Financial Crisis and Fiscal Stimulus: Some Analytical and Measurement Issues

T.N. Srinivasan

1. Analytical Framework for Distinguishing Causal from Associated Factors underlying to Global Financial Crisis and for Devising Responses and Solutions.

1.1 Micro-behavioural foundations for holding money and nominal assets

There is no disagreement on the facts that the Global Financial Crisis originated in the collapse in 2006 of what turned out to have been a bubble in the prices of houses and also commercial real estate in the United States. The crisis then spread to the financial sector and the entire economy in the United States first and then to the global financial system and economy.

I will leave aside, at least for the moment, the pertinent issues of whether the buildup in real estate prices before the collapse was understood early enough by many including policy makers to have been a bubble unwarranted by fundamentals who then could have taken to prevent the bubble from continuing and ease the prices towards their fundamental values. Further the questions arise as to why the aftermath of its collapse was not contained in the real sector that is the housing/real estate sector, but instead spread to the financial sector and turned into an aggregate macro-economic and financial sector crisis in the USA and why the crisis and its consequences were not largely within the USA but spread to the rest of the world's macro-economy and financial sectors. In my view a satisfactory answer to the above questions have not as yet emerged in part because to answer them one needs a well-specified analytical model that integrates the financial and real sectors but as yet there is no model or a relatively few models which most analysts would deem as the most appropriate.

I would go further and argue that in building such a model in which a financial crisis could have impacts on the real economy, one has to provide micro-behavioural foundations for current and future nominal commodity and asset prices and returns to influence current and future micro choices in physical units of commodities to buy or sell, and to buy, sell or hold physical units of assets such as houses, buildings, equipments of various sort in a context of uncertainty about future prices, technologies and so on. To the best of my knowledge no such micro behavioural formulation exists. The classic contingent commodity model of Arrow and Debreu is not appropriate because it is a model of real (i.e. relative) prices, real assets and real returns - thus it is not a financial model. For the classical economists with their quantity theory of money, money is simply a veil with all equilibrium nominal prices varying in the same proportion as the exogenously set quantity of nominal money varies with all equilibrium real magnitudes and relative prices determined independently of the nominal prices. Thus, any financial change, or shock in effect to the stock of nominal money in existence, has no effect on real values including relative pries in equilibrium and all nominal magnitudes fully reflect the shocks to money stock in a proportionate manner. Thus money is only a "Veil" covering the real economy with no influence over what is being covered.

A micro behavioural foundation for a monetary economy has to imply a real opportunity cost for holding or spending money in equilibrium. There are various ways of achieving this. For example, Baumol and Tobin, by postulating that the real cost of a transaction such as sale (purchase) of a real commodity or asset by paying (receiving) money in exchange is lower than that of the same transaction through barter, that is by paying (receiving) some other commodity in exchange. In this model a demand for money is for saving real costs of transaction (sometimes called shoe-leather costs!). This feature ensures that in equilibrium a real price (opportunity cost) for money arises and along with an additional market clearance condition, namely that the stock of money available is at least as large as the aggregate transactions demand for money. Other models such as the various so called `cash-in-advance' models do not even attempt a rudimentary micro-foundation such and as that of Baumol and Tobin and in an ad hoc manner simply assume that transactions can take place only in cash and the stock of money one has

limits the transactions in real commodities that one can undertake. Thus an additional nominal constraint based on cash on hand arises over and above the usual real budget constraint that expenditures cannot exceed resources available from endowments as commodities and factors supplied to the market and incomes from assets holdings. Thus with a behavioural foundation such as Tobin and Baumol or with ad hoc cash in advance assumptions an additional constraint relating to holding of cash arises. This means that in the first order conditions of consumer welfare optimization, a shadow price in units of welfare per rupee of cash emerges for the cash in advance constraint. By dividing this shadow price by that of the first order condition with respect to the resource constraint expressed in terms of the numeraire commodity, one can derive a shadow price in numeraire terms for the cash constraint for each consumer. This price is the real cost of money for that consumer.

It is easy to see if instead of analyzing individual welfare maximization problem, one analyzed a social welfare maximization problem subject to an aggregate resource and a cash constraint expressing that cash requirements for transactions do not exceed cash available, one would again get an aggregate real cost of money. Under well known assumptions (albeit strong) the solution of the inter-temporal social welfare maximization could be de decentralized as a competitive market equilibrium with the associated public interventions in the form of lump sum income transfer across consumers and subsidies/taxes to account for any externalities not internalized by consumer (that is, non-pecuniary externalities).

Let me repeat that this decentralized competitive equilibrium model with money is <u>not</u> the Arrow Debreu model. Still again under the same well known assumptions of Arrow and Debreu, their result that a competitive equilibrium is a Pareto Optimum holds in a monetary economy.

1.2 Dynamic Stochastic General Equilibrium Model (DSGE).

I discussed these well known models only to stress what are missing in them. First of all, the money or cash constraints do not arise either from the preferences of consumers or from technologies of production, but from the imposition in cash- in- advance models of a requirement of cash for effecting a transaction or the Baumol-Tobin assumption that real cost of transaction using money are lower than that of barter transactions. As such the equilibrium real opportunity cost of cash emerging from the model suffers from versions of the Lucas (1976) Critique, namely, that it does not reflect, again using Lucas' terminology, the deep and stable parameters of preference and technology and as such are dependent on policy regimes relating to the supply of money in particular, but also on possibly unstable policy-regime specific factors. Moreover, there is no financial sector with private institutions involved in the supply of credit, public regulations relating to their behaviour and above all no financial intermediation. To quote Ohanian (2010), the model of general equilibrium business cycle theory of the Dynamic Stochastic General Equilibrium (DSGE) genre, "Look like a simplified and stripped down approach. It included a representative agent for households (strictly speaking there is just one household, and with the claim of its being `representative' in some unspecified sense assumed and not established), competitive market equilibria that were always Pareto Optimal and the absence of explicit financial, fiscal, and monetary sectors" (p. 47). Ohanian mentions several generalizations of the stripped-down model that have been proposed in the literature in the 1990s and later. Unlike Ohanian, I am not persuaded that notwithstanding these methodological developments, the models of the DSGE genre, despite their internal coherence and consistency are incapable of incorporating and analysing purely financial shocks. For this reason, in analyzing the contributory roles of real and financial shocks in bringing about the financial crisis (or more precisely in analyzing their contributory roles in the likelihood of a financial crisis, the DSGE models are not of much use.

1.3 Aggregate Macroeconomic Models

Moving away from competitive, general equilibrium models of a decentralized economy towards aggregate macroeconomic models, Woodford (2010) points out that issues of financial stability have always been part of the macroeconomic curriculum, presumably in the US and European Universities. But the financial stability issues have often been presented as mainly of historical interest or primarily of relevance to emerging markets (p21). In other words financial instability is viewed as pathology no longer present in the developed world but not yet eradicated in the emerging markets of the developing world. The fact that the current crisis originated in and had such a disruptive consequence in the US with its well developed and deep financial system came as a surprise and brought home that even in economies like the United States, significant disruption of financial intermediation remain a possibility (ibid). Woodford then discusses "why neither standard macroeconomic models that abstract from financial intermediation nor traditional models of the bank lending channel are adequate as a basis for understanding the recent crisis and sketches, the basic elements of an approach that allows financial intermediation and credit frictions to be integrated into macroeconomic models in a straight forward way. Woodford cites some very recent research based on some version of his approach. But it is fair to say that the approach with financial intermediation in explaining the recent crisis and its spread remains to be tested adequately empirically. Moreover, given the obvious context specificities of models of financial intermediation, for example, in the significance of the so called `shadow banking', credit frictions and that in the developing world a large share of transactions are not monetized, (for example, in India, almost half of domestic savings and investment is by households is in non-financial instruments, in the form of "Direct Saving in Physical Assets", which do not involve financial intermediation at all, empirical testing has also got to allow for these specificities. This is not the occasion to delve further into the Woodford model.

Caballero's (2010) paper as well as Ohanian's and Woodford's papers was part of a symposium on Macroeconomics After the Crisis in the Fall 2010 issue of Journal of Economic Perspectives. It is a thought provoking reflection on the current state of the

discipline of macroeconomics. He views the current core of macroeconomics as the DSGE model and recognizes its logical coherence and the precision of its analytical conclusions. But he argues that the profession of macroeconomists (and more generally of economists) has become so mesmerized by the internal logic (of DSGE) that it has begun to confuse the precision (of DSGE) about its own world with the precision it has about the real world (p. 85) and "the root cause of the poor state of affairs lies in a fundamental tension in academic macroeconomics between the complexity of its subject and the micro-theory-like precision to which we aspire" (p. 100). Caballero's detailed analysis and critique of contemporary macroeconomic models are insightful and important. But his diagnoses of the reasons of their poor performance as tools of analysis for the contemporary financial crisis to enable formulation of policy responses to it as seen from the quotes above do not seem to be addressed to their core deficiencies which Woodford's paper addresses. After all, any theoretical model to be tractable in the senses of delivering solutions (not necessarily of a closed form' kind but also as in principle computable ones), first necessarily have to abstract from many aspects of a complex reality. Of course judgment and experience of the modeler and not only theory, determine which aspects are deemed essential so that they are not abstracted away and which are deemed not essential. Moreover, careful modelers do robustness exercise to evaluate the sensitivity of their findings from a model incorporating their particular aspects of reality that they have and have not abstracted away. Second, internal logic or coherence and precision in driving analytical conclusions are absolutely essential if any model is to be meaningful and policy relevant. Confusing the precision of the model with reality could be possible characteristics some users and even some modelers. The fact that such confusion is seen in the literature is not a critique of the methodology per se.

In my view a far more serious problem is the attribution of expected outcomes (e.g. gain in social welfare) to a policy (e.g. trade liberalization) that a model with one set of assumptions (e.g. absence of any domestic or external distortions to a world in which the assumptions do not hold (e.g. a world full of distortions) and express disappointment if the expected outcomes from the model are not seen. Both advocates and critics of trade liberalization have been guilty of this.

My discussion in Section 5 thus far has been confined to the issues of building an analytical framework or model that is coherent and encompasses the important real and financial shocks that could arise so that the model, in principle, would be useful for analyzing a financial crisis such as the recent one. My conclusion is that we do not as yet have a model or a few models that would be found generally acceptable. However, the absence of such a model has not prevented the articulation of alternative, even diametrically opposite, perceptions about the origins of the crisis and whether or not policy reforms are needed to address of the crisis efficiently and to reduce the chance of occurrence of a future crisis. In the next subsection I will discuss selectively a few alternative perceptions and prescriptions. This subsection will also include a discussion of the comments of some of the Governor of the Central Banks of the countries most affected by the crisis in the symposium on Global Imbalances and Financial Stability in Banque de France's financial stability review (15 February 2011).

1.4 Alternative Perceptions of the origins of and contributory factors to the financial crisis and the associated policy reforms.

Mishkin (2011) divides the financial crisis of 2007-09 into two phases, the first and more limited one from August 2007 to August 2008 affecting a relatively small segment of the US Financial System, namely, sub-prime residential mortgages. In this phase US GDP continued to rise until the second quarter 2008. For these reasons forecasters expected only a mild recession consequent to the disruption in financial markets of the first phase. In mid September, "the crisis entered a far more virulent phase. In rapid succession the investment bank Lehman Brothers entered bankruptcy on September 15, 2008; the insurance firm AIG collapsed on September 10, 2008; and there was a run on the Reserve Primary Fund, a money market fund, on the same day; and the highly publicized [political] struggle to pass the Troubled Asset Relief Program (TARP) began" (pp 49-51).

Mishkin (2011) asks why "something that appeared in mid-2008 to be a significant but fairly mild financial disruption transform into a full-fledged global financial crisis? What caused this transformation? Did the government responses to the global financial crisis help avoid a worldwide depression [as I mentioned in Section 3, the leaders of G-20 answer this question in the affirmative with no caveats whatsoever]? What challenges do these government interventions raise for the world financial system and the economy going forward?" (p50). On the whole these questions, except for their implicitly taking for granted that "appearances" of a mild financial disruption in mid 2008 were soundly based, seem appropriate.

In his answer to the first question, Mishkin basically focused on the credit channel and explains how a financial crisis widens the spread between interest rates on Baa Corporate and treasury bonds thereby making conventional monetary policy ineffective so that a policy induced fall in treasury bond rate in response to a weakening of the economy, the interest rates relevant to households and business decisions go up, causing a fall in aggregate demand. Second, the decline in asset prices during a financial crisis causes a decline in value of collateral which makes it harder for non-financial firms to borrow. Third, the general rise in uncertainty that occurs during a financial crisis also leads to an increase in asymmetric information further hindering the ability of the financial markets to allocate funds to households and businesses with investment opportunities. Mishkin supports his claims about the credit channel with data on credit-spreads, bank-lending, and net issuance of asset based securities. He then discusses the unconventional monetary policy tools adopted such as quantitative easing, asset purchases and management of expectations. Other policies included introduction of "stress" tests that the 19 largest banking institutions were required to undergo and the use of Fed's liquidity provision to bail out financial institutions. Besides monetary policy action of the Fed, the government also used fiscal stimulus expenditures as another policy response.

His answer to the second, and in my view, the more important question on the effectiveness of the policy interventions in defusing the crisis, Mishkin referred to his detailed arguments elsewhere (Mishkin, 2009). His view is that "Conclusions about the

effectiveness of policy should begin by considering the counterfactual – that is, what would have been the likely course of events be without the policy interventions" (p 64). I agree with his stress on counter factual analysis. But he did not add, what I had said in an earlier section, namely, that any meaningful counter factual has to be based on a well specified model of the economy that provides an adequate explanation of what led up to the crisis and provides a basis for out-of-period projections or scenarios of the distribution of outcomes of specified policy changes or responses. Both with respect to the model and its methodology of projections analysts could and do differ. However, Mishkin concludes that "Some part of the government intervention were less helpful than others. But taken as a whole, I believe the government actions helped to prevent a far deeper recession and even possibly a depression". Unfortunately, the periods of intervention and its aftermath are too short to be able to be definitive about the likely longer term consequences of the intervention. Since any meaningful analysis of effectiveness of policy has to apply a social-cost-benefit calculus, any mis-assessment of the long term social costs and benefits of intervention would be unfortunate. But broadly speaking I agree with his "two key lessons from what has happened. First, the global financial system is far more interconnected than was previously recognised and excessive risk-taking that threatened the collapse of the word financial system was far more pervasive than almost anyone realized. Second, extraordinary actions by central banks and governments have [arguably] contained this global financial crisis, but successfully unwinding these policies will prove to be a challenging tasks" (p. 68). Mishkin's perception and conclusion about the crisis are widely shared and could be deemed as conventional.

A different perspective, questioning the conventional view is by Reinhart (2011). He argues that the crash of 1929 and the attendant deep economic contraction were widely viewed as excesses of speculation and competition and the economics profession came around to the view that "cartelization of industry could promote growth [its modern incarnation is industrial policy which has many adherents], restriction on financial firms and transactions in the financial sector were a preferred way to dampen volatility [its modern incarnation includes restrictions on capital mobility and a transactions tax],

flexible exchange rates were destabilizing [a view that relates exchange rate flexibility and allowing of spot and futures markets to operate as encouraging destabilizing speculation, a view that still has many adherents]. It took decades for economists to revise this perspective…" (p71).

Reinhart's (2011) perspective is very provocative. He argues that the conventional narrative of events since 2008 [such as Mishkin's (2011)] makes an error similar to the misreading of and prescriptions that followed the 1929 crash, namely, "that the global economy was hit by a "perfect storm" of disruptive forces in late 2008 [i.e. in the second phase in Mishkin's characterization]…key financial authorities in yellow slickers – a sort of Corps of Financial Engineers (CFE) – fought the elements [the "perfect storm"] and made decisions about which flood waters to divert, which leaves to reinforce, and which sluice gates to open" (p 71-72).

In his perspective – the CFE consisting of Resident Geithner of New York Federal Reserve, Chairman Bernanke of Federal Reserve Board and Treasury Secretary Paulson – "inserted the government into the resolution of the Investment Bank Bear Stearns in March 2008 [because they mis-] interpreted the death throes of the mid-sized investment bank as a problem of systemic importance and, with an ill considered intervention protected the creditors of Bear Stearns and raised the expectation of future bail outs". When the same CFE failed to intervene in September 2008 when Lehman Brothers entered bankruptcy the resulting market seizure was in part a counter – reaction to the early Bear Stearns intervention" As of 2010, according to Reinhart (2011), chairman Bernanke and Secretary Paulson have regretted not intervening at the time Lehman Bankruptcy and bemoaned the lack of tools for them to have intervened.

By his own admission Reinhart, a comprehensive review of official actions and theoretical explanations of how financial crises emerge leaves to others whom he cites. Since in his view, the right question is not "Why not Save Lehman" but "Why Save Bear Stearns?", he naturally focuses "on a course not taken in March 2008 of prompt recognition of economic losses".

He rightly notes that a decision to recognize promptly the economic losses "has implications that go beyond events at Bear Stearns in March 2008 and Lehman Brothers in September 2008….. if financial crises will ever be with us, it is important to have a strategy concerning how they will be managed…. [by making] progress in identifying the inherent tensions and uncertainties that hinder decision making…. Thus [Reinhart focuses] on why the path of recognizing losses and forced mark downs might not have been taken in March 2008 and describes the biases inherent in crisis management that make similar mistakes likely in the future" (p 73).

I described the conventional perspective represented by Mishkin (2011) in less detail than that of the alternatives of Reinhart (2011) and quoted the latter extensively for two specific reasons. First the conventional view by definition is well known and it is widely shared and a non-conventional view that is consistent with the same facts and internally coherent and logical perhaps needs more discussion. My second reason is that the leaders of G-20 have clearly accepted the conventional perspective [interestingly only Dr. Singh referred to alternative views when he discussed elements of Seoul Plan of Action] on the whole more persuasive, with little recognition or evaluation of possible alternative interpretations of the events that led to the crisis and the contributory causes. Personally, I found the logic and reasoning of Reinhart (2011) is compelling.

1.5 Global Imbalances and Exchange Rate flexibility

Global imbalances, meaning persistent increases in surpluses in the current account in some of the emerging market countries [e.g. China] and current account deficits in industrialized countries [e.g. USA] in recent years have attracted the attention of policy makers and politicians. Since the onset of the financial crisis, the attention and particularly its rhetoric have escalated with charges and counter charges of currency manipulation, potential outbreak of competitive currency devaluations and currency wars as a response to the decline in export demand have been bandied about Naturally the issue of global rebalancing and the role of exchange rate flexibility in bringing it about

were discussed at G-20 summits. Dr. Singh in particular came on the side of those who favoured exchange rate flexibility while recognizing the adjustment costs of moving away from a fixed to a flexible exchange rate arrangement. Given that India's exchange rate policy is in principle one of floating exchange rates with (presumably omniscient) RBI intervening in the market as it deems necessary to reduce volatility and also for sterilization purposes, it is understandable that he was in favour of flexibility.

It seems to me that the discussion by G20 and also the economic profession is focused much too much on a single policy instrument, namely the exchange rate, while from an economic perspective, current account deficit or surplus is (influenced by other policies and monetary). A current account deficit (surplus) is the excess (shortfall) of domestic investment over domestic savings available to finance it. From a balance of payments perspective deficit (surplus) in the current account could be viewed as the short fall (excess) of receipts of foreign exchange from exports of goods and services and expenditure of foreign exchange on imports of goods and services. It is thus the algebraic sum of the deficits (surpluses) in goods trade (i.e. trade deficit or surplus) and trade in invisibles (i.e. deficit or surplus in service trade).

Again from a Balance of Payments Perspective, Surpluses (deficits) on capital account represent the excess (short fall) of inflows of capital of various categories (external borrowing, foreign direct investment and others) over outflows of capital in the same categories (i.e. for repayment of external debt, outflow of FDI and also FDI by domestic firms abroad, and others). Either separately or as part of the capital account itself, a balancing item, namely, changes in external reserves, is introduced so that the sum of current account surplus (deficit), capital account deficit (surplus) and the changes in external reserves is always zero. That is the balance of payments is always zero by definition. Obviously errors and omissions in the estimation of flows are unavoidable. The identity that the balance of payments is zero by definition will not hold unless these errors and omissions are allowed for. For this purpose an aggregate errors and omission term is also part of the balance of payments accounts.

My points in making explicit the well known definitions of surplus and deficits are basically two. First I want make it clear that many other policies besides the exchange rate or more precisely the set of exchange rates) influence their various components. For example, it is easy to see that country's exchange rates could influence domestic supplies to meet foreign demand for its exports of goods and services and domestic demand for their imports, inflows and outflows of capital etc. But domestic savings and investment, as well as capital flows, potentially could be influenced by domestic and foreign interest rates, asset prices and returns etc. as well as importantly by effective personal and corporate income taxes as well as public expenditures. Clearly monetary policy influences interest rates and fiscal policies influence tax rates and public expenditures. Moreover, many alternative combinations of fiscal, monetary and exchange rates could in principle be used in achieving a given set of outcomes of CD in each countries and hence in that of global balances. The implication of this is that if only one of many possible instruments is changed to effect a change in the CD by a given amount then the change needed in it would be larger than if other instruments are simultaneously used to bring about the desired amount.

My second point is to draw attention to the implication of the well-known open economy trilemma, namely, the incompatibility for a country to have simultaneously monetary policy freedom in setting domestic interest rates, keeping exchange rate fixed, and allowing free flows of capital. In other words, at least one has to be given up. This does not mean that the pursuit of all three even for extended periods of time necessarily should be ruled out. But it does mean that there are costs to the pursuit and sooner or later it would become unsustainable and unravel. Even if the trilemma is deemed not of great practical consequence in policy choice, at the very least it forces policy makers to think through coherently of the choices of the policies that they make, say for example, on controls on capital flows, on its implication say for exchange rates or public debt.

My third point is purely technical: from ex post accounting data of changes in policy and outcome variables one cannot infer which changes exogenous or forcing changes and which changes were endogenous responses to the changes in forcing variables.

I am not convinced that the apparent unanimity of views of G-20 on exchange rates, capital controls etc. are based on any deep analysis. The fact that IMF now views the use of capital controls could be appropriate in some contexts is of limited significance. Put another way - ruling out **a priori,** the use of one instrument of policy, namely capital controls, without establishing that free capital flows is a dominant policy strategy independent of contexts is inappropriate anyway. Of course, the same is true of the assertion of some that a policy of free capital flows is the dominant strategy. As long as the uses of capital controls (or refraining from their use) are not dominant strategies, it is obvious that the use of capital controls would be in a portfolio of usable policy choices. Its use would of course be country and time specific and also contingent on the external policy environment faced by the country, if its actions and policy choices have no influence on the environment as would be the case for a small economy in all relevant markets. However, IMF's (2011) paper on a conceptual framework for the use of capital controls, and its explicit reference to context specificities there as well as its review of country experience in using them as policy responses to shocks on capital inflows are timely and useful. The paper of Ostry et al (2011) of IMF Staff on toots to use to manage capital flows is also very useful.

It should be evident that in addressing global imbalances, if exchange rate policy changes are the only ones to be used in bringing about a reduction in imbalances or if only one set of countries (i.e. only countries running persistent current account deficits) have to undertake the needed policy adjustments, the welfare cost for individual countries and for the world as a whole would be higher as compared to using all available policy instruments including exchange rates, fiscal and monetary policies and all countries participated in the adjustment towards a lower imbalance.

To conclude my discussion of current perceptions and policy approaches to reducing global imbalances, let me say that global imbalances, like the poor and financial crises have always been and will continue to be with us. So will the academic and policy discussions of them. For example, The Brookings Institution has held several symposia

over time on global imbalances and related issues and several volumes have also been published over time. I had the opportunity to comment (Srinivasan, 2005) on a paper of Rogoff and Obstefeld (2005) on a very stylized three region (US, Asia and Europe) real model of the computable general equilibrium genre. The authors assess how a significant reduction in global current account imbalances might impact dollar, Euro and Asian real exchange rates. Their base line simulations suggest that a halving of the US current account deficit would entail a 20 percent appreciation of Asian exchange rate [proxy for Renminbi dollar rate] and a smaller rise in the Euro. On the other hand, if the Asian exchange rate remains fixed, the Euro has to appreciate by 90 percent, illustrating the points that if the adjustment is by only one country other countries have to adjust far more. I do not wish to discuss in detail my published Srinivasan (2005) paper and my continuing dissatisfaction with the restriction of adjustment only to one instrument namely the exchange rate. But I would like to draw attention to the discussion in it of the classic paper of James Tobin in (1990) entitled "Eight Myths about the Dollar". Many of the myths that Tobin exploded are still alive and present in the contemporary discussion of global imbalances, including by the G20. For example Tobin said "we are being told incessantly that we [the US] depend on foreigners, mainly Japanese banks, insurance and pension funds – to by US treasury bonds and other dollar assets... Should they decide not to buy dollar securities, we are told, [the result] would be calamitous". If we use China rather than Japan in the above quote, and the context to the global economy rather than that of US, we can recognize it being repeated ad naueum now as the one. Tobin also provided a simple macro model for analyzing imbalances and adjustment. I am not entirely persuaded that contemporary models are that much of an improvement over Tobin's. I am afraid the debate about Global Imbalances is yet another example of the famous Base Ball Player Yogi Berra's classic statement "it is déjà vu all over again".

1.6 Perspectives of US Federal Reserve Chairman Ben Bernanke, Governors Mervyn King of Bank of England and Governor Subbarao of the Reserve Bank of India, on the role of Global Imbalances in the Financial Crisis.

In the previous sub-section my discussion was on the use of exchange rate as the only policy instrument to reduce global imbalances. Since rising global imbalances have also been viewed as having fueled, and even as having contributed to the financial crisis, I thought it would be worthwhile to look at the views of the three heads of central banks. Two are two from USA in which the Financial Crisis originated and the UK which was one of the developed countries that was most affected by it. The third is from India, which was indeed impacted by the crisis, though briefly and not as severely as USA and UK and also recovered from it rapidly. It so happens that in the February 2011 issue of the Financial Stability Review of the Banque de France on Global Financial Stability, the three as well as their fellow governors from central banks around the world had expressed their views on the issue. I will draw on these papers in this subsection.

Of the three, Bernanke's (2011) paper is analytically most interesting from the perspective of its much more explicit statement of the underlying analytical framework and the references to the relevant literature. He also rightly and explicitly disavows having provided a causal mechanism by which foreign capital flows contributed to the financial crisis, which originated with the collapse of the housing price bubble in the United Sates in saying "To be clear in no way do our findings assign the ultimate causality for the housing boom and bust to factors outside the United States. Domestic factors…. were the primary sources of the boom and bust and the associated financial crisis. However, an examination of how changes in the pattern of International Capital Flows affected yields on US assets is important for understanding the origins and dynamics of the crisis. (p.15)

His analytical framework is a generalization of the simple "Global Savings Glut (GSG) hypothesis which he had first advanced in Bernanke (2005). It argues that "increased capital flows to the United States from countries in which desired saving greatly exceeded desired investment including Asian emerging markets and commodity exporters – were an important reason that US longer-term interest rates during this period were lower than expected" (p.13). The generalizations included (i) the introduction of more than one US asset, and consideration of how demands for a range of

assets interacted with supplies of those assets to help produce declines in certain key interest rates (ii) consideration of capital flows to the US from other advanced economies in addition to flows from emerging market economies (iii) consideration of "how the demand for apparently safe assets influenced their supply, as the US financial services industry developed a multitude of structured investment products that transformed risky loans into highly safe securities" (p. 14) . In short, the generalized GSG hypothesis is advanced by Bernanke as an explanation of the downward pressure on US asset yields exerted by capital inflows from GSG countries and also from others in which portfolio preferences shifted. Financial innovation in transforming risky and poor quality products into securities that were rated as AAA by rating agencies played its part in expanding the supply of seemingly safe US assets. The crisis revealed the weakness in this house of cards. The three sections of Bernanke's paper attempt to provide empirical support to the generalized GSG hypothesis as an explanatory hypothesis for the onset of the crisis.

My reading of the Bernanke's (2011) paper and of the generalized GSG hypothesis is that there is no micro-behavioural foundation offered for the aggregate or macro savings glut through the asserted shifts in desired savings and or investment (as Bernanke himself rightly mentions, the savings glut could be equivalently called an investment dearth arising from shifts in intertemporal and risk preferences of households and investors. Also the fact that large part of the capital flows resulted from choices of public authorities such as Central Banks and Sovereign Funds whose actions as well as motivation or objectives that guide their actions are not often transparent, is not adequately allowed for in the hypothesis. Whether founded on solid rock of micro behavioural foundations or quick sands of conventional macroeconomic thinking, there can be no doubt that policies adopted by the US Federal Reverse, both conventional and non-conventional, have been influenced by his framework. However, Bernanke's (2011) paper is not intended to rationalize the Fed's intervention (as in Bear Stern episode) or of non-intervention (as in Lehman Brothers). As such it is not of help in evaluating the conventional perspective of Mishkin (2011) relative to the unconventional one of Reinhart (2011).

Governor King's (2011) is also interesting from analytical perspective that is complementary to Bernanke's (2011) in claiming that global imbalances contributed to the crisis and rebalancing is the key to recovery in contrast to Bernanke's analysis of the financial flows that led to the imbalances without claiming that they contributed in anyway a to the build-up and bursting of the US housing bubble in which the crisis originated, and second in briefly discussing explicitly what needs to be done in the concluding section of his paper, while Bernanke does not go into this issue. King's "key message is that in today's highly interconnected global economy, a top priority for national policy makers must be to find ways to rebalance global demand that is important to ensure both the level of world demand and that it is sufficient for the world recovery to continue and (ii) future crises are avoided". For achieving these, King suggests (p.79) two principles, first to focus discussion on the real pattern of spending or the path of real spending that is sustainable and in terms of policy instruments to consider many potential policy measures going beyond the single issue of exchange rates. He pleads for a "grand bargain" among major players in the world economy that constitutes a compromise on the path of economic adjustment without resort to protectionism and goes beyond exchange rate adjustments except as logical measures along with others for implementing the rebalancing part of the grand bargain.

Interestingly he frankly recognizes that the natural forum to strike the grand bargain, which in his view is the G20 framework for Strong and Sustainable and balanced Growth, has so far failed to achieve a move to a better outcome. He suggests that if we cannot achieve co-operation voluntarily then a more rules-based automatic system needs to be considered to restore global demand and to maintain future global economic financial stability (p.61). I found this much too cryptic. If the process for voluntary cooperation failed to move to a better outcome because of strong disagreements among the parties, what would make them agree on the rules of a rules-based system? Even if they did, would it include a mechanism for monitoring compliance with the rules and also incentives for compliance and punishments for non-compliance or will it be a system of self-enforcing rules?

Finally, King's analytical foundation is the well known problem of uninternalised externalities. In other words "Global imbalances are a reflection of today's decentralised international monetary and financial system. All the main players around the world are rationally pursuing their own self interest. But the financial crisis has revealed that what makes sense for each player individually does not always make sense in aggregate. These actions had collective consequences. The main lesson from the crisis is the need to find better ways of ensuring the right collective outcome. (p73).

I would argue that if their self designated role as the international forum for coordinated action is taken seriously by the G20 leaders, the issue of externalities of the self-interested actions of one or more members on the G20 as a whole and on the rest of the world is on that they should have and could have addressed. Had they done so, they would have instituted measures to internalize on each member the effects of the externalities its action creates and thereby achieve a superior collective outcome that King rightly pleads for. But the evidence thus far, as King himself notes of the failure of the process of G20 framework for Strong, Sustainable and Balanced Growth suggests that the chances of G20 acting collectively in a coordinated fashion to take the steps necessary for internalizing externalities do not appear high.

Both Bernanke and King were reputed academic economics before they took on policy making positions. Governor Subbarao on the other hand has been in policy making position most of his career first in senior administrative positions including in the Ministry of Finance before becoming Governor of the Reserve Bank of India. It is to be expected that in his paper (Subbarao, 2011) he does not spell out an explicit analytical framework of beahviour as Bernanke and King had done. However, there is a framework in his paper.

He agrees with King that global imbalances were major contributors to the financial crisis (p. 132) and with Bernanke on the "global savings" glut as having exerted downward pressure on global interest rates. Unlike the other two, he mentions explicitly (i)the accumulation of foreign exchange reserves by public authorities; (ii) their conservative

norms for investment of reserves in high quality low risk assets as having crowed out private demand for the same and (iii) their "abetting" the under-pricing of risk in the United States markets on the presumption of the market that the current account deficit of USA will be financed on a sustainable basis by the foreign reserves of the rest of the world controlled by public authorities. Another factor that only he among the three mentions is the status of the US dollar as the dominant global reserve currency, in combination with the global savings glut induced global imbalances fuelled the asset price bubble. The bubble, he argues distorted incentives to save in the US by encouraging the `wealth effect' of the asset prices and cost of debt. This sequence of effects would have been hardly feasible, in his view, to sustain the level of consumption and neglect savings without the global imbalances. The final element of what he terms as the casual chain is another effect of the absence of any effective alternative to the US dollar as a He harks to global reserve currency back to the discussion of dollar shortage in the late 60s, and argues that the world needed the US to run current account deficits to meet the world's demand for liquidity. He stretches this argument so far to suggest that having its own currency as the sole global reserve currency to encourage the US to delay necessary macroeconomic adjustment at home and possibly also to dilute dilution of regulation and supervision standards that allowed its financial system to grow freely by masking vulnerabilities.

It is not easy to evaluate Subbarao's informal framework without a more formal behavioural framework for the macro variables, leaving aside the issue of the micro foundations for macro behaviour. I will not repeat my comments earlier on the Global Savings Gut Hypothesis of Bernanke that he also shares. He stresses the importance of the role of the accumulation and management of reserves by public authorities including sovereign funds, but other than referring to conservative investment norms followed by the authorities, he does not expand on the objectives and constraints (including political economy considerations) on the choices of public authorities and does not mention the heterogeneity among countries in reserves and their volatility as well as in the objectives of public authorities in accumulating reserves. After all in the distribution of global stock of reserves a few countries hold the dominant share. Among these China's accumulation

of reserves is of fairly recent origin, oil exporters such as Saudi Arabia have accumulated reserves for a long time, and India, whose accumulation of reserves is not only recent but also relatively small in size.

Every element of Subbarao's casual chain calls for both analytical and empirical justification. For example, I have already referred to the significance of aggregate "wealth effect" of asset price increases as doubtful. His sweeping assertions about the mono reserve currency status of the US dollar, particular, and his speculation that it encouraged US authorities to defer macro adjustments and to dilute regulations and supervision standards, need empirical evidence and analytical support that Subbarao does not offer.

Sections 4 and 5 of Subbarao's paper are on India. He (and also his predecessor, Governor, Reddy) have pointed out that India is not a contributor to the persistent accumulation of global imbalances or their propagation; India's growth process has not been dependent on external finance and in the demand structure for its output (i.e. GDP) foreign (i.e. export) demand accounts for a relatively small share; India does not target a particular level of current account surplus or deficit, nor does it pursue an explicit policy of reserve accumulation; and the exchange rate of the rupee is essentially market determined. In short, the burden of these remarks of Subbarao is only to emphasize that India did not contribute to the crisis but as a victim of its ramifications and hence, India has a stake in the resolution of global imbalances on a sustainable basis.

The export data cited in his paper on India's savings and investment rates, current account deficits, exchange rates of the rupee, net capital flows, portfolio flows, and the ratio of reserve assets to total external liabilities are publicly available from official sources. One could however question his interpretation of them as implications of ex ante policy choices made by India. For example, Chart 2 shows that domestic savings and investment as shares of GDP have differed very little from each other since 1981-82 implying that ex post India did not appear to have depended significantly on external

finance for its investment in the aggregate. It could be due to India's ex ante policy choice as he and most analysts including myself have suggested, but it need not.

Viewing the excess of investment over savings as a measure of current account deficits (CD), Chart 3 on the other hand suggest that CD had remained positive in absolute value except for the five years 2001-01 to 2004-05 of the twenty nine year period 1980-81 to 1008-09. But the chart also shows an increasing phase for CD during 1980-81 to 1990-91, s steeply declining phase in 1996-97 – 2004-05 and a steeply increase in phase subsequently. It is hard to believe that this particular pattern is pure coincidence and had nothing to do with policy, as Subbarao's statement that India does not pursue a policy of achieving a particular level of CD to support its growth strategy implies. Did he mean that the CD is the outcome of other policies and was not itself a variable of policy choice? But this does not explain the pattern.

As it so happens, an alternative interpretation is available that appears consistent with the observed pattern. It starts from the break in the 1980s from the fiscal conservatism of the previous three decades in India's fiscal policy into a phase of fiscal profligacy financed by domestic and external borrowing, particularly from non-concessionary private capital markets. The increasing phase during 1980-81 to 1990-91 of CD in absolute value is consistent with fiscal profligacy. The fiscal and balance payments crisis 1990-91 and the post crisis reform with fiscal consolidation as a major item is consistent with CD that fluctuated without a trend during 1992-93 to 2000. The emergence of a steeply declining phase thereafter until 2004-05, followed by a steeply increasing phase is consistent with the fiscal consolidation efforts losing steam after 1996-97, attempts to resuscitate it through the enactment of Fiscal Responsibility and Budget Management Acts at the Centre and States, and the rise in FDI and portfolio flows (referred by Subbarao as surges in capital flows during 2003-08). It should have been obvious a priori and in any case the alternative story documents it with data that CD is the outcome of many policies. Even if one were to target a particular value of CD, achieving it would in general involve a combination of policies, among which exchange rate is one albeit a prominent instrument. His statements that no particular value of CD was targeted to support the

growth strategy and that the exchange rate was not used to target specific values of exports or CD cannot be inferred from the ex post data presented. His statement that the thrust of the exchange rate policy has been to contain undue volatility, particularly that arising from volatile capital flows (p. 134), leaves open the questions around what path of the exchange rate would the volatility be contained (presumably, around a market driven flexible exchange rate path) how volatility is to be measured and how the norms within which it is to be contained were defined and set. Although a direction of causation from volatility in capital flows (aggregate? Portfolio? Short term? Long term?) to exchange rate is suggested by him, in itself it is insufficient to choose the timing and extent of interventions in the market. What is needed is a policy model for determining them that also gives an idea of the errors in actual outcomes around the expected values of outcomes as determined by the model. Of course Subarao or any other Governor was not expected to state their models explicitly but it is not unreasonable to expect them to state that they make their policy choices on the basis of an analytical model and lay out its broad features.

Subbarao argued (p. 136) that India did not accumulate foreign reserves for self-insurance against the risk of adverse shocks to foreign capital inflows, as alleged by some analysts based on the market interventions (presumably its frequency though Subbarao did not say so) of the Reserve bank and the accumulation reserves in the recent decade. In his view the accumulation of reserves and frequency of interventions are not the only possible indicators of a self-insurance policy. His argument is that the variations in reserves are an offshoot of the exchange rate policy of containing volatility. If so it would be very unusual that variations observed over a decade are all positive, that is net increases in reserves. He does say that foreign reserves certainly helped India to face adverse external shocks better. Again why such use of reserves is not self-insurance is not obvious. In any case, he could have simply said that self-insurance was not the primary objective of India's Reserve accumulation policy. I found his characterization of foreign exchange reserves as "borrowed funds" and "qualitatively different" from reserves accumulated through trade and current account surpluses (p. 136) puzzling. From the perspective of the use of reserves, there is and cannot be a distinction between

the two. But as sources of accumulation, unless Subbarao meant that it was foreign borrowing specifically for adding to reserves (doing so at the same times adds to liabilities); once again there is no distinction.

In his remarks on how India has managed the fallout from global imbalances or more precisely the fallouts from the financial crisis to which the global imbalances were a contributory cause he notes most of the challenges faced by India in addressing the fallout. These challenges are not only India's but also those of many developing countries and are well known. I will comment just on two mentioned by him. One challenge is not so much from the crisis per se, but from sustained capital inflows, whether or not associated with the crisis. They can lead to loss of competitiveness of sectors producing traded outputs, a process well known as the Dutch Disease phenomenon, and the associated appreciation associated with it of the real exchange rate (defined as the fall in the prices traded goods in terms of non-traded goods) which could lead to a possibly long term decide in the output of trade sector. The second challenge is the conflict in some periods between the expansionary effect of inflows on domestic money supply, during a time when the monetary authorities wish to employ contractionary monetary policies for achieving the domestic objectives the monetary authorities were pursuing at that time. Thus the inflows threaten the independence of monetary authorities to set interest rates for achieving domestic objectives. This challenge is the logic both behind the open economy Trilemma discussed earlier and behind the alignment between the number of instruments of policy and the number of policy objectives, and is not particularly new.

Subbarao's description of India's policy approach to the use of capital flows suggests a nuanced view of the use of capital controls that goes beyond addressing the implications of the flows on the (real) exchange rates for maintaining financial and macroeconomic stability. The approach has four elements, first, an explicitly stated active capital account management framework (i.e. a framework for using capital controls to encourage non-debt creating and long term capital inflows (e.g. FDI) and discouraging debit flows (e.g. external borrowing by domestic entities). The second element which does not seem that

different from the first is to avoid the "original sin" (a theological term, used by Barry Eichengreen (if I recall correctly) of excessive foreign currency borrowings by domestic entitles including the government and public enterprises. The third element consists of prudential regulations to prevent excessive dollarization of financial sector intermediaries, particularly banks. The fourth element consists of a significant liberalization of permissible avenues for outward investments for domestic entities.

He does not mention that external investment or borrowing by households were prohibited most of the time and the rationales for permitting investments through some channels while doing so through others were prohibited was not always transparent.

He suggests that an ex ante framework for managing capital inflows is preferable to a framework of letting the inflows to be free of any restrictions and dealing the consequences of free inflows ex post. In other words Subbarao, unlike Greenspan of some years ago, curative approach to managing capital inflows, prefers a preventive approach. His preference has also been historically the preference of the Indian authorities in their choice of tools of economic management since the days of the infamous licence-permit-raj.

I have argued on many occasions that for articulating and devising their ex ante preventive controls that would serve social objectives the authorities need to have information of not only the counterfactual of likely course of events, if there were no controls as compared to using controls, but also if ex ante controls are to be used to channel them in the future in socially desirable directions, the probability of their success in doing so. Second authorities enforcing the controls have to have the incentives as well as mechanisms to enforce them by ensuring that evasion and avoidance possibilities do not occur with high probability. Third, incentives (reward and punishment structure) of the ex ante controls have to be such that those whose freedom of action is being restricted by the controls, find it in their own interest to abide by, rather than evade, avoid or escape from the application of controls.

The experience with ex ante controls that are not price-based in India does not give one great confidence in being able to achieve the desired social objectives through ex ante controls and a void the likely economic distortions as well as their manifestations the political economy of India. This is not to say that an ex post framework is necessarily superior. For example, some deleterious outcomes that had occurred already may be irreversible or very costly to ameliorate. Also there is an information problem analogous to the one mentioned with respect to ex ante control. Ex post, the authorities would have to have to be able to identify the causes of the deleterious outcomes to be able to address them. Thus ex ante controllers have to have a convincing model to do a counterfactual analysis of the performance of alternative controls so that they could chose among those available. Analogously from an ex post point of view, they would need a convincing model to do post facto casual analysis of how the observed outcomes could have come about.

I am not convinced that in India we have as yet macroeconomic/financial models and information to do the needed counter factual analysis of Subbarao's ex ante approach to capital inflows. I would venture to add an analogous global model that the G20 leaves and their Sherpas would need for a counter factual evaluation of their pronouncements and proposals for the future exists either.

2.0 International coordination in response to the crisis : Fiscal Stimulus

2.1 Why Coordinate?

The G-20 designated themselves as a forum for coordinated international action presumably where such coordination was appropriate. They apparently believed that national stimulus measures to stimulate the domestic economy would have a greater stimulating effect on the global economy were they coordinated across countries and presumably simultaneous as well. It is of course well understood that if effects of fiscal stimulus of individual countries are interdependent (i.e. mutually correlated) in large part because of externalities (i.e. spill overs) from one country's fiscal stimulus on another

country's economy, then a joint (i.e. coordinated) choice of fiscal stimulus (in principle, it could also involve fiscal contraction by some countries) could maximize the beneficial impact on the global economy. But going from this well understood principle to concrete action would require empirical information on the structural model of interdependence of the economies, information that is based on an econometrically well founded casual analysis of available data. It could turn out that many countries are only weakly connected with the rest of the world and for others the direction of dependence is mostly one way (i.e. the actions of the rest of the world affect them far more relative to what their action would on the rest of the world). In generally, in the contemporary structure of the world economy, it would not be surprising, if coordination among a few systemically important countries would have significant benefits but those could be modest.

It is doubtful if the G-20 leaders or more relevantly their "Sherpas" had a well founded analytical basis to propose a concrete set of coordinated fiscal stimuli across the G-20. Nor is it evident from the available fiscal data that in fact there was coordination, but only they were undertaken more or less simultaneously. The asserted coordination is more in the nature of ritual obeisance to the relevance of and the benefits from coordination of policy actions that are ex ante known to have reasonable prospects of delivering the desired outcome on the global economy, and not that the contemplated actions were of that nature. I have already referred to the diverse views among reputed economists on the qualitative magnitude of the multiplier of domestic stimulus expenditures on the national economy, let alone of a set of coordinated expenditures on the global economy. For to be sure that the joint effect of the stimulus expenditures of countries on the global economy to be positive and quantitatively significant, the externalities of each country's stimulus have to be positive and quantitatively significant. Otherwise, even a successfully coordinated and implemented global stimulus may have a quantitatively small multiplier effect on the global economy, with positive externalities of some being, offset by negative ones of others and if the negative externalities dominate the aggregate effect could even be negative. If this is correct, the claim that the G-30

managed to avoid the crisis deepening from the Great Recession to Great Depression through coordinated fiscal actions would be exaggerated.

I will not repeat my earlier comment on the dangers of coordinated set of actions that are not ex ante known to generate, successful outcomes with a reasonable probability, nor would I elaborate on the well known point from the work of Jan Tinbergen decades ago that unless the number of policy instrument and the number of instruments are fewer than the number of policy objectives, then the use of the available instrument could lead to achieving at least one, if not more, objectives in full measure. For example, if the global objectives include reaching Global Output potential, and employment levels starting from their limited levels largely below due to shocks of the crisis, then restoring global imbalances, containing inflationary expectations using no more than the instrument of fiscal stimulus and exchange rates would not be adequate, but would call for a set of structural as well as non-structural policies. Apparently the Tinbergen lesson has escaped from the memory of analysts since it is being repeated ad nauseam now!

2.2 India's Fiscal Stimulus

Conventionally, public fiscal and other actions to stimulate the economy would follow the contraction in aggregate demand for domestic output (i.e. GDP), consisting of domestic demand (private and public) for consumption and investment and foreign demand. The stimulus is meant to substitute for the fall in aggregate demand by an increase in it induced by fiscal stimulus.

Except for a significant adverse effect on India's domestic output to supply world demand because of the crisis as seen from ex post data, there is no evidence of a significant fall in other components of aggregate demand that would have called for a fiscal stimulus. I have pointed out elsewhere that India's real rate of growth of GDP had begun to fall from its peak in 2007-08, in the last quarter of 2007-08 itself before the crisis hit India's export demand a slowdown that in my view was due to structural factors. Causally disentangling the effect of a decline in growth of GDP – after all India did not

suffer a decline in the level of real DP but only in its rate of growth – that due to structural factors and that due to the shock to world demand for commodities that India's exports has not been done. The evidence in favour of the government having to stimulate the economy through fiscal stimulus is not at all strong.

There is also no official explanation on what specific policy actions and in particular, what specific targets such as sectors, etc. were the stimulus targeted and in what magnitudes. Clearly, given the commodity composition of India's exports, it would seem that substituting the fall in the aggregate demand and for each exported commodity, by increases in its domestic demand would not be easy. Clearly the fall in manufacturing output during the crisis year, could be associated with the fall in world's demand for manufactured products from India since in India's exports manufacturing accounts for a large share, and also it is likely that substituting domestic demand for falling world demand for manufacturing is likely to be easier. But in the aggregate, if there is no decline in other components of domestic demand, the effect of the crisis induced fall in foreign demand on GDP was or would have been modest. The rationale for India engaging in fiscal stimulus is just not there.

This is not to deny of course that an increase in deficit financed public expenditures stimulate nominal GDP. This is what Dr. Singh implied in his remarks. But if the expansion of demand due to the stimulus ran against domestic supply constraints (i.e. there was little unutilized capacity when the crisis hit) as the structural explanation of the slow down India's real growth would suggest, nominal GDP stimulated by the stimulus would be largely dissipated in a spike in inflation. Not having done the requisite empirical analysis, I would not confidently assert that this is happening already, but at the same time I cannot rule it out altogether.

2.3 Global Financial Architecture

2.3.1 Financial Sector Reforms

In an earlier Section I discussed the actions and commitments of G-20 leaders on national financial sector reforms as part of the reform of global financial architecture and found that they were appropriate, needed, and generally well designed. Here I would like to raise a few issues. First, there is inadequate recognition of the heterogeneity of financial institutions among countries. To take just one example, in India, nearly 12 percent of GDP (roughly about a third of gross domestic savings and capital formation) is direct savings in the form of physical assets by households. In other words, these savings/investment flows do not involve any financial intermediation at all. Taking into account all transactions, including saving/investment transactions and others, the share that is not monetized that does not involve the financial sector, is likely to be significant. In terms of sources of finance include, institutions regulated by India's central bank (i.e. Reserve Bank of India) and also a variety of non-formal institutions most of which are out of regulatory system. They are by no means the analogues of the shadow-banking system that is weakly regulated in developed countries. Also, a large share of the assets of the India is banking system (nearly 60 percent or more) and even larger share of employment in the banking sector are in public sector banks, which in my view makes closing failing public banks virtually impossible and also recapitalization of using public resources failing banks inevitable with deleterious consequences on the budget and on incentives of banks to avoid the need for recapitalization.

References

Anand, Rahul (et al) (2010) "An Estimated Model with Macrofinancial Linkages for India". "*Working Paper WP/10/21),* International Monetary Fund.

Caballero Ricardo, J. (2010), "Macroeconomics after the Crisis: Time to Deal with the Pretense-of-Knowledge Syndrome", "*Journal of Economic Perspectives – Volume 24, Number 4 – Fall 2010 – Pages 85-102"*

Gabriel Vasco J (et al) (2010), "An Estimated DSGE Model of the Indian Economy", *(www.egg.uminho.pt/ecoomia/nipe, accessed June 20, 2011)*

Mishkin, Frederic S. (2010), "Over the Cliff: From the Subprime to the Global Financial Crisis", "*Journal of Economic Perspectives – Volume 25, Number 1 – Winter 2011 – Pages 49-70".*

Ohanian Lee E, "The Economic Crisis from a Neoclassical Perspective", *Journal of Economic Perspectives – Volume 24, Number 4 – Fall 2010 – Pages 45-66.*

Reinhart, Vincent (2011), "A Year of Living Dangerously: The Management of the Financial Crisis in 2008", "*Journal of Economic Perspectives – Volume 25, Number 1, Winter 2011 – Pages 71-90".*

Srinivsan, T.N.(2005), "Comments on Obstfeld and Rogoff", *Brookings Papers on Economic Activity, 1, 2005, 129-140.*

Tobin, James (1990), "Eight Myths About the U.S. Dollar", in Stefan Gerlach and Peter Petri (Fds.), *The Economics of the Dollar Cycle,* Cambridge, MA, MIT, Press.

Woodford, Michael (2010), "Financial Intermediation and macroeconomic Analysis", "*Journal of Economics Perspectives – Volume 24, Number 4 – Fall 2010 – Pages 21-44".*