

POLICY EFFICACY IN THE CRISIS, EXIT STRATEGIES AND THE RETURN OF GROWTH

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Abstract: In this paper we seek to provide a critical assessment of monetary and related financial-sector policies in the UK during and after the recent financial crisis. We find, in particular, that macroprudential surveillance failed to predict the depth of the crisis, and although some concerns were expressed, no prior policy action was taken (partly reflecting lack of macroprudential levers). During the crisis, interest rate easing was perhaps delayed unduly, while the quantitative easing policy could have been more effective had it focused on private sector assets, and the bank rescue strategies focused too little on the implications for competition. Exit strategies are still in the offing but it is essential they be well-designed to avoid risks of inflation and moral hazard on the one hand, and renewed recession and credit rationing on the other. A successful return to growth requires the financial sector and economy to function well together, e.g. in respect of the housing market, investment and banking/financial market conditions, including the impact of likely regulatory reforms. There remain some potential difficulties, including ongoing overvaluation of house prices, banks' potential losses on commercial property, possible funding difficulties for banks and the economic impact of regulatory tightening. All of these point to a risk of ongoing credit rationing that might hamper growth in coming years.

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Introduction

The UK has had a turbulent recession, emerging at the time of writing with a very large fiscal deficit and major loss of output relative to trend, as well as quite high headline inflation and slow credit growth. There has been widespread discussion of the role of discretionary policy in overall developments and this is the focus of the current paper. We mainly analyse central-bank monetary, macroprudential and banking policies, although we also comment on certain structural and regulatory policies, and on macro/financial linkages in the UK. The paper is in four sections, first we comment on certain issues in the run up to the crisis, secondly we assess policy efficacy in the crisis itself, third we discuss exit strategies and fourth we consider the scope for a return to growth, focusing on the housing market and the banking sector.

1 Policy in the run up to the crisis

1.1 Monetary policy

The role of banks in the prolonged credit and asset-price cycle that turned so dramatically raises the question of whether monetary policy should have been used to “lean against the wind” during the upswing. Experience of conducting such policies is limited internationally, although Wadhvani (2008) argues that the Swedish authorities were able to undertake them, raising rates more than appeared warranted by the inflation target to allow for the potential impact of the credit and asset price boom.

According to NIESR estimates, for example, in the UK house prices rose by 30% over equilibrium levels during the boom. Accordingly, the question arises as to whether monetary policy contributed, to the subsequent crash in house prices by being too loose. The counterargument is that the bubble was a consequence of misguided expectations of growing prosperity in the wider population, rather than the level of interest rates. It was possibly also linked to loose fiscal policy (Davis 2010) in the sense that a structural deficit over the early 2000s may have itself generated unrealistic growth expectations in the household (and banking) sectors, thus giving rise to false expectations about the sustainability of attained levels of leverage and of asset prices.

1.2 Macroprudential policy

Beyond the macroeconomic impact of monetary policy on the cycle, one can consider system-wide macroprudential concerns about banking system stability that go beyond the institution-specific concerns that have been the focus of microprudential regulation. We would argue that the major difficulty for the UK was in such macroprudential policy, with macroprudential surveillance not fully predicting the crisis per se, policy not acting on crisis risks up to August/September 2007, and to some extent also underestimating them right up to Lehman's failure, as discussed further below. From a Bank of England perspective, Tucker (2008) notes, “perhaps with hindsight, it is baffling that the authorities internationally contented themselves with issuing warnings”.

For example, as regards performance of macroprudential surveillance before the crisis, the last Bank of England Financial Stability Report before the crisis began in August 2007 concluded that the “UK financial system remains highly resilient”, while noting that macroeconomic stability and competition in the financial sector have “encouraged a further increase in risk taking” and that this “increased the vulnerability of the system as a whole to an abrupt change in conditions” (Bank of England, 2007). Risks were considered to arise from

credit markets, and these risks weakened credit risk assessment, impaired risk monitoring and made financial institutions more dependent on market liquidity leading to “warehousing risk” if institutions piled up loans they were unable to securitise. These were held to compound pre-existing risks arising from high asset prices and vulnerabilities in risk premia, high levels of corporate and household debt, dependence on market infrastructure, large financial imbalances among the major economies, as well as from rising systemic importance of large complex financial institutions. There was seen to be a risk of unwinding of low risk premia, triggering a pickup in corporate defaults, an unwinding of leveraged positions in corporate credit markets and consequently lower market liquidity and further falls in asset prices with a generalised retreat from risk-taking and a rise in correlation across markets reducing the scope for diversification against shocks. Such a scenario was seen as calling the ‘originate and distribute’ business model into question.

Meanwhile, the FSA (2007) in its Financial Risk Outlook (FRO), highlighted as “priority risks” that firms should evaluate their responses to extreme situations (stress tests) despite current low volatility; they should be aware of valuation problems with illiquid instruments (albeit in the context of conflicts of interest); and they should consider operational and legal risks with derivatives. They were also urged to bear in mind dangers arising from terrorism, crime and, interestingly, the volume of regulatory reform. The FRO also noted that some consumers were at risk from high debt levels. However, the authors felt that “it is highly unlikely that consumer indebtedness problems could lead to a financial stability problem”.

As detailed further in Davis and Karim (2008), while highlighting a number of risks and capturing a number of the mechanisms by which these materialised, the Bank of England and the FSA, in common with other macroprudential analysts, did not foresee the full extent of the crisis. In particular, they failed to highlight the risk of contagion from the US housing and securitisation markets, the danger of seizure of wholesale markets, including the interbank markets and the extent of risky disintermediation via conduits and Special Investment Vehicles (SIVs). Indeed, as noted in Davis (2009a), “although aware of the exposure of individual UK banks, the FSA was surprised by the scope and size of the overall market for SIVs when the crisis began”.

We would contend that it was possible to estimate equations that would have highlighted the UK economy’s vulnerability to a financial crisis. Underlying research is presented in Barrell et al (2010a and b), which provide estimates of models for predicting banking crises in OECD countries, looking at determinants of banking crises in 14 countries using the multivariate logit estimation methodology. They used a range of “traditional” macroeconomic indicators, as used for global crisis samples in Demirguc Kunt and Detragiache (2005) (such as GDP growth and credit growth) but also rises in house prices, bank capital and liquidity measures, adding the current account/GDP ratio in Barrell et al (2010b). The latter variables had not been tried previously in crisis models owing to lack of data for most non-OECD countries.

In Barrell et al (2010a) following a general-to-specific modelling eliminating insignificant variables, we arrived at the model as depicted in Table 1, which relates crisis risk in OECD countries to the lag of banks’ unweighted capital adequacy ratio (LEV), the lag of liquidity of banks relative to total assets (LIQ), and the third lag of real house price growth (RHPG). The version whose performance is shown in Table 2 was estimated over 1980-2006 and it is remarkably accurate, picking up 67% of crises in-sample. The UK authorities could have estimated this equation and then used it to forecast using actual right hand side variables. It forecasts the subprime crisis well, signalling a crisis in the UK in 2007 and 2008, in common with a number of other countries hit by banking problems. Inclusion of the current account in Barrell et al (2010b) also allows the crisis in the US to be predicted.

In making the suggestion that the UK could have predicted the crisis and reacted appropriately, we note that taking the model at face value, it is not clear monetary policy alone could have offset the risk, except by acting aggressively on house prices well ahead of time, or reducing demand sufficiently to improve the current account. Indeed, perhaps based on the FSA's view of the remoteness of risks from household debt, no specific action at the level of bank regulation was taken to limit household debt, such as tightening regulations relating to mortgages or increasing capital requirements.

Such measures were used to a modest extent, by contrast, in countries such as Estonia and Ireland which faced similar housing booms. Hence the result also highlights the need for complementary countercyclical macroprudential policy operating on capital and liquidity, as discussed further below. The system of countercyclical provisioning in Spain may also have helped its institutions (although it did little to restrain a credit boom), as might setting capital requirements as a function of interest rates as is done in Argentina. Such levers were not available in the UK in the run-up to the sub-prime crisis but are being discussed intensively at the time of writing in UK and international fora (see Basel Committee (2010) for example). In Section 4.5 we discuss their potential impact on the UK banking system.

2 Easing policies during the crisis

2.1 Interest rate policy

We now examine policies adopted during the crisis itself, i.e. from August 2007 onwards. As shown in Table 4, the UK authorities followed a cautious policy in terms of interest rates, with rates only falling decisively in the wake of the failure of Lehman's failure in autumn 2008. The high rates earlier in 2007-8 were felt to be justified by inflation risks at the time.

Martin and Milas (2010) estimated Taylor Rule equations for the UK, relating interest rates to inflation and the output gap. They found that, according to their estimates, the UK "abandoned" inflation targeting during the crisis, with interest rates not responding to inflation after 2007/4, although another structural break was found in 2008/10.²

We would argue that, owing to the impact of the crisis on credit rationing, with an impact on inflation and output which is not captured in the Taylor Rule, it was appropriate for the UK authorities to abandon a simple Taylor Rule (bearing in mind the Taylor Rule itself is only an approximation for the sophisticated policy of inflation targeting). Indeed, the authors acknowledge that a policy of "ensuring deviations from the target are not too large and prolonged" was maintained. However, the timing of the breaks could be significant. Whereas 2007/4 suggests remarkable foresight, Martin and Milas suggest (see footnote) that this was partly an artefact of the data period and statistical conventions.

If the second break in 2008/10 is the true one, then one might suggest that the realisation of the risk of crisis-driven recession and banking system collapse came possibly too late, with high interest rates in early 2008 to combat inflation deepening the recession. This may in turn link to underestimation of the probability and impact of severe financial tensions on the

² In the authors' words "the finding of a single structural break may be questionable. The financial crisis entered its most intense phase in September 2008 with the collapse of Lehman Brothers and associated events; steep reductions in UK policy rates began in the following month. Since these events are excluded from a 15% trimmed sample, we also ran the Quandt-Andrews test with trimming rate of 5%; in this case two structural breaks were detected, in October 2008, and again in April 2007. There are too few observations on the post-Lehman period in our sample (13) to permit estimation of a separate policy rule in this period."

economy, even in advance of the Lehmans bankruptcy, as implied in the section above. Since then, the policy of low interest rates has of course been appropriate given the size of the output gap and continuing financial tensions.

2.2 Liquidity policy

Turning to liquidity policy, a key manifestation of the crisis in the UK, as in the US and the euro area, was a large premium of LIBOR over the central bank rate, reflecting risk aversion among banks in the interbank market, as well as credit rationing per se, especially at maturities in excess of one week. This pattern was unprecedented, with the relation of LIBOR to central bank rates having been very close up to mid-2007. Accompanying the widening LIBOR spread was closure of securitisation markets and of the asset backed commercial paper (ABCP) market, which had been used to finance off-balance sheet vehicles such as SIVs and conduits. In effect, obtaining wholesale funding became very difficult for a number of UK banks, and sterling interbank market lending was down to a third of its previous levels (Table 5). Together these created a challenge to the authorities in the UK, as elsewhere, to provide liquidity to banks and attempt to restart the money markets.

As background, note that the Bank of England's objectives in its normal money market operations is to assist monetary policy by keeping overnight rates in line with the Bank Rate, and reducing the cost of disruptions to the liquidity and payments services supplied by the commercial banks (Bank of England, 2008a). The traditional operating procedure provides liquidity insurance to banks by various means, namely: (1) a reserves-averaging scheme, whereby eligible UK banks and building societies undertake to hold target balances (reserves) at the Bank on average over maintenance periods running from one MPC decision date until the next. If an average balance is within a range around the target, the balance is remunerated at the Bank Rate. This enables banks to vary reserve holdings from day to day to absorb payment shocks without being penalised as long as the average is maintained (2) a standing facility, like a bank account, which provides standing deposit and (collateralised) lending facilities to eligible UK banks and building societies with the Bank of England, which may be used on demand. In normal circumstances they carried a penalty, relative to the official Bank Rate, of +/- 25 basis points on the final day of the monthly reserves maintenance period, and of +/- 100 basis points on all other days. Standing facilities provide a buffer against day-to-day payments shocks, and (3) open market operations (OMOs) to provide short and longer term liquidity directly. Technically, these are used to provide to the banking system the amount of central bank money needed to enable reserve-scheme members, in aggregate, to achieve their reserves targets. OMOs in normal times comprise short-term repos at Bank Rates, long-term repos at market rates determined in variable-rate tenders and outright purchases of high-quality bonds.

There was an initial period in August and early September 2007 when the Bank of England was more restrained than other central banks, owing to fear of moral hazard, leading to low provision of emergency liquidity. Accordingly, it maintained the normal criteria for money market assistance using the instruments highlighted above. This attitude in turn was possibly linked to underestimation of macroprudential risk as noted in Section 1 above, as well as poor information flows from the FSA to the Bank about the risks of failure in institutions such as Northern Rock. It could have contributed to the eventual failure of Northern Rock by this approach, although inability to securitise played a role in the failure as well as shortages of liquidity. By contrast, after the crisis of Northern Rock in September 2007, the Bank of England provided regular large quantities of liquidity to the markets from early in the crisis by a number of means.

First, whereas the regular operations are weekly repos and monthly operations at maturities of 3-12 months, the authorities increased the volume of liquidity available at the 3-month maturity so as to compensate for the closure of the interbank market. Weekly auctions of dollars were also a feature. More collateral was made eligible; for the weekly operations it was to include UK government bonds, supranationals above AA3 and European government bonds. In the monthly operation it included also AAA tranches of mortgage-backed securities from the UK and EEA, covered bonds, US and Euro credit card bonds and a wider range of sovereign debt. After the Lehmans failure, it also included any debt guaranteed by the government under the October 2008 financial support package, discussed below.

Supplementing regular Bank of England liquidity operations is the Special Liquidity Scheme, which was introduced in January 2008. The Bank of England set up a system of long term swaps between mortgages and asset backed securities (ABS) on the one hand and government bonds on the other. The system was designed to avoid the stigma of borrowing from the central bank via the bank's emergency overnight lending facility as discussed below. Such stigma seems to be a consequence of the occasional use of the instrument at times of stress rather than regular use as for the ECB.

The Special Liquidity Scheme uses swaps rather than being on the central bank's balance sheet and hence is not reflected in the latter. Furthermore, stigma is reduced by all banks having agreed to say they are using the scheme. The scheme is only for assets already held on the banks' balance sheets in December 2007. Haircuts are imposed on the assets in order to protect the Bank from risk of loss due to credit risk³. The value was initially thought likely to total around £50 billion, but the Treasury later acknowledged that funding in excess of £100 billion was available for the Special Liquidity Scheme. In the package of banking support measures announced in October 2008, the ceiling was raised to £200 billion.

There were initial concerns that the Special Liquidity Scheme may have created an end date problem. The end date was aimed to prevent counterparties relying on the scheme in an unlimited way but it may have intensified concern over liquidity of some banks in the crisis of September-October 2008. The end date was later extended to January 2009 and then to January 2012, by which time the scheme should be wound up successfully, as discussed in Section 3. Another issue was that banks had the incentive to hoard top quality collateral because the Special Liquidity Scheme was willing to absorb the lower quality paper, while high quality paper can be reserved for private sector transactions. The Bank of England risked becoming lender of first resort, facing adverse selection as banks had an incentive to offer the worst quality assets as collateral. But as the liquidity crisis worsened, such concerns became less pressing, and haircuts were used for low quality assets.

In October 2008, three further initiatives were announced by the Bank to aid banks in managing liquidity (Bank of England, 2008a). First there was a replacement of Standing Facilities by so-called Operational Standing Facilities with the sole aim of dealing with money market imbalances and not giving support to firms in distress, with penalty rates of 25 basis points at all times. This responds to a perception of stigma in the use of Standing Facilities (Tucker, 2008). Second is a Discount Window, allowing banks to get liquidity at times of stress in the form of government bonds or cash for up to 30 days against a range of collateral. And third is a permanent long term repo open market operation against classes of collateral, where counterparts bid separately and against different types of collateral. The new regime is more in line with those already adopted in the US and eurozone.

³ The haircuts vary with maturity and credit/liquidity quality. While they can be varied by the Bank, in April 2008 they ranged from 1% for open market eligible and G10 sovereign paper under 3 years to maturity, to 22% for RMBSs, covered bonds and credit card ABSs with 10-30 years maturity.

Following these policies, as shown in Table 6, the Bank of England's balance sheet grew markedly in the second half of 2007 before falling back in the first half of 2008 when the Special Liquidity Scheme was introduced, then growing markedly again in the third quarter of 2008 as the crisis deepened. On balance, asset swaps via the Special Liquidity Scheme and acceptability of a widening range of collateral via Long Term Repos contained financial system stress by providing financing against illiquid securities (Tucker 2009) and prevented fire sale of illiquid ABS. Accordingly, liquidity policy, after a hesitant start, made a strong positive contribution to financial stability.

2.3 Lender of last resort

Northern Rock, a large and rapidly growing mortgage bank with assets of £101 billion at the end of December 2006, suffered a loss of wholesale funding and of scope for securitisation, on which it was heavily dependent, at the beginning of the crisis in August 2007 (Treasury Committee, 2008). Lender of last resort support was offered to the solvent bank in September 2007, because its failure was considered to pose a major risk of contagion and systemic risk. This support was planned to be announced by the Bank of England, unlike its past behaviour to keep such interventions secret. It has been reported that the Treasury Solicitor gave advice that secrecy was illegal under EU financial regulations⁴ – but equally, the judgement was made that a large intervention could not readily be kept secret in modern market conditions. There were also believed to be provisions in company reporting that require lender of last resort borrowing to be declared to the market by the recipient. However, the announcement was pre-empted by a leak to the British Broadcasting Corporation on the previous day.

This is in stark contrast to earlier episodes such as in 1973 and 1991 when Bank of England emergency liquidity support was covert and successfully so (George 1994)⁵. There followed a retail run which was only stopped by a government guarantee – the bank was ultimately nationalised.⁶ The internet facilitated the retail run in a manner that would not have been feasible in the past, both via direct withdrawals and panic when the bank's website crashed. An important role was played by a sudden realisation on the part of the public of the partial nature of UK deposit insurance, as well as the likely long delay in the payment of compensation.

Particularly in the wake of this, banks were unwilling to access central bank lending facilities, for fear of similar reputation risk – so-called stigma. Even before Northern Rock, a “witch hunt” in August-September 2007 had forced Barclays PLC to deny having liquidity problems after using central bank facilities. Rather, banks increased market demands for liquidity, for example, via backup facilities that may have worsened the tight liquidity situation (IMF 2008). The responses to such reputational issues, after Northern Rock included the Special Liquidity Scheme and operational standing facilities as discussed above.

The Northern Rock run was partly due to leaks of information but would arguably have happened in any case after the official announcement. Under the Banking Reform Act of 2009, more scope was introduced for delayed disclosure, with a possible exemption of charges from Companies Act registration for banks in receipt of lender of last resort. The

⁴ The advice was probably wrong since the same EU legislation applied in Germany and the IKB bank was secretly saved. Equally, as discussed below the UK authorities behaved differently in 2008 under the same EU legislation.

⁵ Such confidentiality can help to prevent knowledge of lender of last resort support from giving rise to panic, a rise in borrowing costs or a loss of reputation to the bank in receipt of lender of last resort.

⁶ Further difficulties arose thereafter for the UK authorities owing to the lack of a special insolvency scheme for banks in that country. This difficulty was resolved in the Banking Act also.

Bank of England's weekly return, which shows inflows and outflows to the accounts including lender of last resort, could be stopped under the Act.

Following these changes, emergency lending in October 2008 to HBOS and RBS was very substantial – around £62 billion – but it was kept confidential for over a year. It benefited from a fiscal backup, with the Treasury offering a fiscal indemnity of £18 billion (NAO 2009), as well as the Bank taking £100 billion of collateral. Justifying confidentiality, it was feared, in the wake of Northern Rock, that formal disclosure implying that financial institutions were calling in their loans to HBOS and RBS on such a colossal scale would have heightened panic. Because of the considerable sensitivity of the support operation at the time, the Treasury judged that it was not in the public interest to follow procedures that allow for confidential notification to the chairs of the Committee of Public Accounts and the relevant departmental select committee.⁷ In our view this approach was justified, given the circumstances.

Further issues which arose are that Lehman's failure exposed problem of global pools of liquidity for Large Complex Financial Institutions. All of the liquidity was supplied from New York as a matter of ongoing policy, meaning that the London operation totally illiquid on the day of failure.

As was the case for liquidity policy, there is evidence that the authorities' approach developed so as to become more effective as a lender of last resort by the time of the Lehman's failure. There remain some challenges. Longer term and lower quality collateral in liquidity policy as well as the risks of stigma from the lender of last resort pose challenges to the traditional Bagehot doctrine where in crises the central bank will lend freely against "good" collateral at a "high" rate. The UK may need to move closer to the Euro area model which accepts a much wider range of collateral from a wider range of banks at all times.

2.4 Bank recapitalisations

In the crisis of early October, the UK authorities acted decisively to address banks' balance sheet weaknesses at a system-wide level. It was realised that liquidity assistance was not sufficient and the crisis concerned solvency and the unsustainability of the banks' funding model (King, 2008). The response entailed a voluntary recapitalisation valued at £ 50 billion for major banks, in the form of preference shares or ordinary shares. The government aims to be a temporary investor, with the preference shares in particular repaid over a short period of time. This was implemented in October 2008, and was aimed to cut default risk and hence stem not only funding pressures but also markets' tendencies to value banks by market and not economic intrinsic value.

The complementary policies aimed to address funding problems were to offer guarantees of liabilities up to three years' maturity (financed by fees) amounting to £250 billion for banks seen as adequately capitalised. By November 2009, the Treasury was thought to have disbursed about £117 billion (NAO 2009). There was also an extension of the Bank of England's Special Liquidity Scheme, as discussed above. In order to participate, banks taking on capital assistance were required to maintain lending to households and small businesses at 2007 levels - a promise which was not fulfilled, as discussed further below. Meanwhile,

⁷ NAO (2009) commented that the indemnity for the Bank of England's emergency support to RBS and HBOS was not reported to Parliament, as would normally be expected under long-standing procedures put in place by the Treasury to control the use of public money. This indemnity would normally have been notified to Parliament as a contingent liability before it was granted.

controls were also to be exerted by the government on dividends and remuneration policies of banks taking capital injections.

Controversially, financial stability was added to the criteria in the Enterprise Act under which mergers can be referred to the Secretary of State for Business, Enterprise and Regulatory Reform to consider whether it is in the overall public interest for the normal competition approval process to apply, although mergers remain subject to the EU rules. In effect, the minister can take a rapid decision, advised by the tripartite committee and the Office of Fair Trading. This change allowed the merger of HBOS and Lloyds TSB to be approved speedily. In this case, however, the merger created a bank with almost one-third of the UK market in retail products, which may affect competition in the sector and has created an institution, which is likely to have extreme systemic implications if it were to fail.

A number of countries undertook similar policies of recapitalisation and guarantees following the UK initiative (Bank of England, 2008b). Existing shareholders are concerned about dilution following the government recapitalisation (that could give it majority stakes in several major banks) but this could be offset by beneficial falls in funding costs.

Overall, the policy can be judged a success in that there have been no disorderly failures of UK banks, and no retail depositor in a bank operating in the UK has lost money. There remain substantial costs - in the April 2009 Budget, the Treasury estimated that the final net cost to the taxpayer might lie within a range from £20 billion to £50 billion, depending on the length and depth of the economic recession and the strength of any recovery. The major determinant will be the prices obtained for the taxpayers' current holdings in the various banks. This in turn means the authorities have had to restrain themselves from politically-attractive moves to, for example, limit bonuses in the nationalised banks, because consequent loss of key staff would reduce the banks' resale value.

While the recapitalisation policy was clearly appropriate, the requirement to maintain lending may be unrealistic, given the need for deleveraging, balance sheet contraction and widening of margins to retain solvency, as well as likely deterioration in credit quality of those seeking credit and indeed lower demand for credit by the private sector. It is noteworthy that the Bank of England (2008b) estimated that UK banks' balance sheets needed to contract by a sixth even after capital injections, to return leverage to 2003 levels. Indeed, forcing the banks to lend as in 2007 was feared to be a recipe for major losses and need for further recapitalisation. And in practice it has not been achieved, as discussed further below. The mix of preference and ordinary shares may need more justification. Whereas the use of preference shares demanding high interest rates give an incentive to repay early, ordinary shares give greater control over the institution, as well as a lesser pressure on net income. The latter are arguably preferable during a banking crisis.

2.5 Quantitative easing

Following Lehman's failure, there was seen to be a need for further monetary easing to boost the economy, initially by cutting rates close to zero. In such cases, there are four options to further increase monetary stimulus, as noted by the IMF (Klyuev et al 2009). These are as follows:

- Commitment to maintaining low short rates, to prevent deflation and encourage recovery. As long as the central bank is credible, there should not be risks of inflation or deflation from this action.

- Enhancing liquidity provision beyond traditional liquidity and LOLR as set out above, sterilised, which may ease risks of credit rationing to the private sector.
- Buying long term government bonds (unsterilised) to affect the long rate and hence private borrowing rates, albeit not spreads (where the key problem is market risk)
- Buying private sector assets with a view to directly improving credit market conditions, sterilised or unsterilised (where the key problem is credit risk).

The adoption in early 2009 of the policy of quantitative easing (QE) led the Bank of England, via an off-balance sheet vehicle, to purchase assets from non-banks as well as banks, equivalent to 14% of GDP at the time of writing (Summer 2010). This meant that by late in 2009, the Bank of England held a significant proportion of UK government bonds, complemented by bank deposits on the liability side. The Bank claim the QE policy restrained long term interest rates by around 100 basis points (Dale 2010). This claim is backed by event studies of the impact of QE announcements on gilt yields (Joyce et al 2010), and this seems reasonable. Whereas it was more adventurous than the ECB, which expanded its balance sheet via somewhat longer term bank-based instruments, the policy chosen contrasts with the US where more private assets were purchased. And this despite the UK Treasury guarantee which meant that the Bank of England was not vulnerable to credit risk.

In November 2008, the Federal Reserve announced purchases of housing agency debt and agency mortgage-backed securities (MBS) of up to \$600 billion. In March 2009, the FOMC decided to substantially expand its purchases of agency-related securities and to purchase longer-term Treasury securities as well, with total asset purchases of up to \$1.75 trillion, an amount twice the magnitude of total Federal Reserve assets prior to 2008. The FOMC stated that the increased purchases of agency-related securities should “provide greater support to mortgage lending and housing markets” and that purchases of longer-term Treasury securities should “help improve conditions in private credit markets.” However, BIS (2008) note that the policy also was necessitated by the introduction of guarantees for bank debt as noted above, that widened the spreads on unguaranteed agency debt. Volumes of total QE, at 12% of GDP, were similar to the Bank of England (Gagnon et al (2010)).

Besides purchasing Treasuries and Agency securities, the Fed adopted a number of programmes with the effect of assisting particular markets (Davis 2009b). The Commercial Paper Funding Facility (CPFF) provided a liquidity backstop to U.S. issuers of commercial paper through a special purpose vehicle that purchased three-month unsecured and asset-backed commercial paper directly from eligible issuers. There was also the creation of the Term Asset-Backed Securities Loan Facility (TALF), a facility that aimed to help market participants meet the credit needs of households and small businesses by supporting the issuance of asset-backed securities (ABS) collateralised by student loans, auto loans, credit card loans, and loans guaranteed by the Small Business Administration (SBA).

The Bank of England claim that although the Bank did not buy private assets in significant quantities, there would be an indirect stimulus to asset demand as non-banks bought equities and private bonds instead of gilts bought by the Bank (Miles 2010). In the Eurozone (Lenza et al 2010) QE was considered to have operated through its effect on money market spreads, with a small total effect. Meanwhile, in the US, Gagnon et al (2010) estimate that the overall reduction in the ten-year term premium on US Treasuries in response to the Fed's purchase programme was between 30 and 100 basis points. But in addition to this effect, they find an even more powerful effect on yields on agency debt and agency mortgage-backed securities “by improving market liquidity and by removing assets with high prepayment risk from private portfolios”.

Meier (2009) of the IMF suggests reasons why the Bank focused almost entirely on government bonds in its QE policy. One is a concern to avoid propping up markets that may not be viable in the long run, another is to avoid replacing private investors i.e. in markets where liquidity is already adequate. More generally it is argued that the Bank of England has signalled a preference for restraint toward operations in private credit markets, citing the fundamental need to avoid reputational risks and keep monetary and fiscal policy apart.

Tucker (2009), for instance, argues that “not only does exposure to reputational risk matter. Central banks should not be involved in providing facilities which ... would be likely to result in a transfer of resources to the private sector. That is the realm of fiscal policy. Central banks should stick to central banking.” And King (2009) insists that “the Bank must not become the arbiter of the allocation of public credit to individual companies or sectors—such decisions are rightly and necessarily the province of government. So there is a limit to the scale of the Bank’s activities in this area.” Klyuev et al (2009) acknowledge “such interventions could distort relative prices, potentially hurt commercial bank profitability, and favour some segments of the credit markets while damaging others.” As Meier (*ibid*) notes, these concerns did not extend to the substantial market risk of the UK’s QE, nor the potential scope for fiscal dominance from Bank gilt purchases. They also do not reflect potential concerns about monetisation of government debt.

The differing strategies pose the question whether the UK missed the opportunity to influence spreads and credit availability to the private sector more strongly, in other words “directly improving market liquidity and lowering spreads” (Meier 2009). Certainly, there is little evidence that banks on-lent the reserves that had been created, which would have been another possible benefit of QE. This is despite the focus put on this reserves channel by the Bank where operations have been geared to increasing broad money through transactions that increase bank reserves “(t)he instrument of monetary policy shifted towards the quantity of money provided rather than its price (Bank Rate)” (Bank of England (2009)). Goodhart (2010) notes that the instability of the “money multiplier” meant that it was unrealistic to expect the rise in so-called “high powered money” (i.e. reserves) to generate any predictable rise in broad money, and indeed the financial stress and volatility in the UK economy plus reserve remuneration made it predictable in current circumstances that banks would just sit on their reserve holdings, while receiving interest on them from the Bank of England. He also notes that the quantity approach is generally misconceived and a price based approach is correct “whereby the Central Bank and the commercial bank set the interest rates at which they will operate, and then the various agents in the private sector and amongst the banks determine monetary quantities endogenously”.

Barrell and Holland (2010) suggest the impact of QE on GDP could have been 1% instead of 0.5% in 2009 if a quarter of the QE policy had been devoted to “credit easing”, as permitted. As relevant background to this suggestion, they highlighted the greater spread narrowing for BAA bonds over Treasuries in the US than the UK and attributed this to the above-mentioned credit easing policies in the US (although the change in the UK was greater than in the Eurozone, suggesting there were beneficial results to buying from non-banks).

The counter argument to Barrell and Holland (Miles 2010, Dale 2010) is that UK corporate spreads did narrow, yields were lower, bond issuance was high and LIBOR spreads were lower in the first half of 2010 than hitherto. Whereas this is incontestable, set against it is the fact that this was a global trend. On the one hand, the Bank contributed to this by its policy – but on the other, the benefit could have been greater according to Barrell and Holland.

3 Exit strategies

3.1 Interest rate policy

We now turn to considering exit strategies from the current extraordinary policies set out above. Concerning monetary policy, current market expectations are for a gradual renormalisation of short rates, with rises over the medium term from the current level of 0.5%. Whereas current inflationary pressures are partly temporary, e.g. due to the past and future rises in VAT, underlying inflationary pressures seem likely to intensify in the medium term, especially if fiscal policy is not tightened sufficiently or the output gap is overestimated. (The new government forecasting group the Office of Budgetary Responsibility's June 2010 forecast suggests this could be so.) Of course, there is a need for balance between aggression in monetary tightening and the risk of a double dip recession.

BIS (2010) raise a number of concerns about sustained low short-term interest rates, which are relevant for countries such as the UK. For example, there may be undue rises in asset prices and compression of risk premia. Also, because long-term rates are considerably higher, there may be increased exposure to interest-rate risk and delays in restructuring private and public sector balance sheets. Furthermore, it is argued that the low short rates in themselves have contributed to a lasting decline in money market activity. All of these suggest that there will be additional benefits from renormalisation of short rates beyond their normal macroeconomic effect, but it needs to be well signalled and cautious to avoid causing losses and credit rationing to the banking system.

Applying these points to the UK, it seems unlikely that there will be a renewed housing boom owing to the ongoing burden of debt, as discussed below. Rather, the low short rates are benefiting the housing market by preventing a sharp rise in arrears and repossessions that would have occurred with higher mortgage interest rates. This is due to the predominance of flexible rate mortgages in the UK which give rise to low repayments in such a situation. Hopefully by the time short rates do rise, household income and balance sheet positions will be strong enough to withstand the rise in payments. As regards commercial property, the UK is still suffering from the after effects of the previous boom, as discussed in Section 4. Hence, the issue of rises in asset prices and compression of risk premia does not seem to be acute in the UK at present. If lending rates are sticky, it may be that the future rise in short rates above 0.5% will itself compress risk premia, rather than the current low level of rates per se.

Concerning exposure to interest rate risk, this is again limited in the UK, since banks tend to hold floating rate assets and liabilities (most loans to households and companies are floating rate). On the other hand, the new FSA liquidity regulations (FSA 2008) will require banks to hold more government bonds, which will imply greater interest rate risk. As regards money market activity, it is clear that, as is the case elsewhere, money market activity in the UK remains much lower than in the years up to 2007 (see Table 5), but dividing the causes of this between risk perceptions and interest rate levels is not easy. To the extent there is an additional reduction in interbank lending from the low level of short rates, their renormalisation in the future will benefit the UK money markets.

3.2 Liquidity policy

In terms of liquidity policy, it is useful to compare prior concerns with reality. As noted above, there was concern regarding the Special Liquidity Scheme with the end date, which was aimed to prevent counterparties relying on the scheme in an unlimited way, but which may have intensified concern over liquidity of some banks in the crisis of September-October

2008. It was announced that, although the drawdown window to access the Special Liquidity Scheme closed as planned in January 2009, the Scheme will remain in place for three years, thereby providing participating institutions with continuing liquidity support and certainty. In fact, the successful winding down of Special Liquidity Scheme to date, in advance of its eventual closure in January 2012 shows there can be a natural wind-down of short term operations as interbank markets revive. On the other hand, the Greek crisis led to knock on effects on the availability of money market funding, also in the UK, showing that the overall situation remains quite fragile with a 37% fall in interbank assets in May 2010 alone (Table 5).

In the long term, it is doubtful the Bank can return to the tradition of requiring high quality collateral at short maturities from sound institutions. Hence there may be a need to consider pricing the “liquidity insurance” that the central bank provides. Note in this context that the EU Commission wants a new European law in 2011 that would require governments to set up national resolution funds to cover future bail-out costs. These national funds would be financed by an obligatory levy on financial institutions. The UK have expressed interest in imposing a levy but not necessarily for use in financing a rescue fund. Nevertheless, the level of fees could have a macroprudential effect by being related to the “liquidity insurance” banks receive and their contribution to systemic risk.

Further issues needing resolution in respect of liquidity policy relate first, to the use of wholesale funding, which central bank liquidity replaced – are the banks’ strategies sufficiently adjusted to survive without central bank support? This issue is discussed further in Section 4.

Second, can securitisation recover – or are further reforms needed? UK banks were heavily dependent on securitisation to sustain the flow of lending that was being made through their operations; securitisation amounted to 25% of new mortgages in 2007. This meant they were hit particularly hard by the onset of the subprime crisis.⁸ The UK authorities passed legislation early in 2008 enabling the issuance of regulated covered bonds compliant with the UCITS Directive, thereby putting the UK at par with some of its European counterparts. This was hoped to be a vehicle for recovery of securitisation in the UK. But the issuance collapsed at the time of Lehmans.

Third, can banks be obliged to hold pools of liquidity in every host jurisdiction, which would offset the Lehmans problem that the UK authorities faced?⁹

Fourth, that there is already a major tightening of FSA prudential liquidity regulation underway. The current proposal¹⁰ includes a significant increase in banks’ buffers of liquid

⁸ This proved a structural weakness because much of the funding for securitisations came from other banks or from overseas. The subprime crisis in the United States hit the demand for UK securitisations directly. Suspicions arose about the real level of risk of highly-rated securities as a result of the high rate of default on the loans underlying US sub-prime collateralised debt obligations (CDOs). This led to a “buyers strike” also for UK securitisations, notably by US banks.

⁹ See the next footnote for an FSA response.

¹⁰ Other elements to the planned changes are as follows: First, all regulated entities must have adequate liquidity and must not depend on other parts of their group to survive liquidity stresses, unless permitted to do so by the FSA. Second, there will be a new systems and controls framework based on the recent work by the Basel Committee on Banking Supervision (BCBS) and the Committee of European Banking Supervisors (CEBS). Third, there will be a system of quantitative individual liquidity adequacy standards (ILAS) for each institution based on a firm being able to survive liquidity stresses of varying magnitude and duration. Fourth, a new framework for group-wide and cross-border management of liquidity is to be introduced allowing firms, through waivers and modifications, to deviate from self-sufficiency where this is appropriate and would not result in undue risk to clients. Fifth, a new reporting framework for liquidity is introduced, with the FSA collecting

assets. The FSA would require banks to hold 6–10% of assets in government bonds compared with an average of 5% for the ten largest banks at present. The FSA calculates that this implies that banks could switch £87 to £350 billion of their assets into government bonds. The question arises whether the policy can successfully oblige banks both to rebuild liquidity and reduce reliance on wholesale funding.

3.3 Lender of last resort and bank rescues

Lender of last resort and bank rescues also raise important issues. On the one hand, it seems clear that the net loss the government is likely to make is much less than the gross expenditure. In due course, the stakes in the major banks will be sold on the market, while losses on guaranteed assets will be realised. Current estimates (e.g. by NAO 2009) suggest eventual losses of around £20 billion.

But more important than the winding down of support is expectations and incentives - whether current regulatory plans are sufficient to prevent a recurrence of bank support, given the expectations and incentives generated by the rescue. Haldane (2010) points to the difference between support credit ratings and standalone credit ratings of banks, where the former reflect expectations of government support. Anticipated government support was shown to give a huge benefit in terms of a lower cost of funds. The differential has widened for all banks during the crisis as their underlying fragility has increased (reducing the standalone rating) while the clarity of government support has also increased (underpinning the support rating). The rating differential widened by three notches during the crisis on average.

Haldane (*ibid*) also notes a bias in this shift to large banks. The average rating difference is up to five notches for large banks and only up to three notches for small ones. In effect, large banks are benefiting hugely from expected public support in terms of their cost of funds, in return for lesser systemic risk due to public support. 90% of UK support goes to the largest institutions. And not only did larger banks get more support but they also imposed greater risk on the economy than small ones, since they all exposed themselves to similar systematic risks as well as holding higher volatility assets, perhaps due to “too big to fail” perceptions.

This pattern is consistent with results of earlier work by Davis and Zhu (2009) who found commercial property price movements (a form of systematic risk) to have a smaller effect on the loan quality and provisions for small banks than for large banks. Also small banks’ profits were less geared to commercial property prices than are those of large banks. They argued that this is consistent with large banks being more willing to take risk, perhaps as a consequence of enjoying higher protection by the safety net with consequent moral hazard.

Haldane sees this pattern as an externality which he calls “banking pollution”. How can it be reduced in an appropriate exit strategy? There are two ways to deal with an externality, taxing it and putting direct controls on the adverse activity, what he calls “prohibition”.

We can see tighter banking regulation as a “taxation” approach to the externality. In this context, the FSA (Turner 2009) for example has proposed *inter alia* new capital and liquidity requirements to constrain commercial banks’ role in risky proprietary trading activities; the quality and quantity of overall capital should be increased; capital required against trading book activities should be increased significantly; a counter-cyclical capital adequacy regime should be introduced, with capital buffers which increase in economic upswings and decrease

detailed, standardised liquidity data at an appropriate frequency so the FSA can monitor both firm-specific and market-wide developments in terms of liquidity-risk exposures.

in recessions; and a maximum gross leverage ratio should be introduced as a backstop discipline against excessive growth in absolute balance sheet size. Many of these are being currently pursued in international arenas, for example, see Section 4. It is important that improvements in the UK regulatory regime are not delayed by the consequences of the shift of bank regulatory responsibility to the Bank of England.

A further form of taxation will be the new bank rescue fund being set up in the UK in line with the rest of the EU. The fee structure will have to be designed carefully to ensure it does not generate moral hazard.

But Haldane (ibid) questions whether taxation will ever be enough. Banks can always increase risk-taking to offset any feasible increase in capital, and return the level of risk to one that threatens the system. Accordingly, there may be a need for “prohibition”. Banks of over \$100 billion in size, for example, appear to generate major systemic risks but apparently do not offer any economic benefits in terms of economies of scale or scope. Should they be broken up? Or could there be a benefit from reducing banks’ exposure to proprietary trading, as is planned in the US? The UK see a need for structural measures to resolve the banking structure, as they have set up a Banking Commission to consider structural policy as discussed below.

A further issue in exit strategies is the “reward of failure” for Lloyds in allowing it to take over HBOS and gaining a dominant position in the banking market, with the government overruling competition authorities. This is again an area where there is a need for further investigation by the competition authorities, with a break-up of the large institution being desirable once the situation becomes calm again.

3.4 Quantitative easing

Regarding exit from quantitative easing, current expectations are for the Bank to terminate the policy in early 2011. The ending of the policy will reduce banks’ reserves and may raise long rates somewhat - but the impact on long rates is likely to be offset by perceptions of the plan for fiscal tightening. Meanwhile, the above-mentioned new FSA liquidity policy will make banks the natural “home” for excess gilts, meaning again that any impact on yields may be attenuated, depending on the timing of these respective policies. In this context, access to credit for small firms and households remains constrained, despite ongoing QE, raising the question whether its conclusion may aggravate the situation. Finally, some have suggested that the Bank of England may possibly hold some “excess” securities to maturity to avoid market risk and a boost to yields.

3.5 Timing of exit strategies

There is a form of endogeneity in the timing of exit strategies; once crisis containment policies are implemented, they along with the crisis itself influence subsequent short-term economic and financial stability, and these in turn dictate when monetary and fiscal support can be withdrawn. Consequently, IMF (2010a) observes that since the timing and extent of economic recovery will vary across countries, domestic exit strategies need to be flexible.

For the UK, getting the timing right requires the monitoring of certain macroeconomic and financial trends: both direct leading indicators of financial instability such as property prices (Barrell et al, 2010a) and factors that indirectly influence financial instability by affecting leading indicators, such as investment.

For this reason, as well as its direct relevance to the future of the UK economy, we will therefore in the next section give an overview of the current state of the UK economy's macro-financial linkages which are likely to be important for recovery, notably the housing market, investment and financial market conditions. We will then consider the macroeconomic impact of any new macroprudential regulations in the UK and what these imply for UK financial service provision.

4 Scope for return to growth

4.1. The UK housing market

The UK housing market has become of major importance as a repository of household wealth which is relevant for consumption, and also as collateral for the large volume of mortgage debt outstanding. Between the first quarter of 1998 and the third quarter of 2007, UK house prices increased by 179% on average whereas between the third quarter of 2007 and the first quarter of 2009, prices fell by 17%¹¹ (ONS, 2009a).

Although ONS (2009b) suggests house price declines may have stabilised recently, residential properties still appear to be overvalued. They suggest that prices of assets in (relatively) fixed supply should grow at the rate of the economy as a whole in the long-run, hence the pattern of the house price to income ratio can be used to draw general conclusions about housing market overheating: ONS (2009a) suggests the long-term average house price to income ratio was 4.02 (Q1 1998 – Q1 2009). In contrast, for Q1 2009 the ratio stood at 4.35, implying that house prices were overvalued¹², and that more correction will be observed.

Figure 1 shows that house price falls in response to the crisis has improved housing affordability for existing home owners (Halifax index) and first time buyers (Nationwide index) recently. Mortgage payments as a proportion of income capture the impact of interest changes on housing affordability. In this context, the timing of any exit strategies will influence future affordability since if interest rates are to increase in line with inflation during a recessionary period when incomes are lower, housing could become much less affordable.

Reflecting the crisis, the number of mortgage approvals in 2008 was half that of 2007 and one third of the 2006 peak-value (ONS, 2009a). Overall credit growth to households in early 2010 was close to zero. However, mortgage debt remains very high as a proportion of GDP, at around 80%, and total household debt/GDP is around 107% with little decline since the crisis (partly of course reflecting changes in the denominator). Lower interest rates have reduced household income gearing (interest payments as a proportion of income) from 11% in 2008 to around 7%. As noted above, this has restrained arrears and repossessions. However, a renormalisation of short rates to 5% could raise income gearing to levels as high as the early 1990s crisis (13%), if spreads remain wide (Bank of England 2010b). This could expose banks to major default risks, not least if negative equity starts to grow further due to falling house prices.

Changes in house prices generate a collateral effect and a wealth effect which influence consumption behaviour. Falling house prices reduce scope for equity withdrawals (negative wealth effect) thereby restricting the funds available for consumption. Simultaneously, lower

¹¹ Based on four commonly used UK house price indices: Nationwide, Halifax, Communities and Local Government (CLG) and Land Registry as cited in ONS (2009a).

¹² ONS (2009b) strikes a note of caution with this interpretation since long-term relationships between house prices and earnings may be unstable due to changing influence of economic fundamentals such as interest rate regimes.

house prices reduce collateral values, limiting households' access to cheaper forms of secured borrowing (negative collateral effect) (ONS, 2009b). There is also direct credit rationing in the wake of the banking crisis, with mortgage spreads having widened from 1.5-2% in 2008 to 3-4% in May 2010 on comparable loan-to-value mortgages (Bank of England 2010b). In combination, these effects have reduced households' propensity to consume and the amount of credit available for consumption as can be seen in figure 2.

Moreover, the probable further reductions in consumer confidence likely after the governments' proposed spending cuts mean that positive collateral and wealth effects from house price increases are unlikely to be significant in the near future. Signs that these negative trends have already started to materialise are apparent from the Bank of England's (2010a) latest Agent's Summary of Business Conditions for August 2010. According to this, the supply of housing on the market has increased but demand has been limited due to households' concerns about government cuts and their future job security.

In comparison to Spain where a housing bubble and concurrent construction boom unravelled around the sub-prime crisis, the UK has experienced a smaller increase in unemployment. Nevertheless, unemployment in the UK has increased somewhat, with a further impact on consumer confidence. And more job losses are likely from fiscal consolidation. Interviews with private sector firms indicate they have been reluctant to make new hires, preferring to use temporary staff or overtime where possible. They do not expect this position to change in the near future and moreover they suggest that any contribution they do make towards employment will be outweighed by the coalition government's cuts to public sector jobs. At the same time, construction firms report that growth in new residential builds is slow, as is the pace of commercial property construction. Many public sector contracts for building work have been put on hold or cancelled and these trends are likely to continue over the coming year.

There is a wider impact of employment trends on economic performance. Associated declines in productivity are greater than in past downturns. To an extent, this may be due to labour hoarding in the UK, which restricts the reallocation of labour during a recovery process. However a considerable part of the decline in per-capita output will be due to the downsizing of the financial sector (IMF, 2009). We now turn to wider investment and financial conditions in more detail.

4.2 Investment and financial conditions

Banking sector problems are likely to transmit to other real activities in the economy. Falling household incomes hits demand for products while credit rationing makes it harder for businesses to secure credit. Indeed the stock of bank lending to companies has been falling since early 2009, albeit reflecting demand as well as supply conditions in the credit market. Spreads on lending to small firms in mid-2010 were close to levels seen at the end of 2009, and almost 1 percentage point above their levels at the end of 2008, although spreads for larger firms have narrowed (Bank of England 2010b). Between 2008 and 2009, corporate bankruptcies increased by 50% and despite the Bank of England maintaining historically low interest rates and using moral suasion upon the banking system, firms have seen a drop in the availability of investment financing. Consequently, there is potentially a slow recovery ahead during which output expectations and investment are likely to fall further.

In recognition of the impact of reduced credit availability, HM Treasury has pressed for improved access to non-bank credit for firms. In 2007, UK corporate borrowing via bond issuance stood at 9% of their total financing compared to 32% via loans. This contrasts with US firms who obtain 14% of their financing from bond issuance and only 26% in loans (HM Treasury, 2010). However the asymmetric information that surrounds SMEs, which are not publicly listed, means non-bank financing is likely to be costly and thus considered unaffordable when borrowers expect future demand for their output will be low. The inability to substitute bank credit with alternative non-bank credit is thus likely to negatively impact future investment further.

UK banks also face significant potential losses from their exposures to commercial property markets where prices had risen continuously over the past decade (see Figure 2). By Q3 2009, the UK financial system held £250 billion in outstanding commercial property loans, a 10 fold increase over the previous decade. The Bank of England (2009) notes that between 2007 and 2009 the IPD All Property Index¹³, which tracks commercial property prices, had declined by nearly 45%¹⁴. Although there was an increase of 10% over the first half of 2010, prices remain well below their peak levels, and recovery is slow: IPD (2010) notes that during May 2010, the IPD index grew by only 0.5%. Concurrently, as can be seen in Figure 3, rents have fallen by 10.7%¹⁵ which has reduced yields on commercial leases. Average loan to value ratios on recent commercial property loans are over 100% and more recent data suggests these ratios are set to worsen, as discussed below.

The Bank of England suggests that these property market trends reflect an increase in demand for prime properties which is counteracted by decreases in demand for non-prime properties and that prices of the latter will continue to fall. Moreover, as Figure 4 shows, the declines in commercial property prices are much deeper than those of residential properties with correspondingly negative implications for banks whose property portfolios are concentrated in the commercial sector.

The repercussion for borrowers is that they will continue to violate their loan-to-value (LTV) covenants, with the Property Industry Alliance predicting that LTVs on recent loans will reach 114% on average by the end of 2010 (Bank of England, 2009). As collateral values decline, real estate firms will continue to face borrowing difficulties. Nevertheless, Bank of England (2009) suggests the impact on bank balance sheets may be mitigated due to some banks' willingness to show forbearance towards LTV covenant breaches and in some cases, their decisions not to revalue underlying properties where loans continue to perform. They have also helped to restructure debt taken out by borrowers experiencing cash-flow pressures. However, Bank of England (2010) note a risk that should banks become less willing or able to forbear on breaches of covenants, this could prompt an increase in corporate liquidations and a greater supply of foreclosed property. That could in turn trigger a renewed fall in prices and a rise in losses in the event of default on banks' commercial exposures, with a renewed downward spiral.

Aside from the ongoing corrections to property prices, Bank of England (2009) notes that deteriorating macroeconomic conditions will exert additional negative effects on bank balance sheets via significant increases in the probabilities of default by real estate firms. There are two channels by which this could occur: income risk and scheduled re-financing.

¹³ Investment Property Databank

¹⁴ Percentage change over the period June 2007 and July 2009.

¹⁵ Between August 2008 and May 2010.

Borrowers will face income risk from the reductions in rental demand during the recession. As figure 3 shows, yields on commercial property have fallen significantly and if this continues as is expected, larger numbers of real estate firms will face debt servicing problems. Consequently, banks will see a rise in non-performing loans and subsequent loan impairment charges; these scenarios appear to be corroborated by more recent commercial property market trends (Bank of England, 2010b).

Commercial property loans are usually non-amortising, so that on maturity the borrower must pay back the outstanding principal amount which is close to the initial amount borrowed. Thus on maturity, borrowers must either sell the property or refinance. Banks are increasingly reluctant to accommodate the latter; Bank of England (2009) cites research by De Montfort University which suggests banks have constrained LTVs on new lending to between 60% - 65%. Borrowers facing negative equity will find it challenging to raise the necessary capital for refinancing. This will affect smaller companies more since as discussed above, unlike larger firms they are constrained in non-bank funding sources such as rights issues. The ECB (2010) comments on the potential losses that UK banks face and their negative implications for domestic and global financial stability.

4.3 Performance of the UK financial services sector

The performance of the financial sector is relevant both in itself as for its impact on the wider economy, via availability of credit and also its direct contribution to GDP. Recent data (Bank of England, 2010b) suggests the operating environment for the UK banking system has deteriorated due to several reasons:

First there is exposure to sovereign risk; the distribution of sovereign risk exposures of individual international banks is largely unknown to investors¹⁶. In Spring 2010 this asymmetric information caused investors to substitute away from what they perceive as potentially risky lending to banks towards safer assets such as US treasury bills, in the wake of the Greek crisis. Given that public deficit reductions in several economies will be a protracted process with substantial public opposition, confidence in banks with sovereign exposures may not recover for some time. Consequently, banks' access to funds in future will become increasingly restricted and may manifest as higher borrowing rates for consumers of bank credit. Although the UK banking system has limited exposure to sovereign risk, balance sheets of UK banks contain large amounts of counterparty exposures from European banks which do hold substantial sovereign risk. These indirect exposures may therefore raise the risk profile of UK banks. The Bank of England (2010b) notes how uncertainty regarding European banks' counterparty exposures to sovereign risks has already led to drastic increases in credit default swap premia for large banks¹⁷, although "stress tests" published in Summer 2010 will be helpful in reducing tensions.

Second, there is the problem of endogeneity which could put pressure on the UK banking system via indirect means. As global investors substitute away from lending to international banks in general, wholesale funding will be harder to obtain. This is likely to raise the cost of borrowing for firms and households and consequently these borrowers will find it increasingly difficult to refinance debt at favourable terms. The knock on effect will be an increase in loan impairments, non-performing loans and defaults on UK bank balance sheets.

¹⁶ Whilst the amount of external debt held by individual economies is known (see for example chart 2.3, Bank of England (2010)), the exact exposures of individual banks to different sovereign risks is less transparent.

¹⁷ Based on average 5 year senior credit default swap premia (weighted by assets) for banks whose assets exceed \$100 billion, see chart 2.7, Bank of England (2010).

Third, many UK banks have shown forbearance towards distressed borrowers during the post-crisis period which has mitigated the recessionary impact on systemic stability. The strategy of forbearance by banks has been largely possible due to historically low interest rates set by the Bank of England; this has meant that the debt servicing capacity of household and corporate borrowers has been upheld. Moreover, public support of the UK banking system has put moral pressure on banks to restructure loans rather than record actual defaults. However Bank of England (2010b) notes that this leniency may come to an end if interest rates are forced to rise in response to above-target inflation or, alternatively, if economic growth does not prove to be sustainable. Such conditions are likely to increase the volume of non-performing loans on banks' balance sheets, further raise banks' aversion to risky lending and thus reduce the amount of forbearance they are willing to show towards distressed borrowers, as noted above.

If UK banks do become unwilling to show leniency towards borrowers' whose repayment characteristics worsen (e.g. increases in loan to value ratios due to falling asset prices), there are likely to be negative implications for corporate sectors with high exposures to commercial property. As discussed in the previous section, prospects for UK commercial property are far from buoyant (IPD, 2010) and an inability to restructure or refinance loans could result in corporate liquidations. Given the level of exposure of the UK banking system to commercial property price risk, a decline in economic activity or an increase in interest rates would reduce the net worth of the UK banking system. The impact of these two transmission mechanisms may have been muted so far. The Bank of England (2010b) has empirically modelled the growth of corporate liquidation rates as a function of GDP growth rates, commercial property price growth, the growth rate of corporate lending and the average borrowing rate faced by corporate firms in an attempt to explain why corporate liquidation rates associated with the recent recession are lower than those associated with previous recessions. They conclude that the historically low interest rates surrounding this recession have limited liquidations. In addition, recessions of the 1980s and 1990s show that there is a lag before reductions in GDP growth translate into corporate insolvencies because firms can run down their liquid assets before entering liquidation¹⁸.

Fourth, there are also structural reasons for the decline in prospects for the UK financial system. Banks will face considerable challenges of their own as public support is withdrawn, because the largest UK banks will need to secure funds to replace taxpayer bailouts to the tune of £750 - £800 billion by the end of 2012. This refinancing burden will be exacerbated by the need to restructure existing sources of wholesale funding, 60% of which are due to mature within a year. Banks had been relying on short-term debt funding, preferring to substitute historically costly longer-maturity debt with cheaper central bank funding. Given the ambiguous outlook for the UK economy, negotiating extensions to maturity may not be straightforward. Indeed, IMF (2010b) suggests that funding spreads in the UK and US have become negative since end-2009 so that funds have already become more costly for banks in these regions. Looking ahead, considerable short-term debt is due to mature over the next five years (see Figure 5) and refinancing will be costlier.

The Bischoff Report (HM Treasury, 2009a) argues for measures to protect the competitiveness of the UK financial services sector on the basis of its contribution to the UK economy; it generates 8% of GDP and almost 14% of government tax receipts, boosting public spending. As well as the UK being endowed with a comparative advantage in services as a consequence of the success of financial services, the financial sector arranges financing for leading industries which also hold comparative advantages such as IT, pharmaceuticals

¹⁸ According to the Bank of England (2010) the peak in liquidations that occurred during the last quarter of 1992 manifested 9 quarters after the first period of negative growth.

and aerospace engineering. The Bischoff Report argues that despite the importance of the financial services sector the UK economy has not become unbalanced; over the last decade, UK financial services have contributed between 5 – 8% towards UK output but this is in line with other market based economies such as the US, Singapore and Hong Kong. The accumulation of skills and experience within the sector has allowed financial institutions to branch into new revenue generating areas: carbon trading, Islamic finance, sovereign wealth funds and financing emerging market growth. Moreover, financial services do not appear to have crowded out other important sectors; manufacturing continues to account for 14% of UK output.

The gains from financial services in the UK are much higher than in other sectors: productivity per capita in the financial service sector is well above the economy average¹⁹ and the industry employs over a workers who contribute to four main areas of service: banking, insurance, investments (e.g. institutional investors) and financial infrastructure (e.g. payments systems). The IMF (2009) observes that the losses to this productive sector, which are still to fully materialise, will cause a considerable decline in UK potential output in the medium term. Furthermore the predominance of financial services suggests a need for caution in public finances, since the collapse in fiscal revenue from financial services was a key reason for the UK's worse fiscal position than for other OECD countries.

4.4 Reform of financial services

While future regulatory reforms to financial markets are being widely debated, it is hard to predict the precise structure that the UK financial services sector will take. Proposals for regulatory reform are coloured by domestic and international agendas. Moreover the domestic debate is in flux due to the changeover of the UK government and their plans for revised regulatory structures; it has been announced at the time of writing that the FSA is to be dissolved and its prudential-supervisory duties are to be taken over by the Bank of England.

What is clear is that returns on equity in finance may decline owing to new regulatory rules on capital adequacy and liquidity and further possible restrictions on institutional size, activity and capital quality. From bank shareholders' perspectives, such reductions in returns point towards the need for caution and restraint in the adoption of new regulations, but this may in turn impede the adoption of socially optimal levels of regulation.

Barrel et al (2010c) show that revisions to capital adequacy albeit agreed internationally would result in some countries' banking systems requiring more extra capital than others who were healthier and less volatile prior to the crisis, if an objective of reducing risk across the OECD is to be achieved. The UK would be one such banking system and the consequent rise in the cost of capital could lower the international competitiveness of UK banks and be detrimental to future investment. We discuss this point further in the next section.

As regards structural reform, the Governor of the Bank of England is mentioned by the House of Commons Treasury Committee (2009) as recognising the benefits in terms of stability that would be achieved by the separation of traditional and investment banking but he also points out the difficulties in achieving this in practice; returns on heavily regulated retail banks' equity would fall below those of less regulated wider banks and investors would shift funds accordingly.

¹⁹ That said, Barrell, Holland and Liadze (2010), this volume, show that the contribution of financial services to UK productivity growth was only 0.2% a year

Clues to the eventual structure of UK financial markets can be found in the latest policy initiative by the Conservative-Liberal Democrat coalition which has formed the Future of Banking Commission. The commission aims to consider the views of the banking industry, academics, regulators, the government and the public and to forward these to the Chancellor for incorporation into final regulations. Their initial proposals²⁰ (Future of Banking Commission, 2010) include the use of “living wills” (Recovery and Resolution Plans) detailing the mechanisms by which a bank in difficulties will ensure its continuance without jeopardising systemic stability. This will be partially achieved by ensuring separate balance sheets and liquidity funding for core banking activities so that deposits and the payments system are ring-fenced from risky investment banking activities by the firm.

The Future of Banking Commission also intends to complement living wills by calling for “safe haven” accounts which are one hundred percent guaranteed because funds are invested in safe assets. Market discipline of banks is to be strengthened by raising the status of depositors above that of bond-holders in the event of bankruptcy, so that the latter have more incentives to monitor the banks. The report also unambiguously calls for structural reforms to separate core and investment banking activities so that depositors are protected, moral hazard in the presence of taxpayer guarantees is reduced and the “too-big-to-fail” problem is minimised. Although the Commission recognises that the separation of activities may not in itself prevent bank failure (as in the case of Northern Rock) it hopes that in combination with improved capital and liquidity standards UK banks will be more stable in future.

4.5 The impact of macroprudential regulation

An emerging consensus, particularly following the subprime crisis, is that there is a need to complement microprudential regulation, concerned with firm-level stability, with macroprudential regulation, which promotes systemic stability. The latter considers both the overall tightness of regulatory policies and whether they should vary over the cycle. However, international consensus on the next generation of regulations will be influenced by the diverse levels of regulatory tightening required by players in the international banking arena. Adhering to revised capital and liquidity standards may be more costly for the UK banking system relative to other Anglo-Saxon banking systems such as France and Germany partly because the UK banking system holds much less liquidity than other OECD banking systems but also because the UK economy is more volatile and crisis prone than other major EU economies.

As also discussed in Section 1, Barrell et al (2010a b and c) derived a stable early warning system for banking crises in OECD economies. They found the most important macroprudential indicators are two banking sector “robustness” variables: unweighted capital adequacy and liquidity, and two real economy “vulnerability” variables: residential real estate prices and the current account. Having identified these policy instruments Barrell et al (2010c) estimated the changes to capital and liquidity standards that would be required to restore systemic stability in 14 OECD economies including the UK. Their results suggest the UK banking system would have to increase their capital and liquidity buffers substantially more than most other OECD banking systems in order to reduce crisis risk to a given level. So, for example, using maximum crisis risk over 1998-2008 as a benchmark to determine desirable levels of capital and liquidity, the UK needs 6 percentage points more liquidity and capital to reduce crisis risks to 1% per annum, whereas for France it is 5%, Germany 3% and Italy 2%. Barrell et al (2010c) note that an international agreement which imposed an average rise in capital to attain the 1% crisis level would mean 3.7% more capital across the OECD as

²⁰ Available from

http://commission.bnbb.org/banking/sites/all/themes/whichfobtheme/pdf/commission_report.pdf

a whole. The UK would either have to impose higher charges via its domestic regulation, or become effectively undercapitalised relative to the rest of the OECD, imposing externalities on other countries. The former would appear more likely. Although it is not clear how these ratios would translate to micro-level bank adjustments, it is inevitable that banks will pass some of these additional costs on to customers via increased spreads. Given the already depressed prospects for UK investment discussed in section 2, this may affect productivity substantially.

The revised capital and liquidity standards are likely to test the competitiveness and business models of many UK banks. The new standards which are currently undergoing calibration are expected to be implemented by the end of 2012, by which time it is possible that much of the monetary support to the financial system will have been withdrawn, while wholesale funding needs will be sizeable. A significant change to the UK's financial architecture is thus possible with weaker inefficient banks disappearing to leave a more concentrated banking system. This in turn will put more banks in the "too big to fail" category and will challenge regulators further.

Further pressures on unprofitable banks may emerge if rules on the quality of regulatory capital are revised according to current debates. There is widespread consensus in the regulatory policy community that Tier 2 capital as defined in the Basel Capital Adequacy Agreement is unsatisfactory. Turner (2009) expressed concerns that Tier 2 is only useful to protect creditors in failure (gone concern) but does not give the right incentives to banks' ongoing operations (going concern). From a regulatory point of view, this implies capital adjustments should be biased towards holding more equity capital, which for unprofitable, smaller banks could be costly.

In the context of reforms proposed by the Basel Committee on Banking Supervision (which will be embedded into Basel III), the Bank of England (2010b) identifies two channels by which UK banking capital will have to increase. These will have different impacts on banks' operations. The first type of increase will be in response to the Capital Requirements Directive (CRD 3) as part of EU legislature which will make operational the Basel Committee's requirements. This directive is expected to have a moderate impact on banks' existing Tier 1 capital ratios, especially since the Basel Committee will defer the adoption of this component to the end of 2011. The expectation is that the transition period will allow banks to adjust their portfolios to be able to meet the new requirements without rationing credit to real sectors.

However, European banks will face an additional layer of capital adjustments instigated by Basel III. These will be transmitted by revisions to the existing Capital Requirements Directive (CRD 4) of the EU Commission. If implemented immediately, these adjustments would have a significant impact on UK banks' operations: major banks' core Tier 1 capital ratios would fall short by 4% whereas the CRD 3 implies a shortfall of below 2%. Hence, to minimise the loss of real output from frictions in credit availability, the Bank of England (2010b) suggests the timing of any implementation should be conditional on the state of the economy, a proposal that accords with the views of the FSA.

Calculations of the impact of increased capital on economic outturns are quite variable. Barrell et al (2009) suggest that reforms introduced solely in the UK gradually should have a long run impact of around -0.1% on GDP per percentage point increase in required capital and liquidity. Financial Stability Board (2010) has comparable median predictions for individual countries. Barrell, Holland and Karim (2010) show that the effects are much lower than -0.1% if all countries move together to tighter regulation – around -0.03% or lower per

percentage point increase in liquidity and capital. This is because, when all OECD countries act together, the initial impact is to lower investment and raise saving. Real interest rates fall as a result. As equity markets reflect the discounted value of future profits and the discount rate has fallen the equity price rises and the cost of equity finance falls. These two effects offset about two thirds of the output costs we identified when the UK acted alone. Certain industry bodies suggest much more severe impacts, but their neutrality is in doubt.

Recently, in recognition of the procyclical amplification of systemic risks during the sub-prime episode, BIS (2009) proposed a macroprudential framework that embodies a countercyclical capital structure so that bank losses during downturns are better absorbed. The House of Commons Treasury Committee (2010) welcomes the implementation of countercyclical provisioning as a means of reducing volatility in the supply of credit to the private sector. However, Barrell et al (2010c) did not find evidence of procyclicality being driven by GDP or credit per se, rather it is the risky lending practices to which GDP growth contributes along side behavioural factors which contribute to risk build up during the upturn. These are indicated by factors such as asset prices and current account balances. Hence provisioning based on GDP or credit cycles may not adequately address systemic risk – and penalise “benign” upturns.

The UK’s position on whether rules or discretion should dominate revised policies is also subject to criticism. The Bank of England (2009) suggests that discretionary leeway in the enforcement of domestic regulation is necessary arguing that it is difficult to design rules based systems which survive through time. Nevertheless, Barrell et al (2010c) show that it is possible to institute rules for capital adequacy that respond to property prices.

The regulatory changes discussed above suggest a turbulent change to the UK banking system is possible. However it is interesting that from the point of view of the banking sector, that the imminent regulatory changes and the tax to be imposed on the banking system were not the most important concerns in May 2010 (Bank of England, 2010b). Banks were more worried about sovereign risk exposures, the level of public debt and the potential risks arising from an economic downturn. However the banking sector did place risks associated with regulatory changes above risks arising from both property price declines and increases in household and corporate defaults. Given the outlook for investment and financial conditions as well the housing market as discussed in sections 2 and 1 respectively, it remains to be seen whether this ranking of risk by the banking community will remain the same.

Conclusions

Following this review of UK monetary, banking and financial policies in recent years, we note that in the run up to the crisis, a key underlying issue was that macroprudential surveillance failed to predict the depth of the crisis, and although some concerns were expressed, no policy action was taken (partly reflecting lack of macroprudential levers). During the crisis, interest rate easing may have been delayed unduly, while the quantitative easing policy could have been more effective had it focused on private sector assets, and the bank rescue strategies focused too little on the implications for competition. Exit strategies are still in the offing but it is essential they be well-designed to avoid risks of inflation and moral hazard on the one hand, and renewed recession and credit rationing on the other. The risk of prolonged low interest rates, for example in causing atrophy of funding markets, also has to be taken into account.

A successful return to growth requires the financial sector and economy to function well together, e.g. in respect of the housing market, investment and banking/financial market

conditions, including impact of likely regulatory reforms. For example, given the importance of the UK housing market as a store of household wealth, recent trends in residential property prices have negative implications for households' and banks' balance sheets. Corrections to overvalued property prices have begun and corresponding weakness in consumption is likely, with wider impacts on growth. The level of defaults and non-performing loans associated with negative equity in residential property may cause problems for UK bank balance sheets in the medium term.

In addition, the increased risk aversion of banks towards non-prime borrowers has continued to reduce the availability of credit to the real sector which is likely to generate further negative effects on UK growth. The UK banking system may also face problems due to its exposure to the commercial property market since commercial property prices are on a downward trend and indebtedness of property firms is high. UK banks themselves are also concerned with their counterparties' exposures to sovereign risk. Furthermore,, the overall macroprudential risks faced by banks are making it harder for UK banks to access wholesale funds. Meanwhile the proposed costly changes to regulatory capital will raise the cost of credit, albeit with a major benefit of reducing the risk of future crises. These issues suggest the scope for the UK economy's return to growth may become increasingly restricted in the coming years, to the extent it relies on credit finance.

References

Bank of England (2007), Financial Stability Report, April 2007, Bank of England, London.

Bank of England (2008a), “The Development of the Bank of England’s Market Operations, Consultative Paper”, Bank of England, London.

Bank of England (2008b), “Financial Stability Report, October 2008”, Bank of England, London.

Bank of England (2009a): “Quantitative easing explained,” Bank of England Website, <http://www.bankofengland.co.uk/monetarypolicy/assetpurchases.htm>

Bank of England (2009b). “The Macrofinancial Environment”. Section 1, Financial Stability Report, December 2009.

Bank of England (2010a). “Agents’ Summary of Business Conditions”. August 2010.

Bank of England (2010b). “Financial Stability Report”. June 2010.

Barrell R and Holland D (2010), “Fiscal and financial responses to the economic downturn”, National Institute Economic Review, 211, R51-R62

Barrell R, Holland D and Karim D (2010), “Tighter financial regulation and its impact on global growth”, National Institute Economic Review, July 2010

Barrell, R, Holland D and Liadze I (2010), “Accounting for UK economic performance 1973-2009”, NIESR Discussion Paper No 359.

Barrell R, Davis E P, Liadze I and Karim D (2010a), “Bank regulation, property prices and early warning systems for banking crises in OECD countries” Journal of Banking and Finance, 34, 2255-2264.

Barrell R, Davis E P, Liadze I and Karim D (2010b), “The Impact Of Global Imbalances: Does The Current Account Balance Help To Predict Banking Crises In OECD Countries?” NIESR Discussion Paper No 351

Barrell, R., Davis, E.P., Karim, D. and Liadze, I. (2010c). “Calibrating macro-prudential standards”. NIESR Discussion Paper no. 354

Basel Committee (2010) “Countercyclical capital buffer proposal”, Basel Committee, BIS, Basel

BIS (2008), “BIS Quarterly review December 2008”, Bank for International Settlements , Basel

BIS (2010), “80th Annual Report”, Bank for International Settlements, Basel

Dale S (2010), “QE – one year on”, remarks at the CIMF and MMF conference, Cambridge entitled “New instruments of monetary policy – the challenges”, 12 March 2010

- Davis E P (2009a), "Financial Stability in the United Kingdom: Banking on Prudence" OECD Economics Department Working Paper no. 717
- Davis, E P (2009b), "The lender of last resort and liquidity provision - how much of a departure is the sub-prime crisis", paper presented at the LSE Financial Markets Group conference on the Regulatory Response to the Financial Crisis, 19th January 2009
- Davis E P (2010), "The financial crisis, private and public debt - contrasting the approaches of economics and theology", forthcoming, Evangelical Alliance
- Davis, E P and Karim D (2008), "Could Early Warning Systems Have Helped to Predict the Sub-prime Crisis?", National Institute Economic Review, No. 206.
- Davis E P and Zhu H (2009), "Commercial property prices and bank performance", Quarterly Review of Economics and Finance 49, 1341–1359
- Demirgüç-Kunt, A and Detragiache, E (2005). "Cross-Country Empirical Studies of Systemic Bank Distress: A Survey.", IMF Working Papers 05/96, International Monetary Fund.
- ECB (2010). "Financial Stability Review". European Central Bank, June 2010.
- Financial Stability Board (2010), "An assessment of the long-term economic impact of stronger capital and liquidity requirements", Basel, August 2010
- FSA (2007), "Financial Risk Outlook, 2007", Financial Services Authority, London
- FSA (2008), "Strengthening Liquidity Standards", Financial Services Authority Discussion Paper, No. 08-22, London.
- Future of Banking Commission (2010). "The Future of Banking Commission", United Kingdom.
- Gagnon, J, Raskin, M, Remache, J and Sack, B (2010), "Large-scale asset purchases by the Federal Reserve: did they work?", Federal Reserve Bank of New York, Staff Report No, 441.
- George E (1994), "The pursuit of financial stability", Bank of England Quarterly Bulletin, February, 60-66
- Goodhart C A E (2010), "Money, credit and bank behaviour, the need for a new approach", forthcoming, National Institute Economic Review
- Haldane A (2010), "The \$100 billion question", Comments given to the Institute of Regulation and Risk, Hong Kong, 30 March 2010
- HM Treasury (2009). "UK International Financial Services – the Future". HM Treasury, United Kingdom.
- HM Treasury (2010). "Discussion Paper on Non-Bank Lending". HM Treasury, United Kingdom.
- House of Commons Treasury Committee (2008), "The Run on the Rock", House of Commons Treasury Select Committee Report, UK Parliament, London.

House of Commons Treasury Committee (2009). “Banking Crisis: Dealing with the Failure of UK Banks”. Seventh Report of Session 2008 – 09, House of Commons, United Kingdom.

House of Commons Treasury Committee (2010). “Too Important to Fail – Too Important to Ignore”. Ninth Report of Session 2009 – 10, House of Commons, United Kingdom.

IMF (2008), “Global financial stability report, October 2008”, International Monetary Fund, Washington DC

IMF (2009). “Europe: Securing Recovery”. Regional Economic Outlook, World Economic and Financial Surveys, October 2009, International Monetary Fund, Washington.

IMF (2010a). “Exiting From Crisis Intervention Policies”. International Monetary Fund, Washington.

IMF (2010b). “Resolving the Crisis Legacy and Meeting New Challenges to Financial Stability”. Global Financial Stability Report, April 2010, International Monetary Fund, Washington.

IPD (2010). “IPD Index Statement”. Investment Property Databank, May 2010.

Joyce M, Lasaosa A, Stevens I and Tong M (2010), “The financial market impact of quantitative easing”, Bank of England Working Paper No. 393

King, M. (2008), “Monetary Policy Developments”, Speech to the Leeds Chamber of Commerce, 21 October 2008.

King, M (2009): “Treasury Committee Opening Statement”, UK Parliament, Wednesday 24 June 2009;

Klyuev V, de Imus P, Srinivasan K, (2009), “Unconventional choices for unconventional times, credit and quantitative easing in advanced economies”, IMF Staff Position Note SPN/09/27

Lenza M, Pill H and Reichlin L (2010), “Monetary policy in exceptional times”, Economic Policy, April 2010, 295-339

Martin C and Milas C (2010), “Financial stability and monetary policy”, Working Paper 05/10, University of Bath

Meier M (2009), “Panacea, Curse, or Nonevent? Unconventional Monetary Policy in the United Kingdom”, IMF Working Paper No. WP/09/163

Miles D (2010), “Interpreting monetary policy”, speech at Imperial College, London, 25th February 2010

NAO (2009). “Maintaining Financial Stability Across the United Kingdom’s Banking System”. Report by the Comptroller and Auditor General, National Audit Office, December, 2009.

ONS (2009a). “Recent Developments in the UK Housing Market”. Economic & Labour Market Review, Vol 3 , No 8, August 2009. Office for National Statistics, United Kingdom.

ONS (2009b). “The Housing Market and Household Balance Sheets”. Economic & Labour Market Review, Vol 3, No 9, September 2009. Office for National Statistics, United Kingdom.

Tucker P (2008) “A protracted “peacetime””, remarks at the Chatham House Conference on “The new financial frontiers”, London, 29 April 2008.

Tucker P (2009), “The Repertoire of Official Sector Interventions in the Financial System: Last Resort Lending, Market-Making, and Capital “, Remarks at the 2009 International Conference: Financial System And Monetary Policy Implementation, Bank of Japan, 27-28 May 2009

Turner, A. (2009). “A Regulatory Response to the Global Banking Crisis (The Turner Report)”, FSA, London

Wadhvani S (2008), “Should Monetary Policy Respond To Asset Price Bubbles? Revisiting The Debate”, National Institute Economic Review, 2008

Tables and figures

Table 1: Logit equations for OECD banking crises estimated over 1980-2006

Variable	Coefficient	Std. Error	z-Statistic
LIQ(-1)	-0.118143	0.033321	-3.545622
LEV(-1)	-0.333534	0.116794	-2.855739
RHPG(-3)	0.113078	0.040419	2.797660

Source: Barrell et al (2010a)

Table 2: In-sample model performance based on correct calls

	Estimated Equation		
	Dep=0	Dep=1	Total
P(Dep=1)≤C	214	4	218
P(Dep=1)>C	110	8	118
Total	324	12	336
Correct	214	8	222
% Correct	66.05	66.67	66.07
% Incorrect	33.95	33.33	33.93

Source: Barrell et al (2010a)

Table 3: Forecast predictions of banking crises based on the 1980-2006 model (percent)

	2007	2008	definition1	definition2
BG	X	X	X	X
CN	-	-		-
DK	-	-		
FN	-	X		
FR	X	X	X	X
GE	-	-	-	-
IT	X	-		X
JP	-	-		
NL	X	-	X	X
NW	X	X		
SD	-	-		-
SP	X	X		X
UK	X	X	X	X
US	-	-	-	-

Source: Barrell et al (2010a)

Table 4: Official UK Bank rate (quarterly average)

Q1 2007	5.22
Q2 2007	5.4
Q3 2007	5.74
Q4 2007	5.69
Q1 2008	5.35
Q2 2008	5.03

Q3 2008	5
Q4 2008	3.37
Q1 2009	1.07
Q2 2009	0.5
Q3 2009	0.5
Q4 2009	0.5
Q1 2010	0.5

Source: Bank of England

Table 5: Bank of England Assets (end quarter) in £ million

	Total assets	Issue department	Banking department
Q1 2007	79633	38661	41020
Q2 2007	79737	39787	40005
Q3 2007	98081	40425	57723
Q4 2007	102241	45022	61013
Q1 2008	98805	42951	67713
Q2 2008	91837	42180	56326
Q3 2008	137685	42769	94975
Q4 2008	238490	46886	204255
Q1 2009	181515	45571	162139
Q2 2009	220105	46143	204549
Q3 2009	226407	47040	200397
Q4 2009	237694	52866	212969
Q1 2010	252336	51249	226703
Q2 2010	250671	51412	230296

Source: Bank of England

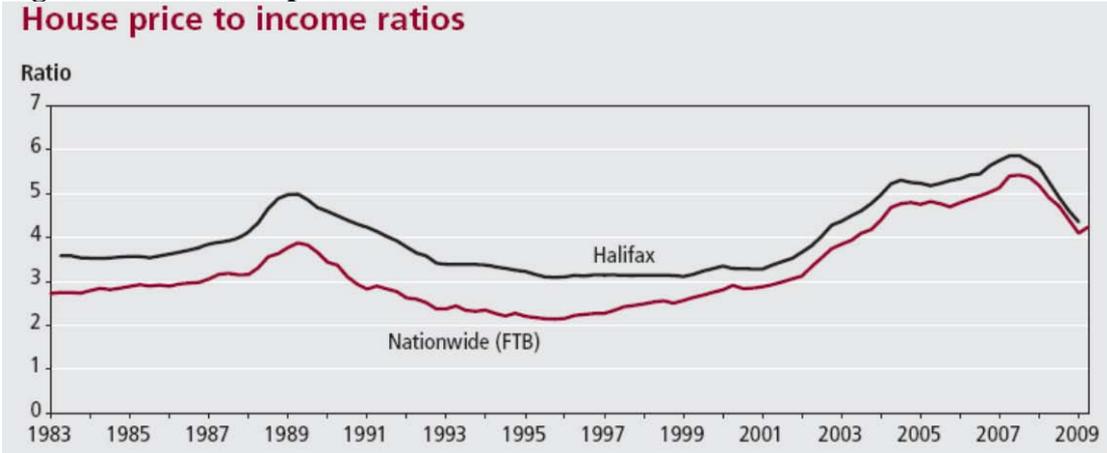
Table 6: UK banks' sterling interbank lending and balance sheet totals (£ million)

	Interbank lending	Total assets	Interbank as a percent of total	Percent growth of interbank	Percent growth of total
31-Jan-07	620195	2999890	20.7		
28-Feb-07	656025	3109881	21.1	5.8	3.7
31-Mar-07	621247	3123141	19.9	-5.3	0.4
30-Apr-07	622072	3190463	19.5	0.1	2.2
31-May-07	622935	3240600	19.2	0.1	1.6
30-Jun-07	614141	3158944	19.4	-1.4	-2.5
31-Jul-07	635217	3231092	19.7	3.4	2.3
31-Aug-07	639637	3244613	19.7	0.7	0.4
30-Sep-07	248618	2876462	8.6	-61.1	-11.3
31-Oct-07	186038	2821493	6.6	-25.2	-1.9
30-Nov-07	191554	2861268	6.7	3.0	1.4
31-Dec-07	185633	2851472	6.5	-3.1	-0.3
31-Jan-08	197557	2944251	6.7	6.4	3.3
29-Feb-08	197382	2996993	6.6	-0.1	1.8
31-Mar-08	192843	2950156	6.5	-2.3	-1.6
30-Apr-08	209210	2987472	7.0	8.5	1.3
31-May-08	203417	2921192	7.0	-2.8	-2.2
30-Jun-08	194283	2930383	6.6	-4.5	0.3
31-Jul-08	203120	2963150	6.9	4.5	1.1
31-Aug-08	202201	2983077	6.8	-0.5	0.7
30-Sep-08	208070	3094834	6.7	2.9	3.7

31-Oct-08	167571	3058390	5.5	-19.5	-1.2
30-Nov-08	174476	3123689	5.6	4.1	2.1
31-Dec-08	174033	3085474	5.6	-0.3	-1.2
31-Jan-09	180215	3156744	5.7	3.6	2.3
28-Feb-09	200895	3201577	6.3	11.5	1.4
31-Mar-09	191825	3205456	6.0	-4.5	0.1
30-Apr-09	206900	3218786	6.4	7.9	0.4
31-May-09	185518	3218291	5.8	-10.3	0.0
30-Jun-09	196603	3210569	6.1	6.0	-0.2
31-Jul-09	191894	3224205	6.0	-2.4	0.4
31-Aug-09	208038	3265742	6.4	8.4	1.3
30-Sep-09	238549	3337926	7.1	14.7	2.2
31-Oct-09	240054	3371076	7.1	0.6	1.0
30-Nov-09	335259	3462340	9.7	39.7	2.7
31-Dec-09	424088	3508092	12.1	26.5	1.3
31-Jan-10	438469	4060315	10.8	3.4	15.7
28-Feb-10	437245	4032935	10.8	-0.3	-0.7
31-Mar-10	414459	4014081	10.3	-5.2	-0.5
30-Apr-10	396130	3967082	10.0	-4.4	-1.2
31-May-10	249130	3801479	6.6	-37.1	-4.2

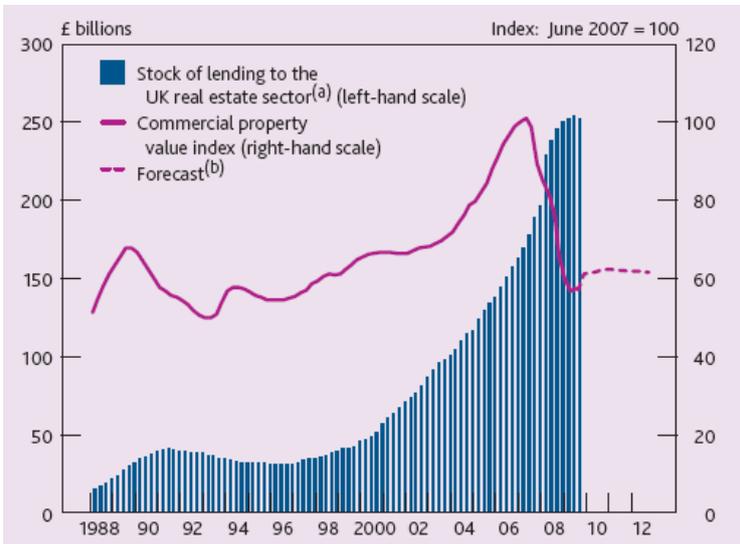
Source: Bank of England. Note that there is a change in definition at the beginning of 2010 from “other UK banks” to “UK Monetary Financial Institutions excluding the central bank”

Figure 1: UK House prices to income ratios



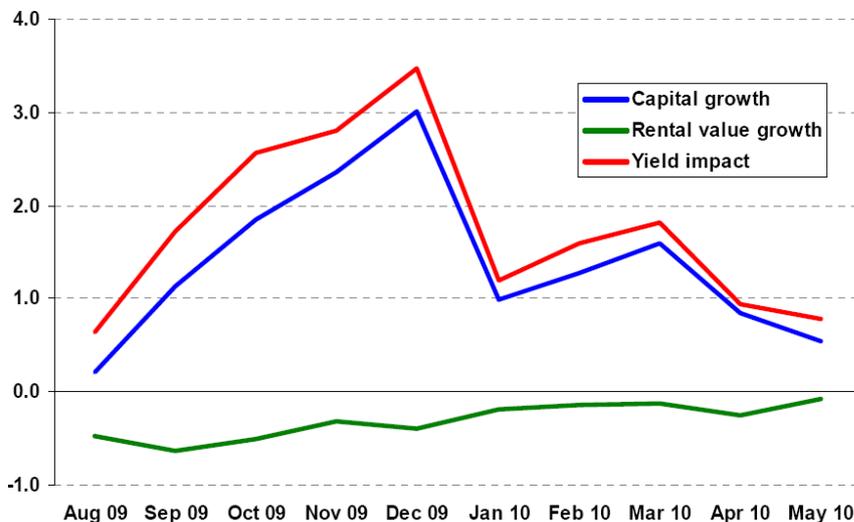
Source: ONS (2009a), based on Halifax and Nationwide sources.

Figure 2: Stock of Lending by UK Resident Banks and Building Societies to the UK Real Estate Sector and UK Commercial Property Capital Values



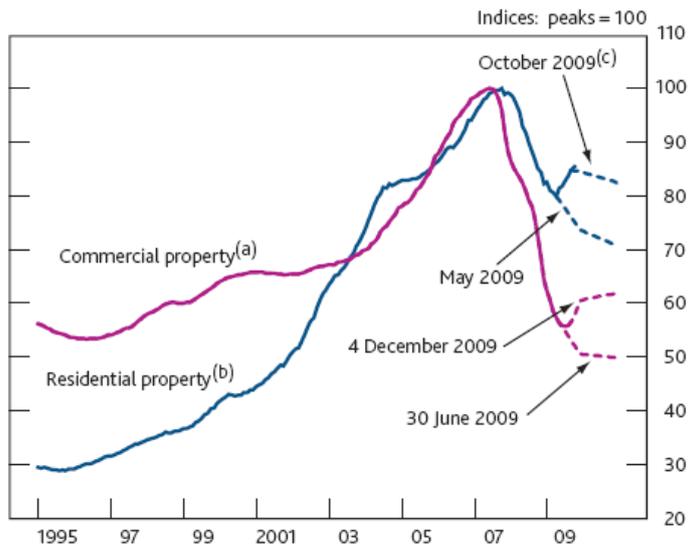
Source: Bank of England (2009)

Figure 3: Trends of Commercial Property Prices, Rental Values and Yields



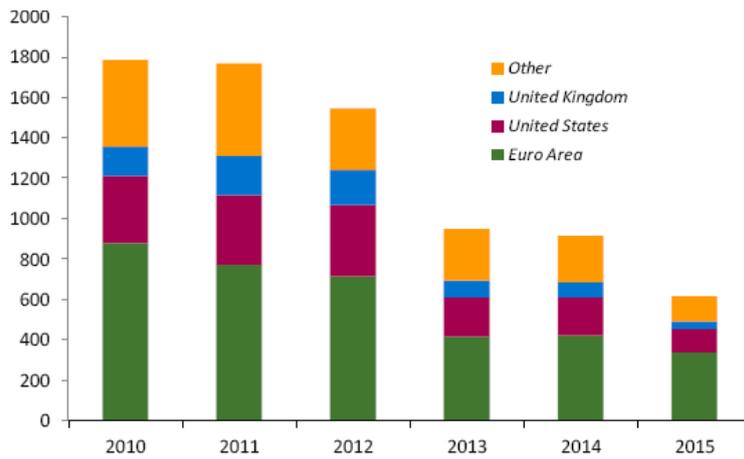
Source: IPD (2010)

Figure 4: UK Property Price Forecasts



Source: Bank of England (2009)

Figure 5: Bank Debt Rollover by Maturity Date (\$ billions)



Source: IMF (2010b)