Multiple principal-agent problems in securitisation

Alison Lui

Liverpool John Moores University, Liverpool, Merseyside, United Kingdom

ABSTRACT

Every crisis presents opportunities. The financial crisis of 2007-2009 provides a valuable opportunity to study the corporate governance and regulatory aspects of the banking sector, a hinge point in the development of corporate governance in banks. There is a tremendous amount of academic literature on corporate governance of corporations generally, but not of banks. Banks share many characteristics in common with other corporations but differ in respect of the social costs involved. Banks play a fundamental role in a country's economy and problems within the banking sector will have an impact on the wider community. The author argues that corporate governance played an important contributing factor to the financial crisis. In particular, the financial crisis has highlighted multiple principal-agent problems within the 'originate-to-distribute' model of banking. Multiple principal-agent problems are the direct consequence of financial innovation and regulatory dialectic. The 'originate-to-distribute' model relies on securitisation. Academic literature has revealed that securitisation is opaque and complex (Buiter, 2007; Berndt and Gupta, 2008; Fender and Mitchell 2009a). Little research however, has been conducted into why securitisation is opaque and complex from a principal-agent angle. This paper thus provides a new perspective to the literature on principal-agent theory and banking corporate governance.

Key words: Financial crisis; corporate governance; banking regulation; separation of ownership and control; principal/agent theory; securitisation

JEL classifications: G01, G21, G24, G30

1. Financial Innovation

Financial innovation and the financial crisis of 2007-2009

On 7th February 2007, HSBC announced losses linked to US subprime mortgages. Two months later on 3rd April 2007, New Century Financial, which specialised in sub-prime mortgages, filed for Chapter 11 bankruptcy protection and cut half of its workforce. The sub-prime mortgage crisis had begun. The sub-prime mortgage crisis in the United States in September 2007 is arguably the catalyst to the global financial crisis of 2007-2009. During this period, the world's financial system has experienced severe challenges since the Second World War. When borrowers of sub-prime mortgages failed to repay their loans, US banks faced a liquidity crisis. Securitisation of loans, increased leverage and the development of complex financial products all contributed to the liquidity problem. Globalisation meant that the financial crisis of 2007-2009 affected most advanced countries simultaneously. Globalisation acts as a rapid multiplier effect, transmitting the infection instantly across the globe and reveals the fragility of the world's inter-connected financial market. In the UK, the property market was shaken due to the securitised credit model and liquidity strains. UK banks were exposed when market confidence and asset prices fell. Northern Rock and Bradford & Bingley were nationalised. The government's recapitalisation programme of £850 billion and quantitative easing programme of £200 billion rescued banks such as the

Lloyds Banking Group (Lloyds and HBOS) and Royal Bank of Scotland (NAO, 2009). UK taxpayers now own 43% of Lloyds Banking Group and 84% of Royal Bank of Scotland (UKFI, 2009).

Sub-prime mortgages form a component part of securitised assets. Securitisation is the '*process of converting cash flows arising from underlying assets or debts (receivables) due to the originator (the entity which created the receivables) into a smoothed repayment stream, thus enabling the originator to raise asset-backed finance through a loan or an issue of debt securities - generically known as asset-backed securities or ABS - which is limited recourse in nature to the credit of the receivables rather than that of the originator as a whole, and with the finance being self-liquidating in nature*' (Deacon, 2004 cited in Burns, 2009). Two schools of thought on securitisation have since emerged. According to the first school, securitisation is to be celebrated because it reduces default risk by dispersing risks along the process and thus strengthens the financial system (Greenlaw et al (2008) cited in Shin, 2009). However, Acharya, Philippon and Richardson (2009) rebut this argument and counterclaim that the securitisation market collapsed in early 2007 due to banks ignoring their own model of securitisation and failed to transfer credit risks (Acharya, Philippon and Richardson, (2009). Banks moved from the 'originate-to-hold' model to 'originate-to-distribute' model because in theory, securitisation would give greater liquidity; more borrowing capacity and ability to transfer credit risks to ultimate investors. In reality, the latter was not achieved (Acharya, Philippon and Richardson, 2009; Goodhart, 2009). Acharya, Philippon and Richardson (2009) believe that between 2003-2007, banks utilised securitisation to avoid Basel II Accord on capital requirements. Regulatory dialectic thus became the aim of banks, not transferring

credit risks to investors. The term 'originate-to-pretend-to-distribute' model should be more accurate to describe securitisation (Goodhart, 2009).

The second school of thought on securitisation is one of misalignment of incentives (Paligorova, 2009) Securitisation contributed to the collapse of the financial system because incentives were distorted in all the stages of the securitisation process. The end result is that the ultimate investors at the end of the process will end up with the 'hot potato of bad loans' (Shin, 2009). In Shin's view, the ultimate investors did not end up with the bad loans. He argues that the financial crisis was severe because the bad loans were not all passed on to final investors. Instead, the bad loans remained in the securitisation process, on the balance sheet of financial intermediaries or special purpose vehicles that sponsored them (Shin, 2009). Misalignment of incentives is the fundamental ground of the principal-agent problem and it is important to study the multiple principal-agent problem in the securitisation process.

It is vital to fix the securitisation process because loan securitisation is the main source for producing credit (Pozen, 2009). Pozen states that in the United States, banks accounted for less than 25% of all credit extended. Lenders in the shadow banking industry (insurance companies, hedge funds, credit card companies) provided the majority of loans. These lenders relied heavily on loan securitisation. A similar pattern can be found in the UK, but to a lesser extent (Bank of England, 2009). Nevertheless, heavy reliance on securitisation by UK banks is a contributory factor to the downfall of banks such as Northern Rock. Northern Rock had a very unusual business model. It combined a traditional reliance on illiquid long-term mortgage assets with a reliance on innovative sources such as securitisation and the wholesale market (Milne & Wood, 2009). Mortgages constituted 77% of Northern Rock's

assets. At the end of 2006, Northern Rock issued asset-backed securities through its 'Granite' securitisation vehicles and obtained 40% of funding (Milne & Wood, 2009). Wholesale funding constituted 68% of Northern Rock's liabilities whilst deposits only made up 27% of its liabilities (Goldsmith-Pinkham & Yorulmazer, 2009). Northern Rock experienced a bank run in September 2007 which caused a ripple effect in the UK financial sector. The Bank of England assisted by giving emergency financial aid and later nationalising Northern Rock. Hence, it is important to understand the problems in securitisation and its associated issues.

The rest of the paper will consist of the following sections: section 2 of the paper will be a discussion on the theory of the principal-agent problem. Section 3 consists of an analysis of the multiple principal-agent problems in securitisation. Section 4 consists of a discussion on the associated issues (information asymmetry, moral hazard, adverse selection…etc.) created by the multiple principal-agent problems. Finally, section 5 is a concluding remark.

2. The theory of the principal-agent problem

Securitisation exacerbates agency conflicts (Gan and Mayer, 2006). Agency conflicts exist when there is a separation of ownership and control (Berle and Means, 1932). 68 years ago, Berle and Means published their seminal work 'The Modern Corporation and Private Property'. Their work is arguably the birth of contemporary corporate governance thought and still exerts significant influence on modern corporations in the 21st century. As Berle and Means pointed out in 1932, the distinctive feature of the modern public corporation is the separation of ownership and control. This means that modern public corporations are

subject to the principal-agent problem as identified by Jensen & Meckling. In modern corporations, the managers decide how a corporation's capital is spent, how resources are allocated and what endeavours the corporation undertakes. They do not however, own the capital or resources. Those in control of the corporation, "*and therefore in a position to secure industrial efficiency and produce profits, are no longer, as owners, entitled to the bulk of such profits… The explosion of the atom of property destroys the basis of the old assumption that the quest for profits will spur the owner of industrial property to its effective use."* Berle and Means believed this led to one simple conclusion: *"[W]here the bulk of the profits of enterprise are scheduled to go to owners who are individuals other than those in control, the interests of the latter are as likely as not to be at variance with those of ownership and…the controlling group is in a position to serve its own interests."*

Thus, the main tenet of Berle and Means's theory is that capital in the U.S. has become heavily concentrated during the previous few decades. Certain corporations became very powerful. As these corporations grew, it became increasingly difficult for the original owners to maintain their majority shareholdings and shares became dispersed amongst many small shareholders. The consequence of this dispersal, as Berle and Means suggested, was that power became vested in the managers, who run the corporations. These managers have different interests to shareholders.

Berle and Means did not foresee the changes that technology and innovation have made to the banking sector. In search of greater yield and liquidity, banks have abandoned the traditional 'originate-to-hold' model to the 'originate-to-distribute' model. Securitisation has

allowed banks to take on more risks and generate more profits. Ownership and responsibility of risks are lost in the process. Jensen and Meckling (1976) developed Berle and Means's concept of separation of ownership and control further. Under the principle of separation of ownership and control, shareholders own shares in a business whilst managers run a business. The principal-agent theory stems from the concern that managers (agents) will pursue their own interests and indulge in perks whilst bearing only a proportion of the costs. Imperfect information (hidden action) and misaligned incentives (hidden information) between principal and agent are the causes of this fear. Shareholders (principals) find it difficult to monitor the managers because of time and logistical constraints. Monitoring the managers will incur agency costs. To limit agency costs, Jensen and Meckling recommended that incentives should be enhanced whilst restrictions in the market to be removed. In their view, the focus of the principal-agent theory is determining the most efficient contract to align the interests of directors with shareholders'. The firm is regarded as a '*nexus of contracts'* (Jensen and Meckling, 1976) because stakeholders have contracts between themselves. Once these interests are aligned through contracts, directors should pursue the goal of maximising shareholder value.

Jensen and Meckling defined an agency relationship as: '*a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent.'* (Jensen and Meckling, 1976, p.5) In modern banking, the contracts of finance include both equity and debt. Equity holders have formal control rights over a bank's assets and are entitled to residual profits. Debt holders only enjoy control rights when there is a default on the fixed payments. Jensen and Meckling (1976) said that both equity and debt finance create specific

general problems. In equity finance, the agency costs are in relation to managerial slack. In debt finance, the agency costs are in relation to risk shifting (asset substitution). According to Keller (2008), managerial slack takes place when a manager '*fails to maximise the value of a bank or portfolio*'. Risk shifting takes place when the manager accepts '*an inefficient high level of risk in his efforts to maximise the value of a firm or portfolio*' (Keller, 2008). These two problems can happen at the same time. In the next section, the author will discuss the multiple principal-agent problems and its associated issues in securitisation.

3. Multiple principal-agent problems in securitisation

Modern banking has created multiple principals and agents in the principal-agent problem. The 'originate-to-distribute' model relies on securitisation and it is useful to understand the securitisation process and key players before the multiple principal-agent problems can be discussed. Diagram 1 below illustrates the key players in the securitisation process:

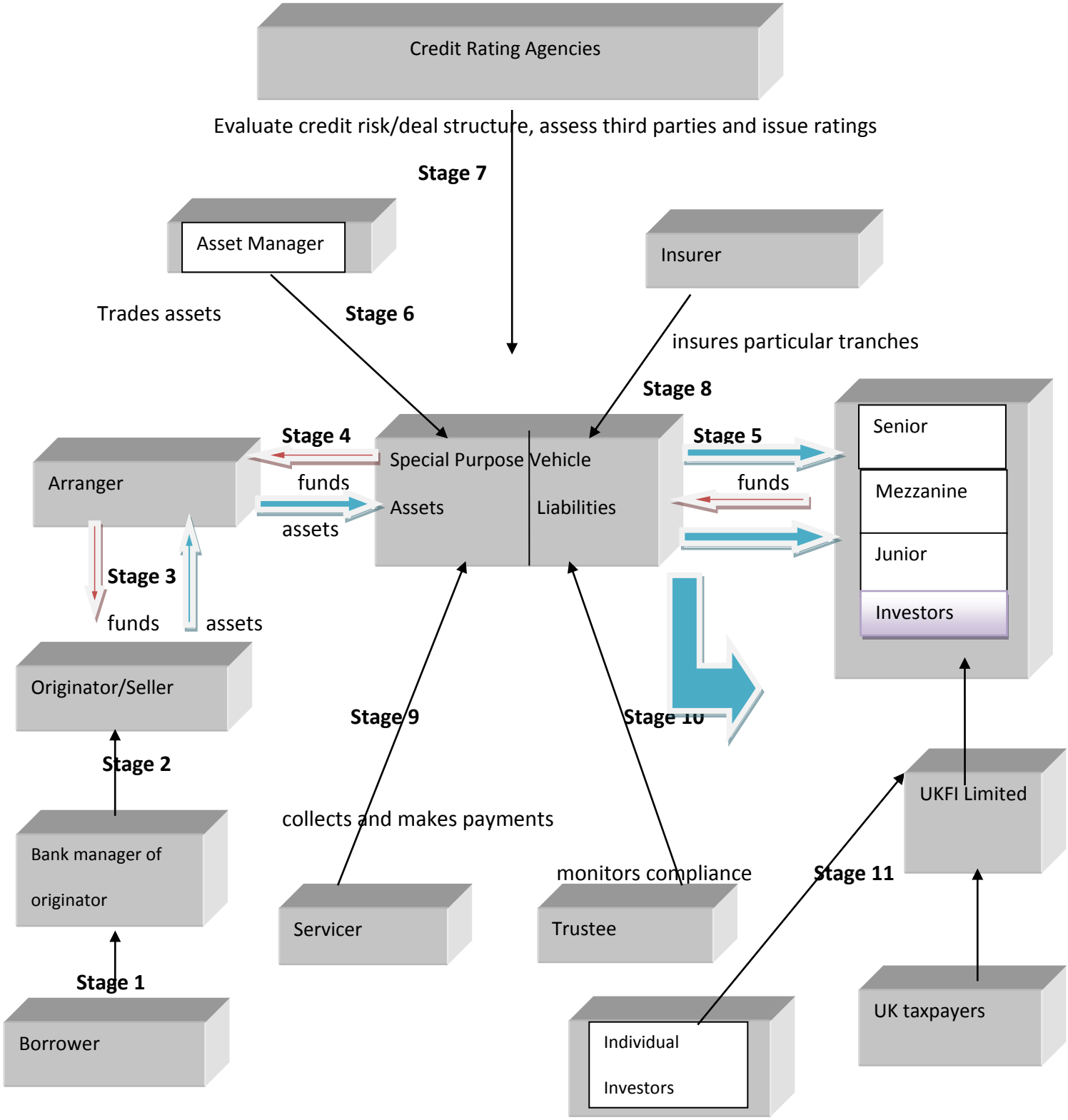

Diagram 1: Key players in the securitisation process

Source: Adapted from Fender and Mitchell (2009a)

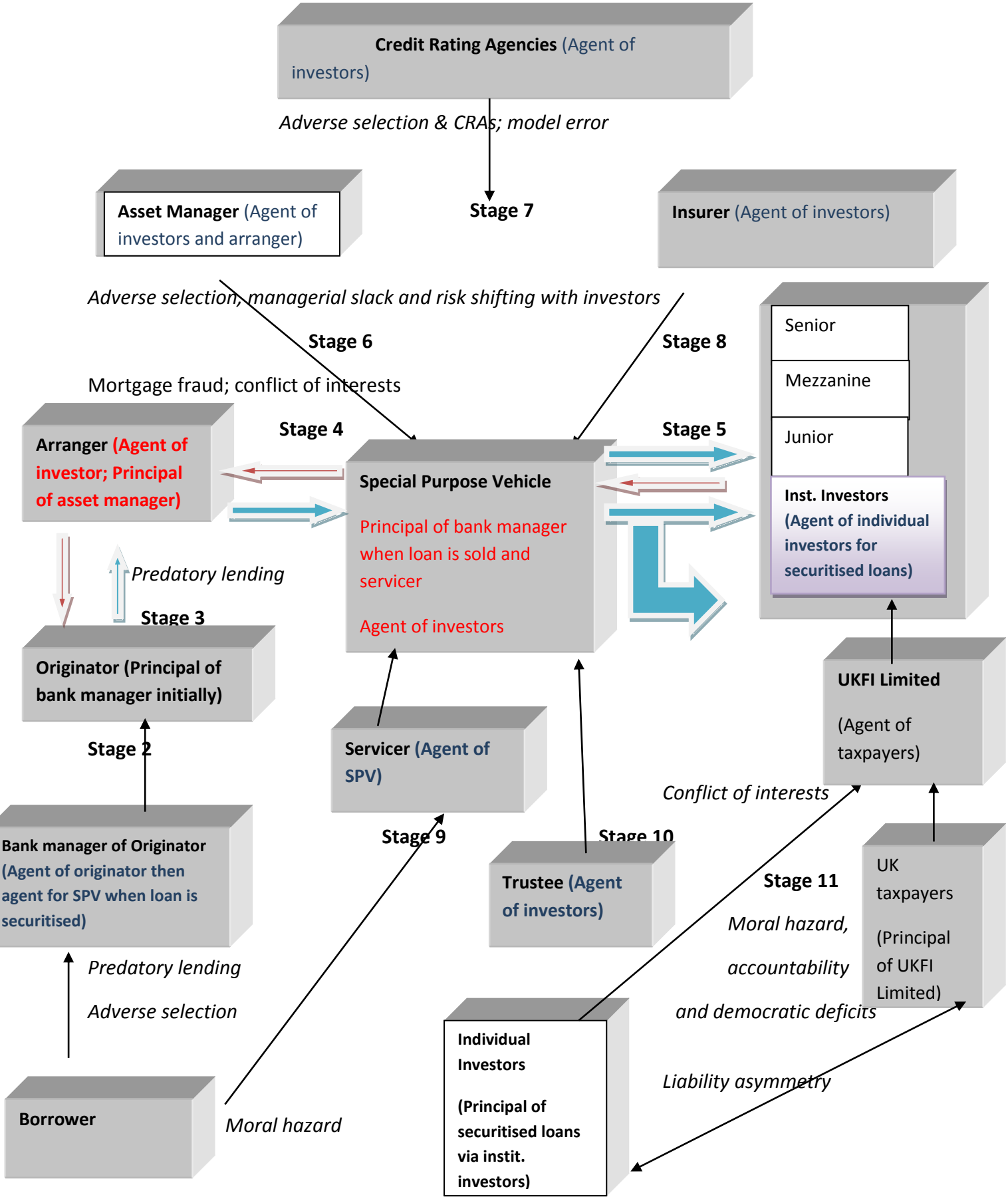

Diagram 2: Multiple principal-agent relationships and its associated problems in the securitisation process

Source: Adapted from Fender and Mitchell (2009a); Ashcraft and Schuermann (2008)

Multiple principal-agent problems

SPVs and arrangers play the dual role of principal and agent. This highlights a number of problems. First, although the SPV owns and controls the securitised loans, Mishkin (2008) reveals that responsibility and ownership for the securitised loans were lost in the securitisation process. In the traditional 'originate-to-hold' model, senior bank managers would supervise junior managers in analysing and assessing default risks. The European Shadow Financial Regulatory Committee even commented that bank managers who offered too many risky loans would have been dismissed (ESFRC, 2007). In the 'originate-to-distribute' model, the originator has little incentive, if at all, to monitor the quality of the securitised loan because investors as end-users bear the risks. The job of analysing and monitoring risks has been assumed by credit rating agencies. Originators were however, interested in the volume of the loans because of the substantial fees they received. Risks without ownership is a licence to moral hazard since there is no meaningful penalty for the risk shredder. Moral hazard refers to 'changes in behaviour in response to redistribution of risk' (Ashcraft and Schuermann, 2008). Originators were thus free to sell loans/assets, obtain more liquidity and take on more leverage. However, not all risks were shifted and the boomerang has swung back to the risk shredders, the originators. Shin (2009) argues that not all the assets were sold to investors in practice. The ultimate investors often bought assets backed by bad loans. There is a difference between assets sold to ultimate investors and issuing assets backed by securities to ultimate investors. In the former, the bad loans are taken off the balance sheets of the originators. In the latter, bad loans remained on the books of SPVs and other financial intermediaries. Although SPVs are separate legal entities, the originators often retained some interest (Shin, 2009). Thus, this led to originators losing

a large amount of money. Moral hazard has thus stung the originators because they were saddled with excessive leverage and risks when they thought that risks have shifted to the ultimate investors.

Buiter (2007) and Pozen (2009) have suggested that retention of a tranche of the collaterised debt obligations by the originator should be a method that would increase the originator's incentive to monitor the quality of the loan. Buiter (2008, cited in House of Commons 2008a) suggested to the House of Commons Treasury Committee that originators should retain the junior tranche in the borrower's loan so that they have an incentive to monitor the risks attached to it. His other suggested solution is to create transparency by publishing details about the owners of the equity tranche. Pozen (2009) suggested that all originators should retain at least 5% of the risk of loss for any loans they originate and sell to the secondary requirement. Other authors such as Keller (2008) and Fender and Mitchell (2009) are less enthusiastic about retention of equity tranches. Keller (2008) said that although it is not a requirement to retain an equity tranche, managers often buy or hold a portion of the equity tranche already as part of the financial remuneration. There is still little evidence of whether retention of tranches has a positive effect on the performance of collaterised debt obligations management. Only the market and future events can judge this. Fender and Mitchell (2009) are more dismissive of the effect of retaining equity tranches. They believe that this method does not provide strong enough incentives for originators to screen borrowers particularly when downturns are likely or if the retained tranches are too small. They suggested that disclosure of the size and nature of the equity retention is a better mechanism. The author believes that retention of equity tranches alone will not suffice. Retention of tranches is similar to executives holding shares in a bank or

company. Richard Fuld, the CEO of Lehman Brothers had 10 million shares in Lehman Brothers but ultimately did not help when the bank collapsed (Fishman, 2008). According to Valencia (2010), a recent study found that banks where chief executives had many shares and options in the company actually performed worse than those with fewer shares. One possible explanation is that the chief executives took risks that they thought were in shareholders' best interests. They concentrated on short-term performance and the stock market crash wiped off their shares. Therefore, both retention and disclosure of tranches are necessary to reduce the agency problem of aligning incentives.

The second problem concerns arrangers, which are often investment banks. They should in theory act as agents for their clients, the investors, but as Shing (2009) suggested, they often acted as principals for themselves. Quarterly reporting requirements and a culture of sales rather than of serving the client encouraged banks to focus on short-term performance and taking excessive risks. An example is AIG's huge losses from its insurance branch. AIG's managers bought risky assets outright, thus acting as principals for themselves rather than as agents for their clients. They reinvested securities when they did not fully understand their exposures and assumed that the secondary market for securities was robust (Tucker, 2010). The managers were wrong and AIG suffered a repo run, which is similar to a bank run. The repo market is a 'large, short-term market that provides financing for a wide range of securitization activities and financial institutions' (Gorton & Metrick, 2009).

Better alignment of incentives can be achieved through transparency; accountability and better regulation of banks. President Obama's proposal to ban deposit-taking banks from engaging in proprietary lending is to be welcomed because this should hopefully reduce the

principal-agent problem between arrangers and ultimate investors (Clark, Treanor & Owen, 2010). Lord Myners does not think that UK banks engaged in proprietary trading as much as the US banks. Therefore, he is not keen to implement similar measures in the UK. Diagram 2 suggests that securisited credit played a lesser role in the UK, but Barclays bank is one of the biggest holders of US bonds due to its purchase of the American operations of Lehman Brothers (Tett, 2010). Therefore, it is important for Barclays to provide liquidity to US banks when half of the American debts are due within the next few months (Tett, 2010). Banning proprietary trading would hinder Barclays Bank in providing such liquidity. The main rationale of banning proprietary trading however, is to be commended. During the financial crisis, many banks held onto collaterised debt obligations for long periods, thus using up their capital. Basle II rules allows banks to hold these collaterised debt obligations with almost no reserves, which made the entire financial system vulnerable to shocks. A ban on proprietary trading would tighten the rules on trading books, making it harder for banks to provide cheap credit.

The decision of the Securities & Exchange Commission to charge Goldman Sachs and its employee, Fabrice Tourre, with fraud on 17th April 2010 (Seib, 2010) seems to suggest that the relationship between arrangers, asset managers and investors is murky and fraught with danger. Goldman Sachs is alleged to have collaborated with a hedge fund called Paulson & Co to create a mortgage-backed product that was doomed to fail. The product is called Abacus (a collaterised debt obligation) and is was made up of risky and poor quality loans. Goldman Sachs then allegedly lied to investors ahd insurers about the types of mortgage that the product contained. It used a company called ACA Management to validate the CDO. Consequently, investors and insurers lost more than £650 million. Paulson & Co (the asset

manager) is not guilty of any wrong-doing. What is interesting here is the principal-agent problem leading to conflict of interest and fraud. Goldman Sachs (agent of investors and principal of asset manager, Paulson & Co) clearly did not act in the best interest of the investors by lying to them. Royal Bank of Scotland (RBS) is one of the major victims in this fraud. ABN Amro was one of the insurers. RBS bought ABN Amro in 2007. In 2008, RBS paid Goldman Sachs almost $841 million to get out of the insurance deal. It is yet unclear whether RBS will take legal action against Goldman Sachs. However, this case is important. It shows that the financial crisis is not just of mismanagement on the part of bank directors, but one of fraud and conflict of interest through financial innovation. The Valukas's report of March 2010 reveals that Lehman Brothers used a 'materially misleading' accounting vehicle called Repo 105. Repo 105 masked the size of Lehman's balance sheet as the pressure grew for investment banks to reduce their leverage at the end of 2007, which Lehman was also doing at the time. Goldman Sachs went further in that not only it participated in opaque deals and offered bad loans, it created Abacus, a complicated financial product which transferred wealth from Paulson & Co. at the expense of other investors such as RBS (Hutton, 2010). The Financial Services Authority should investigate this matter and co-operate with the Securities & Exchange Commission to hold those responsible. Conflicts of interest must be disclosed to avoid similar problems in the future.

The third principal-agent problem is manifested in the different types of ultimate investors. As at 31 December 2008, statistics from the Office for National Statistics (ONS) show that institutional investors own 39.9% of shares in the UK stock market; individuals own 10.2% and the government owns 1.1% of the UK stock market (ONS, 2010). The rest of the share

ownership is as follows: rest of the world: 41.5%; other financial institutions: 0.8%; charities: 3% and banks: 3.5%. Northern Rock and Bradford and Bingley are not taken into account in the survey. Individual investors, often ordinary people with pensions, are the ultimate principals of the securitised loans through institutional investors. However, individual investors have little control over fund managers. Fund managers have little control over chief executives of banks. Chief executives could barely control traders because the former did not fully understand financial derivatives (Dillow, 2008). Therefore, traders were at full liberty to take excessive risks. They were awarded huge bonuses if they performed well but received little punishment for losing money. Dillow (2008) suggested that hedge funds did not fail in the financial crisis because of the ownership structure. Hedge funds are owned as private partnerships where there is no separation of ownership and control. Thus, there is less risk of misalignment of incentives in hedge funds. Joint and several liability of partners also acted as a useful deterrent to excessive risks. Dillow's point is interesting because it raises the cost of separation of ownership and control. Berle and Means (1932) commented that: '*In strictly capitalist countries and particularly in time of depression, demands are constantly put forward that the men controlling the great economic orgasnisms be made to accept responsibility for the well-being of those who are subject to the organisation, whether workers, investors or customers*.' (Berle and Means, 1932, p. 310). They proposed that the modern corporation should serve all stakeholders and not just shareholders. It is for society to assert the stakeholder approach of corporate governance.

Indeed, the stakeholder approach is important to UK taxpayers because they own shares in Northern Rock, Bradford & Bingley, Lloyds Banking Group and Royal Bank of Scotland. It is important that investors become more active and socially responsible to rebuild the banking

structure because society at large suffered the most during the financial crisis of 2007-2009. Taxpayers have seen the value of their pensions decreased and they had to underwrite the four banks named above during the financial crisis. Peston (2009) argues that there is an asymmetry between the liability of banks' shareholders whilst taxpayers have unlimited liability. It is this asymmetry that has led to banks taking excessive risks whilst taxpayers could hardly monitor bank managers' actions.

Individal investors in a dispersed ownership country find it difficult to exert influence. UKFI Limited should thus act as an active institutional investor. UKFI Limited was created as a new 'arm's-length body' to manage the government's shares in UK banks. UKFI is wholly owned by the Government and has the overarching objective to '*protect and create value for the taxpayer as shareholder with due regard to the maintenance of financial stability and in a way that promotes competition*'. (House of Commons, 2008b). UKFI Limited is only a temporary investor in Lloyds Banking Group; Royal Bank of Scotland; Northern Rock and Bradford & Bingley but it should engage fully in maximising value for taxpayers. Its website is thin on information, so it would assist taxpayers if UKFI Limited can provide more information, including its business strategy. It is also important that UKFI Limited operates without political influence. UKFI Limited currently shares support staff and a building with the Treasury (House of Commons, 2008b). Real operational independence and accountable capitalism will only be achieved if UKFI Limited truly operates at arm's length.

The concept of free taxpayer guarantees should cease and that financial reform should '*put capitalism back into the heart of capitalism'* (Tucker, cited in Aldrick 2010. Banks are vital in capitalist economies but they run on socialist principles as they provide social benefits to the public. What we have seen in the financial crisis of 2007-2009 is that taxpayers, rather

than bankers, have borne the mistakes of the financial world. Tucker's remark is welcomed because bankers should take responsibility for their own mistakes.

4. Analysis of associated issues revealed by multiple principal-agent problems in securitisation

The problems associated with the multiple principal-agent relationships are highlighted in italics in diagram 6. They include: information asymmetry; adverse selection; predatory lending; moral hazard; mortgage fraud; conflict of interests; managerial slack; risk shifting; model error; liability asymmetry; accountability and democracy deficits. Ashcraft and Schuermann (2008) have provided an excellent account of the associated principal-agent problems in seven stages. Their analysis is extended below by identification of new problems in securitisation, especially in the UK securitisation model where the UK government acts as agent to taxpayers.

Tackling information asymmetry

Berle and Means (1932) recognised that the securities market has provided mobility and liquidity to traders. They acknowledged that the market works well only if there is '*an adequate supply of information on which to base an appraisal*' (Berle and Means, 1932, p. 263). Parties to a contract often have unequal access to information. The seller usually has more information than the buyer. Hence, the doctrine of 'caveat emptor'. Bank stakeholders similarly experience information asymmetry problems. Bank managers know more about its bank assets than depositors or other stakeholders. In securitisation,

information asymmetry exists in all stages because the securitisation process is a long and complex loan transaction. The seller often has more information than the buyer, so for example, the originator will have more information than the arranger; the arranger will have more information than the ultimate investors. The originator has more information about loans and may be tempted to induce the borrower to misrepresent financial details on the loan application (Ashcraft and Schuermann, 2008). This can lead to predatory lending and adverse selection. These problems will be discussed below.

Information asymmetry is not confined to the banking industry but there is evidence that it affects banks more than other sectors. Morgan (2002) reveals that rating agencies disagree much more over banks and insurance companies than with other sectors. Flannery, Kwan and Nimalendran (2002) do not support Morgan's view, using stock analysts reports. However, Santos (2004) finds that Moodys and Standard and Poors disagreed more on the ratings of financial firms than non-financial firms. The difficulty with explaining these findings is the opaqueness of the banking sector. One of the main criticisms of the originate-to-distribute model is that both the financial products and institutions are too opaque (Buiter, 2007; Berndt and Gupta, 2008; Fender and Mitchell 2009a). Complex structures and products meant that few understood who owned what assets or risks. The process of securitisation resembles a cooking recipe: it involves slicing, dicing, tranching, bundling and re-packaging. Bank assets are often intangible and stakeholders do not realise there is a problem until late in the transaction.

Complex financial instruments such as off-balance sheet vehicles are permissible (though not encouraged) under generally accepted accounting practices (GAAP). However,

Companies Act 2006 does not define 'off-balance sheet arrangement', so there are no guidelines to companies as to the type and amount of off-balance sheet transactions they should disclose. As a result of this lacuna, the International Accounting Standards Board has proposed to tighten up the derecognition (transfer) of financial assets and liabilities. There would be better disclosure because financial statements will contain information about an entity's risk exposure. Montagnon (2008b) suggested to the House of Commons Treasury Select Committee that audit and risk committees within a bank should scrutinise their balance sheets very carefully. This is very important as this scrutiny might have prevented mistakes such as the misuse of off-balance sheet vehicles at The Royal Bank of Scotland. The Royal Bank of Scotland was severely exposed to off-balance sheet vehicles when it took over ABN Amro in 2007. Before the financial crisis, ABN Amro was exposed to more than $100 billion on off-balance sheet entities. This allowed ABN Amro to expand its asset base and they made good profits when the economy was healthy. However, ABN Amro suffered huge losses when the market dipped. In December 1999, ABN Amro set up Amstel Funding Corporation, an off-balance sheet entity. Seven years later, ABN Amro had acquired asset-backed securities worth $28 billion through Amstel Funding Corporation. Approximately 91% of assets were collateralized debt obligations and the remainder were residential mortgages. Credit rating agencies gave AAA rating to 98% of ABN Amro's assets. However, there was little transparency on the quality of assets apart from ratings. ABN Amro issued short-term liabilities and offered investors an option to return the assets to ABN Amro. This insurance policy worked well for investors as they were protected. However, ABN Amro was not protected and it had to bear all the losses during the financial crisis (Acharya and Schnabl,2009).

The difficulty with stricter disclosure of off-balance sheet vehicles is regulatory dialectic. Professor Geoffrey Wood (2008b cited in House of Commons, 2008b) informed the House of Commons Treasury Select Committee that banks invented SPVs as an attempt to circumvent regulatory requirements. Banks utilise off-balance sheet vehicles to reduce the amount of financial capital that they are required to hold under Basel II requirements. The danger of stricter regulation in the UK is that banks may shift towards other jurisdictions which enjoy a lighter regulatory approach (House of Commons, 2008a). Therefore, national efforts to improve off-balance sheet reporting must be coupled with international efforts.

Tackling adverse selection and moral hazard

The main problems resulting from information asymmetry in securitisation are adverse selection and moral hazard. Securitisation has exacerbated the problem of adverse selection. Adverse selection takes place when the original lender/seller has more information on the borrower's credit history than the parties in securitisation and so the latter cannot differentiate between the quality of products. Under the traditional 'originate-to-hold' model, banks have access to information on the borrower's credit history, so they can pick and choose customers. In the 'originate-to-distribute' model however, the transfer of ownership from the originator to the SPV means that banks have less incentives to screen customers. This encourages originators to take on more bad loans from the beginning under the 'originate-to-distribute' model because they can pass them along the chain. Adverse selection takes place in stages 1, 6 and 7. In the securitisation process, the arranger can either securitise high-risk loans or keep the low-risk loans. Arrangers sell the high-risk loans to shred risks and create more liquidity. They have little incentive to monitor these loans.

Adverse selection also takes place in stage 7, where the opinion of credit rating agencies is vulnerable to asymmetric information. Arrangers are more likely to know more about the securitised loans than the agencies.

Recent empirical evidence shows that under the 'originate-to-distribute' model, loans from banks are of a worse quality than those originated by less-regulated institutions (Keys et al, 2009). Purnanandam (2009) finds that banks with a large quantity of loans originated before the first quarter of 2007 (before the credit crunch took place) could not sell them in the immediate post-crisis era. He concluded that securitisation contributed to the origination of inferior loans. His finding shows that banks with a high gearing ratio and weaker sensitivity to demand deposits produce more inferior loans than banks with high capital and stronger sensitivity to deposits. Others argue that the proliferation of toxic assets is due to lax lending standards. Dell'Ariccia, Igan and Laeven (2008) find that the decrease in lending standards has led to an increase in the demand of subprime loans. Additionally, the lax lending standards are more prevalent in areas where lenders securitised large portions of the originated loans. Sir Callum McCarthy (former chairman of the Financial Services Authority) informed the House of Commons Treasury Select Committee (2008b) that banks were also lax in underwriting loans, which is a major contributing factor to the sub-prime crisis. These findings are disturbing because the toxic combination of lax lending standards, poor underwriting practices and increase of subprime loans contributed to the sub-prime crisis (House of Commons Treasury Select Committee, 2008).

Moral hazard arises when the originator has less incentive to monitor the borrower's actions. A bank's incentive to monitor borrowers diminishes since ultimate bearer of the risk will no longer be the originator, but the investors. Investors such as hedge funds and money

market funds do not have the appropriate tools to monitor, as lending is traditionally a banking product, and their benchmark risk analysis relies on the bank's historical lending records. In the House of Commons Treasury Committee Sixth Report (2008), Mr David Pitt-Watson expressed the view that originators do not have strong incentives to adequately monitor credit risk because finance markets are driven by trading rather than ownership. He said that ownership responsibility should be clearly demarcated. Although Berle and Means identified that modern day finance is driven by mobility and liquidity, they only considered the ownership of shares (and not of risks) in a corporation (Berle and Means, 1932, p. 251). In their opinion, shares are liquid, impersonal and shareholders have no responsibility because 'ultimate responsibility and authority are exercised by directors.' (Berle and Means, 1932, p. 297) Through securitisation, risks have also become liquid, impersonal and originators have little responsibility. Securitisation has allowed originators to shift and pass risks along the process, receiving much needed liquidity but losing responsibility and control of risks.

A consequence of the shift in risks is that borrowers in the US can simply walk away from their debts if they choose. Traditionally, US borrowers pay off their mortgages first and then credit card debts. A report by Experian in 2007 however reveals that borrowers pay off their credit card debts before mortgages (Ashcraft and Schuermann, 2008). This is because lenders often do not want to foreclose in a depressed property market. Therefore, instead of giving loan repayments to the servicer (agent of the SPV), borrowers have bargaining powers in relation to mortgage defaults. The remedy is to ask for a significant deposit from the borrowers. This would limit their leverage.

Moral hazard also takes place in stage 11 of diagram 6. UKFI Limited is a temporary manager of taxpayers' interests in the Royal Bank of Scotland; Lloyds Banking Group; Northern Rock and Bradford & Bingley. It has to balance the tasks of maximising value for taxpayers; financial stability and maintain healthy competition between banks. UKFI Limited may adapt their behaviour due to politics. After all, UKFI Limited is close to the Treasury, despite being set up as an independent body. It should avoid pursuing wider policy goals or succumb to political pressure. Explicit government backing of the above four banks may reduce the bank managers' incentive to manage risks properly (von Bismarck, Sikken, Steinberg & Wyman, 2009). UKFI Limited cannot intervene in the daily management of the four banks. Therefore, the risks of purchasing bad loans are shifted to taxpayers if UKFI Limited does not monitor share prices carefully. For every 10 pence increase in the prices obtained for the shares, taxpayers would receive an additional £9 billion from the sale of shares in Royal Bank of Scotland and an additional £3 billion from shares in Lloyds Banking Group. On 27 November 2009, the market prices of Royal Bank of Scotland's and Lloyds Banking Group's shares implied a loss for the taxpayer of £18 billion (NAO, 2009). Therefore, UKFI Limited should monitor share prices and market conditions carefully because short-termism and a quick sale would jeopardise shareholders' value.

Adverse selection and moral hazard are not restricted to the securitisation process. In other areas such as insurance, sellers will make representations and warranties about the buyer and the underwriting process. Such measures would also apply in the securitisation process, on top of thorough due diligence by the buyers.

Tackling mortgage fraud and predatory lending

Stigler and Weiss (1981) showed how information imperfection can lead to banks rationing loans to parties they know. By utilising their own information sources, banks provide tailored services to customers. Barth, Caprio and Levine (2006) argue that information asymmetry also leads to bank secrecy in lending and the reluctance of secondary markets to lend. Banks acquire both negative and positive information about customers from loans. They have the upper hand in lending decisions and credit allocation. This has led to predatory lending in stages 1-3 of diagram 6 in securitisation.

Mortgage fraud is another danger in stage 3. This is not a novel concept but Ashcraft and Schuermann (2008) assert that mortgage fraud is more common when there is an asset bubble. Borrowers want a higher standard of living and are tempted to give inaccurate financial details on their loan applications. Moreover, criminals often use property transactions as a method to launder 'dirty' money. Ashcraft and Schuermann (2008) argued that mortgage fraud played a significant role in the subprime crisis. Fitch Ratings produced a report in 2007 which shows that 45 borrowers defaulted very shortly after origination. Fitch found that there were fraudulent activities amongst these borrowers such as first-time buyers with questionable income and debts; suspicious items on credit history and incorrect calculation of debt-to-income ratios. To prevent mortgage fraud, due diligence must be conducted thoroughly by both the originator and arranger.

Tackling managerial slack and risk shifting

Keller (2008) has identified two main problems with managers of collaterised debt obligations. These are managerial slack and risk shifting. Managers work for the ultimate

investors by managing a portfolio of 100-200 leveraged loans. Leveraged loans are loans that have a high amount of debt and are given to borrowers who are primarily junk-rated (Drucker & Puri, 2009). Standard & Poor (2002b) and Fitch (2006) show evidence that managers of collaterised debt obligations have a considerable impact on performance. The concern is that these managers may not have the incentive to act in the best interests of all the investors (Keller, 2008). Keller only considered two classes of tranche investors in his analysis: senior tranche (debt) and junior trance (equity). Senior tranche investors are entitled to residual profits and so share in the 'upside risk'. However, they cannot make decisions. Keller (2008) commented that it is not clear in whose interests the managers of collaterised debt obligations should normally serve. He added that there is a triangular principal-agent relationship between the managers and the two types of investors (debt and equity). Jensen and Meckling (1976) first identified this relationship. There is a conflict of interest here because debt holders generally wish to be risk averse due to the fixed nature of their claims. Equity investors however, prefer to pursue riskier ventures because they enjoy higher profits and bear few losses from the downside risk. Managerial slack usually occurs at the detriment of equity investors. Managers may spend less time screening the quality of the loans or monitoring loans because only equity investors will enjoy the profits. Further, managers have little to gain from monitoring such loans. This lack of monitoring in turn leads to adverse selection and moral hazard.

Keller (2008) suggested that managers can engage in risk shifting in three ways: concentrating risk; buying and selling loans below or above par and buying subordinated or lower rated loans. In relation to managerial slack, Keller suggested that managers can engage in 'buying the market' and insufficient credit analysis. The first two methods benefit

equity investors because the level of risks in the portfolio is high. The third option increases returns for equity investors when economic conditions are good. 'Buying the market' and insufficient credit analysis are detrimental to both equity and debt investors. This is because by buying whatever product is available on the market without proper analysis, the managers have the burden of inferior loans whilst not receiving any returns to compensate them. Keller concludes by stating that agency problems do matter in the management of collaterised debt obligations but it is not certain how effective the traditional solutions such as retention of equity tranches and reputational constraints are. Only the markets can judge.

Cummins (2004) gives a more sympathetic view towards collaterised debt obligations. He believes that investors' interests are protected through the various tranches and credit enhancement. Originators enhance credit or rating of the securitised instrument by issuing collaterals. The author believes that Keller's arguments are more compelling in view of the evidence given by various credit rating agencies. Excessive leverage led to risk shifting in the 'originate-to-distribute' model. Evidence from diagram 3 below shows that banks in the US, Europe and the UK (the UK is not in Eurozone) had excessive leverage ratios and thus risk shifting was a natural consequence in many banks. It is hoped that by reducing the leverage ratio; originators retaining equity tranches and disclosure of tranches should hopefully reduce managerial slack and risk shifting.

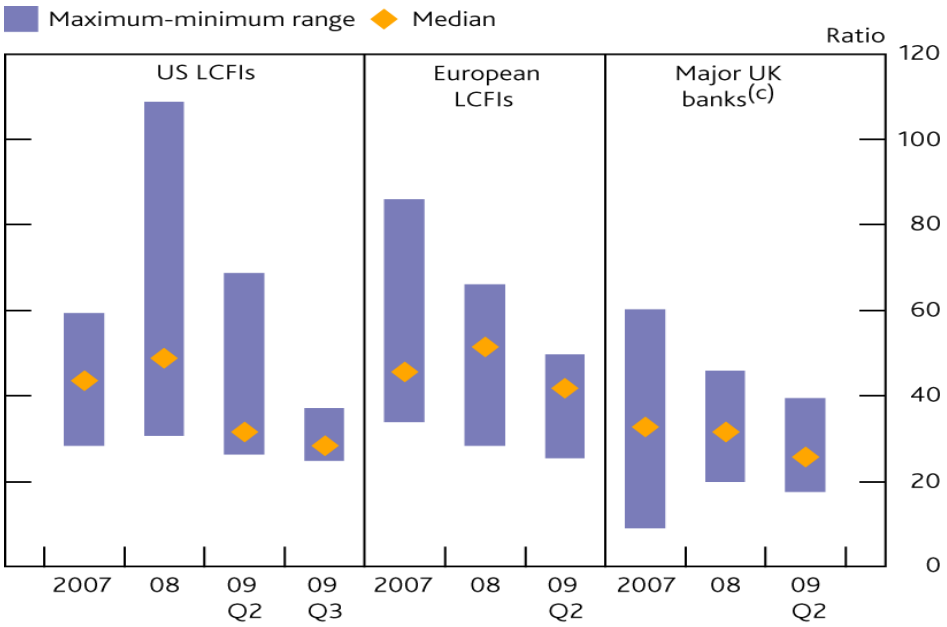

Diagram 3: Bank Leverage Ratios

Source: Bank of England (2009)

[LCFI= Large & Complex Financial Institution]

Tackling conflict of interests and model error

Ultimate investors have less information than credit rating agencies on the quality of the securitised loans, so they rely on credit ratings. However, arrangers pay the credit rating agencies. It is akin to the fact that in the UK, sellers of a house pay the estate agent, not the buyer. Therefore, there is a conflict of interests in stage 7 because the rating agencies are the agents of investors but are paid by the arrangers. Credit ratings agencies have been criticised for lack of objectivity. Ashcraft and Schuermann (2008) claim that Moodys made 44% of their revenue in 2007 from securitisation. Securitised deals are more complicated than simple corporate deals, so Moodys earn more from the former. However, an investigation by the Securities Exchange Commission in July 2008 revealed 'no evidence that decisions about rating methodology or models were based on attracting or losing market share.' (Ashcraft and Schuermann, 2008). Ashcraft and Schuermann (2008) thus conclude by

stating that credit rating agencies made mistakes, both honest and dishonest. Honest mistakes include underestimating the collapse of the housing market and use of limited data. These mistakes are arguably due to financial innovation and complexity of financial products. Dishonest mistakes were made when credit rating agencies relied too heavily on arrangers, therefore they structured deals to maximise most returns for the arrangers. Credit rating agencies rely heavily on reputation. Therefore, they should publish their rating criteria to improve transparency and public confidence.

Tackling accountability and democratic deficits and liability asymmetry

Institutional investors and individual investors

Accountability deficits exist between institutional and individual investors, as well as between UKFI Limited and taxpayers. Good corporate governance encourages transparency and accountability. Institutional investors now dominate share ownership in the UK. They thus have tremendous power in the UK market. Hirschmann (1970) commented that institutional investors can exercise their power through a 'voice' or 'exit' approach. Communication to the management is the 'voice' approach. Selling shares and leaving the market is the 'exit' approach. Institutional investors manage vast portfolios on behalf of individual shareholders and they often need to hold balanced portfolios. Therefore, 'exit' may not be a practical solution but it has been the strategy for UK institutional investors for centuries.

'Voice' should be the main channel for institutional investors. UK corporate governance reports such as the Cadbury Committee (1992); Greenbury Report (1995); Hampel Report (1998) and the Combined Code (2008) all emphasise that institutional investors should engage with the investee companies. Becht, Franks, Mayer and Rossi (2008) argue that UK institutional shareholders are more active than US ones because the UK's company law is more generous with shareholder rights. Institutional shareholders are also more organised in the UK and frequently act collectively (Becht, Franks, Mayer and Rossi, 2008). Nevertheless, the financial crisis of 2007-2009 revealed that UK institutional investors failed to engage with the investee companies and they exited the market when certain share prices dropped (Warner, 2009). The relationship between institutional investors and investors is similar to the arranger and investor relationship. The institutional investors and arrangers (agents of investors) both acted as principals and engaged in trading rather than acting on behalf of the investors. This was driven by performance and investment culture in the financial industry. Lord Myners commented that this culture has led to hedge funds being 'ownerless corporations' (Warner, 2009). His biggest attack on institutional investors however, is on their passive nature. Institutional investors failed to monitor and challenge the boards of the investee companies. Walker (2009) recommended that institutional investors should actively engage with individual investors. He thus recommended the Stewardship Code on which the Financial Reporting Council is consulting at the moment. The Stewardship Code will, in particular, set out the responsibilities of institutional investors owed to the individual shareholders. This would hopefully increase accountability.

<u>UKFI Limited and UK taxpayers</u>

As seen in diagram 6, there are three associated issues between the relationship of UKFI Limited and UK taxpayers: moral hazard; accountability and democratic deficits. The author has discussed moral hazard earlier in the paper. Accountability deficit exists because UKFI Limited has given little information on their website. The public knows very little about the institution that manages its investments in the four UK banks. Given the fact that UKFI Limited holds £23.6 million worth of shares in the Royal Bank of Scotland and Lloyds Banking Group (UKFI, 2009), it is important that taxpayers have more information about UKFI Limited's strategy and performance.

The other issue is democratic deficit, as identified by Peston (2010). In a democratic society, taxpayers should have a voice in how society should be run. The government rescued banks without consulting the public. Arguably, this was necessary because of the urgency and complexity of the matter. However, it was the players in the financial industry who made the mistakes and wreaked havoc to the economy. They are now rebuilding the banking system through the public's unconscious delegation. The public elect members of parliament to voice their opinions in democratic societies. However, members of parliament are not financial or banking experts. Hence, there is a limit as to how much they can help in the redesign of the banking system. It is therefore important for academics to engage in debates about how the banking system could be improved.

Individual investors and UK taxpayers

Liability asymmetry is another issue identified by Peston (2009). Individual investors enjoy limited liability whilst UK taxpayers have unlimited liability and thus there is an asymmetry problem. This is particularly problematic in banking because banks enjoy explicit and implicit

government support, which encourages excessive risk-taking in banks. Explicit government support includes deposit insurance of up to £50,000 per customer. Implicit support includes 'too-big-to-fail' policy and 'lender of last resort'. Customers have little incentive to monitor banks because their deposits are protected up to £50,000 in the UK. Lacker (2009) is of the view that government support actually contributed to the financial crisis. Government support distorted incentives; encouraged banks to increase leverage and made the financial system unstable. Withdrawal of government guarantees would be very difficult because customers would lack confidence in the banking system; bank runs would make an economy very vulnerable and systemic risks would spread quickly within the banking system. Much support has been given to the Tobin tax, a tax on financial transactions to stop speculative trading on currency exchange. The tax would be a way of building up a bank's reserve to absorb future losses. Hence, the costs of bank failures will be absorbed by banks, not taxpayers. The Tobin tax appeals because banks should bear the consequences of financial losses. International co-operation however, is needed for the successful implementation of the tax.

5. Conclusion

Securitisation has played a dominant role in global modern banking since the 1980s. Financial innovation is beneficial to society if the financial products and systems are safe and reliable. The financial crisis of 2007-2009 has revealed several inter-connected weaknesses that financial innovation has created: multiple principal-agent problems; information asymmetry; adverse selection; moral hazard; mortgage fraud; predatory lending; model error with credit rating agencies; managerial slack and risk shifting. Information asymmetry is an acute problem in securitisation and it exists in all the stages of

the securitisation process. Multiple principal-agent problems have created misalignment of incentives between parties; excessive leverage and risk-taking which contributed to the financial crisis. Poor risk management by originators and arrangers have led to bad loans being retained on their balance sheets.

Better disclosure by increasing transparency is essential to reduce principal-agent problems. Most innovative financial products and processes are protected by trade secrecy (Lerner, 2002). Hedge funds have to protect their clients' confidentiality. Further, secrecy is required to protect the franchise value in investment strategies. Yet, it is due to this secretive environment that principal-agent problems foster. It is only through disclosure and better understanding of the complex financial products that the principal-agent problems can be minimised. Lo (2009) suggested that hedge funds should publish their strategies anonymously. This has the double benefit of revealing information to players in securitisation as well as protecting hedge funds through anonymity. The author believes that this is a good solution and should be encouraged. Another possible solution is to encourage financial institutions to file for patents to protect their financial products rather than rely on trade secrecy. Since the Federal Circuit's decision of *State Street Bank & Trust Co. v. Signature Financial Group,* 149 F.3d 1368 (Fed. Cir. Jul. 23, 1998), it is possible for financial products to be patented. By patenting the financial products, the patent owners will have a monopoly for 20 years from the date when the application is filed. This should increase incentives and rewards for patent owners. It improves transparency because patent applications contain information about the financial products. It should also encourage competition because the patent owners can grant licences to competitors. Although licencees are restricted in what they can do, they will be motivated to produce

similar products in order to compete in the market. Naturally, there is always the threat of infringement action but overall, the author believes that patents would increase incentives, increase transparency and improve consumer protection.

Other methods of reducing the principal-agent problems include retention of equity tranches and monitoring the long-term performance of loans; better regulation of off-balance sheet vehicles and better risk management are some recommendations that the author proposes to restore the frail banking system.

A robust banking system is necessary for economic growth. Societies need banks to provide credit and to prosper, especially in capitalist societies. The financial crisis of 2007-2009 has revealed that taxpayers have borne the costs of bank rescues, a highly unjust burden to society. Capitalism must be restored to the banking sector in the sense the bankers (and not the public) should pay for their mistakes. A wider stakeholder approach should be adopted in banking, especially when UK taxpayers now own four banks. Academics, banking practitioners and regulators should actively engage in debates and discussions to redesign the banking structure because of democratic deficit and liability asymmetry.

Severe financial crises are described as black swan events. 'Black swan events' are extremely rare events. The financial crisis of 2007-2009 is arguably the worst crisis since the Great Depression in the early 1930s and has had a major impact on the global economy. However, Mandelbrot, the father of fractal theory and a pioneer in the study of market swings, argues that finance is prone to a 'wild' randomness, which is rare in nature. He said that in markets, 'rare big changes can be more significant than the sum of many small changes' (Mandelbrot, cited in Valencia, 2010). We must therefore grasp this opportunity and actively learn from

this financial crisis to minimise the impact of the next one. If the above recommendations are not implemented, the seeds for the next financial crisis are already sown.

References:

Acharya, V.V. Philippon, T & Richardson, M. (2009) 'The Financial Crisis of 2007-2009: Causes and Remedies.' In *Restoring Financial Stability: How to Repair a Failed System*: edited by V.V. Acharya and M. Richardson, pp.1-56, Hoboken, N.J: John Wiley & Sons.

Acharya, V.V. & Schnabl, P. (2009) "Restoring Financial Stability: How to Repair a Failed System", (http://whitepapers.stern.nyu.edu/home.html), edited by Mr. Acharya and Matthew Richardson, John Wiley & Sons. Hoboken, N.J.

Acharya, V.V. Philippon, T & Richardson, M. & Roubini, N.(2009) Prologue: A bird's eye view. The financial crisis of 2007-2009: Causes and Remedies, *Financial markets, institutions and instruments*, Volume 18(2), pp. 89-137.

Aldrick, P. (2010) Bank reform: how do you put capitalism back into the heart of capitalism? *The Telegraph*. [Online]. Available at: http://www.telegraph.co.uk/finance/newsbysector/banksandfinance/7120825/Bank-reform-how-do-you-put-capitalism-back-into-the-heart-of-capitalism.html. [Accessed 2 March 2010]

Ashcraft, A. & Schuermann, T. (2008) The seven deadly frictions of subprime mortgage credit securitisation, *The Investment Professional*, Fall 2008, pp.1-11.

Bank of England, 2009. Financial Stability Report, Issue 26, 18 December 2009. [Online]. Available at: http://www.bankofengland.co.uk/publications/fsr/2009/index.htm. [Accessed 26 February 2010].

Barth, J., Caprio, G. and Levine, R. (2006), *Rethinking Bank Regulation: till angels governs*. New York: Cambridge University Press.

Becht, M. Franks, J. Mayer, C. and Rossi, S. (2008) Returns to shareholder activism: Evidence from a clinical study of the Hermes UK Focus Fund, *Review of Financial Studies*, Vol. 22(8), pp. 3093-3129.

Berle, A, & Means, G. (1932) The Modern Corporation and Private Property, Second edition, New Jersey, Transaction Publishers.

Berndt, A. & Gupta, A (2008) Moral Hazard and Adverse Selection in the Originate-to-Distribute Model of Bank Credit. Social Science Research Network (SSRN) Working Paper No. 1290312

Buiter, W. (2007) Lessons from the 2007 financial crisis. Social Science Research Network (SSRN) Working Paper No. 1140525.

Burns, T. (2009) The Shadow Banking System as a New Source of Financial Turmoil, *Commonwealth Parliamentary Association Conference,* States of Guernsey, 15-19 June 2009. Scotland.

Cadbury, A. (1992), *Report of the Committee on the Financial Aspects of Corporate Governance*, London: Gee Publishing.

Clark, A. Treasnor, J. Owen, P. (2010) Myners: UK does not need to copy Obama banking reforms. *The Guardian.* 22 January 2010. [Online] Available at: http://www.guardian.co.uk/politics/2010/jan/22/uk-considers-barack-obama-style-banking-reform. [Accessed 2 March 2010].

Cohan, P. (2010) Commentary on Greece and Goldman Sachs, cited in *The Observer*, 28 February 2010, p.48.

Coval, J., J. Jurek, and E. Stafford. 2009. "The Economics of Structured Finance." *Journal of Economic Perspectives* Vol. 23 (1), pp. 3–25.

Cummins, J.D. (2004) Securitisation of life insurance assets and liabilities. In: The Wharton Financial Institutions Centre, 3 January 2004, Pennsylvania. [Online]. Available at: http://www.tsi-gmbh.de/fileadmin/tsi_downloads/ABS_Research/Informationsmaterial_und_Literatur/Literatur_zu_Spezialthemen/Wharton.pdf. [Accessed 2 March 2010].

Dell'Ariccia, G., D. Igan, & L. Laeven. (2008). "Credit Booms and Lending Standards: Evidence from the Subprime Mortgage Market." International Monetary Fund (IMF) WP/08/106.

Dillow, C. (2008) Why aren't hedge funds failing as fast as banks? The Times, 17 September 2009. [Online]. Available at: http://www.timesonline.co.uk/tol/comment/columnists/guest_contributors/article4768564.ece. [Accessed 1 March 2010].

Drucker, S. & Puri, M. (2009) On loan sales, loan contracting and lending relationships, *Review of Financial Studies*, Vol. 22 (7), pp. 2835-2872.

European Shadow Financial Regulatory Committee (2007) Lessons from Recent Financial Turmoil, *Joint statement from the Shadow Financial Regulatory Committees of Asia, Australia, New Zealand, Europe, Japan, Latin America and the US*, 10 September 2007, Copenhagen, Denmark. [Online]. Available at: http://old.ceps.eu/Article.php?article_id=568. [Accessed 2 March 2010].

Fender, I. & Mitchell, J. (2009a). The Future of Securitisation: How to Align Incentives? *BIS Quarterly Review*, (September): pp. 27- 43

Financial Reporting Council (2008), *The Combined Code on Corporate Governance July 2008*, London: Financial Reporting Council.

Fishman, S. (2008) Burning down his house. *New York Magazine*. [Online]. Available at: http://nymag.com/news/business/52603/. [Accessed 2 March 2010]

Fitch (2006), 'Global Rating Criteria for Collaterised Debt Obligations,' Credit Products Criteria Report, 18 October 2006.

Flannery, M., Kwan, S., & Nimalendran, M (2004). Market evidence on the opaqueness of banking firms' assets, *Journal of Financial Economics*, Vol. 71(3), pp. 419-614.

Gan, Y.H. & Mayer, C. (2006) Agency Conflicts, Asset Substitution and Securitisation. National Bureau of Economic Research (NBER) Working Paper No. 12359.

Goldsmith-Pinkham, P. & Yorulmazer, T. (2009) Liquidity, bank runs and bailouts: Spillover effects during the Northern Rock Episode, *Journal of Financial Services Research*, Vol. 37(2), pp.83-98.

Goodhart, C. (2009) The Future of Banking and Financial Regulation, LSE Public Lecture Video, 19 October 2009.

Gorton, G & Metrick, A. (2009) Securitised banking and the run on repo. National Bureau of Economic Research (NBER) Working Paper No. 15223.

Greenbury, R. (1995), *Directors Remuneration: Report of a study group chaired by Sir Richard Greenbury*, London: Gee Publishing.

Hampel, R. (1998), *Corporate Governance: Report of a committee chaired by Sir Ronald Hampel*, London: Gee Publishing.

Hirschmann, A.O. (1970), *Exit, Voice, and Loyalty*, Harvard University Press, Cambridge, Massachusetts.

House of Commons (2008a) Treasury Sixth Report, Banking Crisis: dealing with the failure of the UK banks. [Online]. Available at: http://www.publications.parliament.uk/pa/cm200708/cmselect/cmtreasy/371/37102.htm. [Accessed 2 March 2010]

House of Commons (2008b) Treasury Seventh Report, Banking Crisis: dealing with the failure of the UK banks. [Online]. Available at: http://www.parliament.the-stationery-office.co.uk/pa/cm200809/cmselect/cmtreasy/416/41602.htm. [Accessed 1 March 2010].

Hutton, W. (2010) Now we know the truth. The financial meltdown wasn't a mistake- it was a con. The Guardian, 18th April 2010. Available at: http://www.guardian.co.uk/business/2010/apr/18/goldman-sachs-regulators-civil-charges. [Accessed 18 April 2010].

Inman, P. (2009) Financial Services Authority Chairman backs tax on 'socially useless' banks. *The Guardian,* 27 August 2009. [Online]. Available at:

http://www.guardian.co.uk/business/2009/aug/27/fsa-bonus-city-banks-tax. [Accessed 1 March 2010].

Jensen, M. & Meckling, J. (1976) Theory of the firm: managerial behaviour, agency costs and ownership structure, *Journal of Financial Economics*, Vol. 3(4), pp. 305-360.

Keller, J. (2008) *Agency problems in structured finance- a case study of European Collaterised Loan Obligations*, Working Paper Document, August 2008, Number 137, National Bank of Belgium, Brussels.

Keys, B. J., T. Mukherjee, A. Seru, & V. Vig. (2009) Financial Regulation and Securitization: Evidence from Subprime Loans. *Journal of Monetary Economics,* Vol. 56 (5), pp.700–720.

Lacker, J. (2009) The role of safety net in the financial crisis. Remarks by Jeffrey Lacker, President, Federal Reserve Bank of Richmond. The Asian Banker Summit 2009, Beijing, China. 11 May 2009.

Lerner, J. (2002) 'Where does State Street Lead?' A first look at Finance Patents, 1971-2000', *Journal of Finance*, Vol. 57, pp. 901-930.

Lo, A. (2009) Regulatory reform in the wake of the financial crisis of 2007-2008, *Journal of Financial Economic Policy*, Vol. 1(1), pp.4 - 43

Milne, A. & Wood, G. (2008) Shattered on the Rock? British financial stability from 1866 to 2007, *Journal of Banking Regulation*, Vol. 10 (2), pp.89-127.

Mishkin, F. (2008) On 'Leveraged Losses: Lessons from the Mortgage Meltdown', Speech at the U.S. Monetary Policy Forum, New York, 29 February 2008. [Online]. Available at:

http://www.federalreserve.gov/newsevents/speech/mishkin20080229a.htm. [Accessed 28 February 2010].

Morgan, D. (2002). Rating banks: Risk and Uncertainty in an opaque industry, *American Economic Review*, Vol. 92, pp. 874-888.

National Audit Office, 2009. Maintaining financial stability across the United Kingdom's banking system. [Online]. Available at: http://www.nao.org.uk/publications/0910/uk_banking_system.aspx. [Accessed 25 February 2010]

Office for National Statistics (2010) *Statistical Bulletin: Share Ownership Survey 2008*, [Online]. Available at: http://www.statistics.gov.uk/pdfdir/share0110.pdf. [Accessed 1 March 2010].

Paligorova, T. (2009) Agency conflicts in the process of securitisation, *Bank of Canada Review*, Autumn 2009, pp. 33-47.

Peston, R. (2009) Shouldn't banks work for us? BBC Robert Peston's blog. [Online]. Available at: http://www.bbc.co.uk/blogs/thereporters/robertpeston/2009/12/shouldnt_banks_work_for_us.html. [Accessed 1 March 2010].

Peston, R. (2010) Why do we trust the financial priests? BBC Robert Peston's blog. [Online]. Available at: http://www.bbc.co.uk/blogs/thereporters/robertpeston/2010/01/why_do_we_trust_the_financial.html. [Accessed 1 March 2010].

Pozen, R. (2009) How to restore confidence in loan securitisation, Financial Times, 15th December 2009.

Purnanandam, A. (2009). "Originate-to-Distribute Model and the Sub-Prime Mortgage Crisis." Social Science Research Network (SSRN) Working Paper No. 1167786.

Santos, J. (2004) Do markets discipline all banks equally, mimeo, Federal Reserve Bank of New York.

Seib, C. (2010) $1 billion charge for Goldman Sachs, The Times. [Online] 18th April 2010. Available at: http://business.timesonline.co.uk/tol/business/industry_sectors/banking_and_finance/article7100320.ece. [Accessed 17 April 2010].

Shin, H.S (2009) Securitisation and Financial Stability, *The Economic Journal*, Vol. 119, pp. 309–332

Shing, A. (2009) A Net Profit, *South China Morning Post*, 19 December 2009, p. A11.

Standard & Poor (2002b) 'Rating Methodology for CDOs backed by European Leveraged Loans' 14 August 2002.

Stigler, J., & Weiss, A. (1981). Credit rationing in markets with imperfect information, *American Economic Review*, Vol. 71, pp. 393-410.

Tett, G. (2010) Why a ban on proprietary trading could have a catch, *Financial Times*. 19 February 2010. [Online]. Available at: http://www.ft.com/cms/s/0/a7c89f5c-1cf5-11df-aef7-00144feab49a.html. [Accessed 2 March 2010]

Tucker, P. (2010) Shadow banking, financing markets and financial stability, Speech at a BGC Partners Seminar, London, 21 January 2010. [Online]. Available at: www.bankofengland.co.uk/publications/speeches/2010/speech420.pdf. [Accessed 28 February 2010].

UKFI, 2009 UK Financial Investments Limited (UKFI) UKFI Limited: Market Investments and Annual Report and Accounts (2008-2009). [Online] Available at: http://www.ukfi.gov.uk/releases/UKFI%20Annual%20Report%202008-2009.pdf. [Accessed 25 February 2010]

Valencia, M. (2010) The gods strike back. *The Economist*. 11 February 2010. [Online]. Available at: http://www.economist.com/specialreports/displaystory.cfm?story_id=15474137. [Accessed 2 March 2010].

Von Bismarck, M. Sikken, J. B. Steinberg, K. & Wyman, O. (2009) Governments as shareholders: navigating the challenges of newly held interests in financial institutions. The Future of the Global Financial System, World Economic Forum, New Financial Architecture project, November 2009. [Online]. Available at: http://www.weforum.org/pdf/FinancialInstitutions/GovernmentPaper.pdf. [Accessed 2 March 2010].

Walker, D. (2009), *A Review of Corporate Governance in UK Banks and Other Financial Industry Entities*, London: HM Treasury.

Warner, J. (2009) Myners wants to force investors to be more engaged. The Independent, 21 May 2009. [Online]. Available at:

http://www.independent.co.uk/news/business/comment/jeremy-warner/jeremy-warner-myners-wants-to-force-investors-to-be-more-engaged-1688648.html. [Accessed 4 March 2010].