

# Macroeconomics and the Crisis: A Personal Appraisal<sup>1</sup>

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## The long swings

Fifty-some years ago, when I began to study economics, students were taught that the private sector had no tendency to gravitate to full employment, that it was prone to undesirable fluctuations amplified by multiplier and accelerator effects, and that it was riddled with market failures of various sorts. But it was also believed that a benevolent, competent, democratic government could stabilise the macroeconomy and reduce the welfare consequence of most market failures to relative insignificance.

Fifty years later, in the beginning years of this century, students were taught that representative governments produce pointless fluctuations in prices and output but, if they can be constrained from doing so – by an independent central bank, for example – free markets are sure to produce full employment and, of course, many other blessings besides.

So, within the memory of living men, economists have moved like a migrating herd from one worldview to its diametric opposite (leaving a few stragglers stranded in odd places along the way). At the end of the long trail they have now met with the nasty realisation that this is not the Promised Land but an ominous place beset with disaster of a kind and on a scale that was supposed to be but a distant bad memory. While the leaders of the Long March remain valiant, they have trouble with a growing number of followers who feel that this place is not right and we have to turn back.

This long swing in our economic understanding (Leijonhufvud 2004) is a distressing thing to contemplate. It spans a half-century of prolific technical accomplishments in economics. But what the story shows is that, ontologically, economics has been completely at sea, drifting on the surface in currents of our own making. We lack an anchored understanding of the *nature* of the reality that economics is supposed to illuminate. We need a new paradigm of economic thought (Kobayashi 2009).

## Neoclassical syntheses

There is a persistent tension in economics between, on the one hand, microtheory which does a good and useful job of explaining interactions in individual markets and much else besides and, on the other, macrotheory which has to cope with the sometimes dramatic failures of the Invisible Hand. In the 1950s and 60s, this tension was resolved after a fashion by the Old Neoclassical Synthesis which postulated that the economy worked as portrayed by general equilibrium (GE) theory except that wages did not respond to excess supply of labour. There was, so to speak, ‘a spanner in the works’ which kept the labour market from clearing. The Synthesis embodied, as I said a great many years ago, the ‘terms of truce’ between neoclassical theorists and Keynesian macroeconomists, leaving the theoretical honours to the former and practical policy influence to the latter.

The brand of Keynesian economics associated with the Synthesis ran into trouble in the stagflation years of the 1970’s, lost out first to the Monetarism of Milton Friedman and was subsequently swept aside entirely by a New Classical Economics (NCE) in which all markets cleared and intertemporal plans were coordinated by rational expectations. The New Classical ideas became the motivating force driving the development of dynamic stochastic general equilibrium (DSGE) models that can be implemented empirically. In the Monetarist version of NCE, unemployment was due to evanescent misperceptions of the central bank’s actions and the cure for it was to constrain the bank to obey a fixed rule. Eventually, this Lucasian version of Monetarist causation was found empirically implausible and was then replaced by the Real Business Cycle version of NCE. In this theory, in which money and finance played no role in the explanation of business cycles, fluctuations in unemployment were optimal adaptations to variations in the rate of technological progress. Policies designed to alter the time-path of employment would have negative welfare consequences. The policy doctrine associated with NCE, therefore, was that discretionary fiscal or monetary policies could do no good but only harm and that obedience to the Hippocratic commandment ‘to do no harm’ could only be obtained by constraining the authorities as far as possible to do

<sup>1</sup> Opening Lecture at the 6th Annual Research Conference of the Economic and Financial Affairs Directorate of the European Commission, Brussels, October 15–16, 2009. The topic proposed to me was “Reappraising the Economic Paradigm”.

nothing. Monetary policy should be disciplined by having the central bank bound to operate according to a transparent rule; fiscal policy, in turn, should be constrained by making the central bank independent. This is hardly descriptive of policy making in the last two years.

**The DSGE theory of today shares with the simple atemporal GE theory of 1950s vintage a fundamental preconception that the economy can be truly represented as a *stable* self-regulating system in which effective ‘market forces’ will always tend to bring it into a state of general equilibrium except in so far as ‘frictions’ of one sort or another break down the equilibrating process. I believe this preconception is false.**

The main opposition to New Classical Economics has come from a rather loose coalition of macroeconomists usually labelled New Keynesians. Since the latter are more predominant on the two coasts of the US, they are now often referred to as ‘saltwater’ economists to distinguish them from the New Classical ‘freshwater’ ones who are dominant in the Midwest ‘Land of Lakes’. The New Keynesians put less stress on the inflexibility of money wages than the Old Keynesians had done and developed a complementary strain of analysis emphasising ‘frictions’ and ‘imperfections’ in capital markets due, in particular, to various problems of asymmetric information. The lack of an alternative general theoretical framework on the New Keynesian side together with accumulating empirical difficulties on the Real Business Cycle side eventually drove these two schools into each others arms, albeit in an embrace somewhat lacking in warm affection. The New Keynesians adopted the DSGE framework while the New Classical borrowed the New Keynesian ‘frictions.’ This ‘brackish’ water mix is now referred to as the New Neoclassical Synthesis.

The DSGE theory of today’s New Synthesis is enormously more sophisticated from a technical standpoint than its predecessor of half a century ago. But it does not seem to have given us an advantage over the old and primitive one in forewarning us of the current disaster or in instructing us on what exactly to do about it.

I criticised the Old Neoclassical Synthesis forty years ago – to little effect. I think the New Neoclassical Synthesis is on the wrong track today. The reasons are basically the same. The technically sophisticated DSGE theory of today shares with the simple atemporal GE theory of 1950s vintage a fundamental preconception, namely, that the economy can be truly represented as a *stable* self-regulating system in which effective ‘market forces’ will always tend to bring it into a state of general equilibrium except in so far as ‘frictions’ of one sort or another put the break on the equilibrating process.

I believe that this macrotheoretical preconception is false, that it is based on a fundamental misunderstanding of the nature of the market economy, and that further technical innovations in mathematical modelling or econometrics will not bring real progress as long as this remains the ruling paradigm.

### Some backwater economics

Although ‘freshwater’ and ‘saltwater’ economists disagree on many things in more or less disagreeable ways, both groups undeniably remain in the ‘mainstream.’ Some ideas that have not been part of the mainstream for quite some time are helpful in understanding financial crises and their macroeconomic consequences. Keynes’s theory has come to be regarded as a stale ‘backwater’, but it contained some insights that were lost track of in the Old Neoclassical Synthesis. Formalisation of the Synthesis, primitive though it was, froze Keynesian economics in a state that would not allow these ideas to be reabsorbed into it. The monetary transaction structure of the economy was an essential property of Keynes’s theory. ‘Goods buy money and money buys goods but goods do not buy goods’, as Robert Clower used to put it many years ago. Saving is a demand for command of future purchasing power but it is not an *effective demand* for future consumption. The supply of labour is a demand for money wages but it is not an *effective demand* for consumer goods. Production and pricing decisions in markets only respond to effective signals. These ‘effective demand failures’ were at the core of Keynes’s explanation of why the economy might remain in a persistent unemployment state.

These old Keynesian ideas have of course been of no relevance in recent years. If almost no one saves (or if foreigners do your saving for you), there is no reason to worry about saving exceeding investment. And as long as most people stay below the limits on their credit cards (or are offered ‘ninja’ loans) there will not be much in the way of effective demand failures in consumer goods markets. Economists had little reason to dwell on these matters during the long years of the Great Moderation. But in the wake of a great financial crash there is reason to bring them back to mind.

It is of some consequence to distinguish effective demand failure (EDF) theory from fix-price general equilibrium theory (Barro & Grossman, Benassy, Malinvaud) which was a version of the Old Neoclassical Synthesis particularly cultivated in France. Fix-price GE theory presumes that there are obstacles of one sort or another that prevent market excess demands from steering prices into a GE configuration. Effective demand failure theory maintains that the economy can get into states such that the effective market excess demands steer prices in directions that do not converge on a general equilibrium, at least not monotonically. In the areas of the state space characterised by effective demand failures flexibility of prices may not help you and highly flexible prices may do you fatal damage.

## The corridor hypothesis

The most obviously non-neoclassical feature of Keynes's theory was the multiplier. It is an example of *deviation-amplifying* (positive feedback) processes at odds with the equilibrating responses to shocks that normally characterise 'market mechanisms.' But strong multiplier effects are not to be expected in normal times. The consumption theories of Franco Modigliani and Milton Friedman, which 50 years ago were known as the 'new' theories of the consumption function, taught us that the real determinants of consumption are much less volatile than current income (as usually measured). Thus according to Friedman's Permanent Income hypothesis, for example, variations in current income receipts would have only relatively minor effects on current consumption<sup>2</sup> and the Keynesian multiplier would be correspondingly smaller<sup>3</sup>. So the effective demand failure at the core of Keynes's explanation of persistent unemployment would normally be of only marginal significance.

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When (if ever) should we expect the equilibrating capabilities of a market economy to be inhibited by the fact that the offer of labour is not by itself an effective demand for consumer goods? It would have to be when unemployed labour is constrained from exercising the level of demand predicted by the permanent income hypothesis, which is to say, when their liquid assets and available credit have been run down and their unemployment compensation has run out. At any time, there will be some people in this position but it would take a prolonged period of rather massive unemployment for the economy to end up being trapped in a Keynesian unemployment state of this sort. This is not how the economy functions in normal times but it is an important aspect of how one would expect it to function in the wake of a financial crisis.

Considerations of this sort led me many years ago to propose the 'corridor hypothesis' which suggested that an economic system's capabilities for self-regulation

<sup>2</sup> Depending on the illiquidity of households the effect on current purchases of consumer durables may be stronger than the effects on consumption as defined by Friedman which includes only the services of durables. However, it will hardly benefit the argument in the text to digress on this matter.

<sup>3</sup> The problem has changed since the time of Friedman and Modigliani. More recently, it has been that multiplier effects seem larger than predicted by rational expectations theory.

were bounded (Leijonhufvud 1973). Within some 'corridor' around an equilibrium time-path, the usual adaptive market mechanisms would operate to coordinate activities. But further away from equilibrium, effective demand failures would impair the systems ability to restore itself to a coordinated state and beyond the bounds of the corridor it would languish in far-from-equilibrium states indefinitely unless salvaged by effective policy interventions. As you might surmise, this corridor hypothesis was heartily disliked by Keynesians and free market fundamentalists alike. It is just unattractive to people with an ideological bent.

The corridor argument from the Keynesian multiplier is suggestive but I will admit that by itself it is less than compelling. In the present crisis, we are so far less troubled by the inability of some people to spend than by the return to saving of the majority. There are other types of effective demand failures, however. One is the Japanese case. Following the collapses of the twin stock market and real estate bubbles, Japan has not been able to find a path to resume vigorous growth for well-nigh twenty years. The coordination problem in this case has been that the prospect of future revenues from current investment does not constitute effective demand for the present resources that the investment requires. Once again, such an exchange has to be mediated by money. But following the crash, Japanese firms could not, and years later would not, borrow to finance investments. The priority for banks and firms alike was to repair their balance sheets. This case resembles the present recession more closely. It is the sad condition of balance sheets that makes the current situation so very different from an ordinary recession (Leijonhufvud 2009).

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What should make the corridor hypothesis persuasive, however, is not the 'discovery' of effective demand failures beyond those found in the *General Theory*. It is instead that something very much like it is true of *all* complex systems. *Their capacities for self-regulation are bounded*. In biology, it is true of all living creatures. (Once beyond the age of invulnerability, we all become aware that the human body is a special case of this general proposition). It is true of ecological systems. It is true of man-made engineering systems such as automatic pilots or long-distant transmission networks. It is improbable in the extreme that the same would not be true of economic systems.

The economics of how an economy functions inside the corridor is of course an important subject. It has to be the foundation of much of public finance, for example. General equilibrium theory may well be the best

way available to us at present to study questions that presume the normal functioning of the economy. But the special responsibility of the macroeconomist, I believe, is to try to improve our understanding of what is going on in the boundary regions of the corridor, of how one might prevent the economy from transgressing the bounds, and of what to do when this nonetheless happens.

**The economy is a large complex dynamical system which is in large measure self-regulating. Its self-regulatory features are the negative feedback loops that we (somewhat evasively) refer to as ‘market mechanisms’.**

This conception of the subject led me to spend many years studying high inflations (Heymann and Leijonhufvud 1995). There are many aspects of behaviour under conditions of extreme monetary instability that pose serious challenges to theories of efficient markets and macroeconomic general equilibrium.<sup>4</sup> The manifold difficulties encountered by the former socialist countries in the transition years are of great interest from this same standpoint (Leijonhufvud and Craver 2001). The problems that come to the fore in conditions of extreme instability have much to teach us about what is required for an economy to function normally. The sheer everyday familiarity with normal conditions causes us to take some of these requirements so much for granted that we are hardly aware of their importance.

### **A complex dynamical system**

The economy is a large complex dynamical system which is in large measure self-regulating. Its self-regulatory features are the negative feedback loops that we (somewhat evasively) refer to as ‘market mechanisms’: excess demand for a good raises its price which in turn reduces the excess demand; profit at the margin leads to increased output which reduces the rate of return to the activity, etc. The Invisible Hand at work.

The corridor hypothesis asserts that there are regions of the state space where these mechanisms do not function at all well. In the current cliché ‘you don’t want to go there.’ But this is a seriously incomplete characterisation of the qualitative dynamic properties of an economy with a developed financial system. It is formulated in an impulse-propagation framework; if the economy is displaced not too far from equilibrium, market forces will bring it back; if displaced too far, they will be ineffective or may work perversely. This type of reasoning admits (bounded) instabilities such as the deviation-amplifying multiplier and the far more dangerous debt-

deflation feedback loop. But it treats the impulse itself as exogenous. It misses the possibility of endogenously generated instability.

We have known about the instability of fractional reserve banking for some 200 years and it took us more than a hundred of those years to get a reasonable amount of control over it. The instability of banking inheres in the combination of leverage and the maturity mismatch between assets and liabilities. That combination is equally descriptive of the state of the financial system as a whole that developed in this decade. We might have realised this a bit earlier! We cannot allow ourselves a hundred years to learn to control the system that has now evolved.

It was the great contribution of Hyman Minsky to have explained that the endogenous instability of a financially unregulated capitalist economy extends beyond the deposit-taking banking system. Prolonged periods of stability, during which anticipated risks do not materialise, Minsky argued, will lead agents to revise their estimates of risk downward. As the financial system adapts to the changed perception of risk it becomes increasingly *fragile*. The late lamented era of the Great Moderation illustrates this aspect of Minsky’s theory perfectly.

**If all subprime mortgages had gone into default the total loss to investors would have amounted to a few hundred billion dollars. ... American and European governments and international agencies have committed more than 10 times that amount trying to stabilise the system.**

It only takes relatively small shocks to cause a fragile system to crash. In our present case, the cause was a rising rate of default on subprime US mortgages. If all subprime mortgages had gone into default the total loss to investors would have amounted to a few hundred billion dollars.<sup>5</sup> A tidy sum, to be sure, but at this time American and European governments and international agencies have committed more than 10 times that amount trying to stabilise the system. It has not been to overcome ‘frictions’ that they have allocated trillions in bail-outs, loan guarantees and stimulus spending. It has been done to stop the collapse of an unstable financial house of cards before it draws us all into another Great Depression.

It is instabilities of this nature that are missing from the theories belonging to the New Neoclassical Synthesis.

### **Three systemic problems**

We are faced with three major issues that demand action if we are to have a reasonable prospect of a

<sup>4</sup> ‘All the main macroeconomic theories have been stress-tested in Argentina – and they all flunked;’ I used to tell my colleagues twenty years ago. The major high inflation anomalies are summarised in Leijonhufvud (1997).

<sup>5</sup> Not counting what the lenders might have recovered from the sale of foreclosed properties.



return to 'Moderation.' They are (1) the instability of leverage in the economy, (2) the increased connectivity of the global financial network, and (3) the potential instability of the price level.

#### *Instability of leverage*

High leverage is the easy way to high rates of return – as long as the going is good. When, in a system of endogenous base money, there is no quantitative limit to the liquidity being fed into the system, the going can stay good for quite some time. Underestimation of risk leads institutions to increase their leverage. But also those who do not underestimate risk find that competitive pressures make it difficult to step off the gravy train. Those who do not participate lose out<sup>6</sup>.

When most financial institutions play this game, the margin of return between the assets they invest in and the liabilities they issue will shrink. The players can adapt to this threat by (1) increasing leverage still further, or (2) by turning to riskier asset classes promising higher returns, or (3) by issuing shorter term liabilities on which they pay less. Thus the recent boom 'ended up with historically high leverage ratios, historically low risk premia, high volumes of assets soon to be revealed as 'toxic', and some billion dollar positions financed in the overnight repo market.' (Leijonhufvud 2009b)

**High leverage means that small losses can spell insolvency. Widespread losses on subprime mortgages, for example, will cause interbank markets to freeze and create intense pressure to scramble back onto *terra firma* by deleveraging.**

High leverage means that small losses can spell insolvency. Widespread losses on subprime mortgages, for example, will cause interbank markets to freeze and create intense pressure to scramble back onto *terra firma* by deleveraging. Banks can deleverage by selling assets or by using loan service revenues to draw down debt instead of relending the funds. When the financial sector as a whole strives to deleverage in this way, falling asset prices will erode the balance sheets of banks further while the contraction of credit drives the real sector into recession. The recession, in turn, erodes the quality of bank assets. It is a profoundly destabilising process from which the only way out will be government bail-outs ultimately funded by the tax payer.

It is worth noting in passing that the severity of the recessionary pressures unleashed by financial deleverag-

ing gives us a clue to the role that the build-up of leverage must have played during the preceding boom years. The two sides of the process are, of course, not symmetrical. Like the dynamics of Per Bak's famous sandpile, leverage in the economy builds slowly but comes down as an avalanche.

#### *Connectivity*

The collapse of the American savings and loan industry some 30 years ago was a costly affair. But it was confined. It did not spread to the entire American financial sector, much less to the world at large. The current disaster also started with trouble in American home finance. It has engulfed almost the entire world.

**The old Glass-Steagall system in the US compartmentalised the financial sector into a number of distinct industries. ... Today, a financial institution can compete in virtually any market it wants and the big global banks have a presence in almost all markets**

Much blame has been showered on regulators for failing to enforce more transparency in various markets for new instruments and for not putting checks on the growth of credit default swaps, etc. But the most fundamental change brought about by deregulation has been the greatly increased *connectivity* of the global financial network.

The old Glass-Steagall system in the US compartmentalised the financial sector into a number of distinct industries, each characterised by the assets in which it was allowed to invest and the liabilities it could issue. There was no direct competition across compartment boundaries and very little diversification of risk within each compartment. Today, a financial institution can compete in virtually any market it wants and the big global banks have a presence in almost all markets.

It is this structural change that has created a financial system so interconnected that a disturbance in one part of it can be felt everywhere else all around the globe. Whether a shock to some part of it will propagate in a destructive way or peter out harmlessly depends (1) on the general level of leverage, (2) on the presence of highly interconnected banks that are 'too big to fail', and (3) on the volume and distribution of toxic assets in the system.

Three years ago, central bankers could congratulate themselves on a high degree of independence, on being responsible only for the stability of the price level, and on knowing how to do it by fiddling with the interest rate. Do they even remember those halcyon days? Since that time central banks have acted as lenders of last resort not just to commercial banks but to financial institutions of every description. They have entered various markets to 'unfreeze' them and bought assets of a quality which central bankers of an earlier generation would not have dreamt of in their worst nightmares. In

<sup>6</sup> Paul Tucker, Deputy Governor of the Bank of England, has put it as follows: '... there is a potent collective action problem in getting off the dance floor. Not a few senior market participants felt from at least 2006 that financial risk was underpriced, and that conditions in, for example, the leveraged loan market were silly. But they also had no conviction about when, or indeed whether for sure, the music had to stop, and so feared individually that stepping away from the dance "too early" would crystallise business risk, as the dance would simply go on without them and their franchise would be undermined as customers migrated to their competitors.' Barclays Annual Lecture, London, 22 October 2009.

short, neither they, nor we, know any clear boundaries for the responsibilities of central banks.

This is because of the *increased connectivity* of the new global financial system. It no longer has a well-defined core of just old-fashioned commercial banks to which central banks could limit their attentions.

### *The potential instability of the price level*

The third problem is the most insidious of the three because the satisfaction is so widespread that we have it under control. I have argued before that inflation-targeting misled the Federal Reserve into thinking that their interest rate policy from 2002 onward was right because the inflation rate stayed low and basically constant (Leijonhufvud 2007). Interest rate policy is more complicated than we thought.

**It is a dangerous illusion that you can always control the price level in an economy where the money stock however measured is left to vary in purely endogenous fashion.**

But there is a deeper problem. The Wicksellian recipe for stabilising the price level in a pure inside money system instructs the central banker that he will know whether the interest rate is too high or too low because the price level will be, respectively, falling or rising. *How fast* it does *not* say. (It gives the *sign* but not the *value* of the derivative of prices). This matters not at all if you happen to be living through a 'great moderation' but if we ever were to end up in an inflationary period with volatile inflation expectations, it will not work.

When in the 1980s, the relationships between nominal income and various measures of the money stock became unstable, the old Friedmanian Monetarism died. When people like Ottmar Issing argued that you nonetheless had better pay attention to what was happening to money, this was pooh-pooed by theorists enamoured with the Wicksellian ideas. But Issing was right, in my opinion. It is a dangerous illusion that you can always control the price level in an economy where the money stock however measured is left to vary in purely endogenous fashion.

### **Policy challenges**

The slide into real depression has been halted and for that we should be truly grateful. But formidable policy challenges loom ahead for which, I believe, we do not have reliable quantitative models to guide us. We have been propelled back into a world where, as Ralph Hawtrey put it, central banking is an 'Art', which means in a somewhat cruder American idiom, into a world where policy makers have 'to fly by the seats of their pants.'

The US and Europe are poised between the dangers of Japanese stagnation and Latin American high inflation. At this time, all the signs point to stagnation as the more immediate prospect. But with the longer term soundness of the public finances in doubt, the naviga-

ble channel between Scylla and Charybdis has become quite narrow. Making sure that we avoid stagnation means risking a hard-to-control inflation.

One overwhelmingly important fact must guide stabilisation policy and financial reform efforts at this time. It is that *we cannot afford to have another bubble burst*. The recent stimulus packages and bail-outs have not only been added to pre-existing high deficits and large public debts but to large, unfunded liabilities. We do not have the resources required to handle another emergency like this one. We need to go as far as possible in the direction of fail-safe strategies from now on.

I am apprehensive that the very low interest rates maintained by the central banks at present are not a fail-safe policy. The crisis has been one of solvency, not of liquidity, and while loose liquidity is obviously of some help in a solvency crisis, it is of limited value. Low interest rates following the dot.com crash sent all financial institutions 'looking for yield'-and they found it in maturity transformations done at higher and higher leverage. The surviving players are back at the tables, this time more secure than ever that they will not be allowed to lose. We need to ask whether the present recovery of the markets might be a symptom of the same syndrome beginning to play out once again.<sup>7</sup>

High leverage has been the big culprit in the disaster. Leverage has been rising in the economy in general for quite some time-the ratio of debt to GNP has steadily increased. But most immediately we are concerned with the banks and other financial institutions which have been operating at historically unprecedented leverage. To reduce the risk of another crash it is imperative that leverage be curbed. At present, however, we face a dilemma from which there is no easy escape. Governments have as far as possible avoided taking controlling stakes in the big banks. Having made that choice, they do not want the financial sector to deleverage at the present time because the falling asset prices and curtailed credit that this would entail could only make the recession much more severe. The surviving big banks themselves seem happy to return to their old high-stakes game, secure in their too-big-to-fail status. They cannot very well attract private capital with the promise that it will be used to reduce leverage since this would reduce the rate of return on capital correspondingly.

**We do not have the resources required to handle another emergency like this one. We need to go as far as possible in the direction of fail-safe strategies from now on.**

The central banks assure us that they are planning their 'exit strategies' which are supposed to restore their balance sheets to something resembling normalcy while keeping inflation under control. We all hope for the best. But even if they succeed they remain in the situa-

<sup>7</sup> Just a few days after this lecture, others gave independent voice to the same concerns (Münchau (2009) and Tett (2009)).

tion where the boundaries of their lender-of-last resort responsibilities have lost all definition. Comes another crisis and the monetary authorities would again find themselves bailing out insurance companies and extending credit in 'frozen markets' to all sorts of non-bank enterprises. To get back to a structure where the responsibilities of central banks are limited and clearly defined will not be at all easy. One would like to see a system with at least two 'compartments'. One would be the regulated banking system with access to the lender of last resort; the other a more lightly regulated 'swim-or-sink' sector. The regulated sector would have to be in some degree insulated from the riskier sector. But the too-big-to-fail banks already straddle any such dividing line, so they would have to be forced to divest themselves of certain lines of business. Compartmentalisation would, however, give rise to a 'boundary problem'.<sup>8</sup> Rates of return would differ between the sectors which would make the boundary exceedingly difficult to maintain. This is a problem for which I do not think we have a clear solution as yet.

**Theories that assume that the economy is a stable general equilibrium system, albeit beset with some frictions and imperfections, do not hold true in general. The instabilities that such theories ignore are precisely those problems that should be the particular responsibility of macroeconomists.**

Finally, the problem of the potential instability of the price level requires the reintroduction of a nominal anchor in some form. My preference would be to reintroduce reserve requirements on all liquid liabilities of commercial banks and to impose them also on all other financial institutions that issue the same type of liabilities.

The agenda before us is formidable.

### Conclusion

The core argument of this paper is simple. A modern economy is not globally stable. Theories that assume that the economy is a stable general equilibrium system, albeit beset with some frictions and imperfections, do not hold true in general. The instabilities that such theories ignore are precisely those problems that should be the particular responsibility of macroeconomists.

<sup>8</sup> This problem was particularly stressed by Charles Goodhart at the conference. It is discussed at length in the 11th *Geneva Report on the World Economy* (Brunnermeier et al., 2009).

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