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INFRASTRUCTURE , ECONOMIC GROWTH AND TRADE IN SAARC

Abstract

SAARC being an association of seven nations in a diverse sub-continent of Asia is passing through various structural adjustment programmes. At a time when conventional tools of economic analysis are failing to explain both interregional and international income differentials, economists have found, it appears, a "new trade theory" which links the trading performance of a nation, or an economic bloc, to differential infrastructure facilities across the region. Without proper trading infrastructures, no country, or economic bloc can succeed in the field in a world where regional belonging has become, even under new WTO, an instrument for creating competitive edge over other regional blocs. The same has happened in case of SAARC. In this paper, we have seen that relative positions in income and infrastructure of member countries of SAARC have remained the same for last 25 years. Interestingly, the bloc is dominated by no other country than India whose international presence is highly insignificant. Remaining members have insignificant contribution as well. We have also seen that high disparities in income and infrastructure facilities are prevailing among the member countries of SAARC. This may be a plausible reason for slow growth in this part of the world.

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1. Introduction

At a time when the world is all set to virtually become borderless in terms of flows of commodities and factors of production (due to the new GATT, or so to say, the World Trade Organization), it may apparently be felt that regional economic cooperation is coming to an end. But if reality is any guide for all practical purposes, then the need for economic integration and cooperation leading to regional economic bloc is much more pressing for the poor nations than for the developed nations at this juncture of world history. Just as poorer neighbors always vie with each other and richer ones reciprocate, the poorer nations effectively fail to understand the need to tie with each other in order to face their richer counterparts. Although GATT's basic approach of non-discrimination in world trade will be intelligently honored (insofar as the legalities are concerned) in a very complex and not-easy-to-understand way by the developed countries, the rise to dominant power by the NAFTA (North American Free Trade Association) and EEC (European Economic Community) cannot be so easily counter-balanced by the developing countries of Asia, Africa and Latin America.[1]

Theoretically and practically, justifications for stronger economic cooperation among the South Asian countries has become substantial and indispensable with the beginning of the WTO beyond their inherent historical, cultural and socio-economic commonalties, geographical and ecological propinquity in time and space.

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[1] Although there is a high probability for the Latin American countries to be incorporated into the American free trade zone, it is unlikely for them (on economic grounds) to gain much from trade with their richer northern neighbors. The need for cooperation even for environmental issues is no less important. See, Bhagwati (1990), Anderson and Brooks (1996), Lawrence (1995), and Bhagwati and Hudec (1996).

The fact is that just 50 years ago, all the countries in South Asia were almost fully under one Government rule : India, Pakistan and Bangladesh were ruled by the same head, the same laws, and had a common currency; even Sri Lanka and Nepal permitted the Indian rupee to circulate freely. That is, a region - divided by a common heritage and bondage, quarrels and conflicts - has now to reorient their internal and external policies in order to usher in a new era of confidence and mutual exchange. In a recently concluded conference, organized by the IBRD and the Central Bank of Sri Lanka on the problems and prospects of the South Asia beyond 2000, some critics dismissed regional economic grouping as stumbling blocks to true "globalisation of free trade" in line with the "non-discriminatory" clause of GATT. The question is : for competition to be " free and fair" , should the players not be provided with a "level -playing field" ? The state of affairs in South Asia is so bare that it does not need any proof : South Asia today has the dubious honor of having two-fifths or more of the world's poor, and the highest poverty rate of any developing region. Also, it has a higher incidence of child and infant mortality than any other regions barring Sub-Saharan Africa. But South Asia has resources and hence, can improve. All that it needs is a new vision and leadership for the implementation of the doctrines of SAARC (South Asian Association for Regional Cooperation).[2] At a global level, the belief of the convergence theorists (one of the most dominant empirico-theorist group of today) dealing with cross-country experience that poor countries are catching up with the rich countries (Barro, 1991, and Barro and Salai-I–Martin, 1992) is not at all tenable to this sub-continent of

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[2] In this context, Dr. Mahbub ul. Haq's bitter experience is well-known. In fact, the political will to consolidate the economic integration of the region is rather weak. (See Venkitaramanan , 1998).

Asia. On the one hand, the neo-classical assumptions of free mobility of capital and labour is just not true in this region, and on the other, diminishing returns to capital is very difficult to prove, given the unequal efficiency with which public infrastructure is being utilized across regions. Such was the conclusion of the recent papers by Marjit and Mitra (1996), Ghosh, Marjit and Neogi (1998), and Ghosh and De (1998) dealing with Indian regions. And there is perhaps no chance for such hypothesization to be invalidated in the remaining countries of SAARC, namely Bangladesh , Bhutan, Maldives, Nepal and Pakistan. (excepting perhaps Sri Lanka).

By now everybody must confess that one of the major obstacles to intra-SAARC integration is the poor transport infrastructure. Specifically, ships moving from Bangladesh to the ports of India and *vice versa* levy higher freight charges than for the movement to Singapore or Hong Kong. Much more intense is the case with Indo-Pak trade even. Although this may partly be due to inadequate harbor facilities, a larger part is due to lack of cooperation. For example, Pakistan imports iron ore from Australia, Canada and Brazil, instead of from India. Had she imported through Goa, both landed cost and delivery time would have been lower. On the other hand, India imports natural rubber from Indonesia, Malaysia and Thailand instead of from Sri Lanka, which, again imports cements from South East Asia rather than from India. It would not be exaggerated to say that many manufactured goods of India would better suit the SAARC nations given the low purchasing power of these countries. Finally, Bangladesh and India could cooperate, the former with her huge natural gas and sea resources, and the latter with technology and huge market, to produce value-added goods and thus gain competitive advantage in today's competitive environment.

Being one of the poorest regions of the world as they are, the seven members of SAARC made initiatives in undertaking the liberalization policies in rather quick succession.[3] A few words are in order here to understand their ability and achievement in the context of the world wide onslaught of the classical concept (Mercantilist too) of free trade. The tragedy of the situation is that the SAARC countries, with the mild exception of India, mostly do not have indigenous R & D, and they are so much unprepared that they may easily be by-passed by others in competition.

The current global wave towards liberal economic policy has created such an impression among the policy-makers in this region that it is being understood as synonymous with the economics of efficiency (Banuri, 1991). The purpose of such economic reforms is to create a competitive environment through free entry and exit which are effected by de-regulation and de-licensing. Its economics essentially rests on the neo-classical concept of optimality of free market economy where there is no externality. This would lead, on theoretical virtues, to efficient resource allocation from which naturally follows a Pareto-optimal system of production and distribution in the long run (Vickers (1995)). During the initial phases, it would raise the productivity and efficiency of the factors. This is the most desired goal of this reform package. Questions very often raised against the feasibility of applying the liberal economic model into the LDCs mainly

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[3] In essence, all these countries undertook such economic policies specifically from the late eighties and early nineties which, to coin World Bank terminology, is called the 'structural adjustment programme'. This essentially involves removal of licensing and monopolistic practices, de-nationalization, permission of foreign equity participation in domestic industries , and so on and so forth. In this endeavor, Sri Lanka is the only country which has embarked upon the path of economics of reforms as early as in 1977. (For the details of India's economic reforms and its impact, see Ghosh and Neogi (1993,1996, 1998). For others, see Profile of SAARC and Grover (1997).

centre around the nullification of the assumptions underlying the neo-classical model as such. Moreover, under the same economic rationale for which increasing returns to scale have already been accepted as the determining force for trade and growth under given geographical traits [Krugman (1991)], the performance of the countries under SAARC is limited by their infrastructure bottlenecks.

Against this background, the purpose of this paper is basically four folds. First , the basic principles of SAARC are reviewed vis-à-vis their current economic status. Second, an attempt is made to understand the linkage between infrastructure and income across the region under tremendous data limitations. Third, we have examined the share and movement of intra-regional trade flows between India and Bangladesh with the rest of SAARC. Fourth, with the help of time series framework, we have tried to trace the changing pattern of trading strength of this region with the rest of the world. Let us first try to find out the current positions of SAARC.

2. THE CONCEPT AND POSITION OF SAARC

The main objectives of SAARC (founded in 1985)[4] may just be recalled :

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[4] SAARC is an officially recognized economic cooperation bloc comprising seven developing countries in South Asia with an average per capita income of more than US $1500 at current PPP price. Incidentally this region geographically represents the largest part of un-divided and pre-colonial India.

Today, although all the member countries have registered an average 5% per annum growth in GDP but no other member comes close to India in sheer absolute GDP. Even the total GDP of remaining six member countries represent less than 20% of India's GDP. This indirectly indicates the fact that the bloc is dominated by India whose share in world trade is less than 1%. Hence, it is unexpected for SAARC to compete with other two leading trading blocs in the world, namely EEC & NAFTA.

(1) To accelerate economic and social and cultural development in that the welfare and dignity of the people can be promoted;

(2) To strengthen mutual trust, understanding and appreciation;

(3) To strengthen collective self-reliance amongst the nations;

(4) To strengthen cooperation amongst themselves in international forums; and

(5) To cooperate with international and regional organisations with similar aims and purposes.

The main principles on which these objectives are to be based are :

(1) sovereign equality , territorial integrity, and non-interference in internal affairs;

(2) regional cooperation not to be a substitute for bilateral and multilateral obligations; and

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Although a massive expansion in world trade has taken place over the last four decades, the SAARC countries have not been able to take advantage of this because of their inward-looking policies, mixed-up with poor development of social and physical infrastructure sector which is the most fundamental source of economic development and balanced regional growth. The performance of the SAARC members in this sector is really very poor and this is the natural cause of their inability to compete in overseas trade with developed trading blocs. The share of SAARC in world trade has consistently declined over the last 40 years reaching only 0.8% of exports and 1.3% of imports. The trade within the region (that is among the members) is about 3% of global trade, while nearly 46% of global trade is conducted within free-trade areas like the EEC and NAFTA. It has thus become imperative for SAARC members to create its own regional trade bloc to enhance intra-regional trade and to safeguard its own interests in multilateral trade negotiations. This reasoning underpins the SAARC Preferential Trading Arrangement (SAPTA) that was signed in 1993 with a basic principle of reciprocity and mutuality of advantages for the benefits of all the members equitably. SAPTA provides special concessions to the Least Developed States in the form of exclusive tariff preferences, removal of non-tariff and para - tariff barriers. SAARC was formed much before NAFTA and AFTA keeping in mind the regional economic cooperation rather than freeing trade barriers where as NAFTA (1994), AFTA (1994) and EEC (1961) have been established later, but over time they are becoming global trade-bloc giants competing with each other and EEC. Hence, what distinguishes SAARC from these blocs is that it is not a free trade treaty. It has thus now become essential for SAARC members to re-shape and strengthen SAPTA to enhance intra-regional trade and international trade.

(3) unanimity among the members for all the decisions.

Only eight summits out of scheduled 11 summits have so far been held, the nations of South Asia are so near and yet so far.

One major wave in the evolution of worldwide economic policies is common not only to these nations but also to all countries of the world since the end of the Cold War between the superpowers. That is the so-called economic reforms. In fact, no other economic policy change has been so intensely misconceived as the policy of economic reforms. When the strategy of planning for industrialization and economic development was undertaken by the then poor countries after the Second World War, that had a different and positive meaning insofar as nation building is concerned, because, if economics had any role to play, that was by controlled experiment and regulation through appropriate "ends" and "instruments". But during the next 50 years, the half-hearted pursuit at planning and the resultant failure to breakthrough the "vicious circle of poverty" has forced these nations to choose the path of liberalization without any home work". Naturally, with the exception of the "gang of four" and a couple of other Southeast Asian countries, the performance in bulk of Asia including the SAARC nations is abysmally poor. This is obvious from Table 1.

One essential element of globalisation is increasing export. Although for the world as a whole it is a 'zero-sum-game', for SAARC, export has not yet crossed the 'residual' status. Bhutan is basically an "outlier" : its total export and GDP are respectively just 0.1 billion and 0.3 billion. Along with this, Table 2 also presents the intra-regional trade flows among themselves in 1992, or what may be called what they have done for themselves in the name of SAARC. Although total world trade from SAARC is not insignificant (US $31927.46 million), its share within the region is

a meager 3.4%. Here also, Maldives is just an "outlier" in absolute term. The most noteworthy feature from this table is that India's trade with Bangladesh is about 44% of India's total export to SAARC. But the reverse is only 9.19% (i.e. share of export of Bangladesh to India as a percentage within SAARC). This may be due to lower demand for import from Bangladesh and a better manufacturing position of India within SAARC.

The details of the trade flows from India and Bangladesh to SAARC are considered later.

3. LINKAGE BETWEEN INFRASTRUCTURE AND INCOME

The indispensable role played by Social Overhead Capital (SOC) in helping productive activities, both direct and indirect, was recognized by the pioneers of development economics (Hirschman, 1958 and Myrdal, 1958). The concept of infrastructure is essentially a flow of services out of a certain stock of infrastructural facilities created over a length of time. For example, creation of a dam or a power plant or certain stretch of a national highway or an underground railway may take more than two decades, while a telephone exchange just a couple of years. Depending on the nature of input services, infrastructure can be broadly divided into two types: physical and social. The former consists of transport (roads, railways, aviation, waterways and ports), electricity, irrigation, telecommunication, housing and water supply. They work as direct intermediate inputs to production, and improvement in these inputs in any geographical location attracts flows of additional resources ("crowding-in" private investment from both domestic and international sources). Secondly, this also raises the productivity of other factors of production (labour and other capital) and profitability of the

producing units thereby permitting higher levels of output, income and/or employment. The positive contribution of physical infrastructure[5] to economic growth and development comes through increases in investment, employment, output, and income in a chain of "cumulative causation". Thus, "economies of agglomeration" develop over time leading to further concentration of economic activities in a particular location or region.[6]

On the other hand, social infrastructure broadly includes education, health, nutrition, sanitation, child care, recreation, and banking and other forms of financial facilities. Their contribution to productive activity, although indirect in some occasions, is no less important.[7]

The process of cumulative causation should ultimately lead to better allocation of existing and hitherto unutilised resources of the region. This should raise international competitiveness in the chosen lines of production in such centres of economic activity. In the same logic, from the view point of the sub-region of a nation, namely the State , the "crowding in" effect is encouraging as this would raise the productive potentials of the region in the State, although in the long-run, the "crowding out" effects may exert the negative impacts on further development. But given the phenomenon of "historical accident" and "cumulative causation hypothesis" (Myrdal ,1958)[8], the play of market forces normally

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[5] Beyond the conventional wisdom in economics, the role of defence as a stimulant to economic progress is not incorporated in contemporary studies.

[6] This does not mean that de-ruralisation is the ultimate goal of economic progress. There is in fact no conflict in creating infrastructural facilities in rural areas even with developed agricultural practices such as the case of Punjab

[7] The absence of these facilities would ultimately lead to have "lower productive efficiency" of the population in the concerned regions.

[8] Capital movements also tend to have similar effect of increasing inequality. The lack of expansionary effects in the lagging regions siphon off the savings to the richer and

tends to increase rather than to decrease the inequalities between the competing regions. These favored localities and regions, if happen to coincide with natural geographic scopes for port, road, good soil condition and proximity to raw materials, may gain a "competitive advantage". Even the movements of labours, capital, goods and other services generate ever-increasing internal and external economies in the preferred regions which have strong "backwash effects" on the unlucky regions.

Backwash effects exert a retarding pull on other regions. There are diseconomies of agglomeration also, as well as 'spread effects' to other regions. It is not possible to predict at any particular point of time which effects will dominate. Hirschman (1958) strongly propagated the case for governmental intervention to counteract the "polarization effects" of free market forces.[9]

Thus there is no natural smooth tendency toward inter-regional transmission of growth from the richer to the poorer ones. In sharp contrast to the above reasoning, under the neo-classical framework, with perfect mobility of factors and decreasing returns to capital, convergence is the general outcome.[10] But under either paradigms, the role of SOC may become decisive in explaining the geographical bias of economic development within a single country. Barro (1984 , 1991) , Barro and Sala - I - Martin (1992, 1995), Quah (1993) and others have tried to test the hypothesis of convergence of economic growth or levels of economic

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more progressive regions where both demand for and returns to capital are high and secure due to various external economices. Social institutions including banking add to this process of cumulative causation.

9 The most obvious and less "risky" approach is to endow the backward regions with a good system of transportation, effective power stations, and other SOC facilities as are available in the developed regions.

10 The convergence theorists have done their experimentation on the advanced economies, and not on the complex imperfect and capital - poor LDCs.

development as between different regions within a single country in the league of advanced economies as also between different advanced countries themselves.

As this is an inter-country analysis and there is no "European type" integration among these nations, availability of better infrastructure facilities in one nation can not be assumed to improve upon the mobility of capital and labour across the region. This is why we have opted for verifying the linkage between infrastructure and income in each of these nations. Had we found information on various infrastructural facilities across the States in each of the major SAARC countries, that could have been fruitfully exploited to derive some specific policy conclusions for these dtates (Ghosh & De, 1998). Another limitation is that lack of large set of data has forced us to use arbitrary weightage for various infrastructure variables instead of principal component analysis - the most appropriate statistical technique for such indexation.

However, we have calculated a Physical Infrastructure Development Index (PIDI) for five countries, namely, Bangladesh, India, Nepal, Pakistan and Sri Lanka, taking into account five important physical infrastructure facilities such as (i) proportion of irrigated land area to total arable land area, (ii) Per capita consumption of electricity, (iii) Telephone main line, (iv) Port capacity utilization[11] and (v) Transport facilities (railways + roadways + waterways). All these information along with the estimated PIDI values are presented in the Table 3 for four

[11] In a recent work by a non-conventional approach to trade , Ghosh and De (1997) show that transport facility , particularly port capacity, is the determining force of export activity of India. This conclusion is also supported by Marjit and Roychoudhury (1997).

different years, 1971-72, 1981-82, 1991-92 and 1994-95. Our result (ranking of the countries) is quite consistent with the current literature on developing countries according to which Sri Lanka is one of the most successful countries in this regard. Another observation is that there is no change at all in relative ranking.

In order to find out the linkage between PIDI and income, we have placed the cross-section time series pooled data in Figure 1. The following features are interesting to note from this figure.

First, Sri Lanka is the only nation which has been able, to some extent, to move beyond the level of other nations in SAARC in terms of both income and PIDI. Moreover, impact of reform is much more higher and positive in case of Sri Lanka (starting from 1977-78 along with China) : the movement from S_2 to S_3 to S_4. Second, each nation's income growth is highly positively linked with infrastructure (t =3.03). The low value of R^2 may be due to (i) cross-section nature of the study and (ii) increasing diversity among these nations over different time spans. The implication of the latter argument is that the nations have been vertically fixed with their respective base level PIDI.

Third, had we omitted S_4 as outlier, value of R^2 would have been much higher. Hence, efforts must be undertaken at the government level to encourage investment in infrastructure.

4. INTRAREGIONAL TRADE FLOWS OF INDIA AND BANGLADESH IN SAARC

Let us review separately both India's and Bangladesh's trade with the SAARC countries. For facilitating better understanding, we have presented India's trade with SAARC countries in six separate diagrams representing time series trends of net trade flows

with Pakistan, Sri Lanka, Nepal, Bangladesh, Maldives and SAARC as a whole during the period from 1975 to 1995 (Figures 2 (a-f)). It should be mentioned at the beginning that review of trade pattern for a period of two decades in a situation of drastic transitional phase in the history of world trade development should be treated in a continuous way. This is more so in the context of WTO. Because, any failure of the LDCs to consolidate their regional block would simply be utilized by the foreign MNCs in the name of cheap labour and optimum utilization of resources. What is more, the introduction of WTO has so fundamentally changed the concept of world trade pattern and composition that political border has become almost redundant. That is, factors of production have become more and more mobile across borders.

As obvious from Figure 2, except with Bangladesh and Sri Lanka, India's trade balances with other SAARC countries are very erratic. Although India's trade balance with Pakistan has almost always remained negative during the last 20 years, it is difficult to foresee any prospective change in coming decades. On the other hand, it is interesting to note that India's trade pattern with Sri Lanka has not only been uni-directional but has also recorded a 14-fold rise during this period. Given the overall goodness of fit of the exponential curve of Figure 2(b), it is unlikely for this pattern to change in immediate future. Although trade with Maldives has been continuously rising over time with some minor fluctuations, it is so insignificant that it does not add much to SAARC. In fact, there is much scope to be utilized in this regard.

There is no similarity whatsoever either in pattern or in volume in the trade of Bangladesh with individual members and SAARC as a whole. This is presented in Figures 3 (a-f). In all the cases,

except with India and total SAARC, there is no statistical pattern of trade with Bangladesh. Figure 3(a) shows that trade deficit of Bangladesh with India has been continuously worsening over time. While Bangladesh's trade balance with Nepal has been following a positive trend since 1980, that with Sri Lanka has become positive since 1990. This clearly indicates that Bangladesh has been able to consolidate its trade balance over Nepal and Sri Lanka. However, the movement of trade balance between Indian and Bangladesh is the most dominant force in the trading pattern of SAARC. It also determines Bangladesh's trade with SAARC as a whole. Notable is the similarity of figures 3(a) and 3(f)).

Therefore, the future of trade among the countries of SAARC depends on how India and Bangladesh play a positive leadership role in consolidating the group existence.

5. SAARC TRADE WITH THE WORLD

In recent years, the world has recorded tremendous rise in inter-country flow of goods and services including capital and labour. Simultaneously, there have been emergence of several stronger trading blocs and consequently, regional concentration of trade, investment and technology development. For poor countries, there is no other easy alternative for gaining bargaining strength vis-à-vis the developed countries. In reality, the performance of SAARC as a bloc in trade is a good measure of their bargaining power. Although past performance is very depressing, this section finds some emerging trend which is encouraging. Also, an attempt is made to estimate the time point when SAARC can dream to start from a 'zero level' trade deficit.

It is clear from Table 4 that average annual growth rate of export from SAARC to world was outstripped by that of import

from 1975 to 1985 (11.18 and 15.78 respectively). Encouragingly, this trend has not only been reversed but also growth rate of export has become almost trebled that of import over the period from 1985 to 1992 (20.80 and 7.50 respectively). Of course, there is no doubt that a very significant part of this change was accounted for by India alone.[12]

Second, all through these years, SAARC has been suffering from deficit trade balance reaching the maximum in 1985, amounting to US $13516.60 million. This is obvious from Figure 4(a). Since then, this deficit has been continuously falling with minor fluctuations : the movement from A to B to C. The high value of R^2 (0.7379) of the fitted second degree polynomial

$$y = 110.08\ t^2 - 437036\ t + 4E + 08$$

points out the emerging future.

For better understanding, we have fitted separate time trends to both exports and imports. As shown in Figure 4(b), the maximum R^2 is obtained with the straight line fit for imports and exponential curve for exports. This is consistent with the rates of growth of import and export given in Table 6. Accordingly, we have

for exports : $y = 1\text{ E-}68\ e^{0.0836\ t}$, $R^2 = 0.93$

(t = 9.72)

for imports : $y = 8830.25 + 1687.24\ t$, $R^2 = 0.94$

(t = 12.82)

The goodness of fit of both the curves with the corresponding high value of t-statistics dictates that the trade deficit is falling at

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[12] There is enough evidence to the fact that although India is basically an agrarian poor economy, her industrial base, scientific and technological manpower and development are too dominating in the region. Hence, to increase trade, other SAARC members must emphasize on technological cooperation and development projects.

very high rate. Insofar as our formulation is concerned, it may have already attained the zero level at point beyond 1992 in Figure 4(b) which corresponds to 1999 or so.

A conjecture of this paper is that the real beginning of the new role of SAARC must be made at the turn of the century in commensurate with the new GATT in the same way in which the nations of Europe are visualizing the European Union.

A look at Figure 5 reveals some interesting features. In a game - theoretic context, played by seven players, India is the absolute dominant and determining force in terms of income (Fig. 5a). But these seven players as a group represent almost the same share of world income (Fig. 5c) and trade (Fig. 5b) that is about 2%. And the dominant player's (here India) share in world trade is just less than 1%. Hence, any effort to raise the bargaining power of SAARC in today's world essentially falls down to India's activities (or, chances) to succeed in global competition.

6. CONCLUDING REMARKS

This paper uses a limited number of individual infrastructure development indicators, which are absolutely internal to each of the SAARC countries, for explaining income. With enormous data constraints, it is shown that there is a positive relationship between infrastructure and income within this group. Of particular importance to the issues discussed here is the fact that public investment has a greater effect on the net capital formation in poorer region than in growing region. Furthermore, efficient infrastructure facilities across the members of the block can lead to significant reduction in prices of tradable goods, which may then increase the competitiveness of the region.

We have also seen that due to rising trade intensity of Bangladesh and India, future trading pattern of SAARC depends on how India and Bangladesh play a positive leadership role in consolidating the group existence. Until and unless members of SAARC consolidate their group existence leading to higher world trade, this sub-continent will further suffer the onslaught of 'free trade' to be implemented by the WTO at the turn of the century. For this, these countries have no alternative than to concentrate on their respective infrastructure development for further mobility of goods and services.

The world is rapidly moving to an era of globalization where countries are increasingly connected by markets, trade, finance, resources, transport and communications. SAARC economies face a unique opportunity to participate competitively in this global production and trading system on competitive terms. However, this opportunity will be realized only if we can offer an efficient and integrated infrastructure system to this block.

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Table 1. Economic Performance of Asia

Country	Average Real GDP Growth (1980-1992) (%)	Average Export Growth (1980-1992) (%)	Average Import Growth (1980-1992) (%)	Nominal GDP per Capita 1992 (US $)
China	8.90	12.20	11.60	370.00
Japan	4.00	8.60	4.50	29516.00
NIE's	8.00	13.80	12.60	8857.00
Hong Kong	6.80	16.70	15.80	16628.00
South Korea	8.50	13.60	11.70	6792.00
Singapore	6.30	11.30	10.20	16311.00
Taipei, China	8.20	13.00	12.10	10028.00
Southeast Asia	6.20	8.40	10.20	1063.00
Indonesia	5.70	4.30	7.40	677.00
Malaysia	5.70	10.60	11.90	3119.00
Philippines	0.80	5.10	6.60	821.00
Thailand	7.90	15.10	14.60	1917.00
South Asia	5.10	7.50	4.30	286.00
Bangladesh	4.10	9.30	3.50	200.00
India	5.00	7.20	4.50	277.00
Pakistan	6.30	9.40	5.00	405.00
Sri Lanka	4.00	7.40	3.60	553.00

Source : Asian Development Outlook, Asian Development Bank, Various Issues

Table 2. Intra-regional Trade Flows in SAARC in 1992

From: / *To:*	India (US $ million)	Pakisthan (US $ million)	Bangladesh (US $ million)	Sri Lanka (US $ million)	Nepal (US $ million)	Maledives (US $ million)	Total SAARC (US $ million)
India	-	135.50	4.20	11.50	19.19	0.03	170.42
Pakisthan	47.00	-	30.50	30.10	3.18	0.07	110.85
Bangladesh	258.00	136.100	-	5.00	0.33	0.00	399.43
Sri Lanka	192.00	84.600	10.800	-	0.02	11.33	298.75
Nepal	85.00	1.400	0.200	0.100	-	0.00	86.70
Maldives	5.00	1.800	0.000	0.000	0.00	-	6.80
Total SAARC	587.00	359.40	45.70	46.70	22.72	11.43	1072.95
Total World	19554.00	7316.80	2097.80	2508.30	374.01	76.55	31927.46
Exports to SAARC as a % of total Exports	3.00	4.90	2.20	1.90	6.10	14.90	3.40
Share of intra-regional exports (%)	54.70	33.50	4.30	4.40	2.10	1.10	
Share of export in GDP (PPP value) (%)	2.20	3.03	1.68	6.12	1.67	33.33	

Source : Direction of Trade Statistics Yearbook 1993, International Monetary Fund.

Table 3. Physical Infrastructure Development Index (PIDI)

Country	PIDI	Rank of PIDI	PIDI	Rank of PIDI	PIDI	Rank of PIDI	PIDI	Rank of PIDI
	1971-72	1971-72	1981-82	1981-82	1991-92	1991-92	1994-95	1994-95
Nepal	1.20	5	1.10	5	1.10	5	1.10	5
Bangladesh	2.25	4	2.45	4	2.00	4	2.00	4
India	3.95	2	3.65	2	3.85	2	3.95	2
Pakistan	3.20	3	3.30	3	3.55	3	3.55	3
Sri Lanka	4.40	1	4.50	1	4.50	1	4.40	1

Notes :

1. Physical Infrastructure Development Index = 0.45 [Transport Facilities (= Rail Route + Road Length + Waterways Route)] + 0.15 [PCE] + 0.20 [Irrigation Facility] + 0.10 [Telephone Main Line] + 0.10 [Port Utilisation]
2. Transport facility (per '000 sq. km. of area) = Rail route/ '000 sq. km. of area + Road length / '000 sq. km. Of area + Waterways route / '000 sq. km of area
3. Per capita consumption of electricity (PCE) is calculated in kwh
4. Irrigation facility means irrigated land area as a % of total arable land area.
5. Telephone Main Line means number of telephone per 1000 population.
6. *Port Utilisation means port capacity utilisation in %*

Sources :

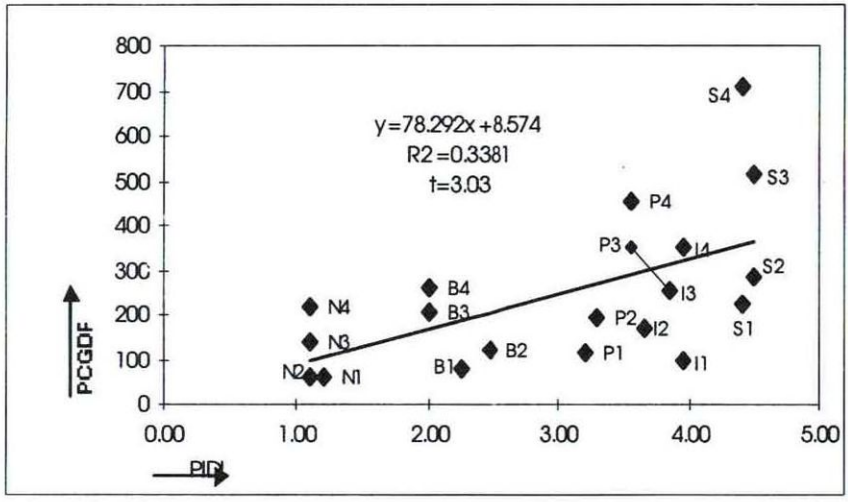
1. World Development Report 1994, Infrastructure for Development , World Bank
2. World Bank Country Study Reports on Pakistan (1995), India(1996), Bangladesh (1997), Sri Lanka (1997)
3. Profile of SAARC, SAARC Chamber of Commerce , 1995
4. Various issues of Statistical Year Book of Bangladesh
5. Various issues of Economic Survey of India
6. Various issues of Asian Development Outlook, Asian Development Bank
7. Various issues of Containerization International Yearbook, Emap Business Communication, England
8. Various issues of Basic Port Statistics of India, Ministry of Surface Transport, Government of India

Table 4. SAARC trade with World : 1975-92

Year	Exports (US $ Million)	Imports (US $ Million)	Total (US $ Million)	Balance of Trade (US $ Million)	Share of Exports in Total Trade (%)	Share of Imports in Total Trade (%)
1975	6340.00	10450.20	16790.20	-4110.20	37.76	62.24
1976	7207.10	8745.50	15952.60	-1538.40	45.18	54.82
1977	8689.60	10863.60	19553.20	-2174.00	44.44	55.56
1978	9557.70	13742.80	23300.50	-4185.10	41.02	58.98
1979	12443.60	17512.10	29955.70	-5068.50	41.54	58.46
1980	12959.10	25049.60	38008.70	-12090.50	34.10	65.90
1981	11627.30	24838.90	36466.20	-13211.60	31.89	68.11
1982	14000.30	25847.30	39847.60	-11847.00	35.13	64.87
1983	14718.60	25581.70	40300.30	-10863.10	36.52	63.48
1984	13253.00	25843.10	39096.10	-12590.10	33.90	66.10
1985	13424.20	26940.80	40365.00	-13516.60	33.26	66.74
1986	14728.40	25190.40	39918.80	-10462.00	36.90	63.10
1987	17555.80	28010.50	45566.30	-10454.70	38.53	61.47
1988	20516.90	31687.00	52203.90	-11170.10	39.30	60.70
1989	23571.60	32641.90	56213.50	-9070.30	41.93	58.07
1990	27163.50	38203.70	65367.20	-11040.20	41.56	58.44
1991	28570.00	35230.80	63800.80	-6660.80	44.78	55.22
1992	32968.10	41082.10	74050.20	-8114.00	44.52	55.48
AAGR (%) (1975-85)	11.18	15.78				
AAGR (%) (1985-92)	20.8	7.5				
AAGR (%) (1975-92)	23.33	16.28	18.95	5.41		

Note : AAGR : Average Annual Growth Rate Source : International Monetary Fund

Figure 1 : Scatter Diagram of PIDI and Per Capita GDP of 'SAARC

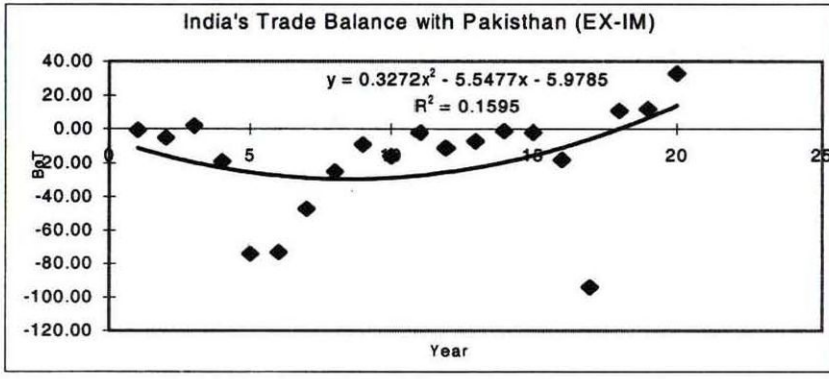


Notes : (1) Subscript 1,2,3 and 4 respectively stand for 1971-72, 1981-82, 1991-92 and 1994-95

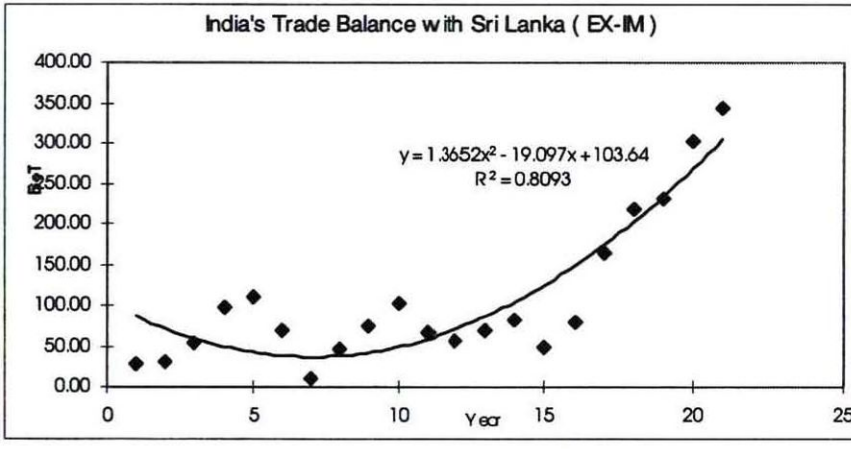
(2) N.B, I, P and S represent Nepal, Bangladesh, India, Pakistan and Sri Lanka respectively

Figure 2 : Trend of India's Trade with SAARC Nations during 1975-1995

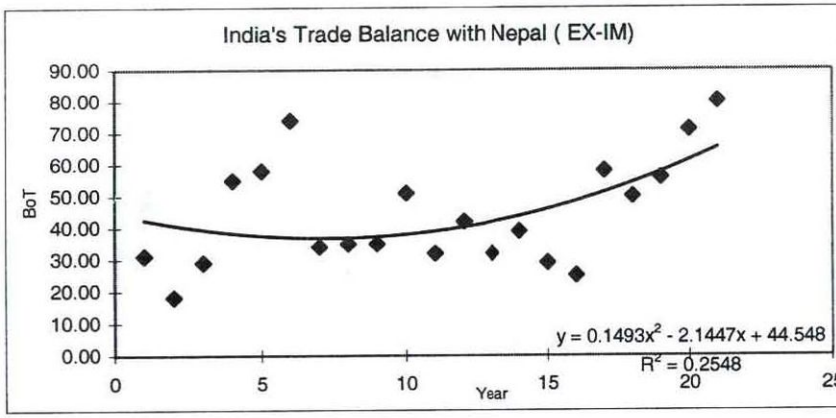
(a)



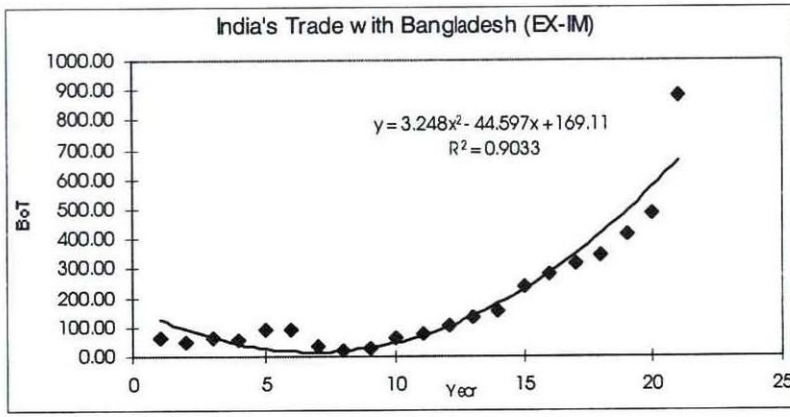
(b)



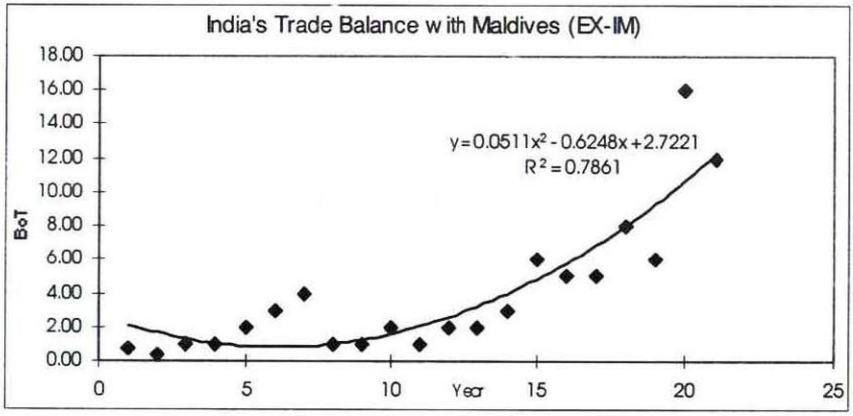
(c)


India's Trade Balance with Nepal (EX-IM)
BoT
Year
y = 0.1493x² - 2.1447x + 44.548
R² = 0.2548
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0
5
10
15
20
25

(d)


India's Trade w ith Bangladesh (EX-IM)
BoT
Year
y = 3.248x² - 44.597x + 169.11
R² = 0.9033
1000.00
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
0
5
10
15
20
25

(e)


India's Trade Balance with Maldives (EX-IM)
y = 0.0511x² - 0.6248x + 2.7221
R² = 0.7861
BoT
Year
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0
5
10
15
20
25

(f)

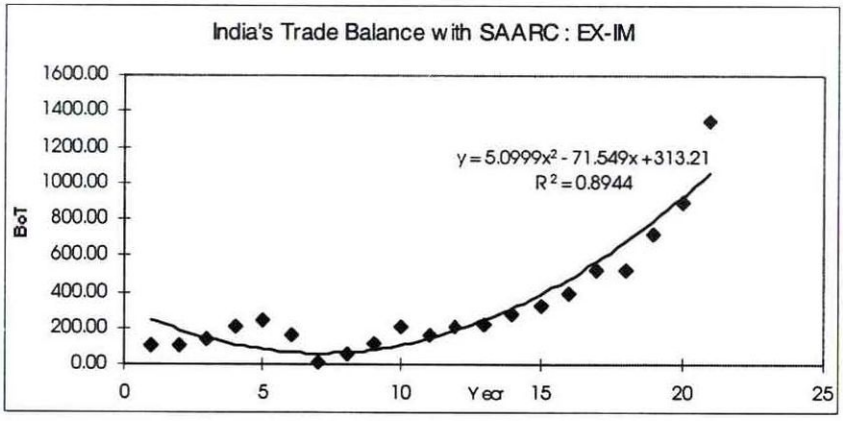
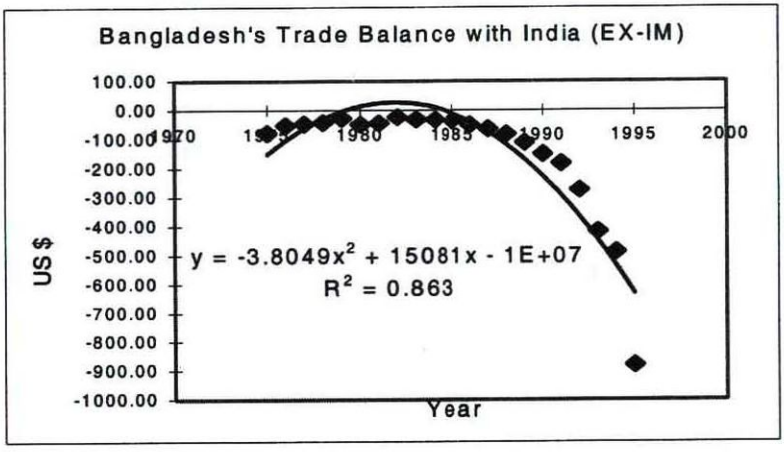
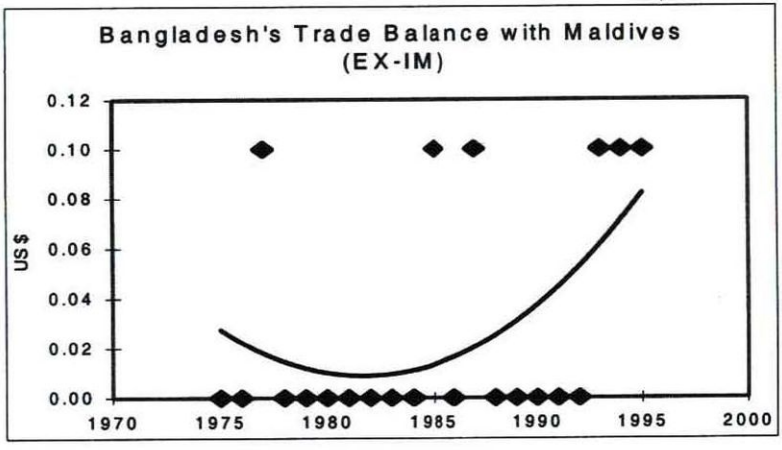

India's Trade Balance with SAARC : EX-IM
y = 5.0999x² - 71.549x + 313.21
R² = 0.8944
BoT
Year
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
0
5
10
15
20
25

Figure 3 : Trend of Bangladesh's Trade with SAARC Nations during 1975-9

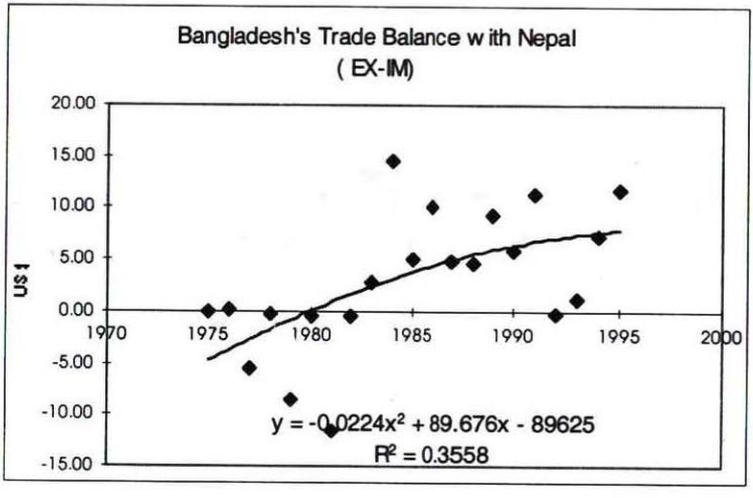
(a)



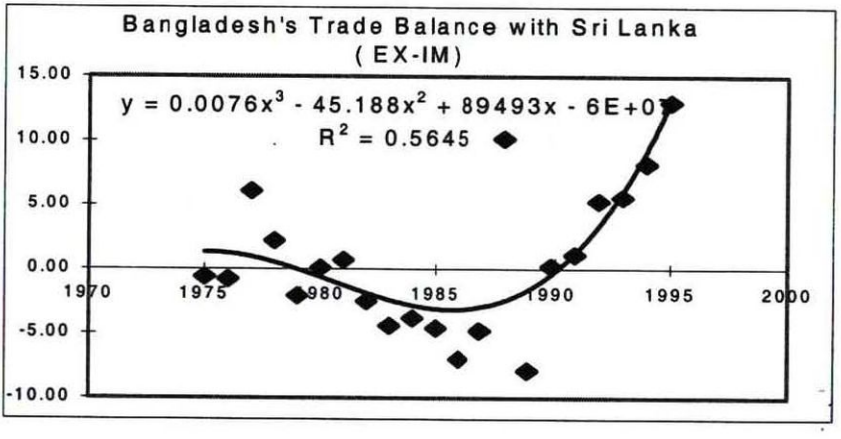
(b)



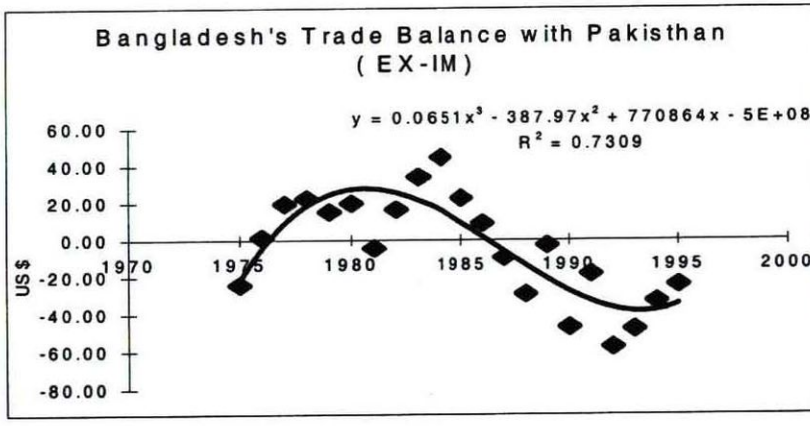
(c)


Bangladesh's Trade Balance with Nepal
(EX-IM)
US $
20.00
15.00
10.00
5.00
0.00
-5.00
-10.00
-15.00
1970
1975
1980
1985
1990
1995
2000
y = -0.0224x² + 89.676x - 89625
R² = 0.3558

(d)


Bangladesh's Trade Balance with Sri Lanka
(EX-IM)
15.00
10.00
5.00
0.00
-5.00
-10.00
1970
1975
1980
1985
1990
1995
2000
y = 0.0076x³ - 45.188x² + 89493x - 6E+0
R² = 0.5645

(e)


Bangladesh's Trade Balance with Pakisthan
(EX-IM)
y = 0.0651x³ - 387.97x² + 770864x - 5E+08
R² = 0.7309
60.00
40.00
20.00
0.00
-20.00
-40.00
-60.00
-80.00
US $
1970
1975
1980
1985
1990
1995
2000

(f)

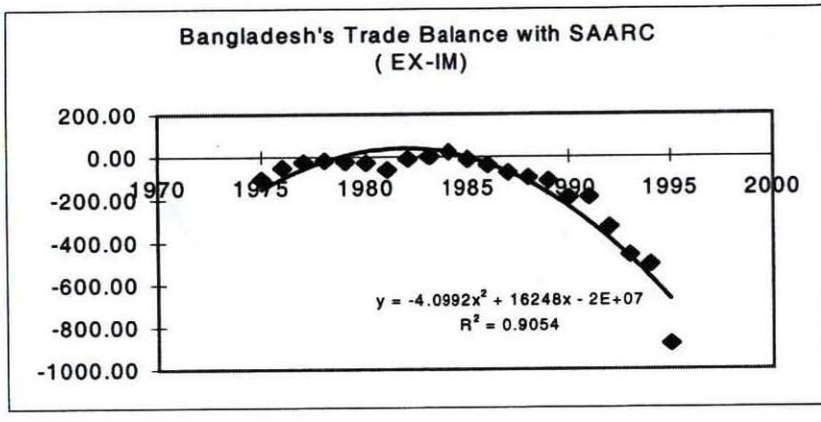
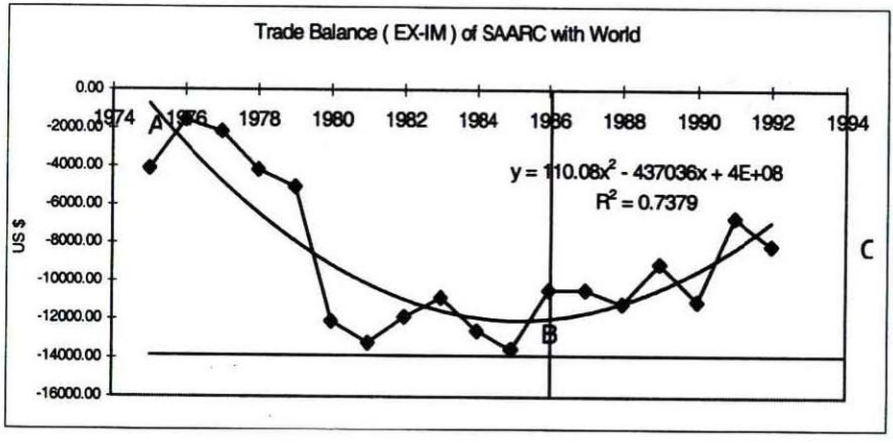

Bangladesh's Trade Balance with SAARC
(EX-IM)
200.00
0.00
-200.00
-400.00
-600.00
-800.00
-1000.00
1970
1975
1980
1985
1990
1995
2000
y = -4.0992x² + 16248x - 2E+07
R² = 0.9054

Figure 4: Trend of SAARC Trade with World during 1975 to 1992

(a)



(b)

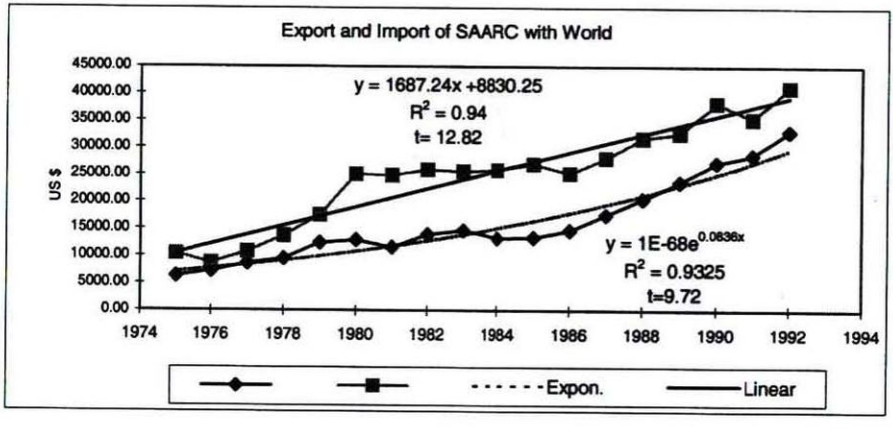
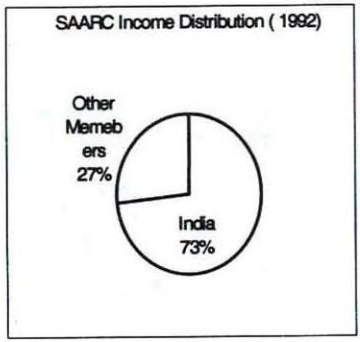
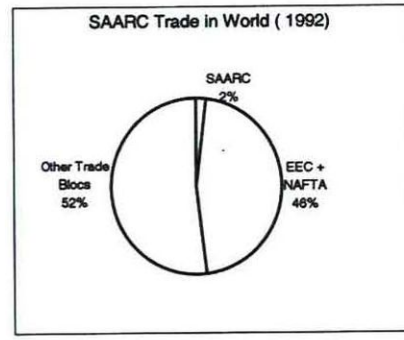


Figure 5: SAARC and World: Income and Trade in 1992

(a)



(b)



(c)