

Speech by

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Leverage and Monetary Policy

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You do not need me to stand here in Dublin this morning and tell you what profoundly difficult economic times we are going through. As an elderly New York friend of mine enquired of me recently when I offered such a thought “for such pearls we need economists?” I feebly replied that knowing how much of a mess you were in was of some use and (with rather more confidence) that thinking how you get out of the mess was something economics could help with. Today I want to talk about setting monetary policy as we emerge from one mess and how we can reduce the chances of getting into another one. I am going to focus on the UK but I think much of what I say has relevance here in Ireland and beyond.

That it has been a very bad mess is clear. From the onset of the financial crisis that started towards the end of 2007 real output in the UK has fallen about 10% relative to the upward path it might have been expected to follow. In Ireland the fall in economic activity has been greater: the level of output is about 13% lower than at the end of 2007; if one had expected growth of 3% a year – significantly lower than the average in the preceding 10 years – output is now more than 20% below where it seemed likely to be.

I want to ask two questions about monetary policy prompted by the financial crisis and the resultant recession. First, should we fundamentally re-think the inflation targeting framework for monetary policy? Is the focus on a target for consumer price inflation flawed? This is a long-term issue.

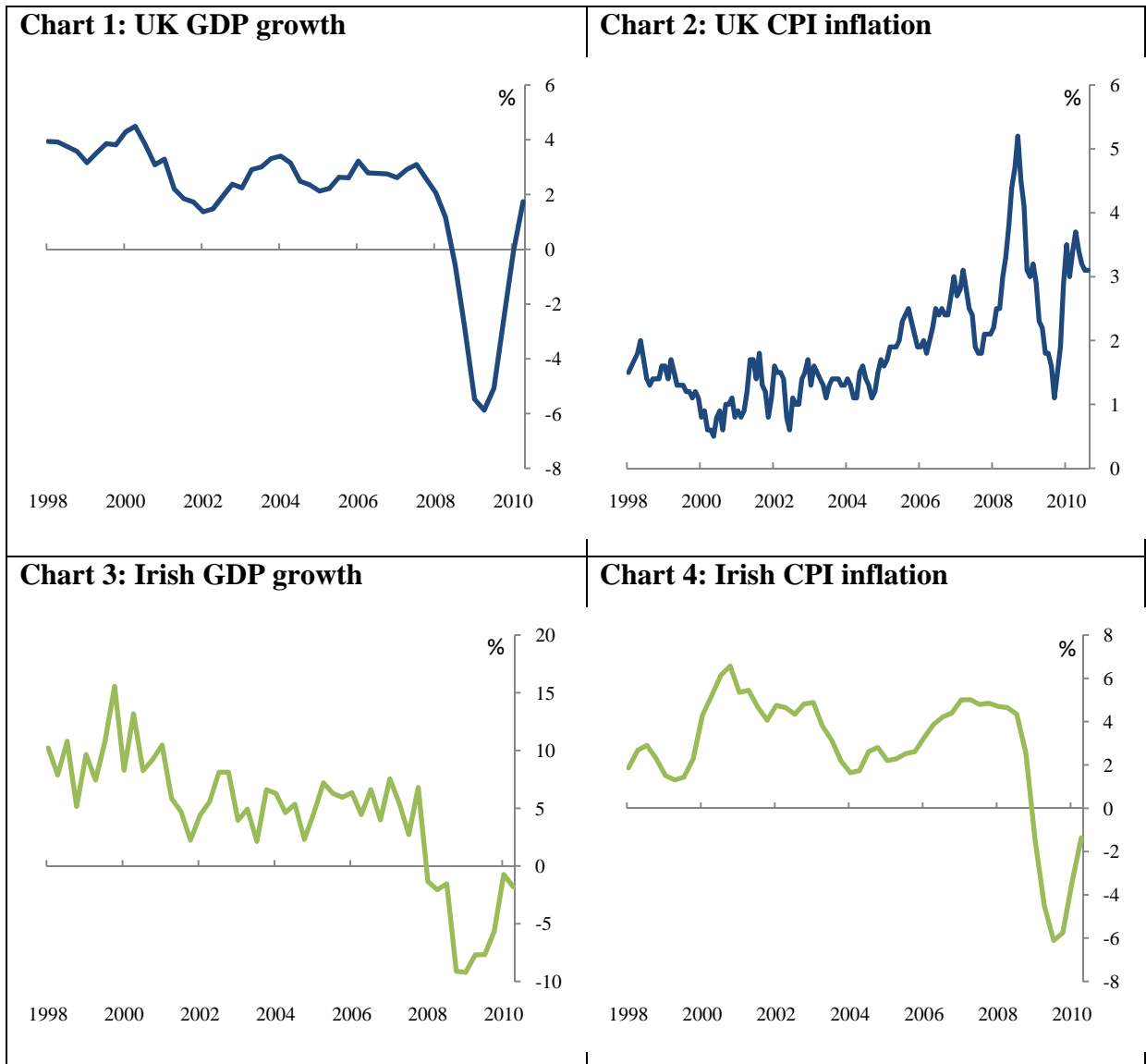
There is a second, in some ways more immediate, question. How should monetary policy be set now in what I hope it is not too optimistic to call the aftermath of the financial mess? In considering that issue I will be talking specifically about the UK, as befits a member of the Monetary Policy Committee (MPC) at the Bank of England.

I want to start with the longer-term issue of the appropriate goals of monetary policy.

The goals of monetary policy:

If one looks at the 10 years leading up to the onset of the crisis – which were also the first ten years of the Bank’s MPC – the outcomes for inflation and for aggregate economic growth in the UK were good. Inflation was – by historical standards – very low, very stable and close to the target. That had not been achieved at the expense of unusually low growth or high

unemployment. In Ireland growth had been much stronger and inflation a bit higher. The aggregate outcomes looked good in both countries (Charts 1-4). In the UK there was a strong consensus that having monetary policy directed at hitting an inflation target was sensible and that it had been successfully implemented.



But if you now view the mess that we are dealing with after the financial crisis as substantially reflecting monetary policy decisions, you would take a completely different view of how well policy had been run.

The charge is that policy in the UK was inappropriate given the huge build-up in many asset prices, and particularly in debt, or leverage. The fact that monetary policy could be very

successful in terms of hitting an inflation target – and in the UK it was¹ – but not prevent a very serious financial crisis, and one that has been followed by much more variable inflation, is taken by many as a clear demonstration that the inflation-targeting framework is flawed. Monetary policy, the argument goes, must be directed at a wider set of goals than controlling consumer price inflation – a set of goals that includes the preservation of financial stability. Those who advocate using monetary policy to help preserve financial stability usually argue that preventing, or at least countering, asset price booms is the most effective means to that end. For a clear statement of this view see, for example, Wadhvani (2010).

I want to make three points about this argument. First, that not all episodes of rapid asset price inflation - followed by substantial price falls - are disruptive to the wider economy. But when big asset price rises are accompanied by very sharp increases in debt they very frequently are followed by bad economic outcomes. Second, that monetary policy is not the most effective tool to prevent rapid and simultaneous build-ups in both debt and in asset prices. Third, that a much more direct and effective tool to counter a potentially dangerous build-up in debt is limits on the debt-to-asset ratios of financial institutions – that is limits to leverage, or capital requirements.

Let me try to justify these three claims.

Reinhart and Reinhart (2010) document the facts around the most serious economic dislocations in modern economic history. They show that big dislocations are almost invariably preceded by large increases in the amount of debt in the economy. It is the combination of very substantial rises in asset prices and in debt that has often proved toxic. Sharp rises, and subsequent falls, in asset prices which have not been preceded (and fuelled) by large rises in debt have been less disruptive. The contrast between the fallout from the sharp falls in equity prices in the early 2000s and the fallout from declining asset prices – most notably US house prices – at the end of the decade is revealing. The run-up in stock prices at the end of the 1990s (“the dot.com bubble”) was an equity market phenomenon and the investment activity it fuelled and reflected was equity financed. The American stock market lost nearly half of its value between March 2000 and July 2002. The fall in asset values wiped out a great deal of the financial wealth of holders of equity, but it did not

¹ Inflation in the ten years from 1997 to 2007 never moved more than 1% from the Bank of England’s inflation target.

bankrupt large financial institutions and the knock-on effect on the wider economy was limited. In contrast, the falls in asset values that became serious in 2007 have been followed by financial crises and recessions that have been exceptionally severe in countries where the build-up in debt had been great. The easing of monetary policy in the wake of the recent financial crises has been greater than in the wake of the equity crash of 2001 – both in the US and elsewhere. But the economic outcomes have been dramatically worse.

A key difference here is that property price rises – unlike big rises in equity prices – are invariably accompanied by big increases in debt. So when property prices fall they are more likely to create solvency problems – and funding problems associated with heightened solvency risks – than when equity prices fall. My colleague Adam Posen recently presented evidence that big falls in equity prices in themselves generally do much less damage than big falls in house prices. He found that the average output loss after real estate booms cumulates to over 5% of GDP over five years, and in 75% of cases at least 2% of output is lost. For equity price booms and busts, there is no output loss on average over five years, and following them only 25% of economies experience a loss of more than 4% (Posen 2009).

What has happened to the hedge fund sector during this crisis is also illuminating. In Q4 2007, total assets held by hedge funds were around \$5500bn, and aggregate equity capital (or what the industry refers to as assets under management, AUM) was around \$2000bn. This implies that the hedge fund sector had an average leverage of around 2.8, compared to typical banking sector leverage ratios at that time of 30 or more. By Q1 2009, the hedge fund sector had experienced trading losses of around \$1000bn amounting to one fifth of their total assets (He, Khang and Krishnamurthy, 2010), a scale that would have wiped out almost all banks given their leverage. Yet many hedge funds have survived. And none has been bailed out with taxpayers' money. Because hedge funds have so much lower gearing, or leverage, than banks they have been able to absorb much bigger falls in asset values. Close to 3,000 hedge funds have closed, that is liquidated, since mid-2007² - but they have done so with a quiet whimper rather than with an alarming bang.

Falls in the value of assets that hit the wealth of institutions – but not their existence – do much less damage than falls that wipe out firms and cause bankruptcy. So sharp asset price

² “Global Hedge Fund Industry Report”, Hedge Fund research Inc, Q2 2010.

variability, per se, is not the most serious problem. It is the combination of (and the inter-relation between) high debt – or leverage - and variability in asset prices that is problematic.

I believe that an important way to help preserve financial stability is to have policy instruments directed at debt gearing (or leverage) and to be used in the light of what has happened to asset values. The aim would be to avoid a situation where gearing has gone up a lot alongside asset values so that subsequent falls in those values threaten the solvency of institutions and of individuals. But I believe it is unlikely that monetary policy – which most of the time means variations in the short-term nominal interest rate – is the most natural tool to use to achieve this.

The reason is that – even when we set aside the issues about how effective interest rates can be in controlling asset prices and what effect on consumer price inflation and activity their use for that end would be – monetary policy tools are likely to be pretty poor at affecting gearing and leverage. And the main reason for this is that changes in the level of interest rates do not obviously alter incentives to use debt relative to equity. It is likely that factors other than the level of interest rates most influence the relative attractions of debt and equity: risk premia, the tax code, regulations (most obviously rules on maximum gearing). Higher interest rates will mean that the return that needs to be promised by the issuer, and expected by the provider of funds, needs to be higher. That will affect the cost of funds in general; it is not so clear how – if at all – it affects the *relative* cost of debt finance to non-debt finance. Indeed it is possible that the attractiveness to those seeking funds of debt relative to equity is greater at higher interest rates. This is because interest payments are tax deductible whereas dividends are not. The scale of that subsidy to debt gets bigger as debt payments rise, which will happen as interest rates rise.

A more formal version of this story goes like this: Suppose that nominal interest payments by issuers of debt, paying an interest rate r , are deductible against corporation tax (levied at rate t_c) but that returns on equity paid by issuers have to come from post-tax income. Assume that all nominal returns received by holders of debt and equity are taxed at a common rate – a single rate that is charged on interest received, dividends and nominal capital gains. Because all receipts of income from financial claims are taxed at the same rate then the payments that need to be made by companies on debt and equity would, on average, need to be the same (because we ignore risk considerations). But companies can deduct interest payments against

tax which means that the cost advantage of debt over equity to the company is measured by the nominal interest rate multiplied by the corporate tax rate – $r \times t_c$. This is increasing in the nominal interest rate. In this case, all else equal, the tax consideration is likely to lead to an increase in leverage when the nominal interest rate is higher.

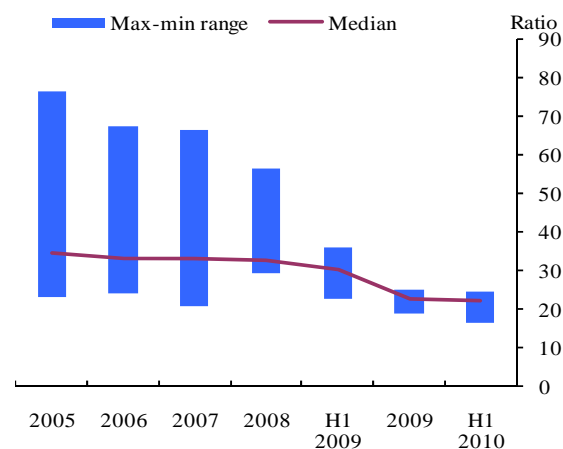
This is not meant to be a realistic model – in fact it isn't even a model, it is simply a set of stark assumptions. But it illustrates why using interest rates to try to control leverage – at least for companies – may not be at all effective. And I believe that high leverage has been at the centre of the financial problems of recent years.

Bean et al (2010) provide some evidence on the impact of monetary policy – that is interest rates – on credit and asset prices. They find that monetary policy has some effect on asset price inflation, but little on bank lending. For example, in a counter-factual experiment using vector auto-regressions, they estimate that for the US if policy rates had started rising in 2003 and peaked at around 7.5% in late 2006, then the peak of the real house prices would have been around 7.5% lower; real credit growth would have been just 3% lower by the end of 2006. For the United Kingdom, if Bank Rate would have been around 7% from the end of 2004 to mid-2007, real house prices would have been around a fifth lower at the end of 2006, while the stock of real credit would have been only 4% lower, trivial compared to the almost 50% increase in the stock of credit seen over the period.

Leverage and financial stability

The fundamental problem in the financial crisis was that the ability of many highly-g geared financial institutions to withstand substantial – but by no means unprecedented – falls in the value of their assets was rightly perceived to be low. Much of the debt of the highly leveraged institutions was wholesale funding – some of which proved footloose when there was increased concern about asset values. It was reasonable to have concerns over the strength of banks because leverage was so high. Between 2005 and 2007 major UK banks – which were by no means the most highly geared – had leverage ratios that averaged slightly above 30. The highest ratios – and this was for major banks – were close to 60 (Chart 5-6). By leverage I mean total bank assets (netted for derivatives and minus cash at the central banks and goodwill) relative to shareholder equity (also net of goodwill and excluding minority interest). So true equity capital was often barely 2% of total assets.

Chart 5: Leverage of UK major banks



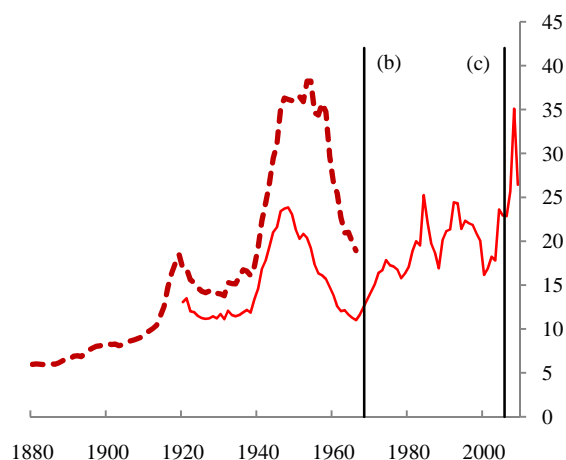
Sources: Published accounts and Bank calculations.

(a) Includes Barclays, HSBC, LBG, RBS and Santander.

(b) Leverage is defined as adjusted assets over adjusted capital.

.Assets are adjusted for cash items, deferred tax assets, goodwill and intangibles. Derivatives netted on a best-efforts basis. For some firms, changes in exchange rates have impacted foreign currency assets, but this cannot be adjusted for. Adjusted capital excludes Tier 2 instruments, preference shares, hybrids and goodwill and intangibles.

Chart 6: Long run leverage of UK banks



Source: United Kingdom: Sheppard, D (1971), *The growth and role of UK financial institutions 1880-1962*, Methuen, London; Billings, M and Capie, F (2007), 'Capital in British banking', 1920-1970, *Business History*, Vol 49(2), pages 139-162; BBA, published accounts and Bank calculations.

(a) UK data on the capital ratio show equity and reserves over total assets on a time-varying sample of banks, representing the majority of the UK banking system, in terms of assets. Prior to 1970 published accounts understated the true level of banks' capital because they did not include hidden reserves. The solid line adjusts for this. 2009 observation is from H1.

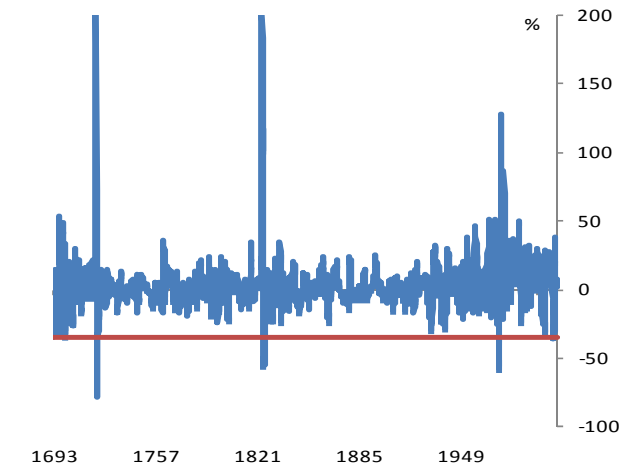
(b) Change in UK accounting standards.

(c) International Financial Reporting Standards (IFRS) were adopted for the end-2005 accounts. The end-2004 accounts were also restated on an IFRS basis. The switch from UK GAAP to IFRS reduced the capital ratio of the UK banks in the sample by approximately 1 percentage point in 2004.

The vulnerability that high gearing brought to financial institutions meant that even relatively modest falls in asset values triggered concerns about solvency that in turn led to funding problems that threatened to be – and in some cases became – self-fulfilling as sources of funding dried up and some assets needed to be sold because they could no longer be financed. It has not been the declines in asset values in the recent financial crisis that have been unprecedented (charts 7-14) – it is the scale of bank leverage and financial problems in the banking sector. Equity prices fell by up to 35% in the UK and 45% in the US during the current financial crisis. During the previous century both countries had experienced similar falls, at least four and three times respectively. Investment grade corporate bond yields in the UK and US rose by over 300bps in the twelve months to October 2008; both countries had

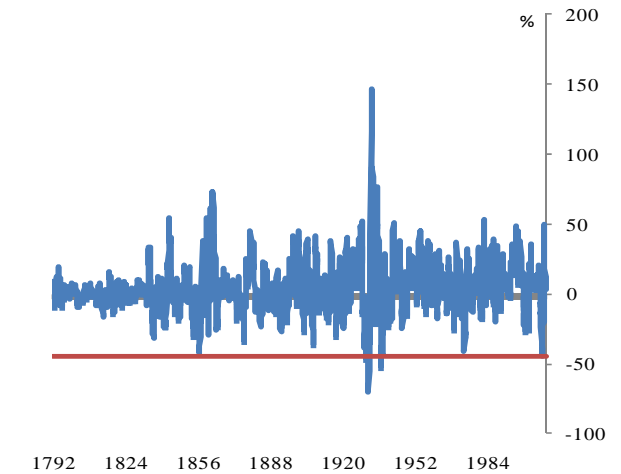
experienced at least three similar episodes within the last hundred years. Falls in residential property prices in the UK have not been exceptional – though the falls in commercial property values have been, as have declines in US house prices.

Chart 7: UK historical equity price changes on a year earlier



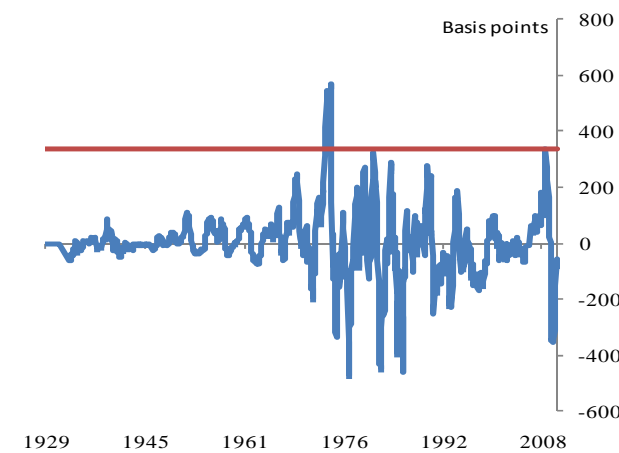
Source: Global Financial Database

Chart 8: US historical equity price changes on a year earlier



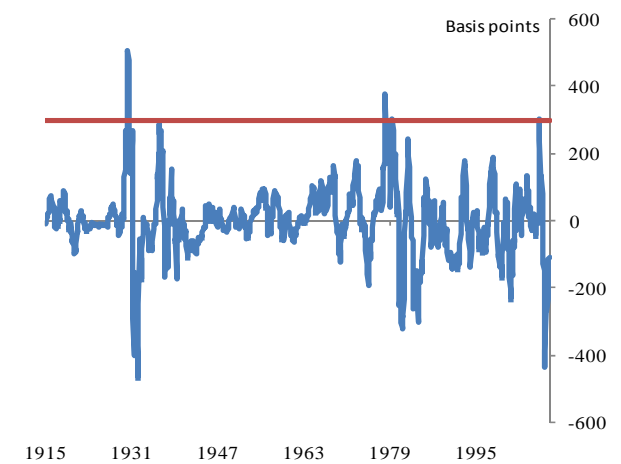
Source: Global Financial Database

Chart 9: UK corporate bond yield changes on a year earlier



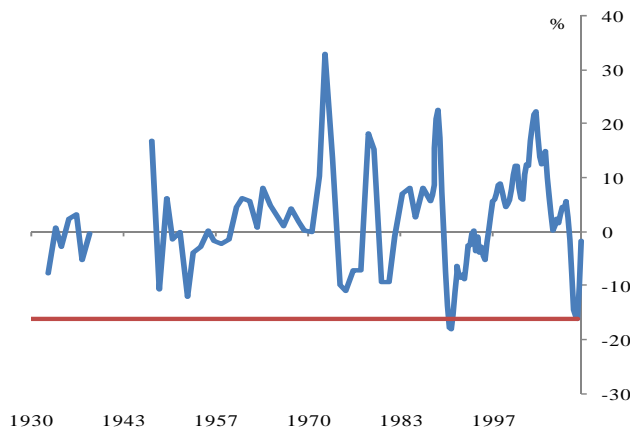
Source: Global Financial Database

Chart 10: US corporate bond yield changes on a year earlier



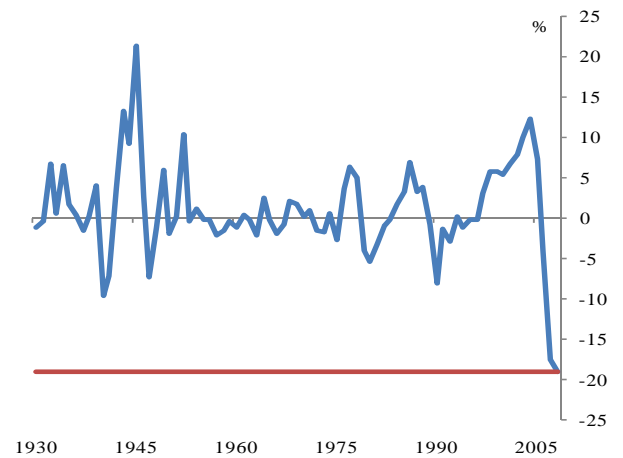
Source: Global Financial Database

Chart 11: UK house prices changes on a year earlier



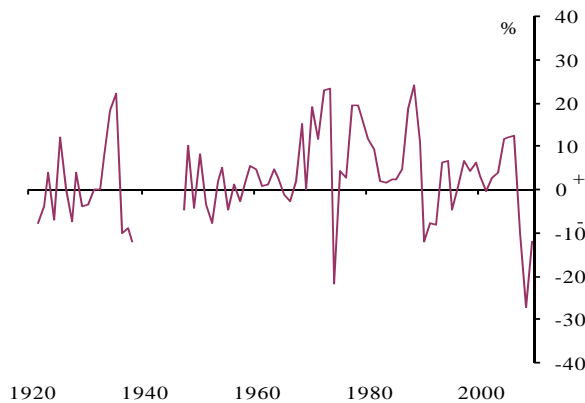
Source: Nationwide, ONS, CLG, RICS and Bank calculations.

Chart 12: US house prices changes on a year earlier



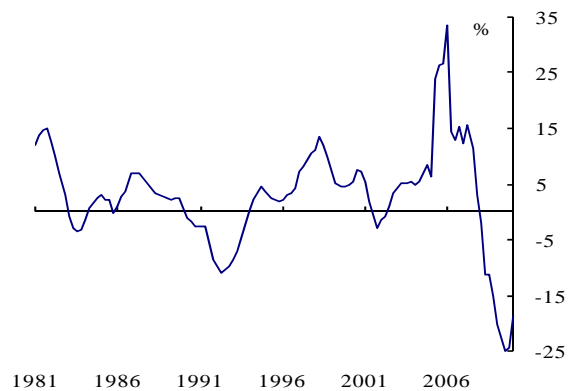
Source: Robert J. Shiller (www.irrationalexuberance.com)

Chart 13: UK commercial property prices



Source: Investment Property Database and Bank calculations.

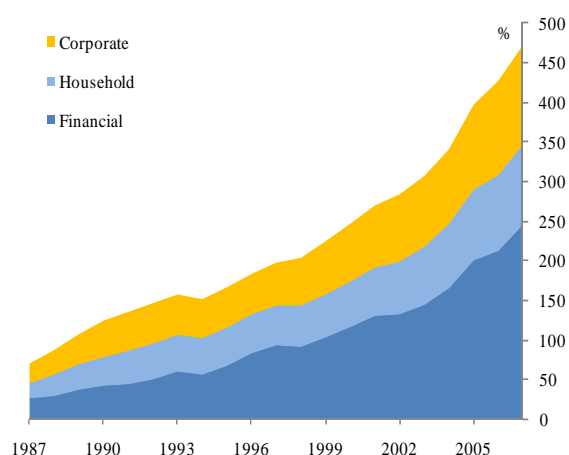
Chart 14: US commercial property prices



Source: Federal Reserve

At the risk of over-simplifying – I would say that declines in asset values leading up to (and during) the financial crisis have generally been on the scale of a once-in-every-25-year event; but the financial mess has been (at least) on a once-every-century scale. Had gearing of financial institutions - and specifically of banks - not been so high (Chart 15) the strains that falls in asset value brought would surely have been substantially lower, as would have been the falls in asset values themselves.

Chart 15: UK debt by sector as % of GDP



Source: Source: Oliver Wyman.

A bad equilibrium path for the financial sector – or in more everyday language a vicious cycle – is much more likely to exist in a world where financial firms that hold large amounts of risky assets, such as banks, have small equity cushions. The smaller bank capital is the greater will be the concern over bank solvency from a given fall in the value of bank assets. That can trigger a drying up in funding for banks causing a sale of some bank assets that drives their values lower, exacerbating the concerns about the ability of banks to survive. There need be nothing irrational about this process. Indeed, there are many examples of bad, but rational, equilibrium paths that markets - and whole economies – can follow.

The idea that this is news to economists who use formal models expressed in maths is completely wrong-headed. Yet there is a current view that economists who use mathematical models to analyse outcomes where people behave rationally are always led to the Panglossian conclusion that things will work out just fine. It would come as a surprise to those who hold this view that two of the most famous economic articles in the last forty years which are routinely taught to economics undergraduates– by George Akerlof (1970) and by Diamond and Dybvig (1983) – draw entirely non-Panglossian conclusions from formal (mathematically expressed) models of collective rational behaviour.

I was struck by a trivial example of where a bad equilibrium path can lead on a recent visit to the US. I opened the mini bar in my hotel room to find it empty save for a small slip of paper. Here is what it said:

“A personal note to you....

We have made a renewing change to our heavenly guest rooms. Our refreshment centers will no longer be pre-stocked.

Please be aware the refreshment center cooler is not intended as a refrigeration device”

The empty-mini-bar equilibrium is not a good one. How do you get there? I think the story is this: mini-bar prices are high; they are high because some people conveniently tend to forget how much they may have used their mini-bar when they come to pay the bill and that forgetfulness gets worse the higher are prices; but then the mini bar prices need to be even higher as the forgetfulness seems to get worse. This vicious cycle ends up with mini bars that are empty save for a “personal note to you”.

Good economic policies can help prevent bad equilibria and reduce the chances of vicious circles. For banks, I believe the most direct way to do this is to prevent an initial (limited) fall in the value of assets triggering sharply higher concerns about their solvency. It seems to me the natural way to do that is to make sure they can withstand falls in asset values by having sufficient loss-absorbing capital rather than to expect monetary policy – moves in interest rates – to substantially reduce asset price variability, much of which might be warranted. The short-term nominal interest rate is a very blunt instrument to use to try to limit gearing of financial institutions. Capital requirements, and explicit limits on gearing, are more direct means to control leverage.

This is why I think the direction of the policy emerging from the Basel III process – which will put in place higher capital requirements on banks - is right. It is also why time-varying limits on gearing of financial firms – limits that might vary with asset prices and with the economic cycle – are likely to be useful in helping maintain financial stability.

I believe that is a much more fruitful way forward than abandoning inflation targeting. But while I think this is plausible, the case is not proved. Simply because they are a more direct means to control leverage does not prove that capital requirements or limits to gearing are a far more effective tool to preserve financial stability than changing interest rates. Indeed

there are at least two situations where the use of capital controls and limits on gearing might not be a very effective means of maintaining financial stability, namely if either:

1. the link between an institution's leverage and its robustness to real (or imagined) risks to the value of its assets were very weak.....OR...
2. there were great sensitivity of the overall cost of funding to changes in equity capital – so that requiring an institution to hold much more capital came at a very high price.

If either of these things were true it would strengthen the case for using monetary policy directly to help preserve financial stability. But I think there is strong evidence that neither of these things are very likely.

The only reason why a financial firm's leverage (the ratio of assets to equity capital) would be irrelevant to robustness is if that equity were not truly loss-absorbing or if it was already so large relative to assets that the chances of losses being that great becomes virtually zero. But in fact bank equity capital that is truly loss absorbing has been 10% or less for most banks, and generally a great deal less. That is certainly not so high that chances of losses this big are of negligible probability. Value-at-Risk (VAR) models might have suggested otherwise. But those models have weaknesses that reflect the difficulty of accurately assessing risks.

Assessing the probabilities of losses on bank assets is not easy. Many bank assets are not marketable – or only became so a few years before the crisis. And where prices do exist, using their recent volatility and assuming price changes follow a normal distribution is unlikely to be reliable. Yet that is what most VAR models do (or at least did).

We do have long runs of data on total incomes for economies – that is GDP. Since the value of bank assets – most of which are loans – ultimately depends upon the incomes of households and companies, variability in GDP is at least some guide to variability in their true value. Analysing changes in annual GDP for a large sample of countries over long periods reveals two characteristics: changes in annual GDP do not follow a normal distribution (they have much bigger chances of extreme movements) and the chances of big falls are much greater than the chances of big rises (there is clear downwards skew). The table below shows the proportion of occasions when annual GDP fell by various amounts in

one year³. The sample is for around 40 (mainly developed) countries and in many cases goes back well over 100 years creating a total sample size of annual observations of around 4000.

Table 1: Frequency distribution of annual falls in GDP

<i>Annual GDP fall</i>	>20%	>15%	>10%	>5%	>2%	>0%
<i>Observed frequency</i>	0.50%	1.20%	2.40%	6.90%	14.30%	27.60%
<i>Frequency implied by normal distribution</i>	0.01%	0.17%	2.00%	11.90%	25.70%	38.00%

Source: Miles, Pillonca and Baker: “What Should Bonds and Equity be Worth in a Risky World?” (2005)

In thinking about variations in the value of the assets held by a bank with a diversified portfolio of loans then variation in real aggregate income is arguably a much better guide than volatility in particular asset classes (eg property, equities). In some simple asset price models the real value of assets which are a claim on a stream of income is proportional to aggregate incomes (see, for example, Barro 2006). If we use that as a rough rule of thumb the Table suggests that occasions when generalised falls in real asset values might be 5% or more occur roughly once every 15 years. Falls in value in excess of 10% might be about once every 40 year events. Declines of 15% or more are once-every-80-year events. This suggests that banks would need far more capital than has been usual in recent years to be truly robust.

Why bank capital might not be expensive?

Of course if having quite substantially more capital generated much higher cost in intermediating funds through banks – and there are no close alternatives for bank financing – that extra robustness would come at a high price. But calculations undertaken by the Bank of England (2010), the BIS (2010) and academics (Kashyap 2009, and Admati et al 2010) suggest this is not the case. It is worth considering why.

A natural way to gauge the cost of higher capital requirements on banks is to estimate how much lower economic activity - GDP – might be as a result. I want to illustrate the cost of higher capital for banks using a very similar method to that used in the studies mentioned above. The calculation proceeds in steps. First, estimate how much the average interest rate

³ For details see “What should equities and bonds be worth in a risky world”, by David Miles, Vladimir Pillonca and Melanie Baker, Morgan Stanley research paper, September 2005.

charged by banks would have to increase to recoup any cost of an increase in their equity financing relative to use of debt. Then estimate how much a rise in the cost of borrowing from banks might change the required rate of return (or cost of capital) of investors. Finally use a production function to estimate the impact of such an increase in the cost of capital on desired capital and output. We can then express the cost of having banks hold more equity capital in terms of the present value of all future falls in output. This is the methodology used in the calculations reported in the Bank of England's 2010 Financial Stability Review (FSR). Those calculations were based on conservative assumptions – understandably so, for fear of under-estimating the cost to the wider economy of imposing substantially higher capital requirements on banks. I will start from that FSR baseline estimate of the present value of output lost as a result of a 1pp increase in the capital ratio, which is 4.25% of current annual GDP. That estimate becomes very substantially smaller if we make less conservative assumptions and allow for several offsetting impacts from banks holding more capital. Specifically:

1. Allowing for a partial offset because as a bank holds more equity capital, its equity becomes less risky, and therefore requires a lower return. (A Modigliani-Miller effect – which I will assume is not zero but only 30% as big as it would be under perfect markets)
2. Allowing for the value to the government of the extra tax revenue received as a result of banks having more equity capital which is less tax sheltered than is debt.
3. Allowing for a somewhat lower use of bank funding for investment than in the baseline.
4. Allowing for a lower sensitivity of investment and the capital stock to a rise in the cost of funds to non-financial firms.

Table 2 shows how rapidly the estimated long-run economic cost of requiring higher bank capital falls as we sequentially allow for each of these offsets.

Table 2. Cost of higher capital requirement as percentage of GDP

(1) Baseline	4.25
(2) 30% Modigliani-Miller effect	3.25
(3) Tax offset	1.67
(4) More Substitutes to Bank Finance	0.80
(5) Less Sensitive Investment	0.32

Notes: In allowing for more substitutes for bank finance we halve the proportion of investment in capital goods funded by bank lending from 30% to close to its recent average. In allowing for lower sensitivity of capital to the cost of funds we reduce the elasticity of substitution between capital and labour from 1 to 0.4, a figure much more in line with empirical estimates.

I conclude from this that the long-run costs of having banks hold more capital is likely to be small – plausibly it is negligible. If that is so then the benefits of having much more robust banks would far exceed its costs.

If it is right that the benefits of raising capital requirements to much higher levels far outweigh their economic cost, how we did we get into a situation that bank capital was so low relative to total assets? I think this is because banks and regulators came to believe capital was very costly. In particular the Modigliani-Miller (M-M) offset (that equity becomes less risky, and so less expensive, as gearing falls) was ignored. A failure to understand the exact details of the M-M theorem is of course understandable – it is a theoretical result and one which was originally described in an academic article. But it was – and remains – surprising to me that the most basic bit of the story – that if a bank has less debt gearing then the volatility of the returns on its equity will be lower and that this will have an impact on the required rate of return on it – seems to have been largely ignored by many people running banks⁴. Anyone who says “equity capital is very expensive to a bank” appears not to

⁴ Merton Miller (1995) makes the essential point with typical clarity: “And dearly, if a bank were earning only 8 percent on average on its loan portfolio, financing that portfolio with 12 percent money wouldn't make a lot of sense. But the cost of equity is not a fixed number; it's a function that depends both on the risk of the firm's earning assets and the degree of leverage in the firm's capital structure. The 12 percent figure I quoted is merely one point on that function reflecting the average business risk and average leverage position of American equities. But for any firm with less than average systematic risk and less than average leverage, the cost of equity would be lower; and at zero leverage, much lower, perhaps as low as say 6 percent. At that rate,

understand this. It might be fine for most people not to understand this – just as it is fine that most people do not understand what tensile strength materials need to have to be suitable to build a bridge with. But it is not fine if those that run banks, or regulate them, don't understand it, any more than if engineers who design bridges don't know about the strengths of building materials.

In retrospect I believe a huge mistake was made in letting banks come to hold much less equity capital – relative to un-weighted assets – than was normal in earlier times. To my mind this was because regulators and governments bought completely the view that “equity capital is scarce and very expensive” – which in some ways is a proposition remarkable in its total incoherence (as shown with clarity and precision by Admati, De Marzo, Hellwig and Pfleiderer (2010) and with wit and humour by Merton Miller (1995)).

I believe there is a need to break out of the way of thinking that leads to the “equity is scarce and expensive” conclusion. That would help us get to a situation where it will be normal to have banks hold very much more capital than had been assumed in recent decades to be acceptable. And that change would be a return to the past.

Having higher bank capital will make the job of monetary policy (which has now to deal with the after-effects of massive instability in financial markets) much easier. Using limits on gearing to help maintain financial stability and monetary policy to help maintain price stability is an efficient allocation of instruments to goals.

But it makes little sense to expect this extra bank capital to be in place immediately. Curbing lending and dealing with a debt-fuelled asset price boom is not the problem for today. Higher capital needs to be in place by the time that does emerge as a problem. The difficulty today is one that monetary policy must address – this is to balance the risks of removing the stimulus from the expansionary monetary policy too soon, starving a recovery while it is still immature, against the risk of allowing inflation and inflation expectations to become stuck at above the target level. Balancing those risks in the UK is not easy. That is the issue the

even an all-equity bank with an expected return on assets of only 8 percent would not only be viable, but would presumably sell for a 1.3 premium over book value..... An essential message of the M & M Propositions as applied to banking, in sum is that you cannot hope to lever up a sow's ear into a silk purse. You may think you can during the good times; but you'll give it all back and more when the bad times roll around..... I can't help smiling at complaints from bankers about their capital requirements, knowing that they have always imposed even stronger requirements on people in debt to them.”

Monetary Policy Committee at the Bank of England faces today and the one I now want to explore.

The immediate monetary policy problem

The financial crisis dealt a huge blow to the financial infrastructure in most of the developed world. In the UK, and here in Ireland, the financial system came close to total breakdown. It was not so much that virtually no-one thought this sort of thing *would* happen. It was worse than that; virtually no-one thought this sort of thing *could* happen. But it did happen. As a result the supply of credit to businesses and to households was – and continues to be – seriously affected. The confidence of businesses and households has been severely dented. Fiscal deficits have exploded; private sector investment has imploded.

Whatever the aftermath of this event is – and we will not know that for many years – I very much doubt it will be a normal cyclical recovery after a downturn. If we were facing a typical pattern of cyclical fluctuations of the sort we have often seen over the past 60 years – albeit a bit more bumpy – then I think the time to remove some of the extraordinary monetary stimulus would already have come. In the UK inflation is above the target level – despite some recent falls, inflation is around 1 percentage point above the 2% target level. Employment has been rising and so has GDP. If that clearly meant we were on the upswing of a typical cycle then I do not think that keeping interest rates at effectively zero and holding on to a stock of £200 billion of assets bought to ease monetary conditions further would be right.

But to me this does not seem like the typical recovery phase following an above average cyclical downturn. A typical downturn is not one in which the financial sector all but stopped working for a while. A typical cycle for the UK is not one in which the exchange rate depreciates by about 25% *ahead* of the downturn.

UK inflation now sits uncomfortably above the target (see Chart 2). But I believe that this tells us rather little about the cyclical position of the economy or where inflation will be in the future. Underlying forces that were created by the financial crisis and that would themselves keep inflation low have been offset by other factors that have kept inflation above target for much of the past year. These factors are well known but it is important not to forget

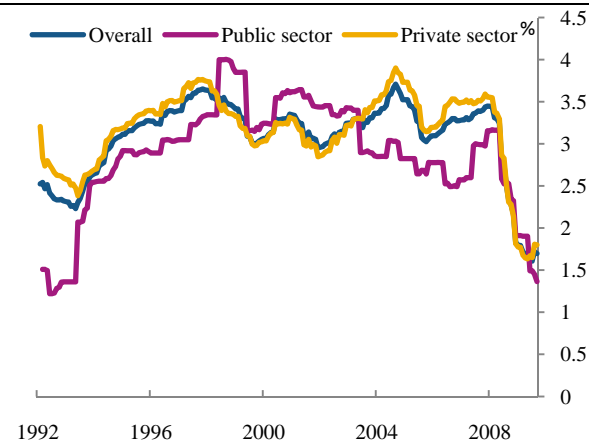
the likely scale of their impact. Around one quarter of the goods that enter the basket for calculating the UK CPI are imported. The 25% depreciation seen since 2007 would – given that imported goods and services account for around a quarter of the consumer price basket – add a bit above 6% to the level of the CPI. Over a three-year-period that would generate 2% a year higher inflation. We have also seen the VAT rate cut and then increased. When the cut was having its largest impact on the annual rate of inflation last year the CPI inflation rate fell to 1.1%. The subsequent rise in VAT at the start of this year has helped push inflation back above the target by about the same amount. At the start of next year there will be another VAT rate increase – and that is likely to keep inflation above the target a bit longer.

I am not blasé about that. That is why I said that I thought we face a risk in the UK of not doing enough to bear down on inflation. But there is also a risk of tightening monetary policy too soon. This second risk is one that I would consider small if it were clear that the economy was on typical upswing of the sort of cycle we used to think normal. But I do not see many of the signs that are usual in a normal upswing. Typical features of the early stage of strong cyclical upswing would be rapid growth in lending and in the money supply, signs of emerging shortages in capacity across several sectors, wage pressures moving up, and indicators of household and business confidence moving steadily higher. Neither the aggregate statistics on the state of the economy, nor surveys, nor the discussions that I have had with businesses across the UK, are consistent with this.

Consider what has happened to wages in the UK – which for many firms are the most significant element of costs and are an indicator of underlying, domestically generated inflation pressures. Over the whole period from the mid 1990s to the onset of the financial crises UK-wide aggregate wage settlements fluctuated in a narrow band around 3.5%. Those settlements were consistent with inflation outcomes that stayed very close to the target set for the Bank of England. Whole-economy annual wage settlements have now fallen to around 1.5% - well below both the current rate of inflation and below the inflation rate thought likely over the next year (see Chart 16).

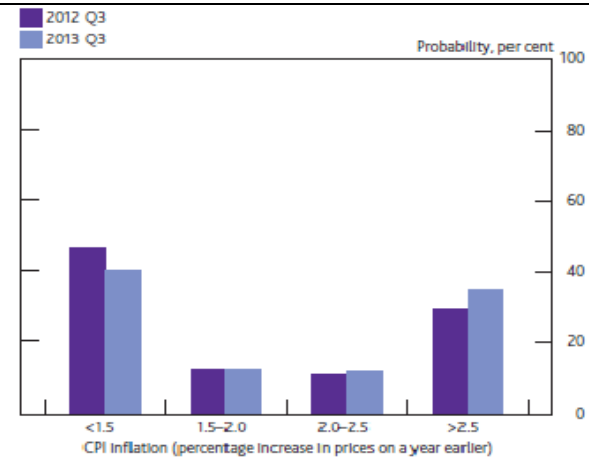
So these are not normal times, which is why there is a risk that monetary policy is normalised too quickly. There is also a risk that that monetary policy is left too loose too long. If only one of those risks existed we should certainly have set monetary policy too tight or too loose.

Chart 16: Wage settlements in the UK



Source: Bank of England.

Chart 17: Frequency distribution of CPI inflation



Source: Inflation Report (August 2010). These figures represent the probabilities that the MPC assigns to CPI inflation lying within a particular range at a specified time in the future..

I think it is entirely plausible that after the economic turmoil of the past few years the risks of inflation being appreciably above or appreciably below the target level a few years ahead are higher than before. That is what the probability judgements made in the MPC's *Inflation Report* show. Chart 17 shows that in August the MPC thought it a rather low probability event that in 3 year's time the rate for inflation would be within ½ of 1% of the target. There was thought to be a near 80% chance that inflation would be either above 2.5% or below 1.5% - with risk either side being roughly equal.

Since the financial crisis actual inflation has also become much more variable. Between 1997 and 2007 the annual rate of inflation was within 0.5% of the target for 66 months out of 132 - 50% of the time. Since the start of 2008 inflation has been within that range for only 30% of the time. Most of the time it has been above 2.5%; but it has not been all one way traffic - for some of last year inflation was below 1.5%.

It is inconceivable that you can get monetary policy exactly right. After the event we will have a better idea of which way we got things wrong. It is a near certainty that four or five years from now the monetary policy that is set over the next year will, with the benefit of hindsight, look very likely to have been too loose or too tight. Many then will talk about the big mistake the MPC made in late 2010 and the first part of 2011. If we tighten too quickly it will be a story of "myopic MPC learnt nothing from events of 2008"; if growth and inflation

look stronger than I now think is the most likely outcome it will be “MPC completely failed to see what was obvious to nearly everyone - that inflation was out of control”. But the only sensible thing to do is to look at all the evidence we have today, and balance the risks.

References

Admati, A, DeMarzo, P., Hellwig M, and Pfleiderer P. (2010) “Fallacies, Irrelevant Facts, and Myths in Capital Regulation: Why Bank *Equity* is *Not Expensive*”. Stanford University Working Paper No. 86.

Akerlof, George A.(1970), "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism." *Quarterly Journal of Economics*, 84(3), pp. 488-500, 1970.

Bank of England (2010), Financial Stability Review, June 2010, page 58-60.

Bank for International Settlement (2010), “An Assessment of the Long-term Economic Impact of Stronger Capital and Liquidity Requirements”.

Barro (2006), “Rare Disasters and Asset Markets in the Twentieth Century” by Robert Barro, *Quarterly Journal of Economics*, 2006, 121, no.3

Bean, C., Paustian, M., Penalver, A., and Taylor, T.(2010), “Monetary Policy after the Fall”, Federal Reserve Bank of Kansas City Annual Conference, Jackson Hole, 2010.

Diamond DW, Dybvig PH (1983). "Bank Runs, Deposit Insurance, and Liquidity", *Journal of Political Economy*, **91** (3): pp 401–19.

He, Z, I Khang and A Krishnamurthy (2010): “Balance Sheet Adjustment during the 2008 Crisis”, *IMF Economic Review*, pp 1–39.

Kashyap ,K., Stein, J. and Hanson, S (2010). “An Analysis of the Impact of “Substantially Heightened” Capital Requirements on Large Financial Institutions”, Working Paper.

McGuire, P M. and Tsatsaronis, K (2008), “Estimating Hedge Fund Leverage”, BIS Working Paper No. 260.

Miller, M (1995). "Do the M-M Propositions Apply to Banks?", *Journal of Banking and Finance*, vol 19, pp 483-489.

Modigliani, F.; Miller, M. (1958). "The Cost of Capital, Corporation Finance and the Theory of Investment". *American Economic Review* 48 (3): 261–297.

Reinhart and Reinhart (2010), "After the Fall", NBER Working Paper 16334.

Wadhvani, S (2010) "What Mix of Monetary Policy and Regulation is Best for Stabilising the Economy", *The Future of Finance*, London School of Economics.