# INFLATION IN SOUTH ASIA AND IT'S MACRO ECONOMIC LINKAGES


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**ABSTRACT**

The objective of this paper is to analyze the consumer price inflation in South Asian Countries from 2000 to 2008. The annual percentage change in CPI and Average Annual Growth Rate in Consumer Price Indices are analyzed to examine the trend of inflation in South Asian Countries like Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan & Sri Lanka. India has average inflation of 5% but Sri Lanka is the hardest hit by the inflation among South Asian countries. Bhutan has very low rate of inflation and Maldives has rising trend of inflation. The inflation rates are co-related with the growth rate of gross domestic product and money supply of South Asian Countries. There is positive co-relation between the rate of inflation and rate of changed in GDP at constant prices in Bangladesh, India, Pakistan, and Sri Lanka but negative co-relation in Nepal. There is negative co-relation between rate of inflation and changes in money supply in Bangladesh, Nepal and Pakistan but positive co-relation in Nepal and Sri Lanka. In Pakistan the consumer price inflation is mainly due to oil price hike and food inflation. So the inflation scenario in South Asia is adverse to economic development as it is above 5% in most of the countries.


**Keywords:** Inflation, Correlation, Money Supply, Macro Economics, Variable.

## INTRODUCTION:

Inflation is a global phenomenon and significant macro economic variable which affect the economic growth of all most all countries of the world. While some amount of inflation is inevitable and is perhaps necessary to accompany development, inflation beyond a certain limit is considered undesirable. A mild rate of inflation within 4 percent per year is good for an economy, but many developing countries of the world are experiencing inflation above the mild rate which is harmful for the economy. Control of inflation has, therefore, become one of the primary objectives of Government intervention in many developing countries(Islam,2008). The inflation has been over stressed as a prime element in the policies prescribed by the international financial organizations and donor countries in the frame work of conditionality of lending. The inflation is measured from the changes in consumer price index (CPI ) in all countries. The objective of this research paper is to analyze the inflation scenario in South Asian Countries (Afghanistan, Bhutan, Bangladesh, India, Maldives, Nepal, Pakistan and Sri Lanka) with it's macro economic linkages.

## LITERATURE REVIEW:

Empirical studies in pre-growth period( before 1990) generally found a negative inflation-growth relationship. A pre-growth literature study in 1985 had already reported a finding that GDP growth was negatively related to the growth rate of inflation. Fischer (1993) reported that growth was related inversely to inflation. New growth models of course focused on the long run. The collective wisdom of the literature could be made consistent by saying that inflation was positively related to growth at short-run, cyclical frequencies, but negatively related to growth at long-run, steady-state frequencies. There was only one problem with this reconciliation of the short run and long run that there was no robust long-run, cross- section relationship between inflation and growth. The statistically significant negative relationships in the new growth period. Several studies have estimated a negative relationship between inflation and economic growth. Nevertheless, some studies have accounted for the opposite. Thirlwall and Barton (1971), in one of the earliest cross-country studies, report a positive relationship between inflation and growth in a cross section of industrial countries and a negative relationship in a cross section of 7 developing countries.

Gillman et al. (2002), based on a panel data of Organization for Economic Cooperation and Development (OECD) and Asia-Pacific Economic Cooperation (APEC) countries, indicate that the reduction of high and medium inflation (double digits) to moderate single digit figures has a significant positive effect on growth for the OECD countries, and to a lesser extent for the APEC countries. They further add that the effect of an expected deceleration of inflation might only be observed when the world economy is not facing a sudden growth rate deceleration due to shocks. If there are no such shocks, a reduction in inflation rate can produce considerably higher growth rate. Similarly, Alexander (1997) finds a strong negative influence of inflation on growth rate of per capita GDP using a panel of OECD countries. Ghosh and Phillips (1998), using large panel dataset, covering IMF member countries over 1960 to 1996, found that at very low inflation rates (less than 2-3 per cent) inflation and growth are positively correlated. However, they are negatively correlated at high level of inflation. Similarly, the empirical results of Nell (2000) suggest that inflation within the single-digit zone may be beneficial, while inflation in the double-digit zone appears to impose slower growth. Bruno and Easterly (1996) find no evidence of any relationship between inflation and growth at annual inflation rates of less than 40 percent. They find a negative, shorter to medium term relationship between high inflation (more than 40 percent) and growth. Furthermore, they report that there was no lasting damage to growth from discrete high inflation crises, as countries tend to recover back toward their pre-crisis growth rates. Mallik and Chowdhury (2001) conducted cointegration analysis of inflation on economic growth for four South Asian countries (Bangladesh, India, Pakistan, and Sri Lanka) and report two interesting points. First, inflation and economic growth are positively related. Second, the sensitivity of inflation to changes in growth rates is larger than that of growth to changes in inflation rates. One recent analysis suggests that there is a threshold level of inflation in the relationship between output growth and inflation. In this context, Khan and Senhadji (2001) have done the seminal work. They not only examine the relationship of high and low inflation with economic growth but also suggest the threshold inflation level for both industrialized and developing countries. They conduct a study using panel data for 140 developing and industrialized countries for the period of 1960-98. Their results strongly suggest the existence of a threshold beyond which the inflation exerts a negative effect on economic growth. In particular, the threshold estimates are 1-3 percent and 7-11 percent for industrial and developing countries, respectively.

**INFLATION IN SOUTH ASIA FROM 2000 TO 2008:**

South Asia is well established in a high growth path with strong and improving macro economic fundamentals where growth is primary driven by domestic demand. In macro economic management, the key areas of concern are inflation and increasing current account deficits( Rajan R, 2003). Inflation in South Asia declined to 5.3 percent after continuous increase from 3.8% in 2001 to 6.3% in 2006, which slightly decreased to 5.7% in 2007 and to 5.5% in 2008. The inflation in Afghanistan is highly unstable and fluctuating which reached as high as 24.1% in 2003 and decreased to 5.1% in 2006 and again increased to 8.0% in 2008 as shown in Table –1.

**Table –1 Inflation Rate ( Annual percentage Change in CPI )**

| Sl. | Name of the Country | Year | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
| | **South Asia** | **6.1** | **3.8** | **3.5** | **5.0** | **6.3** | **5.3** | **5.9** | **5.7** | **5.5** |
| 1 | Afghanistan | - | - | 5.1 | 24.1 | 13.2 | 12.3 | 5.1 | 7.0 | 8.0 |
| 2 | Bangladesh | 2.8 | 1.9 | 2.8 | 4.4 | 5.8 | 6.5 | 7.2 | 7.2 | 8.0 |
| 3 | Bhutan | - | 3.4 | 2.9 | 2.1 | 3.6 | 4.8 | 4.9 | 5.2 | 5.0 |
| 4 | India | 7.1 | 3.7 | 3.4 | 5.4 | 6.4 | 4.4 | 5.4 | 5.0 | 5.0 |
| 5 | Maldives | -1.2 | 0.7 | 0.9 | -2.9 | 6.4 | 3.3 | 3.5 | 7.0 | 6.0 |
| 6 | Nepal | 3.5 | 2.4 | 2.9 | 4.8 | 4.0 | 4.5 | 8.0 | 6.4 | 5.0 |
| 7 | Pakistan | 3.6 | 4.4 | 3.5 | 3.1 | 4.6 | 9.3 | 7.9 | 7.8 | 6.5 |
| 8 | Sri Lanka | 1.5 | 12.1 | 10.2 | 2.6 | 7.9 | 10.6 | 9.5 | 14.5 | 10.0 |

Source – South Asia Economic Report, 2011 : Statistical Appendix, Page – 53

Bangladesh has a moderate rate of inflation which has a continuous increasing trend from 1.09% in 2001 to 8.0% in 2008. Bhutan has very low rate of inflation compared to other South Asian countries. The inflation has continuous increasing trend in Bhutan from 2.1% in 2003 to 5.2% in 2007 which slightly decreased to 5.0% in 2008.

**MACRO ECONOMIC INTER RELATIONSHIP OF INFLATION IN SOUTH ASIA:**

The process of inflation implies interaction between various macro economic variables. The present research paper has considered two important macro economic variables (a) rate of change of GDP at constant price (b) rate of change in money supply to investigate their inter relationship with rate of inflation. The money supply growth rate in South Asia( Table – 2) was above 13% from 2000 to 2008 which was as high as 20.5% in 2005 and lowest 13.7% in 2001. It is 19.7% in 2007 and 19.6% in 2008. In Afghanistan the money supply growth rate was extremely high 50.5% in 2003 and 31.9% in 2004 which decreased to 14.4% in 2008.

**Table –2-Money Supply Growth ( annual percentage change )**

| Sl. | Name of the Country | Year | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
| | **South Asia** | **16.1** | **13.7** | **14.5** | **16.7** | **13.5** | **20.5** | **20.3** | **19.7** | **19.6** |
| 1 | Afghanistan | - | - | - | 50.5 | 31.9 | 16.2 | 12.4 | 19.0 | 14.4 |
| 2 | Bangladesh | 18.6 | 16.6 | 13.1 | 15.6 | 13.8 | 16.8 | 19.5 | 17.0 | 15.0 |
| 3 | Bhutan | 21.4 | 5.5 | 17.6 | 28.7 | 4.0 | 10.7 | 24.8 | 7.6 | - |
| 4 | India | 16.8 | 14.1 | 14.7 | 16.7 | 12.3 | 21.2 | 21.3 | 20. | 20.0 |
| 5 | Maldives | 4.2 | 9.1 | 19.5 | 14.5 | 32.7 | 11.7 | 20.6 | - | - |
| 6 | Nepal | 21.8 | 15.2 | 4.4 | 9.8 | 12.8 | 8.3 | 15.4 | 14.0 | - |
| 7 | Pakistan | 9.4 | 9.0 | 15.4 | 18.0 | 19.6 | 19.3 | 15.2 | 19.3 | - |
| 8 | Sri Lanka | 12.9 | 13.6 | 13.4 | 15.3 | 19.6 | 19.1 | 17.8 | - | - |

Source – South Asia Economic Report,2011, Statistical appendix.

The high value of money supply growth in Afghanistan is due to war with America to stop terrorism. In Bhutan, the MS growth rate is highly fluctuating from 5.5% in 2001 to 28.7% in 2003 and 24.8% in 2006. India has money supply growth rate varying from 12.3% in 2004 to 21.2% in 2005. The correlation between rate of change in money supply & rate of inflation is given in table –5 for entire period of analysis.

**Table –3 – Growth Rate of GDP ( annual percentage change )**

| Sl. | Name of the Country | Year | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
| | **South Asia** | **4.5** | **5.1** | **3.7** | **7.8** | **7.4** | **8.7** | **8.8** | **8.1** | **8.1** |
| 1 | Afghanistan | - | - | 28.6 | 15.7 | 8.0 | 14.0 | 7.5 | 13.5 | 8.4 |
| 2 | Bangladesh | 5.9 | 5.3 | 4.4 | 5.3 | 6.3 | 6.0 | 6.6 | 6.5 | 6.0 |
| 3 | Bhutan | 5.6 | 7.4 | 8.6 | 8.7 | 7.2 | 6.9 | 9.1 | 17.0 | 14.4 |
| 4 | India | 4.4 | 5.8 | 3.8 | 8.5 | 7.5 | 9.0 | 9.4 | 8.5 | 8.5 |
| 5 | Maldives | 4.8 | 3.5 | 6.5 | 8.5 | 9.5 | 4.6 | 19.1 | 7.3 | 8.0 |
| 6 | Nepal | 6.0 | 4.8 | 0.2 | 3.9 | 4.7 | 3.1 | 2.8 | 2.5 | 2.8 |
| 7 | Pakistan | 3.9 | 2.0 | 3.1 | 4.7 | 7.5 | 9.0 | 6.6 | 7.0 | 6.5 |
| 8 | Sri Lanka | 6.0 | 1.5 | 4.0 | 6.0 | 5.4 | 6.0 | 7.4 | 6.1 | 6.0 |

Source – South Asian Economic report,2011

The growth rate of GDP has an increasing trend in South Asia from 4.5% in 2000 to 8.1% in 2008. It is above 8% from 2005 to 2008 indicating good macro economic performance of the region. Afghanistan has highly unstable growth rate varying from 28.6% in 2002 to 14.0% in 2005 and 8.4% in 2008. Bangladesh has low growth rate within 7% with highest growth rate of 6.6% in 2006. Bhutan has an increasing trend of growth rate of GDP with 9.1% in 2006 and 17.0% in 2007 and 14.9% in 2008. India has growth rate of GDP above 8% in 2003, 2005, 2006 2007 and 2008. Average growth rate of India is 8% which is a good rate of growth. Maldives has abnormally high growth rate of 19.1% in 2006 and 8.0% in 2008. Nepal has very low growth rate below 3% but Pakistan & Sri Lanka have moderate growth rate of GDP about 6% (IPS, 2007).

**Table – 4 – Growth Rate of Per Capita GDP ( Annual percentage change )**

| Sl. | Name of the Country | Year | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
| | **South Asia** | **2.7** | **3.3** | **2.1** | **6.0** | **5.7** | **7.0** | **7.3** | **6.6** | **6.8** |
| 1 | Afghanistan | - | - | - | 13.6 | 3.3 | 12.1 | 3.4 | 10.1 | 5.6 |
| 2 | Bangladesh | 4.6 | 5.2 | 3.1 | 3.8 | 4.9 | 4.6 | 5.2 | 5.1 | 5.2 |
| 3 | Bhutan | 2.4 | 6.0 | 7.2 | 7.3 | 5.8 | 5.5 | 7.7 | 15.4 | 12.8 |
| 4 | India | 2.5 | 3.9 | 2.1 | 6.7 | 5.8 | 7.3 | 7.9 | 6.9 | 7.0 |
| 5 | Maldives | 2.7 | 1.7 | 4.8 | 6.8 | 8.0 | 6.2 | 17.3 | 5.7 | - |
| 6 | Nepal | 5.0 | 1.9 | 1.9 | 2.0 | 2.1 | 2.3 | 2.4 | 2.7 | 2.7 |
| 7 | Pakistan | 1.6 | 0.2 | 0.9 | 2.6 | 6.0 | 6.9 | 4.7 | 4.6 | - |
| 8 | Sri Lanka | 4.5 | 2.9 | 2.5 | 4.7 | 4.3 | 4.9 | 6.2 | - | - |

Source- IMF, International financial statistics, 2011.

Growth rate of per capita GDP in South Asia is approximately 7% after 2005. Bhutan has highest per capita GDP growth rate that is 1 5.4% in 2007 and 12.8% in 2008 compared to other South Asian countries.

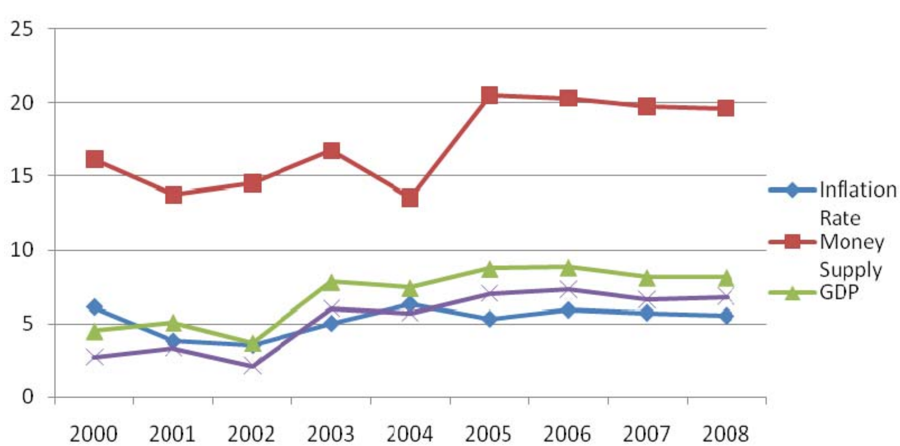

**Fig-1 Trend of Inflation and macro economic indicators in South Asia**

The charges in GDP has positive correlation with rate of inflation in Bangladesh, India, Pakistan & Sri Lanka but it has negative relation in Nepal. The value of $R_1$ in table – 5 gives the correlation coefficient of rate of inflation with rate of change of GDP at constant prices. This correlation coefficient is 0.28 in Bangladesh & Sri Lanka, 0.26 in India but 0.10 is Pakistan. Nepal has $R_1$ value of –0.41 indicating negative correlation between rate of changes in inflation & GDP. The $R_2$ in table-5 indicates correlation coefficient between rate of inflation and rate of change in money supply.

**TABLE – 5– Mean, Standard deviation, Coefficient of variation of inflation and correlation coefficient**

| Sl. | Country | Mean | SD | CV | $R_1$ | $R_2$ |
|---|---|---|---|---|---|---|
| 1 | Bangladesh | 9.99 | 4.31 | 155.39 | 0.28 | -0.26 |
| 2 | India | 7.27 | 5.29 | 72.80 | 0.26 | -0.64 |
| 3 | Nepal | 9.03 | 5.65 | 62.49 | -0.41 | 0.46 |
| 4 | Pakistan | 7.44 | 2.54 | 33.97 | 0.10 | -0.17 |
| 5 | Sri Lanka | 10.97 | 6.94 | 65.95 | 0.28 | 0.19 |

Source – Author's Own Calculation

$R_1$ = Correlation coefficient between rate of inflation & rate of change in GDP at constant prices.

$R_2$ = Correlation coefficient between rate of inflation and changes in money supply.

The co-relation is negative in Bangladesh, India and Pakistan but positive in Nepal and Sri Lanka. India has a high negative correlation of – 0.64 indicating inverse relation between rate of inflation and rate of change money supply.

## CONCLUSION:

Inflation is an important and key variable which influence macro economic variables of a country. The current state of South Asia's inflation is highly unstable and vulnerable to fuel and food price hike. So control of inflation should receive more priority than growth in South Asia. Both fiscal and monetary policy tools should be applied simultaneously to contain price hikes. In India inflation has reduced substantially in this election year but it is likely to increase and remain unstable. The Reserve Bank of India may increase in its key policy rates slightly and use currency appreciation as a major instrument to contain imported inflation. The agricultural growth has been sluggish in recent years The Govt. of India should ban exports of selected food grains and fix higher prices of exportable agricultural produces to avoid price spiral in its domestic market. So management of supply side of food articles should be the most crucial task to keep inflation under check. Bangladesh has favourable current account position for which it can afford to keep its currency slightly stronger . The monetary policy should be more contractionary even if it reduces economic growth of the country. Sri Lanka and Pakistan should adopt same contractionary policy because of rising current account deficit. In Bangladesh and Pakistan , the supply side of the commodity market is disrupted by internal political unrest and emergency rules. In Sri Lanka market is disrupted by ethnic conflicts So there is need on the part of South Asian countries to address supply side bottlenecks in the commodity markets. Except India, other south Asian countries should also rely on external aid if their agriculture fail to provide good harvest in a particular year. Monetary and exchange rate policies in these inflation hit south Asian countries should be applied prudently to fight inflation by appreciating their currencies depending their macroeconomic conditions. Fuel cost economization and automatic adjustment of oil price is needed in most south Asian countries along with high fiscal risk of petroleum subsides. The financial sector should be made more vibrant in these nations to contain inflation. The monetary policies in these countries have been lax for which money supply is increasing steadily in recent years. Since money and credit growth have strong linkage with inflation, credit supply should be regulates in time of commodity inflation in South Asian Countries. Rapid growth along with inflation control should be simultaneously taken care of in these countries.

Inflation is an important and key variable which influence macro economic variables of a country. The current state of South Asia's inflation is highly unstable and vulnerable to fuel and food price hike. So control of inflation should receive more priority than growth in South Asia. Both fiscal and monetary policy tools should be applied simultaneously to contain price hikes. Among South Asian Countries, Sri Lanka suffers from high inflation and large current and fiscal account deficits. The hike in energy prices is the main cause of high inflation and Sri Lanka should tighten its monetary policy. India is the largest economy in South Asia which has moderate rate of inflation. Bhutan and Maldives have low rate of inflation among South Asian Countries. The GDP growth rate is very high in Bhutan which is above 14% where as Nepal has lowest growth rate of GDP in South Asia. Sri Lanka and Pakistan experience high rate of inflation due to oil price hike in International Market.

In Bangladesh and Pakistan , the supply side of the commodity market is disrupted by internal political unrest and emergency rules. In Sri Lanka market is disrupted by ethnic conflicts So there is need on the part of South Asian countries to address supply side bottlenecks in the commodity markets. Except India, other south Asian countries should also rely on external aid if their agriculture fail to provide good harvest in a particular year. The inflation is positively correlated with rate of change of GDP at constant prices in Bangladesh, Nepal , Pakistan and Sri Lanka but it is negatively correlated in Nepal. Afghanistan has highly unstable growth rate of GDP and inflation during last 8 years. The South Asian Countries should adopt proper monetary and fiscal policy to control inflation rate within 4 percent per year.

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