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Can the Relative Strength of the National Systems of Innovation Mitigate the Severity of the Global Recession on the BRICS?

Angathevar Baskaran and Mammo Muchie

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Angathevar Baskaran¹ and Mammo Muchie²

Abstract

The research question we wish to investigate is the degree to which different countries with differing levels of NSI strength and weakness cope in mitigating some of the adverse impacts of the recession. In general during the recession confidence declines or what Keynes calls the ‘animal spirit’. Creative destruction is heightened as firms destroyed need to find other ways of recreating their economic activities. Exports and imports change. Investment from abroad declines and consumers afraid of the recession save or even hoard. Such a state is likely to impact those who are absorbing FDI and exporting to the heartland of the current recession which is the US market. China and India both export mainly hardware and software related goods and services respectively to this market where reduction in demand has resulted in company closures and unemployment. Even free trade has been challenged with protectionist and nationalist rhetoric on the rise during this recession.

Given a recession that has affected the entire world economy and its constituent parts, both the way the recession impacts on different national economies and the ability of national economies to mitigate the recession are likely to be different. This paper concentrates on the latter not on the former per se. We examine what mitigating capability different national innovation systems have in relation to dealing with and responding to the current world financial and economic crises. The hypothesis we would like to test with descriptive comparative data is how far the relative strength or weakness of the NSI is capable of mitigating the adverse impact of the recession. We assume that that the nature and degree of impact of the recession across countries are likely to be different. In this paper we would like to take only the NSI factor in trying to account how such differences due to the individual characteristics of NSIs across different countries mitigate recessionary impact on given economies. For this, we propose to examine selected sectors from selected emerging economies such as China, India, Brazil and South Africa (BRICS excluding Russia) to estimate mitigating capabilities of different NSIs.

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¹ Angathevar Baskaran is Senior Lecturer at the Middlesex University Business School, London, UK. *email:* a.t.baskaran@mdx.ac.uk (Corresponding Author).

² Mammo Muchie is NRF/DST Research Professor of Innovation and Development at IERI, TUT, Pretoria, South Africa, and Professor and coordinator of DIIPER at Aalborg University in Denmark and The Chairman of the Network of Ethiopian Scholars (NES). *Email:* mammo@ihis.aau.dk; MuchieM@tut.ac.za

1. Introduction

The current global recession and financial crisis was triggered in 2007 by the collapse of the sub-prime mortgage market in the US, affecting almost all countries and all sectors of the global economy. The developed countries in the West appear to have experienced the immediate impact and are going through one of the worst recessions. The credit crunch put severe constraints on lending between banks and triggered a series of chain reactions in the economies of Western countries particularly which subsequently affected consumer willingness and power to spend on goods and services and it also severely affected the investment in the corporate world. According to the United Nations (UN) the world growth is estimated to decline from 3.7 per cent in 2007 to 1.0 per cent in 2009. Also, since mid-2008 commodity prices have dropped sharply due to weakened demand. In 2008, due to the impact of the financial crisis the European Union (EU) grew at a rate of 1.1 per cent. As the growth for 2009 is projected to remain low in 2009, both domestic demand and exports are expected to remain weak across the world. The direct and indirect effects of the financial crisis in the Western developed economies on other regions are expected to be very significant. Developing countries are likely to be affected by lower demand for exports, reduced commodity prices, reduced capital inflows, delayed investments, and exchange rate volatility (United Nations 2009; AfDB et al, 2008, Economic Commission for Africa, 2008).

The likely nature and shape of impact of the recession in the advanced economies on the developing world and the emerging economies have attracted a lot of attention and the world multilateral institutions such the UN and IMF have come up with reports and individual experts have made some observations and statements. There seems to be a consensus that among the developing and emerging economies some countries will be affected the most severely than others due to economy-specific factors and characteristics. For example, in the banking/ financial sector which triggered the credit crunch in the developed economies which in turn accelerated the recession it is argued that the emerging economies such as BRICS would not be affected to the extent of developed economies. At the same time it is also argued that there are significant differences in the impact on even the banking/financial sectors among the BRICS economies (Poshakwale, 2008). For example, a study by Credit Suisse has shown that China is least affected by the credit crunch, India is facing domestic liquidity problem (Financial Chronicle, 9 December 2008). In case of South Africa, it is argued that the impact of credit crunch is unlikely to be severe, mainly due to the nature of domestic banking regulatory regime enforced by the South African Reserve Bank which assured strong stability (Donohoe, 2008). Similarly, while it is believed that the overall impact on the banking/ financial sector will not be severe, already the credit crunch in the US appears to have significantly reduced access to bank lending and capital markets. This in turn appears to have affected big investment projects in the infrastructure and energy sectors (International Herald Tribune, 03 November 2008). Therefore, the early evidence emerging from these case countries suggest that the nature and degree of impact of the recession in these economies are different.

This caught our attention and we came up with the argument that these differences are mainly due to the nature and distinct characteristics of the NSIs in these economies other things being

equal. We propose to examine how far the relative strength or weakness of the NSI within the transition economies of the BRICS is capable of mitigating the adverse impact of the recession. For this, in this paper we would like to take only the NSI factor in trying to account how the nature and degree of impact of the recession across countries are likely to be different due to the individual characteristics of NSIs across different countries within the transition economies of the BRICS and not necessarily the already developed economies which have ran into trouble by following largely misguided policies and strategies in managing boosts and busts in the business cycles. Our assumption is that those in the developed economies have underlying strength in their NSI that allows them sooner or later to cope and come out of the recession. Those in the low income countries will suffer severely as their overall NSI is very weak. And the impact of the recession that they had hardly any thing to do in creating will be more severe. The most interesting test for the NSI's contribution in generating a mitigating capability lies with the current transition countries with plans to emerge with developed country status variously with 2020(India), South Africa(2030) and others like China and Brazil.

The question is in these transition economies which the BRICS represent to what degree is the relative strength or weakness of the NSI capable of mitigating the adverse impact of the world recession that is currently affecting them? To show this, we propose to examine selected sectors from selected emerging or transition BRIC economies such as China, India, Brazil and South Africa (BRICS excluding Russia). We expect our research would advance new insights both to the significance and value of strengthening the NSI and how a potential to mitigate the severity of the global recession in emerging economies is associated with NSI development in given transition economies. This paper is structured as follows: section 2 presents a conceptual framework to link and analyse the NSI and its potential mitigating impact on global recession; section 3 to 6 presents individual cases (Brazil, South Africa, China and India respectively), section 7 provides analysis of the cases and finally section 8 presents our conclusions and policy recommendations.

2. National System of Innovation (NSI) and its Potential Mitigating Impact on Recession: A Conceptual Framework

A system of innovation, in general, brings together all the significant economic, social, political, organisational, institutional and other factors and their interactions which come together and influence the development, diffusion, and application of innovations. Though interest in the innovation systems approach have grown since the 1980s, its origin dates back to the nineteenth century catch up aspirations of economies like that of Germany with Britain.

Friedrich List (1856) and his concept national production system may be seen as the historical origin of the national system of innovation (Freeman, 1995). Since then, the innovation system concept has evolved over the years (List 1856; Freeman, 1982, 1987, 1995; Lundvall, 1988, 1992; Nelson, 1993; and Edquist, 1997). Some scholars have drawn affinities to it with the

French Regulation School, and theories of evolutionary and institutional economics in the tradition of Schumpeter (1934) and Veblen (1919). According to Bengt-Åke Lundvall, the modern version of the concept appeared first in an unpublished contribution to OECD by Freeman (1982). Subsequently, Lundvall (1985) used the concept in formulating producer-user interaction and feedback for learning. NSI approach has been increasingly used to understand building technological capabilities and industrialisation process in developing countries (e.g. Cimoli (2000); Intarakumnerd and Chaaminade (2007); Viotti (2001). Furthermore, there have been attempts to broaden the national innovation system to include directly problems and challenges of development and underdevelopment. For example, Muchie and others (2003) attempt to apply the concept for economies in the developing world in general including Africa in particular. This new approach has been stimulated by the Globelics network (see Website A) which links modes of innovation systems to the processes of economic development, and tries to bridge the gap that may exist between innovation system dynamics and economic development by focusing on the determinants of innovative, learning and competence building activities in the development processes. NSI provides the conceptual approach or framework for studying both developed and developing economies at various stages of development. We adopt NSI conceptual framework to investigate the degree to which different BRICS countries with differing levels of NSI strength and weakness cope in mitigating some of the adverse impacts of the recession. This is done by first identifying those elements of NSI which could have significant impact on the effectiveness of recession.

In the narrow sense NSI involves a system of interaction of a wide variety of public and/ or private firms with other institutions such as universities, and government agencies -- all working together towards attaining the production and diffusion of knowledge and science, technology, and innovation within the boundaries of legally recognised states. The form of the interaction can take both technical and non-technical dimensions. It could be organisational, institutional, commercial, physical, human, mental, legal, social, and financial interactions. The broader goal of such interactions is the socio-economic development, regulation, and support for new science, technology, innovation within the country by dealing with and responding to both internal and external challenges.

The SI has four key elements. The first set involves the ideas and policies that frame the overall scope or possible set of interactions of politics, economics and knowledge (e.g. government action, industrial production and knowledge creation by research institutions), given the internal and external social and economic constraints facing a particular NSI. The behaviour and interactions are often shaped by sets of common habits, norms, routines, established practices, rules, or laws.

The second set involves the choice or the selection and actual construction or implementation of the set of interactions that bring to bear the conceptual framing and policies selected above (the first set) with the institutions and elements that interact to build the NSI.

The third set involves the means provided to the institutions (second set) for realising the goals set (first set), that is, various incentives such as financial and social rewards. This is vital to foster appropriate incentive system which is consistent with the goals and objectives set and is seen as fair and legitimate and command wider acceptance by various components forming the NSI. If the incentive system is inappropriate or fails to command wider acceptance, the opportunity to organise robust NI system and achieve measureable results will be put in jeopardy.

The fourth set highlights the overall efficiency of the environment for learning in terms of implementation, monitoring, review, and feedback involving the above three sets. The learning outcomes can be different such as transformative, adaptive, corrective, modifying, evolutionary, redesigning, and so on. This can also be negative. The relationships between these four sets of elements that constitute NSI are illustrated by Figure 1.

Figure 1: Four Major Sets of Elements of National System of Innovation (NSI)

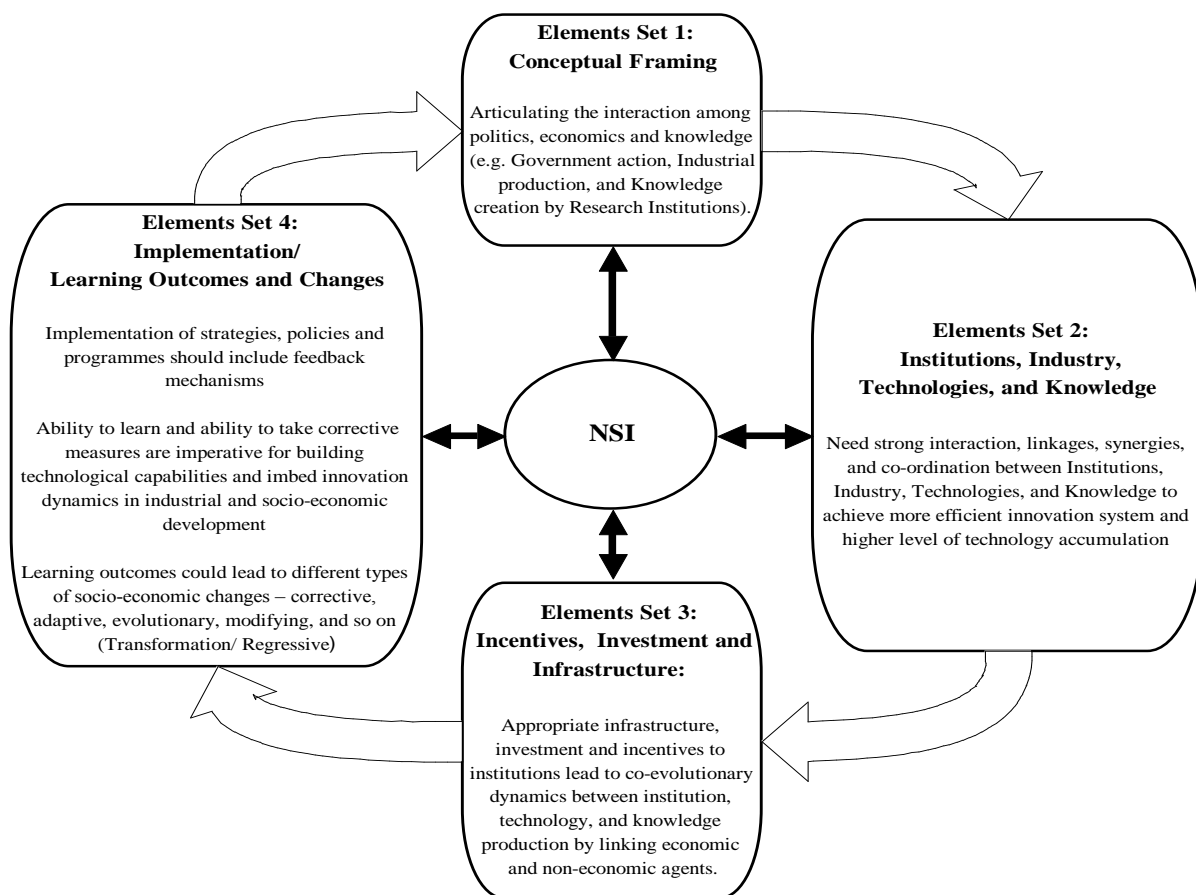
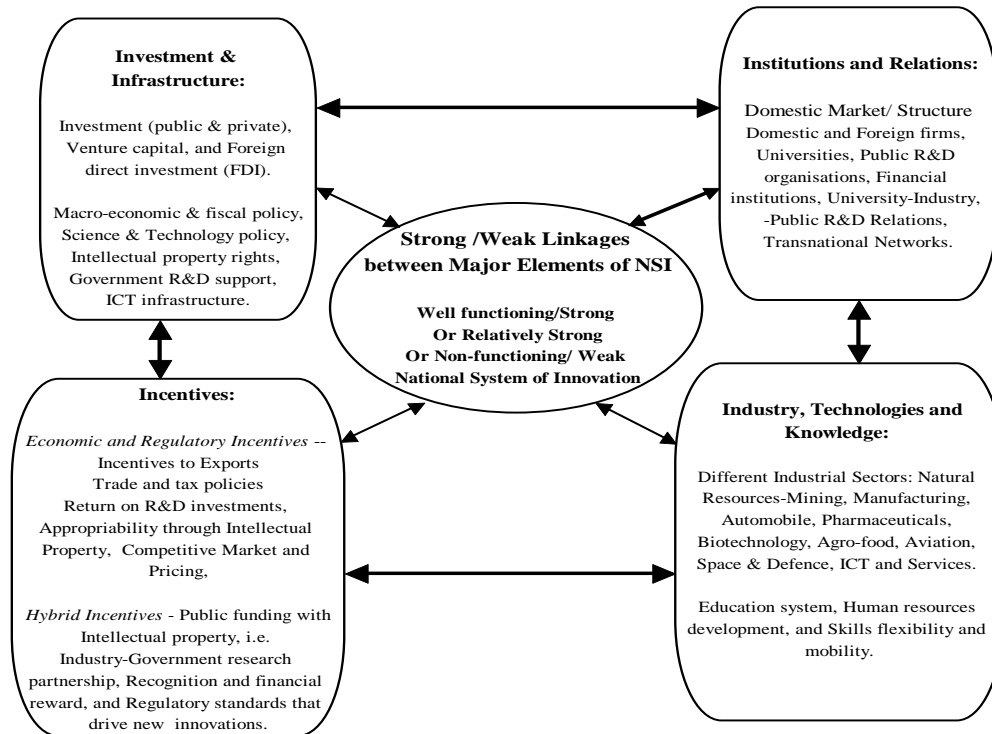


Figure 2:
Linkages Between Some Major Elements of NSI
 (Elaboration of Elements Set 2- Institutions, Industry, Technologies, Knowledge; and Elements Set 3- Incentives, Investment and Infrastructure in Figure 1)



In Figure 2, we elaborate Set 2 (Institutions, Industry, Technologies and Knowledge), and Set 3 (Incentives, Investment and Infrastructure) from Figure 1. These are relevant to making linkages and relations between NSI and recession. The strong presence and interaction and linkages between various institutions, industrial sectors, technologies, knowledge, incentives, investment, and infrastructure determine the higher or relatively stronger or weaker level of functioning of a particular NSI. We would argue that the relative strength of an NSI can have a mitigating impact on recession. We attempt to identify specific elements of NSI that could have significant mitigating impact on recession. We identified 6 sets of components of NSI as shown in Table 1. These are part of 4 sets of major NSI elements that are identified in Figure 1. Figure 2 elaborates further the NSI elements set 2 and 3 which helps to make a link between NSI elements and their potential mitigating impact on recession. These NSI elements and components of these elements are largely derived from the *World Investment Reports* published by the UNCTAD (e.g. 2002, 2003, 2005) and NSI literature.

Table 1: Some Major Components of NSI that Could have Mitigating Impact on Recession	
<i>Components of NSI that could Impact on Recession</i>	<i>Related to the Elements of NSI (As shown in Figures 1 and 2)</i>
<p><i>1. The general investment climate and economic policy framework:</i></p> <p>(a) Macroeconomic and social stability (b) National fiscal policy regime (c) Foreign debt (d) Inflation (e) Interest rate, and Exchange rate (f) Regulatory regime such as trade and tax policies (g) Nature and role of FDI</p>	<p>NSI Elements Set 1 and Set 3 (Figure 1) Investment & Infrastructure, and Incentives (Figure 2)</p>
<p><i>2. Market, per capita income, domestic savings:</i></p> <p>(a) Domestic market size / structure (b) Links to regional and global markets (c) Domestic savings growth</p>	<p>NSI Elements Sets 2 (Figure 1) Institutions and Relations (Figure 2)</p>
<p><i>3. Industrial structure:</i></p> <p>(a) Presence of diverse industrial structure (b) Strength of domestic firms (c) Presence and role of foreign firms (d) Links to foreign companies/ foreign financial market</p>	<p>NSI Elements Sets 2 and Set 3 (Figure 1) Institutions, Investment & Infrastructure, and Incentives (Figure 2)</p>
<p><i>4. Financial Institutions:</i></p> <p>(a) Banking sector (b) Role and effectiveness of the Central Bank (c) Links to foreign financial market</p>	<p>NSI Elements Set 2 (Figure 1) Institutions, Industry Sectors, Technologies and Knowledge (Figure 2)</p>
<p><i>5. Foreign Trade:</i></p> <p>(a) Nature of exports/ Imports (b) Export markets (Destinations) (c) Dependence on commodity exports</p>	<p>NSI Elements Set 2 and Set 3 (Figure 1) Industry, Technologies and Knowledge; and Incentives (Figure 2)</p>
<p><i>6. Skills, R&D, and Technology development</i></p> <p>(a) Investment in education and skills (human resources) development (b) Investment in R&D</p>	<p>NSI Elements Set 2 and Set 3 (Figure 1) Industry, Technologies and Knowledge; and Incentives (Figure 2)</p>

Figure 3
Strength of National System of Innovation and its Mitigating Impact on Recession:
A Conceptual Framework

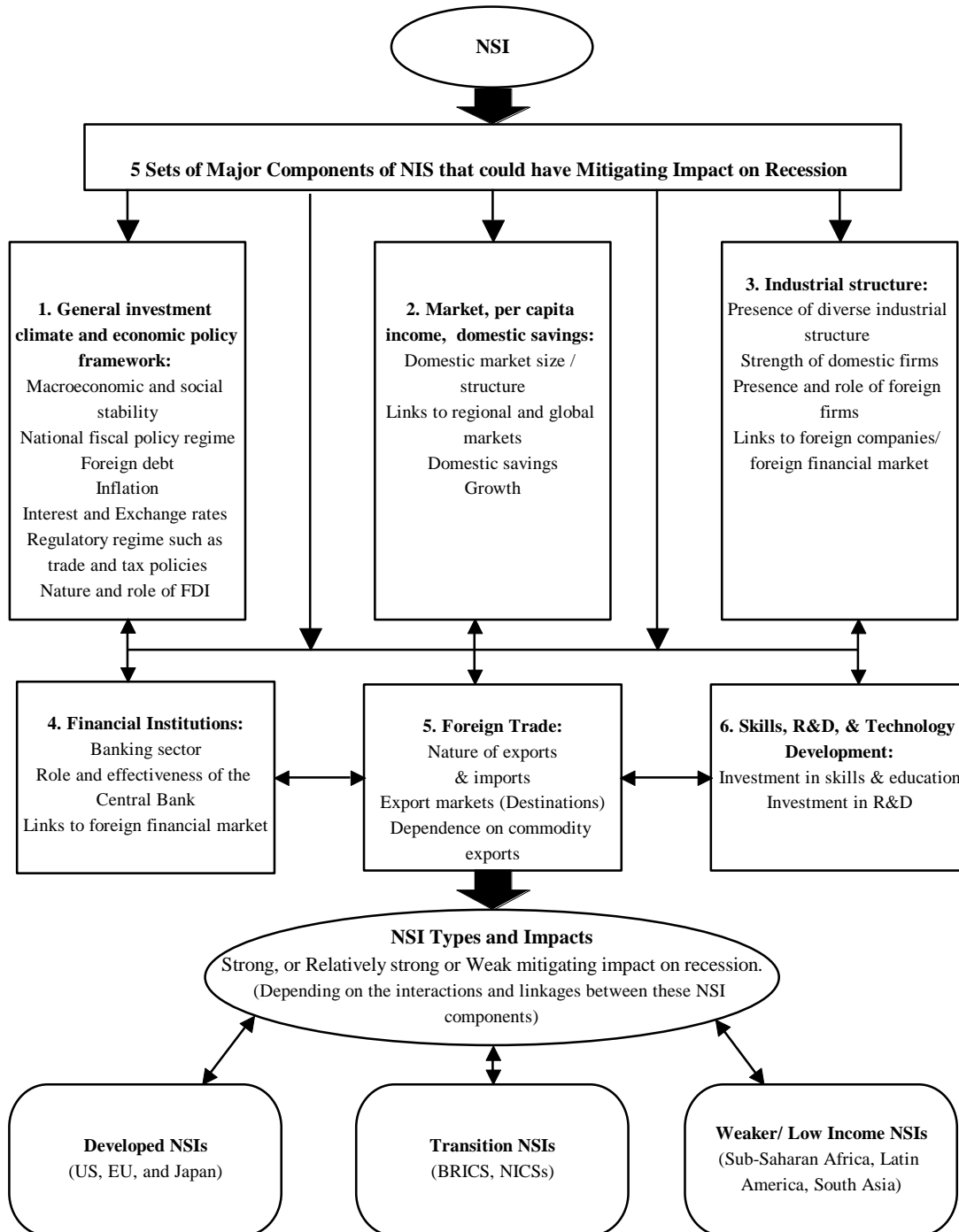


Figure 3 presents a conceptual framework linking 6 major sets of NSI components (which are identified under the 4 major sets of NSI elements as shown in Figure 1) to the mitigating impact of NSI on recession. The degree of strength of these NSI components and interaction between them will make an NSI as either developed, transition, or weaker/ low income. The important issue we are highlighting here is that although there are many similarities between systems of innovation, there are also differences related to the stage of development, characteristics of NSI evolution, path dependency, institutions, laws, policies, and incentives. These in turn are likely to have either strong, relatively strong or weak mitigating impact on recession. That is, if a country has a well functioning or strong 6 sets of NSI components identified in Table 2 and Figure 3, it is likely to witness high mitigating impact on recession. On the other hand, if a country has a non-functioning or weak 6 sets of NSI components, it is likely to witness no or little mitigating impact on recession. If a country has a relatively well functioning 6 sets of NSI components, then it is likely to have a relatively strong mitigating impact on recession.

What we mean by mitigating capability is the ability of NSI to deal with and respond to unforeseen or foreseen crisis that could be induced internally or externally or by the combination of both domestic and international factors. The tendency is towards restricting or contraction of the economy due to changes in business cycle or recessionary down turn in economic activity. Therefore the key to see mitigative capability is how NSI components respond and deal with this challenge. So, we correlate the NSI components to the recessionary downturn to explore whether they can cope or not. This is done by using indicative and descriptive data. For example, we take the GDP and see whether they have contracted or is it still growing, or reduced severely or slightly. We try to show through this the underlying economic strength or weakness or relative strength or weakness of the NSI to deal with the recessionary crisis.

We are contributing by adding to the existing body of NSI literature by linking NSI framework to its potential mitigating impact on recession in national economies. The way we did this theoretically is first to identify the four sets of elements that constitutes the NSI and then identify 6 sub-elements or components of NSI (as shown in Figures 1, 2, and 3 and Table 1) and try to conceptualize whether and how weak or strong they can have mitigating impact on recession. In actual fact we are looking for making a paradigm change of the way economic development and recession can be appreciated by employing NSI framework.

To illustrate this empirically we analyse NSIs of BRICS economies using descriptive and secondary data. In the following sections the potential mitigating impact of NSIs of BRICS economies on recession will be analysed employing the conceptual framework illustrated by Figure 3.

3. The Case of Brazil

It is argued that despite its negative experience in the 1970s and 1980s when it went through financial mismanagement. Spiraling inflation, massive debts and a chronic history of currency devaluation, Brazil is expected to escape or overcome serious negative impacts of the current global recession for number of factors. These included: (i) strong fiscal regime followed in

recent years; (ii) significant reduction of foreign debts in recent years; (iii) low inflation; (iv) steady lowering of interest rate; (v) relatively strong currency which appreciated about 8% against the US\$ over 2007; (vi) continuing bank lending at a steady pace while Europe and the US witnessed significant reduction; (vii) total “stock of credit” is just 35% of GDP and “overall credit markets are calm (i.e. much less leveraged than many other financial markets); (viii) main source of credit has been the increasing domestic savings; (ix) firms carry much lower debt loads compared to foreign competitors; (x) increasing “investments in fixed income securities that are, in effect, closed to foreigners” due to taxation issues; (xi) firms are relying on the domestic market to make up the difference due to global downtrend; (xii) firms are still able to access investment capital (Burnick, 2008). According to a BBC report Brazil is likely to overcome the negative impact of credit crunch without serious problems. It pointed out that until mid-2008 Brazil did not face serious problems from the global credit crunch and it encouraged foreign investors. Also, mortgage finance is available relatively easily and also the stable economy has helped consumers to buy wide range of goods (BBC, 06 August 2008).

Brazil witnessed significant economic performance in the first three quarters of 2008. Compared to same period in 2007, GDP has grown 6.4%, 2 million more jobs created, the unemployment rate down to 7.6% and a 5.1% rise in real wages. Brazil was able to manage the inflation rate close to target level, and retain significant surplus fiscal balance due to the lower cost of debt servicing (5.6% of GDP in the period January-October 2008) and had small public sector deficit (0.33% of GDP). Despite the expectation that the global crisis will have a negative impact on fiscal revenues, a number of areas registered strong performance. For example, manufacturing was up 6.5% on the year-earlier period (due to a 17.6% rise in automobile production and an 18.9% increase in capital goods production), while commerce expanded by 10.4%, and agricultural production was also up by 10%, merchandise exports rose by 28% and imports also increased by 51.6% (i.e. consumer durables 56.1%, capital goods 40.3%, and intermediate goods 20.9%) (ECLAC, 2008, pp.86-87).

Table 2: Brazil: Main Economic Indicators -- I

<i>Indicators</i>	<i>1995</i>	<i>2000</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>
Growth Rates of GDP (%)	4.2	4.3	5.7	3.2	4.0	5.7 (5.9) ⁺
Growth Rates of Per Capita GDP (%)	2.6	2.8	4.2	1.5	2.3	4.0 (4.5) ⁺
GDP at Constant Market Prices (2000) – US\$ billion	583.4	644.5	716.7	739.4	768.7	812.3
Per Capita GDP at Constant Market Prices (2000) – US\$	3601.0	3688.6	3873.0	3941.1	4043.1	4216.5
GDP at Current Market Prices - US\$ billion	769.0	644.5	663.7	882.0	1089.4	1300.3
Per Capita GDP at Current Market Prices – US\$ million	4746.1	36886.6	3586.7	4701.7	5729.8	6749.8
Aggregate Value of Agriculture, Hunting, Forestry and Fishing*	26.6	31.3	38.3	38.4	40.1	42.5
Aggregate Value of Mining and	7.6	8.9	11.1	12.1	12.6	13.0

Quarrying*						
Aggregate Value of Manufacturing*	95.0	96.1	109.6	110.9	112.2	117.5
Aggregate Value of Electricity, Gas, and Water sectors*	16.4	19.0	20.6	21.3	22.0	23.3
Aggregate Value of Construction sector*	27.5	30.8	30.4	31.0	32.4	34.0
Aggregate Value of Whole sale & Retail Trade, Hotels, Bars, and Restaurants*	61.9	65.6	69.7	72.1	76.3	81.8
Aggregate Value of Transport, Storage and Communications*	36.1	47.3	53.6	55.6	56.7	60.1
Aggregate Value of Finance, Insurance, Real Estate, and Business Services*	86.6	96.3	107.7	112.9	118.4	127.6
Aggregate Value of Community, Social and Personal Services*	146.4	162.9	184.3	189.1	195.9	200.7
Total Aggregate Value of Economic Activity*	504.1	558.2	625.3	643.4	666.7	700.5

Source: ECLAC, *Statistical Yearbook for Latin America and the Caribbean, 2008*, New York: United Nations.

* At Constant Market Prices (2000) – US\$ billion
+ 2008 figure

Tables 2, 3, and 4 present some main economic indicators for Brazil. Table 2 shows that the rate of GDP has slowed down in 2005 and 2006 and it picked up again from 2007 and continued to perform better until 2008. This is also reflected in growth rates of per capita GDP (%). It also shows the importance of agriculture and mining, manufacturing, financial sector and real estates to the total value of the aggregate value of economic activity. These are the areas which appear to have been affected by the current global crisis. Table 3 shows that the level of both exports and imports are same in 2007, except that the exports have been growing slowly while the imports have been growing faster. The growth of national savings over the years has been significant. Brazil also has seen its debt payments increasing steadily. Table 4 shows that the rate of growth of consumer prices has been significant (from 4.5% in 2007 to 6.4% in 2008), but the real wage has not grown significantly. Brazil has seen current account surplus of US\$13.6b in 2006 reduced to deficit of 27.8US\$.

<i>Indicators</i>	<i>1995</i>	<i>2000</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>
Gross Capital Formation*	109.3	117.6	117.2	114.8	127.2	145.2
Fixed Gross Capital Formation*	102.1	108.3	107.3	111.1	120.8	137.0
Exports of Goods and Services*	46.5	64.3	96.7	101.5	111.4	118.7
Imports*	66.5	75.7	76.2	83.3	98.3	118.7
Disposable Gross National Income*	582.4	628.1	699.0	722.6	759.5	808.6
Factor Payments to the Rest of the	-11.1	17.9	-20.5	-26.0	-27.5	-29.3

World (at Current Prices –US\$ billion)						
Net Current Transfers from the Rest of the World (at Current Prices –US\$ billion)	3.62	1.52	3.23	3.56	4.31	4.02
National Savings (at Current Prices – US\$ billion)	120.5	93.4	125.3	156.9	196.3	232.3

Source: ECLAC, *Statistical Yearbook for Latin America and the Caribbean, 2008*, New York: United Nations.

* At Constant Market Prices (2000) – US\$ billion

Table 4: Brazil: Main Economic Indicators - III			
<i>Indicators</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>
Consumer Prices (annual growth rate %)	3.0	4.5	6.4
Average Real wage (annual growth rate %)	3.5	1.5	1.7
Money (M1)	20.4	32.7	7.4
National currency – Real – Effective exchange rate (year-on-year average variation)	-11.5	-7.7	-8.8
Exports of Goods and Services (Current prices – US\$ billion)	157.3	184.5	229.9
Imports of Goods and Services (Current prices – US\$ billion)	120.5	157.5	222.7
Current Account (US\$ billion)	13.6	1.7	-27.8
Capital and Financial Account	16.9	85.8	54.8
Overall Balance	30.6	87.5	27.0

Source: ECLAC (2008), *Preliminary Overview of Economies of Latin America and the Caribbean, 2008*, New York: United Nations.

Both FDI and portfolio investment have remained strong in Brazil which was one of the main FDI recipients in South America along with Chile and Colombia. They together accounted for 80% of the FDI inflows into Latin America with Brazil being the leading recipient of FDI in Latin America. The FDI flow to Brazil in 2008 was 30% higher than in 2007. Total FDI inflows between January and October 2008 was US\$ 34.7b (up from US\$ 31b in 2007). Direct investment represented 2.6% of GDP between January and October 2008 (compared with 2.9% one year earlier). Most FDI in Brazil continued to be in the natural-resources sectors (ECLAC, 2008a, p.3). The relatively low volatility and high price of iron ore helped FDI flow to Brazil as it has large iron deposits. In 2008, Rio Tinto announced plans to expand for its La Corumba mine, and Anglo-American purchased the Brazilian firm Iron X (of the MMX group), Arcelor Mittal bought the assets of London Mining which has presence in Brazil, a Japan-Korea consortium of companies acquired a 40% stake in the mining arm of Companhia Siderúrgica Nacional (CSN) of Brazil. Brazil also attracted significant investment in the bio-fuel sector from the UK, Portugal, France, and the US (ECLAC, 2008a, pp.37-38).

However, it is also reported that Brazil's national economy has been affected negatively by the current global recession in a number of ways. These included:

- (i) The global crisis reduced the demand for basic products and this coupled with reduced access to credit, transnational corporations have cut back on their investment plans. For example, Anglo-American announced a 50% cut in its expansion plans, which is likely to affect its projects in Brazil;
- (ii) The national currency which continued to appreciate until August 2008 (US\$1 was 1.56 Real – the lowest rate since 1999), despite the central bank's intervention in the foreign-exchange market, it depreciated by about 50% in September 2008 ((US\$1 was 2.44 Real) due to various reasons such as reduction in lines of credit for foreign trade, the withdrawal of foreign portfolio investors, remittances of the profits of transnational corporations' subsidiaries to their parent firms abroad, and Brazilian firms' need for foreign exchange to cover exchange-rate derivative transactions. That is, in October 2008 outflows of portfolio investment (shares and securities) reached US\$ 7.8b and profit remittances between January and October amounted to US\$ 30.5b, 67% more than in the same period of 2007;
- (iii) The shortage of external credit led to difficulties in interbank operations particularly affecting small and medium-sized banks, and this led to reduced longer-term loans for consumer durables and automobiles and made them costlier;
- (iv) A number of sectors have shown sign of problems created by the credit market. For example, the manufacturing sector contracted by 1.7% in October as compared with September 2008, as production of consumer durables and intermediate goods dropped by 4.7% and 3%, respectively;
- (v) Automobile manufacturers (General Motors, Fiat, Scania and Volkswagen) decided to give their staff early vacations and suspend production for one or two weeks in order to avoid building up excess stock, after sales dropped by 11% in October 2008, which was expected to reduce the automobile production by about 200,000 units. Over all, it is expected that Brazil's automobiles production will drop by 20% in 2009. (ECLAC, 2008a, FDI topic, p.49);
- (vi) The mining and iron and steel sectors also faced problems due to falling international prices for metals and minerals, with production cut announced by the leading firms;
- (vii) FDI position changed from net inflows of US\$ 850m in the first 10 months of 2007 to net outflows of US\$ 15.6b in the same period of 2008. And foreign portfolio investment dropped from US\$ 40.9b between January and October 2007 to just US\$ 9.6b in the same period of 2008. This resulted in reduced the surplus balance of payments in the capital and financial account of payments, that is, US\$ 41.8b between January and October 2008, compared to US\$ 77b recorded in the same period of 2007 (ECLAC, 2008, pp.86-87; 2008a, p.49);

- (viii) Between August and the end of November 2008, international cash reserves shrank by 5.4% to US\$ 194b. But due US\$ 30b received from the United States Federal Reserve for swap operations with the central bank of Brazil, the reserve stood at US\$ 235b;
- (ix) As in the other emerging regions, financial sector stress and deleveraging in advanced economies are raising borrowing costs and reducing capital inflows across Latin America which has affected Brazil as well;
- (x) Also, the decline in commodity prices has severely affected large economies in Latin America including Brazil which are world's major exporters of primary products;
- (xi) Brazil currency (Real) has depreciated significantly as it has flexible exchange rate regime. Local banks' funding costs have increased, particularly for small and medium size banks. The cost of external borrowing has also risen but remained relatively lower. Brazil has already taken steps to provide liquidity and support credit flows, especially to the corporate sector (IMF, 2009, p87);
- (xii) Overall, the current global financial crisis appears to have had some negative impacts on growth prospects for Brazil.

According to Oxford Analytica (a consultancy in the UK), Brazil has been affected by the current global crisis in following ways: (i) reducing access to bank lending and capital markets (may be temporary); (ii) delay or cancellation of infrastructure development projects (e.g. 1.9 billion dollar port project in Peruibe, Sao Paulo, a 3.5 billion dollar high-tension power line from the Amazon to the edge of Sao Paulo); (iii) weakening of the national currency - the real (which lost 30% of its value between August and October in 2008, although it regained some ground later); (iv) a sharp fall in commodity prices affecting its export revenue; (v) slower economic growth (expected to be around 3.0% in 2009 from 4.5% in 2008) which means lower tax revenue and less funds for public works projects; (vi) companies felt the impact of global recession, as Brazil has 38 companies quoted on Wall Street (the largest number among Latin American nations) (Oxford Analytica, 2008).

The government in Brazil has taken a number of policy measures to tackle the negative impact of the current global crisis. These included:

- (i) the central bank lowered the reserve requirements for the large banks and used the large sums held in the form of compulsory deposits (259 b Real in August) to re inject almost 85b Real into the financial system;
- (ii) credit for agriculture was increased by 6 b Real;
- (iii) It provided foreign exchange to the market, that is, mainly swap contracts worth US\$ 30 b and direct sales of foreign exchange for US\$ 6.7b;
- (iv) the central bank set up direct credit lines to the value of US\$ 11.3b to finance exports;
- (v) the central bank was given far-reaching powers to intervene in the banking system and increased the scope and operations allowed to federal banks (such as Banco do Brasil and Caixa Econômica Federal);

- (vi) a number of production sectors received special credit lines to maintain the momentum of consumption;
- (vii) Monetary Policy Committee decided to suspend the rises in the basic interest rate lengthened the period for the monthly payment of taxes thus reducing pressure on companies' cash flows (ECLAC, 2008, p. 86).

5. The Case of South Africa

Like the case of Brazil, it is argued that South African economy will be able to overcome or minimise the negative impact of current global recession triggered by credit crunch in the US and Europe. This argument is based on number of factors. These included: (i) stability in the banking sector fostered by prudent regulatory regime by the South African Reserve Bank; (ii) the stability brought by exchange control regulations, which have ensured the banking sector's exposure is less risky in foreign markets; (iii) "The continued infrastructure development; (iv) reduction in interest rates; (v) significant economic growth (around 3% expected for 2008 and 2009); (vi) recent decline in the value of national currency rand is expected to increase South Africa's exports, particularly from other emerging economies; (vii) increasing South-South trade relations (e.g. Brazil, India, Venezuela).

It is argued that South Africa has been able to avoid serious negative impact of the current global recession, although the full impact is yet to take shape. However, like the case of Brazil, South Africa also has faced some problems because of the global recession. These included: (i) affecting the domestic banking sector's ability to raise cash in international markets; (ii) affecting external financing of some key infrastructure projects; (iii) slow growth of the economy (which is already facing the impact of high inflation, and higher interest rate); (iv) declining exports to developed economies such as the US and EU (expected to decline from 7% in 2007 to 4% in 2009); (v) dependence on commodity exports and its decline; (vi) declining foreign direct investment (FDI) delaying projects; and (vii) increasing net investment outflows as global investors pull out money due to elevated risk aversion (already felt in financial markets) (Donohoe, 2008).

Table 5: South Africa: Key Economic Indicators – National Accounts

<i>Indicators</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>
GNI Per Capita (US\$)	3 280	3 150	3 050	2 830	2 640	2 870	3 630	4 820	5 390	--
Real GDP Growth Rates (%)	0.5	2.4	4.2	2.7	3.7	3.1	4.9	5.0	5.4	4.9
GDP at Current Market Prices (US\$ billion)	134.3	133.2	132.9	118.5	110.9	166.7	216.0	242.3	257.1	272.7
General Government Final Consumption expenditure (US\$ billion)	25.2	24.5	24.1	21.6	20.4	32.2	41.8	47.2	50.0	55.2
Household Final Consumption	84.7	83.4	83.7	73.9	68.4	102.5	136.9	153.4	163.1	179.1

expenditure (US\$ billion)										
Gross Capital Formation (US\$ billion)	22.8	21.8	21.1	18.1	17.8	28.1	38.1	43.8	52.9	56.9
Exports of Goods and Services (US\$ billion)	34.5	33.7	37.0	35.7	36.6	46.8	57.7	66.5	76.2	81.4
Less Imports of Goods and Services (US\$ billion)	32.9	30.3	33.1	30.9	32.3	43.0	58.5	68.5	84.7	100.0
Gross Domestic Savings (US\$ billion)	24.4	25.3	25.1	22.9	22.1	31.9	37.3	41.7	44.0	38.3
GDP at Basic Prices (constant 2000 prices - US\$ billion)	124.6	127.6	132.9	136.5	141.5	145.9	153.0	160.7	169.3	177.7
Agriculture	3.6	3.8	4.0	3.8	4.1	4.0	4.0	4.3	3.9	4.1
Industry (US\$ billion)	36.6	36.5	38.4	39.1	40.2	40.5	42.3	44.2	46.3	48.6
Manufacturing (US\$ billion)	21.1	21.2	22.9	23.7	24.3	24.0	25.1	26.3	27.6	29.0
Services (US\$ billion)	72.5	75.4	78.4	81.3	84.7	88.5	93.1	98.0	104.0	109.0

Source: African Development Bank (2008), *Selected Statistics of African Countries-2008*, Vol. XXVII, Tables 1 to 9, pp. 256-257, Tunis: Statistics Department, African Development Bank.

<i>Indicators</i>	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Trade Balance	1 818.3	4 002.1	4 707.8	5 183.8	4 777.9	3 527.2	- 191.3	-1 000.7	-6 201.3	-7 387.7
Exports	29 062.7	28 515.7	32 019.0	30 899.6	31 688.4	38 525.5	48 144.2	55 349.8	64 085.6	69 996.7
Imports	27 244.4	24 513.6	27 311.2	25 715.7	26 910.5	34 998.4	48 335.5	56 350.5	70 286.9	77 384.4
Service	- 285.1	- 549.3	- 778.1	- 383.0	- 506.3	265.3	- 654.4	-1 019.8	-2 309.1	-3 190.7
Income	-3 161.5	-3 206.4	-3 175.6	-3 740.1	-2 795.6	-4 609.7	-4 317.9	-4 939.3	-5 273.0	-4 750.0
Current Transfers	- 739.9	- 926.2	- 926.0	- 727.3	- 555.7	- 988.5	-1 756.0	-2 813.3	-2 786.7	-3 394.5

Current Account Balance	-2 368.2	- 679.9	- 171.9	333.5	920.4	-1 805.8	-6 919.6	-9 773.0	-16 570.2	-18 722.9
Capital & Financial Account	3 862.9	1 175.3	- 550.2	-1 309.5	-1 178.2	-1 231.8	1 332.0	6 404.8	10 660.2	18 495.2

Source: African Development Bank (20008), *Selected Statistics of African Countries-2008*, Vol. XXVII, Tables 1 to 9, pp. 256-257, Tunis: Statistics Department, African Development Bank.

Table 7: South Africa: Key Economic Indicators – External Debt and Financial Flows, Exchange & Interest Rates, Price Indices										
<i>Indicators</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	
EXTERNAL DEBT AND FINANCIAL FLOWS (US\$ million)										
Total External Public Debt	10 667.8	8 173.3	9 087.7	7 941.0	12 427.1	14 120.1	13 793.4	15 661.6	13 939.8	
International Organisations	--	31.2	144.7	121.9	128.8	211.5	262.7	314.5	341.7	
Private Lenders	10 667.8	8 142.1	8 943.0	7 819.1	12 298.3	13 908.6	13 530.4	15 347.1	13 598.1	
Total Public Debt Service	2 654.4	1 043.9	2 173.3	2 558.1	1 695.6	2 064.8	1 434.5	2 414.9	2 617.1	
Debt Service/ Export of Goods and Service (%)	18.0	17.9	13.8	14.8	12.8	12.7	10.6	8.3	8.4	
Net Total Financial Flows	1 663.6	3 693.3	- 493.3	151.4	3 000.1	5 427.0	10 236.1	14 782.0	8 304.0	
Net Direct Investment from DAC Countries+	1 011.6	2 726.2	397.0	329.2	1 708.8	3 980.5	8 273.4	12 123.1	2 289.4	
Net official Development Assistance from all sources	513.8	541.4	487.3	427.8	504.6	641.3	628.2	680.0	717.8	
International Reserves	5 391	7 373	7 534	7 472	7 639	7 971	14 720	20 630	25 587 (32 943 in 2007)	
EXCHANGE & INTEREST RATES, PRICE INDICES										
Exchange Rate (National currency RAND/ US\$ - end of period)	5.86	6.15	7.57	12.13	8.64	6.64	5.63	6.33	6.97 (6.81 in 2007)	
Exchange Rate (National currency RAND/ US\$ - period average)	5.53	6.11	6.94	8.61	10.54	7.56	6.46	6.36	6.77 (7.05 in in	

									2007)
Inflation, Consumer Price (%)	7.2	6.9	7.7	6.6	9.3	6.8	4.3	3.9	4.6 (6.5 in 2007)
Consumer Price Index – All Items (2000 = 100)	86.8	92.9	100.0	106.6	116.5	124.4	129.8	134.8	141.1 (150.2 In 2007)

Source: African Development Bank (2008), *Selected Statistics of African Countries-2008*, Vol. XXVII, Tables 1 to 9, pp. 258-259, Tunis: Statistics Department, African Development Bank.

+OECD's Development Assistance Committee members

Table 8: South Africa: Key Economic Indicators – Production Indices									
<i>Indicators</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>
Agriculture (1999-01 = 100)	91.5	96.5	104.5	99.0	105.0	103.6	105.4	110.9	106.1
Food (1999-01 = 100)	94.1	97.6	104.8	97.6	102.8	100.4	101.3	105.8	100.7
Mining (2000 = 100)	103.5	101.5	100.0	101.4	102.2	106.4	112.5	111.7	110.5
Manufacturing (2000 = 100)	96.9	96.4	100.0	102.8	107.4	105.4	110.0	113.8	119.3

Source: African Development Bank (2008), *Selected Statistics of African Countries-2008*, Vol. XXVII, Tables 1 to 9, pp. 256-257, Tunis: Statistics Department, African Development Bank.

Table 5 shows that South Africa's economy has been growing steadily until 2006 and started slowing down in 2007 (GDP growth was 5.4% in 2006 and dropped to 4.9% in 2007). Exports have been steadily growing, but the imports have been growing much faster rate than exports. The growth of gross domestic savings dropped from US\$44b in 2006 to US\$38b in 2007. The service sector is the leading contributor to the economy (US\$109b), that is more the joint contribution of industry (US\$48.6b), and manufacturing (US\$29b). That means the current global financial crisis is likely to have significant impact on South Africa due to the major importance of service sector to its economy.

Table 6 clearly shows that South Africa has been facing negative trade balance since 2004 and it remains significant (US\$7.4 in 2007). The current account also has been in negative balance since 2003 and it remains significant (US\$18.7 in 2007). Table 7 shows that total external debt decreased from US\$15.6 in 2005 to US\$13.9b in 2006. But the RAND appreciated until 2006 against the US\$ affecting South Africa's exports and then it depreciated relatively. The inflation has gone up from 4.6% 2006 to 6.5% in 2007. Table 8 shows that South Africa did not see

significant growth in its agriculture and food sector, but the manufacturing and mining sectors have been growing significantly.

According to the Economic Review of Africa – 2009, in South Africa, the financial sector has been affected as stock prices have declined dramatically and GDP growth declined significantly (from 5.1 per cent in 2007 to 3.1 per cent in 2008) led by sharply lower growth in South Africa owing to a tightening in consumer spending and the slowdown in mining and quarrying. The tightening of global credit conditions is reducing FDI and reversing portfolio flows in South Africa and the financing of external deficits is expected to remain strained. According to IMF, South Africa's economy is projected to contract by about ¼% in 2009, its lowest growth rate in a decade, as capital outflows are forcing a sharp adjustment in asset prices (mainly in equity, bond, and currency markets) and in real activity. South Africa's currency (Rand) has weakened by about 23% against the US\$ between September and November 2008 as a “flight to safety” triggered a sell-off in equities and bonds (Economic Commission for Africa, 2009, p.46; IMF, 2009, p.93; UN, 2009, pp.109-110).

The global financial crunch appears to have affected even large African companies' ability to borrow on international markets. Also the domestic banking systems are also affected by liquidity shortage which makes it difficult for them to finance in the short term. This appears to have made an adverse impact on the private sector and on the value of stocks on the markets. Difficulties in financing investment projects appear to have forced firms to increase tariffs and prices. For example, Eskom, electricity supplier, has increased its tariffs as it is finding it difficult to raise finance for its long-term investment projects in international capital markets.

Furthermore, the indirect effects of the current global recession and credit crunch are felt by African countries in general including South Africa in a number of areas. These included falling commodity prices and exports, slow and unpredictable capital inflows, and exchange rate volatility, adverse impact on non-traditional agriculture and tourism (Economic Commission for Africa, 2009, p.36).

However, South Africa is not expected to witness serious problem in FDI. For example, according to IMF because of high rate of return from sub-Saharan Africa the interest in investing in the region will continue (IMF, 2008, p.51). In fact, FDI in South Africa more than doubled in 2008 to US\$12b from US\$5.7b in 2007 (UN, 2009)

5. The Case of China

According to the *Economic and Social Survey of Asia and the Pacific 2008*, by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) China will remain resilient, as strong domestic demand is likely to neutralise partly the impact of global recession. The *Survey* found that not only in the case of China but also most other countries in the Asia-Pacific region have strong macro-economic fundamentals (efficient fiscal and monetary policies, declining budget deficits, and even surpluses) which along with underlying regional domestic demand are likely to overcome the global recession triggered by the US' downturn. It is argued that firms in the Asia-Pacific economies including China are largely resilient to the credit crunch

in the US and EU, as they are generally cash rich and not highly leveraged. For example, a report by Credit Suisse stated that “in China Internet, telecom and winery sectors are particularly top ranked, thanks to their low gearing or net cash positions, with their domestic customers facing limited credit tightening issues”(see Website B). The ESCAP survey also pointed to the fact that firms in these countries including China are more conservative as borrowers and also their central banks are also capable of meeting the liquidity demand by the financial sector. Indeed, the banks in the US and EU appear to be looking to Asian funds to build their depleted capital bases (ESCAP, 2008). For example, many global banks such as HSBC, GE Money and Standard Chartered are started looking towards emerging markets like China to offset the global losses (BBC, 06 August 2008).

According to a report by Credit Suisse China is likely to be the least affected emerging market by the current credit crunch and global recession. Credit Suisse studied the impact of liquidity crunch on 216 companies in 59 sectors across 10 markets in the Asia Pacific region. It said that in Asia, except China, other markets are enduring a similar phenomenon as in the US because companies are facing difficulties in accessing funds (see Website B).

However, like the case of Brazil and South Africa, it is opined that China is facing or likely to face some negative impact from the global recession. For example, according to Sunil Poshakwale because of the developments in the US, stock markets in China have reacted negatively. They suffered mainly due to large scale withdrawal made by foreign institutional investors, mainly from the US, as they need cash in the US due to credit crunch in the US. But this appears to be happening in all emerging markets and not just in China. For example, nearly \$26bn worth of outflows have occurred between June and August 2008 from the emerging market economies, compared to about \$100bn that happened during the five years between 2002 and 2007. Therefore, the stock markets are reacting negatively in these markets (Poshakwale, 2008).

Poshakwale also pointed out some other short term problems faced by China. He argued that unlike India, China has been much more proactive and taking risks by going out and investing. It had to do this to keep the exchange rate (particularly with reference to US\$) at a competitive level. China has been buying US government bonds, treasury bills and bonds issued by investment banks. In fact, three banks in China have bought about \$10.5bn worth of bonds and some of those bonds were issued by the Lehman Brothers which went bankrupt. Because of such direct investments in the US, there is likely to be a direct impact on China. In the manufacturing sector particularly in Southern China, due to weakening global demand, there have been plant closures and layoffs. China’s exports are suffering a bit because of the fall of the US dollar (Poshakwale, 2008).

China’s GDP growth has dropped from 11.4% in 2007 to 9.1% in 2008 and is expected to decline further to 8.4% in 2009 and also its current-account surplus dropped from 11.5% of GDP in 2007 to 8.5% of GDP in 2008. This is due to a number of reasons such as declining demand for Chinese exports in mainly in the developed economies, the appreciation of its national currency and rising labour costs. China’s exports to the US and EU amount to about 8% and 7% of GDP respectively, and therefore recession in these economies are likely to have significant Impact on China ((UN, 2009, p.116; Akyuz, 2008, p.38). But declining exports have actually led to increase in China’s trade surplus in 2008. This is due to sharp decline in imports of inputs that

go into export products. This is also due to reduced domestic demand. But in 2009, imports are expected to increase with the implementation of planned increase in infrastructure investment, which will stimulate demand for raw materials and machinery (Economic Commission for Africa, 2008). According to preliminary ESCAP forecasts of the impact of the recession, particularly the sharp economic slow down in the US, on China's growth in 2009 indicate that its exports will decline from 13.4% to 4.5% (ESCAP, 2008a, p.2). To face the potential adverse impacts of the global recession, in November 2008, China announced a fiscal stimulus package of \$586b (14 per cent of GDP) to be implemented during 2009-10. Using this over two years it aims to stimulate domestic demand by reducing taxes, investing in public infrastructure, and promoting activities in the areas such as health care and education, agriculture, low-income housing, water, electricity, transportation, environment, technological innovation and rebuilding areas. The stimulus package is also designed to boost the income of the poor through measures including higher subsidies and an increased government purchase price for grains in 2009. Despite this, growth forecasts for China suggest that it will drop to have been 7-8% in 2009 (UN, 2009, p.116; Economic Commission for Africa, 2008).

<i>Indicators</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008*</i>
Real GDP Growth Rates (%)	7.6	8.4	8.3	9.1	10.0	10.1	10.4	11.6	13.0	9.0
Gross Domestic Savings Rates (% of GDP)	38.0	38.0	39.0	40.4	43.0	45.6	47.3	47.8	48.6	49.9
Gross Domestic Investment Rates (% of GDP)	36.7	35.1	36.3	37.9	41.2	43.3	43.3	44.5	44.2	41.8
Inflation Rates (%)	-1.4	0.4	0.5	-0.8	1.2	3.9	1.8	1.5	4.8	5.9
Budget Balance (% of GDP)	-3.0	-2.8	-2.5	-2.6	-2.2	-1.3	-1.2	-0.8	0.7	0.4
Current Account Balance (% of GDP)	1.9	1.7	1.3	2.4	2.8	3.5	7.0	9.1	11.5	10.2
Change in Money Supply (%)	14.7	12.3	15.0	13.1	19.2	14.9	16.7	22.1	16.7	14.0
Merchandise Export Growth Rates (%)	6.1	27.9	6.7	22.4	34.6	35.4	28.4	27.2	25.7	17.3
Merchandise Import Growth Rates (%)	18.2	24.4	12.6	27.1	39.9	36.0	17.6	19.9	20.7	18.4

Source: ESCAP, *Economic and Social Survey of Asia and the Pacific 2009*, Tables 1 to 9, pp. 174-182, New York: United Nations.

* Either estimated figure or for only part of the year

But it is expected to be a short term problem rather than a long-term trend. Because, even within domestic market China has significant potential for growth as demands remain strong. For example, retail sales in China have been growing by 20% a year (BBC, 06 August 2008). It is further argued that by itself the current credit crunch may not seriously affect the economic growth in China and it may reduce the growth rate by a couple of percentage points. However,

serious external problems such as sudden stop of capital flows and contraction of export markets are expected to have severe impact on China's growth rate.

Table 9 shows that GDP growth in China has dropped from 13% in 2007 to over 9% in 2008. The gross domestic savings have grown significantly until 2007 and dropped slightly in 2008, but it is still significant (i.e. about 50% of GDP). Inflation has increased by 1% in 2008, but budget balance and current account balance are significant compared to other case countries. But the export growth has dropped significantly in 2008, but imports remained strong (dropped only slightly) in 2008. Table 10 shows that the FDI inflow remained very significant over the years (2.5% of GDP in 2007) and it was nearly four times that of India.

Table 10: Inward Foreign Direct investment: China and India										
<i>Country</i>	<i>FDI Inward Stock</i>					<i>FDI Net Inflows</i>				
	<i>US\$ in millions</i>	<i>% of GDP</i>				<i>US\$ in millions</i>	<i>% of GDP</i>			
	<i>2007</i>	<i>1990-1995</i>	<i>1996-2000</i>	<i>2001-2005</i>	<i>2007</i>	<i>2007</i>	<i>1990-1995</i>	<i>1996-2000</i>	<i>2001-2005</i>	<i>2007</i>
China	327,087	9.7	16.0	13.5	9.6	83,521	3.6	4.1	3.3	2.5
India	76,226	0.9	3.0	5.2	6.7	22,950	0.2	0.7	0.9	2.0

Source: ESCAP, *Economic and Social Survey of Asia and the Pacific 2009*, Tables 10 p. 183, New York: United Nations.

One of the reasons for China not being affected seriously by the financial crisis in the US and EU is the nature of banking and financial system in China. The government control over the financial system has been much stronger. For example, the reserve requirements of banks were constantly raised from 7% in 2003 to 15% in 2008 and banks are holding over 80% of central bank securities issued for that purpose (Akyuz, 2008, p.21). China was able to provide fiscal support because of its reserve stockpiles, more credible inflation-targeting regimes, and stronger public balance sheets.

Although the emerging economies in general have been affected by the global recession and saw their growth reduced by the end of 2008, China did not see such decline mainly because of lower shares of their export sectors in domestic production and more resilient domestic demand. China's policy measures have supported domestic activity and the first quarter of 2009 has shown some signs of a turnaround in economic activity (IMF, 2009, pp.4-5, p.71).

Another factor that helps China to minimize the impact of global recession is the nature outward investment by residents. Unlike Indian firms which acquired assets abroad funded by capital inflows, China's companies acquired assets abroad by foreign exchange earnings from trade surpluses. That is, their acquisition of assets abroad has been based on their success of competition in international markets (Akyuz, 2008, pp.27-28).

Although the Chinese national currency renminbi (RMB) that is pegged to the dollar have also appreciated in real effective terms, it has remained broadly unchanged relative to the dollar.

While other leading exporters such as Japan have experienced sharp decline in demand for manufacturing exports, China is expected to witness significant economic growth (though less than recent years,) with increasing domestic demand (IMF, 2009, p.16 and 71). Although the growth in China is expected to slow to about 6.5% in 2009 (i.e. half the 13% growth rate recorded pre-crisis in 2007), it is still considered a strong performance in the current global recession conditions. IMF has identified two factors for this. First, although the exports declined significantly, it's impact is not severe as they have a smaller share of the economy, particularly after factoring in its high import content. Second, the government has acted aggressively with policy measures to stimulate its domestic market with the aim of helping to boost consumption (IMF, 2009, p.72).

6. The Case of India

Tables 11 to 17 below provide main economic indicators for India. Table 11 shows that GDP growth rate has dropped from 9% in 2007 to 7% in 2008, which is still significant. The domestic savings (% of GDP) have been growing steadily over the years but dropped slightly in 2008. The inflation has increased from 4.4% in 2005 to 9% in 2008, budget deficit (%GDP) has gone up to 6% again after being under control in the past few years. The export growth has declined significantly from 2007 to 2008 (from 23% to 11%) and imports growth has declined since 2004.

<i>Indicators</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008*</i>
Real GDP Growth Rates (%)	6.4	4.4	5.8	3.8	8.5	7.5	9.4	9.6	9.0	7.1
Gross Domestic Savings Rates (% of GDP)	24.8	23.7	23.5	26.4	29.8	31.8	34.3	34.8	35.5	34.5
Gross Domestic Investment Rates (% of GDP)	25.9	24.3	22.8	25.2	28.2	32.2	35.5	35.9	37.0	37.7
Inflation Rates (%)	4.7	4.0	3.8	4.3	3.8	3.8	4.4	6.7	6.2	9.0
Budget Balance (% of GDP)	-5.4	-5.7	-6.2	-5.9	-4.5	-4.0	-4.1	-3.4	-2.7	-6.0
Current Account Balance (% of GDP)	-1.0	-0.6	0.7	1.3	2.4	-0.4	-1.2	-1.1	-1.5	-2.7
Change in Money Supply (%)	17.1	15.2	14.3	16.8	13.0	16.7	15.6	21.6	22.3	23.6
Merchandise Export Growth Rates (%)	9.5	21.1	1.5	20.3	23.3	28.5	23.4	21.8	23.7	11.5
Merchandise Import Growth Rates (%)	16.5	4.6	12.3	14.5	24.1	48.6	33.8	21.8	29.9	19.0

Source: ESCAP, *Economic and Social Survey of Asia and the Pacific 2009*, Tables 1 to 9, pp. 174-182, New York: United Nations.

* Either estimated figure or for only part of the year

Table 12: India: Gross Domestic Product at Factor Cost by Industry of Origin (At 1990-2000 Prices in Rupees-billion)						
<i>Year (1)</i>	<i>Agriculture, Forestry & Fishing, Mining, and Quarrying (2)</i>	<i>Manufacturing, Construction, Electricity, Gas and Water supply (3)</i>	<i>Trade, Hotels, Transport and Communications (4)</i>	<i>Financing, Insurance, Real Estate, and Business Services (5)</i>	<i>Public Administration & Defence and Other services (6)</i>	<i>Gross Domestic Product at Factor Cost (2 – 6)</i>
1999-2000	4881.09	4106.46	3875.14	2335.50	2667.07	17865.25
2000-01	4879.92	4383.72	4156.50	2430.48	2792.39	18643.00
2001-02	5165.84	4507.23	4538.47	2607.37	2907.15	19726.06
2002-03	4861.34	4817.58	4966.92	2815.50	3021.53	20482.87
2003-04	5313.02	5193.22	5563.70	2972.50	3185.14	22227.58
2004-05	5350.37	5740.77	6158.48	3230.80	3403.42	23883.84
2005-06 (P)	5661.63	6351.21	6867.38	3599.42	3648.83	26128.47
2006-07(Q)	5885.30	7078.45	7678.84	4100.30	3900.20	28643.09

Source: Ministry of Finance (Government of India), *Economic Survey 2007-2008*, from Table 1.3A, p. A5.
P – Provisional Estimates
Q – Quick Estimates; US\$1 = About Rs 40-45

Table 12 shows the distribution of the shares of different sectors in the national economy. The three sectors – Trade, transport and communications sector, manufacturing, and financial sector have been making bigger contributions in that order. Any impact from the current global financial crisis on these sectors is likely to have an impact on the national economy in India. Table 13 shows that all the sectors have been growing steadily until 2007, except the agriculture sector which has seen fluctuating growth which is not surprising due to its reliance on monsoon and natural factors.

Table 13: India: Annual Growth Rates of Real Gross Domestic Product at Factor Cost by Industry of Origin (At 1990-2000 Prices)						
<i>Year (1)</i>	<i>Agriculture, Forestry & Fishing, Mining, and Quarrying (2)</i>	<i>Manufacturing, Construction, Electricity, Gas and Water supply (3)</i>	<i>Trade, Hotels, Transport and Communications (4)</i>	<i>Financing, Insurance, Real Estate, and Business Services (5)</i>	<i>Public Administration & Defence and Other services (6)</i>	<i>Gross Domestic Product at Factor Cost (2 – 6)</i>
2000-01	0.0	6.8	7.3	4.1	4.7	4.4

2001-02	5.9	2.8	9.2	7.3	4.1	5.8
2002-03	-5.9	6.9	9.4	8.0	3.9	3.8
2003-04	9.3	7.8	12.0	5.6	5.4	8.5
2004-05	0.7	10.5	10.7	8.7	6.9	7.5
2005-06 (P)	5.8	10.6	11.5	11.4	7.2	9.4
2006-07(Q)	4.0	11.5	11.8	13.9	6.9	9.6

Source: Ministry of Finance (Government of India), *Economic Survey 2007-2008*, from Table 1.4, p.A7.

P – Provisional Estimates

Q – Quick Estimates

Table 14: India: Exports, Imports and Trade Balance (in US\$ millions)

<i>Year</i>	<i>Exports (Including Re-exports)</i>	<i>Imports</i>	<i>Trade Balance</i>	<i>Exports – rate of Change (%)</i>	<i>Imports (Rate of Change (%))</i>
2000-01	44560	50536	-5976	21.0	1.7
2001-02	43827	52413	-7586	-1.6	1.7
2002-03	52719	61412	-8693	20.3	19.4
2003-04	63843	78150	-14307	21.1	27.3
2004-05	83535	111516	-27982	30.8	42.7
2005-06	103092	149167	-46076	23.4	33.8
2006-07	126360	185747	-59387	22.6	24.5
2007-08 (P)	110965	168803	-57839	21.6	25.9

Source: Ministry of Finance (Government of India), *Economic Survey 2007-2008*, from Table 7.1B, p. A81.

P – Provisional

Table 15: India: Principal Exports (in US\$ millions)

<i>Export Items</i>	<i>2000-01</i>	<i>2005-06</i>	<i>2006-07</i>	<i>2007 (Apr- Sep)</i>
Agricultural and Allied Products	6256	10549	13030	6690
Ores and Minerals (Excluding Coal)	906	5361	6036	2934
Manufactured Goods	35181	74200	86729	48442
Mineral Fuels and Lubricants (Including Coal)	1931	11867	18904	1286
TOTAL EXPORTS	44560	103092	126360	71910

Source: Ministry of Finance (Government of India), *Economic Survey 2007-2008*, from Table 7.3A, pp. A87-A88.

Table 14 shows that India has experienced constantly a negative trade balance due to greater growth in imports compared to exports particularly since 2003-04. Table 15 shows clearly that manufacturing goods were the leading exports from India and mineral fuels and lubricants also formed significant part of total exports.

Table 16 clearly shows that the share of exports to EU and North America is very significant (39% and 16% respectively in 2007-08), while India's leading export regions are in Asia (nearly 50%), and its exports to the rest of the world makes up for about 10%. Table 16 highlights the share of India's exports to selected countries in different regions. This shows that the leading export market for India is the US (15%). This is followed by UAE (9.5%), China (6.6%), Singapore (4.8%), the UK (4.2%), Hong Kong (3.7%) and Germany (3.2%). These figures suggest that the financial crisis and current economic slow down in EU and the US could have significant negative impact on India's exports.

<i>Regions</i>	<i>2005-06</i>	<i>2006-07</i>	<i>Share %</i>	<i>2007-08 Apr-Sep</i>	<i>Share %</i>
Europe	24910.3	28922.3	22.9	16543.9	23.0
Africa (excluding North Africa)	5441.7	8400.5	6.7	5533.8	7.7
North America	18374.6	20026.0	15.9	10443.6	14.5
Latin America	2993.5	4274.9	3.4	2354.7	3.3
East Asia	1004.5	1489.7	1.2	617.7	0.9
ASEAN	10411.3	12563.7	10.0	6445.4	9.0
West Asia and North Africa	16685.2	23020.4	18.2	14548.6	20.2
North East Asia	16226.1	19336.2	15.3	10629.8	14.8
South Asia	5547.7	6471.4	5.1	3677.1	5.1
CIS	1247.6	1483.0	1.2	740.3	1.0
TOTAL	103090.5	126331.1	100.0	71909.6	100.0

Source: Ministry of Finance (Government of India), *Economic Survey 2007-2008*, from Table 7.4B, pp. A95-99.

<i>Regions</i>	<i>2006-07</i>	<i>Share %</i>	<i>Regions</i>	<i>2006-07</i>	<i>Share %</i>
Europe			ASEAN		
1. UK	5547.2	4.2	1. Singapore	6021.1	4.8
2. Germany	3987.5	3.2	2. Indonesia	2027.3	1.6

3. Italy	3692.0	2.9	3. Thailand	1443	1.1
4. Belgium	3473.4	2.8	4. Malaysia	1304.8	1.0
5. Netherland	2668.9	2.1	North East Asia		
6. France	2115.1	1.7	1. China PR	37514.9	6.6
Africa (excluding North Africa)			2. Hong Kong	21195.5	3.7
1. South Africa	2246.3	1.8	3. Japan	12727.9	2.2
North America			4. Korea RP	11427.0	2.0
1. US	18872.0	14.9	West Asia and North Africa		
Latin America			1. UAE	12014.7	9.5
1. Brazil	1477.6	1.2	2. Saudi Arabia	2582.8	2.0
East Asia			South Asia		
1. Australia	924.6	0.7	1. Sri Lanka	10199.7	1.8
			2. Bangladesh	7369.2	1.3
Source: Ministry of Finance (Government of India), <i>Economic Survey 2007-2008</i> , from Table 7.4B, pp. A95-99.					

Economic and Social Survey of Asia and the Pacific 2008, by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) suggested that in emerging Asia, India will feel the least impact from the global recession and credit crunch.

Makarand Teje argued that India will be able to minimise the negative impact of the global recession due to number of factors. These included: (i) India is one of the strongest economies in the world as the second fastest growing economy behind China (12th largest globally); (ii) It has enjoyed very high economic growth in the last eight years and is unlikely to see big drop in this growth; (iii) It has taken measures to minimise the effects caused by the global recession; (iv) it is in a relatively stable position; (v) in recent years, the Indian corporate sector (particularly the technology and services firms) was involved in mergers and acquisitions (M&A) in the US and EU, but they have avoided companies in trouble and highly leveraged transactions and funded these deals with bank loans and higher grade credit, which has helped them to steer clear of the credit crunch (Teje, 2008); (vi) India continues to attract investors (e.g. the recent acquisitions from NTT DoCoMo (buying 26% of Tata Teleservices for \$2.7 billion) and Telenor (buying 60% of Unitech Wireless for \$1.1 billion) (see Website C); (vii) many global banks such as HSBC, GE Money and Standard Chartered are turning towards India and China to offset the global losses (BBC, 06 August 2008), and (viii) unlike in China, the banks in India do not have high exposure to the US bonds (not more than \$5mn) (Poshakwale, 2008).

Although India was expected to escape with little or no negative impact from the global credit crunch, it is clear that India is facing some problems, may be short-term. It has been affected by three main factors - the impact of the global credit crunch, high oil prices and rising inflation driven by high cost of fuel and food. This forced the Reserve Bank of India to increase interest rate. It is felt that higher interest rates could lead to declining economic growth.

According to a report by Credit Suisse in India, despite the unprecedented easing and cash reserve ratio reduction, domestic liquidity has not really eased significantly. Particularly, the

credit crunch is exerting pressure on the Indian real estate, banks, construction and metals sectors. It appears that real estate companies are sacrificing growth to generate liquidity. Also, the liquidity problem does not mean just availability of money, the banks are unwilling to lend. The sectors such as sugar, auto, engineering, IT services, telecom and pharmaceuticals have also been affected by the liquidity crunch (See Website B).

The negative impact of global recession on India included: (i) manufacturers have seen slump in profits; (ii) consumers are not spending enough; (iii) financial markets witnessed big slump (the Bombay Stock Exchange's benchmark Sensex has fallen more than 5,000 points); (iv) financial institutions have reduced the level of consumer finance such as lending to buy a new car or a new home (BBC, 06 August 2008). The Reserve Bank of India has repeatedly increased the cash reserve ratio (the level of minimum cash banks must keep in relation to customer deposits) to discourage lending; (v) India is affected by difficult external financing for firms and banks and also, unlike China, India has less room to ease macroeconomic policies. According to IMF, due to weaker investment, difficult financing conditions and problems in domestic credit market, India's growth is expected to decline from over 9% in 2007 to 4.5% in 2009 (IMF, 2009,p.73).

But it is argued that the global credit crunch may have some impact on economic growth, but not serious negative impact. According to ESCAP forecasts of the impact of the United States recession on merchandise exports from India in 2009, it is expected to decline from 9.9 to 2.6 percent (ESCAP, 2008a). It is also expected that India's current account deficits is likely to rise from its recent levels of 3% to 5% of GDP as exports slow down and growth of income and imports is sustained. Although India's relatively high levels of reserves would help ease this problem, it is likely to face serious situation if it faces a sudden stop or reversal of capital flows (Yukuz, 2008, 45).

The foreign-exchange reserves fell by more than \$17b in first half of October 2008 alone, partly due to foreign capital outflows. India's economic activity, which had been growing at 9% or more over the past few years, has been faltering in response to the global recession and financial crisis in the US and EU, and also due to hardening of commodity prices in international markets. Also, the inflation rose from 6.4% in 2007 to 8% in 2008 (UN, 2009, p117)

Although India has been affected by contraction in the export sector, India, like China, it is less exposed to the decline in global demand and its economy has continued to grow because trade is a smaller share of the economy and policy measures have supported domestic activity (IMF, 2009,pp.71-73). To ease the problems in the money market and foreign exchange liquidity shortages, India introduced policy measures by cutting rate and reserve requirements, with large liquidity injections and relaxing controls on capital inflows and introducing foreign exchange swaps for banks.

7. Analysis of the Cases

In this section we compare some important data across the case countries and then also provide Tables which links specific country data with the 6 sets of NSI elements identified in the conceptual framework. By this we try to show how analysing all 6 sets of NSI related data could identify the potential mitigating capability of an individual NSI and help draw some general conclusions.

Table 18 shows that China is in far better position among the case countries in terms of current account balance (% GDP), external debt refinancing needs and South Africa is in unfavourable position in these areas among the 4 case countries.

Tables 18: Comparison of Macro and Financial Indicators among Case Countries					
<i>Country</i>	<i>Current Account Balance (% of GDP)</i>	<i>External Debt Refinancing Needs in 2009 (% of Reserves)</i>	<i>Net External Position vis-à-vis BIS Reporting Banks (% of GDP)</i>	<i>Average Real Credit Growth over the Last Five Years (% year-on-year)</i>	<i>Loan/Deposit (Ratio)</i>
Brazil	-1.8	40	-7.1	15.9	0.8
South Africa	-5.8	49	4.4	12.8	1.2
China	10.3	14	0.7	11.3	0.8
India	-2.5	33	-8.9	18.2	0.8

Source: IMF (2009), Global Financial Stability Report: Responding to the Financial Crisis and Measuring Systematic Risk, April, Washington D.C: IMF, Table 1.1, p. 13.

BIS – Bank for International Settlements

Table 19: Comparison of Equity Market Indices among Case Countries								
<i>Country</i>	<i>End of 2006</i>	<i>End of 2007</i>	<i>End of 2008</i>	<i>End of 2006 (% Change)</i>	<i>End of 2007 (% Change)</i>	<i>End of 2008 (% Change)</i>	<i>12-Month High</i>	<i>12-Month Low</i>
Emerging Markets	912.7	1245.6	567.0	29.2	36.5	-54.5	1249.7	454.3
Brazil	2205.4	3867.2	1638.2	40.5	75.3	-57.6	4727.6	1286.5
South Africa	443.1	508.3	305.1	17.3	14.7	-40.0	523.2	204.4
China	52.1	84.9	40.8	78.1	63.1	-51.9	84.9	27.2
India	390.6	668.9	233.6	49.0	71.2	-65.1	694.2	198.1

Source: IMF (2009), Global Financial Stability Report: Responding to the Financial Crisis and Measuring Systematic Risk, April, Washington D.C: IMF, Table 10, pp. 187-88.

Table 19 clearly shows that equity market indices in all case countries and the emerging markets have declined significantly and by the end of 2008 both India and Brazil have witnessed big drop, followed by China. South Africa has experienced relatively low drop in this are. It appears that the current global economic crisis has affected these markets.

Table 20 again shows that the foreign exchange rate for national currencies of the case countries have experienced significant appreciation against the US\$ in 2007 and subsequently depreciated significantly in 2008, except the case China.

<i>Country</i>	<i>End of 2003</i>	<i>End of 2004</i>	<i>End of 2005</i>	<i>End of 2006</i>	<i>End of 2007</i>	<i>End of 2008</i>	<i>12-Month High</i>	<i>12-Month Low</i>
Brazil	2.89	2.66	2.34	2.14	1.78	2.31	1.56	2.51
South Africa	6.68	5.67	6.33	7.01	6.86	9.53	6.74	11.57
China	8.28	8.28	8.07	7.81	7.30	6.83	6.81	7.30
India	45.63	43.46	45.05	44.26	39.42	48.80	39.27	50.29

Source: IMF (2009), Global Financial Stability Report: Responding to the Financial Crisis and Measuring Systematic Risk, April, Washington D.C: IMF, Table 11, p. 190.

<i>Country</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>
Total Emerging Markets	325 729.6	454 640.3	540 183.9	716 401.2	446 540.0
Brazil	16 669.8	27 486.0	31 219.4	72 969.1	30 343.1
South Africa	5 324.8	6 265.9	12 700.7	19 797.5	2 799.5
China	25 661.6	38 804.6	50 039.4	74 700.7	29, 053.1
India	13 301.1	21 660.0	29 534.4	58 005.3	37 206.4

Source: IMF (2009), Global Financial Stability Report: Responding to the Financial Crisis and Measuring Systematic Risk, April, Washington D.C: IMF, Table 14, pp. 196-97.
* External public syndicated issuance, excluding bilateral deals

Table 21 again shows clearly that all case countries have witnessed significant drop in external financing (total bonds, equities, and loans) in 2008. Until 2007 they all have seen a steady growth in external financing.

Table 22 highlights investments in R&D and education and skills development in the case countries. It suggests that all these countries have been consistently investing about 0.8 to 0.9% of GDP in R&D. They also have been making significant investment in education. These are summarised in the following tables (23 to 26).

Country	2000	2001	2002	2003	2004	2005	2006
<i>R&D as % of GDP</i>							
Brazil	0.94	0.96	0.91	0.88	0.83	0.82	--
South Africa	--	0.73	--	0.80	0.86	0.92	--
China	8.6	9.8	10.1	10.5	10.2	9.9	9.2

India	0.77	0.75	0.73	0.71	0.69	--	--
<i>Total gross domestic expenditure on R&D by source of funds (%) – Business Enterprises</i>							
Brazil	40.0	39.1	40.3	39.2	39.9	39.4	--
South Africa	--	53.3	--	52.1	44.5	43.9	--
China	57.6	--	--	60.1	65.7	67.0	69.1
India	18.0	19.3	20.3	20.0	19.8	--	--
<i>Total gross domestic expenditure on R&D by source of funds (%) – Government</i>							
Brazil	58.7	59.4	57.9	58.7	57.9	58.3	--
South Africa	--	35.2	--	27.9	23.7	38.2	--
China	33.4	--	--	29.9	26.6	26.3	24.7
India	77.9	76.5	75.6	75.4	75.3	--	--
<i>Total gross domestic expenditure on R&D by source of funds (%) – Higher Education</i>							
Brazil	1.3	1.4	1.8	2.1	2.2	2.3	--
South Africa	--	--	--	3.5	9.2	3.0	--
China	--	--	--	--	--	--	--
India	4.0	4.2	4.2	4.5	4.9	--	--
<i>Public Expenditure on Education as % of GDP</i>							
Brazil	4.0	--	--	--	--	4.0	--
South Africa	5.6	--	--	--	--	5.3	--
China	1.9	--	--	--	--	--	--
India	4.4	--	--	--	--	3.2	--
<i>Public Expenditure on Education as % of Total Government Expenditure</i>							
Brazil	12.0	--	--	--	--	--	--
South Africa	18.1	--	--	--	--	17.9	--
China	13.0	--	--	--	--	--	--
India	12.7	--	--	--	--	10.7	--
<i>Total Enrolment (000's) – Primary to Tertiary Education</i>							
Brazil	49 090	--	--	--	--	48097	--
South Africa	12 384	--	--	--	--	--	--
China	--	--	--	--	--	233 702	--
India	194 430	--	--	--	--	244 116	--
<i>Source: UNESCO Statistics on Research and Development, and Education</i> (see http://stats.uis.unesco.org/unesco/ReportFolders/ReportFolders.aspx)							

Table 23: Some Major Components of NSI that Could have Mitigating Impact on Recession - Brazil

<i>Components of NSI</i>	<i>Nature/ Level of Presence in National Economy of Brazil</i>
<p><i>1. The general investment climate and economic policy framework:</i></p> <p>(a) Macroeconomic and social stability (b) National fiscal policy regime (c) Foreign debt (d) Inflation (e) Interest rate and (f) Regulatory regime such as trade and tax policies (g) Nature and role of FDI</p>	<p>(a) Relatively stable GDP growth (b) Significant cash reserves, low current account balance (1.8% GDP) (c) Significant foreign debt, but reduced in recent years (d) (e) Low interest rate (suspended)/ Real depreciated significantly (f) Regulatory regime responding to present crisis with number of initiatives (g) High inflow (30% of total inflow to Latin America), mainly in natural resources sector</p>
<p><i>2. Market, per capita income, domestic savings:</i></p> <p>(a) Domestic market size / structure (b) Links to regional and global markets (c) Domestic savings Growth</p>	<p>(a) Significant domestic market, steady growth of per capita GDP (b) good access to Latin American markets (c) Significant (US\$232b in 2007)</p>
<p><i>3. Industrial structure:</i></p> <p>(a) Presence of diverse industrial structure (b) Strength of domestic firms (c) Presence and role of foreign firms (d) Links to foreign companies/ foreign financial market</p>	<p>(a) Significantly diversified sectors (strong manufacturing, natural resources, and agriculture sectors) (b) Strong domestic firms, carry less debt loads compared to foreign firms (c) 36 companies are listed in Wall street (US)</p>
<p><i>4. Financial Institutions:</i></p> <p>(a) Banking sector (b) Role and effectiveness of the Central Bank (c) Links to foreign financial market</p>	<p>(a) Dominated by small number of banks (b) More powers given to central bank after global crisis (c) Significant links to foreign financial market, number of projects depends on it.</p>
<p><i>5. Foreign Trade:</i></p> <p>(a) Nature of exports (b) Export markets (Destinations) (c) Dependence on commodity exports</p>	<p>(a) Manufacturing/ agriculture goods (b) Same levels of exports and imports by 2007 (c) Significant dependence on commodity exports, fall in commodity prices affected the economy.</p>
<p><i>6. Skills, R&D, and Technology development:</i></p> <p>(a) Investment in education and</p>	<p>(a) Investment in education and skills have been over 4% of GDP consistently.</p>

skills (human resources) development (b) Investment in R&D	(b) Investment in R&D has been between 0.8 to 0.9% of GDP (about 40% by Business enterprises and 58% by the government)
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Table 24: Some Major Components of NSI that Could have Mitigating Impact on Recession – South Africa	
<i>Components of NSI</i>	<i>Nature/ Level of Presence in National Economy of Brazil</i>
<p><i>1. The general investment climate and economic policy framework:</i></p> <p>(a) Macroeconomic and social stability (b) National fiscal policy regime (c) Foreign debt (d) Inflation (e) Interest rate and (f) Regulatory regime such as trade and tax policies (g) Nature and role of FDI</p>	<p>(a) Relatively significant GDP growth (3%) despite the global recession (b) Current account balance –US\$18b. (c) Significant foreign debt (US\$14b in 2006). (d) Inflation increased from 4.6% in 2006 to 6.5 in 2007 (e) Reduced interest rate / RAND depreciated significantly (23% in late 2008) (f) Generally prudent regulatory regime; responded to present crisis with number of initiatives (g) Declining FDI and increasing net outflow of funds (FDI mainly in natural resources sector)</p>
<p><i>2. Market, per capita income, domestic savings:</i></p> <p>(a) Domestic market size / structure (b) Links to regional and global markets (c) Domestic savings Growth</p>	<p>(a) Small domestic market than other cases, significant growth of per capita GDP in recent years (b) Close access to African markets, strong links to EU and America, increasing South-South links (c) Relatively small savings growth compared to other cases (US\$38b in 2007)</p>
<p><i>3. Industrial structure:</i></p> <p>(a) Presence of diverse industrial structure (b) Strength of domestic firms (c) Presence and role of foreign firms (d) Links to foreign companies/ foreign financial market</p>	<p>(a) Significantly diversified sectors with services leading (significant growth in manufacturing and mining, but no growth in agriculture and food sectors) (b) Strong domestic firms and stock prices fell significantly because of current financial crisis. (c) significant presence of foreign firms (d) Strong links to foreign financial market for financing</p>
<p><i>4. Financial Institutions:</i></p> <p>(a) Banking sector (b) Role and effectiveness of the Central Bank (c) Links to foreign financial market</p>	<p>(a) Stable banking sector with prudent policy regime, but domestic banking affected by liquidity problems due to current crisis. (b) Strong central bank (c) Significant links to foreign financial market, but with less risks in foreign market due to prudent policy regime.</p>
<p><i>5. Foreign Trade:</i></p> <p>(a) Nature of exports (b) Export markets (Destinations)</p>	<p>(a) Exports less than imports leading to negative trade balance (US\$18.7 in 2007)</p>

(c) Dependence on commodity exports	(b) Main markets are EU, the US, rest of Africa, now increasing South-South trade. (c) Significant dependence on commodity exports, fall in commodity prices affected the economy.
6. <i>Skills, R&D, and Technology development:</i> (a) Investment in education and skills (human resources) development (b) Investment in R&D	(a) Investment in education and skills have been over 5% of GDP (b) Investment in R&D has increased from 0.73 in 2000 to 0.92 in 2005 (about 43% by Business enterprises and 38% by the government)

Table 25: Some Major Components of NSI that Could have Mitigating Impact on Recession – China	
<i>Components of NSI</i>	<i>Nature/ Level of Presence in National Economy of Brazil</i>
<p>1. <i>The general investment climate and economic policy framework:</i></p> <p>(a) Macroeconomic and social stability (b) National fiscal policy regime (c) Foreign debt (d) Inflation (e) Interest rate and (f) Regulatory regime such as trade and tax policies (g) Nature and role of FDI</p>	<p>(a) More stronger than other case countries. Although GDP growth declined from 11.4 % in 2007 to 9% in 2008, it is still high despite the global recession (b) Current account balance is significant (about 11% of GDP). (c) External financing (total bonds, equities, and loans) amounted to US\$30b in 2008. (d) Inflation increased from 4.8% in 2007 to 5.9 in 2008 (e) Reduced interest rate / RMB appreciated significantly despite global crisis. (f) Strong government control and regulatory regime; responded to present crisis with big stimulation package (US\$586b) (g) FDI inflow declined significantly</p>
<p>2. <i>Market, per capita income, domestic savings:</i></p> <p>(a) Domestic market size / structure (b) Links to regional and global markets (c) Domestic savings Growth</p>	<p>(a) Large domestic market than other cases and strong domestic demand (b) Strong links to Asian markets as well as global markets such as EU and the US (c) High gross domestic savings rate of growth (50% of GDP)</p>
<p>3. <i>Industrial structure:</i></p> <p>(a) Presence of diverse industrial structure (b) Strength of domestic firms (c) Presence and role of foreign firms (d) Links to foreign companies/</p>	<p>(a) Significantly diversified sectors with manufacturing sector leading. But this sector seems to have been the most affected sector due to current global crisis. (b) Strong domestic firms. They are more conservative borrowers. Stock prices fell in response to global crisis. (c) Strong presence of foreign firms. Foreign investors</p>

foreign financial market	withdrew funds due to global crisis. (c) Strong links to foreign financial market, but Chinese firms are not facing serious risks due to this.
<p><i>4. Financial Institutions:</i></p> <p>(a) Banking sector (b) Role and effectiveness of the Central Bank (c) Links to foreign financial market</p>	<p>(a) Strong government control over banking and financial sector with stringent reserve requirements. EU and the US banking sectors are looking towards Chinese financial sector to gain recovery from current crisis. (b) Strong central bank with strong capability to meet liquidity demands of the financial sector (c) Strong links to foreign financial market, but China has taken risks in investing in foreign financial markets.</p>
<p><i>5. Foreign Trade:</i></p> <p>(a) Nature of exports (b) Export markets (Destinations) (c) Dependence on commodity exports</p>	<p>(a) Exports (particularly manufacturing) declined due to current recession. This led to decline in imports and resulted in trade surplus. (b) Main markets are Asia, EU (7% of GDP), US (8% of GDP). (c) Less significant dependence on commodity exports.</p>
<p><i>6. Skills, R&D, and Technology development:</i></p> <p>(a) Investment in education and skills (human resources) development (b) Investment in R&D</p>	<p>(a) Investment in education and skills has been significant. (b) Investment in R&D has been between 0.86 in 2000 to 0.92% of GDP in 2006 (about 70% by Business enterprises and about 25% by the government)</p>

Table 26: Some Major Components of NSI that Could have Mitigating Impact on Recession – India

<i>Components of NSI</i>	<i>Nature/ Level of Presence in National Economy of Brazil</i>
<p><i>1. The general investment climate and economic policy framework:</i></p> <p>(a) Macroeconomic and social stability (b) National fiscal policy regime (c) Foreign debt (d) Inflation (e) Interest rate and (f) Regulatory regime such as trade and tax policies (g) Nature and role of FDI</p>	<p>(a) GDP growth dropped from 9% in 2007 to 7% in 2008, but this is still high growth despite global recession (b) Current account balance was -2.7% of GDP in 2008 and budget deficit has gone up to 6% of GDP in 2008. (c) External financing (total bonds, equities, and loans) amounted to US\$37b in 2008. (d) Inflation increased from 4.4% in 2005 to 9% in 2008 (e) Reduced interest rate / Rupee appreciated significantly before the current crisis and depreciated due to global crisis in 2008. (f) Strong regulatory regime; responded to present crisis with measures such as change in reserve requirement, providing large liquidity, relaxing controls on capital flow, and foreign exchange swaps for banks. (g) Significant foreign capital outflow. But FDI inflow is still</p>

	significant.
<p><i>2. Market, per capita income, domestic savings:</i></p> <p>(a) Domestic market size / structure (b) Links to regional and global markets (c) Domestic savings Growth</p>	<p>(a) Large domestic market and strong domestic demand (b) Strong links to Asian markets, EU and the US (c) High gross domestic savings rate of growth (34.5% of GDP in 2008)</p>
<p><i>3. Industrial structure:</i></p> <p>(a) Presence of diverse industrial structure (b) Strength of domestic firms (c) Presence and role of foreign firms (d) Links to foreign companies/ foreign financial market</p>	<p>(a) Significantly diversified sectors with trade, transport and communications, manufacturing, and financial sectors as leading contributors. All sectors have been growing significantly except the agriculture sector. (b) Strong domestic firms. Stock prices fell significantly in response to global crisis. (c) Significant presence of foreign firms selected sectors such as technology and services. Foreign investors withdrew funds due to global crisis. (c) Strong links to foreign financial market, but Indian firms took precautions to avoid risks.</p>
<p><i>4. Financial Institutions:</i></p> <p>(a) Banking sector (b) Role and effectiveness of the Central Bank (c) Links to foreign financial market</p>	<p>(a) Strong banking sector, but unwilling to provide financing to firms due to global crisis. (b) Strong central bank but with relatively less capability (unlike central bank in China) to meet liquidity demands of the financial sector. But, it took many initiatives in response to current crisis. (c) Unlike China, banks in India do not have high exposure to US bonds.</p>
<p><i>5. Foreign Trade:</i></p> <p>(a) Nature of exports (b) Export markets (Destinations) (c) Dependence on commodity exports</p>	<p>(a) Exports growth declined from 23% in 2007 to 11% in 2008 due to current recession. Main exports include manufacturing goods, mineral fuels and lubricants. Imports also declined significantly. (b) Main markets for exports are Asia (50%), EU (39%), North America (16%). (c) Less significant dependence on commodity exports.</p>
<p><i>6. Skills, R&D, and Technology development:</i></p> <p>(a) Investment in education and skills (human resources) development (b) Investment in R&D</p>	<p>(a) Investment in education and skills has been between 3 to 4% of GDP (b) Investment in R&D has been between 0.7 to 0.8% of GDP (about 20% by Business enterprises and 75% by the government)</p>

8. Some Conclusions

On the NSI side we took six variables such as macroeconomic stability, market structure, per capita income and domestic savings, industrial structure, financial institutions, foreign trade and skills, R&D and Technology development as relevant indicators of how changes in these indicators is correlated to the impact of the recession as much as these can be read through the available data.

On the mitigating capability side we correlated whether the actions taken are defensive by taking measures like imposing protection, reduction in bank lending, consumer fear to spend and save and even hoard, reducing expenditure on R & D, reducing imports and finding new markets for reduced exports as a result of the recessionary downturn and changes in public policy.

What emerges from the four transition countries is that the recessionary impact has forced behaviour for the regulatory tightening by Government and reduction by banks in lending to firms and other factors that are due to the recession. Whilst the recession has induced such behaviour, the basic elements of the NSI appear to function to bring about and overcome the recessionary downturn by taking macroeconomic stability without imposing stringent policies of control, restricting markets, domestic demand and per capita income, tampering with the strategy of diversifying the industrial structure, and changing the central bank, the banking sector and their relations to the foreign capital, currency and money markets, reduced exports without changing mainly the destination of the pre-recessionary export markets, and continuing to fund education, skills development and R & D.

It looks nearly all of the transition countries have their GDP still growing whether the rate is reduced or not showing a quality of NSI that is strong. China had a big stimulus package to fight the global recession whilst the other three Brazil, India and South Africa took steps to deal with the recession not with a massive stimulus but varied regulatory and active policy measures.

Overall the assumption we had that countries in transition are evolving strong NSI that can cope with recessionary downturn appears to be borne out by the available data and the six identified NSI characteristics, showing despite the problems, the economies are broadly on course to see this recession and through and come out stronger.

Initial study on the BRICS reveals that the approach and perspective of using not just isolated variables like financial institutions and banking sector in the economy as the main factors for understanding and finding remedies to overcome the recessionary economic down turn. What comes forcefully is how important it is to frame the challenge of the recession by using the NSI of a country. Very often when we look at the discussions of recession, the NSI is not used. What we have done here is to bring the NSI to the forefront to look at both political and economic system and its ability to respond to the recessionary tide. We think it in itself is an original contribution relating not just single institutions but the NSI as a whole in relation to estimating the capability of the country to work its way out of the global recession.

The second major contribution is the policy learning that is needed when global recession confronts specific NSI. What we can say now from the policy side is that there is a need for integrated policy response (taking into account all the 6 sets of NSI components that we have identified in our conceptual framework) not an ad-hoc or compartmentalised approach (e.g.

tinkering trade or banking regulations, or fiscal policy) to overcoming the crisis. Such integrated policy approach that takes all the relevant NSI components into account will be far more robust in responding to and managing the impact of any global recessionary crisis.

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