FINANCIAL MARKET INTEGRATION AND CO-MOVEMENTS AMONG THE GROWTH RATES: EVIDENCE FROM SOUTH ASIAN COUNTRIES

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Abstract

Since the 1980s, South Asian countries have been implementing financial market deregulation policies continuously. Although the process of deregulations has been slow, many countries in the region are heading toward a more integrated market despite current global turmoil. Financial market integration in South Asia could have synchronised economic activities of the countries in the region due to the impact of consolidation. This suggests that when the region's economies grow/contract, all countries could follow the same path demonstrating a co-movement of growth rates among countries. When economic growth rates are similar for a region, it may be easier to formulate economic policies to achieve a common goal. As the political leadership of South Asia has agreed to work towards forming an economic block similar to that of the European Union and ASIAN, examining co-movement of growth rates could shed more lights on the issue of the success of market integration in the region. The objective of this study is to study market integration by analysing financial markets, trade and economic growth data to spot whether there is any co-movement of growth rates among South Asian countries due to financial market deregulation policies implemented so far. As findings show mix results, we used region's governance indicators to examine further and found that weak governance is a serious problem in the South Asian region.

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1. Introduction

Irrespective of the geographical size, population and diversity, South Asia still remains one of the poorest parts of the world. South Asia has no specific geographical boundaries however Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka are generally called South Asian countries and have formed a number of regional alliances[7]. Per capita income and many other macro level developmental variables have low values for the region compared to other parts of the world. International soft lending institutions such as the World Bank, International Monetary Fund and the Asian Development Bank have been recommending reforms in the region for many years. Irrespective of these advices, most South Asian countries had their markets under government control for a substantial period of time. However, as a result of those advises and global as well as domestic pressure, South Asian countries have begun economic reforms about three decades ago. Financial sector was one of the priority sectors to undergo reforms as early as in the beginning of 1980s. Financial market reforms are a necessary requirement to establish a deep financial sector. When there are fewer regulations and less government interferences and when countries in a region have deep financial markets, financial integration could take place naturally. With financial market integration, investment and growth will improve through identifying opportunities for successful business activities by economic agents. Furthermore, financial integration will mobilise and pool savings in a more efficient way. When financial markets are integrated, corporate governance could improve further. All these activities will result in a more efficient allocation of resources.

[7] One such example is the South Asian Association for Regional Cooperation (SAARC)

In the South Asian region, while financial markets are getting integrated, countries were looking at improving trade by signing bi-lateral agreements. These trade agreements have promoted intra-regional trade in a substantial way. As a number of free trade agreements being signed and also with more integrated financial markets within the region, South Asian economies should display similar growth patterns in their economies. More precisely, South Asian economies should show co-movements among their economic growth rates. Theoretically, such a co-movement of growth rates should have wider implications for the region. As the region has already embarked on a programme of economic integration through their already existing economic co-operation programme (SAARC) [8], governments could introduce common policies for the benefit of the region. In this regard, all countries have agreed in principle to implement programmes to have a common currency, an integrated economic zone similar to the Euro area and a common payment system to facilitate an efficient transfer mechanism. Therefore, the objective of this study is to examine whether there is a co-movement of growth rates among South Asian countries. By using financial, trade and other macro-economic data among the countries, we attempt to examine whether correlation pattern among countries are similar.

The paper is organised as follows; Section 2 gives an overview of the South Asian region; Section 3 examines recent literature on this area of study; Section 4 discusses South Asian financial markets; Section 5 analyses co-movement of GDP; Section 6 discusses non-economic factors and Section 6.0 gives a conclusion.

2. South Asia Region

Many countries in the region were under the British rule for a considerable period of time and later become independent nations. Most economic activities were controlled by the state in almost all countries until last few decade of the 20th Century. The region also has civil unrests, internal conflicts, political hostilities, separatist wars and many other destabilising activities. However, almost all countries are democracies and are being ruled by democratically elected governments. This is the legacy of the British rule and one of the most notable features in the region. Almost all governments in the region have been attempting to relax barriers to economic and financial activities beginning with early 1980s. Sri Lanka has been the first country to liberalise its economic activities in early 1980 and other countries have been following the trend since then. In 1985, countries in the region have formed an alliance (South Asian Association for Regional Corporation or SAARC) to speedup economic and other social cooperation activities among them. As a result, cooperative economic activities among member countries have been increasing significantly. In a most recent move SAARC have embarked on a policy cooperation strategy to direct their countries towards the European Union (EU) style economic union and monetary corporation irrespective of political, social and economic diversity among member countries. Apart from few similarities, many countries in South Asia have disagreements and conflicts with their neighbouring countries in many regards. For example, India has political issues with Pakistan and some other neighbours. Regardless of this type of uncertainties, South Asian countries have courageously embarked on forward looking policies to develop their region.

In this regard, many countries in the region have already signed a number of bilateral free trade agreements. Apart from finance and trade, there are many areas of economic cooperation among countries. These areas include integrated programmes in sectors such as agriculture and rural development, health and population activities, women, youth and children, environment and forestry, science and technology and meteorology, human resources development and transport. Table 1 shows some macroeconomic data for major countries in the region in areas of GDP growth rates, gross domestic capital formation and population.

[8] Member of the SAARC are Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. Afghanistan has also becomes a member very recently.

Table 1. Macroeconomic Data for Selected South Asian Countries

Country	GDP Growth Rate			Gross Domestic Capital formation (as a % of GDP)		Population (in millions)	
	1980-90	1990-2001	2008	2001	2008	2001	2008
India	5.7	5.9	6.7	22.8	39.1*	1,035	1,150
Bangladesh	4.3	4.9	6.2	23.1	24.2	129.9	142.4
Pakistan	6.3	3.7	4.1	17	22	142.35	162.37
Sri Lanka	4	5	6	22.2	27.1	18.7	20.2
Nepal	4.6	4.9	5.3	22.3	31.8	23.15	27.03

*2007 data
Source: Asian Development Bank

3. Literature Survey

Most studies on the issue of co-movement are examining the issue of equity return co-movements. There are only very few studies that are studying economic growth rate co-movements between countries. Among them Den Haan (2000), Croux et al (2001), Den Haan and Sumner (2001), Doyle et al (2002) and Knetsch, (2005) are the significant studies. Den Haan (2000) studies the short-run and long-run co-movement between prices and real activity in the G7 countries using data during the post-war period. The study estimates VAR forecast errors and finds several patterns of the correlation coefficients that are robust across countries and time periods. It is found that long-run horizons are significantly negative and the correlation coefficients at short-run horizons are substantially higher. Following Den Haan (2000), Maria-Dolores and Vazquez (2008) observe the co-movement between output and inflation in the USA. They study the correlations of VAR forecast errors of the two variables at different forecast horizons. They find that correlation is negative and marginally significant for the one-ahead forecast horizon, however the correlations are non-significant for the other forecast horizons studied. Knetsch, (2005) examines the short-run and long-run co-movement between the German, French and Italian aggregates of private consumption, business investment, exports, imports, GDP, and changes in inventories. This study finds stable long-run relationships between consumption and output, investment and output as well as between exports and imports. Essaadi and Boutahar (2008) in their study, test the instability of co-movement, in time and frequency domain, for the GDP growth rate of the US and the UK. Using a frequency approach, they have identified that the degree of synchronisation between the US and the UK has changed over time in all cycles.

Doyle et al (2002) and Doyle and Faust (2005) have examined co-movement of economic growth in G-7 countries. Doyle et al (2002) initially examined growth rates in the United States comparing with other G-7 countries using correlation analysis while Doyle and Faust (2005) extend the previous study further by examining breaks in the variability and co-movement of output, consumption and investment. They do not find any evidence of increase in correlation of growth rates of output, consumption and investment. There are no studies examining co-movement of GDP ratios for emerging market countries. Besides, there is no rationale to think that one study's find for a particular group of countries are same for all other countries. As a result, in this study we attempt to examine co-movement of GDPs and other macro activities in a region where most countries are planning to integrate economically.

4. Financial Markets in South Asia

Financial market liberalisation is the most significant policy outcome in the region. As a result, financial sector has benefitted substantially compared to many other sectors. Due to market deregulation policies implemented by the countries in the region, financial market integration has been substantial. The ultimate objective of financial market integration is to achieve theoretical law of one price. For example, equity market investors should have same expected returns under this scenario. South Asian markets are at this stage far behind this level of correlation. However, as noted before, SAARC countries have embarked on a programme of economic integration among member countries for a number of years to achieve similar objective in a future day. India is the dominant country in the region from geographical, population, economic, defence and many other aspects. As a result, South Asian region's financial markets are also dominated by Indian financial sector. India has

the highest number of financial institutions in the region as well in Asia. Form market capitalisation point of view, it has the largest equity market in the region. It is noteworthy to mention that the region also has the largest democracy in the world and becoming the most populous region at a faster speed. Average profits of banks in the region have been increasing significantly over the years. Apart from these, significant improvement in private capital inflows and foreign direct investments in the region has been substantial. In particular, inadequate facilities in financial institutions and unavailability of basic financial products could discourage savers. However, notable increase in savings in the region implies benefits of reforms. When examine the banking sector further, the South Asian region makes a significant presence among largest 500 banks within Asia. There are 161 commercial banks in the region and in 2008 net income of these banks were around US$ 1.2 billion which is a 100% increase compared to the year 2000 net income.

The current level of financial market integration in South Asian region could be measured by examining the level of financial depth. For example, this could be measured by commonly used ratio of bank credit to the economy as a ratio of GDP. Figure 1 indicates that bank credit as a percentage of GDP and has been increasing over the years for all major countries in the region. Credit decline in 2008 reflects the global financial market crisis. Higher level of credit in the early part of the 1990s in Pakistan shows regulated credit market that existed during the past. Apart from this, two more measures could be used as indicators of financial market integration. Figure 2 and Figure 3 show domestic interest rates and money market rates correlation data from 2001 to 2008 in the region. Money market rate correlation is a pair-wise measure of co-movement in the money markets. A higher correlation indicates a higher degree of integration in the markets showing signs of market integration. There are no visible consistencies among countries however some improvements are visible in recent times. Most countries show similar pattern except Sri Lanka. Due to civil war activities, in Sri Lanka interest rates and credit growth has been somewhat different from other countries in the region.

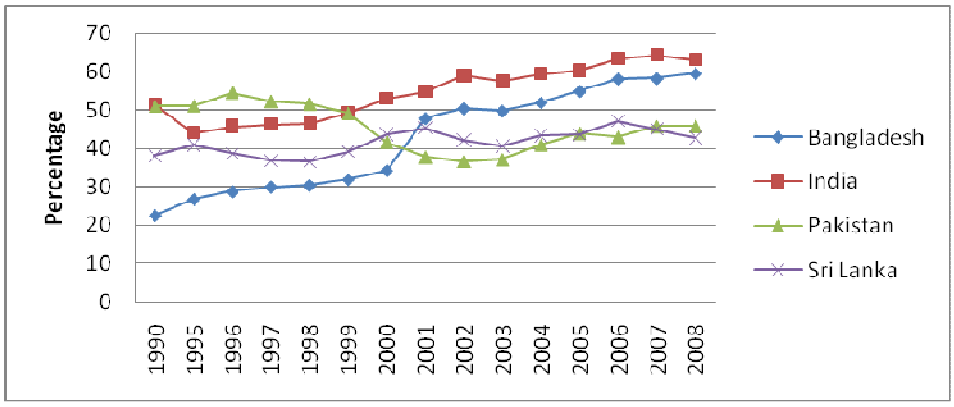


Figure 1. Domestic credit provided by banking sector (as a % of GDP)

Source: Asian Development Bank

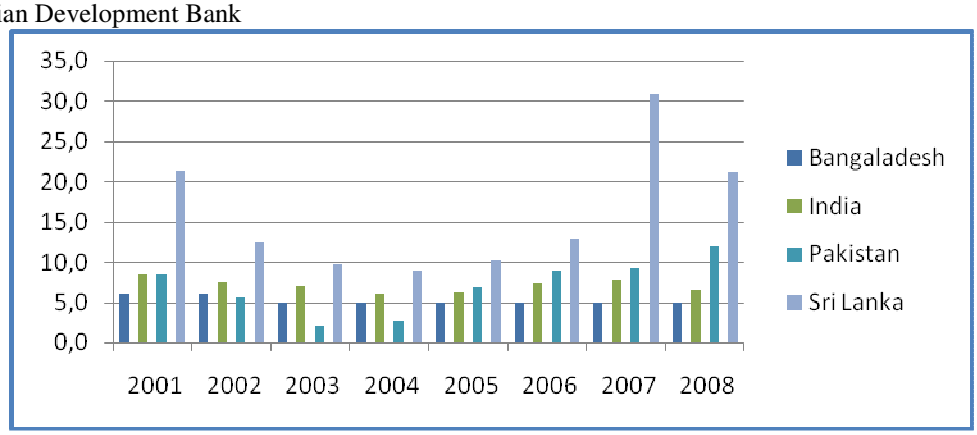


Figure 2. Deposit interest rate (%)

Source: EIU Database

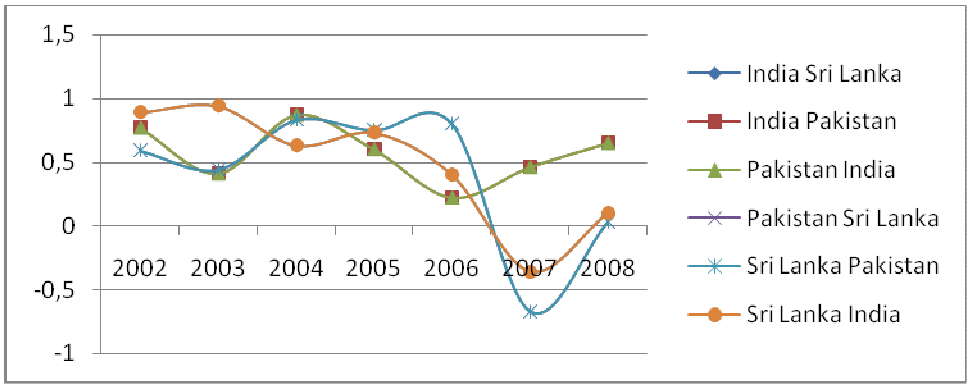


Figure 3. Money Market Rate Correlation*

Source: Asian Development Bank
* No data available for Bangladesh

4.1 Equity Markets

Within the financial market sector banks are the dominating players. However, over the years, equity markets have become increasingly important for many countries in the region. Three decades ago there were no equity markets or very little markets were active in the region. Continues financial sector reforms have helped equity markets in the region to grow significantly. (Table 2 lists stock exchanges in all South Asian countries.) Foreign market participants are still not very common but increasingly their participation is becoming significant. Encouraging broader equity market integration in the region, exchanges have already formed an organisation called South Asian Federation of Exchanges (SAFE). This has helped bourses in South Asia to boost securities markets activities in a significant way. The members of countries have agreed to work towards common standards including international accounting standards and best business practices in capital markets. Stock market capitalisation within the region has been remarkable for all countries however India has been the dominating player in the region. Sri Lanka with a 125% increase in yield has become one of the best performers in the world in 2009 while India was not far behind. Figure indicates stock market capitalisation as a percentage of GDP in the region from 1990 to 2008.

Table 2:. Equity Markets in the South Asian region

Country	Name of the Stock Exchange
Bangladesh	Chittagong Stock Exchange (CSE)
	Dhaka Stock Exchange (DSE)
Bhutan	Royal Securities Exchange Bhutan
India	Bombay Stock Exchange (BSE)
	National Stock Exchange (NSE)
Maldives	Maldives Stock Exchange (MSE)
Nepal	Nepal Stock Exchange
Pakistan	Islamabad Stock Exchange (ISE)
	Karachi Stock Exchange (KSE)
	Lahore Stock Exchange (LSE)
Sri Lanka	Colombo Stock Exchange (CSE)

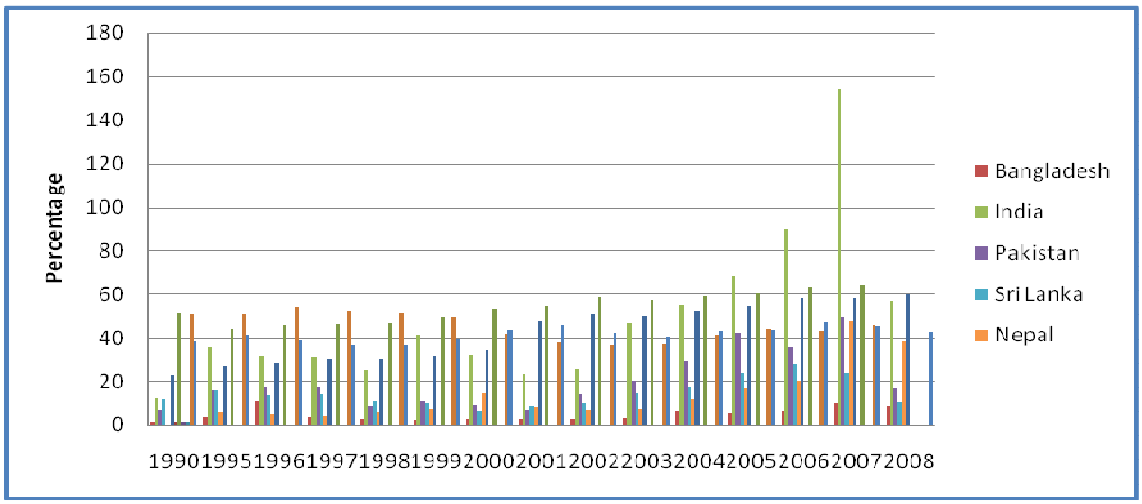
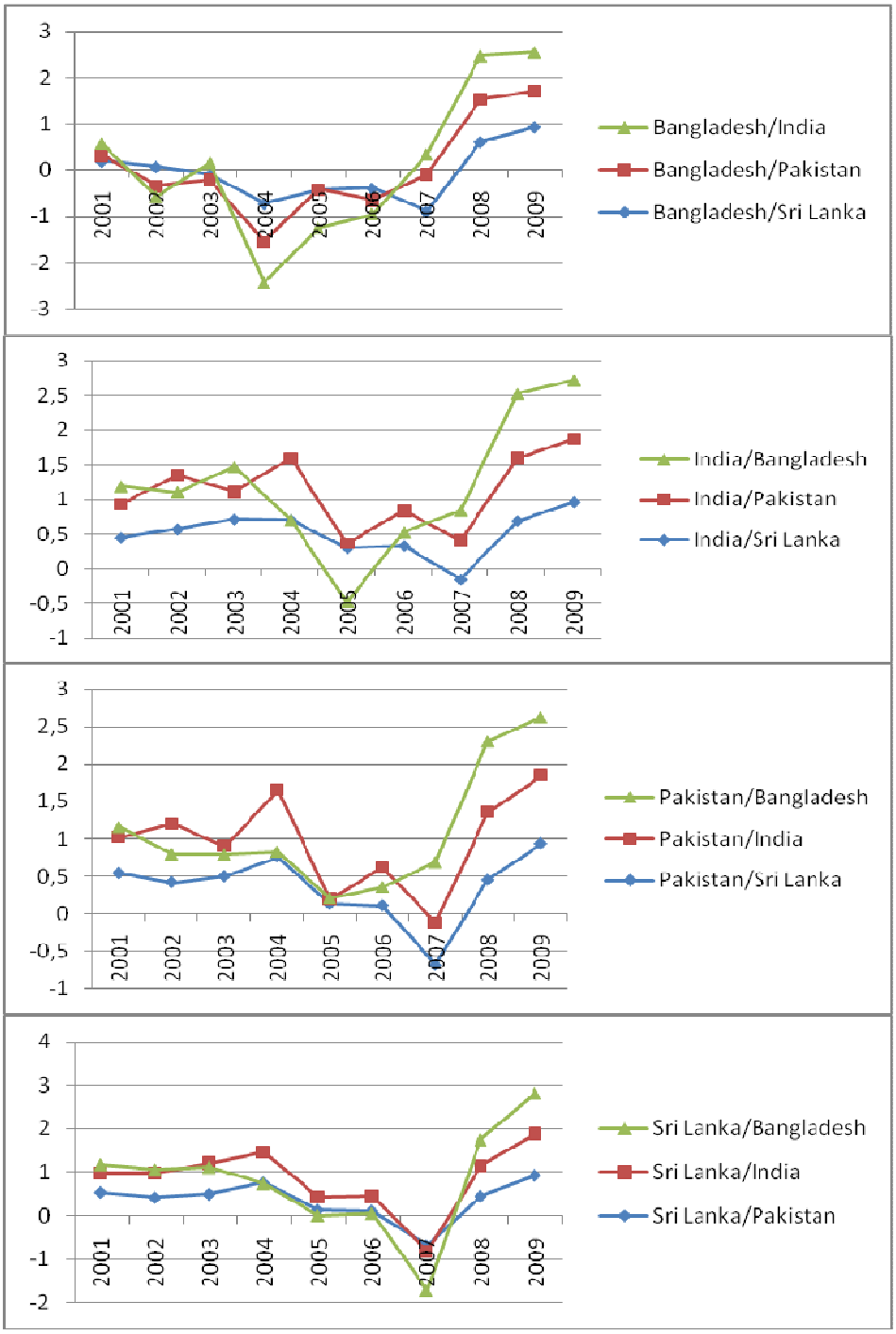


Figure 4. Stock market capitalisation (as a % of GDP)
Source: Asian Development Bank

It is notable from Figure 4 Indian equity market has been experiencing a significant growth in recent years except 2008 which shows the impact of GFC. One significant measure to identify equity market integration in the regions is the examination of equity market correlation data. Equity market returns correlation is a pair-wise measure of co-movement in the stock markets. A higher correlation indicates a higher degree of integration in the markets. Table 3 shows stock market correlation returns for Bangladesh, India, Pakistan and Sri Lanka. Due to data deficiency Bhutan, Maldives and Nepal were omitted. Compared to 2001, all countries show improved correlation statistics indicating market integration within the region. It appears that in most countries, over the years, correlation has improved. However, between some countries there is no continues increase in correlation. This may be due to internal factors of such as civil unrest/war or political volatility which are highly sensitive to equity market activities.

Table 3. Stock Market Returns Correlation Data 2001-2009



Source: Asian Development Bank

4.2 Trade

While financial markets are integrating, trade activities have also been increasing in the region in a significant way over the last two decades. Apart from trading among member countries, total trade with the rest of the world has also increased significantly. Due to natural economic development, trade increases however market integration among nations has undoubtedly helped trade flows in a substantial way. Figure 5 shows trade data for major countries in the region. Sri Lanka's share is the highest among other countries indicating the very early deregulation programmes introduced there. All countries in the region show an almost similar movement in trading activities as a percentage of their GDP. Figure 6 shows global share of South Asia's export and import as a region as well as for each major country in the region.

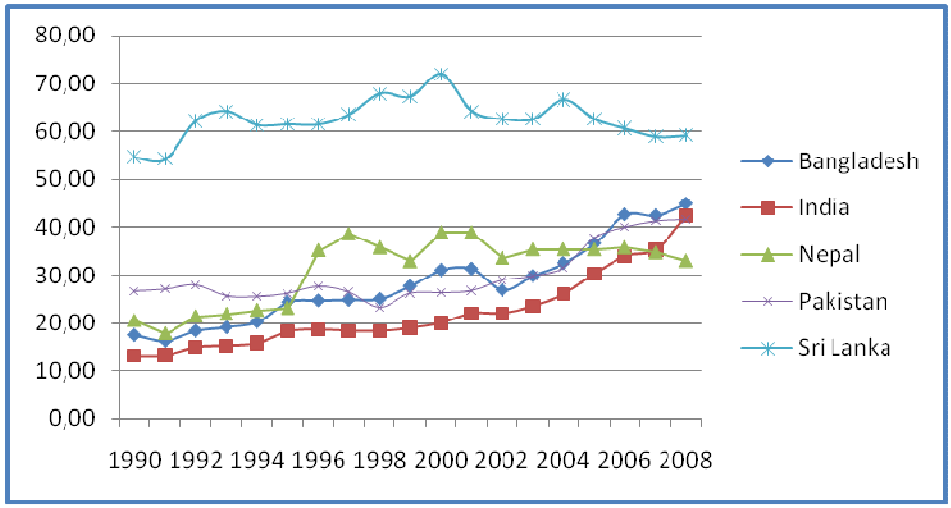


Figure 5. Total Trade as a Percentage of GDP for South Asian Countries- 190-2008

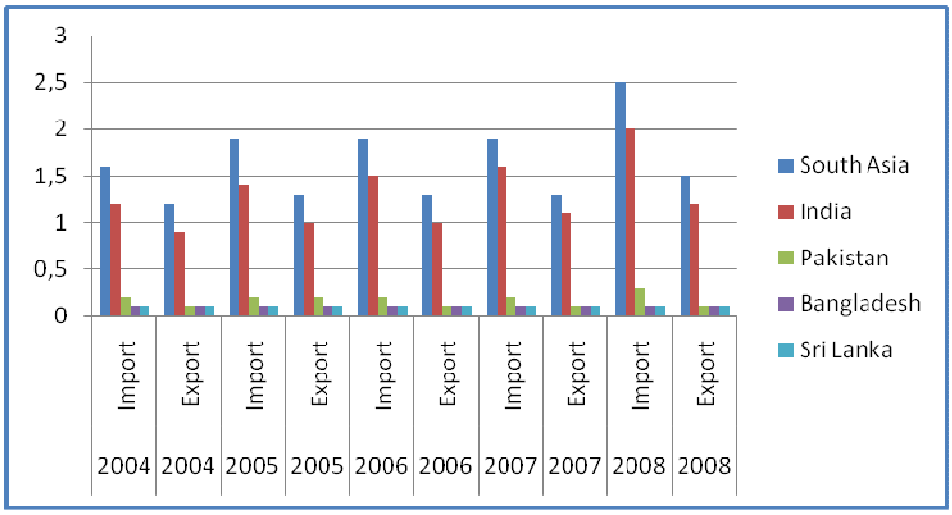


Figure 6. Share in value in South Asia's imports and exports (%)

Market integration in the region is further visible by when we examine the number of Free Trade Agreements (FTAs) signed by countries in the region. These agreements are to allow free trade among participating courtiers and it strengthen further economic corporation in the region. While India and Pakistan are dominating trade activities in the region, they also have signed the highest number of FTAs. Table 4 has data for FTAs for all countries in the region.

Table 4. FTA Status by Country – 2009

COUNTRY	Proposed	Framework Agreement Signed/Under Negotiation	Under Negotiation	Signed	Under Implementation	TOTAL
Bangladesh	0	2	1	1	2	6
Bhutan	0	1	0	0	2	3
India	11	5	7	1	8	32
Nepal	1	1	0	0	2	4
Pakistan	10	5	3	2	6	26
Sri Lanka	2	1	0	1	4	8

Source: Asian Development bank

Figure 7 shows GDP growth rate from 1998 to 2008. It shows that compared to 1998 and 1999 many countries in the region has now higher GDP growth rates. This may be due to number of factors including economic and financial market integration in the region. While continues increase in overall trade as a percentage of GDP and continues improvement in economic growth rates could be interpreted as a sign of market integration, it is also possible to use the trade intensity index to support this argument further. Trade intensity index is the ratio of trade share of a country to the share of world trade with a partner to support further for this argument. The index could be used to determine whether the value of trade between two countries is greater or smaller than would be expected on the basis of their importance in world trade. Trade intensity index is calculated as below;

$$Tij = (eij/Eit)/(ewj/Ewt)$$

Where *eij* and *ewj* are the values of country i's exports and of world exports to country j and where *Eit* and *Ewt* are country i's total exports and total world exports respectively. An index of more than one indicates a bilateral trade flow that is larger than expected given the partner country's importance in world trade. Figure 8 shows trade intensity index pattern for four major countries in the region. Though there are some signs of improving trade between some countries (for example between Sri Lanka and India and between Pakistan and India), there is no dramatic improvement in the region. Research done on trade between the countries in the region indicates that India is the only country that receives more benefits from market integration than other countries. (see Bandara and Yu, 2003 and Siriwardena and Yang, 2007)

5. Comovement/ Co-Movement Analysis

Comovement (Shiller 1989) or co-movement (Doyle, Faust and Halket 2002) is loosely defined in economics and finance literature and there is no specific measure used to observe it. However, many have described it to suite there requirements. For example, co-movement is the tendency of two variables, e.g. the returns from two investments, to move in parallel. Among other measures, it can be measured using the correlation coefficient which is a relative measure of co-movement that locates assets on a scale between -1 and +1. If returns move exactly in unison, perfect correlation exists. If exactly opposite movements occur, perfect negative correlation exists. The other measure is the covariance which is an absolute measure of co-movement with no upper or lower limits. Co-movement of growth variables in a particular economic region or among countries could occur due to a number of reasons. We take the view that main reason for such a correlation in South Asian region is due to increased cross-border transmission of shocks due to financial market deregulation policies implemented by the region. South Asian countries have not only been deregulating their financial markets, they also have been implementing number of programmes to integrate economic and social activities including relaxation of trade barriers. We believe that due to market integration, economies of these countries should have a higher correlation among growth rates. This means a recession or boom in one country should transmit that to other countries in the region. Figure 7 shows GDP growth rates of major South Asian countries from 1990 to 2008. It is observable that since 2000 onward, most countries growth rates are behaving in a slightly similar pattern indicating some market integration impact.

In this study we use correlation as a measure of co-movement to analyse GDP growth rates in the South Asian region. This means we are able to calculate correlation of growth rates of country A and country B (for example for India and Pakistan) using covariance in GDP growth of two countries using as a common variability measure. Once we calculate covariance, then it is possible to use standard deviation which is a measure of variability of growth in each country to calculate correlation growth of countries[9]. Following Doyle et al (2002) we interpret correlation as a measure of co-movement and use it to identify GDP growth patterns in South Asian countries. Using a three-year rolling interval and quarterly GDP data for eighteen years (1990-2008), in this study, correlation of growth is examined for each country namely, Bangladesh, India, Pakistan and Sri Lanka. For example, say, correlation of India's real GDP growth is examined with growth rate of other three countries in the region. In this way, we compare each country's GDP growth with other three countries.

From the analysis it appears that in recent times almost all countries have positive correlations implying that markets have begun to integrate. Until the year 2000, Sri Lanka shows negative signs. The reason for this may be that Sri Lanka has embarked on a market deregulation programme since early 1980s and other courtiers in the region started there deregulation programmes vary late. Results also indicates that there is no continues higher correlation among countries. The impact of the Global Financial Crisis (GFC) in 2008 is notable for all countries in the region.

Further to the economic growth rates co-movement in the region, aggregate globalisation data also prove that the region's markets are integrating. Figure 10 shows KOF Index of

[9] $Cor(x,y) = cov(xy)/\delta_x\delta_y$

Globalisation data. It is notable that, from 1990-2010, major countries of the region have been relaxing their market regulation regimes and opening for global competition. This shows that South Asian countries are not only integrating within the region but also integrating globally. Figure 10 also shows the impact of GFC on the South Asian countries.

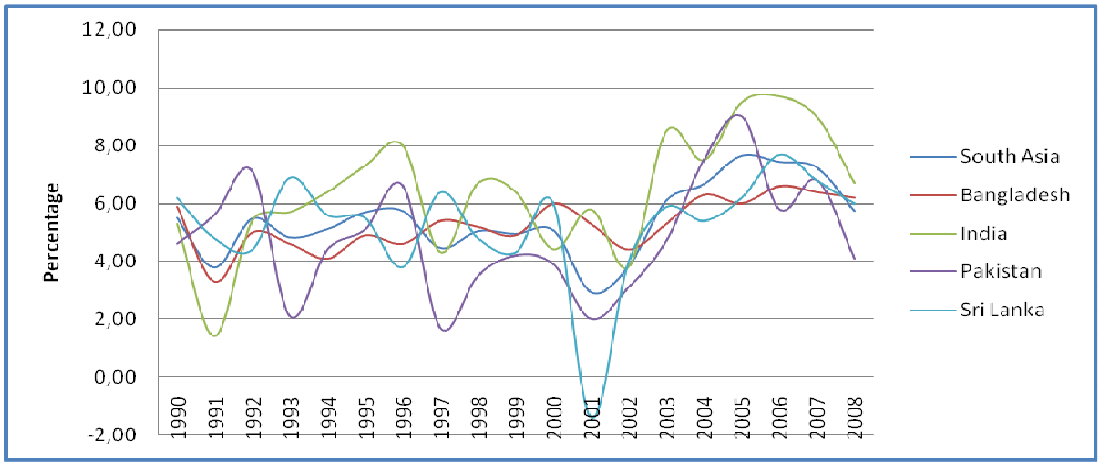


Figure 7. GDP Growth Rates of 4 South Asian Countries
Source: Asian Development Bank

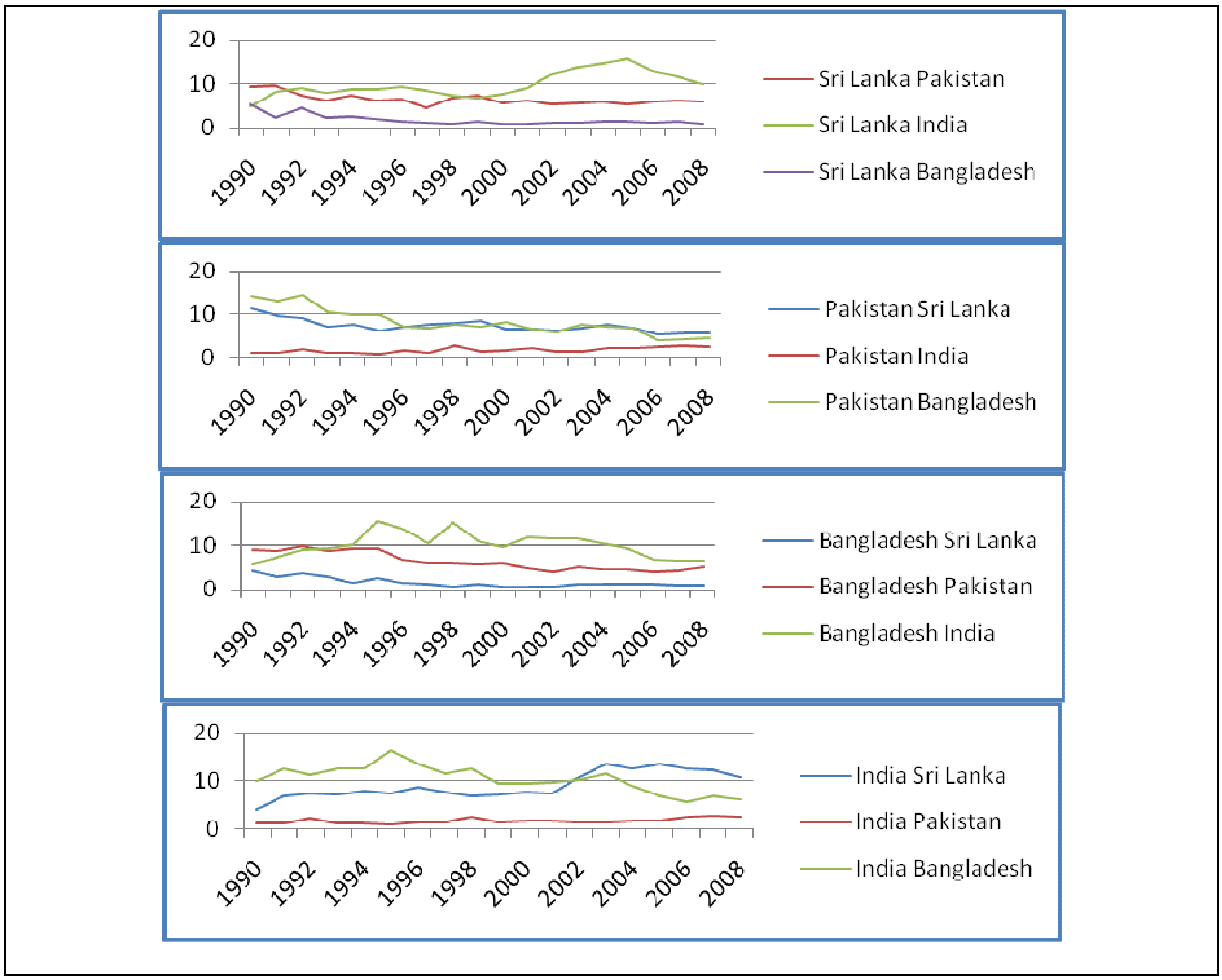


Figure 8. Trade Intensity Index for Major South Asian Countries 1990-2008
Source: Asian Development Bank

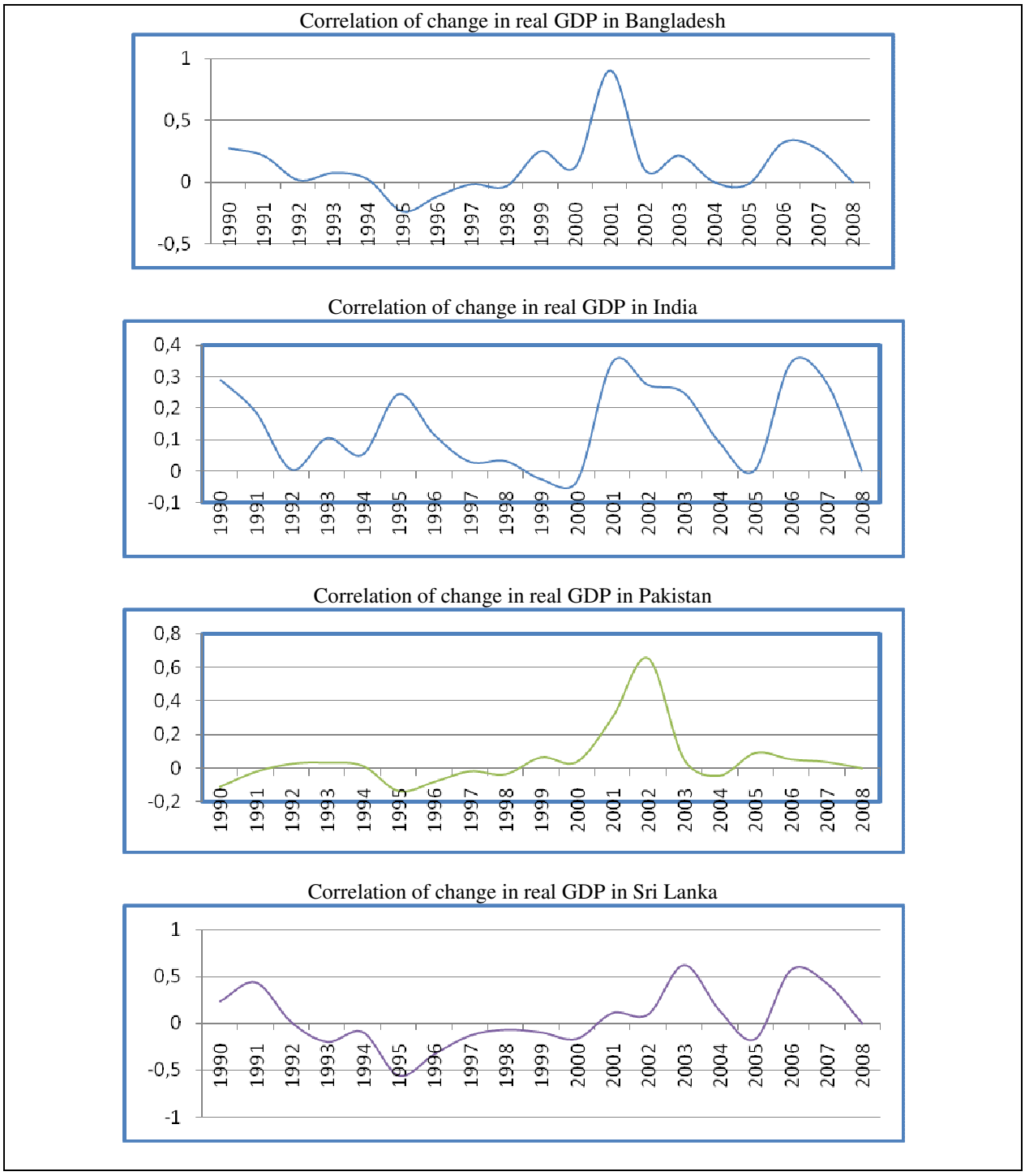


Figure 9. Correlation of changes in real GDP in the 4 major countries with the change in each other 3 countries, rolling 3 year period – 1990-2008

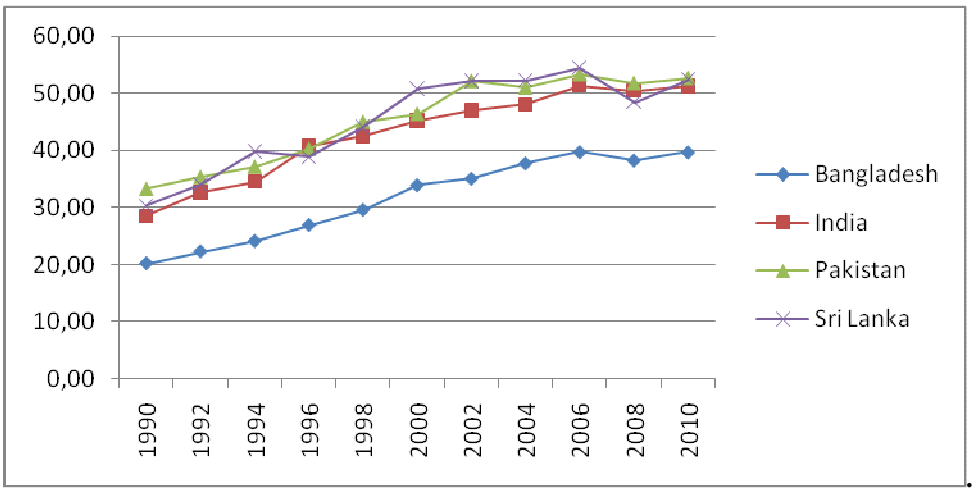


Figure 10. Aggregate Globalisation Index for South Asian Countries
Source: KOF index of Globalization

6. Non-economic factors

The above analysis shows somewhat inconclusive findings in which it is noticeable that countries in the region are not showing signs of continues higher correlation among GDP growth rates irrespective of financial market deregulation. Trade flows among countries are also not showing continues improvements. By examining non economic factors we may be able to show that why there is no continues higher correlation among GDP growth rates. When investigate non-economic factors such as political stability, government effectiveness, quality of regulations and rule of law we find that the region is far below compared to many nations. It is correct to assume that these non-economic factors have contributed negatively to economic integration in the region. In a simple way, we can argue that it is necessary to improve weak governance to get the optimum benefit from economic integrations backed by market deregulation policies. It is said that the importance of other factors suggest a limit to the degree of financial integration in some countries (Buch and Driscoll, 2010). Kaufmann at el. (2009) have developed global governance indicators for almost all countries. These indicators are a useful tool to examine the level of governance in the South Asian region. Figure 11 shows indicator data for four areas of governance; political stability, government effectiveness, control of corruption and regulatory quality for four countries. The estimated values lie between -2.5 and +2.5 and assume a normal distribution[10]. Higher score indicates a better outcome. For comparison reasons we also have included data for Singapore. While control of corruption and quality of regulations appear to improving, political stability indicators are showing a declining trend. The reasons for the decline can vary from country to country. For example, in Sri Lanka and Pakistan, have their own civil unrests due to terrorist related activities. This situation has not only led to decline in political stability but also negatively affecting the benefit of financial market integration. Therefore, continues co-movement of growth rates has become non achievable factor.

7. Conclusion

Deregulation policies implemented in the South Asian region has helped countries to improve their financial market sector significantly over the years. Trade between nations in the region and outside the region has also improved over the years. The purpose of this study was to examine how the markets in the South Asian region are being integrated. We use evidence from the financial sector, trade sector and finally real economic growth of four major countries in the region. From financial market point of view, it is evident that domestic credit provided by the banking sector as a percentage of GDP has been rising in all countries indicating some market integration evidence. Apart from this deposit interest rates and money market interest rates were also consolidating supporting the evidence of market integration. We also examined equity markets in the region. This is one of the sectors that provided strongest evidence of market integration. Stock market capitalisation (as a percentage of GDP) has been improving in all countries over the years. We also examined stock market return correlations among countries and there is some evidence of market integration. Trade sector has been improving and many bilateral trade agreements have been signed between countries. However, when we closely examined trade intensity indices for the countries in the region there is little evidence to support market integration in South

[10] The method of calculation could be found in Kaufmann at el. (2009)

Asia. Finally, we examined co-movement of real GDP growth rates in the region and there is no consistent co-movement among countries over the period. It is noticeable that since 2000 onwards markets are showing some similarities. However, the impact of GFC is showing declining co-movement of growth rates. Apart from these, KOF Index of Globalisation data also support market integration by way of showing continues increase in the globalisation index.

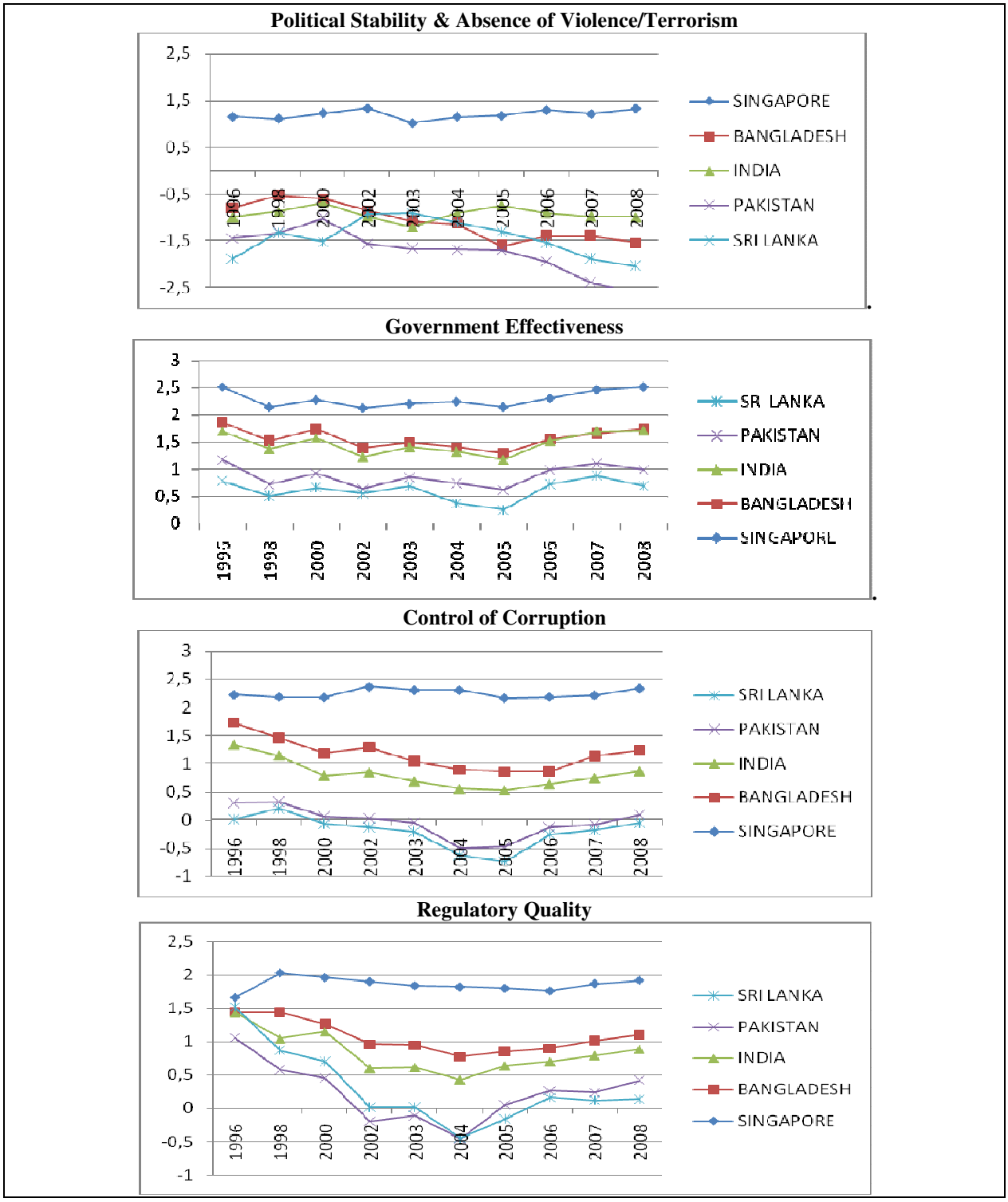


Figure 11. Governance Indicators – South Asia - 1996-2008
Source: World Bank (www.worldbank.org/wbi/governance)

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