

Two systemic problems

Axel Leijonhufvud

UCLA and University of Trento

Greed was not invented yesterday. So, contrary to much recent political commentary, it does not explain our difficulties at this particular time.

We depend on the greed or self-interest of people to deliver our daily bread and much else besides and thus to serve the common good even when that is 'no part of [their] intention' as Adam Smith said. And we depend on competition to chastise those who do not do a good job of it. This harmony of self-interests is what markets are supposed to do for us.

All that does not seem to have worked as it is supposed to in the financial markets. So what is wrong? We better find out so that, if the collapse of the house of cards can be stopped midway, something can be done to fix it.

The market for bread is stable. If demand exceeds supply, the baker will bake more. If his inputs get more expensive he will raise the price and some customers will consume less bread. Neither the baker nor the consumer need to be 'quants' for this to work. Simple sensible rules of behaviour will suffice to coordinate their actions, to find the price that makes supply match demand. The market works on the negative feedback principle like a thermostat controlled air conditioning system or an automatic pilot.

The financial system

The world of finance is a multidimensional system. In most dimensions it works in the same way as the market for bread. But in two important dimensions it does not. The general price level is not stabilised by market forces under present arrangements. Neither is the overall level of leverage. Both are unstable and subject to positive feedback processes. Movements of the price level – inflations or deflations – tend to be self-reinforcing. So do movements in leverage.

Two consequences follow. The price level must be stabilised by monetary policy. Leverage needs to be constrained by regulation.

The price level

In the days of metallic standard, the price level was ultimately determined by the demand and supply of mon-

etary metal. The system could be imitated on a fiat standard. Not so long ago monetarists still explained the equilibrium of the price level in terms of the demand and supply of money. Reserve requirements imposed on the banks and the public's slowly changing habits with regard to the use of paper currency together with the central bank's control of the monetary base determined the supply. Today, the reserve requirements are essentially gone, substitutes for the use of currency have proliferated and the monetary base adjusts to the demand for it. What this means is that the price level has lost any quantitative anchor. It is no longer determined by market forces.¹

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Although the price level no longer has a market determined equilibrium, the central bank can use the interest rate to govern the direction in which it is changing. Set the rate below a certain value and prices should rise; above it, and they should fall. Find just the right rate and the price level should stay constant. This is what the policy strategy of inflation targeting was supposed to achieve.

However, the inflation targeting policy doctrine failed in the US. The Federal Reserve's policy of keeping the federal funds rate extremely low helped engineer the recovery from the collapse of the dot-com boom. In the ensuing years, US consumer prices stayed within the Fed's inflation target range. This seemed to indicate that they had found the 'right' level for the interest rate. But the stability of consumer prices was misleading. Inflation was in fact kept in check by the policies of a number of countries intent on keeping their currencies undervalued vis-à-vis the dollar so as to maintain their exports of consumer goods to the American market. American prices were kept from rising by competition

¹ See Axel Leijonhufvud (2007a), "The perils of inflation targeting", *VoxEU.org*, 25 June 2007, and (2007b), "Monetary and financial stability", *CEPR Policy Insight* No 14, October 2007.

from these imports.

Hence, the Fed was misled into keeping interest rates far too low for far too long. It was running what was in effect an extremely expansionary monetary policy – although it did not produce CPI inflation. What it did bring about was asset price inflation, most notably in housing and real estate, coupled with a very serious deterioration in the quality of credit in the system.

Leverage: Markets and the madness of crowds²

When leverage is rising all around with everyone buying on credit, everyone is also merrily making money. The profits thus made reinforce the process. Meanwhile, securitisation of loans and credit default swaps serve to obscure rising risk. Competition forces even those firms and individuals who realise that risk is rising to follow along or else be pushed out of the game altogether. A loan officer who does not lend, a risk manager who does not go along, a manager whose bank branch does not grow will all be under threat to lose their positions. The pressure to run with the herd becomes hard to resist. In this stage of the process, opposition to government interference with ‘free enterprise’ will be fierce and almost universal. But risk is constantly increasing and the financial system as a whole becomes steadily more fragile until eventually it is so fragile that when it finally breaks it can be difficult to identify what exactly made it happen.

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Some simple arithmetic helps illustrate what is going on. Consider, as an example, a bank which uses \$1 billion of capital and \$24 billions of borrowed money to invest in \$25 billions worth of assets. Its leverage ratio (debt/equity) is 24. That is high but not extraordinary in recent years. All five of the big American investment banks³ had higher leverage ratios than this at the end of 2007. Many big European banks exceeded this ratio and hedge funds often operate with still higher leverage.

Even if the rate on its assets exceeds that on its debt by only 0.5%, the bank would earn a rate of return on equity somewhat in excess of 12%. When competition from other financial institutions compresses this margin between the rates on assets and on liabilities, the bank has two strategies available by which it can maintain

the rate of return on equity that its investors may have come to expect. Both give rise to self-reinforcing, positive feedback processes which serve to grow a bubble. One is simply to increase leverage further⁴. The other is to shift part of its portfolio into riskier asset classes promising higher margins. Of course, these margins too will come under competitive pressure. Thus the recent boom ended with leverage ratios at historic highs and risk premia at historic lows.

But the riskiness of high leverage is as obvious as its profitability. Suppose 20% of the bank’s assets were in mortgages or mortgage-backed securities and that it incurred a 20% loss on them. A decline of just 4% in the market value of its asset portfolio would render the firm insolvent – and would cause it to go bankrupt if it was forced to use ‘mark-to-market’ (MTM) accounting which would reveal its condition for all to see.⁵ The ultimate collateral for mortgages and mortgage-backed securities is of course the market value of the housing stock that they have been used to finance. As of August 2008, the Case-Shiller 10-city index of house prices is about 18% below its value of a year earlier and 22% below August of 2006.⁶

When markets ‘freeze’

August 7, 2007 has become the date generally accepted as the day the crisis hit. It was not the day that problems first began to reveal themselves. There had been trouble in American housing and mortgage markets going back to the previous autumn. But on August 7, the interbank market ‘froze.’ The banks would not lend to each other. This was virtually unprecedented – something that market participants had not experienced before.

For more than a year, the interbank market has flickered on and off at varying volume but has not properly ‘unthawed’. Moreover, the phenomenon of ‘frozen’ markets have become commonplace, affecting ordinary commercial paper, mortgage-backed securities and other collateralised debt obligations, auction rate securities, and so forth. Central banks have struggled mightily to restore liquidity to money markets but with little success.

The simple leverage arithmetic above suggests what the problem is. The banks were highly levered and held

2 *Extraordinary Popular Delusions and the Madness of Crowds*, by Charles Mackay (London 1841) provided famously vivid accounts of three early forerunners of our present troubles: the Mississippi bubble, the South Sea Bubble, and the Dutch Tulip Mania.

3 A vanishing species! Of the big five, Lehman Brothers went bankrupt; J.P. Morgan Chase, with some Federal Reserve assistance, absorbed Bear Stearns as did Bank of America with Merrill Lynch; Morgan Stanley and Goldman Sachs changed into bank holding companies so as to be eligible for Federal Reserve credit.

4 Deposit-taking banks which normally should not operate with leverage ratios in the double digits may yet do so indirectly by spinning off off-balance sheet entities such as the special investment vehicles (SIV’s) located in the Cayman Islands or some other place outside the reach of US regulatory agencies.

5 MTM accounting was generally accepted and used as long as all markets were going up. Managers could claim bonuses proportional to the capital gains that this accounting convention showed. Many became quite rich. Since the credit crisis broke, financial firms have tried to escape MTM accounting as far as possible and regulators have not insisted on it out of fear that it would immediately reveal widespread insolvencies and pose the danger of an avalanche of bankruptcies.

6 The decline in house values is far from uniform across the country. For the Los Angeles metropolitan area, for example, the August 2008 value of the index is 26.7% below August 2007 and 31% below August 2006.

huge amounts of mortgage-backed securities. The ultimate collateral behind these securities was rapidly losing value as house prices fell. Defaults on mortgages were rising as were defaults on auto loans and credit cards. The variety of novel collateralised debts and risk transfer instruments made the precise situation of potential counterparties non-transparent to the individual financial institution. But many institutions knew themselves to be on the brink of insolvency and knew their own balance sheet to be fairly typical. For a bank to lend to a counterparty that might go bankrupt the next day could easily endanger its own survival. So the market 'froze.'

Conventional monetary policy can relieve a situation of illiquidity in the markets. It can do very little to 'unthaw' markets among institutions tottering on the brink of insolvency. Just lowering the central bank interest rate accomplishes very little. The impotence of traditional monetary policy explains the spectacular array of improvised and extraordinary measures tried by the monetary authorities in the US and in Europe during the last 15 months.

Financial deleveraging and the real economy

Once the boom breaks, the thundering herd reverses course and stampedes in the opposite direction. Now everyone attempts to protect himself by reducing leverage. Now losses pile up on all hands. Everyone wants out but few can escape. Before long, all the institutions that a few months earlier wanted no interference with the 'free market' call on government to pick up the pieces.

The logic of deleveraging is simple. There are three ways for a firm or an individual to attempt to do so. The first is to attract new capital so as to increase the denominator of the leverage ratio. The second is to sell assets and use the proceeds to pay down debt. The third is to save, to spend less than current income, and to use net cash flow to reduce debt.

What works for a single entity does not necessarily work for the entire banking system or for the private sector as a whole. Attracting outside capital is 'nice work if you can get it' but the impressive sums that US banks managed to raise from sovereign wealth funds and other foreign sources proved no more than drops in the bucket in the end. The last resort, therefore, became government 'bail-outs', ultimately funded by the tax payer.

The other two ways of reducing leverage are dangerously destabilising when too many economic entities are striving to do so at the same time. If, for example, several banks were to sell the same type of assets in order to pay down debt, the price of the asset would fall and the proceeds of sales might well be so low that the net result is a further increase in their debt-to-equity ratios. This is another example of positive, self-reinforcing feedback. In this instance, it makes the situation worse. Naturally, the big financial institutions do their utmost to avoid being caught in vicious circles of this kind. When they cannot find buyers for assets at prices which

would help them reduce their leverage, the markets are said to be 'frozen'. With no transactions, no recorded market prices. The assets on their books, the banks will then argue, cannot be 'marked-to-market' for accounting purposes, but have to be 'marked-to-model'.⁷ This is a temporising tactic, allowing the banks for the time being not to report losses on these assets and, in extreme cases, not to reveal insolvency. The authorities tend to go along with such evasion out of fear of the secondary effects of insolvency of large institutions. A large volume of more or less 'toxic' debt supported by highly leveraged institutions is hanging over the markets. An avalanche of insolvencies would be devastating.

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The third way to deleverage is to spend less than you take in. For financial institutions this means not relending the funds flowing back in the servicing of loans but using them instead to reduce debt or build up cash reserves. When the banks are all operating in this mode, businesses and households find ordinary commercial or consumer credit to be simply unavailable.

When everyone in the non-financial sector tries to spend less in order to pay down debt, the net result is simply that everyone's revenues decrease and the more so the harder they try. The drop in income then reduces their ability to service debt. Beyond that, the attempt on all hands to buy less and sell more puts pressure on market prices in general. In the worst case, this can produce true 'debt deflation' – a process whereby the general attempt to reduce debt leads to a fall in prices that raises the real value of outstanding debt. This is the most dangerous of all the positive feedback processes set in motion by a financial crisis. The US and Europe has not experienced debt deflation for the last 75 years, but it has been a looming threat for the last several months and it is still too early to say whether the danger has been definitively averted.

The decline in asset prices resulting from financial deleveraging will come to affect also reproducible assets – in the present situation particularly (but not only) house prices. The production of these assets will fall, therefore, and so will employment in construction and capital goods producing industries. American households are also fairly highly levered at this time and virtually the only way for them to reduce debt is to increase their saving. The fall in business investment combined with the increase in attempted saving by households will, under present financial conditions, produce the kind of recession that John Maynard Keynes theorised about. The automatic adjustment tendencies

⁷ The models are internal to the institutions in question. In some instances, they have been criticized as 'marked-to-myth'.

of free markets are peculiarly ineffective in producing a recovery from a recession of this type.⁸

Financial reform

The American financial system is now in shambles. There is a myriad of issues to be dealt with in order to put it back in working order. Many of the markets for recently invented instruments lack transparency⁹ and some require legal clarification of the rights and obligations of the contracting parties. Securitisation as practiced until now is beset with agency problems. The problem of institutions 'too big to fail' has gotten worse than ever. The boundaries of matters for which the Federal Reserve takes responsibility have lost all definition.

In the scheme of things, however, these are 'details' – even if there be a devil in each one. The central focus of any reform effort must be on how to deal with the two critical system variables that are not subject to market driven negative feedback control – the price level and system-wide leverage.

The early stirrings of political debate on reforms have been unthinkingly ideological. Proponents of free markets argue that none of our present problems would have happened except for government interference in housing and mortgage markets. Others regard markets in general as unreliable and would like to see virtually all financial markets tightly regulated and all financial institutions closely supervised. One side needs to recognise that system-wide leverage is not stabilised by market forces and that fluctuations in it are destabilising to the real economy. The other side needs to recognise that properly structured financial markets will generally work well and that governments are unlikely to find competent supervisory talent that could improve their functioning.

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What kept the threat of another Great Depression from materialising for all of 75 years? The regulations of the Glass-Steagall Act, finally abolished in 1999, are not the whole answer but nonetheless a big part of the answer. They effectively constrained the leverage of the American banking system. For a variety of reasons there cannot be a return to this system of regulations. To construct a regulatory framework that does the same job and has global reach will not be easy.

8 Leijonhufvud (2008) 'Keynes and the Crisis', CEPR *Policy Insight* No. 23, May 2008

9 The most critical matter at the present time is the market for credit default swaps which needs to be thoroughly restructured so as not to pose an imminent danger to the stability of the entire system.

Two elements of a reconstructed system of regulatory control may be suggested. The first would be to reimpose effective reserve requirements on deposit-taking banks and to extend them to all types of institutions, such as money market funds, that carry demand liabilities. The second would be to extend capital requirements to virtually all financial institutions. The Basel type requirements need to be reworked however. As presently structured they have tended to amplify leverage movements, permitting expansion in the boom and forcing liquidation in the bust. A desirable property for the capital requirement formula would be to gradually tighten on the upswing and relax on the downswing.¹⁰

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There is another reason, apart from the desirability of constraining leverage, that argues for the reimposition of effective reserve requirements on banks. At present the economy is of course under strong deflationary pressure. If, however, all the extraordinary measures taken by the US Treasury and Federal Reserve were to succeed in stopping the slide towards depression, output in the economy would stabilise surrounded by an enormous pile-up of inflationary tinder. If inflation once got under way under such conditions the Fed's control of the overnight federal funds rate would be a slender reed indeed to lean on in trying to stop it. Effective reserve requirements would restore a bit of a nominal anchor to the system and enable the Fed to operate with a tighter rein on the banking system than at present.¹¹

Finance and income distribution

The policy issues raised by recent booms and busts are not confined to problems of stabilisation and financial reform. Over this period, income inequality has also risen dramatically, especially in the US but also elsewhere. The upper tail of the distribution has moved far-

10 Spain which is facing its own housing bubble has capital requirements based on a weighted sum of the bank's assets, the weights determined by past default frequencies for different asset classes. As a consequence the Spanish banks have loan-loss reserves that at least so far vastly exceed defaults.

11 Until recently the U.S. federal debt was on the order of some 60% of GDP. Although unfunded liabilities for Social Security and Medicare would add huge numbers to the debt, the situation was still generally regarded as manageable. According to the *Los Angeles Times* (Nov. 30, 2008) Treasury and Federal Reserve commitments to the current stabilization effort total approximately \$8.5 trillion. This impressive number is made up of actual spending, lending against collateral, loan guarantees, etc., so how much of it will end up adding to the national debt is highly uncertain. Yet, one has to worry that the United States is edging into a zone where a potential inflation would be hard to deal with.

ther and farther away from the median and nowhere more so than in the financial sector.

High leverage can be immensely profitable as long as the going is good. During the years of the 'Great Moderation' the going was good indeed. Executives of financial institutions were able to appropriate for themselves a good share of the profits generated by the new financial engineering. High salaries and astounding bonuses seeped down into lower hierarchical levels of the industry even as the financial sector grew considerably faster than the rest of the economy. Competition from finance pulled up managerial compensation in other sectors as well. The lessons of high leverage also spread beyond Wall Street as many non-financial corporations learned to issue debt and buy back equity.

For most of the powers on Wall Street, serving the common good was probably 'no part of their intention.'

Nor in the end was it the result. The invisible hand did not transubstantiate private greed into public harmony. But the sense of entitlement of our new managerial class has gained strength over recent decades that it did not have 40 or 50 years ago. Resistance to taxation is correspondingly hard. Constraining leverage in the financial sector may serve to moderate income inequality or at least slow down its growth.

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Axel Leijonhufvud was born in Stockholm, Sweden and obtained his bachelor degree at the University of Lund. After coming to the United States in 1960, he earned an M.A. from the University of Pittsburgh and his Ph.D. from Northwestern University. He came to the University of California at Los Angeles in 1964 and was named Full Professor in 1971. He has served as Chairman of the Economics Department, most recently in 1990-1992. In 1991, he started the Center for Computable Economics at UCLA and remained its Director until 1997. In 1995 he was appointed Professor of Monetary Theory and Policy at the University of Trento, Italy.

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