



Working Paper No. 623

**The Meltdown of the Global Economy:
A Keynes-Minsky Episode?**

by

Sunanda Sen*

Levy Economics Institute of Bard College

September 2010

* An earlier draft of this paper was presented at the Keynes International Conference, Sofia University, Tokyo, Japan, in February 2010, and at the Minsky Summer Seminar and Conference, Levy Economics Institute of Bard College, Annandale-on-Hudson, New York, in June 2010. The author thanks the participants for their comments on the paper.

The Levy Economics Institute Working Paper Collection presents research in progress by Levy Institute scholars and conference participants. The purpose of the series is to disseminate ideas to and elicit comments from academics and professionals.

Levy Economics Institute of Bard College, founded in 1986, is a nonprofit, nonpartisan, independently funded research organization devoted to public service. Through scholarship and economic research it generates viable, effective public policy responses to important economic problems that profoundly affect the quality of life in the United States and abroad.

Levy Economics Institute
P.O. Box 5000
Annandale-on-Hudson, NY 12504-5000
<http://www.levyinstitute.org>

Copyright © Levy Economics Institute 2010 All rights reserved

ABSTRACT

The enormity and pervasiveness of the global economic crisis that began in 2008 makes it relevant to analyze the circumstances that can explain this catastrophe. This will also provide clues to the appropriate remedial measures needed to prevent future occurrences of similar developments.

The paper begins with some theoretical concerns relating to factors that could trigger a similar crisis. The first of these concerns relates to the deregulated financial institutions and the growing uncertainty that can be witnessed in these liberalized financial markets. The second relates to financial engineering with innovations in these markets, simultaneously providing cushions against risks while generating flows of liquidity that remain beyond the conventional sources of bank credit.

Interpreting the role of uncertainty, one can observe the connections between investment and finance, both of which are subject to changes in the state of expectations. The initial formulation can be traced back to John Maynard Keynes's *General Theory* (1936), where liquidity preference is linked to asset prices and new investments. The Keynesian analysis of the impact of uncertainty related expectations was reformulated in 1986 by Hyman P. Minsky, who introduced the possibility of sourcing external finance through debt, which further adds to the impact of uncertainty. Minsky's characterization of deregulated financial markets considers the newfangled sources of nonbank credit, especially with the involvement of banks in the securities market under the universal banking model.

As for the institutional arrangements that provide for profits on transactions, financial assets bought and sold in the primary market as initial public offerings of stocks are usually transacted later, in the secondary market, where these are no longer backed by physical assets. In the upswing, finance creates a myriad of financial claims and liabilities, and thus becomes increasingly remote from the real economy, while innovations to hedge and insulate assets continue to proliferate in the financial market, especially in the presence of uncertainty.

The paper dwells on an account of the pattern of the financial crisis and its spread in the United States. This is appended by a stylized account of the turn of events in terms of a theoretical model that highlights the role of uncertainty in the process.

Keywords: Uncertainty; Speculation; Hedging; Ponzi; Securitization; Financial Fragility

JEL Classifications: E12, E41, E44, F33, F34, F41, G15, G21

The mayhem that started in the deregulated financial markets of United States in the autumn of 2008 engulfed, by early 2009, the real as well as the financial sectors in the global economy at large. The crisis not only deepened, but also has continued since then. A development as above makes it imperative that it still remains as relevant to analyze the circumstances that can explain this catastrophe.

WHAT CAN TRIGGER A FINANCIAL CRISIS? SOME THEORETICAL CONCERNS

Tracing back the origin of the ongoing crisis and its manifestation in the global economy, we highlight the following two facets in the changing institutional structure of deregulated financial markets.

The *first* concerns the deregulated financial institutions and the growing uncertainty as can be witnessed in these liberalized financial markets. The *second* relates to financial engineering with innovations in these markets, simultaneously providing cushions against risks while generating flows of liquidity that remain beyond the conventional sources of bank credit.

Dealing with the first aspect that concerns uncertainty in deregulated markets, the growth of latter sets the pace of investments by affecting expectations, of future value as well as of returns on assets. One can here observe the connections between investment and finance, both being subject to influence when the state of expectations are subject to changes. We can trace the above to Keynes's formulation in *The General Theory* (1936) where liquidity preference had been linked to asset prices and new investments.¹ As formulated by Keynes, net return on an individual asset (including money) is determined by four factors, which include the expected yield in physical terms (q), carrying costs (c), the liquidity cost (l) (for holding the asset), and expected changes, if any, in the price of assets (a). One thus arrives at a notion of the "own rate of interest," on assets (including money) as measured in terms of itself ($q-c+l+a$). The "own rate" also reflects the marginal efficiency of capital for each such asset. As Keynes viewed it, to continue with the purchase of individual assets (new investments), the respective own rate of

¹ See Keynes (1951: 225–229)

interest (marginal efficiency, as defined above) has to be higher than those on other assets including money. However, for assets other than money the “own rates of interest” are likely to fall with additional investments, especially due to a drop in yield (both actual and expected). But such declines are absent for money, which, as held by Keynes, has no intrinsic yield, carrying cost, or price appreciation during the short period. Thus a point will come when the own rate of interest on money will be equalized to those on other assets, which indicates an equilibrium situation where the returns on all assets including money are equalized.

Dwelling further on uncertainty and its role in the process, it is the state of expectations that shape the level of confidence relating to yield (q) and movements in asset prices (a) along with the need for liquidity (l), which is held as a contingency. A rise in the level of confidence will contribute to expectations of higher yields, as well as to a rise in future prices of assets while reducing the need for contingent liquidity reserves. This links the Keynesian theory of asset demand (investment) to the liquidity preference theory (of “own rate of interest rate” on money itself), both of which are subject to notions of uncertainty and the state of expectations, as visualized in subjective terms, by those who operate in the asset market.²

Gaps in earlier formulations of theories, generally noticed by those who continue to work in the same frame of analysis, often relate to changing institutions, which correspond to the changed circumstances. Hyman Minsky, working in the Post Keynesian tradition, reformulated in 1968 the Keynesian analysis of the impact of uncertainty related expectations, with an explicit reference to possibilities of sourcing external finance through debt-financed credit. This further added to uncertainty-related effects by what Minsky characterized as the “borrower risk” and “lender risk” when funds are borrowed by those who, respectively, demand and supply assets.³ For those who demand assets the risk of borrowing, which is essentially subjective, rises with increased leveraging. Similarly, for suppliers the rising cost of additional borrowing and fees is added to the current replacement cost of assets. In the process a “margin of safety” is created for buyers who fix the demand price for new assets at a level that is lower than the current market

² See also Kregel (2009)

³ Minsky (1986: 183–196). See also Wray and Tymoigne (2008) for a clear distinction between the Keynesian “investment theory of cycles” and the Minskyan “financial theory of investment” and its exposition.

price for old assets. For sellers (suppliers) their supply price, in turn, includes the respective “margin of safety,” which is added to the replacement cost of assets at current market prices. In both cases the “margins of safety” are subject to subjective assessments relating to uncertainty and the state of expectations. Factors as above continue to have a significant role in determining the respective demand and supply prices of assets. In the process, purchase of assets (or investment) continues as long as the demand price is above the supply price.⁴ We will deal later with the implications of uncertainty in the context of the current crisis.

Minsky, in his characterization of deregulated financial markets, incorporates the new-fangled sources of nonbank credit, especially with the involvement of banks in the security market under universal banking. It is important, as pointed out, that in the new institutional setting of universal banking and deregulated finance, banks and nonbank financial entities actually follow an “originate and distribute” model by the repackaging of assets and their sales. In this, the shifting of risks to counterparties can generate more profits than what is possible from the simple “commitment models,” which rely on the spread at the loan officer’s desk.⁵ The above, as held by Minsky, made for higher profitability when funding was market-based, especially as compared to bank-based funding of projects, a process in which banks get involved in the security market. It also makes for a “symbiotic relation” between the globalization (the leveling off) of financial structures and the related securitization of financial instruments.⁶

Minsky, pointing at securitization and the use of security-based assets, drew attention to related changes in the character of money, accommodating credit flows that no are longer constrained by reserves and capital held by banks, as it had been the case under a fractional reserve system. Thus “...securitization implies that there is no limit to bank initiative in creating credits, for there is no recourse to bank capital and because the credits do not absorb high powered money (bank reserves).”⁷ This considerably changes the character of money, which, as held by Minsky, diminishes the capacity of central banks to protect credit. Efforts on part of

⁴ Incidentally, like in the Keynesian formulation, the Tobinesque “q” also had ignored the links of uncertainty, as in the Minskyan approach, to credit finance and on investment decisions.

⁵ See Wray and Tymoigne (2008)

⁶ See Minsky and Wray (2008)

⁷ Minsky and Wray (2008)

monetary authorities (following monetarist norms) to raise interest rates in order to control inflation may even lead to a collapse of stock prices followed by a financial crisis, rather than to financial stability.

The changing pattern of the financial institutions and the related transactions brings us back to the *second* aspect mentioned above, which also contributed to triggering the global financial crisis. The above relates to financial engineering entailing innovations in deregulated financial markets. It reflects the new pattern of finance under globalization which, as held by Minsky, "... requires the conformity of institutions across national lines, and in particular, the ability of creditors to capture assets that underlie the securities."⁸

Devices as above have, in recent times, generated myriads of derivative instruments in deregulated financial markets (like futures, swaps, options, and so on), in a bid to protect asset values in uncertain markets. Innovations as above have made it possible to invest in and to acquire financial assets far more easily, as compared to what it could be otherwise. For example, with "futures," a typical derivative product (which arranges for a contract in the stock exchanges for sale and purchase of financial assets at some future date), the deal can work out as convenient (but not equally profitable) for buyers as well as sellers, both of whom can insure against uncertainties in the market and can also dispense with cash transactions at the time of the contract. Thus a buyer contracting a "long" (buying) position under a "future" deal needs to deposit only a fraction of the contracted price as "margin" with the security exchange. In addition, assets held by lenders against loans can be securitized to create asset backed securities (ABSs). The latter, when sold and repackaged (mostly by investment banks), creates further opportunities for borrowing as has happened in the financial markets of the United States. In between the insurance companies provide cushions to agents in the financial market by offering the credit default swap (CDS) arrangements.

Financial instruments as above thus opened up vast potentials for an explosion in the financial markets of the United States and other nations since these transactions were no longer constrained by the availability of bank credit. Nor were these subject to the regulations and the

⁸ Minsky and Wray (2008)

surveillance of the central bank like the Federal Reserve in the United States. However, transactions as above, including those who were engaged therein, could remain in business as long as hedging worked to minimize and compensate for the risks under uncertainty while the risk-adjusted returns/losses on assets with long (buy) positions (of assets) could be more than compensated by the losses/returns on short (sell) positions on assets. As we point out later in this paper, an outcome as above might not materialize in a typical “Ponzi” situation.

As for the institutional arrangements that provide for profits on transactions such as above, financial assets bought and sold in the primary market of stocks as initial public offerings (IPOs), are usually transacted later in the secondary market where these are no longer backed by physical assets.⁹ Finance in its upswing, creating myriads of financial claims and liabilities, thus becomes increasingly remote from the real economy, while innovations continue to proliferate in the financial market, to hedge and insulate assets therein, especially in the presence of uncertainty. *An expansionary financial market thus does not necessarily generate corresponding expansions in real terms, while the growing disproportion between the two may finally end the financial boom itself, has happened as of late in the world economy.*

Aspects mentioned above have of late been instrumental in pushing the deregulated financial markets to a state of virtual collapse.¹⁰ In this process the easy access to credit provided as much finance as was needed, initially for hedging when the realized and the expected income flows, under favorable circumstances, were adequate to cover (and hedge) the mandated payments liabilities on interest and repayments. However, hedging often ended up in speculation, when such income flows fell short of the payments liabilities and attempts were made to “roll over” past debt, thus making for what has been described as “balance sheet flows.” Finally a state arose when payments liabilities that were due could only be settled with additional

⁹ We need to mention here that the multiplicity of financial assets that rely on derivatives, while originating from the *same* base in terms of specific real activities (or “underlying”), do not expand the base itself. Instead, it amounts to a piling up of claims that are linked to the same set of real assets. As it has been pointed out, “From a Wall Street point of view capital assets are valuable not because they are productive in a physical sense but because they yield profits” (Minsky 1986).

¹⁰ See Nesvetailova (2008) for a lucid analysis of the Ponzi constitution of today’s financial system.

borrowings. This is a typical case of “portfolio flows” with speculation leading to a state of “Ponzi finance,” which ushers in fragility and a potential collapse of the system.¹¹

Under Ponzi finance as described above, the high returns that borrowers promise to pay the lenders to entice new loans are not necessarily realized when these funds are invested. To avoid an impasse with impending default and an interruption of business, a need arises, on part of borrowers, to speculate and roll-over the debt-related liabilities on previous investments. However, with the declining state of confidence on the value of financial assets held by lenders, such dealings in the market often come to a grinding halt, leading to big holes in the balance sheets of the concerned parties and heralding the onset of a typical Ponzi crisis. The high stakes prevailing in the financial markets under uncertainty may thus turn out to be disproportionately high as compared to what eventually turns out as their realized returns. Transactions as above are both unsustainable and hazardous as compared to acts of simple hedging (or even speculation) on asset prices in these financial markets.

Ponzi finance is thus very different from hedge or even speculative finance that, to some extent, keep the business going. Speculative finance, which dwells on more risk than under hedging, can be sustained until it becomes Ponzi, when borrowing at high rates no longer generates compensating returns. A situation as the latter, as we point out in the following section, did clearly plague the U.S. financial markets in the fall of 2008.

It may be relevant at this point to highlight the fact that Ponzi finance is another name for fraudulent behavior on part of financial agents, as can be seen in the various scams and related acts in recent times.¹²

¹¹ Minsky (1986: 203)

¹² See Sen (2009) and Nesvetailova (2008). See also Black (2005).

TURBULENCE IN GLOBAL FINANCIAL MARKETS AND ITS ORIGIN IN THE SUBPRIME LOAN MARKET CRISIS OF THE UNITED STATES: A BRIEF ACCOUNT

Back in the 1970s, the U.S. economy was subject to an unprecedented wave of credit squeeze with a series of anti-inflationary restraints on credit. Alternate channels of credit creation, beyond the usual banking orbits, were soon invented, with the market relying on financial innovations like derivatives for the purpose. In the event, a large number of U.S. firms were able to access short-term credit by making use of securitized assets as collateral. These were treated in the market as commercial papers.¹³ The wave of these asset backed securities (ABSs) was followed by newer forms of financial intermediation as investment banks started repackaging those assets in order to market these securities easily, to other banks or to the nonbank financial units. Transactions as above facilitated the churning of these multiple ABSs (which, in turn, were generated on the basis of the “underlying,” or original, asset), while propping up multiple counterparties that held those assets. Leveraging played a major role in the creation of these debt financed assets, which continued as long as there was trust and confidence despite uncertainty in these markets in terms of these newly created financial assets. Since those transactions were outside the orbit of conventional banking channels, the Fed had no regulatory power over those. Instead these deals were subject to the jurisdictions of the Securities and Exchange Commission (SEC) of the United States, which exercised very little power to regulate. As a consequence there was a 50% decline in the proportion of U.S. financial assets that were held by banks between 1950 and 1990. Credit flows as above along nonbanking channels were not only unrestrained, but even offered at rates that were at much lower spreads as compared to those along conventional banking channels. The wave of securitization quickly spread to financial markets in other parts of the advanced region and also to developing countries subject to a globalized financial structure. It also resulted in a massive increase in the use of derivatives. Thus the over-the-counter (OTC) derivatives alone recorded a global transaction of \$33.88 trillion as their gross

¹³ See Wray (2008)

market value in December 2008, which was way above the recorded value of global GDP in 2007 at \$32.91 trillion.¹⁴

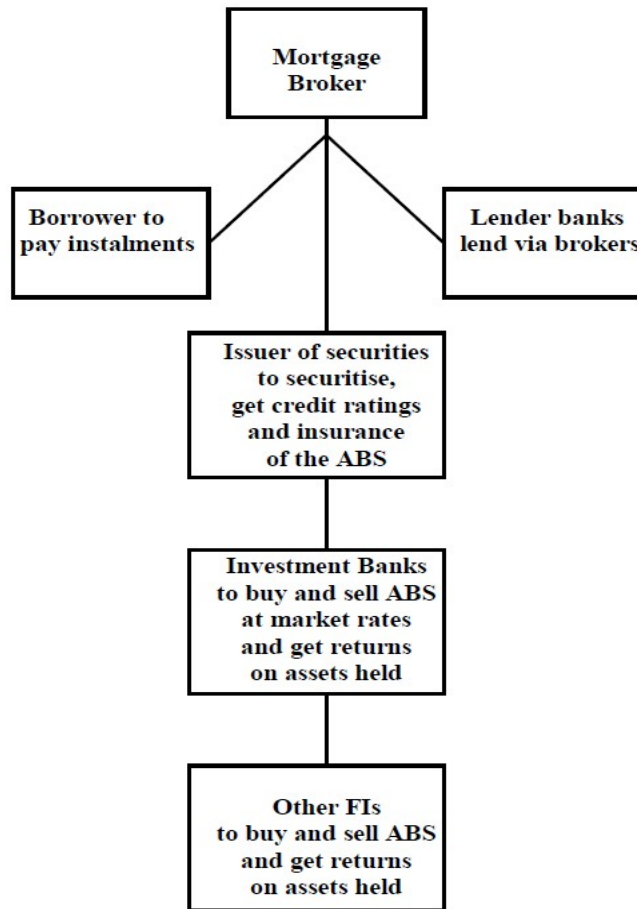
In the United States, the transactions in derivatives that included the ABSs and the CDSs got a boost as the property market boom was opening up new profit opportunities on the mortgaging of houses. With the housing market targeting U.S. citizens, who were so-far excluded by banks from the financial markets on grounds of race and/or income (as well as on grounds of the risk-weighted credit rationing),¹⁵ it became an opportune moment for banks and other nonbank intermediaries to venture out to these new markets. Possibilities to securitize the mortgaged assets opened up new channels of investments—for the mortgage-brokerage firms, the issuers and insurers of ABSs, for investment bankers who readily purchased and repackaged the ABSs, and for other financial institutions. Each, by acquiring an asset, was able to leverage by obtaining credit against the former.

As the process continued, a large number of American citizens with low incomes were now endowed with a mortgaged property and a liability to pay monthly installments—usually to the broker-mortgager cum bank that organized the deal. Assets as above were backed by loans that later proved as “subprime”—with the mortgaged collateral subject to valuation in a sliding market, loans offered at interest rates that were higher than those ruling in the market, and with little accountability of the borrowers, many of whom were not bankable in terms of the conventional practices followed earlier. The euphoria, fed initially by rising property prices as well as with the eagerness on part of the financial community to profit by using the securitization route (which temporarily shifted the risk to counterparties), did work as long as it lasted. All this business, led by investment banks, as we have mentioned above, was outside the purview of the Fed and the SEC hardly stepped in to interfere.

To follow the sequence that led to the recent subprime crisis of the United States we provide below a rough sketch of the possible links in the system:

¹⁴ Bank for International Settlements (2008)

¹⁵ Dymski (2008)



The boom in the asset market eventually gave way to its lull in the United States. The financial crisis was prompted by a slump in the overpriced property market. These developments made it difficult to continue by riding on the expanding mortgage market. Repackaging of these mortgage-based assets (which exchanged hands to generate further assets and credit opportunities) finally proved to be an Achilles' heel by impairing the credentials of the entire financial system in the United States. Use of futures and other derivatives (swaps, options, etc.) expanded the scale of operations by making it possible to bid on positions in the security market with small margins of the final transaction in cash until full payment was due when the contract matured.

A STYLIZED MODEL OF THE REAL FINANCIAL SECTOR IMBALANCES UNDER UNCERTAINTY WITH THE POSSIBILITY OF AN ECONOMIC CRISIS

Economic crises that are generated in an uncertain economic environment are often also matched by severe imbalances between the real and the financial sectors of the economy. The pattern can be captured in terms of the following formulation:

$$Q = f(A, r) \quad (1)$$

Q: total value of assets

A: value of assets comprised of the respective values of real (A_R) and financial (A_F) assets

r: average rate of return comprised of returns on real (r_R) and financial (r_F) assets. Thus

$$A \equiv A_R + A_F$$

$$r \equiv r_R \cdot A_R + r_F \cdot A_F$$

$$\text{and } L = L_R(r_R) + L_F(r_F) \quad (2)$$

where L , L_R , and L_F are the respective liquidity demands, in aggregate, for real assets and for financial assets.

Given the state of financial engineering in a deregulated financial sector, we can assume, as in the “endogenous money” approach,¹⁶ that liquidity demand always adjusts to its supply, both under boom situations and under slump.

Defining the asset demand in the two sectors,

$$A_R = A_R(L_R) \quad (3)$$

¹⁶ See Rousseas (1986) for the endogenous money approach. See also Wray (1998 and 1990).

Where $A'_R > 0$ since such demand always responds to liquidity demand relating to the real sector.

It, however, is not as simple for the financial sector where uncertainty plays a major role in influencing the rate of return on financial assets, which, in turn, influences liquidity demand for financial assets. Thus with

$$r_F = r_F(\mu) \quad (4)$$

With returns on financial assets on the decline when uncertainty goes up, $r'_F < 0$ where μ is level of uncertainty and

$$L_F = L_F(r_F) \quad (5)$$

with $L'_F > 0$, we get

$$A_F = A_F(L_F) \quad (6)$$

where $A'_F > 0$

Thus A_F rises/declines when L_F rises/declines due to a rise/fall in r_F , which is related to lower/higher levels of uncertainty μ . One can expect a rising level of uncertainty under situations of speculative and Ponzi finance.

To find out the asset market behavior for the economy as a whole, we need to look at the changes in the total value of assets Q. The latter, if positive, will let the market continue without a crash. Alternatively the economy would crash with a collapsing asset market.

Let us spell out, using (1) to (6), the total changes in Q as follows:

$$dQ = dAR \left[\frac{\partial Q}{\partial AR} \cdot \frac{\partial AR}{\partial LR} \cdot \frac{\partial LR}{\partial rR} \right] + dA_F \left[\frac{\partial Q}{\partial A_F} \cdot \frac{\partial A_F}{\partial L_F} \cdot \frac{\partial L_F}{\partial r_F} \cdot \frac{\partial r_F}{\partial \mu} \right] + dr_R \cdot \frac{\partial Q}{\partial rR}$$

$$+ dr_F \left[\frac{\partial Q}{\partial r_F} \cdot \frac{\partial r_F}{\partial \mu} \right]$$

Or

$$dQ = \left(dA_R \left[\frac{\partial Q}{\partial A_R} \cdot \frac{\partial A_R}{\partial L_R} \cdot \frac{\partial L_R}{\partial r_R} \right] + dr_R \cdot \frac{\partial Q}{\partial r_R} \right) + \left\{ dA_F \left[\frac{\partial Q}{\partial A_F} \cdot \frac{\partial A_F}{\partial L_F} \cdot \frac{\partial L_F}{\partial r_F} \cdot \frac{\partial r_F}{\partial \mu} \right] + dr_F \left[\frac{\partial Q}{\partial r_F} \cdot \frac{\partial r_F}{\partial \mu} \right] \right\} \quad (7)$$

From (7) above, the total differential dQ (which indicate the change in value of all assets) will be positive when the sum on the rhs is positive. In order for that to happen, the items that have a negative value need to be more than compensated by the sum of positive items. We notice a clear distinction between two sets of items in (7) above, with items related to the real sector (within the first bracket) always having a positive value. Separating the two, we get, as negatives, the items within the second bracket in (7) as

$$dA_F \left[\frac{\partial Q}{\partial A_F} \cdot \frac{\partial A_F}{\partial L_F} \cdot \frac{\partial L_F}{\partial r_F} \cdot \frac{\partial r_F}{\partial \mu} \right] + dr_F \left[\frac{\partial Q}{\partial r_F} \cdot \frac{\partial r_F}{\partial \mu} \right] \quad (8)$$

In case the sum of items in (8) above are larger than those within the first bracket in (7), we can now relate the situation to one of a typical Ponzi finance with the asset market failing to perform on a net basis. With μ , or uncertainty moving up, the expected returns on financial assets r_F is likely to go down. The latter reduces L_F and hence A_F , thus rendering the sum in (8) above large. The above relates to assets within the financial sector, which indicates the dampening effect of an uncertain market on value of those assets.

However, we hasten to add that as long as the returns on real sector assets continue to be positive, the sum within the first bracket in (7) above, if large enough, may more than compensate the negative performance of financial assets under uncertainty (items within second brackets in (7)). In sum, dQ will continue to be positive even with rising uncertainty when the negative impact of the latter on the value of financial assets will be more than compensated for by the positive contribution of the real sector to total value of real and financial assets in the economy. An outcome as above, however, will never be achieved when even the real sector assets fail to perform, which is a situation of an overall catastrophe.

However, there remain situations where the financial sector may continue to have positive returns while the real sector fails to perform, a situation visible in the advanced countries during the 1980s. In such cases, the positive contribution of the financial sector on asset value has to continuously compensate for the negative impact of liquidity demand in the real sector on the value of assets therein. Unlike what is assumed in (3) above, here a rise in credit flows (L_r) fails to raise the value of real assets (A_r). On the whole credit flows (L_r) to the real sector fail to contribute to an improved value of assets (Q) in the economy as a whole. As mentioned above, this is a typical case that has prevailed in the advanced economies since the mid-1980s, with the boom in the financial sector failing to revive the stagnating real sector.

As it happened in more recent times, the financial boom in the global economy (and especially in the OECD) could not last in the absence of investment with real asset formation. As we have pointed out elsewhere, a financial boom, unless backed by real investments, amounts to financial market activities that are fed by speculation alone.¹⁷ These transactions in the secondary market entail multiple transfers of titles or claims (financial assets), which are backed by the same stock against real assets issued in the primary market. It does not require much to explain that these bubbles in the financial sector often have no counterpart in the real sector, which continue as long as expectations are self-fulfilling. The latter proves difficult to fulfill in practice as more and more liquidity is pumped in to acquire these financial assets with the expectation of achieving high returns that eventually fail to be realized.

CONCLUSION

The intensity of the severe economic crisis across the world that is still continuing, especially in the real sector, makes it urgent to seek remedial steps. The world has witnessed the limits of financialization as a sustainable path of economic sustenance. One needs to recreate the base for real expansion by reorienting the pattern of investment incentives, possibly with direct controls

¹⁷ Sen (2003: 8 and 50–51)

on speculation, and with a move away from the high-risk/high- return profits in speculation to the ground reality of real expansion in the global economy.

REFERENCES

- Bank for International Settlements. 2008. "Seventy-eighth Annual Report, 2007–2008." Basel: Bank for International Settlements (BIS).
- Black, W.K. 2005. *The Best Way to Rob a Bank is to Own One*. Austin: University of Texas Press.
- Dymski, G. 2008. "Financial Risk and Governance in the Neoliberal Era." Mimeo. Available at: <http://www.econ.uoa.gr/UA/files/1604690999..pdf>
- Keynes, J.M. 1951. *The General Theory on Interest Rate, Employment, and Money*. London: McMillan and Company.
- Kregel, J. 2009. "Managing the Impact of Volatility in an Uncertain Market." Working Paper 558. Annandale-on-Hudson, NY: Levy Economics Institute of Bard College.
- Minsky, H.P. 1986. *Stabilizing an Unstable Economy*. New Haven, CT: Yale University Press.
- Minsky, H.P., and L.R. Wray. 2008. "Securitization." Policy Brief 2008/2. Annandale-on-Hudson, NY: Levy Economics Institute of Bard College.
- Nesvetailova, A. 2008. "Ponzi Finance and Global Liquidity Meltdown: Lessons from Minsky." Working Paper CUTP/002. London: City University of London, Center for International Politics.
- Rousseas, S. 1986. *Post Keynesian Monetary Economics*. Armonk, NY: M.E. Sharpe.
- Sen, S. 2003. *Global Financial Risk: On Real Stagnation and Instability*. London: Palgrave.
- Sen, S. 2009. "Speculation Scams, Frauds, and Crisis: Theory and Facts." *Economic and Political Weekly* XLIV(12).
- Wray, L.R. 1998. *Understanding Modern Money: The Key to Full Employment and Price Stability*. Cheltenham, UK: Edward Elgar.
- Wray, L.R. 1990. *Money and Credit in Capitalist Economies: The Endogenous Money Approach*. Aldershot, UK: Edward Elgar.
- Wray, L.R. 2008. "Financial Markets Meltdown: What We Can Learn from Minsky." Public Policy Brief 94. Annandale-on-Hudson, NY: Levy Economics Institute of Bard College.
- Wray, L.R., and E. Tymoigne. 2008. "Macroeconomics Meets Hyman P. Minsky: The Financial Theory of Investment." Working Paper 543. Annandale-on-Hudson, NY: Levy Economics Institute of Bard College.