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BACKGROUND PAPER

COMMODITIES SUPER-CYCLE: IMPLICATIONS FOR SOUTH ASIA

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COMMODITIES SUPER-CYCLE: IMPLICATIONS FOR SOUTH ASIA

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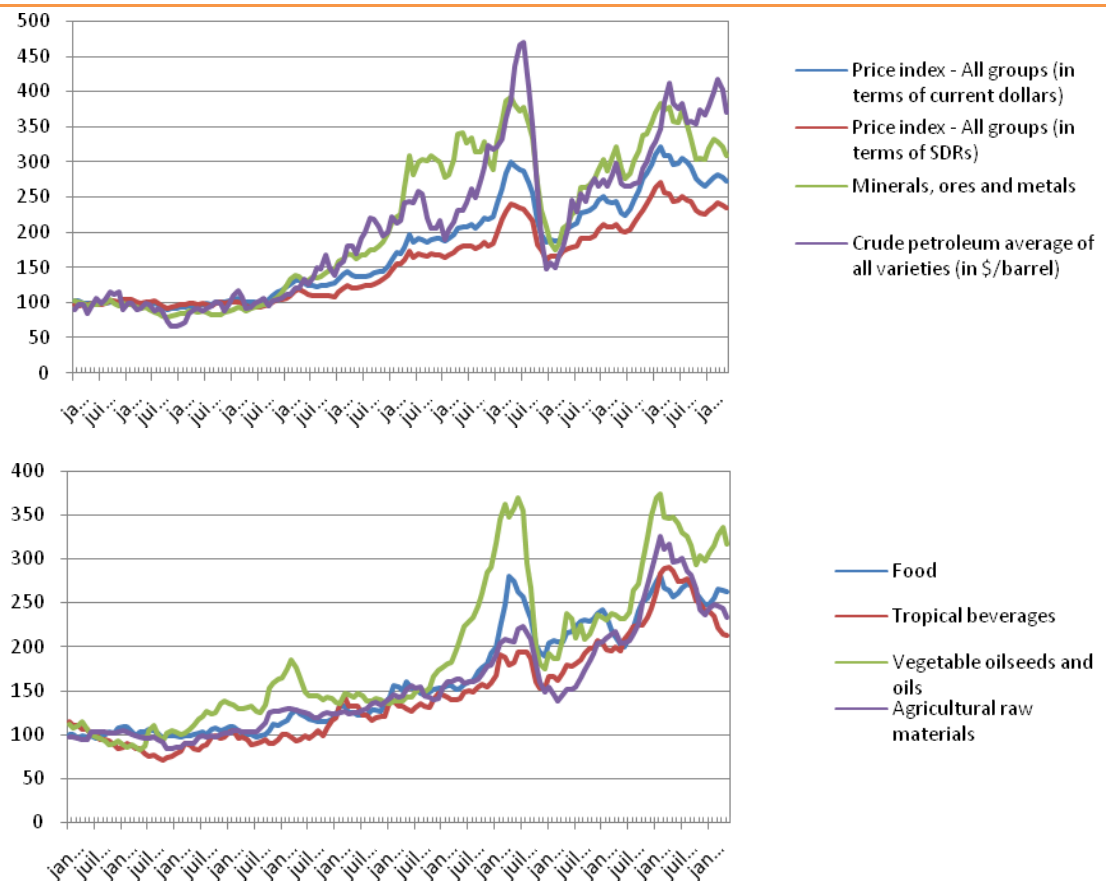
1. Introduction

At the beginning of this millennium, there was a significant turn round in primary commodity prices. After two decades of low, at times of dwindling, prices, many primary commodity prices have registered a steep increase since 2002. The marked price increases began to gather pace first in 2002-3 and then in 2006-7, culminating in the all-time high peak in nominal terms in spring-summer of 2008 across commodities just before the onset of the Global Financial Crisis, as shown in Fig. 1.1 below for all commodity groups. The sharp increase in *nominal* prices was so marked that it has also resulted in a sharp upturn in *real* commodity prices in the first decade of the new millennium (Fig. 1.2-A), though the scale of the increase differs among commodities and *real* prices of agricultural commodities are still lower than the peaks previously attained during the Korean war and oil shocks of the early 1970s (Fig. 1.2-B).

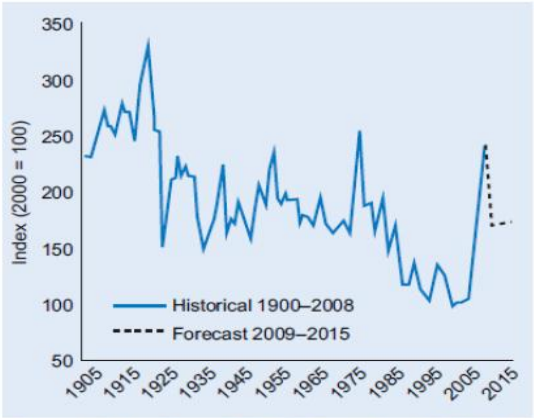
Fig. 1.1: Monthly Commodity Price Indices by Commodity Group, Jan. 2000-May 2012 (2000=100)



Sources: IMF, 2012, International Financial Statistics: Commodity Price Index

This price movement over the last 10 years has led many observes to conclude that commodities had entered into a new price *super-cycle* in the early 2000s (e.g. Kaplinsky, 2010). The soaring key commodity prices hit the world economy at the time of the severe financial crisis initially triggered by the Sub-Prime mortgage crisis in the US in the background of global macroeconomic imbalance, which has spread to major industrial economies through poorly regulated global financial transactions and systems. The rapidly increasing prices of basic goods such as fuel and food had sparked off social-and political disquiets and unrest across the globe in the immediate period preceding the global financial crisis. The rising fuel cost and food shortages then hit particularly hard the livelihood of the urban and rural poor in developing countries.

Fig. 1.2-A: Real Non-Fuel Commodity Prices: 1900-2015: Are Commodity Prices in Super Cycle?

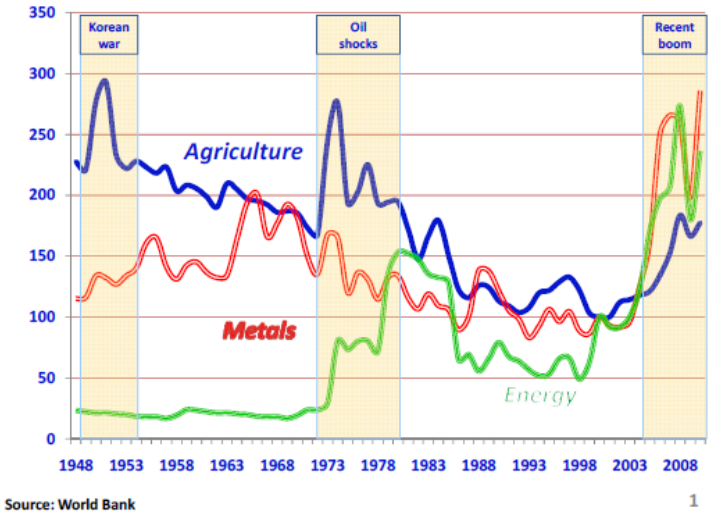


Sources: Grilli and Yang (1988); Pfaffenzeller et al. (2007). World Bank estimates 2004–08, forecasts 2009–15.
* Indexes, 2000 = 100. Deflated by unit value of manufactured exports.

Source: Brahmbhatt and Canuto, 2010

Fig. 1.2-B:Historical Trend in Real Prices by Commodity Groups

Commodity Price Indices (Real, MUV-deflated, 2000=100)



Notes: MUV stands for Unit-Value of manufactured goods.

Source: Baffes & Haniotis, 2010, Fig. 1

We should note, however, the extreme high volatility as an equally or even more defining feature of commodity prices to date. At the onset of the global financial crisis in mid-September 2008, commodity prices experienced an almost free fall across the board in the last quarter of that year. The fear of accelerating inflation and fuel and food shortages worldwide had been suddenly overtaken by a greater fear of global recession engulfing all economies, including those in the developing world. Subsequently, several 'high-profile' commodities have continued experiencing large swings and bounced back nearly to the pre-crisis peak level towards the spring of 2011. As the world got concerned about the possibility of renewed food and fuel crises that could jeopardise the fragile global recovery, commodity prices experienced a marked fall again in connection with the sharp slowdown of the global economy amidst the worsening Euro Zone crisis. At the time of writing of this paper in the summer of 2012, emerging agricultural production data seem to indicate a forthcoming global shortage of supply of staple food crops. One can therefore expect that a new short-term boom-bust cycle of commodity prices is already in the making.

Indeed, the recent boom-bust price cycles once again highlight the high vulnerability of commodity dependent low income developing countries (CDDCs) to price shocks and associated difficulties in managing their economies over commodity price cycles, while placing an escalating burden from the sudden price hike on countries heavily dependent on imported essential commodities. Thus, both the prospect of the persistent commodities super-cycles and the continuing extremely high price volatility will have significant implications for all developing countries, both commodities exporters as well as commodities importers.

These concerns are of particular relevance to South Asia, a region which experienced its own historically high growth in the last decade. The region is made up 8 heterogeneous countries: five of them (Afghanistan, Bangladesh, Bhutan, Maldives, and Nepal) are classified as Least

Developed countries (LDCs), while the remaining three (India, Pakistan and Sri Lanka) as developing countries according to the UN classification. Thus, the region covers countries with different economic structures: India, Bangladesh, Pakistan, and Sri Lanka are relatively diversified and large economies, compared with Bhutan and the Maldives, which are small and specialised, and Nepal and Afghanistan, which are landlocked and largely undiversified economies (WB, 2010). As discussed in details in Sections 4 and 5, the region contains both an exporter and importer of several strategically important commodities. As a region, South Asia has been largely self-sufficient in basic cereals, but emerging as a net exporter of rice and a net importer of wheat. It is also a net importer of oilseeds but a major exporter of a number of agricultural commodities such as tea, cotton and jute. Demand for metals and minerals have been rising for almost all countries in the region, while India is emerging as an important exporter of iron ore, copper and foremost petroleum products.

Given this background, the objectives of this paper is to examine various economic implications of the recent development of these commodity prices for the region. Set against this objective, the paper is structured as follows: in Section 2, we outline the historical trend in commodity prices, identifying the super-cycles and their broad features in the context of commodity prices and economic development. This is followed by discussion on the key features of recent commodity price dynamics as comparison with earlier super-cycles and impacts on economic development of developing countries. Section 3 presents factors explaining the increasing volatility of commodity prices in world commodity exchanges as resulting from two interrelating phenomena; structural change in demand-supply market fundamentals and the finalisation of commodity markets. Section 4 outlines global regional patterns of trading in different commodity groups (agricultural commodities, metals & minerals and energy) with focus on South Asia, while Section 5 discusses South Asia's role in commodity trade and changing trends over the last decades. Section 6 then evaluates implications of super-cycles for South Asian economies. Section 7 offers concluding remarks, including policy implications from our analyses of commodity price cycles with some concrete policy proposals to deal effectively with commodity-related developmental problems.

2. Commodity Price Dynamics

2.1 Debate in a Historical Retrospect

Historically two questions have dominated the discussions in literature on primary commodity prices in development economics: i) the declining terms of trade in commodity export prices relative to imports of manufactured goods from developed countries (the Prebisch-Singer hypothesis), and ii) the high price volatility and instability. The early debate on trade and development and the North-South economic relations in the post-war period was largely shaped by these two questions, as they have had a profound effect on the course of economic development and management of commodity-dependent low income developing countries.

The long term declining terms of trade of primary exports were explained by Prebisch (1950) and Singer (1950) in terms of the fundamental differences between primary commodities and manufactured goods both on demand and supply sides. The Prebisch-Singer hypothesis, as known in literature, is built on conditions such as: i) the low price-and income-elasticities of demand for commodities as compared with manufactures; ii) the technological superiority of developed countries over developing countries; iii) the dominance in economic power relationships of the former, which allows transnational corporations to capture excess profits; and iv) the asymmetric impact of labour union power in developed countries and labour surplus in developing countries on the division of the benefits of increased productivity.

Turning to these fundamental factors affecting commodity prices, Maizels (1994; 1992) explains the sharp decline of terms of trade for primary commodities in the 1980s in terms of the structural shifts in the demand and supply relationships in primary commodities. These are not only due to the nature of technological changes, but also as a consequence of the two oil shocks and the commodity booms in the 1970s and the subsequent deep recessions following contractionary macroeconomic adjustments to major industrial economies and the ensued debt crisis that gripped the developing world.

In a similar fashion, large fluctuations characteristic to commodity prices can be explained in terms of frequent shocks to the fundamental demand-supply relationship of physical commodities. Specifically, "because of the low *short-term* price elasticities of both supply and demand for the great majority of primary commodities, any given disturbance in economic activity in the developed countries, or in commodity supply, results in a greater than proportionate change in commodity prices and export earnings of commodity-dependent economies" (Maizels, 1994, p. 1692). Typically, for example, exogenous shocks on supply side set-off a price cycle over medium-term, if the size of shocks is such that it cannot be absorbed through inventory adjustments. The duration and amplitude of the price cycle is in turn determined by the way supply would respond to the initial shock as well as the speed of adjustments on both demand and supply sides.

At the same time, as CFC (2006) notes, undifferentiated basic commodities such as tropical beverages could also exhibit a tendency to structural over-supply or over capacity from time to time. Such over- supply condition, especially a simultaneous export expansion of basic commodities in a number of key producing countries would depress prices in world markets, as the 'fallacy of composition thesis' implies. Such a condition prevailed for several commodities in the 1980s and 1990s, when export growth was encouraged concurrently across commodity producing countries as a way out of the debt crisis under the Structural Adjustment Programmes. The over-supply conditions could not be attenuated through effective international coordination over prices and supply, as the International Commodity Agreements had become defunct over time during this period.

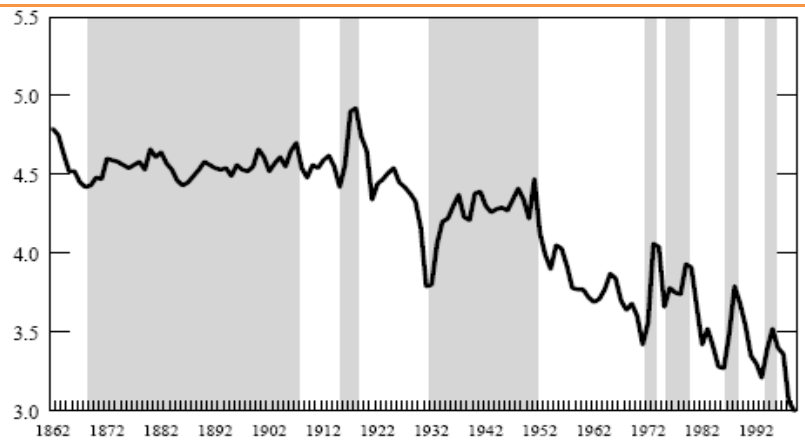
However, shifts in the supply-demand relationships, such as those described above, have become less effective on their own for explaining the ever-increasing volatilities in price movements, observed systematically across a large number of commodities, in particular large fluctuations found in high-frequency price data. Already in the early 1990s, there was evidence showing that the high price volatility could result from the intensifying two-way interactions between the commodity and financial markets. Whilst speculative activities in commodity markets exacerbate price volatilities, key financial variables can also influence the volume of commodity stocks held and hence price dynamics over short-run. Thus, "instability in the commodity markets and in the financial markets feeds on each other, and constitutes an inbuilt mechanism of short-term destabilization and uncertainty in the world economy" (Maizels, 1994, p. 1692). This two-way interaction has been further intensified over the last two decades, and the pace of financialisation of commodity markets has significantly accelerated in the 2000s, as commodities form a critical part of investors' asset portfolio, as discussed in detail in Section 3 below.

Indeed, several earlier statistical analyses which examined historical time-series data of commodity prices up to the 1990s such as Deaton (1999) and Cashin and McDermott (2002), consistently show that large commodity price cycles have become more frequent with shortened duration and increased amplitude over the recent decades. For example, Deaton (1999) remarks that "what commodity prices lack in trend, they make up for in variance". Analysing the behaviour of *real* commodity prices over the period 1862-1999, Cashin and McDermott (2002) also find that: i) large price volatility dominates the relatively small secular decline in real commodity prices; and ii) the real commodity index fell by four-fifths between 1900-1999, ending the century at a record low, with an increasing annual volatility and much shorter price cycles under the flexible exchange rate regime of 1972-99 (Fig. 2.1).[1] The first characteristic is stressed by Baffes and Haniotis (2010), concluding that price volatility indeed continues overwhelming price trends when the data analysis is extended to cover the recent decade. The latter also note that the long term decline in real prices had been especially marked in food and

[1] Their analysis is based on the Economist's index of industrial commodity prices - the longest dataset publicly available. It covers textiles, metals and non non-food industrial commodities. The real index is calculated by deflating the nominal industrial commodity-price index (dollar-based with base 1984-5=100, weighted by the value of developed-country imports) by the GDP deflator of the United States.

agriculture, observing the reduction of world food prices in real US dollar terms by 53 percent for the 5 year period (1975-6 to 2000-1) alone, as shown in Fig. 1.2-B above.

Fig. 2.1: Historical Trend in Real Commodity Prices in the Last Century (Log of real price of industrial commodities, 1826-1999)



Source: Cashin and McDermott, 2002, Fig. 6

2.2 Recent Price Swings in World Commodity Exchanges and Implications for Economic Development of Developing Countries

As discussed in Introductory Section (Section 1) above, commodity prices have experienced one of the most extreme swings over the past decade. The marked price increases began to gather pace first in 2002-2003 and then in 2006-2007, culminating in the all-time peak in the spring-summer of 2008 across commodities. The boom lasted nearly six years up to the spring and summer of 2008, which was longer and stronger than any other boom in the last century price developments. Table 2.1 presents summary statistics on the scale of the price boom and bust of 2002-2008 for main primary commodities.

Table 2.1: Percentage Change of World Primary Commodity Prices Between 2002-2007 and 2008 (Percentage change over previous year monthly average)

Commodity group	2002-2007[a]	2008 (1st half)[b]	2008 (2nd half)[c]
All commodities (excluding crude petroleum)	113	34	-35
Food	65	51	-31
Tropical beverages	67	24	-15
Vegetable oilseeds and oils	93	-	-48
Agricultural raw materials	80	26	-25
Minerals, ores and metals	261	18	-41
Crude petroleum	185	52	-50

Note: Price in current dollars
[a] Percentage change between 2002 and 2007
[b] Average monthly prices for half of 2008 compared 2007 monthly average
[c] Percentage change from the peak monthly price recorded in 2008 in comparison with the November 2008 monthly price

Source: Reproduced from Table 1 of UNCTAD, 2008b

As shown in Table 2.1, the nominal price index of non-fuel commodities increased by 113 percent, while that of crude petroleum increased by 185 percent for the five year period of 2002-

2007. The price increases further accelerated in the first half of 2008. The non-fuel commodity prices registered an average monthly price rise of 34 percent over the one in 2007. The steepest increase in the first half of 2008 was for crude petroleum (52 percent) and food (51 percent) – politically sensitive consumer goods.

Noting that the scale of cumulative nominal price increases between 2003 and 2008 (e.g. prices of energy and metals increased by 230 percent, and food prices doubled, while prices of fertilizers increased fourfold), Baffes and Haniotis (2010) remark that the price boom of this period is certainly one of the longest and broadest of the post war period. There are some similarities between the boom of 2002-8 and the previous booms. For example, Radetzki (2006) compares the price boom of this period with the two earlier commodity booms of the last century: the booms during the Korean War and the oil price shocks of 1973-4. The similarities between the three booms are: i) the three booms took place against a backdrop of high and sustained economic growth as well as an expansionary macroeconomic environment; and ii) each was followed by a severe slowdown of economic activity; and iii) all three booms triggered discussions on coordinated policy actions to address food and energy security concerns.[2] Yet, the recent boom is distinct from earlier commodity booms in some critical aspects, including: i) it was not only the longest-lasting but the broadest, involving all three commodity groups, i.e. energy, metals and agriculture simultaneously, though the increases in food prices started with some time lags; ii) it was not followed by high inflation in the initial period of the cycle, but the sharp price hike of strategic commodities such as food and fuels fed into higher inflation in 2007-8, hitting hard both the urban and rural poor in developing countries; and iii) it was a part of the booms across other asset classes traded in financial and housing markets, caused by lax monetary conditions and depreciation of the US dollar prevailed since 2001.[3]

Historically, booms in assets prices of this proportion cannot be sustained for too long after all, always ending in an equally abrupt fall. The recent boom was no exception, but the scale and speed of the fall was spectacular indeed. As the unprecedented turmoil and meltdown in financial centres hit the headlines across the globe and the pessimism about the prospects for the world economy started dominating in September 2008, prices across commodities plummeted sharply (Table 2.1). Oil prices fell from over $140 dollars in early July to below $50 in November-December 2008, and to $35-$45 in February 2009. A similar dramatic fall was reported for a number of metal prices due to an immediate and impending reduction expected in world demand, notably a drastic deterioration in global prospects for the construction and automobile industries. Grain prices also declined significantly, For example, wheat prices fell from $440 a tonne in March 2008 to $240 a tonne in November 2008, while rice prices fell from $1,000 a tonne to $550 a tonne for the same period.

[2] As cited in Baffes and Haniotis (2010).
[3] See Baffes and Haniotis (2010) for further discussion on these points and macro conditions leading to the commodity boom.

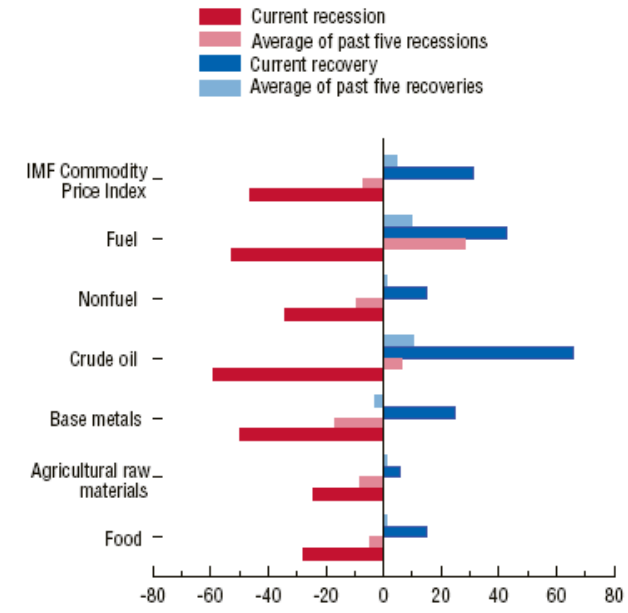
Commodity prices began to recover the lost ground partially in the second quarter of 2009 while the global economy was still in a deep recession. An IMF report observed that the recovery in commodity prices has been faster in the current economic cycle than in the previous ones, whilst the fall in prices was by far the steepest compared to the previous five recessions across commodities, as shown in Table 2.2 and Fig. 2.2 below. Subsequently, high price volatility resurfaced in 2010 and a fear of another global food crisis loomed again in spring 2011, when a numbers of commodity prices reached another hike, followed by softening prices in the global economic slowdown amidst the Euro-Zone debt and financial crisis since then (Fig. 1.1 above).

Table 2.2: Commodity Price Developments, 2008-9

	Percent Change		
	Peak to through	**Through to June**	**2009:Q2/2009:Q1**
IMF Commodity Prices Index	-55.6	31.1	15.7
Fuel	-64.1	42.7	20.01
Petroleum	-68.7	66.4	33.8
Nonfuel	-35.5	17.5	9.5
Base metals	-49.6	24.5	15.1
Agricultural raw materials	-33.0	13.6	0.7
Food	-33.4	19.6	10.2

Source: Reproduced from Table 1.2 of IMF, 2009

Fig. 2.2: Commodity Prices in Global Recessions and Recoveries (Percentage change indices, 2005=100)



Sources: IMF Primary Commodity Price System; and IMF staff calculations.
[1]Global recessions and recoveries are identified on the basis of monthly peaks and troughs in the log level of a monthly index of global industrial production.

Source: IMF, 2009, Fig. 1.17

The continued price volatility across commodities have been undoubtedly a major source of instability to the world economy and made all the more difficult to ride through the global financial crisis of 2007-9 and to secure a robust recovery worldwide since then. The highly unstable commodity prices over the past decade have also had profound impacts on the course of economic development of both commodity exporting and importing developing countries alike. In particular, the recent episodes of commodity price swings remind us once again of the importance to pay attention to the developmental challenges facing commodity dependent low income economies, as they remain extremely vulnerable to commodity price shocks with little resilience. Though a number of developing countries which are rich in oil and minerals, including those classified earlier as High Indebted Poor Countries (HIPCs), have experienced a high growth rate on average, "riding" the commodity boom since 2002, many of them have not succeeded in decreasing their vulnerability and exposure to commodity price shocks. They have not yet transformed economic structures through diversification in the process of creating a basis for more articulated economies with vibrant spill-over effects economy wide. In fact, many farmers engaged in export cash crop production have not benefited from the high agricultural commodity prices registered in world commodity exchanges even at the height of the commodity booms. For example, as discussed below, it has been reported that the farm gate prices paid to small holders for cotton and coffee by private traders working as agents for transnational corporations (TNCs) have been meagre throughout the boom period.[4]

While commodity dependence had generally been recognized as an obstacle to economic development, efforts in overcoming its root causes and negative longer term effects have had only limited success over the last 50 years at best. It was especially unfortunate that during the debt crisis of the 1980s and 1990s, the commodity related development issues were not featured in the global policy debate, in particular, in official positions taken by the IFIs which did take charge of resolution of the protracted debt crisis. Though there is now a clear acknowledgement that the high vulnerability to external shocks represents a significant developmental challenge to fragile low-income countries, the global community has not acted specifically to deal with the "commodity dependence trap" with its earnest through instituting a global facility to address excessive volatilities in commodity prices and mitigate their negative developmental impacts.

Furthermore, the extremely volatile commodity prices over the last decade are not only a threat to the fragile recovery of the global economy but also a heavy burden to low-income developing countries that are highly dependent on imports of grains, energy and other strategic commodities for meeting their basic needs. These import-dependent economies are equally subject to external shocks stemming from volatile commodity price movements in their balance-of payments management. The soaring key commodity prices in 2007-8 and 2011 hit the world economy at the time of the severe financial crisis of the advanced economies, and the subsequent feeble recovery of the global economy with many European countries experiencing deep double

[4] . See Nissanke (2010a, 2011) for more detailed discussions on how small-holders and farmers have been squeezed out.

recessions amidst the sovereign debt and euro crises. As the pass-through rate of higher import prices to domestic prices is very high in most of countries these days as discussed in Section 6 below in relation to South Asia, the rapidly rising food and fuel prices threatened particularly hard the livelihood of the urban and rural poor in developing countries, impeding the hard-won progress so far achieved in meeting the MDGs. Prakash (2011) discusses the evidence for the welfare costs of volatility. and argues that policies should be sought after taking into consideration long term impact of short episodes of extreme market volatility: While such episodes may be relatively rare and short-lived, they can trigger "a downward spiral of rising vulnerability" and have massive long term implications for vulnerable countries. This vulnerability is often linked to reliance on commodities for participation in international trade, which remains the main economic scenario for many low income countries. If commodity issues are continuously left unattended, the goal of achieving the food security of the poor as basic human rights in near future - one of the critical aspirations of the global community - could be seriously compromised in many politically and socially fragile low-income countries.

Since commodity prices governing international trade are determined in world commodity exchanges, it is critical to examine factors behind the recent commodity price dynamics before discussing appropriate policy responses to counteract any negative developmental impacts. Hence, we shall now turn to examine the recent heightened volatility of commodity prices as resulting from two interrelating phenomena: i) structural changes affecting demand-supply fundamentals; and ii) the ever increasing finalisation of commodity markets.

3. Understanding Factors behind the Recent Price Dynamics[5]

3.1 Changing Market Fundamentals over the Last Decade

The synchronisation of sharp increases in commodity prices in 2002-2008 and again in 2009-11 indicates that common factors may be responsible for the price escalation across commodities. It is widely accepted that the recent price increases and dynamics over the *medium term* reflect the profound changes in fundamental demand-supply relationships affecting many commodities simultaneously. In contrast to the earlier price cycles, which were typically triggered by supply shocks, the recent structural changes are known to be mostly found in the "Asian driver" Story on the *demand* side. For example, the sharp increase in prices of mineral and metals is driven by an upsurge in demand from newly industrialising emerging economies, in particular from the two most rapidly growing economies - China and India - due to intensive use of these raw materials for their industrialisation drive, physical infrastructure building, and urbanisation trends (Kaplinsky, 2010).

Similarly, there has been a steady increase in demand for agricultural products from growing emerging economies, with a time lag of a few years compared with that for oil, minerals and metals. Substantial increases and changing patterns in food consumption with rising per capita income have turned these countries into substantial net importers of agricultural products. For example, China has become a significant net importer of agricultural products, including grains, soya beans and vegetable oils as well as raw materials such as cotton and rubber. China's growing demand has contributed to the steep rise in the prices of foods and other agricultural raw materials on world markets in 2007-2008.

Further, there are common threads on the supply side too. Minerals, metals and oils have hit supply constraints in meeting the fast growing demand, as investment in these sectors were subdued in the 1980s and 1990s due to the historically low commodity prices. Similarly, agricultural production has long been neglected with low investment in technology and supporting infrastructure in many low-income developing countries, which were hit hard by the recent rising world food prices (World Bank, 2008). Small-holder agricultural production in many poor countries suffered also from institutional vacuums created by the economic reform programmes in the 1980s and 1990s.[6] The food price hike in 2007-8 was also aggravated by poor harvests due to adverse weather conditions and diversion of food production to bio fuels, as discussed below.

[5] This section is drawn largely on Nissanke (2012), which examines the financialisation of commodity markets in much more details.

6 See Nissanke (2010a) for a more detailed discussion on this with reference to coffee and cotton producers in Tanzania.

A common observation can also be made with regard to inventory/stock management. For example, the sharp price increases in 2007-2008 in major food crops took place in the context of very low world stocks for major crops such as wheat, maize and rice (UNCTAD, 2008). Many governments ran down grain stocks in the period preceding the food crisis in order to reduce the cost of storage. According to data supplied by the US Department of Agricultural, global stock-to-use ratios of several grains are known to have been historically low at the time of their accelerated price increases in 2006-8. Similarly, the level of inventories was also running low when the sharp rise in metal prices took place in 2005-2007.

There are also close linkages between oil prices on the one hand and agricultural and other commodity prices on the other through associated higher transport costs and other input cost for their production and marketing. [7] The high correlation between metal prices and energy prices is due to high energy intensive technology used in both mineral production/extraction and the metal sector. At the same time, there is a particular link between the rise of oil prices and that of food prices in the recent episode (e.g. Busse et al (2011) demonstrate the evidence of correlation between energy and rapeseed oil prices between 1999 and 2009).

The dramatic price increase in food prices, which doubled between January 2006 and May 2008, is associated with the abrupt shift in arable land use from food crops towards bio-fuel crops in a number of major developed economies in the face of soaring fuel prices. Subsidies available for converting maize to ethanol in the US are reported to have encouraged this process. Vegetable oilseeds and oils have seen a dramatic increase as food crops. Climate change, intensified by soaring global fuel consumption, also adversely affected agricultural production in many countries. Finally, policy measures such as export bans and other trade restrictions taken by several food exporting countries at the height of the food crisis in 2008 have aggravated the situation, sending prices of staple goods such as rice rocketing. Faced with escalating food prices, various countries especially in East and South Asia where rice is a staple food, imposed export bans and accumulated domestic reserves in order to prevent domestic food price inflation. Following the policy action taken by these governments, small traders and consumers also started hoarding rice reserves (Timmer, 2009). For example, India imposed restrictions on rice exports in October 2008. Export restrictions were also imposed by Vietnam, China, Cambodia, Indonesia and Egypt, while the Philippines imported massive amounts of rice to build up domestic reserves in fear of the food crisis predicted (Brahmbhatt and Cristiaensen, 2008). [8]

Taking into account these factors influencing fundamental demand and supply relationships, many observers concluded that most commodities had entered into a price *super-cycle* in the early 2000s. In particular, given that the recent boom is associated with more permanent shifts in

[7] After rather dismissing the arguments that the dietary changes in China and India have given rise to the price increases of food prices, Baffes and Haniotis (2010) conclude that a stronger link between energy and non-energy commodity prices is likely to have dominant influence on commodity prices, particular food prices.

[8] Unlike wheat markets, world rice markets are very thin, trading only 6-7 percent of the global production, attracting less financial speculators. As suggested by Timmer (2009) and Brahmbhatt and Cristiaensen (2008), the possible impacts of speculative demand on futures markets may have been indirect for global rice prices compared to maize and wheat prices

demand, originating from a thirst for mineral resources and agricultural products by Asian drivers, it was argued that commodity prices would remain high until supply capacities catch up sufficiently with rising investment in their extraction/production. Excess demand for agricultural products was also predicted to persist over the medium term as some supply side-factors were found to be not necessarily of a temporary nature.

With these expectations still prevalent in summer 2008, many were caught by surprise when commodity prices experienced such a precipitous fall in the second half of 2008, at the onset of the deepening global financial crisis. The sharp simultaneous fall in prices across commodities was certainly a reflection of the actual and expected shift in demand-supply relationships, as a marked decline in global aggregate demand with the deep recession was seen as inevitable. In particular, investors and traders on commodity exchanges undertook a swift revision of expectations regarding the growth prospect of emerging market economies in Asia. These countries, which were very much behind the "commodity boom" of 2002-2008, looked suddenly fragile, as they were known to be heavily dependent on world demand and trade.

Through this connection, we suggest that the swift change in *market sentiment* resulting from the increased uncertainty regarding the growth prospect of the world economy on part of all participants, including financial investors has contributed to the "free-fall" in commodity prices in the wake of the financial meltdown in September 2008. The crisis of confidence that seized the global financial system prompted investors to seek "safe" investments with fast increasing liquidity premiums. The resultant flight *en masse* to the "quality"- highly liquid assets - by financial investors has led to deleveraging on a massive scale and a sharp drop in liquidity in other asset markets, including commodity markets, and to the subsequent collapse in world trade and economic activities. What was observed is typical of a "self-fulfilling" crisis whereby agents' expectations in assets markets would result in the expected events and the immediate collapse of real economic activities, as described in a number of currency crisis models (e.g. Obstfeld, 1996).

Consequent upon the combined effects of the fast turn-around in market sentiment and the anticipated reversal in supply-demand dynamics, there was a massive liquidation of long positions in commodity futures markets and the OTC deals, leading to a precipitous fall of commodities across the board. After huge deleveraging on the part of portfolio investors for two months, commodity prices stabilized in December 2008 and a further stockpiling of a number of strategic commodities resulted in some rebound of their prices in the first half of 2009, even though the world economy was still in a deep recession. Since mid-2009, prices of several commodities such as minerals and metals, oil and agricultural raw materials bounced back strongly, mainly due to robust recovery in demand from emerging market economies (UNCTAD, 2010), as discussed above.

3.2 Increasing Participation of Financial Investors in Commodity Derivatives Markets

While there have certainly been structural changes in market fundamentals, a question frequently raised is whether ever-increasing volatilities observed in co-movements across commodities can be explained simply by shifts in supply-demand relationships on their own. This issue has drawn increasing attention because the high price volatility could result from the intensifying two-way interactions between the commodity and financial markets.

It is true that financial investors have historically always been active in holding commodities as a part of their portfolio as Keynes (1942) observed. However, it is their increasingly prominent presence in commodity *derivatives* markets that has changed the way their participation influences commodity price dynamics. In particular, the fast expansion of liquid commodity derivatives have provided investors with ideal and cost-effective means to include commodities in their portfolios without bearing the cost of holding commodities physically, as they have to make only a small payment of margin requirements for entry - a tiny fraction of the contract value.

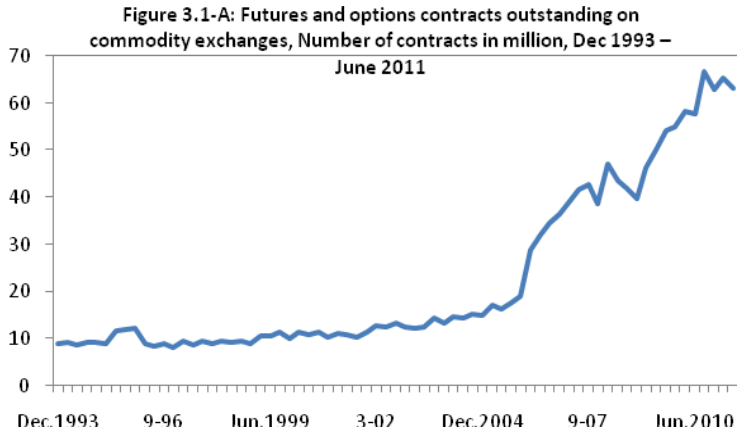
In this context, it should be noted that the heightened price volatility since the collapse of the International Commodity Agreements in the late 1980s has led to a rapid expansion of commodity derivatives markets, as demand for risk hedging instruments from commodity stakeholders has intensified. The rapid growth of derivatives markets has subsequently attracted new players - financial investors who are not engaged in the trade of physical commodities - to the trading floors. Already in the early 1990s, there was a marked shift of speculative funds into, and out of, commodity futures markets (Maizels, 1994). Their active participation in derivatives markets and dealings has resulted in a radical change in the structures of trading on commodity markets, leading to a change in the relationship between derivatives market and physical markets.

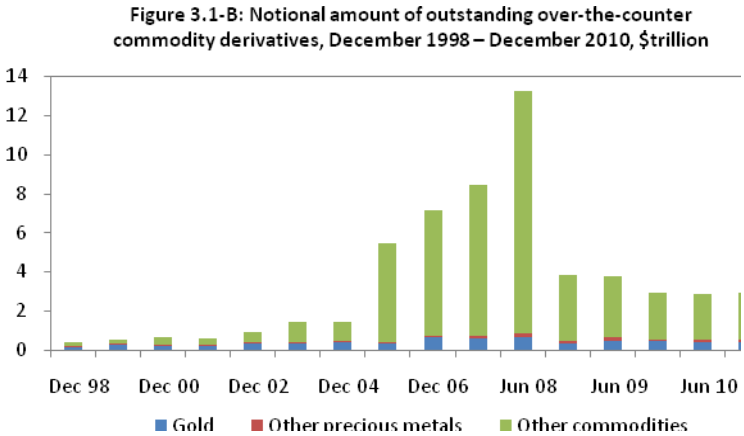
Generally, financial investors enter commodity markets with a view to obtaining an optimal risk-return configuration from different assets through portfolio diversification. In particular, they can make good returns on high volatility assets in search of high risk premiums by taking a speculative position on volatile prices. The growth of linkages between commodity and financial markets by portfolio investors through derivatives markets and dealings, to which we refer as the financialisation process of commodity markets, has further accelerated over the last decade or so, as commodity derivatives markets have experienced an explosive growth. Basu and Gavin (2011) advance two hypotheses for this phenomenon: i) commodity futures are thought as offering hedging opportunities against equity risk given a *perceived* negative correlation between returns on equity and commodity futures (the Hedging Hypothesis); ii) commodity derivatives are used as a vehicle for obtaining higher yields from riskier assets in a low interest rate environment (the Search for Yield Hypothesis).

Indeed, an explosion of derivatives markets during the past decade took place after the severe downturn in equity markets of 2000-2002 triggered by the burst of the dot com bubble. The large depreciation of the US dollar as well as the general low interest rate environment prevailed in developed economies provided an added impetus away from US dollar denominated financial assets to commodity markets, especial to oil markets. Financial institutions and private investors operating globally have switched to commodities from equity and bond markets with the launch of commodity index funds. This trend accelerated in 2007-2008 as the crisis unfolded in financial markets in the US and Europe, as the flight from equities and bond markets as well as housing mortgage markets to commodity markets took place on a large scale.

As shown in Fig. 3.1 below, there was a marked jump in the volume of derivatives trading and deals in 2005, culminating in the price spike in 2007-2008. This expansion was in no small measure facilitated by the deregulation of position limits previously imposed on investment banks by the US Commodity Futures Trading Commission (CFTC) in 2000. Financial institutions such as pension and hedge funds and sovereign wealth funds have become significant players in commodity markets of futures and options (UNCTAD 2008a). As major currencies were experiencing wild swings, many commodities appeared to have provided investors with a vehicle for inflation and currency hedging.

Fig. 3.1: Outstanding Volumes of Commodity Derivatives Contracts in Futures and Options Exchanges and OTC Deals

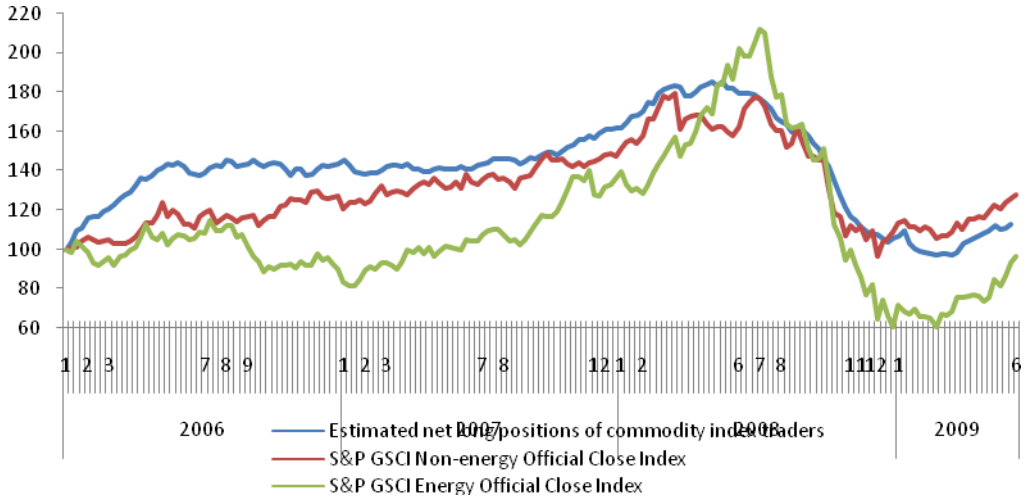




Source: Updated from Chart 2.1 in UNCTAD (2011), drawn from data by Bank for International Settlements (BIS), Quarterly Review, June 2011

Further, prices of various commodities have become highly correlated with the rising share of index trading of a bundle of commodities, in which an index is calculated according to the prices of selected commodity futures contracts that make up the index (US Senate Committee Report, 2009). Commodity index traders - usually swap dealers active in OTC dealings mostly based at big investment banks - sell index funds to institutions such as hedge funds and pension funds as well as wealthy individuals, who want to invest in commodity markets without actually holding any commodities.[9] To offset their financial exposure to changes in prices, index traders buy the futures contracts on which the index-related instruments are based. UNCTAD (2008a) reports that the investment in commodity *indices* surged from less than $13 billion at the end of 2003 to $260 billion in 2008, constituting about a quarter to one third of the notional amounts of commodity futures at the time (Fig. 3.2)[10]

Fig. 3.2: Estimated Index Trader Positions and Commodity Prices, January 2006-June 2009



Source Updated from Chart 2.2 in UNCTAD (2009)

There are several features specific to commodity index trading. First, as Masters and White (2008) argue, commodity index funds are created specifically as a vehicle for speculation on price movement in commodity futures, not as an investment vehicle typical to other financial futures. Further, commodity index traders tend to take continuously a long position in futures markets by gaining the roll return and in the process pushing futures prices up in a unidirectional

9. Masters and White (2008) report that 85 to 90 percent of index positions are held by swaps dealers and that the swap dealers are in turn dominated by four investment banks: Goldman Sachs, Morgan Stanley, J.P Morgan and Barclays Bank, who together accounted for over 70 percent of swap dealings in 2007-08.

10 The Standard & Poor's-Goldman Sachs Commodity Index (S&P GSCI) and the Dow Jones-AIG Commodity Index are the most popular commodity indices: the former's market share is just under two third, while the latter accounts for about one third (Masters & White, 2008). These indices are based on prices of the nearest-to-expiration futures contracts.

fashion.[11] These factors combined are likely to have in turn contributed to price volatility and driven many commodity prices to historic highs in the first half of 2008.

In the downturn, the dramatic decline in the outstanding OTC commodity derivatives and index trading during the last quarter of 2008 has clearly contributed to the sharp fall in commodity prices observed for those months (Fig. 3.1 and Fig. 3.2). The volume of OTC trading has remained at a subdued level since then (see Fig. 3.1-B). This reflects the fact that OTC deals involve a transaction through swap deals where contracting parties should assume counter-party credit risks, which are still seen as risky among investors given the severity of the recent global banking crisis. In contrast, as shown in Fig. 3.2-A, after a short period of deleveraging of net positions, financial investors returned to commodity exchanges in 2009, actively taking their positions in futures and options. This is driven by their renewed appetite for risk premiums associated with commodity trading under the prevailing environment of low interest rates in developed countries. UNCTAD (2011) provides an estimate that the commodity-related assets under management by financial investors recorded a historic high in March 2011, to a level of $410 billion, about double the pre-crisis level and their ratio to global GDP increased more than four-fold in the period of 2008-2010.

Thus, trading activities in world commodity markets have undergone some fundamental changes in both the form and the scale of links between activities in commodity and financial markets. As UNCTAD (2011) notes, in the process, more complex commodity linked financial instruments and products are all the time launched in response to heterogeneous and changing demand by portfolio investors. More recently, the share of passive index trading has been diminishing despite its increased absolute volume, as many investors have turned to a trading strategy based on active management of commodity related funds. Irrespective of instruments used, most of these portfolio investors tend to act as *noise* traders in derivatives markets, as they take trading positions with less reference to development in physical commodity fundamentals.[12] The increased presence of noise traders could make prices excessively more volatile than warranted by fundamentals in all asset markets. With it, the nature of commodity price dynamics might have altered significantly over the short-run, if not in the medium term.

3.3 The Financialisation Hypothesis as an Explanation for Excess Price Volatility

Thus, it can be argued that the unprecedented magnitude of swings and excessive volatility in commodity prices over the past decade can be seen as a reflection of the ever increasing linkages

11 The roll return is derived from the periodic sale of futures contracts nearing expiration and the simultaneous purchase of futures contracts bearing more distant expiration dates (the roll). The roll returns depend on market conditions. They are positive when markets are in backwardation (when futures prices are progressively lower with rising maturities) and negative when markets are in contango (when futures prices decline with rising maturities).

12 . See Nissanke (2012) for more definition and behavioural patterns of noise traders as opposed to informed traders who trade mostly with reference to demand-supply fundamentals of individual physical commodities.

between activities in commodity and financial markets. Through this process of financialisation of commodity markets, the volatility in commodity markets and financial markets can feed on each other and constitute an inbuilt mechanism of destabilization and uncertainty in the world economy. In this regard, the simultaneous appearance of severe strains in both commodity and financial markets in 2007-09 cannot be treated as a mere coincidence. Given the accelerated pace of financialisation of commodity markets through the rapid expansion of derivatives markets and dealings over the last 10 years, it is not surprising that the very high volatility of commodity prices has been increasingly conjectured as being linked to this development. Fears have been frequently expressed that speculative activities by financial investors in commodity futures markets and OTC dealings can exacerbate price volatility.

As discussed elsewhere in detail (Nissanke, 2011, 2012), it has long been accepted that the co-movement in commodity prices does mirror common macroeconomic shocks to inventories. However, what is debated intensely in the excess co-movement hypothesis is whether the co-movement is well in excess of anything that can be explained by common macroeconomic effects such as current or expected inflation, or changes in aggregate demand, interest rates, and exchange rates.[13] In this context, we suggest that with the financialisation of commodity markets, inventory adjustments to commodity stocks held are increasingly influenced by activities in derivatives markets and dealings, particularly in index trading. Since financial investors opt to hold commodities *virtually* through futures contracts as part of their portfolio, other asset prices are bound to affect commodity prices. By implication we postulate that an "open interest"- that is *virtual* commodity stocks held in futures contract as part of diversified asset portfolios- may exert a significant effect on commodity prices. If so, commodity prices and their inventory adjustments can increasingly be exposed to swings in *market sentiment* in asset markets in general. Should this be the case, the *excess* co-movement in commodity prices may be explained additionally by the "liquidity" effects, whereby traders operating across different asset markets are subject to swings in market sentiment, hence to common cyclical movements in market liquidity conditions.

Thus, commodity prices, along with prices of any assets traded globally, can be largely influenced by market liquidity cycles in global finance. It can be argued that in commodity markets, where both demand- and supply-elasticities are extremely low in the short-run, price stability cannot be maintained easily and instantaneously through inventory adjustments only, as investors' sentiments shift. Even though financial investors do not take on physical commodity delivery, changes in futures prices resulting from positions taken by financial investors responding to swings in general market sentiments and liquidity cycles could therefore affect spot prices. Besides, changes in market sentiments affecting derivatives markets and deals also lead to an increase in precautionary demand for commodity holding, thus affecting spot prices directly. More generally, since physical commodity stakeholders make decisions on production,

[13] The analysis presented by Tang and Xiong (2011) demonstrates that co-movement of prices is significantly more pronounced for commodities which are included in popular investor indices.

consumption and inventory stock management with reference to futures prices, any significant development in derivatives markets such as a fast-expanding demand for futures contracts from financial investors could exert strong impacts on spot prices. Indeed, Masters and White (2008) confirm that futures prices are used as the benchmark for spot market transactions conducted by physical traders.

Thus, the recent heightened instability common across commodities can be attributable, at least partially, to a growing application of "destabilising" trading by financial investors to commodity exchanges. Specifically, the recent massive swings in commodity prices could not be explained without taking into account large-scale leveraging and deleveraging of financial investors in commodity derivatives markets. This financilaisation hypothesis is still contentious, requiring further empirical tests for more verification. However, a sizable number of literature have emerged so far to confirm that the increasing presence of financial investors in commodity derivatives markets have exerted some powerful influences on the commodity price dynamics over the past decade or so (Gilbert, 2008; 2010; Mayer, 2009; 2012).[14]

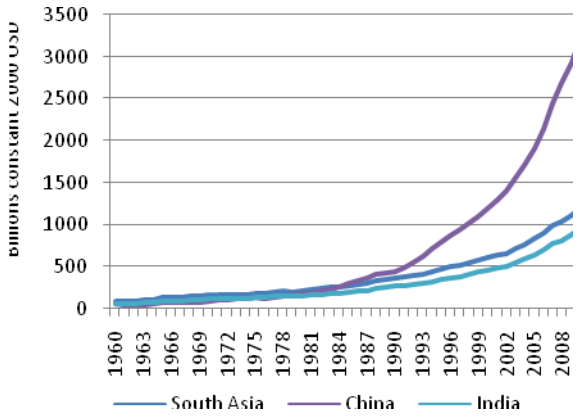
[14] See Nissanke (2012) for more detailed discussions on how the financialisation process can give rise to *excessive* volatility in relation to market fundamentals as well as for a review of empirical literatures carried out to date on this subject which give wide-raging mixed results, some of which confirm the financialisation hypothesis, while others tend to refute.

4. South Asian and Global Regional Patterns in Commodity Trade

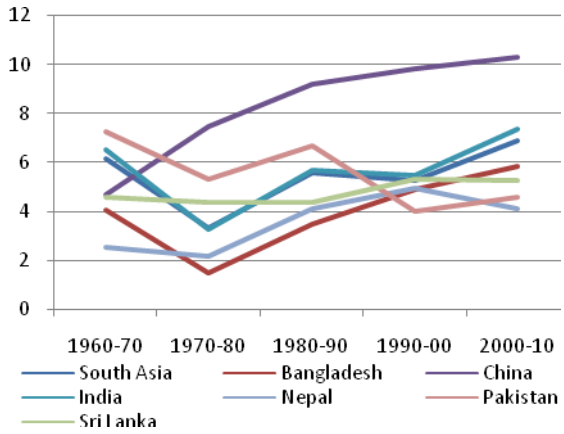
In the aggregate statistics, South Asia is among the fastest economically growing regions and the most densely populated area in the world (Rasul, 2010). However, despite its remarkable economic growth with an average GDP growth rate of 7 percent over the last decade (Fig.4.1), the region is home to the largest concentration of people living in conditions of poverty and conflict. In fact, the region's recent growth record is dominated by India's success story in accelerating growth over the past two decades.

Fig.4.1: GDP and GDP Growth Rates in Comparison (1960-2010)

GDP in Constant 2000 US$ (1960-2010)



10 Year Average Annual GDP Growth Rate (1960-2010)



Source: World Bank, 2010, World Development Indicators

Despite its relatively small area geographically compared with other regional groups, South Asia is home to a rich variety of geographical features including glaciers, deserts, rainforests, and grasslands with distinct raw material reserves and potential for agricultural commodity cultivation (WB, 2010). This diversity in geographical features, together with differences in each country's size, location, political circumstances, and economic situations results in different patterns of commodity trade flows for each of South Asian economies. However, India - by far the largest South Asian economy, which accounted for nearly 80 percent of the region's GDP in 2008, clearly dominates commodity demand and supply patterns for the region as a whole.[15]

Against the backdrop of the region's large population and fast economic growth, South Asia's overall share in global commodity trade is surprisingly low especially in comparison with other emerging market regions like East and South-East Asia. The low share of South Asia in global trade of metals and minerals may be explained by its focus on services rather than industry. The service sector dominates in all South Asian economies but Bhutan, while value added of industrial sectors is relatively low. This focus on services rather than industry is also reflected in

[15] The data used in the text describing the region's economic characteristics is based on World Development Indicators (WB, 2012).

the relatively low demand for energy commodities. Further, India's long pursued policy of food self-sufficiency and high trade quotas and tariffs may have further contributed to the low overall import and export share of the region in global commodity trade.

However, despite the low share in overall commodity trade, South Asia's imports and exports are significant for some commodities. Further, South Asia's demand and supply of commodities can be of greater importance to particular regions, even though they may not figure out prominent globally. An example of this can be found in commodity trade with East, and South East Asian, as well as Middle-Eastern, and African countries, which are major partners in this respect.

4.1 Food and Agricultural Commodities

The trade matrix below (table 4.1) shows import and export patterns in 2010 for food and agricultural commodities between regions expressed in the percentage share in total imports and exports from and to the reporting regions.[16] South Asia accounted for 2.74 percent of world food and agricultural commodity imports and 2.44 percent of world exports. This share is remarkably reduced if excluding India as a trading partner; shrinking to 1.32 and 0.59 percent respectively. South Asia's share in world trade of agricultural commodities are relatively low compared to East and South-East Asia - South Asia's neighbouring regions - (10.35 and 10.9 percent of world imports and exports respectively) even if excluding China which alone accounts for 7.73 and 3.56 percent of world imports and exports respectively (table 4.1.1 appendix).

For almost all regions, intra-regional trade for food and agricultural commodities has the greatest share in overall trade. With 15.17 percent of South Asia's exports destining in countries within South Asia, and 4.39 percent of its imports originating from the region, South Asian is no exception. Interestingly, if excluding India from the aggregate, the percentage share of imports originating from other South Asian countries (inclusive of India) increases by almost 20 percentage points. Similarly, the share of exports from South Asian countries excluding India which destine in South Asia is reduced by more than eight percentage points if excluding India as an export partner (table 4.1). This is indicative of the great importance of India as a trade partner for neighbouring economies in food and agricultural commodity trade.

Further, South Asia is especially important as a trading partner in food and agricultural commodities for East and South-East Asia, West Asia, and to a lesser degree also Sub-Saharan Africa. 9.08 percent of total West Asian food and agricultural imports originate from South Asia and 8.97 of total East and South-East Asian exports destine to South Asia. For Sub-Saharan Africa, 4.11 percent of its food and agricultural exports are reaching South Asia, while 3.96 percent of its imports originate from the region. Also from a South Asian perspective East, South-East, and West Asia are crucial trading partners in food and agricultural commodities. If including China almost 40 percent of total South Asian imports originate from East and South-East Asia, while more than 20 percent of the regions exports destine to West Asia (another 16.62 percent to East and South-East Asia if excluding China and 26.44 percent if including China).

[16] A more comprehensive analysis of trade patterns can be found in the appendix (table 4.1.1).

Europe is another important export partner, while South and Central America, Australia and New Zealand (Oceania), and the United States are crucial trading partners regarding South Asian food and agricultural imports (table 4.1).

Table 4.1: Food and Agricultural Commodities Trade Matrix

REPORTER (Percentage of respective regions' exports/imports destining/originating to/from South Asia)

		China	Russia	USA	South Asia	South Asia ex. India	East & South-East Asia	West Asia	North Africa	Sub-Saharan Africa	South & Central America	Oceania	Europe	World
SA	Exp.	2.83	0.95	1.48	15.17	20.43	8.97	4.50	2.77	4.11	2.18	4.30	0.34	2.74
	Imp.	2.73	2.04	1.93	4.39	24.10	3.40	9.08	2.35	3.96	0.50	2.05	0.94	2.44
SA ex India	Exp.	1.63	0.61	0.59	12.99	12.36	3.09	2.96	1.24	1.50	0.76	2.63	0.17	1.32
	Imp.	0.33	1.05	0.27	0.30	3.96	0.57	2.38	0.24	1.62	0.17	0.65	0.26	0.59

PARTNER (Percentage of South Asian exports/imports destining/originating to/from the respective regions)

		China	Russia	USA	South Asia	South Asia ex. India	East & South-East Asia	West Asia	North Africa	Sub-Saharan Africa	South & Central America	Oceania	Europe	Other Regions
SA	Exp.	9.82	1.96	6.1	15.17	12.99	16.62	22.09	2.25	4.8	0.95	0.79	14.29	5.14
	Imp.	8.62	0.13	13.18	4.39	0.3	39.11	4.18	0.07	3.4	9.65	12.34	7.64	5.63
SA ex India	Exp.	3.92	3.69	4.25	20.43	12.36	9.15	26.04	1.25	8.38	1.39	1.01	16.34	4.14
	Imp.	3.63	0.89	4.1	24.1	3.96	29.01	3.62	0.54	3.33	6.92	5.77	5.89	12.2

Note: Food and agricultural commodities comprise of all food items including food and live animals, beverages and tobacco, oil seeds, and animal and vegetable oils (SITC 0+1+22+4) as well as agricultural raw materials (SITC 2 less 22, 27, and 28).
Further, the regional category "South Asia" does not concur with the category "Southern Asia" as defined by UNCTAD Stat. The latter category also includes the Islamic Republic of Iran in Southern Asia, while the Islamic republic of Iran in the above analysis is added to "West Asia" as a region. In the category "East & South-East Asia" China is excluded. Japan, Canada, and other countries not included in the above listed regional categories are included in "Other Regions."
The table is calculated using merchandise trade data by trading partner and product based on SITC, Rev.3 commodity classification, expressed in annual trade dollar values. The entire trade matrix is included in the appendix (table 4.1.1. appendix)

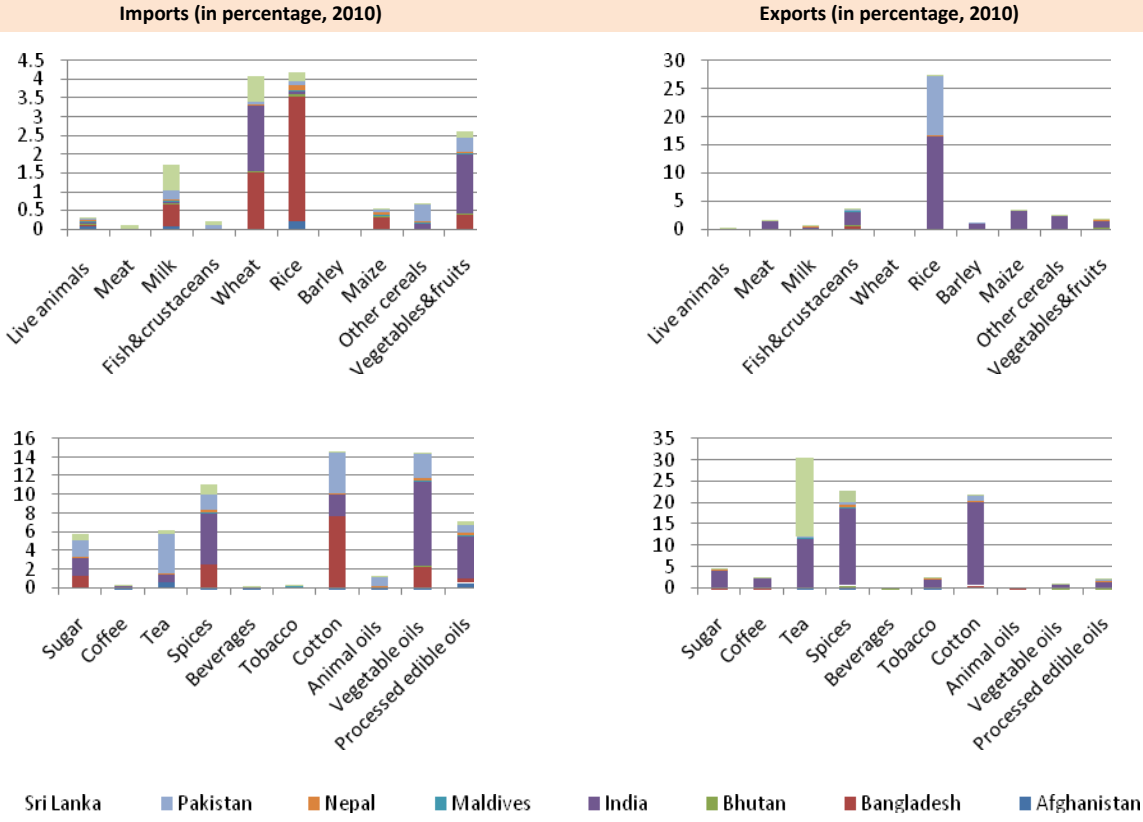
Source: UNCTAD Stat, 2011, Merchandise Trade Matrix (author's calculation)

Trade data disaggregated by food and agricultural commodity category (Fig.4.2) show that South Asia contributes to a considerable amount of imports of rice and wheat - mainly accounted for by Bangladesh, which has a substantial food deficit - as well as imports of sugar (almost 6 percent of world imports in 2010) and especially vegetable oils (more than 14 percent of world imports in 2010). The main drivers behind vegetable oil imports are India, Pakistan, and Bangladesh, while for sugar also Sri Lanka holds a considerable import share. South Asia also held a considerable share in imports of tea, cotton, and spices in 2010. However, the demand is largely satisfied by intra-regional trade in these commodities, which partly explains the large intra-regional trade share in table 4.1.

Regarding exports of food and agricultural commodities, South Asia - mainly India and Pakistan - had a considerably large share in world rice exports with almost 28 percent of total exports in 2010. Also for exports of tea, spices and cotton the region remains important in world trade with

shares in total world export of 31, 23, and 22 percent respectively. For tea Sri Lanka is the major exporter, followed by India, while for cotton and spices, India is the major exporter with minor shares held by Sri Lanka, Pakistan, and others. The region accounted for 81.5 percent of world exports of jute in 2010, with 76 percent originating in Bangladesh alone (N.B. Jute is not shown in figure 4.2, as its share is an outlier to other commodities). The remaining share came from India. However, South Asia also accounts for 48.4 percent of world jute imports, with Pakistan importing 21 percent, India 18.7 percent, and Nepal 8.6 percent of world imports.

Fig.4.2: South Asian Countries' Percentage Share in World Imports/Exports of Selected Food and Agricultural Commodities in 2010



Source: UNCTAD Stat, 2011, Merchandise Trade Matrix (author's calculation)

4.2 Minerals and Metals

Regarding minerals and metals, the share of South Asia as a region in world imports is 3 percent and 2.62 percent in world exports, though this trade flows are largely accounted for by India (table 4.2). Excluding India from the region the trade shares decline to 0.51 and 0.11 percent respectively. Compared with trade in food and agricultural commodities, the intra-regional trade share is even higher for South Asian countries other than India, while with India included intra-regional trade is only of minor importance. East and South-East Asia and especially China are certainly the most important trading partner regarding South Asian metal and mineral trade. More than 40 percent of South Asian metal and mineral exports, which are dominated by India's exports, are destined to China alone. In turn, imports from East and South-East Asia (excluding China) account for 35.11 percent of total South Asian mineral and metal imports. Other

important export partners are West Asia and Europe with a share of 17.73 and 9.51 percent in South Asia's total metal and mineral exports respectively.

Hence, despite its relatively low share in world mineral and metal commodity trade, South Asia - foremost India - is an important trading partner for China and West Asia. For the region itself, India is the single most important importer of metals and minerals mined in other South Asian countries. More than 50 percent of South Asian metal and mineral exports destined to India in 2010, while 20 percent of South Asian imports are originating in India. However, while India is an important import partner for its smaller neighbours, intra-regional supply does only play a minor role in total Indian mineral and metal imports.

Table 4.2: Metals and Minerals Trade Matrix

REPORTER (Percentage of respective regions' exports/imports destining/originating to/from South Asia)

		China	Russia	USA	South Asia	South Asia ex. India	East & South-East Asia	West Asia	North Africa	Sub-Saharan Africa	South & Central America	Oceania	Europe	World
SA	Exp.	6.80	1.59	1.74	5.65	61.55	6.15	10.01	4.59	2.39	2.03	2.50	1.76	3.00
	Imp.	6.63	0.51	1.89	1.60	22.94	1.91	5.51	1.87	6.05	1.09	1.10	0.62	2.62
SA ex India	Exp.	1.21	0.31	0.30	3.38	9.76	1.06	1.72	0.84	0.31	0.02	0.06	0.23	0.51
	Imp.	0.18	0.08	0.02	0.06	1.63	0.07	0.03	0.07	0.13	0.00	0.02	0.03	0.11

PARTNER (Percentage of South Asian exports/imports destining/originating to/from the respective regions)

		China	Russia	USA	South Asia	South Asia ex. India	East & South-East Asia	West Asia	North Africa	Sub-Saharan Africa	South & Central America	Oceania	Europe	Other Regions
SA	Exp.	40.38	0.15	4.60	5.65	3.38	11.56	17.73	0.60	3.20	1.60	0.25	9.51	4.78
	Imp.	13.77	1.82	3.77	1.60	0.06	35.11	2.11	0.14	2.41	4.24	6.80	4.48	27.95
SA ex India	Exp.	17.96	0.53	0.66	61.55	9.76	6.80	1.91	0.46	1.08	0.60	0.03	6.50	1.93
	Imp.	9.95	1.39	3.42	22.94	1.63	18.14	10.01	1.53	3.88	0.90	3.01	14.38	10.45

Note: Mineral and metal commodities comprise of ores and metals (SITC 27+28+68) as well as iron and steel (SITC 67).
Further, the regional category "South Asia" does not concur with the category "Southern Asia" as defined by UNCTAD Stat. The latter category also includes the Islamic Republic of Iran in Southern Asia, while the Islamic republic of Iran in the above analysis is added to "West Asia" as a region. In the category "East & South-East Asia" China is excluded. Japan, Canada, and other countries not included in the above listed regional categories are included in "Other Regions."
The table is calculated using merchandise trade data by trading partner and product based on SITC, Rev.3 commodity classification, expressed in annual trade dollar values. The entire trade matrix is included in the appendix (table 4.2.1 appendix)

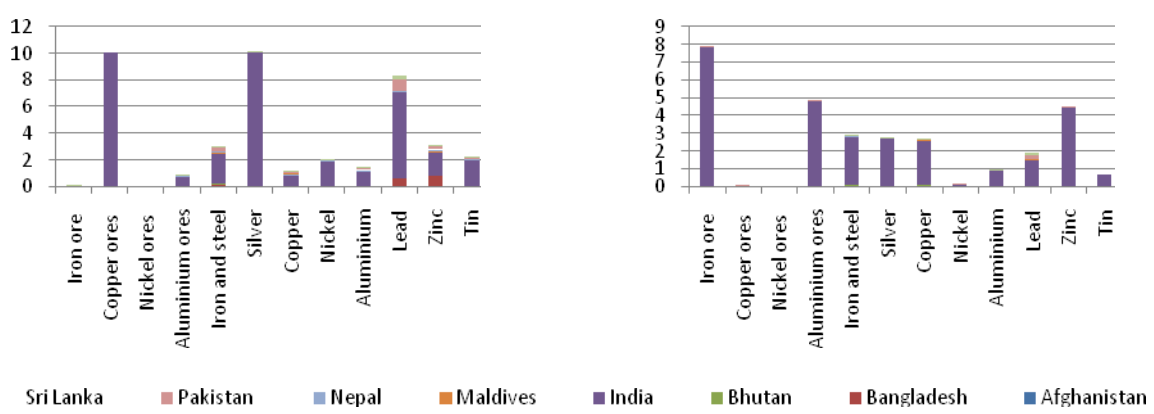
Source: UNCTAD Stat, 2011, Merchandise Trade Matrix (author's calculation)

Disaggregating the minerals and metals by its commodity components, the region - especially India - is a major importer of copper ores (10 percent of world imports), silver (10 percent), and lead (8 percent). India accounts almost entirely for copper ores and silver imports, while Bangladesh, Pakistan and Sri Lanka also contribute to lead imports with a 0.6, 0.9, and 0.2 percentage share in world imports respectively (Fig.4.3).

Further, India is a considerable large exporter of iron ore (almost 8 percent of world exports), aluminium ores (almost 5 percent), and zinc (4.5 percent). In 2011 India was the world's seventh

largest aluminium producers with a production volume of 1.4 million tonnes, the fourth largest zinc producer with a volume of 0.75 million tonnes and finally the world's fourth largest iron ore producer with a production volume of 260 million tonnes according to the U.S. Geological Survey (USGS, 2011).

Fig.4.3: South Asian Countries' Percentage Share in World Imports/Exports of Selected Metals and Minerals in 2010



Source: UNCTAD Stat, 2011, Merchandise Trade Matrix (author's calculation)

4.3 Fuels and Energy Commodities

Regarding fuels and energy commodities, South Asia accounts for 5.38 percent of world imports and 1.69 percent of world exports. Both import and export shares are reduced to below one percent if excluding India. The by far most important trading partner regarding imports of energy commodities is West Asia, accounting for 33.01 percent in total energy commodity imports by South Asia and for 72.50 percent if excluding India from the South Asian aggregate. China and Russia are also important import partners, especially for India (table 4.3). Again intra-regional trade appears essential for South Asian countries' other than India. However, in contrast to trade patterns in minerals and metals the inter-regional share in exports does not decline much if excluding India. Hence, for South Asian countries other than India, the trade with other South Asian countries excluding India is as important as the trade with India (table 4.3).

Table 4.3: Fuels and Energy Commodities Trade Matrix

REPORTER (Percentage of respective regions' exports/imports destining/originating to/from South Asia)														
		China	Russia	USA	South Asia	South Asia ex. India	East & South-East Asia	West Asia	North Africa	Sub-Saharan Africa	South & Central America	Oceania	Europe	World
SA	Exp.	2.20	0.31	1.36	5.53	54.38	5.01	13.38	2.82	9.44	4.48	11.45	0.16	5.38
	Imp.	0.18	0.07	0.66	4.50	10.46	3.64	9.47	2.11	8.26	2.25	0.05	0.98	1.69
SA ex India	Exp.	0.54	0.18	0.01	5.27	47.08	1.40	2.31	0.04	0.14	0.00	0.08	0.02	0.88
	Imp.	0.00	0.00	0.00	0.07	1.45	0.13	0.32	0.00	0.01	0.00	0.00	0.00	0.05

PARTNER (Percentage of South Asian exports/imports destining/originating to/from the respective regions)														
		China	Russia	USA	South Asia	South Asia ex. India	East & South-East Asia	West Asia	North Africa	Sub-Saharan Africa	South & Central America	Oceania	Europe	Other Regions
SA	Exp.	1.00	0.01	1.62	5.53	5.27	25.73	18.24	1.11	9.33	4.51	0.02	19.69	13.23
	Imp.	4.28	3.17	2.20	4.50	0.07	39.61	33.01	0.68	1.44	2.29	2.37	2.57	3.88
SA ex India	Exp.	1.42	0.00	0.01	54.38	47.08	18.66	24.54	0.00	0.24	0.04	0.00	0.01	0.72
	Imp.	0.13	0.76	0.11	10.46	1.45	8.70	72.50	0.29	1.34	0.00	0.11	0.47	5.14

Note: Fuels and energy commodities comprise of mineral fuels, lubricants and related materials including coal, petroleum, gas, and electricity current (SITC 3).
Further, the regional category "South Asia" does not concur with the category "Southern Asia" as defined by UNCTAD Stat. The latter category also includes the Islamic Republic of Iran in Southern Asia, while the Islamic republic of Iran in the above analysis is added to "West Asia" as a region. In the category "East & South-East Asia" China is excluded. Japan, Canada, and other countries not included in the above listed regional categories are included in "Other Regions."
The table is calculated using merchandise trade data by trading partner and product based on SITC, Rev.3 commodity classification, expressed in annual trade dollar values. The entire trade matrix is included in the appendix (table 4.3.1 appendix)

Source: UNCTAD Stat, 2011, Merchandise Trade Matrix (author's calculation)

South Asia plays only a marginal role in energy commodity trade for all regions. Only West Asia and Sub-Saharan Africa receive significant energy commodity imports originating from India (if excluding India, the share declines to almost zero). For these region as well as Australia and New Zealand (Oceania), India is also an important export partner. However, overall South Asia is far behind in its energy import demand compared with other regions such as East and South-East Asia. China alone accounts for 7.27 percent of world energy commodity imports, and East and South-East Asia as a region accounts for 17.90 percent of world imports (table 4.3.3 appendix).

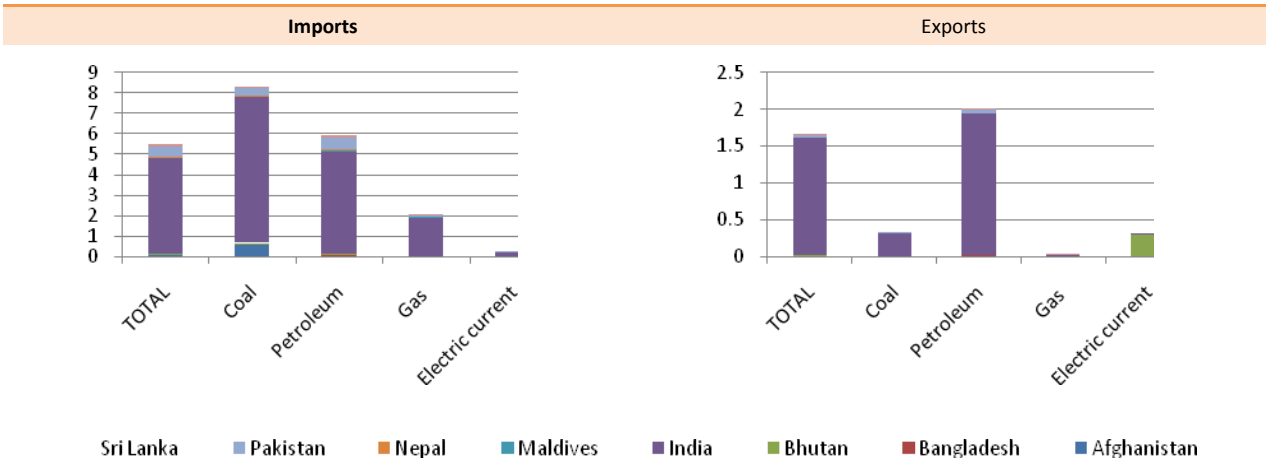
As for metals and minerals, India clearly dominates both exports as well as imports of energy commodities in the region, with some noticeable share of Pakistan only in coal and petroleum imports, and Afghanistan in coal imports (Fig.4.4). Only for electricity exports Bhutan held a significant share in 2010, which is due to its hydro energy exports to India. These are largely driven by Indian public sector companies which are investing heavily in hydropower projects in Bhutan in order to strengthen the bilateral cooperation between the two countries and to satisfy India's growing energy demand (Srivastava & Misra, 2007).

India contributes with two percent to global petroleum exports, as its increased oil refinery capacity, doubling from 1.1 million barrels per day in 1999 to 2.1 million barrels per day in 2001. Since then, India runs a relatively strong oil refining industry, importing crude oil for refining and exporting, especially to its neighbouring economies (EIA, 2010). On the demand side, India, despite its rich natural coal endowments, is a large importer of coal (the fourth largest in 2009) with a share in world imports of over 7.2 percent (ibid.). This is due to its growing iron and steel industry which demands high quality coal that cannot be supplied domestically as domestic coal reserves are largely of low quality.

Despite the region's remarkable economic growth over the last decade, South Asia's share in global commodity trade is still much smaller than its neighbouring regions. Further, while not only India but also other countries in the region (Bangladesh, Bhutan, Sri Lanka, and Pakistan)

are a significant player in global trade of food and agricultural commodities, trade in mineral and metals as well as in fuels and energy commodities is dominated by India alone.

Fig.4.4: South Asian Countries' Percentage Share in World Imports/Exports of Selected energy Commodities in 2010



Source: UNCTAD Stat, 2011, Merchandise Trade Matrix (author's calculation)

4.4 Inter-Regional and Intra-Regional Trade

For inter-regional trade, the importance of South Asia as a tading partner in primary commodities varies from region to region. For Weast Asia the region is an important trading partner as a source of food and agricultural commodities as well as a market for its metals and minerals and fuels and energy commodity exports. These trading ties are espcially strong with India. Another important trading partner is South-East Asia, especially for food and agricultural imports. For energy commodities and fuels, Sub-Saharan Africa is another important trading partner, accounting for a significant share in South Asian energy imports. Although South Asian imports and exports are only of minor relevance for East Asian trade, imports from East Asia in all commodity classes have a high share in overall South Asian imports.

In contrast to trading patterns in manufactured products and services where Europe as well as the United States are the most important trading partners, in particular for South Asia's grament industry, trading in commodities are conducted more with East, South-East, and West Asia as well as Sub-Saharan Africa. Furthermore, while inter-regional trade is quite low for manufactured goods and industry, intra-regional trade contributes to a large share of overall commodity trade in South Asia. This is especially pronounced for smaller economies in the region, i.e. Bhutan, Nepal, and Maldives (table 4.4). Smaller and landlocked economies are heavily dependent on commodity imports and exports from India or Pakistan and to a lesser extent also Bangladesh for all commodity categories.

Bhutan for instance is highly dependent on India and Bangladesh as trading partners for food exports as well as imports. While 97.5 percent of Bhutan's exports destine to India or Bangladesh, it relies heavily on food and agricultural imports from India, accounting for 78.5 percent of its total imports in this category (table 4.4.1 appendix). The dependence of Bhutan on

India as a commodity trading partner is even more pronounced for energy as well as minerals and metals (table 4.4.2-3 appendix). Not only Bhutan but also Nepal relies heavily on energy commodity and mineral and metal imports from India (table 4.4.2 appendix).

Afghanistan is also relatively dependent on intra-regional commodity imports and exports. Unlike Bhutan's and Nepal's, Afghanistan's trading ties are strongly knot with Pakistan rather than India and Bangladesh. While India is relevant only as an importer of Afghan food and agricultural commodities (mostly nuts and oil seeds), there are no relevant trading ties regarding metals and minerals or energy commodities with India. However, the trading share hold by Pakistan in Afghan commodity imports and exports in all categories varies between 25 (food and agricultural exports) and 86 (metals and minerals exports) percent (table 4.4.1-3 appendix).

Overall, Bhutan is the country most dependent on commodity imports from its neighbouring countries, followed by Nepal and Afghanistan. Similarly, Bhutan, Afghanistan, Nepal are most dependent on markets in its neighbouring countries, especially India, for their exports. An exception to this is energy exports from Nepal, which is destined to countries outside South Asia. The Maldives also relies heavily on intra-regional trade for all commodities but energy. The more diversified economies of Bangladesh, Pakistan, and Sri Lanka show a share above 10 percent of intra-regional trade in their overall commodity imports and exports, except Pakistan's imports of metals and minerals as well as energy commodities. Only for India, intra-regional trade is of minor importance, as intra-regional trade accounts for less than 10 percent for all but for exports of food and agricultural goods (table 4.4).

Table 4.4: Import/Export Percentage Share in Intra-Regional Trade by Country in 2010

		Afghanistan	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
IMPORTS	Food and Agricultural	42.82	34.58	84.96	5.23	29.56	39.72	13.17	26.54
	Metals and Minerals	44.74	21.33	77.15	1.05	56.10	65.12	6.72	32.44
	Energy Commodities	65.90	10.14	98.95	0.28	0.27	97.77	0.07	31.14
EXPORTS	Food and Agricultural	66.67	18.33	97.46	12.45	9.36	89.72	20.82	11.35
	Metals and Minerals	87.77	16.21	97.37	3.09	75.34	99.86	23.88	54.60
	Energy Commodities	60.47	25.20	100.00	5.25	0.00	0.00	57.38	23.25

Source: UNCTAD Stat, 2011, Merchandise Trade Matrix (author's calculation)

Clearly, given that India is by far the biggest economy in the region, it serves as an important supplier as well as market for commodity imports and exports of its neighbouring countries. At the same time, India's own reliance on its neighbouring countries for exports and imports is low, and hence engaged more in trade with countries outside the South Asian region.

5. South Asia's Role in Commodity Trade

With the high growth rates over the last decade or so as well as the environmental and demographic changes, the pattern of commodity demand and supply of South Asia has shifted dramatically. At the same time, the region's pattern reflects largely India's, which is by far the biggest economy in South Asia and an economic driver for the region. For energy and metal commodities, both demand and supply capacities have concomitantly increased as the economies have grown over the last decade. However, the region faces pressing challenges in feeding a growing population with decreasing agricultural yields and arable land per capita. Though the region was formerly more or less self-sufficient in production of staple food commodities such as rice and wheat, it is becoming increasingly dependent on food imports. Changing dietary patterns with growing income further contributes to increasing demand of nutrition-rich food commodities besides staples.

5.1 Major Features and Overall Trends

Clearly, India is the largest economy in the region and home to 20 percent of the world's total population. This alone makes it a major player on global food commodity markets (WB, 2010). However, historically, India's food commodity imports were relatively low compared to other densely populated regions like East and South-East Asia. Over the last decades, India has followed a policy of self-sufficiency regarding its domestic food supply (Francis & Winters, 2008). Its agricultural sector is highly subsidised in order to achieve adequate returns to farmers by providing incentives for production. Policies include minimum prices for key agricultural products as well as input subsidies for electricity needed for irrigation, water, fertiliser and pesticides.

However, such policies have made the Indian agricultural sector the most irrigation dependent in the world, which resulted in decreasing ground-water levels in many regions (ibid.). Water shortages has brought about new environmental challenges causing - beside other factors - agricultural productivity to stagnate. Combined with increasing population growth, energy shortages and preceding urbanisation these factors eventually turned India and the region as a whole into a net importer of some food and agricultural commodities. As there is no quick solution to the rising challenges, India's imports of staple food and other agricultural products are likely to increase further. Moreover, with economic growth food consumption patterns are likely to shift from staples like wheat and rice towards a more balanced diet, including meet, oils, and vegetables (ibid.).

As a major consumer, South Asia would have some decisive impacts on world demand for wheat and sugar, and hence on prices especially in times of significant fluctuations in domestic production due to weather and climate conditions. Since India lifted its export ban on rice in 1994 and one year later also on wheat, it became one of the largest rice producers globally and

together with Pakistan it accounts for more than one quarter of world rice exports. However, it was only recently during the commodity price peak in 2008 that the Indian government among others re-imposed export bans on rice and other staples (Timmer, 2009; Brahmbhatt & Christiaensen, 2008). Such policy decisions are seen to have majorly impacts on world prices. Given the increasing demand pressure from growing population and stagnating or decreasing agricultural yields, such policy interventions might occur more often in the future.

South Asia could maintain its key role in global tea, cotton, and jute trade and production. However, net exports for tea declined steadily over the years due to growing domestic demand. For jute, net exports decreased for some time, but are increasing again recently. Intra-regional trade is strong in both tea and jute. Unlike jute, tea is also exported to other regions, including West Asia and to a lesser extent North America and Europe. Likewise, cotton produced in South Asia is traded within the region in order to meet regional demand. Only recently, South Asia became a net exporter of cotton to the rest of world.

India is clearly dominating the region's overall trade patterns in minerals and metals. However, India's role in global commodity trade in this category is still relatively small, especially compared to China. The relatively low share of South Asia as a whole and India in particular in metal and mineral trade can be explained by the fact that economic reform policies promoted and commenced by the Indian government since the early 1990s have favoured services over the industrial sector (Francis & Winters, 2008). In 2010, services accounted for approximately 55 percent of India's total GDP while industry had a share of only 26 percent. This is in sharp contrast to China, where industry contributed 47 percent of total GDP value added (Fig.5.1.1. appendix). Given that industrial production is a strong driver of metal demand, India's economic growth patterns partly explain the relatively minor role - relative to India's share in world GDP as well as remarkable economic growth over the last decade - in global metal demand.

However, the increasing focus on the industrial sector (WB, 2010; Francis & Winters, 2008) coupled with India's endowments in iron ore and bauxite may change South Asia's role in mineral and metal commodity trade in future. India's steel industry is expected to grow exponentially due to the predicted rapid growth of its economy throughout the 21st century (Datamonitor, 2011b). Similar patterns can be expected for copper ore imports as well as copper and aluminium production.

However, one of persistent challenges for the region's mining and metal industry is uninterrupted power supply, which is still a major concern not only for India (Dutta & Mukherjee, 2010). Further, high tariffs and export bans in times of high world commodity prices as a policy tool for domestic price control, could further hinder South Asia's and India's participation in global commodity trade. During the recent price hikes for instance, the Indian government imposed not only restrictions on grain exports but also on cement exports, in order to maintain a smooth domestic coal supply (ibid.).

India is also the main driving force behind South Asia's energy commodity trading patterns. India accounted for 83 percent of South Asian total energy commodity demand and is already the

third largest consumer of coal and fourth largest consumer of oil in the world, though it is still far behind the United States and China in total energy consumption. On the production side, India accounts for approximately one percent of the global production of oil, and has 0.5 percent of proven reserves. Likewise, for gas, India accounts for 1.1 percent of global production and 0.6 percent of world gas reserves (Francis & Winters, 2008). India, however, has significant coal deposits and accounts for 6.6 percent of global production and 10.6 percent of global coal reserves, making it the third largest producer of coal (behind the US and China, which together produce 60 percent of the world's coal) (ibid.).

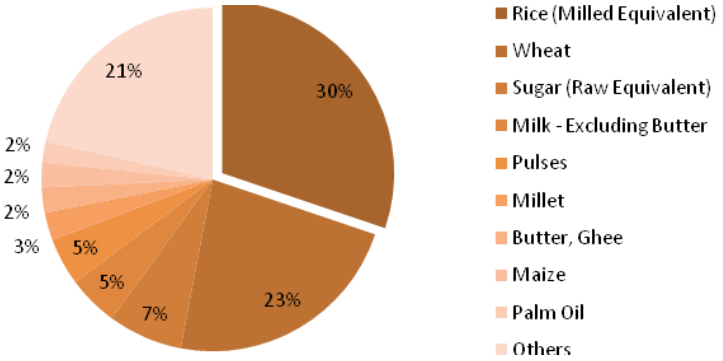
Overall, India was the fourth largest energy consumer in 2009, after the United States, China, and Russia. With increasing economic growth as well as population growth India's energy demand is likely to increase further in future which puts pressure on the government to ensure its growing energy needs as a fundamental input for industry, manufacturing as well as agriculture. The International Energy Agency estimated a total increase of 116 percent in Indian energy demand over the period from 2007 to 2030 which should be increasingly met by nuclear energy and gas as well as oil and coal (IEA, 2009). Given India's low natural endowments in oil, the dependency on oil imports - already high - is likely to increase further. Also coal imports are likely to increase because of growing demand from its metal and mining industry for high quality coal. Given the country's yet untapped potential for gas production, net-imports are likely to increase only slowly or even decrease once the Indian gas industry unleashes its potential. If economic growth prospects of the remaining seven South Asian economies stay strong, import dependency in coal as well as petroleum and crude oil is likely to increase for these countries.

Changing trend and prospects in specific commodities will be discussed in more details in section b. on grains and food commodities, section c. on soft commodities and agricultural raw materials, section d. on minerals and metals, and section e. on energy commodities.

5.2 Agricultural Commodities: Grains and Food

Rice, wheat and sugar make up 60 percent of the average daily caloric intake per capita in South Asia. South Asia is the second largest rice consuming region in the world after East Asia with rice accounting for 30 percent of the daily caloric intake (Fig.5.1).

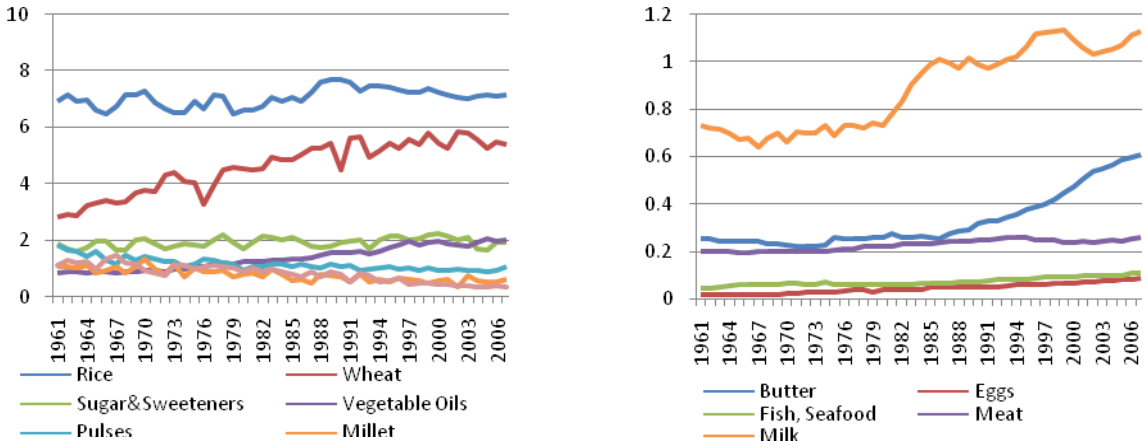
Fig.5.1: Daily Caloric Intake Per Capita, South Asian Average (in 2007)



FAO, 2007, Food Balance Sheet: Southern Asia (author's calculation)

However, with economic growth, dietary patterns have been changing and are likely to change further in the future (Talukder, 2005; Kumar, Mruthyunjaya, & Birthal, 2007). While rice remains an important staple food, wheat increasingly replaces sorghum, millet, and pulses. Further per capita consumption of vegetable oils, milk and butter as well as fish, meat and eggs, has increased steadily since late 1980s, while rice and wheat remain the most important staple food commodities (Fig.5.2).

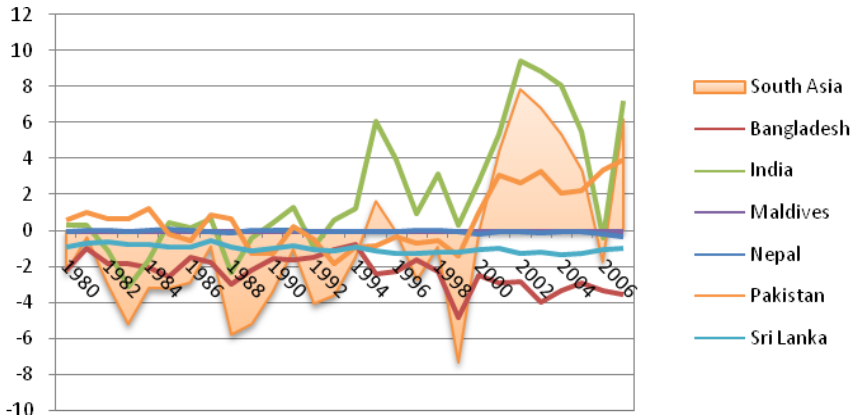
Fig.5.2: Food Supply in South Asia: Crop and Livestock Products (100 kcal/capita/day, in 2007)



FAO, 2007, Food Balance Sheet: Southern Asia

South Asia as a region is a net importer of wheat and a net exporter of rice. However, within the region, domestic demand-supply gaps and hence trade patterns are quite diverse. While Pakistan and India are net exporters of cereals, Bangladesh and Sri Lanka are net-importers. The volatility in the volume of annual imports and exports of cereals is very high, especially for India (Fig.5.3).

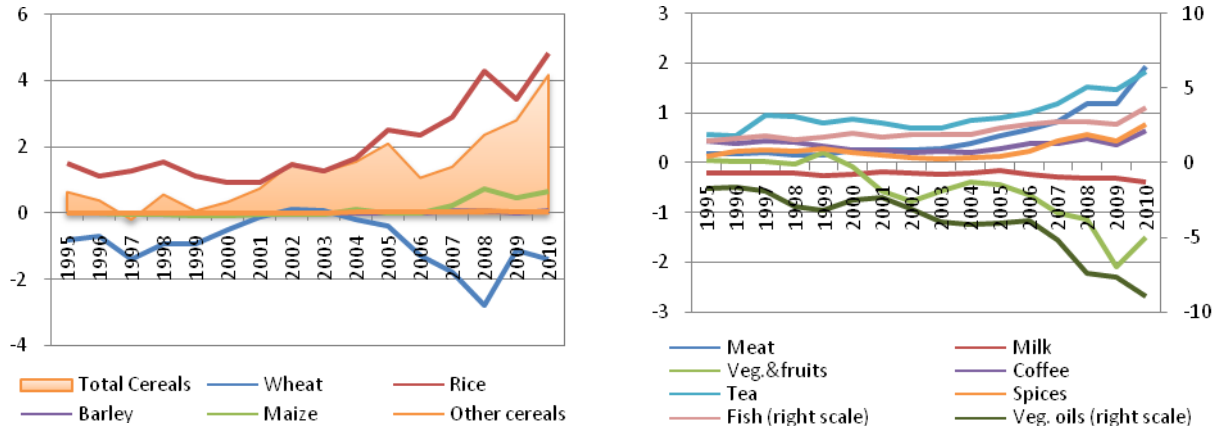
Fig.5.3: Annual Net Exports of Cereals (in million tonnes, 1980-2007)



FAO, 2007, Food Balance Sheet: Selected Countries (author's calculation)

Fig.5.4 shows trends of net exports disaggregated by individual food and agricultural products in US$ billion. The first chart confirms that South Asia is a net exporter of cereals as a whole, since it is dominated by its net-exporter position in rice, while it is a net importer of wheat and a relatively small exporter in other cereals. The second chart reveals that vegetable oils and vegetables & fruits constitute increasingly significant import bills for the region, while export earnings from fish, meat, and tea have steadily increased. On the whole, import bills of wheat, and vegetables & fruits have started exceeding export earnings, so that the region became a net-importer in these commodities since the mid 2000.

Fig.5.4: Annual South Asian Net Exports of Selected Food and Agricultural Commodities (in billion US$, 1995-2010)



Note: The category "South Asia" comprises Afghanistan, Bhutan, Bangladesh, India, Maldives, Nepal, Pakistan, and Sri Lanka and hence does not correspond to the UNCTAD Stat category "Southern Asia."

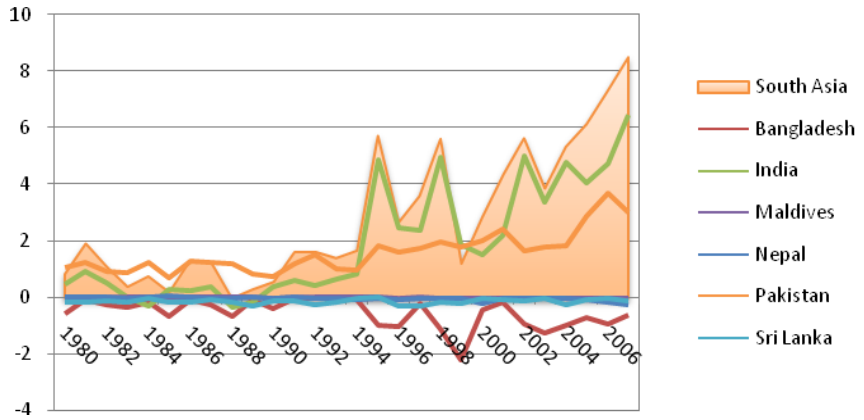
Source: UNCTAD Stat, 2011, Merchandise Trade Matrix: South Asia (author's calculation)

According to the food balance sheet published by FAO Stat, for seven out of eight South Asian countries rice is among the three most important food crops produced annually measured in tonnes for 2000-2007. India is the second largest rice producer worldwide after China, and together with Pakistan it is the largest rice exporter of the South Asian region (Fig.5.5). India increased its domestic rice production from 50 million tonnes in 1980 to almost 100 million tonnes in 2007. Bangladesh also more than doubled its rice production over the same period from

14 million tonnes to 29 million tonnes. India and Bangladesh are the two biggest South Asian rice producers. However, only since the mid-1990s India has become a net exporter of rice, exporting about 6 percent of its total production. Bangladesh remains a net importer despite its rising production level. Pakistan's large export share in rice is a result of its lower domestic consumption of rice so that more than 50 percent of domestic production could be exported in 2007according to FAO Stat.

According to UN Comtrade data, which provide detailed breakdown by trading partners, Bangladesh, Saudi Arabia and the United Arab Emirates are the major destinations of Indian rice exports.[17] Other major importers of Indian rice include Nigeria, Kuwait, Iran, United Kingdom, Nepal, Sri Lanka and Madagascar. [18] For Pakistan, three major export partners, measured in trading volume were United Arab Emirates, Iran, and Kenya for 2003 to 2010. In terms of export values Saudi Arabia replaces Kenya as the third most important market for Pakistani rice exports, followed by Afghanistan (fourth largest importer of Pakistani rice over the period), Oman and Qatar as well as several African countries (e.g. Cote d'Ivoire, Mozambique, South Africa, and Madagascar). Indian rice exports accounted for 9.2 percent of world rice exports (in kg) in 2010, which made it the world's fourth largest rice exporter, right after Pakistan with a share of 15.5 percent of world exports. Indian and Pakistani rice exports were only outperformed by Thailand (33 percent) and the United States (17 percent). Hence, India and Pakistan are important rice suppliers, not only to South Asian, but also to East and South-East Asian, African and Middle Eastern countries. Pakistani and Indian exports ensure rice supply around the Arabian Sea and Indian Ocean among which major trading partners (except the United Kingdom) are located.

Fig.5.5: Annual Net Rice Exports by South Asian Countries (in million tonnes, 1980-2007)



FAO, 2007, Food Balance Sheet: Selected Economies (author's calculation)

Wheat is the second most important staple food in South Asia in terms of daily caloric intake per capita (see Fig.5.1). India and Pakistan are the biggest wheat producers in the region. Although

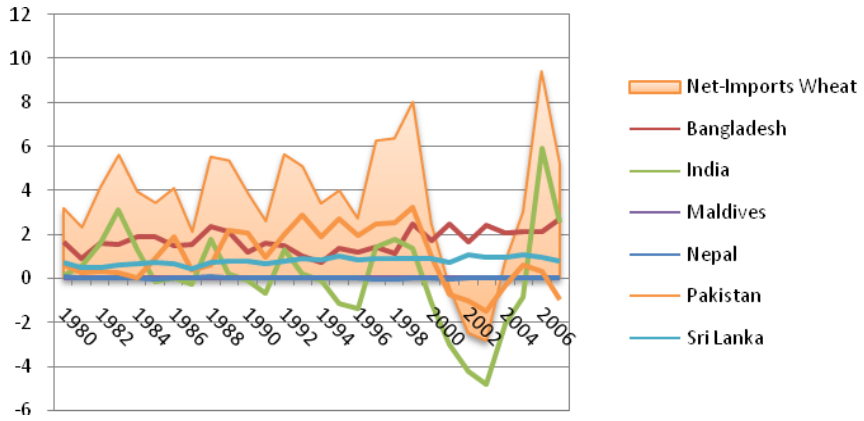
[17] Bangladesh is the second largest when it comes to imports per kg and United Arab Emirates when it comes to import values in US$.

[18] In order to assess the importance of each trading partner total annual exports per trading partner were aggregated over the time period 2000 to 2010 and then ordered by their share.

production increased steadily from 40 million tonnes in 1980 to 100 million tonnes in 2007 according to FAO Stat data, the region remains largely a net importer for wheat (Fig.5.6). The increase in production over the last three decades can be attributed to India's increased capacity, where wheat production almost tripled over the time period. However, South Asia as a region remains a net importer of wheat, except 2001-2003.

According to UN Comtrade data, Canada was the largest supplier of wheat to South Asia followed by Russia for 2000-2010, while India is a main supplier of wheat for smaller South Asian countries. For example, more than 55 percent of Indian wheat exports were destined to its smaller neighbours in 2008. Australia, Argentina, and the United States also export wheat to the region. South Asia accounted for about 10 percent of Canada's entire wheat exports, 12 percent of Russia's, and 7.5 percent of Argentina's in 2008 respectively. Although South Asia accounted for only about 3- 5 percent of world total wheat imports in 2008-2010, it is important to note that demand was increasing much more rapidly than in the rest of the world with an annual average increase of 15-6 percent between 2000 and 2010 compared to an annual average increase of only two percent in world demand. However, demand patterns fluctuated a lot over the period, as shown in figure 5.6.

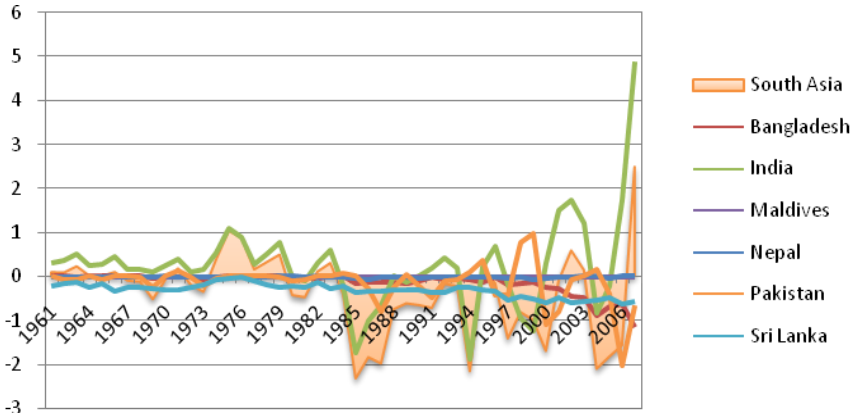
Fig.5.6: Annual Net Wheat Imports by South Asian Countries (in million tonnes, 1980-2007)



FAO, 2007, Food Balance Sheet: Selected Economies (author's calculation)

For sugar, South Asia is one of the largest consuming regions worldwide. Sugar accounts for 7 percent of daily caloric intake on average in the region and is the third most important source of daily nutrition (see Fig.5.1). Pakistan and India are the region's two major sugar consumers as well as producers. Sugar production in both countries has steadily increased since the 1980s from 5 million and 0.6 million tonnes to 25 million and 3.5 million tonnes of annual production for India and Pakistan respectively in 2010. However, domestic demand increased in tandem with domestic production. Imports fluctuate heavily in order to meet demand in the face of volatile domestic production, hence the region could become a substantial net importer or net exporter of sugar, depending on domestic sugar cane harvests (Fig.5.7).

Fig.5.7: Annual Net Sugar Exports of South Asian Countries (in million tonnes, 1980-2007)

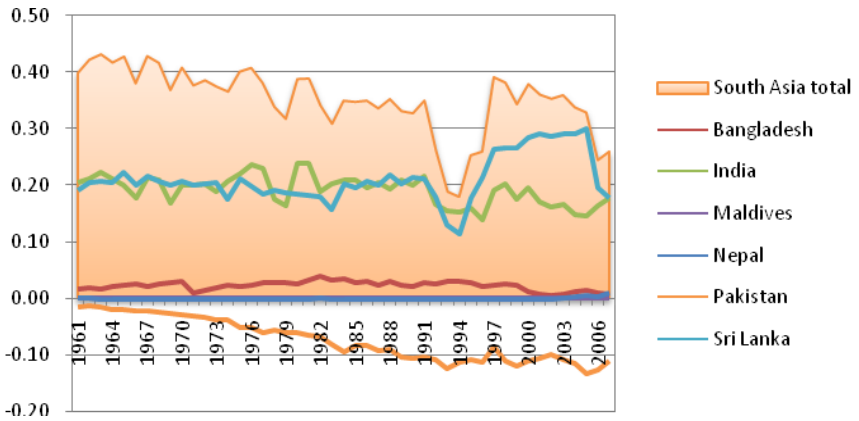


Source: FAO, 2007, Food Balance Sheet: Selected Economies (author's calculation)

5.3 Agricultural Commodities: Tropical Beverages and Agricultural Raw Materials

India and China are the world's largest tea producers with an annual average of 0.85 million tonnes of production over the time period 1992 to 2007 (China has roughly the same amount of average production).

Fig.5.8: Annual Net Tea Exports of South Asian Countries (in million tonnes, 1961-2007)



FAO, 2007, Food Balance Sheet: Selected Economies (author's calculation)

India and Sri Lanka are the main producing areas. While Sri Lanka increased its annual production from 0.2 million in the early 1990s to 0.3 million tonnes in 2007, India steadily increased its production from 0.35 million tonnes in 1960 to 0.95 million tonnes in 2007. However, India is also the largest tea consumer and consumption increased at an equally steady rate from 0.15 million to 0.8 million tonnes over the same time period, resulting in a relatively stable export level for Indian tea, according to FAO Stat data.

In 2010, Afghanistan, Bhutan, Maldives, and Pakistan were all net importers of tea, while Sri Lanka, Nepal and India were net-exporters. Sri Lanka was the region's largest exporter with a share of about 60 percent of total South Asian exports in net weight and 67 percent of total

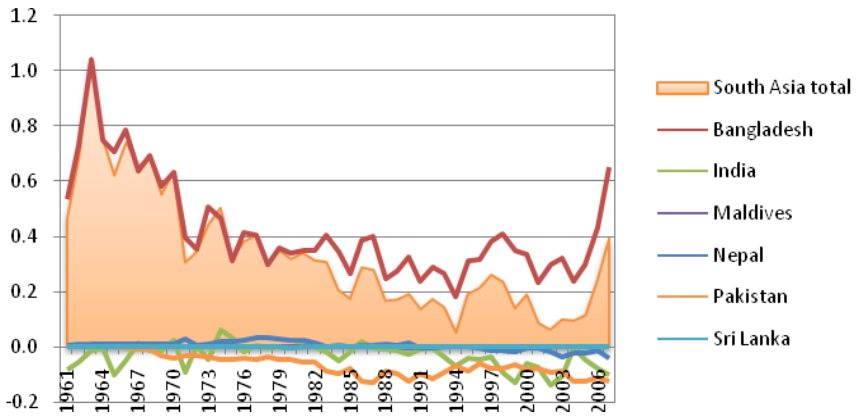
exports in dollar value. India holds 38 percent and 32 percent share in volume and value respectively. The difference in market share measured by net weight and dollar value indicates higher prices paid on world markets for Sri Lankan tea than for Indian tea. Pakistan was by far the largest importer in the region, followed by Afghanistan. The latter accounted for 20 percent of South Asian net imports in 2010 according to UN Comtrade data.

The six most important export partners for India in 2010 were Russia, the United Arab Emirates, the United Kingdom, Iran and the United States. While Iran and the United Kingdom are historically important trading partners, the United States only recently started importing Indian tea. For Sri Lanka the most important export partners are Russia, Iran, United Arab Emirates, Syria, and Turkey. Together these countries account for over 50 percent of total Sri Lankan tea exports. Hence, Middle Eastern countries i.e. the West Asia region are the major destinations for South Asian tea exports.

For jute, Bangladesh and India are the main producers in the region. Their production level was at par with each other until late 1980s. However, since then it diverged as production decreased slowly over time in Bangladesh, while it steadily increased in India. The whole region is the world's largest jute producer. As shown in figure 5.9, despite its large production, India is a net importer of jute, whereas Bangladesh does export a significant proportion of production, though fluctuating considerable from year to year (e.g. it exported only 20 percent in 1994 but it went up to 80 percent in 2007).

Total South Asian net exports, however, decreased since the 1960th until the mid-1990th to a marginal level. This decrease in net exports occurred despite a relatively stable level of jute production in Bangladesh which fluctuated between 1 and 1.5 million tonnes per year over the entire period and an even steadily increasing production level of Indian jute from around 1 million tonnes in mid-1970th to 1.8 million tonnes in 2007. However, domestic jute demand in India and Pakistan increased sharply, exceeding the growth in production. Largely owing to an increase in Bangladeshi exports net exports from the region has started increasing again since 2004 (Fig.5.9).

Fig.5.9: Annual Net Jute Exports of South Asian Countries (in million tonnes, 1961-2007)

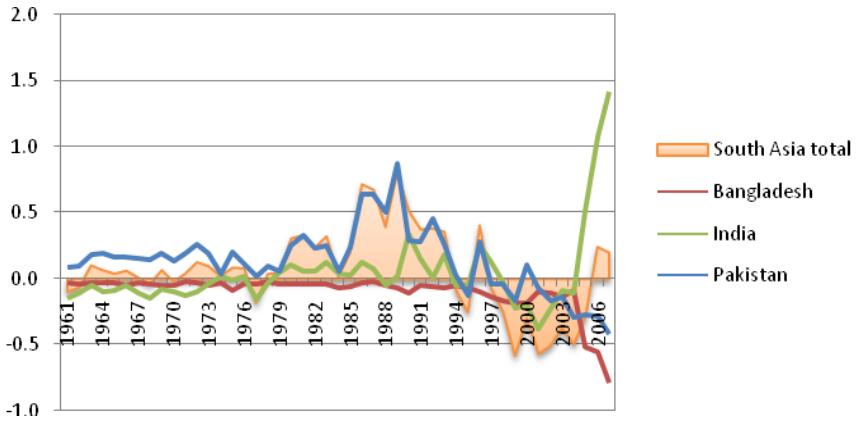


FAO, 2007, Food Balance Sheet: Selected Economies (author's calculation)

For cotton, the region, in particular Pakistan and India is a major producer in the world together with China and the United States. While production of cotton lint increased in both India and Pakistan in parallel till 1983, Pakistan's production increased sharply to reach the same level as in India, and both countries produced in the range of 1.5-2.5 million tonnes until 2004. However, India tripled its cotton production from 2002 to 2007, outperforming Pakistan again after 2004. Pakistan and India increased their production from 0.3 million and 0.9 million tonnes in 1961 to 2.0 and 4.4 million tonnes in 2007 respectively, according to FAO Stat.

Since Bangladesh, India, Nepal, Pakistan and Sri Lanka all have a vibrant garment and textile industry with a huge demand for cotton lint, not much of the cotton produced is actually exported and South Asia became even a net importer of cotton as a region for 1997-2006 (Fig.5.10). In particular, Pakistan's cotton exports peaked in 1989 and have experienced a decline since then. In 2000 the country has became a net importer of cotton and remained so since then according to UN Comtrade data. Bangladesh increased its import volume since the early 2000s. In contrast to these two countries, India has increased its net exports substantially since 2004, as its export volume peaked in 2007, and remained a significant net exporter since then. In 2010 India's exports were 1.5 times that reached in 2007. As a result, the region is an overall net exporter of raw cotton since 2006 (according to UN Comtrade data).

Fig.5.10: Annual Net Cotton Lint Exports of South Asian Countries (in million tonnes, 1961-2007)



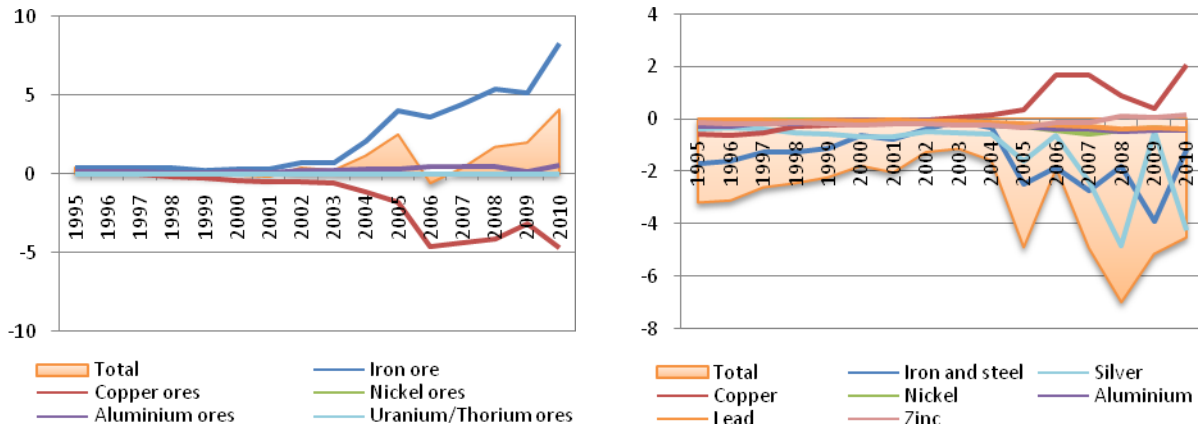
FAO, 2007, Food Balance Sheet: Selected Economies (author's calculation)

5.4 Metals and Minerals

India is the only country in the region with a considerable large metal and mining industry. All other countries are net importers of aluminium, iron and steel, coal and base metals (lead, zinc, copper, nickel, and tin). As shown in figure 5.11, South Asia as a region became a major exporter of iron ore and to a lesser extent copper since 2002 and 2005 respectively, while it is net importer of copper ores and concentrates, which increased substantially since 2003. It also imports iron & steel as well as silver since then, registering a significant increase in value terms.

In 2011 India has become the world's seventh largest aluminium producers, fourth largest zinc producer, and fourth largest iron ore producer (USGS, 2011). As of May 2012 India is among the five largest crude steel producers with 6.2 million tonnes of output, which is roughly 4.75 percent of global steel supply, after registering an annual growth of 4.24 percent in production. This production level is similar to Russia's and only slightly lower than production in the United States (Worldsteel, 2011; Worldsteel, 2012). However, India's production is only one-tenth of China's steel output which accounts for 47 percent of global production (ibid.). Besides India, Bhutan and Nepal are also exporters of iron & steel, which accounts for 40 percent of Bhutan's export earnings and for 12 percent of Nepal's export earnings in 2010 (Fig.5.1.2 appendix). Although for both countries iron & steel exports are important, they are marginal exporters in relation to world iron & steel trade.

Fig.5.11: Annual South Asian Net Exports of Selected Minerals and Metals (in billion US$, 1995-2010)

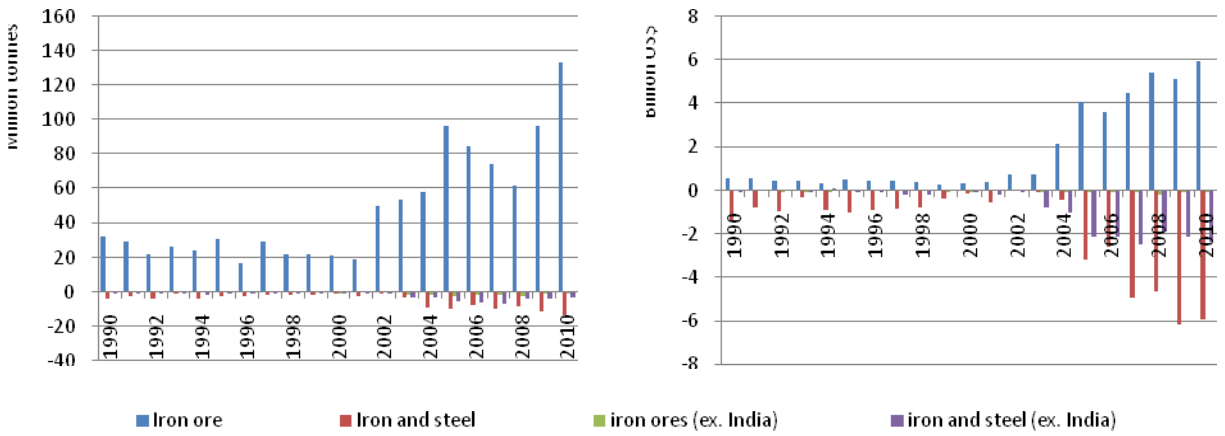


Note: The categorisation "South Asia" comprises of Afghanistan, Bhutan, Bangladesh, India, Maldives, Nepal, Pakistan, and Sri Lanka and hence does not correspond to the UNCTAD Stat category "Southern Asia."

UNCTAD Stat, 2010, Merchandise Trade Matrix: Selected Economies (author's calculation)

The iron and steel industry is India's most lucrative metal and mining sector with total revenue of $78.5 billion in 2010, which was about 74 percent of the sector's overall value (Datamonitor, 2011a&b). With growing production capacity, India steadily increased its exports of iron & steel from 1.2 million tonnes in1990 to 7.2 million tonnes in 2006. Since 2006 India's exports of iron & steel suffered a decline and its exports were 3.7 million tonnes in 2010. This significant reduction in export volume can largely be attributable to the impact of the price fall across commodity classes in the last quarter of 2008, which hit the Indian steel industry hard (Datamonitor, 2011b). However, world price in iron and steel bounced back thereafter, so that although the volume of total exports decreased by 45 percent for 2008-2010, the export value in US$ decreased by only 15 percent.

Fig.5.12: South Asia Annual Net-Exports of Iron ore and Iron & Steel (in million tonnes weight and billion US$ value, 1990-201)



Note: Iron ore (2601) and Iron and Steel (72) UN Comtrade categories have been used to estimate net-imports.

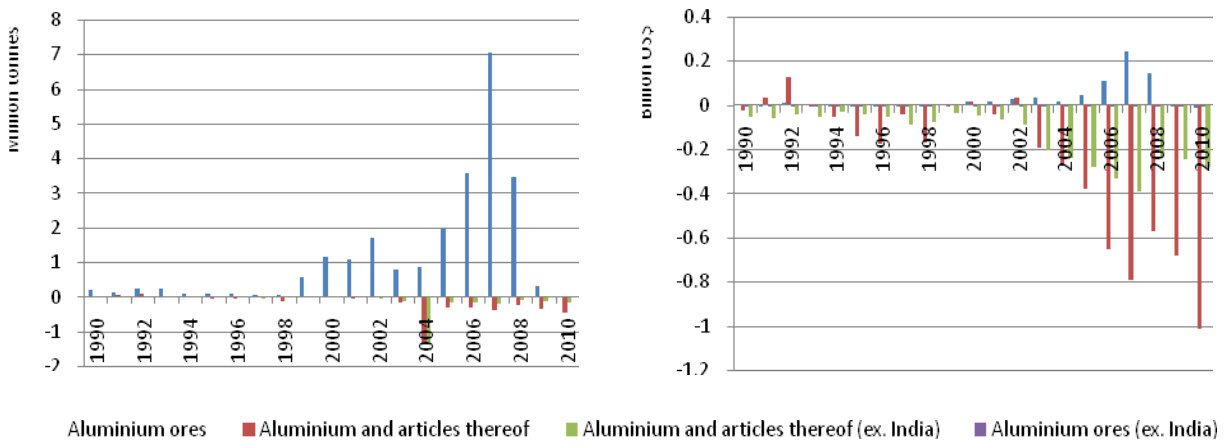
Source: UN Comtrade, 2010 (author's calculation)

Despite its growing iron and steel industry and exporting capacity, India remains a net importer of this product, with net-imports steadily increased since 2002, reflecting its fast growing domestic demand (Fig.5.12). Besides India, Pakistan, Bangladesh, and Sri Lanka (and since recently Nepal) also account for some of the region's iron & steel imports. However, India contributes to by far the largest share. Therefore, the region as a whole is a net importer of iron & steel, with net imports between 2 to 4 million tonnes of annual imports for 1990-2002. Mainly driven by India, total imports have steadily increased since 2002 to 18.7 million tonnes in 2010, resulting in 13.4 million tonnes of net imports in the same year. If we exclude India from the South Asian aggregate, net imports peaked in 2007 with 6.6 million tonnes and since then are on a declining trend. Unlike iron and steel products, India is a net exporter of iron ore, earning export revenue of US$6 billion in 2010 with its rich deposits (Fig.5.12).

India is also well endowed with bauxite - the raw material for aluminium production -, ranking as the fifth largest producer of aluminium in the world. Net exports of bauxite (aluminium ore) increased till 2007 and since then are on a decline as a result of rising domestic consumption. Although Indian bauxite is of high quality and its reserves are estimated to account for five percent of the world's total deposits, production is still less than 10 percent of China's (Dutta & Mukherjee, 2010). However, India's production has been increasing, emerging as an important producer of primary aluminium. It already accounted for four percent of the global primary aluminium production in 2010 (EAA, 2010).

However, the region as a whole is a net importer of aluminium and articles thereof (Fig.5.13), reaching more than US$1 billion in total value of net imports in 2010, with India accounting for the largest import share despite having its own domestic aluminium industry. Given that the main end-use markets for aluminium are construction and transportation, demand for aluminium is expected to increase further over the next years (EAA, 2010).

Fig.5.13: South Asia Annual Net-Exports Aluminium and Aluminium Ores (in million tonnes weight and billion US$ value, 1990-2010)

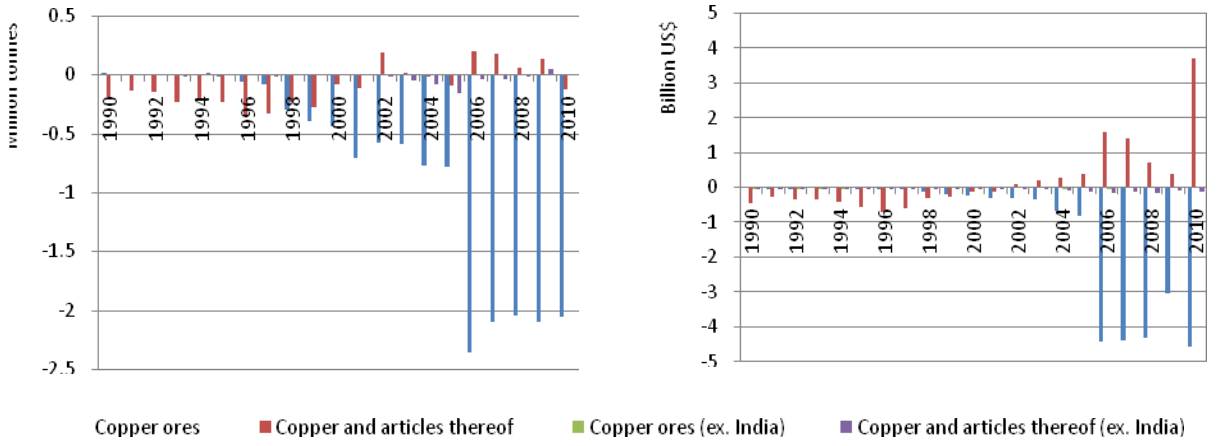


Note: Aluminium ores (2606) and aluminium and articles thereof (76) UN Comtrade categories have been used to estimate net-imports.

Source: UN Comtrade, 2010 (author's calculation)

Turning to copper, India is also a major producer, ranking as the fifth largest copper smelter, accounting for about four percent of the world's copper smelter production after China (24 percent), Japan (22 percent), Chile (10 percent), and Russia (5 percent) in 2010 (ICSG, 2010). [19] Although India has a relatively large smelting industry, its natural endowments of copper ores and concentrates are relatively low. Hence, India is a large net importer of copper ores and concentrates, amounting to import bill of US$ 4.6 billion. India was the third largest importer in 2009 only after China and Japan (ibid.).

Fig.5.14: South Asia Annual Net-Exports Copper and Copper Ores (in million tonnes weight and billion US$ value, 1990-2010)



Note: Copper ores 2603 and copper and articles thereof (74) UN Comtrade categories have been used to estimate net-imports.

Source: UN Comtrade, 2010 (author's calculation)

Since other South Asian countries account for copper imports and exports only marginally, South Asia's trading patterns mainly reflect Indian imports and exports. The region became a net exporter of copper and copper articles in 2002 (Fig.5.14). Simultaneously net imports of copper ores and concentrates increased dramatically. From 2005 to 2006 net imports more than tripled

[19] Smelting is the pyrometallurgical process used to produce copper metal (ICSG, 2010).

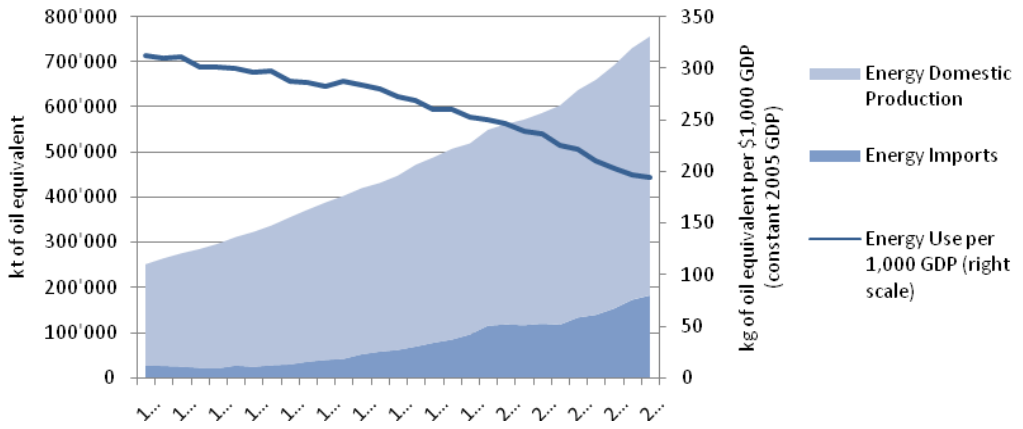
from 0.75 million tonnes to 2.4 million tonnes and stabilised since then at an annual level of about two million tonnes of net imports.

5.5 Energy commodities

With economic growth over the last five decades, energy consumption in South Asia has risen as well. Although efficiency of energy use has increased steadily with a decrease of one third in the ratio of energy use per US$1,000 GDP between 1980 and 2008, absolute energy consumption has increased by almost 300 percent between 1970 and 2008. The increasing regional demand could not be fully matched by increasing levels of domestic energy production. Hence, South Asia as a region became more dependent on energy commodity imports (Fig.5.15).

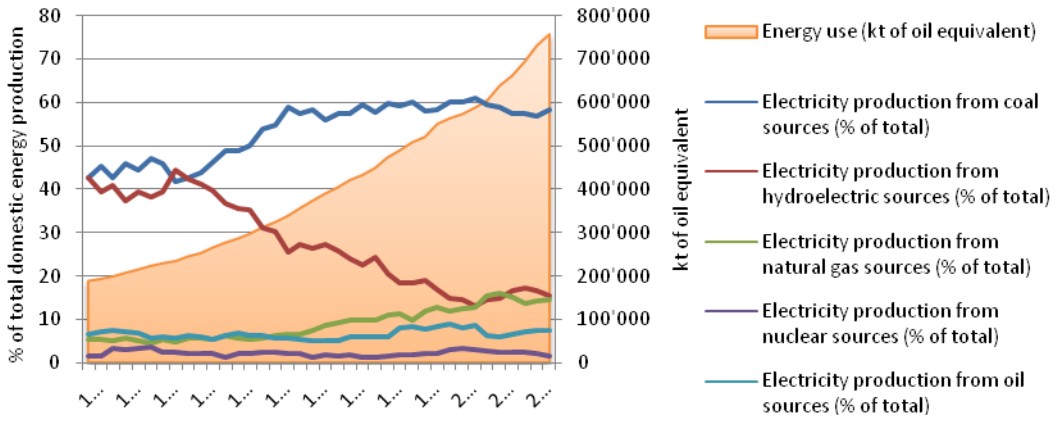
This development is accompanied by changing patterns in the composition of sources for electricity production. In the 1970s hydropower and coal had an equal share in energy production. Since then the percentage share of hydropower in total energy production decreased by 30 percentage points, while the importance of coal and also natural gas increased (Fig.5.16).

Fig.5.15: South Asian Domestic Energy Production, Imports and Energy Efficiency (1980-2008)



Source: WB, 2011, World Development Indicators

Fig.5.16: Sources for Domestic Energy Production and Domestic Energy Use in South Asia (annually, 1971-2008)



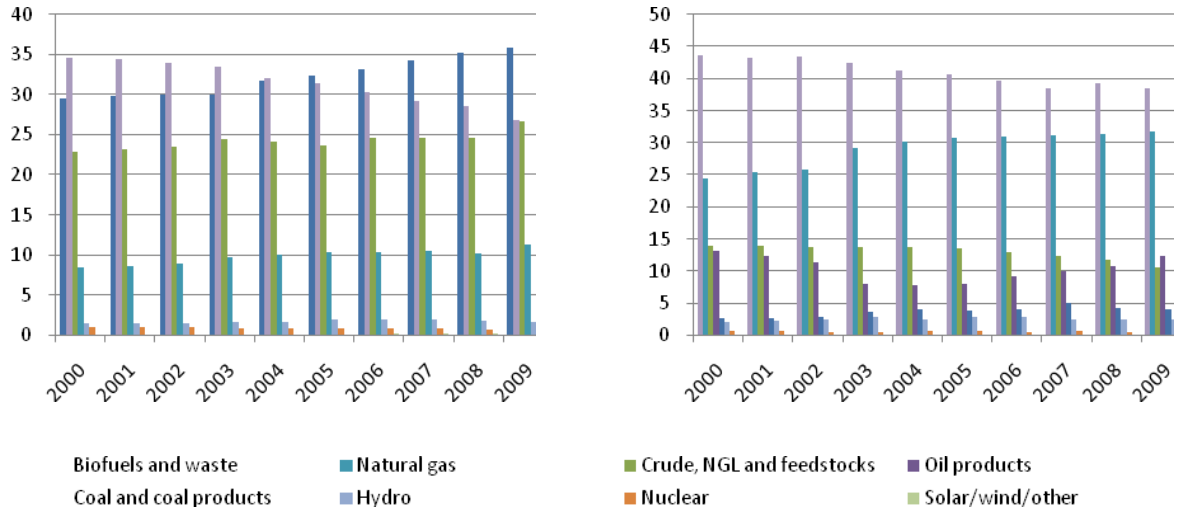
Note: Due to data constraints Afghanistan, Bhutan, and Maldives are not included in the aggregation.

Source: WB, 2011, World Development Indicators

However, this pattern is dominated by India's energy production and consumption, the by far largest energy consumer. India was even the fourth largest energy consumer in the world after the United States, China, and Russia in 2009 (IEA, 2009). The composition of sources for energy production as well as dependence on energy commodity imports of other countries in the region differs quite substantially. Figures 5.17-A and 5.17-B show a more detailed disaggregation by energy sources and import share separately for South Asia in aggregate and for South Asia excluding India.[20]

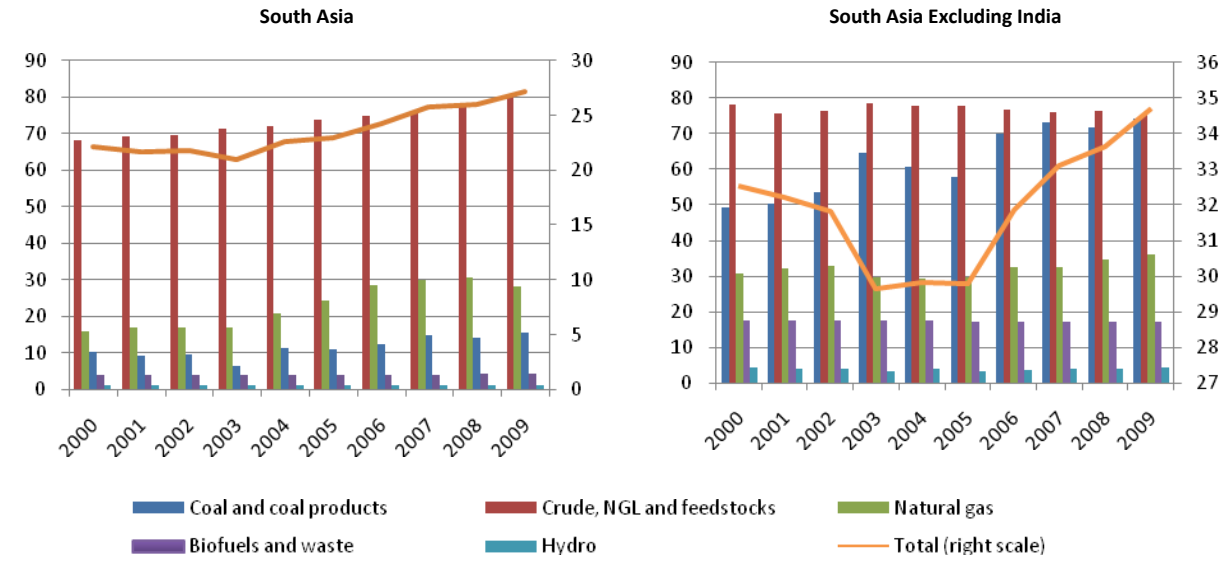
Fig.5.17-A: South Asian Total Energy Supply Composition by Sources (in percentages, 2000-2009)

South Asia | **South Asia Excluding India**



[20] . There is a discrepancy in composition of energy consumption between data provided by the World Bank (figure 4.16) and the International Energy Agency (figure 4.17a) because the former source does not include biofuels and waste in consumption, which is quite substantial in South Asian countries.

Fig.5.17-B: Percentage Share of Imports in Total South Asian Energy Supply Composition by Sources (in percentages, 2000-2009)



Note: Due to data constraints Afghanistan, Bhutan and Maldives are not included in the South Asian aggregate

Source: International Energy Agency (2011): Energy Balances of Non-OECD Countries (author's calculation)

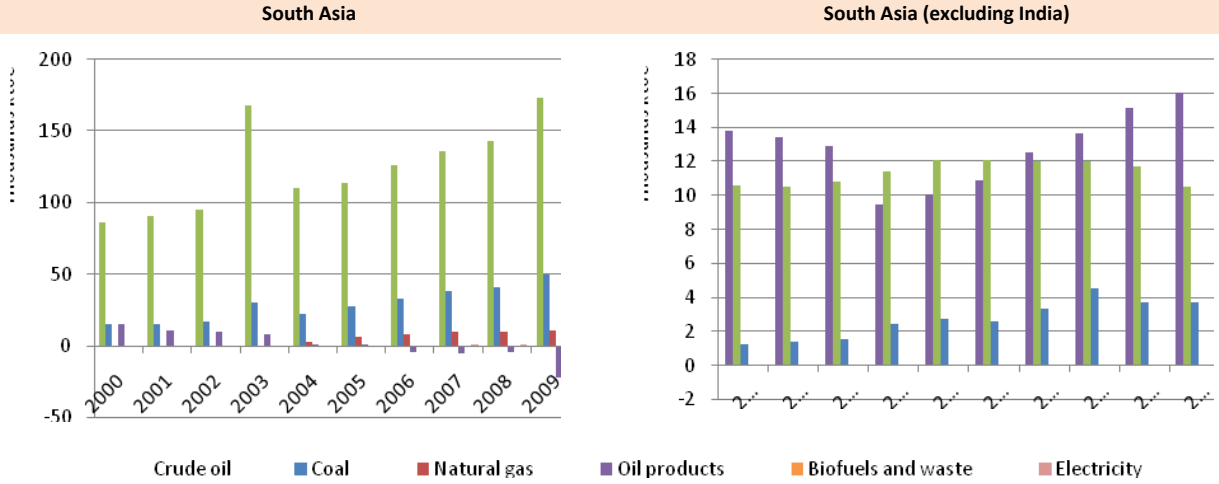
For South Asian countries other than India, the share of biofuels and waste in domestic energy production is much larger, accounting for the largest source of overall energy production, though with a declining share. This large share of biofuels and waste reflects still insufficient energy provision at household levels, and many - especially rural - households rely on traditional sources like biofuels and fuel wood for daily heating and cooking (Srivastava & Misra, 2007). Further, the decline in the share of biofuels and waste as an energy source in total energy production is accompanied by a rising importance of natural gas. This development is probably driven by the trend in Bangladesh, which relies on natural gas for almost 90 percent of its energy source (Fig.5.16.1 appendix). Coal, however, does account for a very minor share in energy production in countries other than India.

As shown in the left chart of figure 5.17-A, South Asia provided 73 percent of its total primary energy needs from domestic energy resources in 2009. This represents a high degree of self-sufficiency compared to other world regions or countries, such as OECD Europe (55 percent in 2007) or the United States (70 percent in 2007) (Remme, Trudeau, Graczyk, & Taylor, 2011). However, the share of imports in total energy supply has started increasing steadily since 2003 (Fig.5.17-B).

South Asia as a region does have only minor oil reserves, and hence up to 80 percent of crude oil demand is supplied by imports. As India is relatively well endowed with coal reserves, the share of imports in domestic coal demand is relatively low, though following an increasing trend. This is largely due to the Indian iron and steel industry's demand for high quality coal. For other South Asian countries, coal has to be largely imported so that the share of imports in total needs has increased from about 50 percent in 2000 up to almost 75 percent in 2009, which is largely driven by demand from Pakistan and Bangladesh where coal consumption more than doubled

over the same period (Remme, Trudeau, Graczyk, & Taylor, 2011). Driven by demand from India and Bangladesh, the import share of natural gas has also increased over the last decade to about 30 percent of total domestic gas consumption (Corbeau, 2010).

Fig.5.18: Net Imports of Selected Energy Commodities by South Asia (in thousand ktoe, 2000-2009)



Note: Due to data constraints net-imports by Afghanistan, Bhutan and the Maldives are not included in the South Asia aggregate.

Source: International Energy Agency (2011): Energy Balances of Non-OECD Countries (author's calculation)

South Asia as a region is a net importer of almost all energy commodities but oil products, for which it turned into a net-exporter in 2006 as a result of India's growing oil refining capacity (Fig.5.18). With 21 refineries reported in 2011 (MPNG, 2011a&b) India is self-sufficient in refining capacity for domestic consumption and became a net exporter of petroleum products. However, the industry remains highly dependent on imports of its key input factor, crude oil. In 2011, India ranked fourth in global petroleum consumption. If excluding India from the South Asian aggregate, the region remains a significant net importer of crude oil[21] as well as refined oil products.[22]

Figures 5.18.1 and 5.17.1-5 (appendix) show energy consumption and import share for each South Asian country individually. Nepal almost entirely produces energy from hydropower stations. Sri Lanka followed hydropower electricity production until the mid-1990s. Since then the use of oil has increased and reached an equal share with hydropower. Bangladesh relies heavily on natural gas as a source of energy production, while Pakistan relies on hydropower, natural gas, and oil as energy sources with each accounting for an equal share. Overall, oil has become an increasingly important energy source since the early 1980s.

Not only the composition of energy sources, but also the import dependency varies across countries (Fig.5.17.1-5 appendix). Sri Lanka has the largest import dependency with an import

[21] Crude oil IEA definition: Crude oil comprises crude oil, natural gas liquids, refinery feedstocks, and additives as well as other hydrocarbons.

[22] Oil products IEA definition: Oil products comprise refinery gas, ethane, LPG, aviation gasoline, motor gasoline, jet fuels, kerosene, gas/diesel oil, fuel oil, naphtha, white spirit, lubricants, bitumen, paraffin waxes, petroleum coke and other oil products. The exceptions to this are those finished products which are classified as refinery feedstocks.

share of about 45 percent of its overall energy sources. It imports its entire demand for oil products, crude oil, and coal. Only energy from biofuels and waste as well as hydropower is domestically produced. Nepal has the lowest import dependency with about 12 percent, due to its low level of domestic energy supply (lowest in the region) and its heavy reliance on biofuels and waste for energy production. Only coal, as an additional source of energy has to be imported from India. Bangladesh on the other hand is rich in natural gas reserves, which satisfy more than half of its energy-demand already, while the share of traditional sources (biofuels and waste) for households' energy consumption has steadily declined. For India and Pakistan the import share in domestic energy consumption is 25 percent, which is still low in world comparison. Indian energy imports almost entirely comprise of crude oil imports (though started importing natural gas and coal recently). In contrast, Pakistan satisfies its increasing energy demand largely with natural gas. Domestic natural gas reserves are for the time being sufficient to meet domestic demand, resulting in low import dependency in this regard. However, crude oil and coal, which accounted for 12 percent and 5 percent of energy sources respectively in 2009, have to be imported up to 70 percent of its needs.

6. Implications of the Super-Cycle for South Asia

6.1 Balance-of-Payment Implications from the Commodity Price Boom of 2002-8

As discussed above, South Asia as a region can be a net exporter or net importer depending on the commodity in question. Hence, in terms of Balance of Payments management, it can be either winners or losers from a commodity price hike as observed for 2002-8. For example, while South Asia as net exporter of some agricultural commodities as well as metals and minerals has gained extra in export revenues from the price rise over the latest commodity price boom, an increase in import bills especially for paying higher energy costs has exceeded any additional gains from the price boom between 2002 and 2008. Table 5.1 presents our estimates of gains/losses from price movements for selected commodity groups. These are calculated as the sums of annual differences between net export values actually recorded and hypothetical values if prices stayed at levels observed in 2002.

Table 5.1: Net Changes in Import Bill/Export Earnings Due to The Price Increases of 2002-8 (in millions US$)

Type	Commodity	South Asia	South Asia (ex. India)
Food commodities	Rice	7,144.24	3,672.49
	Wheat	-3,027.36	-2,451.37
	Edible oil	-5,213.97	-3,071.72
	Tea	1,305.58	1,196.60
Agricultural raw materials	Cotton	63.17	500.32
	Jute	299.96	-108,95
Metals and minerals	Iron ore	16,414.13	-128.36
	Iron and steel	-6,671.58	-2,840.81
	Aluminium ore	322.39	-0.11
	Aluminium	-6,286.62	-1,909.47
	Copper ore	-10,743.35	1.43
	Copper	5,045.24	-27.24
Energy commodities	Coal	-13,818.81	-848.09
	Natural gas	-3,337.71	-422.20
	Crude oil	-170,388.41	-15,937.49
	Refined oil products	19,392.93	-11,846.90

Note: UN Comtrade classification (HS as reported): rice 1006; wheat 1001; edible oil 15; tea 902; cotton 5201; jute 5303,5307,5310; iron ore 2601; iron & steel and articles thereof 72; aluminium ore 2606; aluminium and articles thereof 76; copper ore 2603; copper and articles thereof 74; coal 2701; natural gas 2711; crude oil 2709; refined oil products in 2710.

Source: UN Comtrade (author's calculation)

According to this estimation, South Asia as a region earned extra revenues from the price hike of rice, amounting to US$7.1 billion. Since export bans imposed to prevent shortages and to control domestic food prices did limit the traded volume, the extra revenues could have been higher if these measures were not taken. However, it is important to note here that the food security programmes implemented to ensure affordability of staples resulted in an increasing fiscal

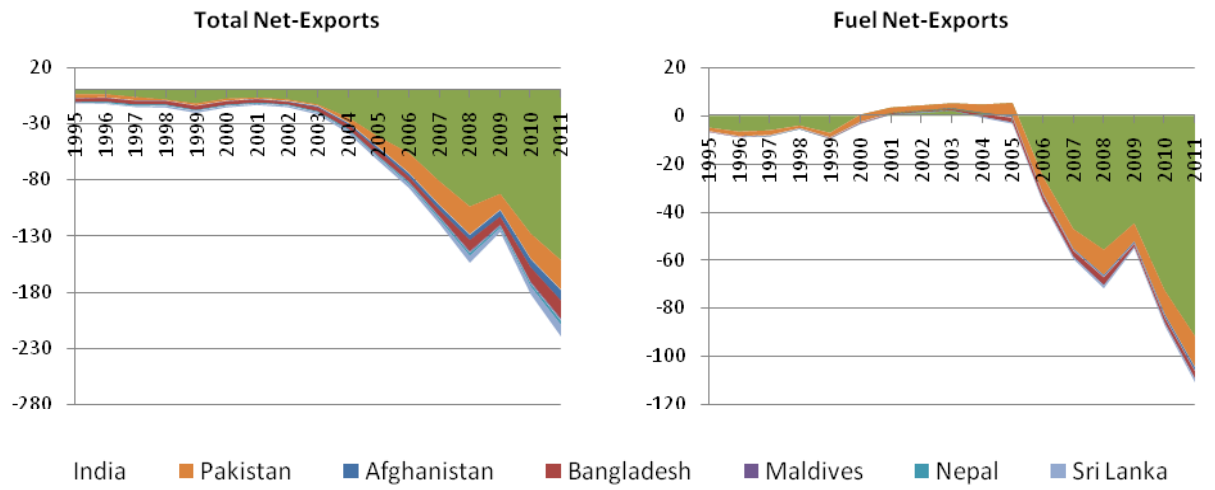
burden with rising prices. Further, the increase in global wheat prices coupled with rising demand for wheat imports resulted in $1.6 billion additional costs for wheat imports in 2008 alone. Should world prices have remained constant at the 2002 level, South Asia's import bill for wheat would have been less by US$3 billion over the time period of 2002 to 2008.

As tea prices also followed a rising trend, India and Sri Lanka as net exporters of tea gained extra revenues from the price increase, earning together additional US$1.3 billion from rising prices between 2002 and 2008. As cotton price increase was much less compared to other commodity groups, extra export revenues earned by India and Pakistan as net exporters from the price increase is marginal, just over US$63 million, while Bangladesh, Nepal, and Sri Lanka as net importers of cotton lint had to pay a higher price for imported raw materials for their garment industry.

Turning to metals and minerals, India's gains from its iron ore exports due to the price increase are estimated to be about US$16.4 billion over the period of 2002 and 2008. However, South Asia had to pay additional US$6.7 billion for imports of iron & steel and US$6.3 billion for aluminium imports for sustaining their booming construction sector and other industrial activities. India's estimated additional bill of US$10.7 billion for copper ore imports exceeds its copper industry's extra export revenues of US$5 billion from copper processed products.

However, it is energy commodity imports, especially crude oil imports that caused a massive trade deficit from the price hike observed in 2002-8, as the region increasingly depends on crude oil as a source for its overall energy supply. According to our estimate, the increase in world oil prices from 2002 to the price peak in 2008 added US$170 billion to the crude oil import bill for all countries in the region as a net importer. However, for refined oil products, South Asian countries other than India are net importers, while India is now a net exporter of oil products, having developed a large oil refining industry over the last decade. While India earned an additional US$31.2 billion due to the price rise in oil refined products over the period of 2002 to 2008, the import bill for the remaining South Asian nations increased substantially by US$11.8 billion. As demand for coal increased steadily in the entire region the coal price increase added an additional import bill of US$13.8 billion for South Asia as a whole and US$13 billion for India alone. Thus, increasing global energy prices, especially fuel prices together with the region's rising demand for energy commodities resulted in a huge trade deficit recorded since 2003 according to World Bank data (Fig.6.1). In 2011 the trade deficit of the entire region reached more than US$200 billion of which more than US$100 billion resulted from fuel imports.

Fig.6.1: South Asian Countries' Trade Balance for Total Net-Exports and Fuel Net-Exports (in Billion US$, 1995-2011)



Source: World Bank, 2010, World Development Indicators

6.2 Food security

There are two dimensions of food security which have to be considered: firstly availability or self-sufficiency on the aggregate level (quantity dimension), and secondly affordability on the individual level (price dimension) (Talukder, 2005). The former aspect concerns agricultural productivity and reliance on food imports as well as on the diversification of its import partners, while the latter deals with issues related to food prices as well as their impacts on overall inflation and hence on household real income.

South Asia, as the most densely populated regions in the world, has to feed one-fifth of the world's population with only 3.3 percent of the world's land area (Rasul, 2010).[23] As shown in figure 6.2 and table 5.2 major progresses have been made in raising agricultural productivity over the last five decades. However, the extent of productivity gains varies widely among South Asian countries. While Nepal could increase cereal yield per hectare by only 28.7 percent over the time period 1960 to 2010, Pakistan could more than triple its yields over the same time. Bangladesh, India, and Maldives could all more than double their yields (table 5.2).

However, the pace of productivity growth has slowed down or even declined recently for major food grains in Bangladesh, India, Pakistan and Nepal. Small countries such as the Maldives, Nepal, and Bhutan, and those which are frequently exposed to flooding and other natural disasters or experienced periods of political unrest, conflicts and even war like Afghanistan, agricultural yields were extremely volatile (Fig.6.2), imposing severe threats to food-security in terms of availability and self-sufficiency.

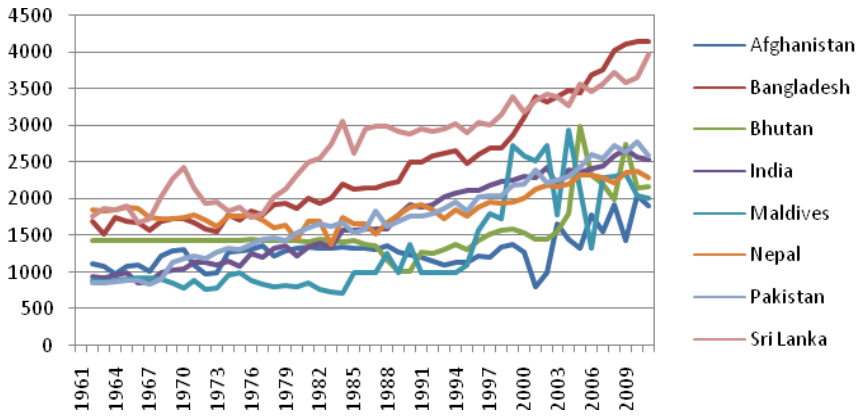
Table 5.2: Increase in Agricultural Productivity 1960-2010 for South Asian Countries

[23] . Naturally, the relevant share to consider here is not world's total land area as Rasul (2010) used but the arable land area.

	1960-70	1970-80	1980-90	1990-00	2000-10	1960-2010
Afghanistan	-0.94%	22.08%	-11.00%	-32.84%	153.65%	**83.41%**
Bangladesh	-0.89%	20.38%	24.17%	35.89%	22.35%	**146.31%**
Bhutan	-0.28%	-0.82%	-9.62%	12.69%	48.78%	**49.85%**
India	19.81%	18.96%	40.09%	21.30%	12.11%	**171.53%**
Maldives	0.44%	-4.72%	17.65%	151.11%	-18.70%	**129.86%**
Nepal	-3.47%	-5.35%	13.40%	11.27%	11.12%	**28.56%**
Pakistan	43.59%	31.18%	9.51%	36.31%	15.86%	**225.79%**
Sri Lanka	22.05%	16.08%	18.55%	12.58%	9.75%	**107.52%**

Source: World Bank, 2010, World Development Indicators (author's calculation)

Fig.6.2: Agricultural Productivity (in cereal yield kg per hectare, 1961-2010)



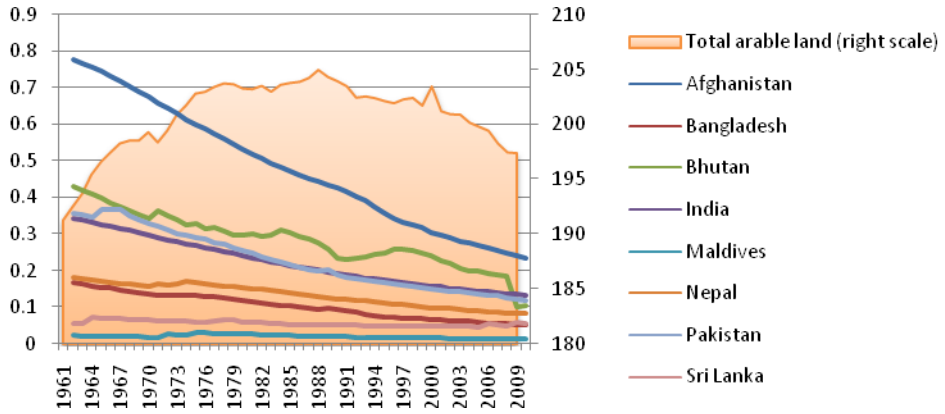
Source: World Bank, 2010, Development Indicators

Further, increasing urbanisation, population growth, soil degradation, and flooding have caused the amount of arable land per person to decrease substantially over the same period. Whilst Green revolution technologies have surely increased agricultural productivity to a remarkable degree in many South Asian countries, these technologies have also affected water, land, and the environment (Rasul, 2010). India today has one of the most irrigation dependent agricultures. Since the production of two major staple crops, rice and wheat of the region is extremely water intensive, this development is worrisome (ibid.). The decreasing ground-water level makes irrigation more and more costly and energy intensive, which results in ever higher levels of inputs needed, i.e. fertilisers and costly irrigation methods, to reach the same level of production, hence leading to lower profits for farmers even in times of high world prices.

Additionally, the region is estimated to be hardest hit by the impact of climate change regarding cereal production (von Braun, 2007). This is inter alia reflected in extreme flooding in increasing frequency (Dorosh, Malik, & Krausova, 2010). For example, Pakistan experienced floods in July 2010, which have left huge damage to agricultural crops and livestock, especially sugarcane, rice, vegetables, cotton and maize (wheat was less affected as it is cultivated in the winter season) (ibid.).

Furthermore, it is important to emphasise that food production is failing to keep pace with population growth in the South Asian region. Arable land per person declined inversely with population growth for all South Asian countries over time. Additionally, total arable land has decreased since the 1980s, due to urbanisation and environmental challenges (Fig.6.3).

Fig.6.3: Arable Land in South Asia (in hectares per person (left scale) and million hectares (right scale), 1961-2010)



Source: World Bank, 2010,World Development Indicators

Furthermore, those small economies with heavy reliance on food imports are high vulnerable to global price shocks as well as trade disruptions. Table 5.3 shows the import share in overall domestic supply of some of the region's essential staples as measured in daily caloric intake per person in 2007. While Pakistan, India and also Nepal are less dependent on food imports (with the exception of vegetable oils), Bangladesh, Sri Lanka and especially the Maldives are heavily dependent on imports to meet their domestic food demand.

Table 5.3: Import Dependency for Food Commodities in 2007 (in percentage of imports in total domestic supply)

	Cereals (total)	Rice	Wheat	Sugar	Vegetable Oils	Milk	Pulses
Bangladesh	11	2	79	87	90	11	67
India	1	0	3	0	40	0	17
Maldives	100	95	100	100	100	100	100
Nepal	5	9	0	10	81	1	4
Pakistan	1	0	1	16	65	1	30
Sri Lanka	38	5	100	95	100	77	89

FAO, 2007, Food Balance Sheet: Selected Countries (author's calculation)

Afghanistan, as a war-torn country, though not included in table 5.3 due to data unavailability, is known to be highly dependent on food imports, mainly wheat from Pakistan (Chabot & Dorosh, 2007). Milling products make up for four percent of Afghanistan's total import value already (Fig.5.1.2 appendix). Although relatively self-sufficient in rice production, Nepal remains a food-deficit country and hence dependent on imports from India to smooth domestic consumption (Sanogo & Amadou, 2010). The entire region is highly dependent on imports of vegetable and edible oil, which accounts for a substantial part of per capita daily caloric intake (see Fig.5.1). Pakistan and Bangladesh are the biggest importers of this commodity with edible

oil imports accounting for 5 and 9 percent of their entire import bills in 2010 respectively (Fig.5.1.2 appendix).

While South Asia's strong economic growth has translated into some decline in poverty and improvements in human development, the region is still home to most of the developing world's poor, having the largest number of malnourished people in the world (WB, 2010). With these pressing challenges, food security in terms of affordability besides availability is a major concern in all South Asian countries. Economies of the entire region were badly affected by the international price movements such as the food price hike observed in 2008. In particular, due to strong intra-regional trade in food and agricultural commodities, price policies taken by a few major countries at that time, i.e. export restrictions imposed by India and Pakistan resulted in large spillovers into neighbouring countries with higher food prices in Bangladesh, Afghanistan, Nepal, and other South Asian countries (Dorosh, 2008; Sanogo & Amadou, 2010).

Further, higher price for fuels and fertiliser squeezed profits for farmers, as discussed earlier. In countries like India, where the agricultural sector is highly subsidised for ensuring farmers' profitability as well as food affordability for consumers, rising input costs through oil, fertiliser and energy as well as high food prices impose a dual fiscal burden. However, government intervention in food markets for preventing major famine is widely practised in other South Asian countries. Price hikes as witnessed in 2007-8 hence pose severe challenge to the governments' fiscal positions (Dorosh, 2001). For many of the smaller economies where the government's fiscal space is low, food subsidies are not an option and global price movements hit the poorest of the population directly. Additionally, these economies are exposed to a real threat for food security by policy measures taken in times of scarcity by their larger neighbours like India and Pakistan. Bangladeshi food grain imports, for instance, rose steeply again at the time of rising prices in 2011 as the government sought to build large stocks, despite the high prices prevailing then (ADB, 2012).

We should note that in this region an only slight increase in food prices could throw many under the poverty line and cause a turn back to less nutrition-rich food staples with accompanying health problems (ADB, 2012). High and increasing import dependency would make many South Asian countries most vulnerable to global food price movements.

6.3 Energy security

South Asia's energy consumption per capita is lowest in the world, but energy intensity is relatively high, though slowly decreasing (Srivastava & Misra, 2007). It is true that many rural households are still relying on traditional source such as biomass and fuel wood for everyday energy needs (heating and cooking). Bhutan, for instance, has the highest per capita fuel wood consumption in the world and 54 percent of Indian rural households do not have access to electricity connection yet (ibid.). Providing better and securing energy supply for the vast majority of the region's population remains a major challenge. Further, unreliable power supply is a major bottleneck for industrial sectors of South Asian countries. It is estimated that

Bangladesh looses US$1 billion annually due to power supply shortages or interruptions. This results in 0.5 percent reduction in the country's annual GDP growth (Srivastava & Misra, 2007). Likewise, for the Pakistani economy the lack of energy supply is a major bottleneck for its development as it is seen as the main cause for its stagnating industrial and manufacturing sector and sluggish growth performances (ADB, 2012).

Given the economic importance of energy prices, many countries subsidise highly their energy sector. Hence, rising prices for energy commodities put an increasing pressure on government's budget. For Bangladesh, a recent report by the Asian Development Bank (ADB, 2012) predicted, a further increase in spending on subsidies from 2.2 percent to 3.4 percent of GDP in 2012. Foreign exchange needed to pay for the fuel import bill is also becoming scarce for the state-owned Bangladeshi Petroleum Cooperation. With a probable increase in fuel imports by more than half in 2013, foreign exchange has to be borrowed elsewhere in order to satisfy domestic demand (Srivastava & Misra, 2007). Likewise, in Pakistan, despite increases in tariffs and fuel price adjustments to global prices, customer tariffs remain below the level needed for cost recovery, and hence require government subsidies to keep the system operating (ADB, 2012). Nepal also experiences pressure on its foreign currency reserves resulting from an increasing energy import bill (Srivastava & Misra, 2007).

Import dependency of South Asian countries - foremost India - is likely to increase further in future given the region's economic growth and rising needs from construction and transportation sector as well as industry (IEA, 2009). Given the high dependency of the smaller countries on only a very few trade partners for energy commodity imports, disruption and shortages in those countries puts an additional threat to energy security. Further, steadily increasing oil imports together with rising oil prices puts a burden on foreign currency reserves, leads to widening external deficits, rising inflation, and puts an overall threat to the region's energy security.

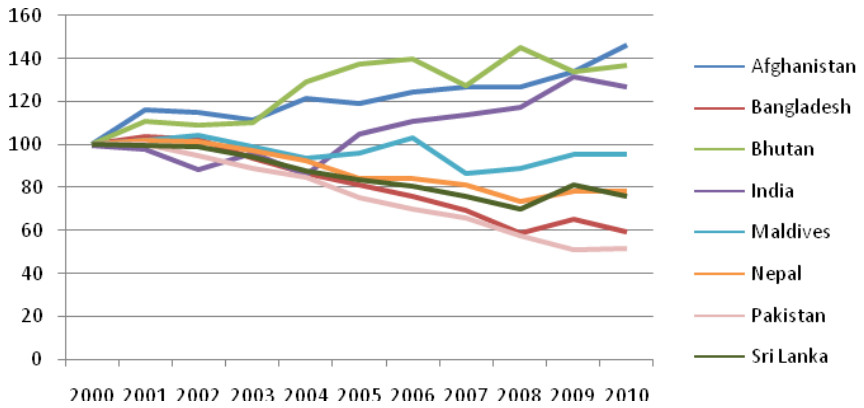
6.4 Macroeconomic Effects of Commodity Price Rise

As discussed in Sections 1 and 2, global commodity prices in nominal terms reached an all time high in 2007-mid 2008.For South Asia, this commodity price shock had major effects on macroeconomic conditions, resulting in: i) large terms-of-trade losses, ii) widening external deficits; iii) loss of foreign reserves and iv) higher inflation.

World Bank (2010) reports that terms-of-trade losses cumulative to May 2008 were about 9 percent of GDP for South Asian countries on average, and this was the greatest among all developing regions. The World Development Indicators published annually by the World Bank contain data on terms of trade effects disaggregated by individual countries of the region (Fig.6.4). With increasing prices for imported products relative to exported products, terms of trade deteriorated for Nepal, Sri Lanka, Bangladesh, and Pakistan. A constant devaluation of the Pakistani Rupee against the US Dollar since early 2008 further added to this trend. In contrast, for India terms-of-trade improved from 2004 onwards which is probably due to its relatively large exports of petroleum products. The improvement observed for Afghanistan is likely to be

driven by poppy exports, which still hold a very large share in overall exports. For Bhutan, energy exports to India might be the driver behind the improvements in terms-of-trade.

Fig.6.4: Terms of Trade Indices, annual (2000=100, 2000-2010)

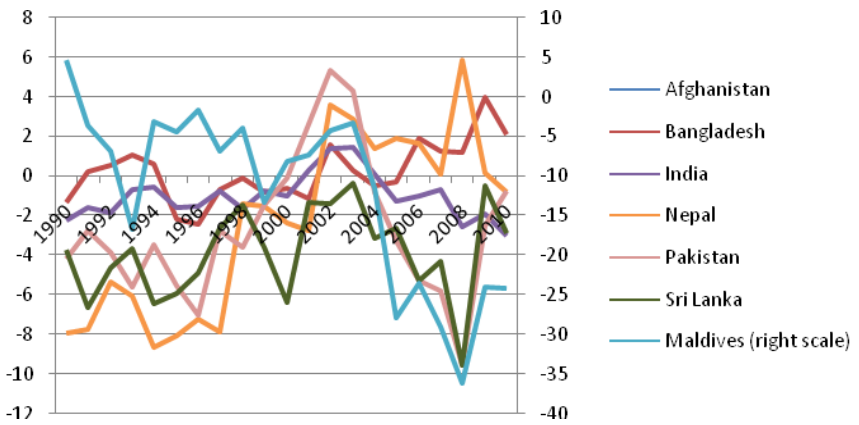


Source: World Bank, 2010, Development Indicators

Further, the balance of payments is under strain from high commodity prices, including increased oil imports for power generation, and weakened exports. Rising subsidy costs for power supply (mainly for fuel) have also intensified fiscal pressures (ADB, 2012). The external deficits widened for almost all countries except Nepal and Bangladesh over the recent commodity price peak due to larger import bills causing substantial trade deficits (Fig.6.5). Pakistan's current account deficit as ratio to GDP reached 9.6 percent in 2008 and was back to 2.5 percent in 2009. Sri Lanka had a similar magnitude of deficit, while the Maldives registered a 35 percent to GDP deficit in 2008. India's current account deficits widened since 2005, reaching a level of 2.5 percent as a ration to GDP in 2008 and after a short decline increased further to more than 2.9 percent in 2010.

Bangladesh and Nepal are the only South Asian country without a widening deficit over the recent commodity prices hike. However, Bangladesh's current account went negative in 2011 and reached a deficit of US$1.2 billion in 2012, since the rise in petroleum-product imports, coupled with the increase in oil prices, rising raw material prices for its garment industry as well as difficulties on the export side, especially garments exports as a result of the Euro zone crisis (ADB, 2012). Further, the external price shock resulted in a loss of foreign reserves for Pakistan, Bangladesh, Sri Lanka, and the Maldives, all of which experience reserves below the critical level of covering three month's import bills one time or another according to World Bank World Development Indicators.

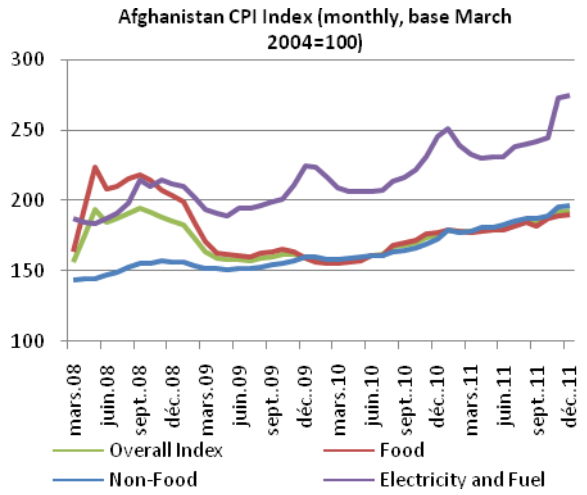
Fig.6.5: Current Account Balance (% of GDP, 1990-2010)

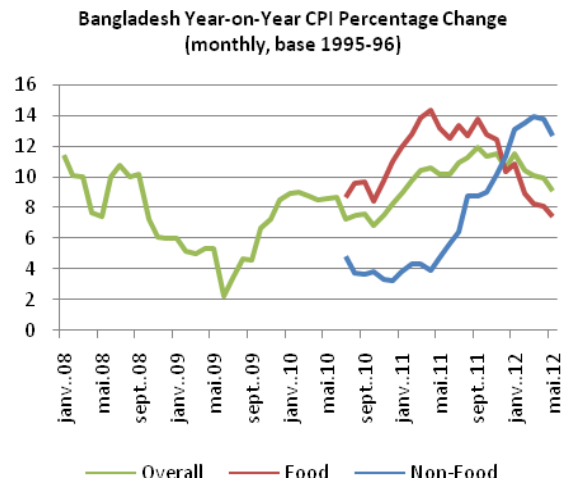


Source: World Bank, 2010, World Development Indicators

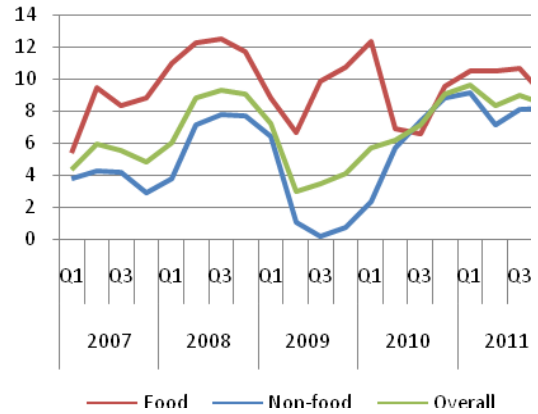
Further, given the persistently high commodity prices and elevated volatility, South Asian countries face strong inflationary pressure. Core inflation is rising not only with food prices but also with fuel prices. India's food price inflation followed global price movements with a lag and reached an 11-year high at almost 20 percent (year-on-year inflation rate) by the end of 2009 (Fig.6.6). For rice, sugar, pulses, and oil seeds - all major staples and basic food products in South Asia - the price hike was evident (WB, 2010). Due to the close link with its neighbouring countries in food and agricultural commodity trade, food inflation in India is spilling over to Bangladesh, Bhutan, Nepal, and Sri Lanka (ibid.). This is especially pronounced for Nepal and Bhutan as their currencies are pegged with the Indian Rupee and bilateral trade dependency is extremely high. Especially for smaller countries with a high dependency on imports in their domestic food supply like Afghanistan, Bangladesh, Bhutan, Maldives, and Sri Lanka food price inflation was significantly higher than non-food inflation at time of the price hike in 2008 and their inflation rates closely followed world food prices.

Fig.6.6: CPI Based Inflation Rates for South Asian Countries

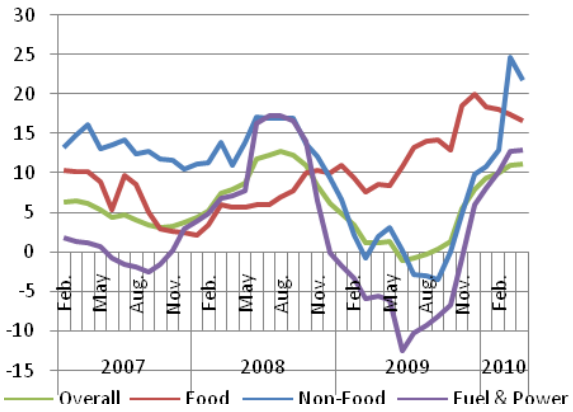




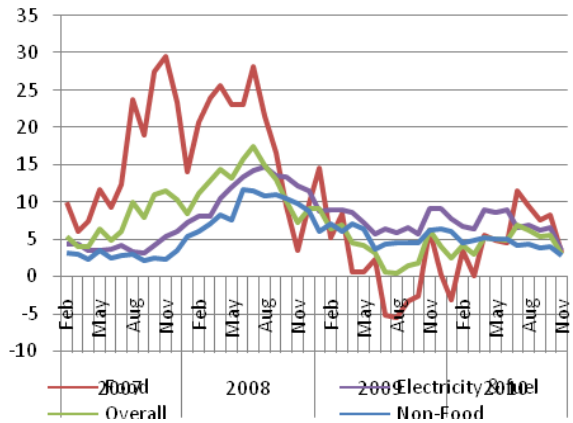
Bhutan CPI Year-on-Year Percentage Change (quarterly, base Q3-2003)



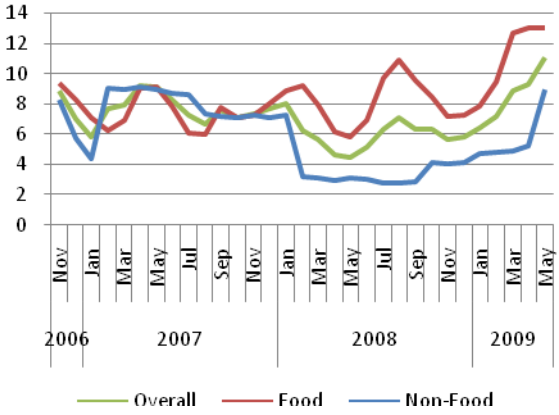
India Year-On-Year Percentage Change Wholesale Prices Index (monthly, base 1993-94=100)



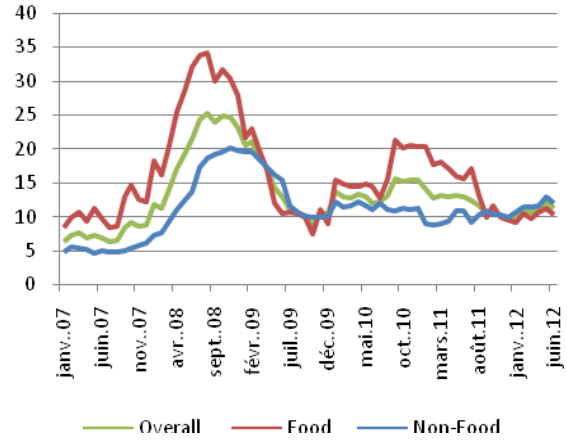
Maldives National CPI Year-On-Year Percentage Change (monthly, base June 2004=100)



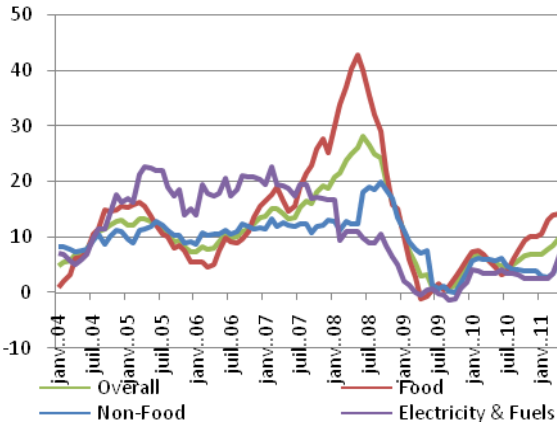
Nepal National Urban CPI Year-on-Year Change (monthly, base 1995/96=100)



Pakistan Year-on-Year CPI Inflation (monthly)



Sri Lanka, Colombo CPI Year-on-Year Inflation (monthly, base 2002=100)



Notes: Overall Index for different countries is weighted as following: *Afghanistan*: 61.3% Food, 38.7% Non-Food, 6.8% Housing/Electricity & Fuels; *Bangladesh:* 58.84% Food, 41.16% Non-Food, 16.87% Housing/Electricity & Fuels; *Bhutan:* 31.7% Food, 68.3% Non-Food; *India*: 15.40% Food, 6.14% Non-Food, 0.49% Minerals, 14.23% Housing/Fuels & Power, 63.75% Manufactured Products (excl.); *Maldives:* 33.31% Food, 66.69% Non-Food, 19.48% Housing/Electricity & Fuel; *Nepal:* 53.2% Food, 46.8% Non-Food; *Sri Lanka:* 46.70% Food, 53.3% Non-Food, 18.3%

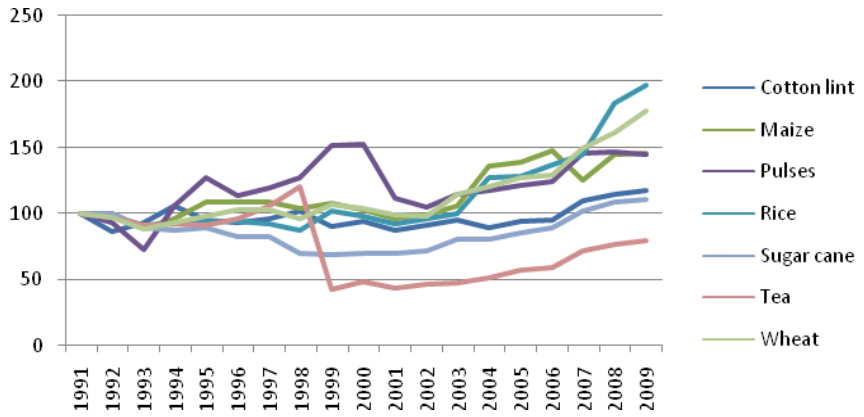
Housing/ Electricity & Fuels.

Sources: *Afghanistan*: Central Statistics Organization, Afghanistan Statistical Yearbook (various years)/DA Afghanistan Bank, Quarterly Economic and Statistical Bulletin (various quarters); *Bangladesh*: Bangladesh Bureau of Statistics, Monthly Economic Trends; *Bhutan*: Royal Monetary Authority Bhutan, Selected Economic Indicators (various volumes); *India*: Office of the Economic Adviser, Ministry of Commerce & Industry, Government of India, Index Numbers of Wholesale Prices in India - by Groups and Sub-Groups (various month); *Maldives*: Maldives Monetary Authority, Monthly Statistics (various month), Consumer Price Index - National; *Nepal:* Nepal Rastra Bank: Monthly Inflation Data: National Urban Consumer Price Index (various month); *Pakistan:* State Bank of Pakistan: Statistical Bulletin: Selected Economic Indicators (various month); *Sri Lanka:* Department of Census and Statistics Sri Lanka: Colombo Consumer Price Index: Inflation Sub-Group (base 2002=100)

In mid-2008 Bhutan's inflation rate peaked at 12.5 percent, food-price inflation in the Maldives reached almost 30 percent, while for Sri Lanka food inflation peaked at 40.2 percent then (Fig.6.6). Although less dependent on food imports than its smaller neighbours, for Pakistan the pass-through rate of world food prices to domestic prices was also high. Food price inflation there peaked 34.1 percent in mid-2008. India acted to counteract food inflation in 2007-8 by significant policy interventions such as export ban and subsidies, though inflation of fuel and energy prices could not be prevented.

In figure 6.7 we show our estimates of average producer prices for various agricultural commodities across South Asian countries. Producer prices increased from 2002 onwards in all countries. However, recalling domestic inflation patterns, the increase in producer prices is largely offset by high inflation.

Fig.6.7: Average Producer Prices Selected Commodities for South Asian Countries (in US$/tonne, 1991=100, 1991-2009)



Source: FAO, 2009, Producer Prices

While high food and agricultural commodity prices might be thought to be beneficial for farmers, poor households even in rural areas of South Asia are net-buyers of food and hence strongly affected by rising food prices (WB, 2010). Further, although producer prices were increasing, producer profits were squeezed by higher input costs. Rising input prices offset any gains in producer prices not only for the agricultural but also for the industrial sector (Datamonitor, 2011a). For example, price volatility on global markets for essential input factors like coal is an increasing burden for the industry (Dutta & Mukherjee, 2010). Steelmakers recently broke a 40-year tradition of annual pricing in favour of adopting a contract system based on a quarterly index of iron ore and coking coal prices (Datamonitor, 2011b). This is probably the industry's

reaction to increasing price risk induced by high price volatility. This would leave especially steelmakers vulnerable to significant price risk (ibid.).

Especially for smaller South Asian economies, highly dependent on commodity imports, the pass through rate of global commodity prices to domestic prices is high. Such high inflation rates disproportionally affect the poor and vulnerable non-poor households (WB, 2010). Safety net programs and food and energy subsidies are costly, imposing an increasing fiscal burden, putting high pressure on the countries' balance of payments and causing depletion of foreign reserves.

7. Concluding remarks

7.1. Overall findings of commodities related issues facing South Asia

South Asia's share in global commodity trade is still much smaller than its neighbouring regions such as East and Southeast Asia.. Further, while several countries of the region other than India such as Bangladesh, Bhutan, Sri Lanka, and Pakistan are a significant player in global trade of food and agricultural commodities, trade in mineral and metals as well as in fuels and energy commodities is dominated by India alone. South Asia's trading in commodities are conducted more with East, South-East, and West Asia as well as Sub-Saharan Africa than with advanced economies such as those in North America or Europe. Furthermore, since intra-regional trade contributes to a large share of overall commodity trade in South Asia, many smaller countries in the region are heavily dependent on commodity imports and exports from India or Pakistan. Overall, given that India is by far the biggest economy in the region, it serves as an important supplier as well as market for commodity imports and exports of its neighbouring countries. At the same time, India's own reliance on its neighbouring countries for exports and imports is low, and hence engaged more in trade with countries outside the South Asian region. Hence, the region's overall pattern in commodity trade with outside world reflects largely India's, which is by far the biggest economy in South Asia and an economic driver for the region.

With the high growth rates over the last decade or so as well as the environmental and demographic changes, the pattern of commodity demand and supply of South Asia has shifted dramatically in recent years. For energy and metal commodities, both demand and supply capacities have concomitantly increased as the economies have grown over the last decade. However, the region faces pressing challenges in feeding a growing population with decreasing agricultural yields and arable land per capita. Historically India has followed a policy of self-sufficiency in food with its subsidised agricultural sector through policies of minimum prices for key agricultural products as well as input subsidies. India's food commodity imports are relatively low compared to other densely populated regions like East and South-East Asia. Since India lifted its export ban on rice and wheat in mid 1990s, it became one of the largest rice producers globally and together with Pakistan it accounts for more than one quarter of world rice exports. Smaller countries in the region have become heavily dependent on these larger economies' supply capacity. Hence, India's decision to re-impose export bans on rice and other stables during the commodity price peak in 2008 had major impacts on prices and availabilities of staple foods in these smaller economies as well as on world prices of these commodities.

India is clearly dominating the region's overall trade patterns in minerals and metals as well, though India's role in global commodity trade in this category is still relatively small, especially compared to China. However, this may change in future as India's focus on restructuring its historically service based economy. In this regard, India as well as other countries in the region

face one of persistent challenges for developing mining and metal industry with more secure power supply.

India is also the main driving force behind South Asia's energy commodity trading patterns, accounting for over 80 of South Asian total energy commodity demand. Today, it is the fourth largest overall energy consumer, the third largest consumer of coal and fourth largest consumer of oil in the world, though its share in global trade of energy commodities are much smaller compared with China, the US or Russia with significant coal reserves and domestic production. With increasing economic growth as well as population growth India's energy demand is likely to increase further in future which puts pressure on the government to ensure its growing energy needs as vital inputs for industry, manufacturing as well as agriculture. Given India's low natural endowments in oil, the dependency on oil imports - already high - is likely to increase, as it has become a significant exporter of petroleum products with its increasing refinery capacity. Also coal imports are likely to increase because of growing demand from its metal and mining industry for high quality coal.

Given the overall picture of the region's patterns of commodity trade as well as domestic supply-demand balances, South Asia can be a net exporter or net importer depending on the commodity in question. In this regard, it can be either winners or losers from commodity price movements, in terms of implications of commodity price super-cycle for the region's balance of payments. However, the high price volatility of commodity prices has definitely posing a significant threat to the region's security of strategic commodities such as food and fuels as well as to macroeconomic stability. High levels and extreme volatility of commodity prices would impose severe constraints on the region's aspiration for accelerating industrialisation and sustaining economic growth as well as their ambition to provide access to foods as basic human rights to growing population and to achieve significant poverty reduction. Smaller countries in the region are subject to much higher vulnerability to price shocks as their pass-rate of import prices to domestic inflation is high. They are also highly vulnerable to trade policies adopted by the larger neighbours as their dependence on intra-regional trade for supply of basic commodities is very high. Since only a slight increase in food prices could throw both the urban and rural poor under the poverty line in South Asia, high and increasing import dependency would make many South Asian countries most vulnerable to global food price movements.

7. 2. Policy Implications

With the sharp swings and continued high volatility of commodity prices affecting the course of the global economy in the new millennium, the "commodities and development" are back to the international policy agenda. The "revival" of interests in this topic could potentially make an important difference to the plight of low-income developing countries. Especially, this is because the commodity related development challenges facing these countries were eclipsed by the dominant "free trade and globalisation" agenda in international policy discussions throughout the 1980s and 1990s. At this historical juncture, we should remind us that formulating appropriate policies to address the "commodity" issues for development would require an in-depth

understanding of the nature and sources of structural vulnerability of these developing countries when they are exposed to shocks originating in world commodity markets as either exporters or importers.

From this perspective in mind, the paper examined the historical evolution and the recent developments in commodity markets, trade and production, before discussing specific cases facing developing countries in South Asia. At the country level, effective commodity sector specific development strategies should be built around realistic and practically feasible goals. These goals should be set with the overall objectives of reducing the degree of exposure to shocks as well as building the resilience at micro and macro levels through persistent and innovative investment in productive capacity. Hence, any commodity sector-specific interventions should be incorporated into a country's overall development strategy in improving agricultural productivity, poverty reduction and sustainability of its growth and development path. Furthermore, to be effective in fast-changing commodity markets, policy makers would need to undertake continuous assessments and filtering of available intervention instruments in relation to prior agreed indicators of commodity related vulnerability with its negative feedback loop identified in a country specific context.

We should bear in mind that market-based solutions and instruments do not necessarily provide fragile countries and fragmented producers with workable solutions to improve their competitiveness in commodity production and trade with reduced risks of exposure to huge shocks from price volatility. Greater attention should be paid to building the resilience of commodity producers and consumers through rigorous investment in sustained productivity growth and institutional capability for creating an economic base for advancing social development goals. Given South Asia's high degree of intra-region trade in commodities, it is also important to achieve much more coherence and coordination in policy responses to commodity price shocks within the region.

Further, it is important to note that the continued extreme volatility of commodity prices has become a major source of instability to the world economy. The highly unstable commodity prices over the past decade have also had profound impacts on the course of economic development of both commodity exporting and importing developing countries alike. The instability originating from world commodity exchanges have added considerable strains and setbacks on the progress in socio-economic development in low income developing countries worldwide. The sharp price rise of strategic commodities such as grains and fuels hit particularly hard poor countries heavily dependent on imports of these commodities.

Because the problems associated with excessive volatility of commodity prices and the resulting income instability have global dimension and implications, there is a strong case for coherent global policies and actions. As examined and discussed in details in Nissanke (2010b, 2012), the global community should seriously consider establishing two new global facilities to address commodity related development issues collectively: a) innovative stabilisation schemes through *virtual* intervention to reduce large swings of commodity prices, well in excess of what could be explained in demand-supply fundamentals of individual commodities and standard macroeconomic variables; and b) a new compensatory financing facility such as a state-contingent compensating facility as a basis for counter-cyclical macroeconomic demand management to mitigate negative impacts of income instability associated with exogenous shocks such as large price swings of strategic commodities. Both schemes discussed therein have innovative elements to suit a new challenge in this millanium.

An establishment and successful operation of these schemes would depends on the political exigency and willingness of the global community to support innovative schemes to reduce excessive price volatility and income instability that have derailed socio-economic development of low-income countries so far. It can be recalled that the lack of strong political and financial support has led to the demise of the earlier stabilisation mechanisms and compensatory financing facilities. It is no longer acceptable to let low income countries to bear large share of global costs of volatility and instability originating in world commodity exchanges, where large financial investors exert considerable influences on price dynamics in pursuit for high private returns on high frequency transactions. This demands a new international policy framework that contains a series of concerted global actions to address commodity related development challenges at source. As often the case, power and will to counteract destabilizing market forces still lies largely with developed nations. Without a radical change of their mindsets and approaches to commodity related development challenges, the world's poorest people will continue to pay the highest price and socio-economic development of low-income developing countries cannot be placed in a secure and sustainable path. Emerging market economies such as India are now acquiring more voices in global economic issues. They are now in a position to exercise their rights and responsibility to debate actively appropriate policy actions to overcome commodity related development challenges as both exporters and importers by representing interests of the developing world as a whole.

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8. Appendix

Table 4.1.1: Food and Agricultural Commodities Trade Matrix: 2010 Percentage Share of Partner in Reporting Country's Exports/Imports

		REPORTER												
	Export Import	China	Russia	USA	South Asia	South Asia ex. India	East & South-East Asia	West Asia	North Africa	Sub-Saharan Africa	South & Central America	Oceania	Europe	World
PARTNER	China	0.00	24.66	16.44	**9.82**	**3.92**	17.10	0.56	1.33	6.12	10.56	15.19	1.45	**7.73**
		0.00	4.38	5.60	**8.62**	**3.63**	10.33	1.94	1.72	3.26	2.05	5.91	1.58	**3.56**
	Russia	2.91	0.00	0.90	**1.96**	**3.69**	1.05	2.99	3.79	1.52	3.54	1.15	2.53	**2.63**
		4.93	0.00	0.46	**0.13**	**0.89**	0.91	1.88	3.86	0.53	0.21	0.06	0.69	**1.43**
	USA	12.06	0.95	0.00	**6.10**	**4.25**	9.29	1.58	3.04	4.85	17.96	7.60	3.38	**7.97**
		22.49	3.96	0.00	**13.18**	**4.10**	16.36	7.21	12.35	6.61	36.87	9.53	2.70	**10.60**
	South Asia	**2.83**	**0.95**	**1.48**	**15.17**	**20.43**	**8.97**	**4.50**	**2.77**	**4.11**	**2.18**	**4.30**	**0.34**	**2.74**
		2.73	**2.04**	**1.93**	**4.39**	**24.10**	**3.40**	**9.08**	**2.35**	**3.96**	**0.50**	**2.05**	**0.94**	**2.44**
	South Asia ex. India	**1.63**	**0.61**	**0.59**	**12.99**	**12.36**	**3.09**	**2.96**	**1.24**	**1.50**	**0.76**	**2.63**	**0.17**	**1.32**
		0.33	**1.05**	**0.27**	**0.30**	**3.96**	**0.57**	**2.38**	**0.24**	**1.62**	**0.17**	**0.65**	**0.26**	**0.59**
	East & South-East Asia	33.91	7.89	15.19	**16.62**	**9.15**	26.19	5.81	1.20	7.27	7.41	25.62	2.70	**10.35**
		20.52	5.07	13.42	**39.11**	**29.01**	26.61	8.30	5.37	15.11	3.77	20.88	3.81	**10.90**
	West Asia	3.35	9.63	4.20	**22.09**	**26.04**	4.15	59.58	24.20	5.40	6.37	6.82	2.84	**6.13**
		0.36	4.07	0.57	**4.18**	**3.62**	0.88	23.82	4.07	3.71	0.23	0.99	1.13	**2.68**
	North Africa	1.25	8.70	2.61	**2.25**	**1.25**	1.65	3.71	12.78	2.96	3.13	2.23	1.83	**2.35**
		0.14	1.26	0.31	**0.07**	**0.54**	0.12	3.07	3.42	2.26	0.11	0.06	0.82	**0.80**
	Sub-Saharan Africa	2.34	0.96	1.75	**4.80**	**8.38**	4.21	4.60	10.15	17.93	2.39	1.94	1.90	**2.92**
		2.64	2.21	1.93	**3.40**	**3.33**	2.17	2.74	3.75	20.81	0.33	2.02	3.52	**3.22**
	South & Central America	3.05	0.26	17.33	**0.95**	**1.39**	1.83	0.34	0.56	0.75	15.33	1.72	0.97	**4.90**
		20.71	18.97	30.63	**9.65**	**6.92**	11.10	12.00	19.44	10.89	41.40	5.86	9.64	**14.83**
	Oceania	1.56	0.03	0.97	**0.79**	**1.01**	1.89	0.42	0.08	0.67	0.41	7.29	0.52	**1.00**
		7.00	1.33	3.52	**12.34**	**5.77**	9.88	3.57	3.65	2.53	1.17	24.29	0.96	**3.70**
	Europe	14.86	22.89	9.63	**14.29**	**16.34**	12.05	16.02	37.68	42.11	23.48	9.24	77.11	**41.02**
		8.16	38.09	17.16	**7.64**	**5.89**	10.97	20.04	32.38	26.46	7.63	22.92	71.13	**38.21**
	Other Regions	21.89	23.10	29.50	**5.14**	**4.14**	11.62	-0.11	2.43	6.31	7.25	16.91	4.44	**10.28**
		10.25	18.62	24.47	**5.63**	**12.20**	7.26	6.36	7.65	3.86	5.73	5.42	3.09	**7.63**

Note: Food and agricultural commodities comprise of all food items including food and live animals, beverages and tobacco, oil seeds, and animal and vegetable oils (SITC 0+1+22+4) as well as agricultural raw materials (SITC 2 less 22, 27, and 28).
Further, the regional category "South Asia" does not concur with the category "Southern Asia" as defined by UNCTAD Stat. The latter category also includes the Islamic Republic of Iran in Southern Asia, while the Islamic republic of Iran in the above analysis is added to "West Asia" as a region. In the category "East & South-East Asia" China is excluded. Japan, Canada, and other countries not included in the above listed regional categories are included in "Other Regions."
The table is calculated using merchandise trade data by trading partner and product based on SITC, Rev.3 commodity classification, expressed in annual trade dollar values.

Source: *UNCTAD Stat, 2011, Merchandise Trade Matrix (author's calculation)*

Table 4.2.1: Metals and Minerals Trade Matrix: 2010 Percentage Share of Partner in Reporting Country's Exports/Imports

		REPORTER												
	Export Import	China	Russia	USA	South Asia	South Asia ex. India	East & South-East Asia	West Asia	North Africa	Sub-Saharan Africa	South & Central America	Oceania	Europe	World
PARTNER	China	0.00	4.03	15.19	**40.38**	**17.96**	23.59	7.07	5.37	26.86	28.55	50.56	3.62	**16.22**
		0.80	11.98	5.55	**13.77**	**9.95**	14.64	7.15	8.90	13.18	9.66	14.90	2.15	**5.73**
	Russia	1.97	0.00	0.13	**0.15**	**0.53**	0.37	0.31	0.26	0.41	0.02	0.00	0.89	**0.99**
		2.05	0.00	4.58	**1.82**	**1.39**	3.28	8.48	4.93	0.78	1.69	0.14	5.63	**4.47**
	USA	7.14	7.15	0.00	**4.60**	**0.66**	4.45	2.41	4.78	7.89	11.23	1.01	4.00	**6.86**
		3.48	0.96	0.00	**3.77**	**3.42**	4.50	3.41	2.75	2.86	24.15	4.60	2.48	**4.98**
	South Asia	**6.80**	**1.59**	**1.74**	**5.65**	**61.55**	**6.15**	**10.01**	**4.59**	**2.39**	**2.03**	**2.50**	**1.76**	**3.00**
		6.63	**0.51**	**1.89**	**1.60**	**22.94**	**1.91**	**5.51**	**1.87**	**6.05**	**1.09**	**1.10**	**0.62**	**2.62**
	South Asia ex. India	**1.21**	**0.31**	**0.30**	**3.38**	**9.76**	**1.06**	**1.72**	**0.84**	**0.31**	**0.02**	**0.06**	**0.23**	**0.51**
		0.18	**0.08**	**0.02**	**0.06**	**1.63**	**0.07**	**0.03**	**0.07**	**0.13**	**0.00**	**0.02**	**0.03**	**0.11**
	East & South-East Asia	39.87	8.50	11.52	**11.56**	**6.80**	35.10	11.48	3.64	8.85	10.69	18.40	2.79	**14.45**
		12.16	3.90	5.85	**35.11**	**18.14**	20.03	6.53	3.43	3.99	5.23	16.83	1.68	**8.85**
	West Asia	7.77	15.68	3.45	**17.73**	**1.91**	4.10	43.90	21.55	2.02	2.00	0.24	4.50	**6.44**
		2.71	1.13	1.28	**2.11**	**10.01**	2.45	21.11	11.74	5.59	1.48	0.76	1.63	**3.64**
	North Africa	1.73	1.12	0.53	**0.60**	**0.46**	0.45	6.03	11.65	0.47	0.87	0.10	2.09	**1.41**
		0.21	0.13	0.34	**0.14**	**1.53**	0.13	1.81	3.66	1.87	0.67	1.74	0.61	**0.55**
	Sub-Saharan Africa	3.52	0.21	0.49	**3.20**	**1.08**	0.58	2.34	5.09	8.27	0.45	0.16	0.76	**1.31**
		7.83	2.40	5.31	**2.41**	**3.88**	3.28	2.04	1.99	25.99	1.38	1.79	3.68	**4.85**
	South & Central America	6.86	1.15	15.71	**1.60**	**0.60**	2.53	1.43	4.32	1.05	11.55	0.26	1.48	**3.92**
		21.14	0.45	19.82	**4.24**	**0.90**	9.21	4.23	5.97	7.75	33.48	12.83	7.27	**12.70**
	Oceania	2.59	0.02	0.56	**0.25**	**0.03**	1.83	0.26	2.03	0.28	0.65	0.95	0.25	**0.71**
		21.98	1.59	2.28	**6.80**	**3.01**	9.58	2.04	0.50	3.77	0.95	9.55	0.85	**7.61**
	Europe	11.41	49.92	22.05	**9.51**	**6.50**	6.50	14.49	36.61	28.21	18.97	2.83	74.44	**34.81**
		7.89	27.31	17.73	**4.48**	**14.38**	6.03	23.68	43.69	20.73	11.64	11.41	66.19	**30.04**
	Other Regions	10.35	10.64	28.65	**4.78**	**1.93**	14.34	0.26	0.11	13.30	12.99	22.98	3.41	**9.88**
		13.12	49.63	35.38	**27.95**	**10.45**	24.94	14.00	10.57	7.45	8.59	24.34	7.23	**13.95**

Note: Mineral and metal commodities comprise of ores and metals (SITC 27+28+68) as well as iron and steel (SITC 67).
Further, the regional category "South Asia" does not concur with the category "Southern Asia" as defined by UNCTAD Stat. The latter category also includes the Islamic Republic of Iran in Southern Asia, while the Islamic republic of Iran in the above analysis is added to "West Asia" as a region. In the category "East & South-East Asia" China is excluded. Japan, Canada, and other countries not included in the above listed regional categories are included in "Other Regions."
The table is calculated using merchandise trade data by trading partner and product based on SITC, Rev.3 commodity classification, expressed in annual trade dollar values.

Source: UNCTAD Stat, 2011, Merchandise Trade Matrix (author's calculation)

Table 4.3.1: Trade Matrix Fuels and Energy Commodities: 2010 Percentage Share of Partner in Reporting Country's Exports/Imports

		REPORTER												
	Export Import	China	Russia	USA	South Asia	South Asia ex. India	East & South-East Asia	West Asia	North Africa	Sub-Saharan Africa	South & Central America	Oceania	Europe	World
PARTNER	China	0.00	3.99	1.65	**1.00**	**1.42**	12.34	9.25	10.02	19.16	7.54	10.29	0.27	**7.27**
		0.00	5.64	0.14	**4.28**	**0.13**	4.29	1.06	0.01	0.39	0.46	0.47	0.08	**0.90**
	Russia	0.83	0.00	0.06	**0.01**	**0.00**	0.08	0.02	0.00	0.00	0.00	0.00	0.24	**0.17**
		6.80	0.00	5.27	**3.17**	**0.76**	3.80	20.04	9.55	0.08	1.09	1.76	22.19	**11.73**
	USA	3.25	2.32	0.00	**1.62**	**0.01**	2.98	8.48	13.50	29.23	53.52	0.43	6.16	**14.11**
		0.87	2.40	0.00	**2.20**	**0.11**	1.61	3.37	5.47	2.30	36.52	1.09	2.03	**3.41**
	South Asia	**2.20**	**0.31**	**1.36**	**5.53**	**54.38**	**5.01**	**13.38**	**2.82**	**9.44**	**4.48**	**11.45**	**0.16**	**5.38**
		0.18	**0.07**	**0.66**	**4.50**	**10.46**	**3.64**	**9.47**	**2.11**	**8.26**	**2.25**	**0.05**	**0.98**	**1.69**
	South Asia ex. India	**0.54**	**0.18**	**0.01**	**5.27**	**47.08**	**1.40**	**2.31**	**0.04**	**0.14**	**0.00**	**0.08**	**0.02**	**0.88**
		0.00	**0.00**	**0.00**	**0.07**	**1.45**	**0.13**	**0.32**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.05**
	East & South-East Asia	63.71	5.00	7.01	**25.73**	**18.66**	49.10	39.99	3.35	5.17	5.57	23.90	0.98	**17.90**
		16.45	3.92	1.45	**39.61**	**8.70**	28.20	2.35	2.33	3.52	3.62	58.80	0.75	**9.13**
	West Asia	2.71	3.46	1.60	**18.24**	**24.54**	0.63	3.20	3.78	0.45	0.24	0.34	1.74	**2.24**
		36.11	2.83	14.12	**33.01**	**72.50**	43.92	33.84	28.52	26.95	4.43	12.61	8.25	**24.65**
	North Africa	0.05	0.29	1.40	**1.11**	**0.00**	0.21	0.94	1.89	0.28	0.11	0.02	1.65	**0.77**
		6.75	0.01	4.95	**0.68**	**0.29**	1.01	3.99	11.07	0.73	3.03	1.47	9.62	**5.36**
	Sub-Saharan Africa	1.90	0.01	1.75	**9.33**	**0.24**	0.91	1.86	0.20	8.04	0.30	0.55	2.68	**2.02**
		18.70	0.04	15.00	**1.44**	**1.34**	2.50	1.27	1.68	35.83	9.93	4.14	4.28	**7.83**
	South & Central America	9.88	0.18	40.90	**4.51**	**0.04**	1.09	0.69	2.33	5.27	12.67	2.22	1.60	**3.73**
		6.87	0.28	25.94	**2.29**	**0.00**	1.27	0.94	1.28	1.06	22.99	0.03	1.85	**7.05**
	Oceania	0.78	0.03	0.35	**0.02**	**0.00**	8.02	0.84	0.31	0.51	0.01	2.55	0.01	**1.16**
		4.31	0.00	0.08	**2.37**	**0.11**	4.84	0.50	0.08	0.58	1.79	5.74	0.60	**2.87**
	Europe	5.13	58.88	18.77	**19.69**	**0.01**	2.82	8.00	56.28	17.65	7.89	5.84	77.09	**30.42**
		0.75	22.55	6.65	**2.57**	**0.47**	1.57	13.24	35.98	19.11	7.49	0.25	38.51	**15.77**
	Other Regions	9.57	25.52	25.15	**13.23**	**0.72**	16.80	13.34	5.51	4.79	7.67	42.41	7.41	**14.82**
		2.20	62.25	25.74	**3.88**	**5.14**	3.35	9.91	1.92	1.19	6.40	13.60	10.84	**9.62**

Note: Fuels and energy commodities comprise of mineral fuels, lubricants and related materials including coal, petroleum, gas, and electricity current (SITC 3).
Further, the regional category "South Asia" does not concur with the category "Southern Asia" as defined by UNCTAD Stat. The latter category also includes the Islamic Republic of Iran in Southern Asia, while the Islamic republic of Iran in the above analysis is added to "West Asia" as a region. In the category "East & South-East Asia" China is excluded. Japan, Canada, and other countries not included in the above listed regional categories are included in "Other Regions."
The table is calculated using merchandise trade data by trading partner and product based on SITC, Rev.3 commodity classification, expressed in annual trade dollar values.

Source: *UNCTAD, 2010, Merchandise Trade Matrix (author's calculation)*

Table 4.4.1: South Asian Intra-regional Trade in Food and Agricultural Commodities in 2010

PARTNER	REPORTER							
Exports Imports	Afghanistan	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
Afghanistan	0.00	0.26	0.00	0.25	0.00	0.00	12.29	0.00
	0.00	0.03	0.00	0.99	0.00	0.00	0.70	0.00
Bangladesh	0.75	0.00	25.01	5.23	0.00	22.83	4.69	0.15
	0.05	0.00	4.85	0.62	0.04	0.78	1.07	0.02
Bhutan	0.00	0.23	0.00	0.07	0.00	0.28	0.00	0.00
	0.00	0.17	0.00	0.85	0.00	0.00	0.00	0.00
India	40.31	12.62	71.28	0.00	0.15	65.74	1.59	8.37
	3.51	32.68	78.47	0.00	16.46	38.79	10.57	23.39
Maldives	0.00	0.00	0.00	0.10	0.00	0.00	0.06	0.83
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67
Nepal	0.00	0.18	1.16	1.15	0.00	0.00	0.00	0.01
	0.00	0.27	1.64	1.01	0.00	0.00	0.01	0.16
Pakistan	25.60	5.00	0.00	3.45	0.09	0.19	0.00	1.98
	39.25	1.36	0.00	0.45	1.50	0.11	0.00	2.30
Sri Lanka	0.00	0.04	0.00	2.20	9.12	0.69	2.18	0.00
	0.01	0.07	0.00	1.31	11.56	0.04	0.81	0.00
South Asia total	**66.67**	**18.33**	**97.46**	**12.45**	**9.36**	**89.72**	**20.82**	**11.35**
	42.82	**34.58**	**84.96**	**5.23**	**29.56**	**39.72**	**13.17**	**26.54**

Source: *UNCTAD, 2010, Merchandise Trade Matrix (author's calculation)*

Table 4.4.2: South Asian Intra-Regional Trade in Metals and Minerals in 2010

PARTNER	REPORTER							
Export Import	Afghanistan	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
Afghanistan	0.00	0.09	0.00	0.03	0.00	0.00	14.91	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.94	0.00
Bangladesh	0.00	0.00	5.36	0.79	0.00	0.00	0.23	0.06
	0.04	0.00	0.01	0.07	0.00	0.00	0.01	0.39
Bhutan	0.00	0.00	0.00	0.09	0.00	1.63	0.00	0.00
	0.00	0.36	0.00	0.15	0.13	0.01	0.00	0.00
India	0.64	13.86	91.55	0.00	73.77	98.24	5.41	52.12
	5.49	20.86	76.40	0.00	53.82	65.09	5.73	30.23
Maldives	0.00	0.00	0.00	0.07	0.00	0.00	0.00	1.01
	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01
Nepal	0.00	0.00	0.47	0.74	0.00	0.00	0.00	0.00
	0.00	0.00	0.75	0.67	0.00	0.00	0.00	0.00
Pakistan	86.37	0.21	0.00	0.38	0.00	0.00	0.00	1.41
	39.20	0.10	0.00	0.04	0.03	0.00	0.00	1.80
Sri Lanka	0.76	2.04	0.00	0.99	1.57	0.00	3.33	0.00
	0.00	0.01	0.00	0.11	2.11	0.02	0.04	0.00
South Asia total	**87.77**	**16.21**	**97.37**	**3.09**	**75.34**	**99.86**	**23.88**	**54.60**
	44.74	**21.33**	**77.15**	**1.05**	**56.10**	**65.12**	**6.72**	**32.44**

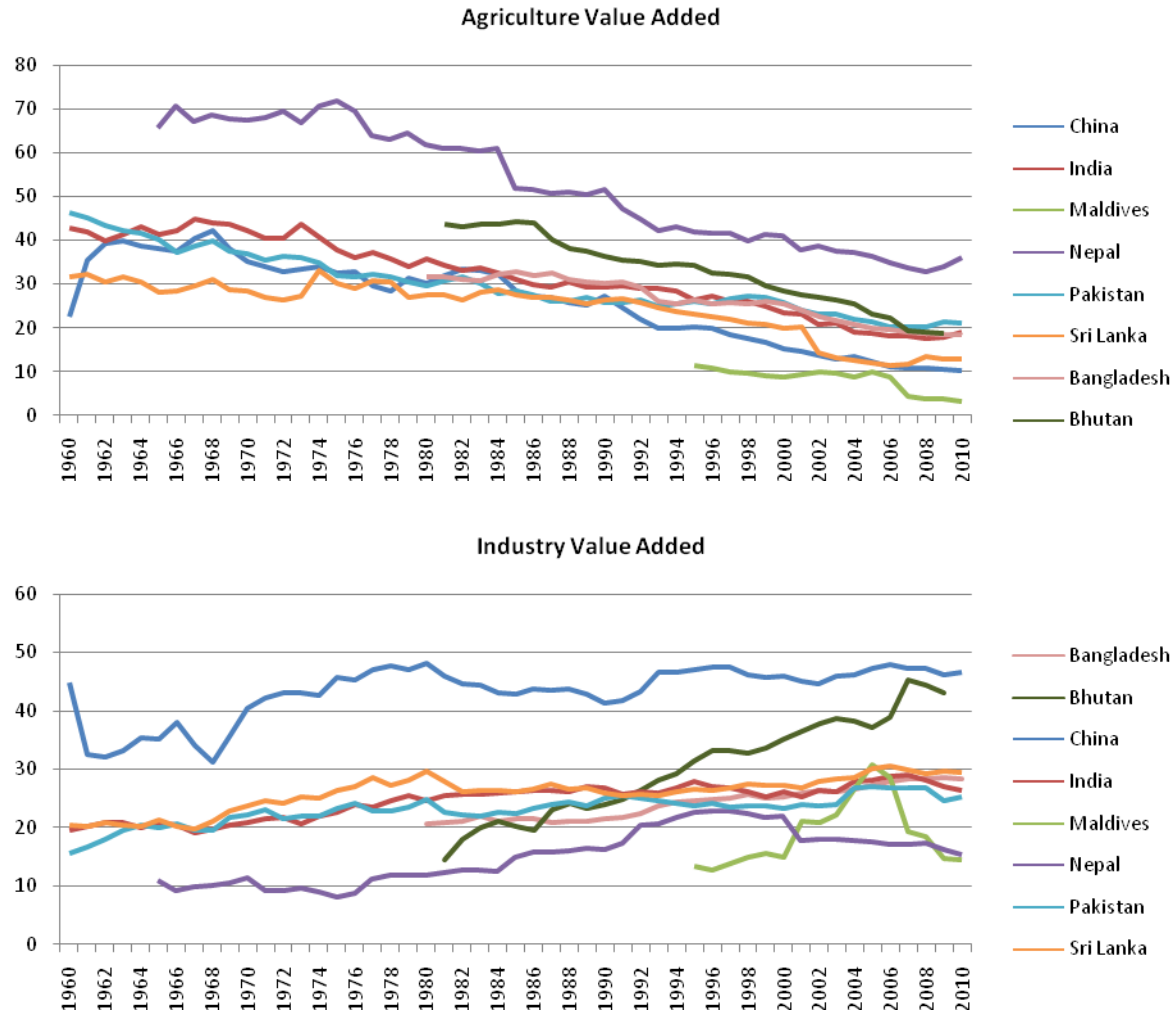
Source: *UNCTAD, 2010, Merchandise Trade Matrix (author's calculation)*

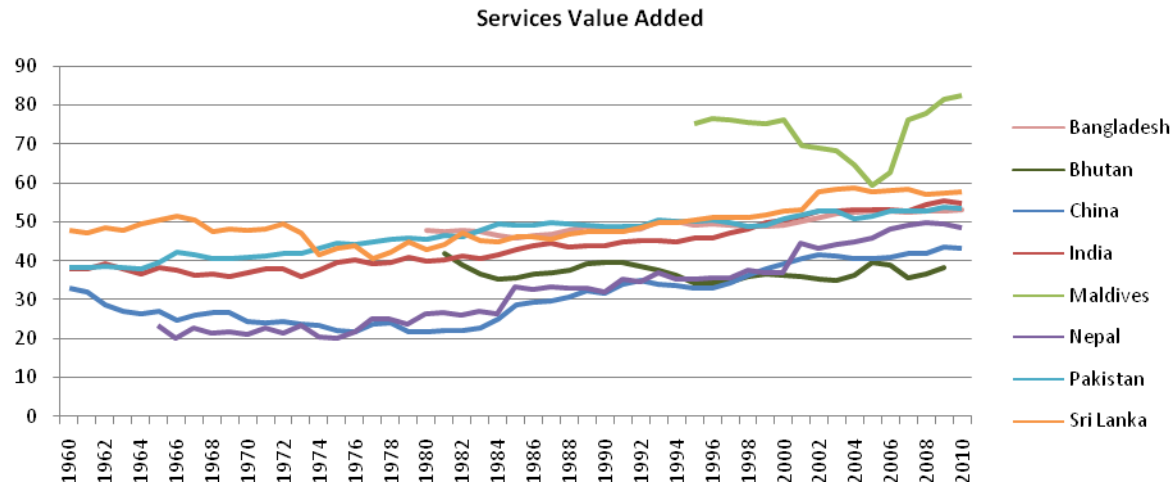
Table 4.4.3: South Asian Intra-Regional Trade in Energy Commodities in 2010

		REPORTER							
	Export / Import	Afghanistan	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
PARTNER	Afghanistan	0.00	0.00	0.00	0.00	0.00	0.00	54.98	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00
	Bangladesh	0.00	0.00	0.00	0.51	0.00	0.00	0.20	13.90
		0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00
	Bhutan	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.11	0.00	0.27	0.00	0.00
	India	0.05	23.58	97.35	0.00	0.00	0.00	2.20	1.42
		0.03	10.10	98.95	0.00	0.04	97.50	0.01	31.14
	Maldives	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.79
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Nepal	0.00	0.13	2.65	1.64	0.00	0.00	0.00	2.14
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Pakistan	60.36	0.05	0.00	0.35	0.00	0.00	0.00	0.00
		65.86	0.03	0.00	0.15	0.00	0.00	0.00	0.00
	Sri Lanka	0.06	1.43	0.00	2.67	0.00	0.00	0.00	0.00
		0.00	0.01	0.00	0.00	0.23	0.00	0.00	0.00
	South Asia total	**60.47**	**25.20**	**100.00**	**5.25**	**0.00**	**0.00**	**57.38**	**23.25**
		65.90	**10.14**	**98.95**	**0.28**	**0.27**	**97.77**	**0.07**	**31.14**

Source: *UNCTAD, 2010, Merchandise Trade Matrix (author's calculation)*

Fig.5.1.1: Value Added by Sector and Country (in % of GDP, 1960-2010)

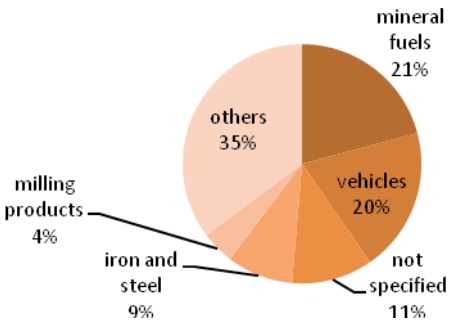




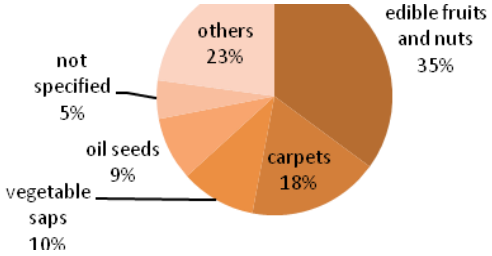
Source: WB, 2010, World Development Indicators

Fig.5.1.2: South Asian Countries Snapshot Imports/Exports

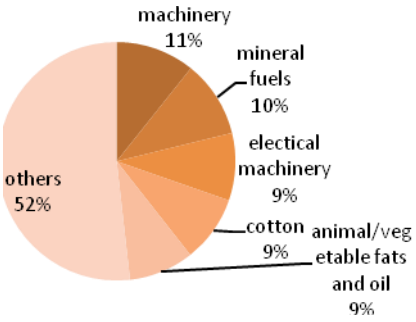
Afghanistan (Imports 2010)



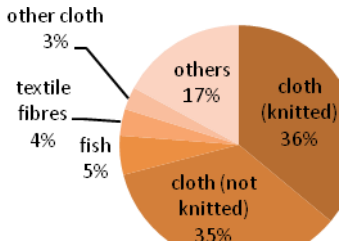
Afghanistan (Exports 2010)



Bangladesh (Imports 2007)

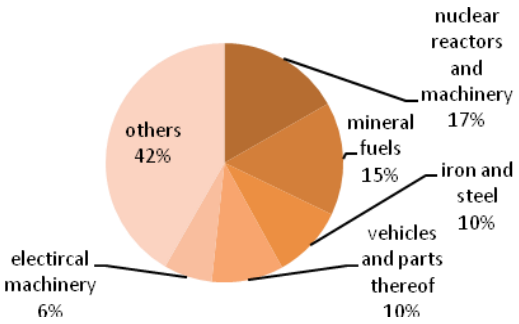


Bangladesh (Exports 2007)

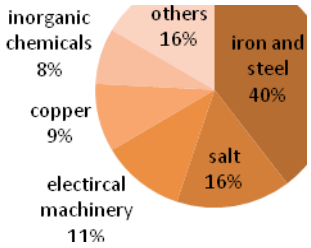


Bhutan (Imports 2010)

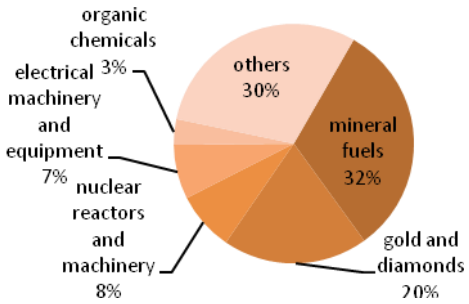
Bhutan (Exports 2010)



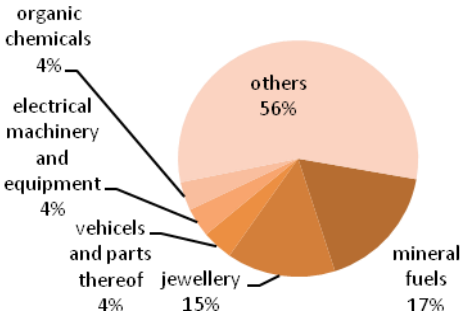
India (Imports 2010)



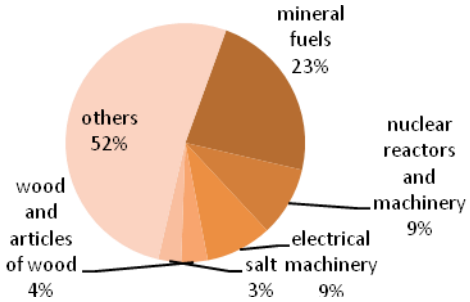
India (Exports 2010)



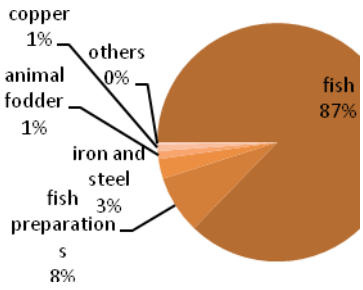
Maldives (Imports 2010)



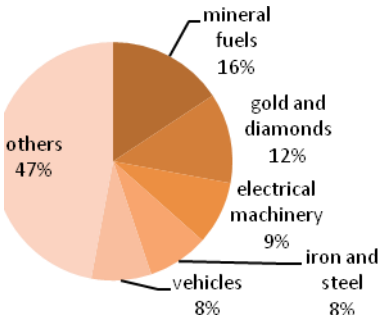
Maldives (Export 2010)



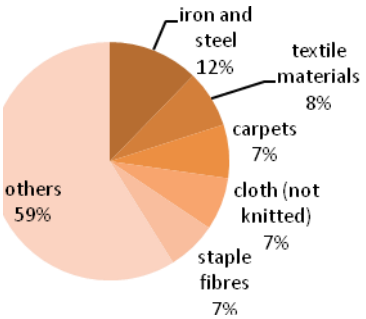
Nepal (Imports 2010)



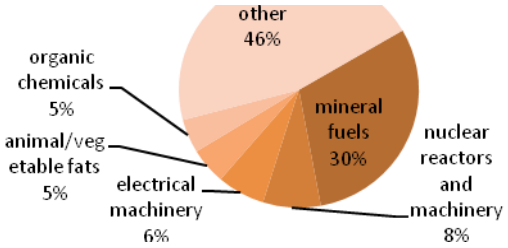
Nepal (Exports 2010)



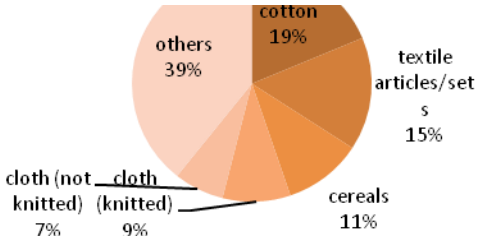
Pakistan (Imports 2010)



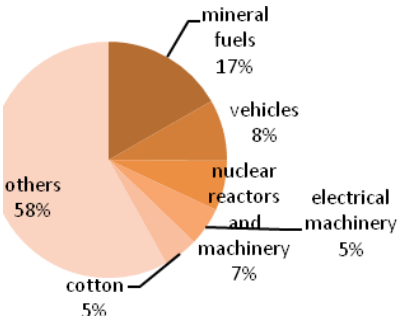
Pakistan (Exports 2010)

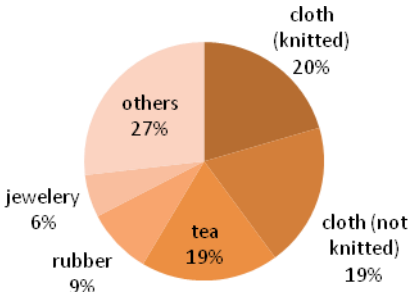


Sri Lanka (Imports 2010)



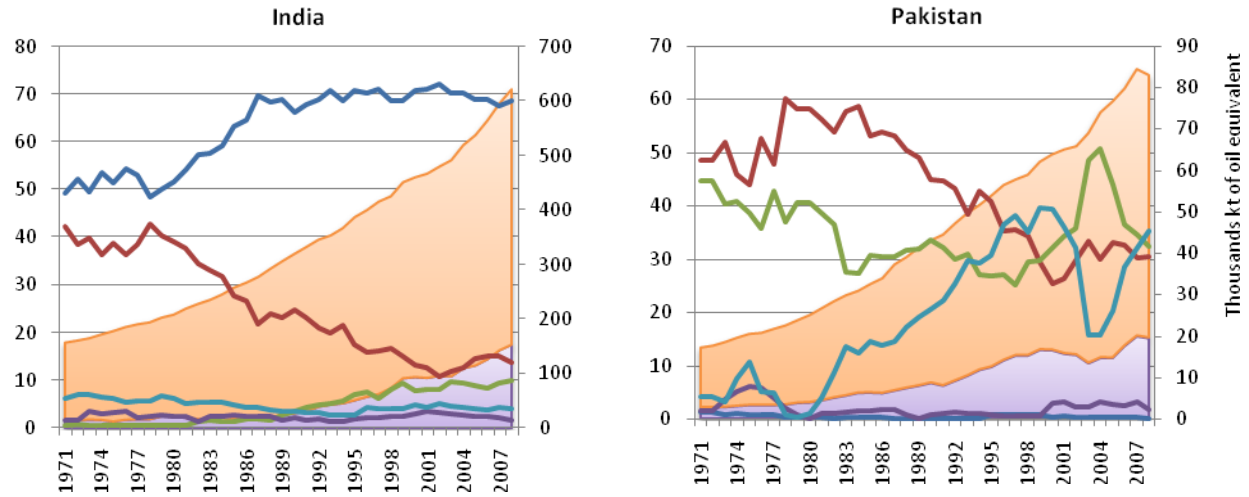
Sri Lanka (Exports 2010)

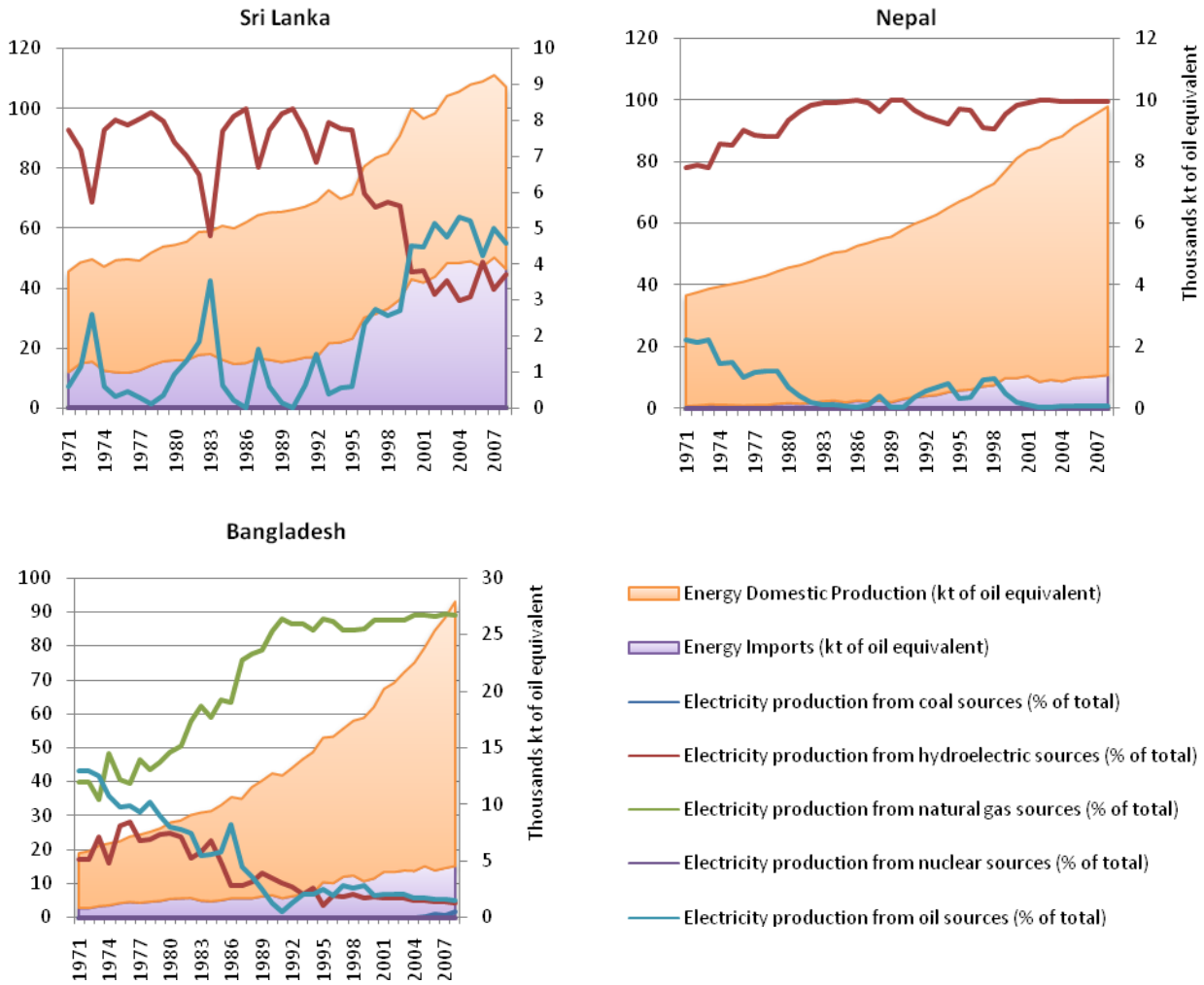




Source: UN Comtrade, 2010, Country Snapshot

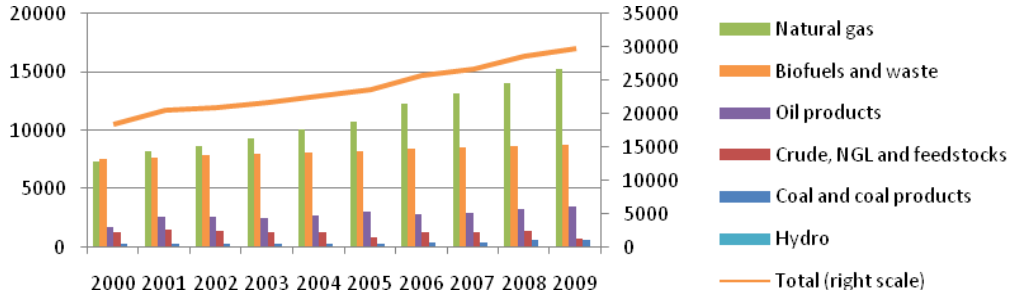
Fig.5.16.1: Sources of Domestic Energy Production per Country and Domestic Energy Use in South Asia (annually, 1971-2008)

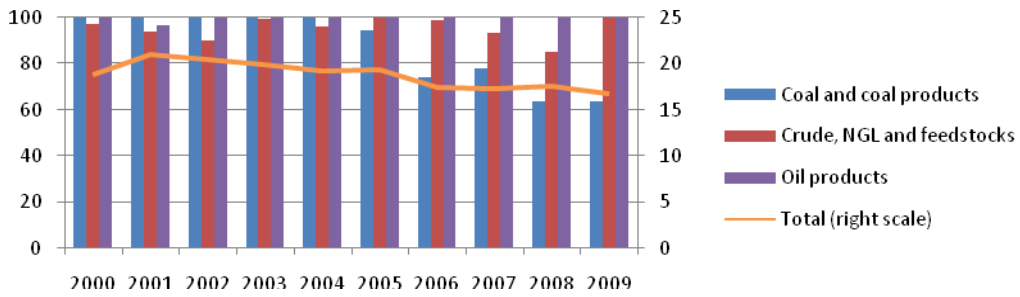




Source: WB, 2011, World Development Indicators

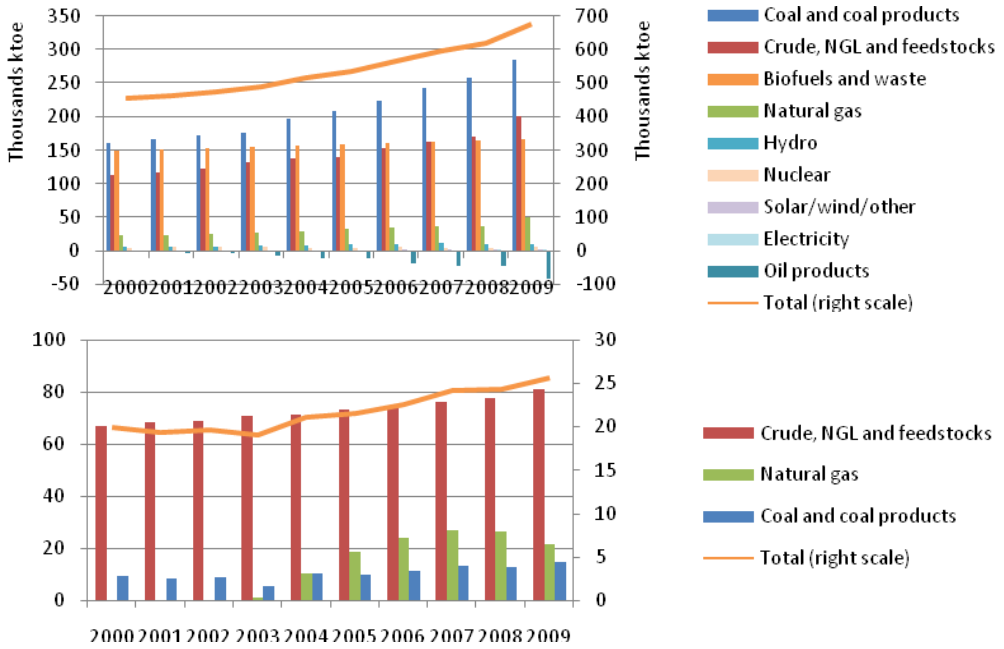
Fig.5.17.1: Bangladesh Total Primary Energy Supply (ktoe) and Import Percentage Share (annually, 2000-2009)





Source: International Energy Agency (2011): Energy Balances of Non-OECD Countries (author's calculation)

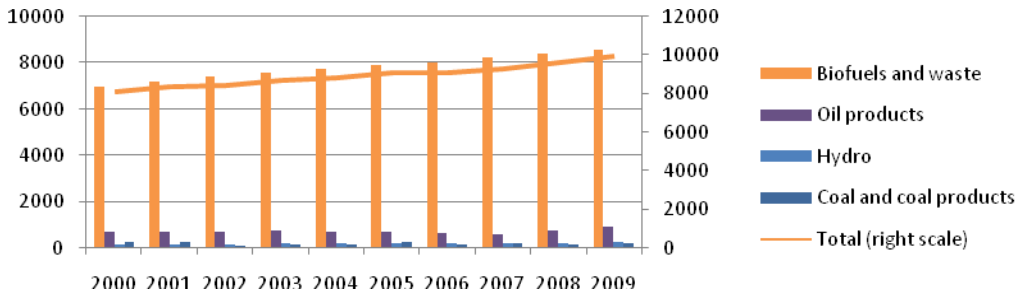
Fig.5.17.2: India Total Primary Energy Supply (ktoe) and Import Percentage Share (annually, 2000-2009)

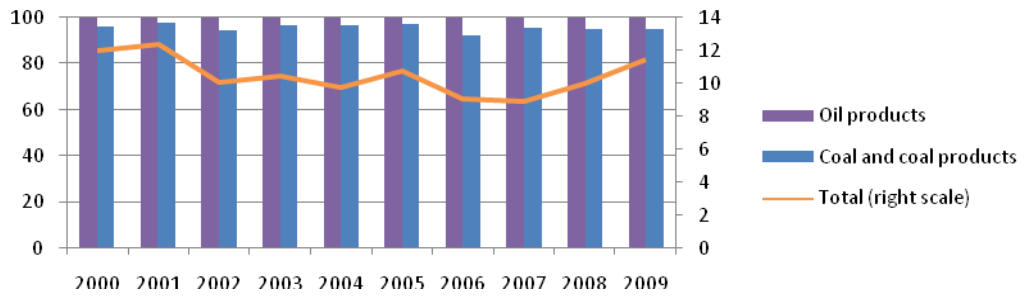


Note: Total Primary Energy Supply comprised of total domestic production plus net-imports plus/minus stock changes. Oil products are not included in the percentage import shares as India is a net-exporter.

Source: International Energy Agency (2011): Energy Balances of Non-OECD Countries (author's calculation)

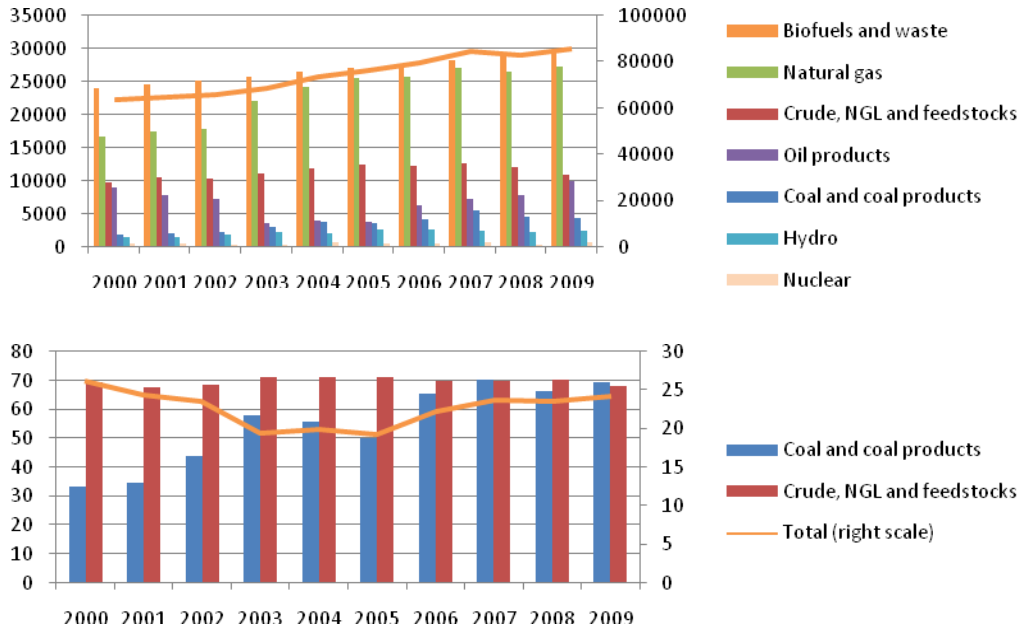
Fig.5.17.3: Nepal Total Primary Energy Supply (ktoe) and Import Percentage Share (annually, 2000-2009)





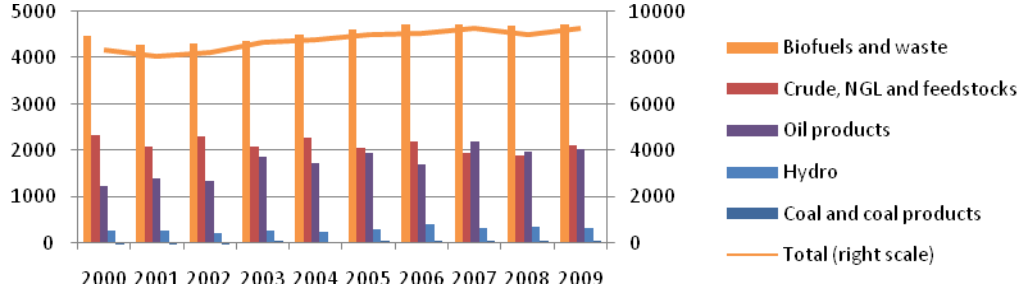
Source: International Energy Agency (2011): Energy Balances of Non-OECD Countries (author's calculation)

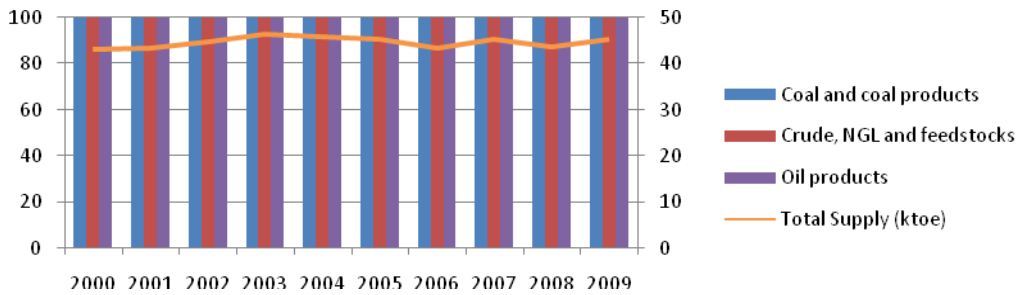
Fig.5.17.4: Pakistan Total Primary Energy Supply (ktoe) and Import Percentage Share (annually, 2000-2009)



Source: International Energy Agency (2011): Energy Balances of Non-OECD Countries (author's calculation)

Fig.5.17.5: Sri Lanka Total Primary Energy Supply (ktoe) and Import Percentage Share (annually, 2000-2009)





Source: International Energy Agency (2011): Energy Balances of Non-OECD Countries (author's calculation)