

UK Banking 1997-2009: a Very Old Fashioned Crisis

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Abstract

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1. Introduction

The goal of this paper is to investigate the role played by shadow banking and financial innovation in supporting the expansion of UK credit during the years 1997-2007 and in the subsequent banking crisis of 2007-2009. Our conclusion, perhaps a surprising one, is that the central mechanism was much the same as operated during credit expansions and subsequent banking problems in the UK associated with the secondary banking crisis of 1973-1975 and the property related banking losses of 1991-1993 that followed the Thatcher-Lawson credit boom: unsustainable lending intermediated via specialised

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institutions and secured on property, particularly during in the most recent expansion on commercial property. Credit derivatives and other novel instruments played only a relatively minor role.

Since the global financial crisis of 2007-2008 'shadow' banking, and also the new credit instruments that proved so problematic in the crisis, have attracted considerable attention from regulators, politicians, policy makers and researchers. The Financial Stability Board is proposing a global approach to the regulation of shadow banking, to be discussed and agreed at the St Petersburg G20 summit of Sept 2013.

Although there is a well advanced policy response, there are still considerable gaps in our understanding of shadow banking. There is not even an established consensus on how shadow banking has contributed to the build of systemic risk outside of the US.

This justifies an examination of the role played by non-bank intermediaries in the UK credit expansion of 2003-2007 and subsequent materialisation of liquidity and credit risk. This seems to be worth doing both for better understanding recent UK macroeconomic and monetary history *and* for developing appropriate policy post-crisis.

The questions we address are as follows:

- To what extent has shadow banking in the UK been separate from and to what extent part of the regulated banking sector and its activities? We argue that, in contrast to the situation in the US in the run-up to the crisis of 2007-2008, shadow banking providing sterling lending in the UK was primarily funded directly by UK regulated banks, it did not to any important degree raise its own money market funding.
- To what extent did shadow banking trigger liquidity problems in London markets and did this pose a problem for the authorities in responding to the crisis? Here we distinguish UK domestic (i.e. sterling denominated) and off-shore (i.e. foreign currency denominated) shadow banking. UK domestic shadow banking did not contribute to the liquidity problems of UK banks; what did contribute was off-shore especially US dollar denominated shadow banking, necessitating the provision of Federal Reserve swap lines to the Bank of England as well as to other European central banks.

The paper is organised as follows. Section 2 reviews the existing literature on shadow banking and its role in the build up of systemic risk before the recent global financial crisis. A considerable amount of research has been done on shadow banking in the US, notably at the Federal Reserve Bank of New York, and some on shadow banking in the Euro area.

Section 3 then uses available Bank of England data to examine the build of credit and subsequent banking losses during the years 1997 – 20013 and the role of shadow banking in their finance. Section 4 provides a discussion of what lessons UK experience offers for regulatory policy. Section 5 concludes.

2. Shadow banking and the global financial crisis

Most of the existing literature on shadow banking describes circumstances in the United States. There are two fundamental reasons for this focus on US experience: the subprime and subsequent financial crisis within shadow banking began in the United States, and the Federal Reserve Bank has detailed and accessible structured securities data.³ This section reviews this literature but discusses the contrast between the way shadow banking i.e. credit intermediation conducted outside the traditional regulated banking sector, has operated in the US and in the UK.

What is shadow banking?

‘Shadow banking’ suggests intermediation that takes place outside the scope or possibly alongside that of the traditional banking industry. The term ‘shadow banking system’ is most often attributed to McCulley (2007). The Financial Stability Board defines shadow banking as ‘credit intermediation involving entities and activities outside the regular banking system’. However we argue that shadow banking – under this very broad definition -- is often far from separate from traditional banking. Rather as the case of the UK illustrates it can be intimately connected with the extension of traditional bank credit.

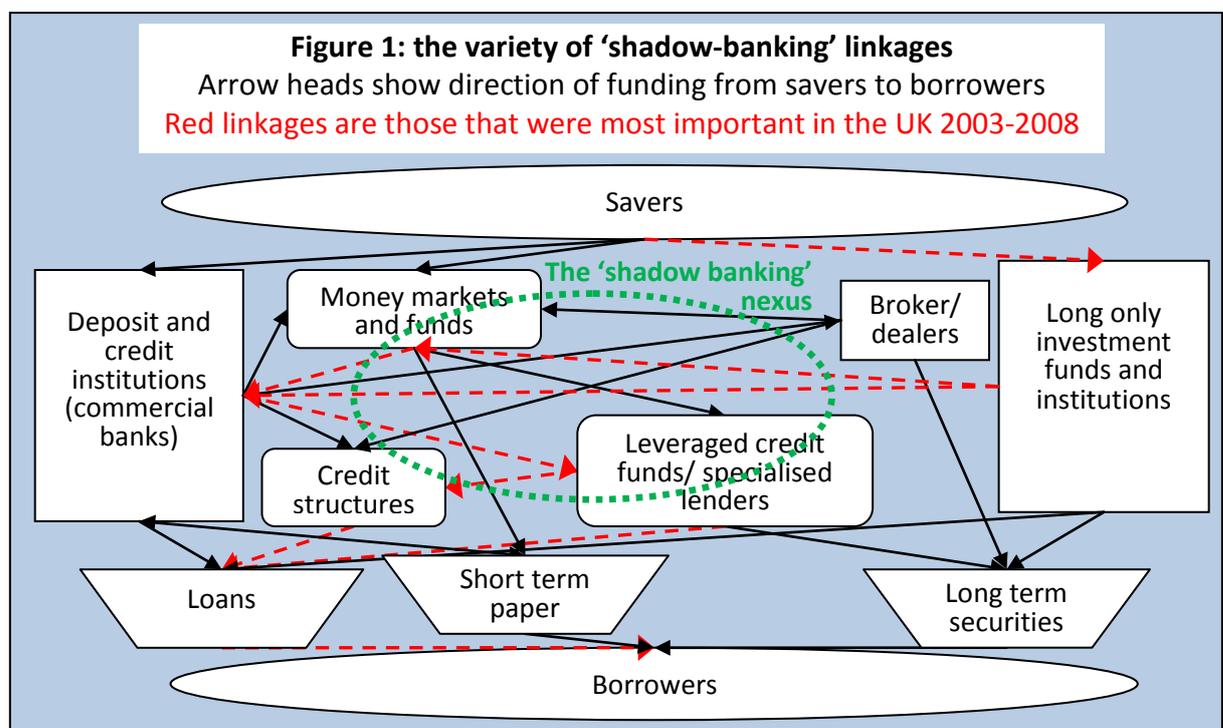
Figure 1, illustrating the variety of links associated with shadow banking and their place in the broader financial market, can help elucidate this argument. The linkages represented by

³ Federal Reserve Bank data only covers transactions that are facilitated via the Central Bank.

dotted lines (red in electronic copy) are those that we find to have been most important in the UK.

Before discussing Figure 1 in detail, it is worth contrasting some of prominent descriptions of US shadow banking in the years preceding the 2007-2008 crisis, provided by (Adrian and Shin 2009; Pozsar et al. 2010; Gorton and Metrick 2010) and others, with the operation of UK shadow banking during the same period. As described by (Gorton and Metrick 2010) US shadow banking operated largely outside the regulated banking system, using structured credit securities both as repo collateral for raising short term money market finance, especially from money market mutual funds that have captured deposits away from traditional banks. This in turn allowed credit to be extended directly to borrowers without direct intermediation of banks or of long only investment institutions.

In contrast in the UK – this is illustrated by the red lines in Figure 1 and documented in our Section 3 below – shadow banking was funded directly by traditional deposit and credit institutions, *not* from money markets; and UK shadow banks made relatively little use of structured credit instruments, rather they mostly provided credit directly to borrowers.



With this contrast between the different ways in which shadow banking can operate, , let us now examine Figure 1 in more detail. Three arrangements illustrated here can be highlighted:

- The shape labelled 'leveraged credit funds and specialised lenders' represents the non-bank institutions i.e. 'shadow' banks that have been a source of systemic vulnerability in many financial crises. Problems have emerged for such non-bank intermediaries in many episodes in the UK and elsewhere including (i) the secondary banking crisis in the UK of 1973-74; (ii) centralised mortgage lenders that were most exposed to losses on UK mortgage lending during the downturn of 1992-93 ; (iii) the Thai finance houses that were the first casualties of the Asian financial crisis of 1997-98 ; (iv) the 'structured investment vehicles' (SIVs) that collapsed at the onset of the global financial crisis in 2007 and triggered substantial losses for German and other banks; and (iv) the private commercial real estate funds that have been a prominent source of recent UK bank credit losses following the crisis of 2007-2008.
- The shape labelled 'Money markets and funds' is a composite representing both direct investment in short term money market instruments, such as bank and government bills and commercial paper; and investment in specialised money market mutual funds that offer money market investors maturity and instrument diversification. Money market intermediation is major source of short term funding to commercial banks, leveraged credit funds and specialised lenders, and also to broker/dealers and (via direct investment in short term paper) private non-financial companies. Maturity mismatch using short term money-market instruments has contributed to many episodes of financial instability including those in Scandinavia, Japan and the UK in the early 1990s, the Asian crisis of 1997-98 (where Thai and South Korean institutions especially borrowed on a large scale in foreign currency in money markets, assuming that their currency peg meant that they were not exposed to exchange rate risk); and in the US in 2007-2008.
- The shape labelled 'credit structures' represents the novel instruments that played a central role in the global financial crisis of 2007-2008. The most important of these

were residential mortgage backed securities (RMBS), commercial mortgage backed securities (CMBS), credit card and other loan structures (usually referred to as ABS), syndicated loan structures (CLOs), structures build on credit derivatives (synthetic CDOs) and finally resecuritisations of credit structures (so called ABS-CDOs).⁴ A key vulnerability of 2007-2008 was that the tranching instruments (in order of seniority: senior, mezzanine, junior and equity tranches) issued by these credit structures were held largely by banks, by broker dealers and by leveraged credit funds and funded in money markets. Long-only investment funds and institutions made only very limited investments in these new credit instruments.

Two further points can be made in relation to Figure 1. First that the 'shadow banking' linkages illustrated in Figure 1 have often been a source of financial instability, but financial crises can still occur without them. Over the years commercial banks have proved quite capable of getting into deep trouble, often needing government intervention to ensure their survival, without recourse to either novel financial instruments or off-balance sheet intermediation. Examples include the Latin American debt crisis and the US Savings and Loans losses of the 1980s, many banking failures in emerging markets since the early 1970s. Such direct exposure has also been a feature of Euro area banking problems, with for example the recent large scale losses on property lending amongst both Irish and Spanish banks and the exposure of many banks to periphery Euro-area sovereign debt. These cases of financial instability have been associated with unsustainable credit expansion and with excessive maturity mismatch using short term wholesale money market funding, but undertaken directly by banks or other established deposit institutions, rather than through leveraged credit funds or specialised investors.

Second it should be acknowledged that most episodes of financial instability, whether involving shadow banks or not have been associated with excessive extension of credit secured on residential and commercial property and often, but not always, with unsustainable external borrowing. In a few other cases (Latin American exposures in the 1980s or recent Euro area exposures) banking problems have resulted from exposures to

⁴ (Milne 2009) provides a detailed discuss of the operation of these structures and their role in the crisis of 2007-2008.

sovereign lending or sovereign debt. Occasionally, in some emerging markets with poor standards of governance, serious banking problems have been associated with large scale misuses of funds or other banking fraud.

When then does 'shadow banking' pose a potential concern for financial stability? Maturity mismatch and credit losses can trigger solvency and liquidity problems for both established regulated banks and for comparatively lightly regulated 'shadow banks'. The principal concern about 'shadow banking' is that failures of leveraged credit funds or specialised lenders may in turn trigger failures in either the established regulated banking sector or in the securities industry, i.e. broker-dealers, where these operate separately from commercial banking.

Such contagion can occur from direct credit exposure to shadow banks, either through short term money market exposures or longer term direct lending. Problems amongst shadow banks can also affect established regulated banks or securities firms indirectly, through common exposure to asset markets, for example if both shadow and traditional banks are lending on commercial or residential property; or if shadow banks and securities firms are engaged in excessive use of short term funding to finance security portfolios.

The operation of US shadow banking

The shadow banking 'system' in the US operated in a very similar fashion to commercial banks. It was able to raise deposits from households, corporations and other financial institutions; and in turn use these funds into structured credit securities. Long-term, often risky, assets were converted into seemingly riskless short-term liabilities. By absorbing low-risk agency backed structured credit securities, the assets and liabilities of the US shadow banking system surpassed traditional bank assets and liabilities as early as the mid-1990s.⁵ Subsequent growth continued through an extension into 'private label' RMBS and other relatively risky securities. The high returns to shadow banking encouraged participation from a wide range of institutions including substantial offshore activity in London and other financial centres. However, the collapse of confidence in structured credit securities, amplified by the widespread maturity mismatch in the funding of US shadow banking, then triggered the global financial crisis of 2007-2008.

⁵ For a comprehensive background on shadow banking see Pozsar, et al (2010).

A key feature of US shadow banking has been its widespread use of a range of financial innovations, whether in the form of repurchase agreements (repos), asset backed securities (ABS), structured investment vehicles (SIV), or collateralized debt obligations (CDO) to name a few. Securitization is the means by which loans, which were previously held on the balance sheets of financial intermediaries, are now sold in capital markets. Securitization has gained widespread use since the 1980s. Repos have an even longer history, having been used in mainstream markets since the 1920s in the US, the 1970s in continental Europe and the 1990s in the UK.⁶ Central banks originally used repos as a monetary policy tool and a means to add liquidity and efficiency to markets.

Gorton and Metrick (2012) provides a thorough review of securitization and shadow banking in the United States, which they argue has grown from a relatively small amount in 1990 to become one of the largest of all capital markets. One of the major causes of the financial crisis was the lack of transparency of asset quality: investors were acquiring shadow banking exposures with little regard to which assets were safe and which had more underlying risk. Investors assumed (see) was that because there was a liquid market for structured credit securities they could readily sell their exposures if the risks proved to be greater than they suspected. This lack of transparency of shadow banking was an important source of demand for subprime mortgage credit.

Gorton and Metrick (2010a) examine what happens to shadow banking when confidence is lost. They claim that the crisis of 2007-09 was a banking panic in the repo market. As depositors panicked, the highly liquid market shrank drastically and liquidity vanished. Repos operate in the same way as traditional banks do, taking deposits and paying a repo rate. However, in addition to the equivalent of an interest rate to compensate for risk, repos also offer haircuts, which happens when less is deposited with an institution than is received as a bond; the riskier the asset or institution the higher the haircut. Panic in financial markets led to increasingly large repo haircuts, resulting in massive deleveraging. This

⁶ For a comprehensive background on the repo market see Corrigan and de Terán (2007) and Bank for International Settlements (1999).

corresponded to information-insensitive securities becoming information-sensitive, creating a loss of confidence.

To demonstrate this, Gorton and Metrick document haircuts across asset classes. Before the financial crisis, haircuts were zero for all asset classes, which implied the market was based on information-insensitive assets backing deposits. However, haircuts were higher on subprime-related asset classes and eventually went to 100%; these assets were no longer acceptable as collateral in repo. Non-subprime-related asset classes also reached a maximum of a 20% haircut. This is important because it suggests that the line between information sensitivity and insensitivity moved because of the subprime shock. The authors note that difference between BBB-rated industrial bond spreads and AAA-rated industrial bond spreads moved with the measure of counterparty risk; BBB-rated tranche of structured products became permanently information-sensitive after the run on repo.

Gorton and Metrick (2010b) highlights the trust that investors had in securitization before the financial crisis, which the authors note created a form of 'information-insensitive' securities. This maintained an incredibly liquid market, which was free from adverse selection problems. However, once there was the sudden and profound loss of confidence of investors, billions of dollars of formerly information-insensitive became information-sensitive. Moreover, Singh and Aitken (2009) demonstrate that the extent of rehypothecation has declined substantially since Lehman Brothers' bankruptcy due to the fear of losing collateral if the broker dealer becomes insolvent. The authors highlight that while this does reduce counterparty risk in the markets it also reduces liquidity.

Adrian and Shin contribute an influential and complementary perspective, emphasizing the participation of broker-dealers in US shadow banking. Adrian and Shin (2009) describe the financial crisis of 2007-09 in as a crisis that grew out of the securitization of assets and permeated banking and capital markets. They emphasise that in our modern market-based financial system that banking and capital markets are thoroughly interwoven. Originally securitization intended to transfer and spread credit risk in an attempt to minimize losses; however, allowing banks to buy each other's securities instead increased the instability of the entire financial system.

Adrian and Shin (2010) go a step further and expound the fragility and volatility of broker dealers' balance sheets. Since financial firms are highly leveraged, the net worth of these intermediaries is especially sensitive to fluctuations in asset. They note that if financial intermediaries were passive and did not adjust their balance sheets to changes in net worth, then leverage would fall when total assets rise. Instead their evidence points to a strong positive relationship between changes in leverage and changes in balance sheet size for broker dealers. This is important because it means that leverage is procyclical; financial intermediaries adjust their balance sheets actively and in such a way that leverage is high during booms and low during busts. The procyclical nature of leverage will exacerbate aggregate volatility and the price of risk. The adjustment of leverage and price changes will reinforce each other in an amplification of the financial cycle and undermine each other in a downward cycle.

Adrian and Shin make clear that if financial markets are not perfectly liquid so that greater demand for the asset tends to put upward pressure on its price then there is the potential for a feedback effect in which stronger balance sheets feed greater demand for the asset, which in turn raises the asset's price and lead to stronger balance sheets. If there is a general increase in prices, the expansion of balance sheets will be reflected in the asset price changes of the financial system.

This shadow banking is closely linked to the US dollar repo market. Hördahl and King (2008) provides an account of activities in both the United States as well as the United Kingdom. Since 2002, repo markets had doubled in size; \$10 trillion in each the US and euro repo markets and \$500 billion in the UK repo market at the end of 2007 (although most of this is foreign currency not sterling repo, see Section 3 below). As liquidity dried up, repos became increasingly concentrated in the shortest maturities and only against the highest-quality collateral. The Bank of England gathers data from roughly 60 banks and broker dealers for the UK repo market. Total repos and reverse repos reached a peak of £662bn or around 50% of UK GDP in mid-2007. Approximately four to six banks dominate the market with banks accounting for three quarters of transactions while securities houses, building societies, fund managers and insurance companies account for the remainder. Strikingly, in mid-2007

while the repo market in the US was under stress the euro area and UK markets operated under much calmer conditions.

Just before the financial crisis, Gorton (2010) estimates the repo market to be \$12trillion compared with the total assets in the US banking system of \$10trillion. Moreover, Hördahl and King (2008) claim that the former top US investment banks funded roughly half of their assets using repo markets, with additional exposure due to off-balance sheet financing of their customers. The collateral often consisted of securitized bonds. Gorton and Metrick (2012) estimates that net repo financing provided to broker dealers fell by \$1.3 trillion from the second quarter of 2007 to the first quarter of 2009. The flight of capital was driven by foreign financial institutions, domestic and offshore hedge funds, as well as other unregulated cash pools. Gorton and Metrick (2009) discuss how problems in subprime mortgages caused such a systemic event. Since the location and size of subprime risks in the repo market were unknown, there was fear that collateral liquidity would vanish. With a flight to quality, non-subprime related collateral would dry up. This uncertainty and fear led to increases in repo haircuts, which was the equivalent of massive withdrawals from the banking system, exacerbating the crisis and further driving both haircuts up and asset prices down.

Additional estimates of the size of shadow banking have also been undertaken. In the United States, only bi-party, not tri-party, agreements are captured by the Federal Reserve data. Therefore complete assessments of the size of the shadow banking sector are open to subjective estimations, hence there exist some discrepancies in the approximations. Pozsar, et al (2010) estimate the US shadow banking sector to be \$20 trillion in March of 2008, falling to \$16 trillion in 2010. Pozsar and Singh (2011) estimate that the size was \$25 trillion in the US at the end of 2007 and \$18 trillion at the end of 2010. In October 2011, the Financial Stability Board estimated the global shadow banking sector to be \$27 trillion in 2002, \$60 trillion in 2007, and \$60 trillion in 2010. Of the \$60 trillion in 2010, \$24 trillion was attributed to the US and \$22 trillion to Europe.

Bouveret (2011) estimates the shadow banking sector in Europe to be around \$13 trillion in the end of 2010 and \$15.8 trillion in the United States. The author also notes that the sector

has declined by 20% since the beginning of 2008, while for the same period the European sector remained stable. The likely explanation for this is that the European Central Bank operational monetary policy framework played a more expeditious role, compared to the US Central Bank, by implementing liquidity facilities to the traditional banking sector and entities outside of the traditional banking sector. While the Federal Reserve did act quickly, they took longer than possibly they should have to open up liquidity facilities to broker dealers and non-traditional banks. Even though they were performing bank-like activities, at the start of the financial crisis shadow banks did not have access to liquidity backstops such as central bank lending facilities and deposit guarantees. This aggravated the run on these institutions and worsened the crisis.

3. Shadow banking and the UK credit expansion

This section documents, using available data, the UK credit expansion of 1997-2008 and the role played by 'shadow banking', wholesale funding and securitisation to support the expansion of UK credit.

Shadow banking and financial instability

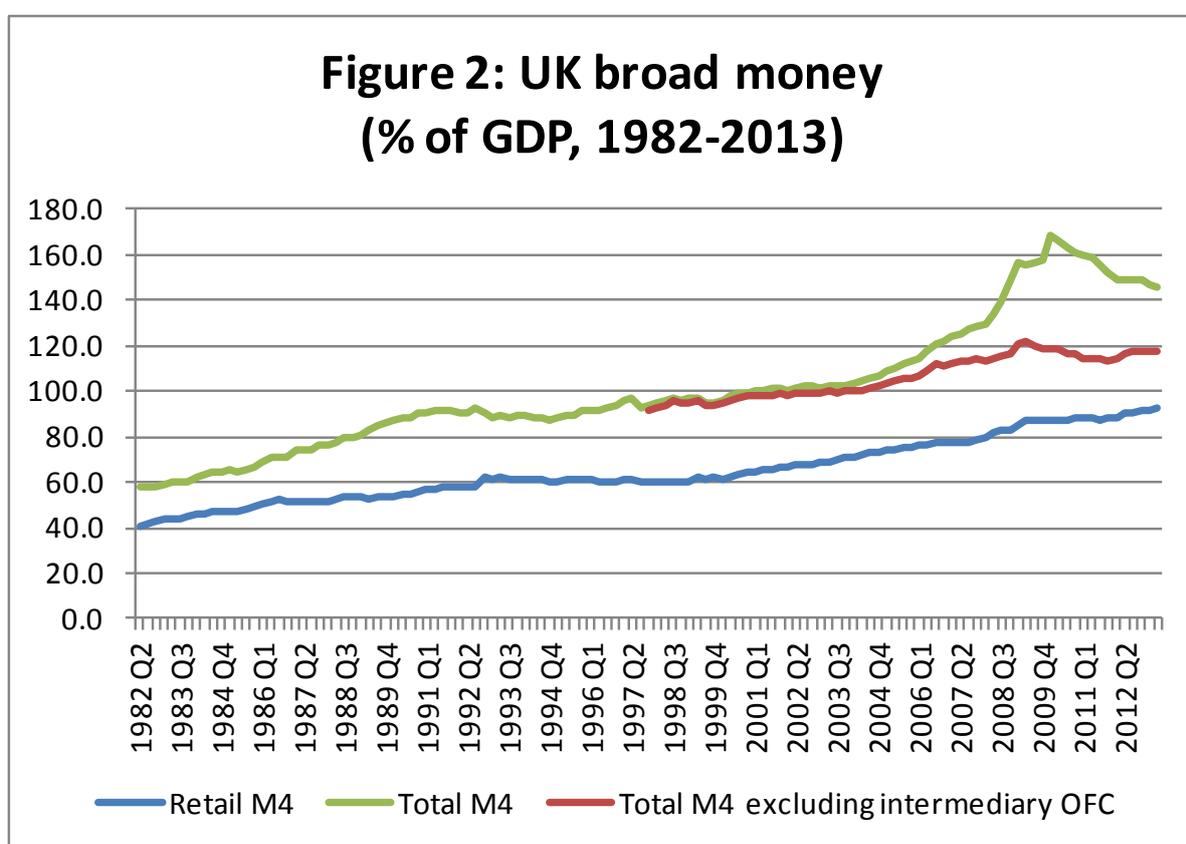
UK credit expansion prior to the crisis

With this background, we can now examine the expansion of credit in the UK, prior to the crisis of 2007-2008 and consider the extent to which this was associated with 'shadow' banking. All the data presented here are for sterling money and credit of UK monetary and financial institutions.⁷ Foreign currency lending and deposit takes place in the UK on a large scale but this is not part of the UK credit expansion since it is overwhelmingly off-shore banking.

Figure 2 shows the evolution of UK broad money (M4), as a percentage of GDP from 1982 to 2013. This figure highlights a major challenge in understanding the data on the UK credit expansion of 2002-2007: the dramatic growth in both bank lending to and funding from what the Bank of England statistics describe as the 'Intermediate OFC (or Other Financial

⁷ The data in Figures 2-6 is taken from the Bank of England Statistical interactive database (<http://www.bankofengland.co.uk/boeapps/iadb/>).

Corporations)' sector.⁸ As described by the Bank of England these Intermediate OFCs consist of ' non-bank credit grantors (including securitisation vehicles); mortgage and housing credit corporations; bank holding companies; other activities auxiliary to financial intermediation; and other financial intermediaries, to the extent that these deposits are held with MFIs in the same group of financial companies (i.e. 'intra-group' deposits).'⁹ For the purpose of analysing monetary conditions, for example in their Inflation Report, the Bank of England prefers to monitor M4 excluding deposits from these entities, on the ground that this narrow measure of money has a closer relation to nominal spending and is therefore economically more meaningful.



⁸ Even larger levels of broad money result including deposits from other OFCs, such as life insurance and pension funds, central counterparties, or securities brokers; these are excluded entirely from Figure 2.

⁹ For more detailed discussion see (Janssen 2009). According to the Bank of England Statistical Interactive Database, Table C further analysis of deposits and lending, the breakdown of intermediate OFI lending in Dec 2012 was as follows: loans to 'activities auxiliary to financial intermediation' (apparently fund management) £121bn, 'intra-group lending' £150bn, lending to securitisation special purpose vehicles £19bn, loans to bank holding companies £29bn, loans to non-bank credit grantors £13bn, and loans to mortgage and housing credit corporations £55bn, a total of £387bn. The corresponding sterling deposits and repos were : from securitisation special purpose vehicles £212bn, Intragroup deposits £110bn, from bank holding companies £18bn, from mortgage and housing credit corporations £14bn, from non-bank credit grantors £2bn, and finally from fund management companies £60bn.

As Figure 2 indicates much of the notable growth in intermediate OFC deposits occurred *post-crisis*, their ratio to GDP increasing from 19 percent of GDP in 2008Q2 to 50 percent of GDP in 2010Q1, before falling back to 29 percent of GDP in 2013Q2.¹⁰ There is also a notable growth in intermediate OFC deposits in the period running up to the crisis, rising from around 2½ percent of GDP in 2003 to 19 percent of GDP in 2008. In the late 1990s the ratio was close to zero. Over the same period lending to intermediate OFCs grew even more rapidly (see the discussion of Figure 3 below).

Figure 2 indicates that during the run-up to the crisis wholesale funding of UK monetary institutions, *excluding* deposits from intermediate OFCs, grew rather less rapidly than retail deposits in M4. However since lending was growing more rapidly than deposits (documented in Figures 3 and 4 below) other further sources of funding must have been used to support lending growth.

The relatively rapid growth of M4 lending to the non-financial private sector, relative to the stock of retail deposits, is shown in Figure 3.¹¹ This uses three measures of sterling lending available from the Bank of England statistics. The first and lowest in most years is lending on balance sheet (sometimes called M4L). The second (sometime called M4Lex is described on the Bank of England website as ‘M4 lending excluding the impact of securitisation’, a rather confusing description since this measure rather than excluding securitisation actually adds back securitised lending which is not reported on balance sheet). Finally this chart reports a third less standard measure, which is generally the largest of those shown, also including the *net* lending to intermediate OFCs i.e. lending by monetary financial institutions to intermediate OFCs less deposits taken by monetary financial institutions from OFCs. Since

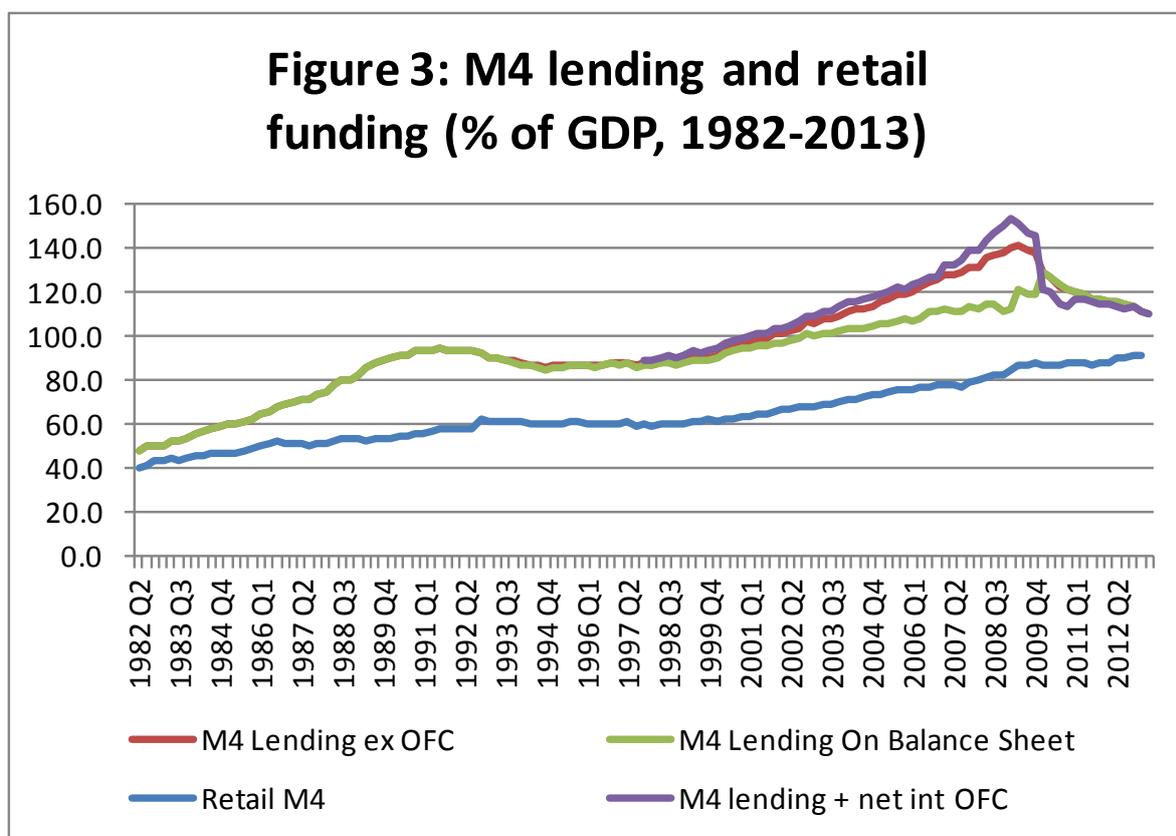
¹⁰ This is largely accounted for by a substantial increase in deposits from securitisation special purpose vehicles/ mortgage and housing credit corporations from March 2008 until Dec 2010 (during this period these two series are not reported separately although it is clear from later figures that most of these deposits are from special purpose vehicles). This increase is not explained in the notes to the Bank of England database. They might be due either to changes in the reporting base or a changed accounting treatment of SPVs when they required support from their sponsoring banks.

¹¹ Apart from *net* lending to intermediate OFCs this graph excludes all M4 lending to other financial corporations, described by the Bank of England as follows ‘Other financial corporations (Items 15-17) are private financial corporations (other than monetary financial institutions) engaged primarily in provision of financial services. Examples include financial intermediation, insurance companies and pension funds and activities auxiliary to financial intermediation (e.g. fund management).’

(<http://www.bankofengland.co.uk/statistics/pages/iadb/notesiadb/industrial.aspx>)

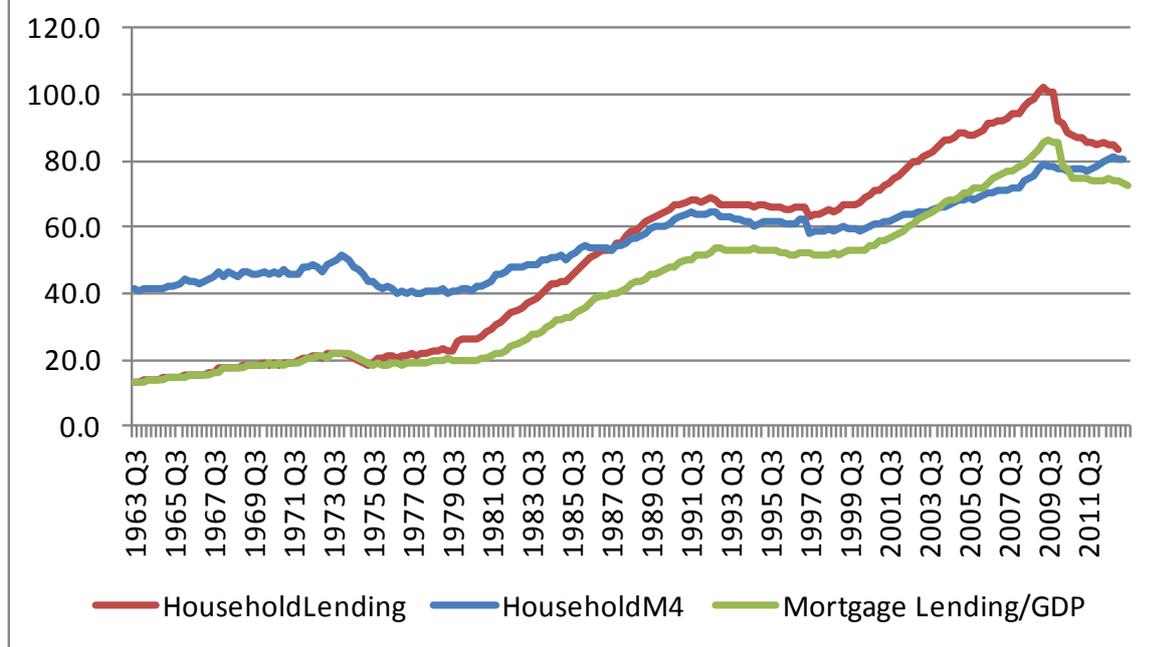
intermediate OFCs include substantial amounts of lending to securitisation vehicles and to housing and mortgage credit institutions this additional measure is a more comprehensive measure of lending.

Figure 3 shows that while there appeared to be a fairly stable relationship between on-balance sheet sterling lending and retail deposits in the UK, during the years preceding the crisis, by 2008 these other forms of net lending had grown to around 30 per cent of GDP from essentially zero in the late 1990s.



A similar picture of lending outstripping deposits emerges from Figure 4, constructed using Bank of England statistics for household lending and deposit taking. As indicated in this figure household lending grew much faster than household deposits, from the late 1990s to 2008, all of which can be accounted for by an increase in the ratio of mortgage lending to GDP from 52 percent of GDP in mid-1999 to 86 percent of GDP in the first half of 2009. Over the same period the gap between household deposits and total household lending grew from 7 percent of GDP to 23 per cent of GDP. It has since fallen back to around the 1997 level as UK households have rebuilt their balance sheets.

Figure 4: Household lending and deposits (% of GDP, 1963-2013)



M4 lending only includes lending to the non-financial corporate sector monetary financial intermediaries. A recent Bank of England analysis ((Benford and Burrows 2013)) provides a fuller picture of one major corporate lending market, that for commercial real estate (CRE). They report that £247bn of the outstanding debt secured on CRE at end-2010 was bank lending, with about two-thirds of this lending provided by UK-owned banks and the rest by foreign owned banks. This amounts to about two thirds of all UK resident bank lending to non-financial corporations.

Compiling data from a variety of sources, they report that total debt secured on commercial real estate rose rapidly in the year preceding the crisis, growing from around £110bn at end-2002 to around £300bn at end-2008 (Source (Benford and Burrows 2013) , page 55, Chart A) . This represented an increase from 11% of nominal GDP in 2002 to 23% of GDP in 2008, and accounts for close to one-third of the increase in the ratio of M4 lending to GDP over the same time period shown in Figure 2.

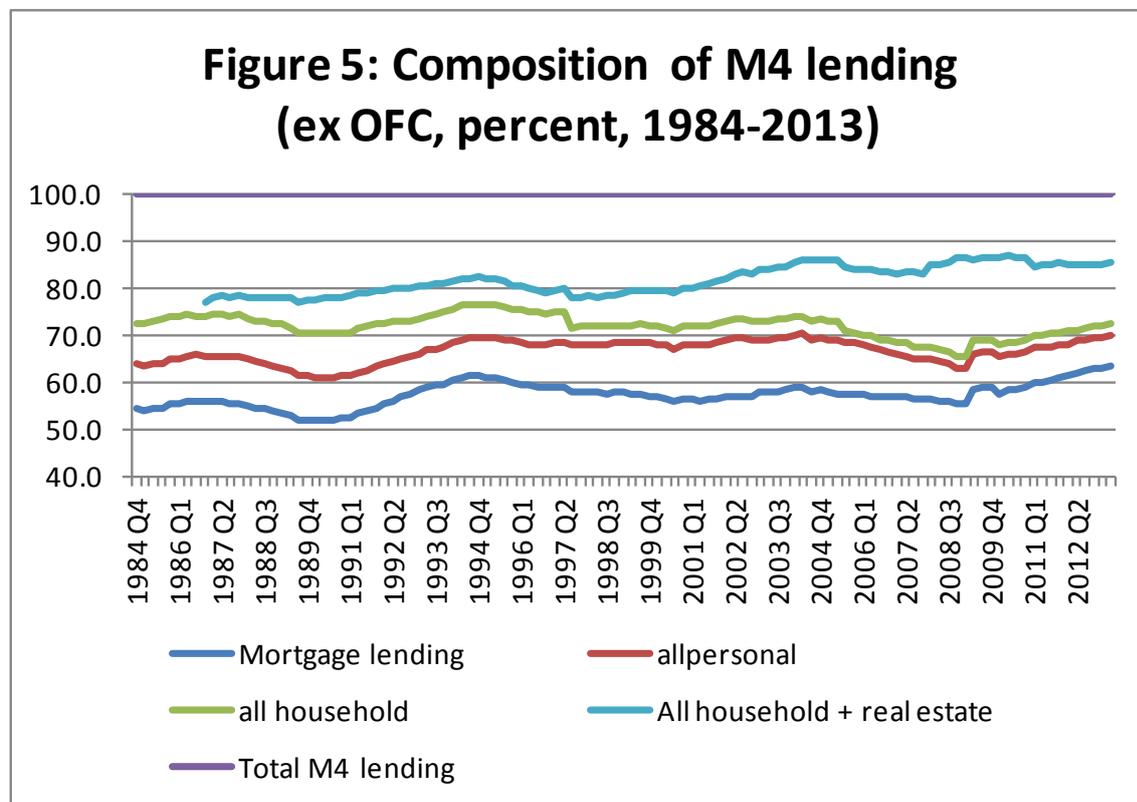
The CRE lending documented by (Benford and Burrows 2013) can be roughly matched to the Bank of England provide a breakdown of the industrial and sectoral allocation of M4 lending to the non-financial corporate sector. Much of this lending is captured by Bank of England data base series RPQTBUT 'Sterling lending to firms involved in undertaking the buying, selling and renting of real estate', a component of lending to the non-financial corporate sector. This lending to GDP grows from 2½ percent of GDP in 1986 to over 7 per cent in 1991, the peak of the Thatcher-Lawson credit boom. After declining to 4 per cent of GDP in 1997 it then rises strongly again reaching a peak of 19½ per cent of GDP in 2009 i.e. again around one-third of the overall rise in the ratio of M4 lending to GDP. Subsequently it has fallen back to 11 percent of GDP in 2013.

A further part of property related lending is recorded by the Bank of England as part of lending of Other Financial Corporations (OFC) as series RPQTBVN "Sterling lending to mortgage and Housing Corporations". Until Dec 2010 this series also includes lending to special purpose securitisation vehicles. This lending series rises from 1 percent of GDP in 1997 to 6½ per cent of GDP in mid 2007 (and rises further to 12 per cent of GDP in 2009, we believe this is because many banks were forced to lend money to fund their own securitisation vehicles).

The sum of these two property related lending series rose from 5 per cent of GDP in 1997 to around 25 percent of GDP at the beginning of the crisis. Over the same period residential mortgage lending rose from 52 percent to 85 percent of UK GDP. Taken together with a much smaller rise in lending to property construction companies from about 1 percent to 2 percent of GDP, property related lending pretty much accounts for all of the increase in sterling M4 lending relative to GDP during the credit expansion of 1997-2007. This was an old fashioned property lending boom.

Figure 5 shows the impact of this property lending boom on the composition of total M4 lending (including securitised loans, excluding lending to intermediate OFCs but adding back lending to mortgage and housing credit corporations) to the personal, non-personal household and corporate sectors. This share of mortgages in total lending actually falls slightly during the years 1997-2008, and this is due to the even more rapid growth of

lending secured on commercial real estate. The share of personal non-mortgage lending and lending to the rest of the household sector (this includes lending to unincorporated businesses) declines.



The share of M4 lending going to real estate and construction companies of all types, including the listed and unlisted CRE funds analysed by (Benford and Burrows 2013) is represented by the gap between the green and upper blue lines of Figure 5. While this lending expanded extremely rapidly over the period 1997-2008, over the same period other forms of lending to non-financial companies falls from over 20 to less than 15 per cent of total M4 lending (although the total amount of this other lending did not change much as a share of GDP).

While the credit boom of 1997-2008 was dominated by lending on residential and commercial property, the risks exposures that resulted from this lending varied considerably from one category of loan to another; and also, depending on the quality of their loan books, from one lender to another. Table 1 shows five year cumulative loan write offs, for major categories of lending, again taken from Bank of England Statistics.

Table 1: Write-offs on UK sterling lending, 2008Q3-2013Q2

All resident monetary financial institutions

		<i>Cumulative £bn</i>	<i>Share of total</i>	<i>Rate</i>
Non-financial corporations	(1)	30.3	42%	6.4%
Other financial corporations	(2)	2.2	3%	0.5%
Residential mortgages to individuals	(3)	3.4	5%	0.4%
Credit card lending	(4)	17.5	24%	22.4%
Other unsecured personal lending	(5)	15.1	21%	
Lending to individuals: (3)+(4)+(5)	(6)	35.9	50%	3.7%
Unincorporated businesses	(7)	1.4	2%	3.5%
Non-residents	(8)	2.0	28%	0.6%
Total		71.9	100%	3.2%

Source: Bank of England Interactive Statistical Database and authors' calculations.

A total of £71.9bn of UK lending has been written off, representing 3% of the stock of loans in 2008Q2. Of these the major contributions have been from credit card lending (£17.5bn, 24% of the total), other unsecured personal lending (£15.1 bn, 21% of the total) and lending on commercial real estate (approximately £20bn, 28% of the total).¹² These three forms of lending together account for very close to three-quarters of all of these UK sterling loan write-offs.

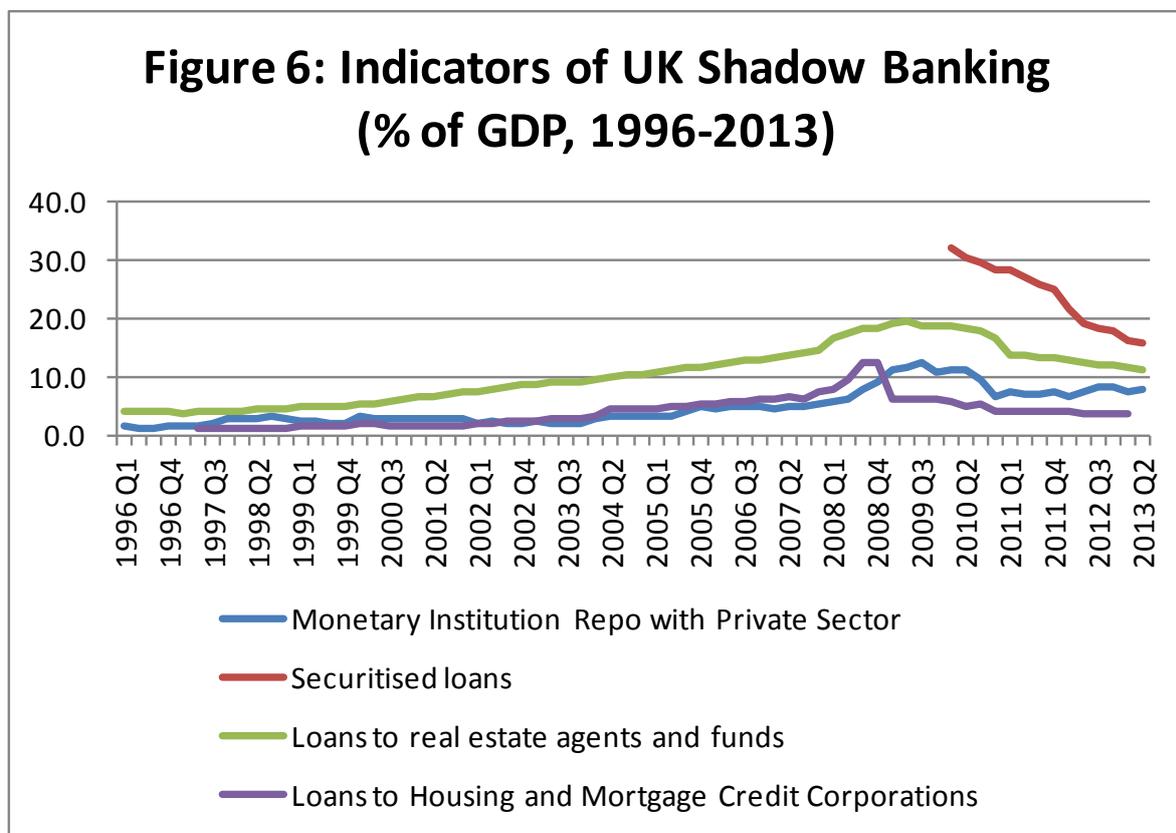
Despite the very large increase in the ratio of residential mortgage lending to GDP, write-offs on residential mortgage loans to individuals accounted were only £3.4bn, 5% of the total write-offs and less than ½ percent of the 2008 stock of residential mortgages. Similarly low write off rates were recorded for lending to other financial corporations and to non-residents. Finally about £10bn of writeoffs, 14% of the total, are against non-financial corporations not involved in commercial real estate.

To conclude: the credit exposure and experience of loan losses by banks and building societies in the UK, in the build-up to and materialisation of the financial crisis of 2007-2009, were similar in many ways to those experienced in the earlier UK financial crises of 1973-1975 and 1991-1993. As in the earlier crises there was a rapid growth of property related

¹² The breakout of writeoffs for CRE lending is not available in the BoE database, but is reported by (Benford and Burrows 2013)

lending, through both residential mortgage lending and indirect exposure to commercial real estate.

To what extent was this related to shadow banking? Figure 6 reports some indicators of shadow banking activity. This suggests that sale and repurchase agreements (Repo) played a relatively minor role in this UK experience: yes there was an increase in sterling repo from the private sector of a little over 10 per cent of GDP, but much of this will have been secured against.



[some further discussion to be added, supporting the view illustrated in our Figure 1 that the main funding for UK 'shadow banking' was via traditional banks, not via money markets]

4. Policy discussion

[Incomplete]

One final and key question we put forward is why the growth in shadow banking in the United States was much greater than in the United Kingdom? There are many possible explanations for the difference in growth of wholesale funding in each country, which

we put forward for discussion here. Shadow banking, and the repo market in particular, was much larger in the United States than the United Kingdom. Why was there much more growth in repo securities in the United States and in offshore US dollar markets?

One might think that loose regulations in the United States would have contributed to more explosive growth than in the United Kingdom, however it is the United Kingdom that has looser regulations for the rehypothecation of securities.¹³ A possible explanation is how savers, and their funds, enter the market. In the United Kingdom savers are channeled through a more traditional banking system consisting of high street banks and building societies, whereas savers in the United States often bypassed commercial banks and entered the market directly via money market funds (or purchasing securities directly through retail broker-dealers). The widespread practice of holding retain investments outside of traditional banking institutions may have been a contributing factor to the larger growth in the United States compared to the United Kingdom.

Gorton and Metrick (2010b) argue that shadow banking grew because of supply side forces, with innovations and regulatory changes wearing away the competitive advantage of banks and bank deposits, and demand side forces, with the development of securitization and the demand for collateral for financial transactions. Importantly, both of these forces were furthered by court decisions and regulatory rules that allowed securitization and repos special treatment under the bankruptcy code in the United States.

[to be added, discussion of current FSB proposals for regulating shadow banking, arguing that this places too much emphasis on the regulation of liabilities, e.g. repo markets, and not enough on the regulation of assets, asset quality, and accounting measures of performance.]

¹³ The United States has a limit of 140% rehypothecation of the original liability while the United Kingdom has no such restrictions.

5. Summary and conclusions

[To be added, will elaborate on the short summary in our introduction]

“Our conclusion, perhaps a surprising one, is that the central mechanism was much the same as operated during the UK secondary banking crisis of 1973-1975 or the 1991-1993 banking problems that followed the Thatcher-Lawson credit boom: unsustainable lending intermediated via specialised institutions and secured on property, particularly in the recent expansion on commercial property. Credit derivatives and other novel instruments played only a relatively minor role.”

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