Something old and something new: Novel and familiar drivers of the latest crisis

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Over the last three years, the developed world has suffered a major financial and economic crisis, the latest stages of which we are still seeking to manage. It is certainly the biggest financial crisis since the Great Depression and by some measures, in its global reach, the biggest financial crisis in the two hundred year history of the modern capitalist system. So far – and I am confident that this will continue to be true – the real economic consequences have been nothing like as severe as the Great Depression, but they are still large, in lost wealth, lost income, lost employment.

We have to learn the lessons of why this crisis occurred so that we can reduce the probability and the severity of a repetition.

One thing is clear: the primary causes of this crisis came from within the financial system and not from the factors which lay behind, for instance, the crisis of the 1970s – inflationary fiscal and monetary policies, inflexible labour markets and over-powerful trade unions, politically induced swings in commodity prices. True, in some countries – Greece in particular – long term unsustainable public finance has played an important role; but in most what is striking is how rapidly public deficits and debt burdens which appeared sustainable before the crisis have become onerous in the face of financial turmoil. And what is equally striking is that the financial system from which this crisis sprang had been positively lauded before the crisis as a driver not only of economic efficiency but stability, dispersing risk into the hands of those best able to manage it, creating new and flexible mechanisms for the hedging of risk, enhancing market discipline through the increased transparency of prices in increasingly liquid markets. The new financial system of credit securitisation and credit derivatives was seen as a key contributor to 'the Great Moderation'.

We must understand why we were so wrong. That requires theoretical analysis, empirical analysis of this crisis and analysis of past history.

Financial and economic history, together with theory, tells us three key things:

- First, that financial markets and systems, and more broadly still, monetary relationships and the artifice of money itself, play a central role in market economies. The economic transformation of the last 200 years is in part the history of real developments, technologies and productivity growth; but it is also crucially a history of the development of complex financial relationships. And the financial system plays a far larger relative role in the modern market economy than it did in the pre-industrial economy. Increasing prosperity has tended to be accompanied by increasing financial intensity.

- Second, however, that financial intensity itself creates the potential for instability, and one key driver of that potential instability is that financial markets are inherently susceptible to momentum and herd effects, to over-shoots, to self re-enforcing irrational exuberance and then irrational despair. Charles Mackay's classic work on the Madness of Crowds, Charles Kindleberger's on Manias, Panics and Crashes – have documented that inherent susceptibility, from the Dutch tulip mania of 1635-37 to the Wall Street boom of the 1920s.[1,2] And we have an increasingly rich theoretical understanding of why these over-shoots occur. The behavioural economics of Daniel Kahneman and others provide explanations from psychology and evolutionary biology, with people acting in instinctive or emotional ways which, even at the individual level, might reasonably be described as irrational, with 'animal spirits' sometimes a key driver of market dynamics.[3,4] But theories of imperfect principal/agent relationships and decision making under conditions of imperfect information and inherent irreducible uncertainty, also explain how even the most rational of people might participate in a collectively irrational boom, calculating that they will be among those clever enough to get out just in time.[5] Both sets of explanation are important to our understanding.
- Thirdly and crucially, however, it is clear that some booms and busts matter more than others, and that in particular, booms and busts in credit pricing and credit supply are far more important than those in specific commodities or in equities:
    - The internet boom and bust of 1998-2001, while large enough to move equity indexes in a dramatic fashion and to create wealth gains and losses which were significant relative to US GDP, had only a slight impact on US or global growth.
    - But throughout modern economic history, in the 19th century banking crises and in the many banking collapses of the 1930s, and in the numerous crises of the past 30 years, it was volatility in credit supply within the economy, surges and sudden stops of credit – whether to governments, to other banks, or to the non-bank private sector, which have had a peculiar ability to cause real economic harm. As the International Monetary Fund (IMF) figures illustrate, banking crises are far more likely than other financial crises to have severe real economic impact.

And we have a fairly good understanding of the features which make credit contracts different and potentially more disruptive than, for instance, equity contracts. Four features are important: specificity of tenor, specificity of nominal value, the irreversibility and rigidities of default and bankruptcy, and the credit/asset price cycle.

- Specificity of tenor, the fact that a debt contract has to be repaid at a particular date, and that at any time there are large debt repayments due in the next month or the next year, means that a continual supply of new credit is essential to the working of the economy in a way which is not true of equity finance. Equity prices can collapse, and firms may be unable to raise new equity, but they are not also required to repay existing equity; and economies could operate for sustained periods of time with no new primary equity issues: they cannot operate without new lending to refinance old. Portfolio equity flows to Asian countries prior to the 1997 crisis, if measured as the purchases or sales of secondary equities by foreign investors, show volatile equity flows but measured as the net flow of new money, they were less volatile because sales of secondary equities are not repayments. Debt flows by contrast can go from net new credit provision to large debt repayments. Credit is different because if the financial machine suddenly stops lending, the economy can go into reverse.
- Specificity of nominal value – debt contracts in nominal value money terms – is an equally important feature, harmless as long as generalised inflation is maintained at a relatively stable and predictable level, but potentially destructive in the face of unanticipated inflation or deflation. Unanticipated inflation and hyper-inflation can destroy financial wealth and social cohesion, but it is unanticipated deflation, such as that of 1930-33 in the US, which has arguably even greater capacity to

wreak real economic harm through its impact on the real value of debt, via the mechanisms which Irving Fisher set out in his classic article on Debt Deflation.[6]

- Thirdly, rigidities of default and bankruptcy, which generate economic costs even in the absence of debt-deflation or financial crisis, but which if combined with either debt-deflation or banking crisis (banks as well as corporates going bankrupt) can have an enormously destructive effect. As Ben Bernanke points out in one of his Essays on the Great Depression, the existence of debt default and bankruptcy are direct contradictions of any theory of smoothly adjusting economic relationships. 'In a complete markets world, bankruptcy would never be observed – Bernanke notes – because complete state contingent loan agreements would uniquely define each party's obligations in all possible circumstances'[7]. As firms approach default, economic rationality and perfect information would dictate a smoothly operating write-down of debt claims or translation of debt claims to equity claims. The fact that instead we have large legal and administrative costs and fire sales of assets illustrates how far from the Arrow Debreu nirvana of complete markets our real world economy actually is.
- Fourth and finally, credit plays a specific and potentially destabilising role because of its interaction with real asset prices, its ability to drive speculative bubbles in real assets, such as equities, but above all in real estate. Increased credit supply can drive capital appreciation which appears to both the borrower and the lender to make further borrowing and lending safer. In Hyman Minsky's terms, credit supply can become first 'speculative', relying on the anticipation of capital gain to pay back the capital of the loan and then ultimately 'Ponzi' in nature, relying on the anticipation of capital gain to raise new loans not just to pay back existing loans but also to service interest payments[8]. Without credit there could still be irrational exuberance in real estate or other real asset markets, but with the implicit put option of a credit contract, the potential is hugely increased. And the extent to which the banking system is involved, for instance, in the financing of real estate investment has, at least in the UK, increased dramatically over the last 20 years.

So credit claims are different in economic substance from equity claims; and volatility in credit markets has far greater potential to drive volatility in the real economy than volatility in equity markets.

- Between 1998 and 2001 internet and IT related stocks, represented in this chart via the Nasdaq index, soared and then collapsed.
- Between 2002 and 2008 confidence in the credit markets soared and the collapsed, spreads on many categories of credit falling to historically low levels, under pricing risk – before soaring to excessive levels.

But the former boom and bust did little real economic harm; the latter produced a financial and economic crisis.

But it is not just credit which is different; it is bank credit which is even more specific. The characteristics of credit mentioned above – specificity of tenor and nominal value, the rigidities and irreversibilities of default and bankruptcy, and the potential for credit driven asset cycles – apply to non-bank credit securities as well as to bank intermediated credit – and indeed one crucial issue to which I will return later is whether a non-bank system of credit extension introduces some specific drivers of instability which are not present to the same extent in a bank based credit system. But it is certainly the converse case that bank credit intermediation introduces specific additional risks not present in the non-bank case.

Essentially, what leveraged fractional reserve banks do is to increase the range of potential contracts available to both users and suppliers of funds, by making it possible for suppliers to hold assets with different combinations of risk, return and maturity from those which users of funds face in their liabilities. Essentially they tranche by risk and return and they maturity transform[9].

Those transformation functions in turn appear to deliver significant economic benefits, at least at some stages of economic development. Economic historians of 19th century Britain have often argued that Britain's more developed banking system was one of the factors driving superior economic performance, facilitating the mobilisation of savings which would have been more difficult if savers had been linked to users of funds through untransformed contracts, in which the risk, return and maturity of the issuers' liabilities had to match precisely the aggregate risk, return and maturity of the savers' assets. Walter Bagehot certainly believed so arguing in Lombard Street that Britain enjoyed an economic advantage over France because the UK's more advanced banking system fostered the productive investment of savings rather than leaving them 'dormant'. 'Much more cash' – he wrote – 'exists out of banks in France and Germany and in the non-banking countries than can be found in England or Scotland, where banking is developed. But this money is not… attainable… the English money is 'borrowable money.'[10]

But clearly these benefits of leveraged and fractional reserve banks also bring with them significant risks.

- Banks facilitate greater leverage in the real economy and they are leveraged themselves, increasing the dangers that arise from the specific characteristics of credit rather than equity contracts.
- And they introduce maturity transformation risks, and related confidence and contagion risks, rooted in the simple fact that banks create a set of contractual liabilities which legally have a right to simultaneous execution, but which banks could never simultaneously honour, given the contractual tenor of their assets. Banks are therefore inherently risky institutions, which can only be made safe through the combined effect of capital and liquidity regulation and central bank liquidity insurance.
- Finally, Minsky's cyclical process of asset price appreciation driving credit demand and supply, which in turn drives further asset price inflation, while possible to some degree in a world of non-bank credit extension, is hugely facilitated in a world of bank credit. Bank credit creates bank money in a cyclical process, and periods of low loan losses, facilitated by collateral price appreciation, swell bank capital reserves thus removing constraints on further credit growth. Until, that is, the self-reinforcing cycle swings into reverse. Bank credit extension has deeply embedded tendencies to self-reinforcing procyclicality.

These specific characteristics and risks of credit supply were central to the latest financial crisis. The specific forms through which these risks manifested themselves, however, combined some which were novel and some very familiar – and it is vital that we understand this mix of the new and the old in order to think through the required policy response.

- The new element, compared with many previous banking crises, was the increased role of securitised credit, of credit in the form of marketable securities, traded in at least somewhat liquid markets, and continually marked-to-market against prices in those markets. Marketable credit securities of course are not new. Simple marketable credit securities, corporate or government bonds, have existed for almost as long as bank credit to corporates or governments; covered bonds have existed since the pfandbriefe emerged in late 18th century Germany.

  But what was new from 1970s on was the steady growth and then in the 1990s the explosion of complex packaged credit securities, using the techniques of pooling and tranching to extend securitised credit to new market segments, encompassing a rising share of mortgage market debt in many countries, significant shares of commercial real estate debt, and various categories of personal unsecured credit – credit cards and student loans. And what was new from the 1990s onwards was the emergence of credit derivatives to hedge credit risk and to take credit risk in a synthetic form.

Together these changes made the marginal price of credit more transparent, and that greater transparency was lauded by many as bringing the disciplines of transparent liquid markets to the world of credit extension. Thus the IMF Global Financial Stability Report of April 2006 noted with approval that 'credit derivatives enhance the transparency of the market's collective view of credit risks…[and thus]… provide valuable information about broad credit conditions and increasingly set the marginal price of credit'. But a marginal price of credit set by a liquid market in credit derivatives is only economically valuable if we believe, as per the efficient market hypotheses, that the market's collective view of credit risks is by definition a correct one. If instead we note the movement in the CDS spreads for major banks, with spreads falling relentlessly to reach a historic low in early summer 2007, and providing no forewarning at all of impending financial disaster, we should be worried that an increased reliance on market price information to set the marginal price of credit, could itself be a source of credit and asset price volatility, particularly when combined with marked-to-market accounting.

A crucial issue to consider is therefore whether the increased role of securitised credit, and its potential for self-referential credit pricing and credit risk evaluation, has introduced a new driver of volatility into the financial system.

- But if the importance of securitised credit and credit derivatives was something new in this crisis, it also had some deeply familiar features. HBOS, one of the UK banks which got into most trouble, was not extensively involved in risky proprietary trading, complex structured credit and credit derivatives. But it was extensively involved in what turned out to be poor bank lending against commercial real estate, one of the most familiar and most recurring features of recent banking crises –the Japanese and the Swedish crises of the early 1990s, the savings and loan crisis of 1980s America, the early 1970s secondary banking crisis in Britain, or the Thai crash of 1997. Minsky's insight into the inherent dangers of bank lending against assets whose value can move in line with the value of bank finance extended, must be central to a policy response which ensures that we do not repeat the pattern yet again in another 15 or 20 years time.
- Finally, it is worth noting that the latest phase of the crisis, the sovereign debt crisis of the last few months, also takes us into familiar territory. For most countries the cause of the rapid increase in sovereign debt has been the financial crisis itself and the tax implications of property booms and busts which derived from financial system excess. More than in some past crises, this sovereign debt crisis has its origin in financial system deficiencies. But the dynamics of the market for sovereign debt are displaying long familiar patterns of the sort described by Carmen Reinhardt and Ken Rogoff[11] – with sudden switches in market willingness to provide new credit to sovereign borrowers, and sudden shifts in the perceived probability of defaults. That reflects of course the inherently fragile and multiple nature of sovereign debt market equilibria once debt levels go above some threshold.
    - With default probabilities strongly influenced by the cost of debt, which in turn reflects the perceived default probability in a self-reinforcing cycle.
    - And with the inherently uncertain and political nature of decisions on sovereign debt restructuring and the extreme uncertainty of loss given default estimates. This uncertainty is inherent to contracts where creditors have no rights to seize underlying business assets and attempt to recover value, and thus where the bounds which somewhat constrain Loss Given Default estimates for non-sovereign debt contracts are entirely absent.

So we have both old and new factors in our latest crisis, but all of them rooted in the highly specific nature of credit contracts.

The crucial question is how we design policy to reduce the likelihood or the severity of a similar crisis in future. Three broad categories of policy response can be envisaged – in

choosing between them, or combining them, we should be guided by insights from history as well as from theory.

- The first approach focuses on parametric reform – on changing the numeric rules which govern capital leverage and liquidity. Such reform is at the core of the global regulatory agenda, with major decisions to be made this year by the Basel Committee, the Financial Stability Board and the G20. What history tells us is that banking systems in the past have operated with capital and liquidity levels not just slightly but far above current levels, suggesting that we should at least consider quite radical change. One thing theory and models tell us however is that transition to higher capital and liquidity standards needs to be managed carefully if we are not to slow recovery from the recession which excessive leverage and maturity transformation has produced – an issue to which I will return later.
- The second category of approach focuses on issues relating to the structure of the banking system. One clear priority is to address the problem of banks which are too big to fail and which, if the market perceives this, are free from the market discipline which might otherwise constrain their risk taking. And there is popular pressure to fix this problem, given anger at the sight of tax payer money bailing out large banks. But we also need to recognise that addressing the too big to fail issue is a necessary but not sufficient response. The direct tax payer cost of rescue – adding up the capital injections and the Treasury guarantees, and any central bank losses on liquidity provision – are likely, as the IMF's latest estimate show, to be the small change of the cost of this crisis – 2% to 4% of GDP maybe, perhaps less, versus 50% or more added to many countries debt to GDP ratios[12]. The far bigger issue is volatility in the supply of credit, first over-exuberantly supplied at too low a price and then restricted – and it is possible that such volatility could arise in a system of multiple small banks as much as in a system of large ones. And multiple small banks can fail as much as large and with as harmful effects: the US banking crisis of 1931-33 was a crisis of a fragmented banking system. We must learn enough from history to know that common underlying problems can manifest themselves in multiple different forms.
- The third category of response, which we may call macro-prudential, would focus on the most important underlying problem – the volatility of credit extension and its relationship to asset prices, a problem which lies at the interface between central banking and prudential regulation, an interface which in the years before the crisis we allowed to become a gap. The conventional wisdom of developed world policy, before the crisis, was that monetary policy should be exclusively focused on the inflation target, pursued through the use of the interest rate policy lever; and that the regulation of banks and other financial institutions should entail enforcing a clear set of rules applicable continuously over time. The idea that either the central bank or the regulator should be willing to make judgements on the sustainability of lending and asset prices in, say, the commercial real estate sector, has been outside the conventional intellectual framework. But a historical perspective tells us that we used to pull such levers; and an international perspective tells us that many emerging markets still use such levers today, having resisted our over-simplistic preaching in favour of our apparently more advanced approach. We need, I believe, new policy levers which can take away the punch bowl before the party gets out of hand – levers such as counter-cyclical capital requirements, which a macro-prudential authority can pull on a discretionary and possibly sector specific basis[13]. We need, as Stefan Ingves, Governor of the Riksbank recently put it, to 'extend the punch bowl principle into the financial sector'. But we also need the historical and international perspective to remind us that such policy levers are not actually new.

So we need fundamental analysis, rooted in theory, empirical analysis and history to help decide the appropriate balance of parametric reform, structural reform and new macro-prudential approaches which should form our response to the latest financial crisis. But we also need to ask fundamental questions about the role and size of the financial system in the real economy. I said earlier that one of the key things we know is that the

financial system plays a crucial role in a market economy, and that, if we look over a 200 year perspective, increasing prosperity has tended to be accompanied by increasing financial intensity. Broadly speaking, richer countries have higher financial assets and liabilities and large bank balance sheets relative to GDP than poorer countries, and a wider array of financial markets and products – both greater financial intensity and greater financial sophistication.

The financial intensity and complexity of developed economies indeed grew very rapidly in the 30 years running up to the crisis. Financial assets relative to GDP grew rapidly in many countries, with significant increases in non-financial sector leverage, but what was even more startling was a dramatic increase in intra-financial sector leverage, in the aggregate value of claims between one financial institution and another. Financial innovation produced an explosion of new derivative contracts, with the nominal value of over-the-counter (OTC) interest rate contracts rising from around zero in 1987 to over £400 trillion in 2007. And the value of financial trading in multiple markets soared relative to real underlying values – the growth of FX trading far outstripping growth in real trade or long term capital flows; oil futures trading swelling from far less than the total value of physical oil produced and consumed in 1980 to about 10 times today.

At least until the crisis, the dominant conventional wisdom of economic theory was that this increase in financial intensity was value-creative, enabling the economy both to improve efficiency and to disperse risk more effectively, completing more markets and thus taking us closer to the nirvana of an Arrow Debreu equilibrium. The correlation between increasing financial intensity and increasing prosperity was assumed to apply limitlessly over time: if 19th century Britain gained an economic advantage from increased financial intensity and sophistication, then still further financial intensity and sophistication beyond today's levels was also assumed to be beneficial.

But we need to consider whether this assumption is true, whether the financial deepening and financial innovation of the last 30 years truly has delivered economic benefits, and whether it is possible to distinguish elements of financial deepening and sophistication which are more or less useful. We cannot assume that the existence of financial activity proves axiomatically that its economic impact is beneficial; we cannot assume, as the Greenspan doctrine did, that what exists is necessarily optimal. Once we move away from the simplistic elegance of the economics of always efficient markets and always rational expectations and introduce imperfect information, complex principal agent relationships and inherent irreducible Knightian uncertainty, it becomes clear that financial activity, far more than other categories of economic activity, has a theoretical potential to swell beyond its economically optimal level[14].

And high level historical analysis – which should provoke more detailed exploration – at very least casts doubt over whether increased financial intensity over the last 30 years has truly delivered economic benefits.

- Carmen Reinhardt and Ken Rogoff characterise the mid 20th century – the 1930s to the 1970s – as a period of relative 'financial repression' both in developed economies and in developing. And in some emerging countries – for instance India – it probably was the case that 'financial repression' was one among a package of market restrictive policies which hampered economic growth. But equally, there were countries which in that period achieved historically rapid growth with fairly 'repressed' financial systems (for instance Korea). And in the developed economies – US, Europe and Japan – this period of financial repression was one of significant and relatively stable growth, comparing fairly well with the subsequent 30 years of increased financial activity and financial liberalisation.
- And a recent paper by Moritz Schularick and Alan Taylor poses a fundamental question, but one to which economics has not yet provided adequately clear answers: what is the relationship between financial deepening in its most straight forward form – increased credit outstanding relative to nominal GDP – and economic growth?[15]. A number of studies have in the past illustrated either cross-

sectional or time series correlations between the development of basic banking systems and related credit aggregates, and the early stages of economic growth[16]. But Schularick and Taylor's paper suggest that any positive relationship may break down beyond the level of financial intensity reached in advanced countries 30 or 40 years ago. It documents the growth of leverage and credit extension which liberalisation and innovation have facilitated, but finds little support for the proposition that this liberalisation and innovation has led to a corresponding increase in real growth rates for the countries in their sample.

A finding which perhaps should not surprise us, given the changing functions which credit extension plays within developed economies, and the fact that perpetual growth in credit intensity must produce major financial risks.

Over the last 55 years for instance, private sector debt to GDP in the UK has grown from around 30% of GDP to over 120% of GDP, with that growth almost entirely dominated by growth in household mortgage debt and commercial real estate financing. Both forms of finance of course perform some useful economic functions; but it is clearly not the case that further growth of such credit intensity is essential for economic growth; further intensity of this sort, for instance, does not drive increased fixed capital formation[17]. And it is also clear that the higher the leverage the greater the fragility of the system, the more vulnerable it is the specific risks induced by debt contracts which I documented earlier. Neither economic logic nor time series data nor cross-country correlations suggest that increased credit intensity is essential to drive superior economic performance once some basic threshold has been achieved.

That may seem so obvious as to be not worth saying. But in fact the implicit assumption that further credit growth is economically beneficial and limitlessly so has played a pervasive role in debates about financial liberalisation and regulation.

- Arguments for the social benefit of complex securitisation and credit derivatives, and therefore against tight regulation which might restrict to their growth, have often asserted that these are beneficial because they will "facilitate credit extension".
- And in the debates about the Basel II capital adequacy regime, there was an overt argument that the more sophisticated risk management techniques used by banks moving on to the Advanced Internal Ratings Based approach, should be rewarded and should make possible more 'efficient use of capital' (i.e. lower but still safe capital requirements). But this more 'efficient use of capital' is only economically valuable if we assume that the extra leverage thereby enabled will be economically beneficial.
- And in the current debates about future capital adequacy requirements, arguments are being advanced against the tightening of requirements which explicitly assume that private credit growth is essential and which implicitly assume that once a certain level of leverage is attained, it is impossible to reduce it. Thus for instance several of the private sector contributions to the debate clearly assume that if private sector credit growth is reduced, nominal GDP growth falls roughly pari passu. Now of course that may be at least partially true as a statement of transition dynamics, particularly if other potential drivers of demand growth – fiscal or monetary – have reached their limit. But if it is true in the long term, we have a big problem because we face a ratchet effect, in which it is possible to have periods in which private sector credit growth significantly outpaces nominal GDP growth, thus producing the growth in debt to GDP, but in which any attempt to de-leverage will produce slower growth, thus at the limit making smooth deleveraging completely impossible.[18] Under these circumstances, deleveraging would require debt default and restructuring. To the extent that any such ratchet does exist, it reinforces the vital importance of policies which present the build up of excessive debt in the first place.

The long term dynamics and impact of changing credit intensity in developed economies are therefore subjects on which far more empirical, theoretical and historical analysis is essential if we are to make sensible decisions both about long term policy frameworks and about how we transition towards them.

We need therefore to ask fundamental questions about the role and economic value added of financial systems, as well as about their tendency to stability or instability. Such questions were too often swept aside in the years before the crisis by a dominant conventional wisdom which asserted that increased financial activity and innovation must be beneficial because otherwise the market would not sustain it, which assumed that technically efficient liquid markets were always collectively rational, and which went along with the sloppy logic that if financial innovation 'facilitated credit extension' this was by definition beneficial.

And to answer these questions we need new approaches within economics. Too much of recent economics has involved the development of mathematically elegant results based on assumptions about rational economic man, rather than on observation of human decision making in the real world. Too much financial and monetary economics has treated the specific structure of the financial system itself – the balance sheets of banks, insurance companies, investment banks, mutual funds, hedge funds, as unimportant. And too much of economics has ignored economic history.

The history of financial systems and financial markets has a crucial role to play in our understanding of how economics work. It can illustrate what happened in the past and help us think through how far the problems we now face are similar to those faced before, and how far and in what way they have subtly changed.

And within financial history, the history of banking systems and of the dynamics of credit extension, have a particular importance because banks are very specific institutions and credit contracts have very specific and important characteristics.

Unless we study the past we are condemned, if not to repeat it, at least to suffer new variants of old problems.

And one of the greatest benefits we had as we entered this financial crisis was that economists and economic historians had thought deeply about the history of the Great Depression, and about the mistakes which then turned financial crisis into economic and political disaster. Amid the crisis of autumn 2008, as we were trying to think out how to stabilise our banking systems, the two most useful books I found time to read were Ben Bernanke's Essays on the Great Depression and the chapter on The Great Contraction from Friedman and Schwartz's Monetary History of the United States[19]. The good news was that the most important decision maker that autumn did not need to read Essays on the Great Depression, because he had, sometimes with others here today, written them. The insights of economic history helped the world respond to the latest financial crisis. We now need to use them to help design a less fragile financial system for the future.

[1] Charles Mackay, Extraordinary Popular Delusions and the Madness of Crowds (first published 1841,Wilder Publications 2008.

[2] Charles Kindleberger, Manias, Panics and Crashes (First published 1978. Wiley, 2000).

[3] G. Akerlof and R. Shiller, How human psychology drives the economy and why it matters to global capitalism.

[4] See Kuhneman, Slovic and Tversky, Judgement Under Uncertainty heuristics and biases, 1982, for a discussion of how economic agents made decisions on the bases of rough heuristics, i.e. rules of thumb. The widespread application of these rules by multiple agents can then generate self-reinforcing herd effects.

[5] See Vayano and Woolley, An Institutional Theory of Momentum and Reversal, (LSE November 2008), and George Soros The New Paradigm for Financial Markets (2008).

[6] Irving Fisher, The Debt-Deflation Theory of Great Depression, (Econometrica, 1933).

[7] Ben S. Bernanke, Non-monetary effects of the financial crisis, Essays on the Great Depression, Princeton, 2000.

[8] Hyman Minsky, Stabilising an Unstable economy, Yale University Press, 1986.

[9] See Adair Turner, What do banks do, what should they do? Lecture at Cass Business School, 17 March 2010 for a more detailed analysis of this characterisation of bank functions.

[10] Walter Bagehot, Lombard Street, A Description of the Money Market, 1873.

[11] Carmen Reinhardt and Kenneth Rogoff, This Time is Different – Eight Centuries of Financial Folly, Princeton, 2009.

[12] IMF, A Fair and Substantial Contribution by the Financial Sector, Interim Report to the G20, April 2010.

[13] See Adair Turner, What do banks do, what should they do? for a detailed exposition of the case for macro-prudential levers.

[14] See for instance Joseph Stiglitz, Using tax policy to curb speculative short term trading, Journal of Financial Services Research, 1989.

[15] M Schularick and A M Taylor Credit Booms Gone Bust: Monetary Policy, Leveraged Cycles and Financial Crises 1870 to 2008, NBER working paper number 15512, November 2009.

[16] I.R.G.King and R.Levine, Finance and growth: Schumpeter might be right, Quarterly Journal of Economics, 1993, or Rouseeau and Sylla, Emerging Financial Markets and Early US Growth, NBER WP 7448.

[17] See A. Turner, What do banks do, what should they do? Op. cit.

[18] Thus if attempted deleveraging, driven by regulatory intervention, produces a slower growth in private credit, and if this slower private credit growth is matched pari passu with a reduction in nominal demand growth, the ratio of the stock of private credit to nominal demand can never reduce.

[19] M. Friedman and A. Schwartz, A Monetary History of the Unites States 1867-1960. First published 1963. Princeton University Press, 1993.