The Interlocked Crisis Of The Real And The Financial Sector.

The relation between the real economy and the financial sector has long been a matter of controversy among economists. One could easily trace it back at least to David Hume, but a more recent convenient landmark would be the so-called Keynesian-Monetarist controversy, which was influenced by Friedman and Schwartz's account of the monetary history of the United States. They the attributed the Great Depression almost exclusively to monetary causes, especially the misplaced financial austerity of The Federal Reserve System at some critical junctures. The current chairman of the FED, Ben Bernanke, as a faithful follower of this tradition, had approved strongly of that diagnosis. Highlighting the pre-eminence of money, finance and monetary policy, the Monetarist doctrine downplayed, and in extreme cases denied altogether any useful role of fiscal intervention by the state to fight unemployment or counter cyclical downturn. This is not new. Before the Second World War, a similar debate took place about the relative importance of 'industry' and 'finance' in Britain, and the official doctrine favoured maintaining a high international credit rating for the sterling at the cost of substantial unemployment. The official doctrine of 'sound finance' claimed that government deficit spending to fight unemployment would only result in a corresponding deficit in the balance of payments without improving the employment situation. Indeed in 1929 this led Churchill to observe caustically that, the Chancellor appeared perfectly happy with the fine credit rating for Britain despite one and a half million unemployed at home. Kalecki, who discovered independently the main principles of effective demand, apparently used to say that the acceptance of Keynesian demand management was possible politically, only when the prestige of 'high finance' and the City of London was in ruins following Britain's humiliating exit from the Gold Standard in 1931 (Bhaduri and Steindl, 1981). With the current financial crisis spreading rapidly in the global economy, the intellectual history of this debate might be repeating in many ways, irrespective of whether mainstream economists care to remember it or not. As a currently circulating joke has it, " We are all Keynesians in times of crisis, but become Monetarists in interpreting the crisis as soon as it is over."

The underlying changing balance of political power is reflected in the desire to return to the fold of Monetarism as soon as possible, as the ideological support to free market capitalism, and denying the need for state action to maintain high employment and growth on the assumption that all markets are self-equilibrating. Thus, when the financial sector is on the defensive in times of a financial crisis, the chorus among academic economists for state intervention is loud and clear. Yet, as soon as the financial sector becomes stronger, its tendency to dominate and shape the real economy to its advantage surfaces again. Theories are put forward accordingly to justify minimal state action. Recall for example the doctrine of the 'natural rate of unemployment', non-accelerating inflation rate of unemployment or NAIRU, the ineffectiveness of fiscal policy under capital mobility, the public choice theory of the selfish government incurring public debt or the importance of the independence of the central bank for maintaining currency value at any cost. Such theories presume that the real economy mimicking the Walrasian market story tends to be self-equilibrating, and government intervention at the most affects transiently that equilibrium of the free market. Consequently, the broad message is reiterated in many ways that the real economy is best left to the market mechanism, and the financial sector can have its free run without adversely affecting the real economy.

Many recent incidents illustrate how this happened this time in the United States. Just before the bursting of the high-tech (dot com) bubble of 2000-01, it was officially held that the financial sector was not keeping up with the dynamism of the new economy. Thus commercial

banks were considered not high-risk ventures, as they were used to managing conservatively other people's money under government guarantee of the Glass –Stegall Act. Accordingly, that Act was repealed, and high risk taking investment banks operating on high leverage were merged with commercial banks under the Gramm-Leach-Bliley "financial services modernisation act" in 1999, with economist Larry Summers as its main intellectual architect. Again, in 2004 a decision of the Securities and Exchange Commission with Larry Summers present allowed in one stroke investment banks to raise their debt capital ratio from 12:1 to 30:1 or even higher.

As the vulnerability of the financial system was increased by conscious design for reaping greater profit from financial operations, the system allowed an increasing role to be played by a set of financial institutions and companies. This trend was already present in the 1970s, but accelerated in the last two decades. Thus, between 1970 and 2007 just before the onslaught of the present crisis, the assets of the financial system held by the more traditional financial institutions like the depository commercial and savings banks had dropped from 54 to 23 per cent, insurance companies had reduced their share from 17 to 11 percent, pension funds had gained only marginally from 15 to 17 percent, but the assets of the less traditional financial institutions like mutual funds had soared from 4 to 18 percent, that of security brokers from 1 to 5 per cent, that of mortgage banks from 4 to 13 per cent, and a residual category of 'others' from 0 to 10 percent The less traditional institutions were in the lending business almost like the usual commercial banks, but had no 'lender of last resort'. They resembled instead a 'shadow banking system', which lacked on the one hand the explicit backing of the monetary authority, but on the other hand escaped largely its regulations. In the true spirit of free market enterprise, finance could now go on innovating new credit instruments with little regulation, supervision or disclosure. Devoid of a lender of last resort at the top, innovative shadow banking resulted in what may be described as a circular rather than a vertical network of correlated credit interdependence. It was a system in which these shadow bankers, especially large investment banks, pushed credit to the clients, while mutually guaranteeing and underwriting each other's debt. For instance 'credit default swap' (CDS) offered insurance protection in case of default say of a bond, but was often held by parties who did not hold the underlying credit instrument. Derivatives emerged as the most prominent instrument for this purpose. By 2008 the over-the- counter derivatives market of the world was reported at about $ 2.1 trillion per day, whereas total world trade was estimated at $12 trillion per year, i.e. about 1.6% of derivative trade. At the same time this largely unregulated system of finance went into new forms of "securitization" of these mutually correlated debts by mixing them in different combinations of financial packages to be sold to private parties, including institutional investors, as securities or assets the world over according to their supposed degree of risk. The variety of financial packages thus created was bewildering, e.g. collateralised debt obligations (CDO), mortgage backed securities (MBS), asset backed commercial papers (ABCP) and securities (ABS), Special Purpose Vehicles. (SPV), Special Investment Vehicles (SIV) etc, a fog of non-transparent deals that came to be known as the 'origination and distribution' model. It meant the institutions 'originate' these financial packages, and without holding on to them 'distribute' them to clients for a fee. At the end of 2007 total US securitized bond market was estimated at $ 10.2 trillion per year, of which 76 per cent was mortgaged based securities (MBS consisting of residential sub prime 13 percent, prime 57 per cent and commercial 6 per cent) while the rest asset based securities (ABS including students, loan, credit cards, auto related etc). Ironically the grading of the securities by their degree of risk was done entirely by well-known private credit rating agencies like Moody, Standard and Poor etc, many of whom turned out to have been beneficiaries through consultancy and other fees from the very financial institutions whose securities they were rating. In short, ignoring all forms of possible conflict of interests, the whole game of massive credit expansion was played within the unregulated private financial system on the ideological belief that the private financial market knows best how to regulate itself. The system was driven by treating each other's debt as asset in the capital base for lending, and the volume of lending could be expanded enormously through increasing leverage. "Low margin, high volume" by typically leveraging loans more than 30 times on a shaky capital

base, and earning enormous fees on each transaction rather than interest income became the logic of the financial game that was being played out with virtually all rules of the game set by the private players to suit themselves.

II

The fragility of the highly correlated circular credit structure has not been unknown. Having lost a large sum in the derivative market, Warren Buffet famously observed a few years before the crisis, ". Derivative dealers trade extensively with one another Linkage when it suddenly surfaces can trigger serious systemic problems. History teaches us that a crisis often causes problems to correlate in a manner undreamed in more tranquil times". He is also reported to have joked that the weapons of mass destruction were already in the Wall Street, and there was no need to look for them in Iraq.

The problems of the macro credit structure was typically correlated in two different ways. An increased capital base became possible through treating each others guaranteed credit as asset, while several layers of leverage on the base allowed massive expansion in credit. Available financial statistics suggest how the this worked. As noted earlier, between early 1970s and 2007 the non-traditional financial sector consisting mostly of mutual funds, security brokers and mortgage banks vastly increased their share of asset holdings in the financial system from 9 to 36 per cent at the cost of traditional depository banks, insurance and pensions (reduced from 86 to 51 per cent), while on the side of debt during the same period real GDP increased about 14 times, total debt about 32 times, household and government debt about 28 times while finance firms increased theirs by 160 times. However, the asset and capital base itself became increasingly vulnerable due to the magnifying effect of each defaulted loan, as it was correlated with the capital base and asset structure of several other financial institutions. At the same time, the probability of default increased with a rapid expansion of high leveraged loans. Thus continuous innovations in credit instruments rapidly raised leverage and the number of layers on the capital base, while the increase in the number of layers raised both the proportion of non-performing loans and diminished the capital base in a magnified way through the "correlation effect" in case of each default for the shadow banking system as a whole.

A simple algebraic formulation might be useful at this stage to capture the broad features of the demand and supply of credit related particularly to the shadow banking system described above.

Let x = no of layers leveraged on the capital base B; q = proportion of performing loans, $1>q>0$.For reasons explained above in the relevant range of sufficiently high leverage x,

(1) $q = q(x),\ q'(x) < 0.$

The capital base *B* depends positively on the level of economic activity Y. It also depends on x, but the nature of dependence is more complicated. The variable x depends on financial innovations aimed at relaxing the degree of quantity rationing of credit, that is, a higher x means weaker quantity rationing of credit. The typical index of price rationing of credit is the interest rate i which is realistically assumed in the present context to be at its minimum value. It is left out from the model for simplicity of exposition. More assets are created through securitization, and are purchased by some financial institutions to enter their capital base. Thus B increases with x, but beyond a threshold value any further increase in n through high risk securitisation makes the effect on capital base negative.

The credit supply function can be summed up as,

(2) $S = x.q.B(Y,x),\ B_Y > 0,\ B_x > 0$ or <0 depending on whether x is below or above the threshold value.

The demand for a loan depends positively on both the level of economic activity and the ease with which credit is made available, that is

(3) $D = D(Y, x), D_Y > 0$ and $D_x > 0$.

With the interest rate assumed to be given at some minimum value, in the credit market quantity rationing takes over as the possible equilibrating variable to capture the idea of 'low margin, high volume' mentioned earlier. Any excess demand is attempted to be met by increasing credit supply through higher leverage on the base,
that is

(4) $(dx/dt) = a\,[D(Y, x) - xqB(Y, x)],\ a.>0.$

For any given Y, the stability of the credit market can be studied in isolation (partial equilibrium). The stability of the adjustment equation (4) in this case requires that the stimulation, measured by the slopes of the demand and the supply curves of credit with respect to x, is greater for supply than for demand as a result of an increase in leverage x. This requires in turn that the expression $K < 0$, where

(5) $K = D_x - qB - xB(dq/dx) - xqB_x = D_x - qB(1+\varepsilon) - xqB_x < 0$, where $\varepsilon = (x/q)(dq/dx)$.

While $K < 0$ represents the necessary and sufficient condition for stability, it is clear when the negative elasticity of q with respect to x, exceeds unity in absolute value, i e, $\varepsilon < 1$, and leverage is also sufficiently high to exceed the threshold value of x to make $B_x < 0$, the stability of the credit market must be violated. Under these conditions of an over-extended leverage (high x) and negative correlation effect of securities in the credit base ($B_x < 0$ at high x), it may not be possible for the credit market to stabilise on its own.

Injection of funds by the government would be needed to satisfy stability condition (5). The higher the leverage the greater would be the volume of funds needed in general for injection. Assuming injection is proportional to supply leverage for simplicity (other assumptions complicating the algebra are possible without altering the results qualitatively), this would be simply an additive term b to the slope of supply of credit that stabilises the system if,

(6) $K = D_x - qB(1+\varepsilon) - xqB_x - b < 0,\ b > 0.$

Note in passing that funds may also be injected to detoxify toxic assets of the financial institutions turning B_x positive and sufficiently large to satisfy stability condition (6).

The impact on the real economy of simply stabilising an unstable credit market through injecting funds can be examined as a standard comparative static exercise. Totally differentiating the equilibrium condition of demand equals supply of credit and rearranging terms,

(7) $(dY/dx) = K/(xqB_Y - D_Y)$,

where $K<0$, due to injection of sufficient funds satisfying stability condition (6).

Consequently from (7) the impact of higher x, interpreted as less stringent quantity rationing of credit, would be positive on the level of economic activity Y *only* if the denominator on the right hand side of (7) is negative. And this requires that in response to an increase in income Y, the demand for credit by households and firms increases more than the supply of credit. The weakness of a policy of only injecting funds into the financial system is implied in this condition. The demand for credit by both firms and households may not be stimulated sufficiently in situations where the economic outlook is grim and uncertain due to heavy indebtedness and the fear of wide spread unemployment. Thus, the financial system may be stable and flushed with liquidity through injection and a high supply response from creditors, and yet, in the absence of sufficient demand for liquidity from the real economy, the depressive economic conditions would continue. Governments that still refuse to go in for a Keynesian strategy of direct massive public spending for employment and income generation in the real economy, not necessarily routed through making only the financial system more liquid, try to save capitalism by saving only the financial capitalists. This may fit the neo-liberal monetarist outlook, but is unlikely to be effective in fighting the deepening recession.

III

It is arguable that the irony of the current crisis is not the result of forgotten Keynesian policies, but an attempt to turn Keynesian policies of demand management on its head. When tax cut favouring the rich and even low interest policy failed to stimulate demand sufficiently failed, the bubble of high asset prices was encouraged, if not created by the FED, by resorting to deregulated expansion of credit of dubious quality, and reduction in capital gains tax. The resulting wealth effect that kept consumption demand high despite the demand depressing effect of widening trade deficit, and without distributing income either in favour of the poorer classes with a higher propensity to consume, or raising sufficiently public investment. Rising asset prices also made the financial system look highly liquid and solvent, encouraging it to follow a policy of lending on easy terms. At the same time the borrowers could more easily meet their mortgage and other debt servicing obligations often only from capital gains without feeling the burden of growing debt. And the monetary authorities saw no need to interfere as the very rich, the rich, and even the not-so-rich house owners seemed to be enjoying a free lunch!

There was however a clearly visible dark cloud on the horizon, gradually gathering the momentum of a storm, which was ignored. The wealth effect is nominal or virtual by its very nature, and higher consumption or debt servicing cannot be met, except marginally out of **realised** capital gains. Because most wealth holders try to realise their capital gains from rising asset prices, the price level would crash. This fallacy of composition of the macro asset price market is avoided through the financial system by lending against the rising asset prices as the asset holders become nominally more creditworthy. However this leaves the borrowers with a larger and growing stock of debt and higher debt service obligation irrespective of whether asset prices remain high or not.

That gathering dark cloud of debt had also been even more visible internationally with the growing dollar denominated liability of the United States vis- a-vis the rest of the world, especially China, Japan and Germany. It remained a matter of speculation among economists which bubble, the national asset price driven debt bubble or the dollar bubble, would burst first, with a hard landing, if not crash of the dollar. As it happened the domestic debt bubble burst first, initially only because a few mortgage debt was not honoured, whose effect reverberated in a magnified way through the highly correlated asset base of the financial system, and resulted in a collapse of confidence among financial institutions leading to a situation of classic liquidity preference not among the public but among the bankers and financiers themselves. The rest, insolvency, bankruptcy and partial salvage operations by the government and the Federal Reserve System, violating all teachings of the self regulating market economics, is now history as the effects of the financial crisis unravels itself in the real economy ,locally in the US and globally. On the basis of historical data, it is claimed that in comparison to the Great Depression (for the year 1929-30) , at least so far the depression has probably been less severe in the US (Krugman, 2009; Short, 2009), but more severe in the rest of the world in terms of industrial production, stock market prices, and the volume of world trade (Eichengreen and O'Rourke, 2009).

In the US the asset price bubble was of great importance in maintaining a high level of effective demand. Tax cut for the rich and even low interest provided relatively weak stimulus to demand, because it was partly counteracted by the deteriorating personal income distribution, and the system relied increasingly on being debt driven. The financial system fuelled the asset price rise through easy credit by expanding their own lending base through acquiring each others securities of uncertain qualities. To capture this, we might think of a simple extension of the consumption function where, consumption (C) is a linear function of both income (Y) and the increase in notional wealth (dW/dt) due to the rising price level for assets (dP/dt).

(8) $C=c.Y+j.(dW/dt)$,$1> c>0$,$1> j>0$.

At the same time, the increasing notional wealth of the borrowers made them more creditworthy in the eyes of the lenders. The consequent wealth effect on private

consumption is mostly fuelled by rising debt with the private sector borrowing against their rising notional wealth. The corresponding expansion of credit is fuelled by an augmented credit base (B) of the financial sector, partly through treating each others guaranteed loan as capital, highly leveraged in turn is in the manner outlined above (see equation 2 on credit supply). Assuming simple proportionality we may thus rewrite a modified consumption function as,

(9) $C = cY + [j.k.(dR/dt)] - u.R, k>0, q>0.$

where the last term on the right hand side the depressing effect of servicing a higher stock of debt. In short, a positive net flow of debt stimulates in the short run, but its growing stock also depresses in the longer run the level of consumption. Since stocks and flows of debt pull consumption in opposite directions, like some Keynesian models of business cycles (Kalecki 1933; Kaldor, 1940; Goodwin, 1951 with later mathematical sophistication, e.g. Arrowsmith,) the possibilities of debt cycles could be explored along those lines. Indeed before the eruption of the financial crisis, several economists had pointed out the unsustainability of the growing stock of debt mostly in terms of the servicing cost it placed on the borrowers (Godley, 2001; Bhaduri et al, 2006). And yet the crisis did not quite happen that way some had predicted; instead some initial defaults by borrowers magnified rapidly, and led to insolvencies and bankruptcy of several large financial institutions. Confidence collapsed paralysing lending activities. To see how this might be captured analytically, we write,

(10) $GNP=Y= C+I+ [\text{ current account balance}]=C+I+(dR_F/dt)$

where (in the case of the U.S) the current account deficit is covered by increased foreign debt (R_F) liabilities denominated in dollars. In view of (9) and (10) ,

(11) $(1-c)Y= [I+R_F]+ jk(dR/dt)-uR$

For reasons already outlined earlier, the volume of domestic debt is positively related to the level of asset price (P), while the increase in debt is influenced positively by rising asset price (dP/dt), Because higher and rising asset prices increase the borrowers creditworthinesson the one hand, and the lenders capital base on the other. Again assuming simple proportionality for convenience,

(11) $C = c.Y +[jkh(dP/dt)]- u.h.P, l>0,h>0,$

or, in shorter notations,

(12) $Y= (A/s) + m(dP/dt)- n.P$, where $A=(I+R_F)$, treated as exogenous, and $s= (1-c)$, $m=jkh/s$, $n=qh/s$.

The change in asset prices is assumed to depend on the state of excess demand or supply in that market. However both have a speculative element in the sense that, both demand and supply of assets are influenced not only by the price level but also the expected change in prices. Assuming static expectations (or any extrapolation into the future in the same direction as the current direction of change in prices) the demand for assets is represented by,

(13) $D = vP + z(dP/dt)$

The supply of assets depends positively on price level, its rate of change and also the layers of leverage (x). However, as discussed earlier, as x increases, the quantity rationing on credit supply is eased and the supply of credit increases; but higher leverage also entails the probability of higher default of loans, and thus affects negatively the asset and capital base B of the financial sector for lending directly through lower percentage of performing loans q, and indirectly by introducing 'toxic' assets into the capital base. This makes the effect of an increase in x on S uncertain, i.e.S_x has ambiguous sign without further specification. Credit supply S is represented in terms of its arguments as,

(14) $S = S(x, P, dP/dt).$

The adjustment equation for asset price level is given as,

(15) $(dP/dt) = b[vP+z(dP/dt)- S(x, P, (dP/dt)] , b>0.$

It is rewritten as,

(16) $(dP/dt) = [b/(1-bz)]. [v.P-S(P, dP/dt, x)]$

Thus the credit system is stable, if

(17)For (1-bz)>o, i.e.z<(1/b), the systen is stable if S_P>v, implying supply responds more strongly than demand to higher price,
(18) but for z>(1/b) the opposite holds , and demand has to be more responsive than supply for stability.
Interpreted economically this means when the speculative element is relatively weak and z is sufficiently small, the usual stability condition greater supply than demand response holds, but when the speculative element in the credit maket becomes relatively strong for sufficiently large values of z the stability condition is exactly reversed. Without going through a precise algebraic formulation, we can now broadly trace how the credit fuelled crisis works.
To start with the financial system maintains a high supply response through the innovations of many credit instruments discussed above, and the speculative element on the demand side is not moderate (z sufficiently small) to keep the credit system stable while relaxed credit conditions allow asset prices to rise gradually to a high level(see17) in the stable zone to create a strong wealth effect on aggregate demand and high level of GNP. In the course of these events, confidence in the future course of prise rise is built up, 'irrational exuberance' takes over and the speculative element gets stronger (z becomes larger) tending to destabilise the system from the demand side. The destabilising tendency is reinforced as credit supply tries to keep pace with demand especially by increasing leverage (x), and allowing in the process even some assets of questionable credit rating to enter the capital base. This induces higher default (lower q), shrinks the capital base (B) through extensive correlation effect ($B_x < 0$) and supply response becomes weak with the system trapped again in a low level credit equilibrium because the stability condition is now reversed.(Because at z relatively large, response of supply is now weaker than that of demand; see 18).Formally this could become the story of a (limit) cycle with the economy being alternatively trapped in a high and a low level equilibrium both in the financial and in the real sector of the economy.

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