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Synchronization of Business Cycles: “Few Suggestions for Managerial Decision Making”

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Abstract: Synchronization of business cycles of various world economies/regions during the recent years has been observed remarkably high. The sub-prime crisis in United States led to a Global Financial Meltdown in 2008. The increased integrated ness of various advanced, emerging and developing economies through trade, finance and confidence channels made the contagion effect of the sub-prime crisis more out-stretched and severe. Economic growth in major EMEs, including India, was also impacted falsifying the decoupling hypothesis perceived by many economists. Thus, going forward, the decoupling hypothesis is not expected to hold as globalisation has increased India's economic linkages with almost all major economies. So, at this backdrop, we would be attempting to find India's bilateral correlations of business cycles with major world economies/regions. The inter-temporal comparisons would be analysed to check the co-movement of India's business cycles with major World economies. We would also make an attempt to suggest suitable managerial practices taking external risk as a significant element in new age managerial decision making. In order to conduct the proposed study, the real GDP growth numbers on a set of advanced, emerging and developing economies with a time-series data segregated in 3 time frames of 1996 to 2001, 2002 to 2007 and 2008 to 2014 would be used to know about past trend and developments in the recent times. The Hodrick-Prescott (HP) filter which is used to remove short-term fluctuations from economic cycles to reveal long-term trends will be used to draw inferences. In all, the study would enable business managers to assess the impact of global economic developments and its likely impact on India's business environment. Furthermore, the study would enable the managers to acquaint with new management practices so as to avoid negative repercussions of business shocks in the global economy. The HP filter, developed by Hodrick and Prescott (1997), is widely used in the business cycles literature. The HP filter is a mathematical tool used in macroeconomics, especially in real business cycle theory. It is used to obtain a smoothed non-linear representation of a time series, one that is more sensitive to long term than to short term fluctuations.

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1. Introduction : Trend in international risk scenario

The post 2008 world has become seen a dramatic decline in output growth across the world, with majority of economies of the advanced and emerging markets trying to break the disequilibrium in macroeconomic indicators through massive rounds of quantitative easing programmes and macro-prudential regulations.

Global regulatory authorities have hotly debated issues related to reforming the architecture of the international financial and banking system, aimed at reducing the risks arising out of contagion or spillovers. In retrospect, many argue that the negligence on part of regulatory institutions and increase in incessant risk-taking on part of Shadow Banks was the major reason for Sub-prime crisis of 2008. However on observing the last two decades in global financial history it has been felt that technological advancements and increased trade and financial linkages has been the prime reason for making the economies more prone to contagion/spillovers.

During the time-period from 1996 to 2001, two major financial crisis occurred which resonated from developing economies and finding its way to Latin America and advanced nations. The Asian crisis in 1997 and Russian default in 1998, The Asian financial crisis in 1997 occurred due to capital flight from East Asian countries, as a result of un-pegging of their currency from the US dollar. The un-pegging caused a significant currency devaluations and as a result capital flows declined significantly. Then again in 1998, the devaluation of Russian Ruble as a result of default by Russian government on their loan, led to the collapse of major hedge funds, including Long Term Capital Management (LTCM) which lost US\$1.85 billion (Dunbar, Nicholas, 2000). The crisis subsequently hit Brazil, creating uncertainty about the country's ability to pay-back its public sector debt, and continued to spread to other emerging markets in Latin America and elsewhere. (Dornbusch R, Park Y.C , Claessens S, 2000). To add fuel to fire, the year 2001 saw its first economic crisis when over-valued stocks prices of internet companies declined significantly as a result of exaggerated market confidence and speculation in stocks. The

The period from 2007 to 2009 was probably a year which marked by gross negligence on part of regulatory authorities and increase in incessant risk-taking on part of Shadow Banks. The Sub-Prime Crisis of 2008 had its roots from the Dot-Com Bubble of 2001 and 11th September 2001 terrorist Attack on US, which threatened the country into recession. In order to avoid the turning of

recession into deflation in the economy, Federal Reserve took a series of interest cuts and reached at record low rate of 1% in June 2003. This excessively loose monetary policy and lax lending standards during 2002-2006 boosted demand for consumption and investment in the US and especially for the houses and properties. This augmented demand for houses/properties lead to increase in demand for funds. These loans were incessantly made available to sub-prime creditors under the mortgage contract which further outlined that once the 'low-interest' period or "teaser-period" expired after 2 years, the rates would be exponentially increased. This led to number of defaults from creditors, which resulted in collapse of the securitization value chain which was contingent on the interest and principal payments from these creditors of mortgages loans.

2. Impact of economic contagion on India

2.1 Asian contagion

The contagion effect of the Asian crisis of 1997 was triggered off in the Thai financial markets, however it spread quickly to Malaysia, Korea, Philippines, and Indonesia. The severity of the crises was profound in these countries to close financial and trade linkages between the economies. The affected economies witnessed a sharp decline in output, employment and standards of living.

The crisis intensified as a result of failure of the Thai central bank to support the baht and its subsequent float on July 2, 1997. Hence the financial inter-linkages between the East Asian economies led to the transmission of the crisis that began in Thailand to the entire region.

The Indian economy as a result of strengthening of its banking sector during 1991 period of market liberalization, remained fairly insulated from the impact of the contagion. The speculative attacks on Indian Rupee were curbed as a result of intervention in the spot and forwards exchange rate markets by the Reserve Bank of India (RBI).

In addition, the period between 1991 and 1996, a number of reasons including controls on capital flows, phased tightening of monetary policy, weak trade linkages and strong macroeconomic fundamentals ensured that India remained mostly immune from the East Asian crisis. As a result, the key macroeconomic indicators in India were stable during the period of the East Asian crisis and thereafter.

Country	Indicators			
	Current account/GDP in 1996 (in %)	Capital account/GDP in 1996 (in %)	Financial instrument Claims on Private sector/GDP (in %)	
	1996	1996	1990	1996
Thailand	(-) 8.0	10.6	83.1	141.9
Indonesia	(-) 3.5	4.9	50.6	55.4
Malaysia	(-) 5.3	9.4	71.4	144.6
Phillippines	(-) 4.3	11.0	19.3	48.4
Korea	(-) 4.8	4.8	56.8	65.7
India	(-) 1.6	3.1	26.8	24.7

Source : PHD Research Bureau, compiled from Radelet and Sachs (1998)

2.2 Dot com bubble

The dotcom bubble was the first financial crisis for the 21st century both for the World and India. In spite of India's significant reliance on American internet sector to feed its IT/ITES industry, the economy remained fairly insulated. The first half of 2000s, India maintained a moderate inflation (at 3.5%), the trade deficit was 2.8% of GDP, and the current account balance (as a proportion of GDP) was in surplus and rising from 0.6% in 2001-02 to 1.2% in 2002-03. In other words, the macroeconomic conditions were mainly moderate; yet output was expanding well below the trend growth rate of 3.8%, due to reduced public investment because of policy constraints;

With public investment curtailed as a matter of policy and with low private investment demand, FDI was seen as a saviour. FDI approval was sizeable (mostly for power generation) but the actual (or realised) inflow was about a third of the approval, mostly in manufacturing (Nagaraj 2003). Foreign investment in the power sector was severely discredited after the debacle of Enron's Dabhol power project in Maharashtra. The bursting of the dot-com bubble, and the decline (briefly) in software export growth after the "Y2K" problem was fixed apparently reversed the flow of software professionals for a while.

The most visible infrastructure investment was the "Golden Quadrilateral" road reconstruction effort, initiated in 2000, to upgrade road connectivity between the four metropolitan cities – perhaps the largest public investment programme in recent times – which, with a lag, contributed to the boom in the automotive industry and private road transportation. Liberal reformists pressed for more deregulation to revive growth, though until then the experience did not bear out their confidence, especially as the memory of the Asian financial crisis was too fresh to accept a benign view of external financial reforms.

But things began to look different around 2003. World trade, dormant after the Asian financial crisis, turned around to grow at an unprecedented rate of 16.5% annually between 2003 and 2008 – against 3% per year in the previous six years, and at the highest six-yearly average growth rate ever achieved since 1980. As India's exports are known to be pro-cyclical, the exports-to-GDP ratio almost doubled – from 14% in 2002 to 25% in 2009. Seizing the opportunity of the communications revolution, the US liberalised the rules for outsourcing, hailed as the next industrial revolution, contributing to the boom in the back office operations of the leading financial firms (Blinder 2006). The social capital, or the social network, of Indian professionals working in Wall Street firms, Indian academics in US universities and Indian entrepreneurs all combined to create a remarkable success story, igniting the popular imagination of India becoming the world's back office.

Capital flows to emerging market economies that had practically dried up after the Asian financial crisis, more than doubled in five years, from \$250 billion in 2002 to about \$600 billion in 2007, largely determined by global supply factors, such as the low US interest rates after the dot-com bubble burst, and the willingness of global investors to take risks in investing in emerging market economies (Ghosh et al 2012; Institute of International Finance 2012). As the US and Japan maintained a loose monetary policy to revive their domestic economies, international investors grabbed the opportunity to invest in emerging markets, via carry trade, to profit from interest rate arbitrage.

The dilution of the definition of an "FDI-invested company" in India to comply with the International Monetary Fund's (IMF) guidelines, and the enlargement of the scope of such investment in real estate and special economic zones (SEZs) in 2004 and 2005 were other important factors.

India also experienced an impact of the dot-com bubble as majority of its technology and internet sector companies' stock prices fell. However the Indian IT companies were not wholly based on the US market and also these companies had sound business principles and a viable business model. So the Indian economy faced little trouble from the dot-com bubble comparatively and was able to recover easily.

During the first half of the 2000s, both monetary and fiscal policies remained expansionary. Despite concerns about fiscal unsustainability, macroeconomic conditions remained conducive without necessitating any reversals of accommodative policy stance until the inception of the crisis in August 2007.

2.3 Sub-prime crisis

India remained fairly insulated during the East Asian Financial crisis and Dotcom bubble crisis in 2001. As a result of this a strong consensus was being drawn amongst academia that economic cycles of emerging markets had decoupled from that of advanced economies. However the 2008 Sub-prime crisis and Eurozone debt crisis in 2009 severely impacted India's growth rate, clearly negating the decoupling theory that was cited as a major reason for the success emerging markets during the early stages of Sub-prime crisis. According to the decoupling theory, cited by Akin and Kose (2007) and The Economist (2008), owing to the rapid expansion of intraregional trade over the past few decades, high savings ratios and a burgeoning stockpile of international reserves, business cycles in a number of emerging-market economies had become decoupled from those of the developed economies. However, this was clearly not the case: a number of emerging-market economies, including China and India, were strongly affected by the crisis, resulting in a sharp drop in their gross domestic product (GDP) growth rates and a rise in unemployment rates.

The 2008-09 global financial and economic crises has significantly dented growth prospects in India, largely negating the decoupling theory that was propounded during the onset of the crisis in the developed world in 2007. According to the decoupling theory, cited by Akin and Kose (2007) and The Economist (2008), due to rapid expansion of intra-regional trade over the past few decades, high savings ratios and a burgeoning stockpile of international reserves, business cycles in a number of emerging-market economies had become decoupled from those of the developed economies.

In fact, the crisis has been a clear reminder of how synchronized national business cycles are. This experience is in contrast with the experience of the two decades leading up to 2007, during which it was difficult to find strong evidence of increased or increasing business cycle linkages emerging markets. (Helbling and Bayoumi, 2003).

Academicians in support of the decoupling theory were in state of denial and questioned the causes for the contagion reaching to India on the basis of two important reasons. (1) The Indian banking system had no direct exposure to the sub-prime mortgage assets or the bankrupt institutions. India had very limited off-balance sheet activities or securitized assets and (2) India's growth during the period was primarily driven by domestic consumption and domestic investment with less merchandise exports. The enigma was that how was India impacted in a crisis when it had nothing

much to do with any of the maladies that formed the core of the crisis and why was the economy affected when its dependence on external demand was limited (Subbarao D, 2009).

The reason for above two questions is based on the dynamics of increased globalization, arising from strengthening of trade and financial channels. Going by the common measure of globalization, India's two-way trade (merchandise exports plus imports), as a proportion of GDP, grew from 21.2% in 1997-98, the year of the Asian crisis, to 34.7% in 2007-08. In addition, India's financial integration with the world too has intensified, that is the ratio of total external transactions (gross current account flows plus gross capital flows) to GDP more than doubled from 46.8% in 1997-98 to 117.4% in 2007-08. In addition, the Indian corporate sector's access to external funding has increased significantly between 2003 and 2008. During the period, the share of investment in India's GDP rose by 11%. Corporate savings financed around half of this, but a significant portion of the balance financing came from external sources. On the other hand, in a global market was highly liquid and on the promise of India's growth potential, foreign investors were willing to take risks and provide funds at a lower cost. These capital flows, in excess of the current account deficit, evidence the importance of external financing and the depth of India's financial integration (Subbarao D, 2009).

Further, India's financial integration with the world has been as deep as India's trade globalization, if not deeper. If we take an expanded measure of globalization, that is the ratio of total external transactions (gross current account flows plus gross capital flows) to GDP, this ratio has more than doubled from 46.8% in 1997-98 to 117.4% in 2007-08.

Importantly, the Indian corporate sector's access to external funding has markedly increased significantly in recent times. In the five-year period 2003-08, the share of investment in India's GDP rose by 11%. Corporate savings financed roughly half of this, but a significant portion of the balance financing came from external sources. While funds were available domestically, they were expensive relative to foreign funding. On the other hand, in a global market awash with liquidity and on the promise of India's growth potential, foreign investors were willing to take risks and provide funds at a lower cost. Last year (2007/08), for example, India received capital inflows amounting to over 9% of GDP as against a current account deficit in the balance of payments of just 1.5% of GDP. These capital flows, in excess of the current account deficit, evidence the importance of external financing and the depth of India's financial integration. So, the reason India has been hit

by the crisis, despite mitigating factors, is clearly India's rapid and growing integration into the global economy (Subbarao D, 2009).

3. Findings & Analysis

3.1 Business Cycle Synchronization (BCS)

This section analyzes the cross-country/region correlation of the de-trended GDP data over three temporal stretches. figures during three time-periods, including 1996-2001, 2002-2007 and 2008-2014. We use the Hodrick-Prescott filtered annual data of 13 countries and 3 regions – USA, European Union, UAE, Brazil, China, Russia, South Africa, Portugal, Ireland, Italy, Greece, Spain, PIIGS, BRICS, and the World for from 1996 to 2014. We also examine the data from three sub-samples, 1996 to 2001, 2002 to 2007, and 2008 to 2014, to study the changes in correlations over time. This analysis provides information about the extent of similarities among cyclical economic activities in these countries. If these economies' business cycles exhibit a significant degree of synchronization, then it is not surprising to observe the rapid contagion of crisis from one country to another. If, on the other hand, the degree of co-movements of business cycles is low, domestic fundamentals may not explain the contagious nature of the Crisis.

The main findings from this paper are the following:

Period-wise Findings

- Consistent with results from other recent studies, BCS appears to have spiked significantly in correlation to India specifically before the globe crises from 2002 to 2008. Based on bilateral correlations of de-trended GDP data, output correlations peaked or got reversed compared to previous time period of 1996-2001, in most countries.
- During the sub-prime crisis and EU debt crisis the bilateral correlations of India with EU and BRICS economies became highly correlated, signifying near perfect positive correlation. However compared with USA and PIIGS economies, the co-movement of business cycles is inversely correlated during 2008-2014 period. This clearly points out towards shift in economic inter-dependence of EU and BRICS economies with India.
- During normal times, BCS is typically much lower in UAE, USA, Brazil, China, Portugal, Ireland and Spain whereas remained Russia, South Africa and Italy and Greece remained positively correlated with India, depicting strong fundamental linkages with India.

Country/Region-wise Findings

- **World:** The Table 1 showing bilateral correlation of de-trended GDP data of India with the world explains that India is highly synchronized with global economy. From 1996-2001 to 2002-2007, India had seen a slight decline in business cycle co-movements, however in the most recent period of 2008-2014, India has become highly synchronized with global business cycle.
- **USA:** On comparing correlation of India with USA, we infer that the two countries have overall, negative correlation of around 0.50. On analyzing the sub-periods it was observed that India was had low negative correlation with USA in 1996-2001, which increased further in 2002-2007. Post Sub-prime crisis period from 2008 to 2014 saw a marginal weakening in negative correlation. The interpretation of these results, align with the fact that the low interest rate scenario in USA had resulted in diversion of capital flows to emerging economies like India.
- **UAE:** India and UAE have inverse correlation of low degree, wherein the period from 1996-2001 to 2002-2007 experienced an increase in negative correlation, however the period from 2007-2014 saw positive correlation of low degree between the two nations.
- **European Union:** On analysis of correlation between India and EU, it was inferred that two economies have inverse correlation of high degree. On observing the sub-periods, it was seen that the correlation between the economies had high negative correlation during the period 1996 to 2007. However from 2008 to 2014, the two economies have become highly synchronized.
- **BRICS Economies:** The co-movements of business cycles amongst BRICS economies shows a high positive correlation with Brazil having the highest correlation, followed by South Africa, China and Russia from 1996 to 2014. On analyzing the sub-periods, it is observed that co-movements of business cycle has seen a role-reversal for Brazil and China from 1996-2001 to 2002 onwards. Here the correlation of the two economies with India was negative during 1996 to 2001, however this trend was broken and the two economies have become highly synchronised with India from 2002 onwards. On the other hand, India's correlation with South Africa and Russia has been positive, however the strength of correlation has declined from 1996-2001 to 2002-2007 and then rose significantly high during 2008-2014.

- PIIGS Economies:** India is inversely correlated with PIIGS economies to a very low degree with Greece being the only economy from the country-group which has positive correlation, followed by Spain, Italy, Portugal and Ireland, which have a weak inverse correlation with India. On analyzing the sub-periods it has been observed that co-movements between the business cycle was synchronized for the period of 1996 to 2001. However for the period of 2002 to 2007, correlation strengthened with exception of Greece, which experiencing economic downturn during the period. Lastly, the period of 2008 to 2014, saw overall decline in positive correlation of all PIIGS economies with India to become inversely correlated.

Table 2 : Cross-country bilateral correlations of select countries and regions with India

Country/Region	1996 to 2014	1996 to 2001	2002 to 2007	2008 to 2014
World	0.828	0.770	0.701	0.992
USA	-0.460	-.812	-0.966	-0.845
UAE	-0.250	-0.623	-0.899	0.327
Euro Union	-0.128	-0.84	-0.934	-0.961
Brazil	0.830	-0.038	0.998	0.999
Russia	0.601	0.659	0.022	0.991
China	0.660	-0.191	0.997	0.999
South Africa	0.708	0.858	0.296	0.994
BRICS Region	0.900	0.742	0.905	0.998
Portugal	-0.242	-0.941	0.615	-0.057
Ireland	-0.375	-0.847	0.199	-0.717
Italy	-0.056	0.279	0.772	-0.178
Greece	0.090	0.507	-0.104	-0.092
Spain	-0.044	-0.127	0.902	-0.274
PIIGS economies	-0.152	-0.576	0.683	-0.403

Source: PHD Research Bureau, compiled from own calculations

4. Reasons for the Bilateral Correlation Results

Theoretically, the impact BCS has been due to a number of reasons including Trade integration, financial integration, policy coordination and domestic market factors. The results produced in this paper, confirms the ambiguity in the existing literature for BCS. However, this paper will only outline the major reasons for BCS and not go into quantitative validation of any existing or proposed theory.

4.1 Trade integration: Given the ambiguity of the theory, the impact of trade integration on BCS is essentially an empirical question.

- On the one hand, according to traditional trade theory, openness to trade should lead to a greater specialization across countries. To the extent this holds in practice, and insofar as business cycles are dominated by industry-specific supply shocks, higher trade integration should reduce BCS.
- On the other hand, if the patterns of specialization and trade are dominated by intra-industry trade, greater trade integration should be associated with a higher degree of output co-movement in the presence of industry-specific supply shocks. If instead demand factors are the principal drivers of business cycles, greater trade integration should also increase BCS, regardless of whether the patterns of specialization are dominated by inter- or intra-industry trade.

4.2 Financial integration: The empirical literature is not fully settled on a common theory for BCS due to financial integration.

- On the one hand, Morgan and others (2004) developed a model in which if firms in one country are hit by negative shocks to the value of their collateral or productivity, then in a more financially integrated world domestic and foreign banks would decrease lending to this country and reallocate the funds to another, thereby causing cycles to further diverge.
- Likewise, in the workhorse international real business cycle (RBC) model of Backus, Kehoe and Kydland (1992), capital will leave a country hit by a negative productivity shock and get reallocated elsewhere under complete financial markets, again amplifying divergence. Another argument is that if higher financial integration between countries encourages them to specialize, thereby inducing greater inter-industry trade, higher financial integration could (indirectly) reduce BCS.

- On the other hand, if negative shocks hit the banking sector, then global banks would pull funds away from all countries across the board, thereby amplifying business cycle movement.

4.3 Policy coordination: Apart from trade and financial integration, policy matters for BCS. Specifically, if two countries synchronize—on purpose or not—their policies by implementing expansionary or contractionary policies at the same time, BCS between these two would be expected to rise, all else equal. Inklaar and others (2008), using data on OECD countries, confirms that similar monetary and fiscal policies have a strong impact on BCS. Similarly, Shin and Wang (2003), using data for Asian countries, find that monetary policy coordination has a significant and positive impact on BCS.

5. Few Suggestions

Risk management function the process of identifying, prioritizing, and mitigating the impact of unforeseen (and usually negative) events. In other words, it's a form of proactive contingency planning — either to completely avoid difficult situations, or prepare for them so that any undesirable consequences are lessened.

However an important point to understand is that Risk has become an inherent part of our global economic system, whatever may be the underlying cause for it, as has also been proved by our analysis. The volatility in trade, output, stock-market, capital flows, oil prices etc. have a major impact on business decisions of an enterprise.

Traditionally, the definition of risk varies from manager to manager on the basis of the core functional area they work in. For example, in a bank, risk management concentrates on financial risk; in a hospital, the focus is on patient and legal risk; in a manufacturing firm, the concern might be product or environmental liability; and in a utility the priority is outages. Since these risks are either integral to conducting business or threaten business continuity, it's appropriate that they receive special attention and resources. But on a day-to-day basis, managers face many other types of risk that are less visible and complicated and therefore receive less attention.

5.1 Types of Risks faced by Managers

5.1.1 Preventable risks: These are internal risks, arising from within the organization, that are controllable and ought to be eliminated or avoided. Examples are the risks from employees' and managers' unauthorized, illegal, unethical, incorrect, or inappropriate actions and the risks from breakdowns in routine operational processes. This risk category is best managed through active prevention: monitoring operational processes and guiding people's behaviors and decisions toward desired norms.

5.1.2 Strategy risks: A company voluntarily accepts some risk in order to generate superior returns from its strategy. A bank assumes credit risk, for example, when it lends money; many companies take on risks through their research and development activities. Strategy risks are quite different from preventable risks because they are not inherently undesirable. Strategy risks cannot be managed through a rules-based control model. Instead, it requires a risk-management system designed to reduce the probability that the assumed risks actually materialize and to improve the company's ability to manage or contain the risk events should they occur. Such a system would not stop companies from undertaking risky ventures; to the contrary, it would enable companies to take on higher-risk, higher-reward ventures than could competitors with less effective risk management.

5.1.3 External risks: Some risks arise from events outside the company and are beyond its influence or control. Sources of these risks include natural and political disasters and major macroeconomic shifts. External risks require yet another approach and pertain to our paper. Because companies cannot prevent such events from occurring, their management must focus on identification and mitigation of their impact. Companies should tailor their risk-management processes to these different categories. While a compliance-based approach is effective for managing preventable risks, it is wholly inadequate for strategy risks or external risks, which require a fundamentally different approach based on open and explicit risk discussions. Examples of external risks are :

- **Reputational Risk:** Companies derive great value from their reputations both at a brand level and in terms of overall image, but reputations can be easily damaged. As a manager you need to be mindful of the risks to your firm's reputation that stem from your actions.

- **Staffing or skill gap risks** arising out of economic downturn; budgetary risks arising out of international commodity prices volatility.
- **Supplier risks** arising from shortages arising out of decline in trade and many more.

5.2 Few Suggestions to Managers

- Every manager is a risk Manager:** As mentioned previously, it is important to realize that every functional manager has to bear the impact of external risks, the impact of which may lead to job-loss, devaluation of company, cash-flow impediments and probable bankruptcy. In a world which is so highly dependent on global value chains and international financial channels, comprehensive understanding of uncontrollable risk factors need to be appreciated and associated mechanism need to be implemented with serious outlook. In regards to this, every organization should have dedicated introductory classes and refresher classes to managers of all functional areas on risk management.
- Take decisions based on independent and reliable data:** During an economic downturn, a stream of information is poured from a number of sources. These information may be compromised and unreliable and basing any decision or calculation on such inaccurate and untrusted data can lead to catastrophic impact on enterprise' future growth outlook. It is crucial that the manager bases the decision on authentic data and also on relevant factors. In case of BCS, the manager should not base his/her decision simply after studying the Composite Leading Indicators (CLI) of OECD, but should also study the lagged and coincident indicators.
- Set up early-alert systems to allow for decisive action:** In most economic downturns, the decisions taken by central banks and various concerned organizations are very quick. It is important that to place an information systems and expert committee that can detect and understand such threats and rapidly combat these before its impact hits the enterprise.
- Hedge Accounting:** It is an accounting practice which attempts to reduce the volatility created by the repeated adjustment of a financial instrument's value, known as marking to market. Hedge accounting can be used by managers to handle a number of risks like foreign currency exposure, foreign investment operations etc. The aim of hedge accounting is to provide an offset to the mark-to-market movement of the derivative in the profit and loss account. For a fair value hedge this is achieved either by marking-to-market an asset or a

liability which offsets the P&L movement of the derivative. For a cashflow hedge some of the derivative volatility into a separate component of the entity's equity called the cash flow hedge reserve. Deutsche Bank's Japanese operations were able to make the right decisions in the midst of the Fukushima Daiichi disaster on the back of independently gathered risk data, at a time when other information sources were conflicted.

- e. **Scenario planning:** This tool is suited for long-range analysis, typically 5 to 10 years out. Originally developed at Shell Oil in the 1960s, scenario analysis is a systematic process for defining the plausible boundaries of future states of the world. Participants examine political, economic, technological, social, regulatory, and environmental forces and select some number of drivers—typically four—that would have the biggest impact on the company. Some companies explicitly draw on the expertise in their advisory boards to inform them about significant trends, outside the company's and industry's day-to-day focus, that should be considered in their scenarios.
- f. **Tail-risk stress tests:** Stress-testing helps companies assess major changes in one or two specific variables whose effects would be major and immediate, although the exact timing is not forecastable. Financial services firms use stress tests to assess, for example, how an event such as the tripling of oil prices, a large swing in exchange or interest rates, or the default of a major institution or sovereign country would affect trading positions and investments (WEF, 2014).

6. Conclusion

The purport of the above explanation is to show how, despite not being part of the financial sector problem, India has been affected by the crisis through the pernicious feedback loops between external shocks and domestic vulnerabilities by way of the financial, real and confidence channels. Our analysis is a contribution to the existing literature on BCS and clearly aligns with the fact that economic risk has become an inherent part of the global environment. In past there has been major stress on building tools for managers which supplement various compliance risks, operational risks, fraud risk, environmental disaster risk, supply chain risk etc. However focus on external economic risks i.e. risk arising from outside the domestic market as a result of volatility in economic channels, has been less appreciated and understood at the firm-level. It is crucial for Indian firms to face these external economic risks in a detailed and comprehensive manner in order to truly sail the turbulent water of world with growing financial risks.

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