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Securitization: a financing vehicle for all seasons?

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Securitization: A financing vehicle for all seasons?



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Securitization: A Financing Vehicle for All Seasons?

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Securitization: A Financing Vehicle for All Seasons?

Abstract

Securitization is considered to be one of the biggest financial innovations of the last century. It is also regarded as both a catalyst and solution to the 2008 financial crisis. Once a popular method of financing the mortgage and consumer credit markets, aspects of the global securitization market are now struggling to revive. In this paper I discuss the role that ethics played in securitization prior to the 2008 financial crisis and find that it is not an obvious story of moral failures, but rather that it lies in more subtle elements of the financial system. The ethics uncertainty role in the securitization story is one of flawed incentives and the shifting of responsibility for handling risk. The role of securitization and the ethics of risk transfer have rarely been discussed explicitly in the literature. The historical origins of securitization and lessons learned from previous flawed uses of the process are also provided. I also detail the various global institutional reform proposals that have taken place. Moving forward, it is crucial to understand the causes, consequences and ethical implications of securitization in the financial crisis so as to help individuals and managers better assess risk, align incentives and design appropriate policy responses.

Securitization: A Financing Vehicle for All Seasons?

“A Treasury spokesman said that while securitization had made credit more widely available, breaking the direct link between borrower and lender “had led to a general erosion of lending standards, resulting in a serious market failure that fed the housing boom”.

June 16, 2009 Financial Times

“Securitization, a dirty word these days, must play a greater role. This whole business has a tarnished brand, post-crisis, but efforts are under way to address this”.

April 23, 2013 Financial Times¹

“Securitization... a financing vehicle for all seasons”

Andy Haldane, Bank of England, December 2013².

Introduction

In 1858 William Gladstone wrote, *“Finance is, as it were, the stomach of the country, from which all other organs take their tone”*³. In 2014, this sentiment still rings true. (Mukunda, 2014) describes the financial system as the *“economy’s circulatory system”* and the large banks as *“the heart.”* Furthermore, (Mukunda, 2014) attributes the *“enlarged heart”* of the US economy to the impact of financialization. Financialization is a term used to describe the expansion of financial trading associated with the abundance of new financial instruments (Phillips, 1994; Orhangazi, 2008; and Krippner, 2009). The increasing influence of financial markets and institutions impacts other societal institutions (including the government) placing a reliance on short-term and liquid assets. Eventually investment in real assets is crowded out by financial asset investment, an activity described as *“distributive”* rather than *“creative”* (Orhangazi, 2008).

(Minsky, 2008; Kindleberger, 2011; and Rajan, 2010) observe that one way in which financialization can destabilize an economy is due to an increasingly complex and opaque financial system. One example of complexity is securitization, which over the last four decades came to integrate virtually every aspect of the global financial system (including, but not limited to, monoline insurers and the credit default swap (CDS) market). It is also considered part of the shadow banking system.⁴ (Franke and Krahnen, 2008; Eggert, 2009; Gorton, 2012; and Donaldson, 2012) regard securitization as the most recent example of a credit boom that typically precedes a financial crisis. (Laeven and Valencia, 2009) acknowledge that although the

2008 financial crisis exhibits many boom and bust characteristics, the role securitization played is a new aspect.

In this paper I will define securitization as the sale of underlying assets or debt so that they are removed off the issuer's balance sheet, the pooling of illiquid assets, credit enhancement and tranching of the underlying pool. Typically most borrowers in the securitization market do not have access to capital markets. The securitization process should be able to sell and redistribute risk to those investors who are more capable of bearing it and as a result the functionality and stability of financial markets should increase.

Prior to the 1970s banks typically retained their loans on their own books and had to grow either by attracting new deposits or through mergers. Securitization changed this (Sellon and VanNahmen, 1988) and brought about a new way for banks to accelerate lending, as well as generating more fees and income. This would be balanced against meeting capital regulatory requirements, so by redistributing loans, banks could cut their capital needs which allowed them to loan more. According to the Securities Industry and Financial Markets Association (SIFMA, 2010), between 2000 and 2010 the size of the global securitization market increased from US\$4.8 trillion to US\$13.6 trillion.

Securitization is regarded as one of the biggest financial innovations during the last century (McConnell and Buser, 2011; FCIC Report, 2011; Gorton and Metrick, 2012) and has become a popular method of financing the consumer credit market such as home equity loans, credit card receivables, auto loans and student loans (see Figures One and Two). In 2007, over half of the credit card and student loans were securitized in the U.S.⁵ (Gorton, 2012) estimates that 64 percent of outstanding US home mortgages were securitized and between 30 and 75 percent of consumer loans were securitized prior to the financial crisis.

[INSERT FIGURE ONE ABOUT HERE]

[INSERT FIGURE TWO ABOUT HERE]

Since 2007 many aspects of the global securitization market such as home equity loans and mortgages have been decimated. Securitization and the mortgage crisis have been linked to the failures of Bear Stearns, Lehman Brothers, Merrill Lynch, AIG, Washington Mutual,

Indymac, Ameriquest, Countrywide Financial and New Century Financial. More than 1300 US mortgage related entities have declared bankruptcy, been acquired or have closed.⁶ The IMF estimates that US banks alone have lost more than \$885 billion due to credit write downs.⁷ Issuance activity has slumped, particularly in the European Union. This is apparent in Figures Three, Four and Five which profile US and European securitization issuances respectively. Figure Four indicates that the US private label (non-agency) mortgage backed security issuance market has severely declined since the crisis started. European issuance has declined from \$1.2 trillion in 2008 to \$239.6 billion⁸ in 2013, bringing the European securitization market to its lowest point since the start of the Eurozone debt crisis⁹.

[INSERT FIGURE THREE ABOUT HERE]

[INSERT FIGURE FOUR ABOUT HERE]

[INSERT FIGURE FIVE ABOUT HERE]

One of the earliest casualties of the financial crisis was UK bank Northern Rock. For many years the majority of Northern Rock's mortgages were funded by retail deposits. However, by 2007 approximately half the funding at Northern Rock was via securitization and only approximately 20 percent of its mortgages were covered by retail deposits.¹⁰ This is not an isolated example. Royal Bank of Scotland (RBS) which incurred the biggest UK corporate losses of the last 400 years had a total of £5.1 billion (\$8.3 billion) of various collateralized debt obligations (CDOs) and securitized assets. Its derivatives book had become much bigger, to the sum of £337 billion of assets (\$550 billion), as opposed to £116 billion (\$188 billion) in 2007. The losses sustained by these banks caused considerable collateral damage to the global corporate sector.

Accusations that securitized instruments were flawed or even designed to incur losses have become regular media features. Nor do the lawsuits show any signs of slowing down. In 2010, the SEC took action against Goldman Sachs, alleging that Goldman Sachs deliberately designed a synthetic collateralized debt obligation (or CDO), based on mortgage backed products so that it would fall to the benefit of third parties who wanted to short it¹¹. One of the most famous examples was GSAMP Trust 2006-S3, whereby Goldman Sachs put together a package

of 8,274 mortgages. The average loan-to-value of the mortgages in this package was an astonishing 99.21 percent (meaning borrowers had minimal equity invested in the house) and 58 percent of the loans were “no-doc” or “low-doc” loans. Sixty eight percent of the securitized package ended up being assigned an AAA rating¹².

After six years and numerous efforts to reform finance, the securitization lawsuits continue unabated¹³. To date, banks have paid US\$59 billion in fines and consumer relief since the crisis in an effort to settle MBS related cases and seven banks are still under investigation¹⁴. In 2013, Morgan Stanley faced a lawsuit that centers on a collateralized debt obligation (CDO) issue created in the first half of 2006. During 2013 Wells Fargo was sued by a German agency for \$160 million in CDO losses¹⁵. Also of note was Morgan Stanley which structured a \$500 million CDO deal (of which \$415 million ended up being worthless) that was mainly purchased by Chinese and Taiwanese investors. In early 2013, Standard and Poor’s (S&P), the largest credit rating agency in the US, faced a federal suit led by the US Attorney General’s Office¹⁶. The suit claims that S&P intentionally propped up ratings on shaky mortgage backed investments. At the heart of the lawsuit were forty CDOs packaged by banks and rated by S&P which were sold to investors in 2007. As of 2014, the US federal government is seeking US\$5 billion (five times what S&P earned in 2011) in penalties to cover the losses incurred by state pension funds, credit unions and federally insured banks.

Since 2008 financial regulators have undertaken a sweeping overhaul of securitization markets with tough new rules designed to restore market confidence. There has been a barrage of well-intentioned legislation and regulatory initiatives on a global basis regarding reforms such as: (i) how to make securitized products more transparent to investors and regulators (ii) forcing banks to keep “more skin in the game” (iii) to change the way ratings agencies work to reduce conflicts of interest and (iv) simplification of securitization structures. Clearly from a regulatory point of view, improved disclosure is the key element, but disclosure does not really matter if the entire process is not understood.

However, one cannot consider a debate on reform without considering the role of ethical impropriety in pre-crisis securitization.¹⁷ (Raine and Leathers, 1994) and (Tett, 2009) claim that the rapid rise in derivatives trading can be attributed to technological advances in data processing and communication and the increasing use of sophisticated mathematical models to manage risk.

They observe a more tolerant attitude towards derivatives after the 1970s which reflected a change in society's ethical perspective on the relationship between speculative financial trading and gambling. The securitization market also started to flourish during this period.

When discussing the role of securitization in the financial crisis, the literature appears to be in agreement that predatory lending and perverse incentives were bigger ethical faults. The ethics impropriety role in the securitization story is also one of the shifting of responsibility for handling risk. One may well ask: how was this risk transference unethical in the case of securitization? If the receiving parties in the securitization transactions are able to handle the risk then shifting that responsibility can be considered ethical. However, in the case of securitization not all conditions were met for various receiving parties to manage risk, thus in many instances risk shifting was not ethical. What tended to be overlooked during the crisis was that despite the sophistication of the securitized products, the risk was not completely eliminated – only reallocated and diversified – and the risks that remained in the system had become more amplified, aided by the use of leverage and derivatives. In addition, over the last two decades greater distance has started to be placed between mortgage borrowers in the USA and the global investors who purchase securitized assets. Once the link between borrower and lender is broken, there are potential ethical issues such as who is responsible for handling the risk? Can the risk properly be priced and is the market still liquid? Are incentives properly aligned? As many of the above examples illustrate, the answer is no, so the risk shifting and flawed incentives are unethical. In trying to comprehend the numerous ethical failings and securitization, a quote from (Hubbard, 2009) rings true: *“Never attribute to malice or stupidity that which can be explained by moderately rational individuals following incentives in a complex system of interactions.”*¹⁸

(Scalet and Kelly, 2012) provide an extensive discussion of the ethics of the credit ratings agencies and their role in the financial crisis. This paper complements (Green, 1989; Nurnberg and Lackey, 2010; Graafland and van de Ven, 2011; and Scalet and Kelly, 2012). However, I make a number of additional contributions to the literature. Firstly, the ethics of risk transfer in the securitization industry has rarely been the subject of an explicit analysis in both an historical and current context. In moving forward with policy reform we need to glean lessons not just from the 2008 financial crisis but earlier instances as well. Secondly, I provide an additional contribution in discussing the latest global institutional reforms to the securitization industry.

The paper is set out as follows: in the next section I describe the securitization process and its benefits and costs. I then provide a discussion of industry trends and a brief history of securitization. The role of ethical uncertainty around securitization is then analyzed and this is followed by an overview of post-financial crisis regulatory reform. Finally, I examine future directions for research including the how the key players in the securitization process can embrace greater transparency. I agree with (Scalet and Kelly, 2012) that many participants did not behave according to three core virtues: due care, honesty and accuracy and that moving forward with a renewed sense of virtues must also be accompanied by long-term financial reform.

The Securitization Process

(Cummins and Weiss, 2009) define securitization as the “*repackaging and trading of cash flows that traditionally would have been held on the balance sheet.*” Since the 1970s, securitization has changed the liquidity transformation role of banks (Diamond, 1984; Holstrom and Tirole, 1997). The “*Originate-to-Hold*” (OTH) model means that banks usually retained loans on their own books and had to grow either by attracting new deposits or through mergers. Under this model, credit, income and collateral were the main criteria for a loan. Securitization (also known as the “*Originate-to-Distribute*” (OTD) model) changed this and the process brought about a new way for banks to accelerate mortgage lending, as well as generating more fees and income. This would be balanced against meeting capital requirements and banks could cut their capital needs by reallocating loans which allowed them to lend more.

Under the OTD model, a pool of 30 year mortgage loans can be used to create tradable securities that have varying maturities. Mortgages are moved off the balance sheet and pooled and bundled by a special purpose vehicle (SPV). The SPV is responsible for slicing or “tranching” the pool of assets and does not have to appear in annual accounts. In addition, SPVs are notionally self-funding and do not count against a bank’s capital requirements for prudential purposes. To make the securitized products more palatable, tradable securities, they require a rating and this is where Moody’s and Standard and Poor’s fulfil a role (Scalet and Kelly, 2012). ABS and MBS are frequently guaranteed by third party insurers such as monoline insurers which provide credit enhancement. The securitization process has often been compared to a waterfall

(or cascade) structure. Therefore, if payments came in below expectations, those at the bottom will incur the first set of losses. In theory the AAA (or investment grade) tranche faces a very low probability of ever incurring a loss.

(Cummins and Weiss, 2009) divide the securitization market into two segments. Asset-backed securities are usually backed by mortgages or corporate bonds, whereas non asset-backed securities are backed by futures and options. The parties that are regarded to be critical in the life of an asset backed security include: the issuer, the underwriter, the trustee, the ratings agency, servicer, third-party servicers as well as auditors and lawyers. The securitization process is summarized in Appendix One.

Anything that is expected to bring in a steady stream of revenue can be securitized. In recent years the more popular securitized assets have included: mortgages, accounts receivables, student loans, small business loans, credit-card receivables, automobile loans, emerging market loans, mutual-fund management fees and even the royalties paid on music. In 1997, David Bowie used securitization to raise \$55 million backed by the current and future revenues of his first 25 music albums. These securitized products came to be known as “*Bowie Bonds*”. More recently aircraft leases, life insurance contracts, solar energy contracts and even “Peanuts” comic strip royalties¹⁹ demonstrated growth potential in securitization. Prior to the Eurozone debt crisis the Greek government securitized many assets including: highway tolls, airport landing fees, future receipts from the national lottery and even grants from the European Union. What this allowed the Greek government to do was to realize future revenues sooner and increase spending immediately. Some Eurozone countries also securitized their sovereign debt, resulting in a lower debt/GDP ratio.²⁰

The origination of loans is to a large extent a locally based market. By converting previously localized illiquid loans into tradable securities, securitization is able to tap a global market of investors. According to (Allen and Yago, 2010), in 1980 the total US household debt was \$958 billion, of which 11 percent was securitized. In 2008, the US household mortgage debt was \$10.5 trillion, of which 60 percent was securitized. (Rajan, 2010) states that roughly 60 percent of all ABS were rated AAA during the lending boom, whereas typically less than 1% of all corporate bonds were rated AAA.

Global financial institutions of all sizes benefited from securitization. Gone were the days when the small regional bank had no choice but to place concentrated bets on local housing markets. Now this same bank could offload credit risk to international investors such as insurers and hedge funds. About half of the securitized assets in the US such as CDOs and MBSs were sold to foreign investors. Foreign banks, pension funds and other financial institutions snapped up these securities during the boom. When a mortgage was defaulted upon in say California or Cleveland, it rippled up the securitization chain, affecting everyone from Norwegian pensioners to investment banks in New Zealand.

Benefits and Costs of Securitization

(Greenbaum and Thakor, 1987; Gorton, 2012) provide a number of reasons for securitization: reducing informational asymmetries, servicing as a lower cost of financing source, reducing regulatory capital and reducing bank risk. Securitization increases the institution's risk profile only if the most creditworthy assets are removed from the balance sheet through securitization. (Murray, 2001; Cantor and Demsetz, 1993; and Calamoris and Mason, 2004) measure the extent of the regulatory arbitrage argument in the securitization framework. Investigating the role of securitization as a new source of liquidity in bank management (Loutskina, 2011) finds that securitization reduces the bank lending sensitivity to external sources of funds availability. However, securitization also has the potential to make banks more vulnerable to economic shocks when the market for loans is disrupted.

In a US based study, (Uzun and Webb, 2007) find that bank size is an important determinant of whether a bank will securitize. (Cerrato et. al, 2012) utilize a sample of UK banks and find that the need to securitize tends to be driven by the search for liquidity, followed by regulatory arbitrage and credit risk transfer. Banks which securitized extensively prior to the 2008 financial crisis also tended to incur more defaults and commercial banks were more highly exposed to conditions in the securitization market. (Cardone-Riportella et al., 2010) also find that liquidity needs are an important driver of securitization for Spanish banks, whereas (Affinito and Tagliaferri, 2008) find that capital requirements play a driving role in loan securitization for Italian banks.

The benefits of securitization include (1) cheaper funding costs (2) credit risk

diversification (3) freeing up equity for a financial institution (4) creation of new asset classes (5) the potential to accelerate earnings potential (Greenbaum and Thakor, 1987; Fabozzi, 2005; Uzun and Webb, 2007; Schwarcz, 1991, 2013). The securitized tranche structure also allows buyers to customize their payments and reduce information asymmetry. It is almost a given that the originator of the securitization transaction will possess knowledge about the underlying financial assets that third-party credit enhancers and investors do not. The originator must assume the first loss on the assets in order to convince investors to accept the risk and is viewed as a response to (Akerlof's, 1970) "lemons problem".

However, there are potential drawbacks associated with the securitization process (Schwarcz, 1991, 2009; Cerrato et al., 2012). It is the credit ratings process that has come in for much criticism in the aftermath of the financial crisis (Scalet and Kelly, 2012). (Bolton, Freixas and Shapiro, 2012) examine the distortions that the credit ratings agencies can create and find that it encourages ratings shopping. Ratings are more likely to be inflated during boom times. (He, Qian and Strahan, 2012) examine the relation between issuer size and market prices of MBS conditional on ratings and find that for both AAA- and AA- rated tranches sold by large issuers, the prices drop by a larger magnitude than similarly rated tranches by smaller issuers. (Nini, 2008) shows the growth of institutional investors increase the supply of credit to firms with speculative grade ratings. (Ashcraft and Schuermann, 2008) find that credit ratings were assigned to subprime MBS with substantial error and note that despite the fact ratings agencies publicly disclosed their ratings criteria for subprime securities, investors lacked the necessary skills to assess the efficacy of the ratings models.

Other potential drawbacks of securitization include the rebundling process which could lead to a lack of transparency and weakening of the due diligence process. (Petersen and Rajan, 2002) find that securitization may potentially reduce incentives for lenders to carefully scrutinize and monitor borrowers due to the greater distance between the borrower and those who finally bear the default risk. To prevent moral hazard on the part of the lenders, they suggest improved regulatory oversight and balance sheet risk management. Secondly, default correlations that are low in a healthy economy may become very high during a recession and this means the attempt to diversify idiosyncratic risk becomes less reliable. Thus, faulty risk analysis, especially correlations may become illusory in nature. Finally the securitization chain is considered to be

very opaque which presents difficulty in renegotiating claims and enforcing claims. It also presented a problem for many financial institutions that relied on short-term financing as many other credit markets started to operate at substantially reduced capacity.

Securitization Industry Trends

Figure Two displays the most common assets that serve as backing for US ABS at various time periods. In 1993, auto loans (40 percent) followed by credit cards (31 percent) led the group. Student loan asset backed securities (SLABs) have comprised between 1 percent (in 1993) and 13 percent (in 2012) of the ABS market. This trend in the SLABs market is expected to continue (Arnold, Buchanan and Robertson, 2012) as the US student debt market now exceeds \$1 trillion.

In terms of specific issuances, Figure Three displays that US home equity ABS rapidly grew during 2004 to 2006. In 2007 this segment issued \$216.9 million worth of securities and dropped to \$3.8 million the following year. Since then the securitization issuance of home equity loans has demonstrated anemic growth. After 2007, non-agency commercial mortgage backed securities (CMBS) declined from \$229.2 million to \$4.4 million and residential mortgage backed securities (RMBS) also rapidly dropped from \$509.5 million to \$32.4 million.

Figure Four illustrates US agency (Fannie Mae, Freddie Mac, Ginnie Mae) and non-agency (or private-label) securitizations since the mid-1980s. After 2001, non-agency securitization started to accelerate reaching a peak during the period 2005-2006, the height of the housing bubble. Private label securitizations plummeted after 2007.

Figure Five displays the trends of the European securitization markets, indicating a sharp decline after 2008. Figure Six shows that RMBS has consistently dominated the European securitization market since 1993. Many European banks were active securitizers, with Britain, Spain and the Netherlands providing most of the loans. In 2007 alone, \$690 billion (€496.7 billion) worth of European loans became the basis of ABS, MBS and CDOs. By the end of 2009, the ECB raised estimates of write-downs to \$765 billion (€550 billion).

[INSERT FIGURE SIX ABOUT HERE]

A Brief History of Securitization

Securitization research has focused on the post-1970s mortgage securitization market and the role of government sponsored entities. Yet it is not the relatively new phenomenon many believe it to be. (Buchanan, 2014) surveys the earlier origins of “crude” forms of securitization starting with the 12th century Genoese *compera* through to early 20th century efforts.²¹

A *negotiate*, or plantation loan, is the forerunner of the mortgage backed security (Riley, 1980; Rouwenhorst, 2005; Frehen et al., 2013). Pioneered by the Deutz Company in 1695, a *negotiate* organized credit secured on plantation assets and was serviced by revenues obtained from expected coffee and sugar production. By the 1760s the market was so popular that some planters inflated the value of their assets and even manufactured fraudulent assessments that could be used to secure loans. With a large geographic distance involved, the loans became increasingly more complex and opaque and not all the risks involved were reflected in the instrument’s yield. In the late 1790s the plantation loans defaulted and investors (who did not understand all the risks involved) were forced to convert their bonds into equity.

The first successful central mortgage facilities that were either publicly financed or sponsored were in Germany and France. (Frederiksen, 1894; Wandschneider, 2013; and Buchanan, 2014) describe the 18th century origins of the German mortgage backed bond market as a response to the financial crisis following the Seven Years War. According to (Wandschneider, 2013), the *Landschaften* credit structure was intended to overcome the problems of adverse selection, moral hazard, auditing and enforcement problems. The *Pfandbriefe* (or covered bond) issued became a very durable mainstay of the European market and remains popular today. (Frederiksen, 1894; Buchanan, 2014) describe the efforts that were made to ensure the mortgages were in no way separated from other assets of the *Landschaften*. In other words, there was “skin in the game”. By 1870 single centralized well regulated securitization agencies had been well established in France and Germany.

Much younger than its European counterpart, the American securitization market was initially privately financed and unregulated. Prior to World War II, there were three previous attempts to convert mortgages into tradable securities – in the 1870s, the 1880s, the 1920s (Snowden, 1995). All ended disastrously with major defaults which (Snowden, 1995) attributes to “a fundamental misreading of the European experience”. For example, in 1877, the New York

Times provided an account of failing mortgages in the Western part of the United States. “...it is quite clear that investors cannot be over-vigilant in connection with a system which practically takes the management of their money out of their own hands and places them at the mercy of agencies whose responsibility is seldom or never equal to the responsibilities they assume”. Not only is it a story of regulatory failures, but it was also due to a poor management of risk transfer. These historical episodes and ethical lapses highlight the problems that result when the geographic link is broken between borrower and investor in a mortgage backed security. The risk was not properly priced and illustrates a lapse in the three virtues (Scalet and Kelly, 2012) describe: honesty, due care and accuracy.

By the 1970s mortgage securitization was considered to be an effective response to prepayment and interest rate risk. Ginnie Mae (GNMA) issued the first residential mortgage backed security (RMBS) in 1968, followed by Freddie Mac (FHLMC) and Fannie Mae in the early 1970s. In the private market Lewis Ranieri is credited with being the father of modern securitization. When Ranieri suggested securitizing mortgages in 1977 only 15 states recognized mortgage backed securities as legal investments. Through extensive lobbying Ranieri also won a battle to remove legal and tax barriers. In the 1980s securitization became a dominant source of funds for long-term residential mortgages. In 1984, SMMEA (the Secondary Mortgage Market Enhancement Act) was passed by Congress, allowing any investor to hold mortgage backed securities. Followed by the 1986 Tax Reform Act, a tax friendlier environment was created by introducing REMIC (Real Estate Mortgage Investment Conduits). After these two acts were passed, there was a significant increase in loan liquidity and flow of capital into the securitization market (Loutskina (2011)). In the late 1980s, the Resolution Trust Corporation (RTC) securitized everything from commercial mortgages to auto loans. By 1992 the SEC recognized that securitization was “*becoming one of the dominant means of capital formation in the United States*” (Schwarcz, 2013).

Securitization and the Ethics of Risk Transfer

An examination of ethical lapses is inevitable in the aftermath of a financial crisis. Aspects of the 2007 financial crisis may be characterized by greed, recklessness and dishonesty, but it may also be described as the result of good intentions gone amiss (Tett, 2009; FCIC

Report, 2011). (Scalet and Kelly, 2012; Donaldson, 2012; and Graafland and van de Ven, 2011) have examined moral and ethical issues that emerged from the recent credit crisis. A study of the securitization industry in ethical terms is not just important because of the complex ethical relationships that exist between originators, SPVs, ratings agencies, investors and regulators but also because of the role it plays in the global financial system. There is also a need to develop an understanding of the ethics of risk transfer, which remains a relatively unexplored area in the literature.

Securitization was originally intended to be a cheaper, efficient form of financing that could reallocate risk to less risk-averse investors. Compared with other structured financial products, there is nothing inherently injudicious about the securitization process. Indeed the term “securitization” does not make its meaning immediately apparent (Lanchester, 2014). He refers to the “reversification” of financial words and in the case of securitization what initially appears to be a word that has something to do with security or reliability, ends up being associated with a product put to malign use. (Solomon, 2012) argues that the decision making process became distorted because the originator could externalize the default risk onto creditors, and hence securitization became the preferred choice of financing. As Figures One and Seven indicate certain kinds of loans and products were securitized on a massive scale prior to 2007. There was a huge demand for securitized products especially by institutional investors (mutual funds and pension funds could only invest in AAA products). One benefit is that it increased the volume of available loans but an unintended consequence was a fuelling of both predatory lending and the amplification and dispersion of risks arising from bad loans. James Rokakis (FCIC Report, 2011) told the commission that securitization “...freed up a lot of capital. If it had been done responsibly, it would have been a wondrous thing because nothing is more stable, there’s nothing safer, than the American mortgage market. It worked for years. But then people realized they could scam it.”

(Kolb, 2011) explores the distributive justice aspects of risk management and finds the business sector generally fails to consider the important normative dimension of who bears the risk and how that risk is transferred. There are five types of social risk management that Kolb (2011) considers: mitigation; diversification; voluntary transfer of risk to others; involuntary transfer through deceit; and involuntary transfer through the excessive use of power. No special

ethical problems are posed through either the mitigation or diversification of risk. Nor should there be any special ethical problems posed through the voluntary transfer of risk since both counterparties should have a full understanding and knowledge of the risks being exchanged and transferred. However, there are ethical problems posed when there is an involuntary transfer thorough deceit and/or excessive use of power. (Boatright, 2010) documents that because financial innovation is often inherently opaque, the dangers and risks are difficult to perceive. Due to the opaque nature of the securitization process, investors were often unaware of the risk shifting taking place. Gabaix and Laibson (2006) describe such a strategic misrepresentation to the purchaser as “shrouded attributes” and this may well apply in the case of securitization ethics. When assessing securitization and the financial crisis a less explored aspect of the literature is the ethics of risk transfer.

Ethics of Risk Transfer: Originate to Distribute Model.

Ethical problems emerge when the transfer of risk involves asymmetric information, deception or the exercise of power. Consider the shift from the Originate to Hold (OTH) to Originate to Distribute (OTD) model. Under the OTH model, the creditworthiness of potential borrowers was verified by issuers who had the incentive and responsibility to do so because the issuers held the loans on their books and subsequently bore the full risk of default. There was a shift in risk responsibility under the OTD model. Now the originator and security packager were often the same entity. The originating financial institution is now incentivized to boost return on equity by turning over its balance sheet more frequently. This is achieved by moving more loans off its balance sheet and securitizing those loans. The institution that initially made the loan no longer has to care whether or not the borrower can repay the loan and only bears the risk for the amount of time between making the initial loan and the moment it sells the security. In the resulting securitization the financial institution may have only borne the risk for a number of days (Lanchester, 2014).

Under the OTD model the financial institution has no real interest in the financial condition of the borrower. The risk responsibility now shifts to the ratings agencies and ultimate investors around the globe. Securitization transactions are believed to have created moral hazard problems because originators did not have to live with the credit consequences of their loans.

The increase in volume of originated loans would lead inevitably to an increase in fees generated. When employees were paid for booking loans there was an incentive to boost the volume of loans. The ratings agencies also had skewed incentives (Scalet and Kelly, 2012) due to the information and servicing payments supplied by the securitization originators.

The OTD model tended to present a false sense of confidence that risks were understood and being effectively managed. (Tett, 2009) quotes Charles Pardue: *“I don’t think we should kid ourselves that everything being sold is fair value. I have been to dealer events where bankers are selling this stuff, and the simplicity of the explanation about how it works scares me...there are people investing in stuff they don’t understand, who really seem to believe the models, and when models change, it will be a very scary thing.”* The OTD model transformed the incentives for securitization participants, particularly lenders. It did so by undermining accountability and responsibility for the long term viability of mortgage backed securities and continued to exacerbate the poor quality of loans. In this crisis, investors also did not seem to realize the responsibility for understanding and assessing the risk of subprime mortgages was now in their hands. Mian and Sufi (2009) note a negatively correlated relationship between credit growth and income growth. They determine that the rate of securitization is much stronger in subprime ZIP codes where the default patterns were subsequently quite high.

Furthermore, a combination of herd mentality and complacency also explained the lowering of investing standards. Cheng, Raina and Xiong (2014) study the individual purchase behavior of mid-level Wall Street managers who worked directly in the mortgage securitization business. They find that securitization mid-level agents neither managed to time the market nor did they exhibit cautiousness in their home transactions. The results apply especially for those agents living in the “bubblier” areas of the United States and the agents may have been rather susceptible to potential source of belief distortion. This could include job environments that encourage group think, cognitive dissonance and other sources of over-optimism.

It also raises the crucial question: what happens when you break the link between originator and lender? (Soros, 2008) claims that securitization became a “mania” around 2005: *“Securitization was meant to reduce risks through risk-tiering and geographic diversification. As it turned out, they increased the risks by transferring ownership of mortgages from bankers who*

knew their customers to investors who did not.” In summary, not all the conditions for transferring and managing risk were met, creating ethical problems.

In terms of shifting risk responsibility, is this time different? Not really. (Buchanan, 2014) states that this shifting of risk responsibility has occurred before in early attempts to introduce a mortgage bond market to the 19th century US financial market. (Arnold and Buchanan, 2009, 2010) reinforce this danger of breaking the link between the originator and lender in their analysis of Heilig-Meyers’s securitization of accounts receivable. Once the largest furniture retailer in the US, Heilig-Meyers had been experiencing cash flow problems prior to 1998 and in order to accelerate cash flow, Heilig Meyers decided to securitize its accounts receivable. The company held the riskiest tranche of a financial product that was securitized with low-quality loans, or what is termed toxic waste. In 2000 a sudden downgrading in ratings was the result of significant portfolio deterioration following a controversial servicing transfer. The servicing transfer became controversial because borrowers were usually assessed on individual store credit scoring models and made payments at individual retail locations. Problems arose when Heilig-Meyers shut its doors during bankruptcy proceedings. The accounts receivable certificates defaulted once stores began closing. Even if borrowers wanted to repay their debt, there was no store open to make a payment. Consequently, in 2001, Heilig-Meyers became the first company in which the senior notes of asset backed securities suffered a principal loss. In addition, by 2000, an estimated one out of nine bankrupt Americans owed money to Heilig-Meyers. In 2003, Union Bank and Bank of America were accused of misreporting the credit quality of Heilig-Meyers’s ABSs. First Union settled out of court and in late 2008 the plaintiffs (including AIG) were awarded \$141 million in damages from the Bank of America case.

The CDO Market and the Ethics of Risk Transfer

So where do collateralized debt obligations (CDOs) fit into the ethics of risk transfer story? Problems of distributive justice in risk transfer are also well illustrated in the manufacture of CDOs and synthetic instruments such as CDO² and CDO³. In the late 1980s, Drexel Burnham Lambert assembled CDOs out of various companies’ junk bonds and investors then picked their preferred level of risk and return from the tradable securities. In 2001, American Express announced a \$26 million loss from CDO related investments. American Express had been

carrying out these re-securitizations since 1997 but the company head admitted the firm did not fully comprehend the risk of the CDO investments²². Moody's then went on to announce that 58 percent of synthetic CDOs had exposure to Enron, Global Crossing and WorldCom. Despite this when the housing market began to surge after 2001, the demand for securitized products accelerated and CDOs were no exception (Tett, 2009; Boatright, 2011). Wall Street bankers would take the low investment grade tranches (think of the BBB MBSs) and repackage them into new securities, namely a CDO. So it really became a securitization of a securitization. Eventually, 80 percent of the CDO tranches would be rated triple-A despite the fact that they generally comprised the lower-rated tranches of mortgage-backed securities (FCIC Report, 2011). CDO securities would then be sold with their own waterfall structures. The CDO market was controlled by six or seven issuers. Out of this market came the synthetic securitized products namely the CDO² and CDO³. A CDO² is produced from the low investment grade CDO tranches and put through the securitization process again. Then the low investment grade CDO² tranches are put through the process again to produce CDO³. The rise and fall of the global CDO market is displayed in Figure Seven, and it is clearly evident this segment is struggling to rebound.

From the above description it quickly emerges that with the creation of synthetic CDOs the securitization process started to achieve quite bizarre levels of complexity. Therefore it is not surprising that the securitized products came to be thought of colloquially as an “*alphabet soup*”. Here is a sampling of other instruments that emerged: CMO (collateralized mortgage obligations where all the tranches drew their payouts from the same pool of mortgages), CLO (collateralized loan obligations), CSO (collateralized synthetic obligations (consists of a synthetic asset pool)), CFO (a CDO like structure that acquires investments in hedge funds or private equity funds), CCO (collateralized commodity obligation – this acquires exposures in commodity derivatives) and CXO (acquires exposures in exchange rate derivatives).

MBS and CDOs created further leverage because they were initially financed with debt. The original mortgage creates leverage particularly when the loan is low on down payments and a high loan-to-value ratio. With synthetic securitized products, CDOs purchased as collateral in creating other CDOs creates another round of leverage. The CDO backed by MBS that in turn was backed by mortgages creates another level of leverage. Credit default swaps (CDSs) applied to securitized products in the 1990s played a central role to the securitization market, especially

to investors. A firm wishing to reimburse its credit risk gets a counterparty to take on that risk, the risk of default, and effectively pays a premium to it to do so. The counterparty buys a CDS from another firm (AIG was the most famous example (Tett, 2009)). The default risk does not necessarily stay with the original seller because these products can be freely traded. What emerges out of the CDO market prior to the crisis is opaqueness and complexity, making risk assessment extremely difficult. If the risk is properly priced by the market and the market remains liquid then it is sound, otherwise it indicates unethical factors may be present and this was the case with CDOs.

Another way of considering the complexity of CDO related products is to calculate the number of pages of documentation for a prospective investor. (Haldane, 2009) considers a diligent investor attempting to understand securitized products. Table One provides data on the level of documentation for a prospective RMBS investor, which is relatively straightforward, approximately 200 pages (assuming there are 5000 mortgages in a typical RMBS). However, the complexity of documentation quickly escalates for a prospective CDO² investor.

[INSERT TABLE ONE ABOUT HERE]

Using the sample data in Table One, the approximate number of pages to read for a CDO² investor equals:

$$\begin{aligned}
 &\text{Pages in CDO}^2 \text{ prospectus} + [(\text{pages in RMBS prospectus}) * (\text{no. of RMBS in CDO}) * (\text{pages in} \\
 &\text{ABS CDO prospectus}) * (\text{no. of ABS CDO tranches in CDO}^2)] \\
 &= [1] + [3]*[5]*[2]*[4] \\
 &= 300 + [200*150*300*125] \text{ pages} \\
 &= 1,125,000,300 \text{ pages.}
 \end{aligned}$$

So to truly comprehend the components of a CDO² in this case, the investor would need to read in excess of one billion pages.

One of the disadvantages about securitization mentioned before is that default correlations that are low in a healthy economy may become very high during a recession and this means the attempt to diversify idiosyncratic risk becomes less reliable. During the housing and securitization boom financial engineers were attempting to come up with more innovative ways of exploiting correlation structures. That is, how likely is it that one default would trigger others? The most famous example was the increasing use of the Gaussian copula model. (Li, 2000) measured the degree of dependencies of different kinds among a group of variables but warned against a one size fits all model. Despite this warning, many banks adopted the Gaussian copula model as a template and soon developed “correlation trading” and this in turn introduced new risks into the financial system. The main problem this presented was that all structures were now being designed in a similar manner and contained the same default triggers. So this meant if there was a trigger event, then many financial institutions would simultaneously default.

And relatively recent historical episodes tell us that this is not the first time that such correlation trading has gone awry. At the turn of the century multi-sector CDOs were constructed based on loans that were assumed to have low correlations with respect to each other. Yet in 2002 after the dot.com bust, 9/11 and large defaults in the mobile home loan market, the multi-sector CDO market experienced write downs. Backed by mortgages, mobile home loans, aircraft leases and mutual fund fees and defaults in these markets happened simultaneously, causing losses in the multi-sector CDO market.

Is Every Asset a Suitable Candidate for Securitization?

Prior to the financial crisis there was pressure to securitize risky subprime loans to facilitate financing for low-income households. Then MBS were re-securitized into CDOs, CDO² and so on, thus creating greater amounts of highly rated, higher yielding securitized bonds. This was heightened by a reliance on short-term debt and incentive schemes that focused on short-term profits rather than a long-term sustainable profit. Effectively the CDO boom “created the investor” (FCIC Report). What resulted was an extremely complex and opaque process.

(Schwarcz, 2009) warns of the potential dangers of securitizing risky microfinance loans to facilitate financing to the impoverished if the negative aspects of securitization are not

addressed. In 2009, the NYTimes describes a growing life insurance settlements securitization market. (Nurnberg and Lackey, 2010) warn of the ethical dimensions of securitizing life insurance settlements. (Arnold, Buchanan and Robertson, 2012) detail the student loan asset backed securities (SLABS) market, drawing comparisons with the recent mortgage bubble. They also find that the student loan and SLABS market bears some similar features to the subprime mortgage market bubble.

(Graafland and van de Ven, 2011) state that a renewed set of virtues is not enough and that moving forward, any long term strategies must involve institutional reform. In the next section I examine some specific international securitization reforms.

Current Securitization Reform

Early attempts in the US to respond to the crisis included the Toxic Asset Relief Program (TARP) and Term Auction Loan Facilities (TALF). The intention of TALF was to stimulate the securitization market, especially the continued availability of credit to the small business and consumer market. Nevertheless, in 2009 SIFMA President and CEO Tim Ryan said, *“The securitization market has seized up...We are convinced that getting securitization started again is the single most important question facing the capital markets today.”*²³ By 2009 it was strongly apparent that the revival of the securitization markets was vital to support provision of credit to the global financial system. Standardization of terms and structures of securitized products as well as enhancing transparency became of paramount importance amongst regulators. The 2009 Financial Standards Board (FSB) report called for improved disclosure of securitization exposures in trading books, SPVs, re-securitization exposures, valuation assumptions and pipeline risks. In 2010, FSB started to look more closely at a number of other issues and urged adoption of higher risk weights for securitizations and re-securitizations as well as strengthening of capital treatment. FSB also called for more rigorous due diligence of externally rated securities in order to satisfy higher capital requirements as well as tighter prudential guidance for bank management on off-balance sheet exposures arising from securitization parties.

Moving forward, any reform needs to address why securitization market bubbles (especially private-label market) formed, why they failed and how the securitization market can

be improved. There have been calls for much needed reforms in the following areas: standardization, greater transparency, having simpler securities, requiring originators to keep more “skin in the game” and the role of ratings agencies. One common objective has been to realign previously misaligned incentives that existed in the securitization process.

The Dodd-Frank Act

The Dodd-Frank Wall Street Reform and Consumer Protection Act was signed into law on July 21, 2010. Dodd-Frank takes a three pronged approach to reforming securitization – risk retention, due diligence and disclosure and credit ratings agencies. Nearly three years later, there remains substantial ongoing rule-making in order to implement specific provisions of the act.

First, the Dodd-Frank Act requires that securitization sponsors to have some “*skin in the game*”²⁴, specifically that companies that sell products such as MBS to retain at least 5 percent of the credit risk, unless the underlying loans meet standards that reduce riskiness²⁵. Dodd-Frank also does not allow for hedging of the retained risk position, so the pure risk must be retained. The proposed rules regarding risk retention exempts transactions guaranteed by Fannie Mae and Freddie Mac. Secondly, the Dodd-Frank Act mandates improved disclosures and ongoing reporting obligations for all ABS issuance, including individual loan data and use of computer programs indicating the cash flow waterfall. The type of assets involved in the transaction are important for the due diligence and disclosure reporting requirements. The review of actual assets underlying the ABS must be performed by registered issuers who are also required to disclose their findings. If the underlying assets in the securitization pool have been originated under different conditions, then the issuer must disclose these facts. The Dodd-Frank Act also has specific due diligence proposals regarding loan level data. It suggests revising the previous reporting regime where issuers were only required to report pool-level data. The new requirements would include: terms of the asset, service identity, an identity number, whether or not it conforms to applicable underwriting criteria and obligor characteristics.

European Reform Plans

(Blommestein, Keskinler and Lucas, 2011; Humphrey and Jaffe, 2012) draw a distinction between the recent European and US securitization experiences. Historically, securitization has

acted as a legitimate funding tool in Europe as opposed to one of capital arbitrage reasons, or an end in itself, as was the case with many US securitizations. They observe in Europe regulation and underwriting standards appear to be significantly more robust, and this is exhibited by a tendency of many European underwriters to keep “more skin in the game”. There remain key segments of the European securitization market that continue to rely on support from the European Central Bank’s liquidity program and this is termed “retained” issuance. U.S. provisions emphasize regulation of issuers whereas the European Union (EU) securitization reforms emphasize the investor perspective. Various regulatory reforms have included the Capital Requirements Directive (CRD), the Credit Agency Regulation, Solvency II Proposals as well as the Basel II and III Accords.

In January 2011, risk retention requirements came into effect in Europe under Article 122a of the Second Capital Requirement Directive (CRD). Under CRD, originators and investors are required to undertake heightened due diligence, risk management and disclosure practices on an ongoing basis. Beginning in January 2011, the CRD applies to both private and public securitizations. CRD rules stipulate a 5 percent retention requirement by originators. In the EU, banks and investment advisors are currently the biggest investors in securitized products. CRD also imposes due diligence requirements on banks that invest in securitized products. Both originator and investor are required to disclose information and higher capital charges are also stipulated.

The Basel Committee on Bank Supervision has embarked upon a fundamental review of the ways in which securitization risks work. From the viewpoint of regulating capital prior to Basel III, the treatment of securitization has been viewed as unsatisfactory. (Calomiris and Mason, 2004; Pennacchi, 1998; Uzun and Webb, 2007) describe how banks used securitization to reduce capital requirements, or what became known as regulatory arbitrage of Basel I, or “gaming Basel”. Basel II which came into effect in the majority of EU countries in 2008 remedied the weaknesses in the Basel I framework. Basel II used risk-sensitive capital ratios, and thus regulatory arbitrage may have factored into the increased use of securitization (Minton et al, 2004). Under Basel II, the lower capital requirements permitted banks to make an increasing number of loans with the same amount of initial capital which further increased the supply of capital during the buildup of the housing bubble.

In terms of securitization, the deficiencies that the Basel Committee identified after the latest financial crisis include: (1) undue reliance on external ratings (2) that there were too low risk weights for highly rated securitized products (3) for low rated senior securitization exposures the risk weights were considered too high (4) the “*cliff effects*” in capital requirements resulting from the underlying pool’s deteriorating credit quality. A cliff effect is the case where a small difference in credit quality or other parameters produce large differences in capital requirements. Basel 2.5 proposals (introduced in July 2009) have already introduced significant increases for the relative risk weights of securitization and re-securitization positions.

The G20 has led many global regulatory reforms, including the endorsement of the Basel III reforms. Implementation of the Basel III reforms²⁶ will be phased in before 2019. There are three cornerstones to the Basel III reform, namely: (1) capital reform (quality and quantity of capital, risk coverage, buffers and controlling leverage) (2) liquidity reform (short term and long term) and (3) systemic risk and interconnectedness. Like Basel II, Basel III provides capital rules which are designed to enhance the quality and quantity of loss-absorbing bank capital. The objective is to make securitization capital requirements more prudent and risk-sensitive²⁷. There has been vigorous debate regarding the calculation of risk-weighted assets, a variable that is crucial in deciding which banks have adequate capital buffers and which banks need to improve asset quality problems. The more stringent requirements of Basel III will likely affect the incentives of banks to securitize their assets, as well as investing in securitized products. Another objective of Basel III is to improve the banking sector’s ability to absorb shocks in response to financial stress.

In response to the Eurozone debt crisis, derivatives and structured finance have been increasingly embraced by countries to help them out of crisis. The European Financial Stability Facility (EFSF), created by the Eurozone countries in May 2010, is regarded as the largest CDO ever created²⁸. The EFSF was marketed as a way to reduce risk. The EFSF, created to assist countries facing “illiquidity”, buys the bonds of the countries which find it difficult to finance themselves. It then issues bonds that are AAA rated. Once again, it relies on overcollateralization, an assumption on the joint distribution of possible outcomes, and the approval of the credit rating agencies. The overcollateralization takes the form of guarantees by other Eurozone countries.

Against this backdrop of increased liquidity ratio regulation and higher Solvency II capital charges and general uncertainty regarding banking reform, there has been a shift towards issuing covered bonds and other, less expensive sources of funding – including loans from central banks.

Is the Covered Bond Market a Solution?

The growth of the American securitization market has been due to investments related to mortgage-backed securities, whereas Europeans have historically tended to trade in mortgage bonds (or covered bonds). The “covered” nature of European mortgage bonds derives from the fact that the bonds are the direct liability of a mortgage institution and rely solely on the creditworthiness of that financial institution. The argument for increased use of covered bonds has been made in the aftermath of financial crises, due to the protection these markets have offered to investors.

In 2006 Washington Mutual and Bank of America were the sole issuers of covered bonds in the United States. After 2006 the US covered bond market still lagged the European market. There are two primary reasons for this. Firstly, until 2008, FNMA, Freddie Mac and GNMA provided attractive alternatives to residential mortgage funding. Secondly, there had been a lack of certainty as to the availability of the cover pool to investors in the event of a sponsoring bond failure. Covered bond legislation was reportedly not included in the Dodd-Frank Act due to a dispute over whether the Office of the Comptroller of the Currency (OCC), the Federal Deposit Insurance Corporation (FDIC) or the U.S Department of Treasury would act as a regulator. U.S trade groups strongly supported efforts to bring covered bonds to the US as a corollary to the securitization industry. In 2011 a bill supporting the US Covered Bond Act was introduced in the US House of Representatives.

In terms of regulation, covered bonds seem to have received more favorable regulatory treatment and have lower associated costs of funding. The 2009 FSB Report also encourages greater uses of the contractual framework seen in the covered bond market. The explanation for this is that it ties the issuers to the instrument by requiring them to act as default guarantor in the event of underperformance of the underlying assets provided the depositors are not disadvantaged. In other words, there is a clearer framework for how risk is transferred.

The cover pool is considered to comprise of high quality, low risk assets. When there are difficulties with a poorly performing mortgage, the bank that issues the covered bond will remove the troubled loan and replace it with a better performing mortgage. That is, the issuer maintains some “skin in the game”. To prevent any significant deterioration, the cover pool is over-collateralized with assets and in Europe bonds are usually over-collateralized by 20-30 percent. In addition, the management of the cover pool must be supervised and in the event of an issuer bankruptcy, the covered bond holders have first priority ahead of other debt holders. The majority of the covered bond market carries a AAA rating and are periodically “marked-to market” to make sure the loan-to-value ratios do not exceed 80 percent. Apart from attractive features such as liquidity and covenants, covered bonds do not entail complex tranches or pre-payment risk arrangements.

There are few potential disadvantages in the case of covered bonds. Legal uncertainties arise due to the track record of zero defaults. Identical treatment of covered bonds is difficult due to different legal frameworks and practices across countries.

Conclusion

The global financial crisis that was triggered in 2007 will continue to have long lasting effects on consumer behavior, financial markets, financial institutions, interplay of economies and the nature of government policies. The costs of the recent financial crisis are enormous and the structural flaws in the securitization framework continue to present challenges. It is important to understand the causes, consequences and ethical implications of the crisis to help individuals and businesses better manage risk and also to assist in designing regulations and establishing policy responses. In response to ethical problems: there is a need to develop a greater responsibility in transferring risk such as: better risk management, more careful attention to incentives; more emphasis on intermediation; less reliance on credit ratings and markets; greater regulatory oversight for systemic risk. And many lessons may be gleaned from the covered bond market.

In the US, Fannie Mae, Ginnie Mae and Freddie Mac are presently funding more than 90 percent of mortgages. Any near term recovery of the private label issuance market remains weak. Securitization is making a gradual recovery in some sectors. Auto-loan receivables, credit-card

debt securitization are above 2010 levels. Securitization of more esoteric sources, such as cash flows from solar panels and home rental income have picked up. It is not just investor demand for yield but also regulator enthusiasm for moving more credit flowing to the economy that is contributing to the recovery of the securitization market. There is also likely to be a further tightening of rules regarding “re-securitizations” and as a result products like CDO² are unlikely to recover. The newly formed Structured Finance Industry Group (SFIG) is attempting to reinvigorate the private label mortgage market.²⁹ The SFIG aims to reform the representations and warranties in mortgage backed securities to signal that the loans underlying the instrument are properly underwritten and not fraudulent.

Attempts to deal with the opacity problem associated with the ratings process have been varied. Regulators have also claimed it would be difficult to find an alternative to the ratings agencies. One such solution is the Open Models Company (OMC). The OMC detours the credit ratings agency system and allows participants to independently input their assumptions on future economic activity and run a “what-if” analysis on asset pricing. This independent network of modelers is also encouraged to comment on underlying data and assumptions. (Tapscott and Williams, 2012) compare the OMC process with the scientific peer review process. The OMC business model is intended to deal with new securitization offerings as well as existing problematic offerings.

One potential tradeoff of this increase in proposed regulation is that recent regulatory rules intended to deter the past *under-capitalization* enabled by securitization, may have swung to the other extreme, essentially requiring *over-capitalization*, which in turn increases the cost of securitization and thereby reducing the availability of credit in financial markets. Regulators may accomplish the objective of keeping banks safer, but it could jeopardize recovery by constricting the flow of credit. It could also compromise the competitiveness of US financial institutions vis-à-vis foreign institutions that are not subject to similar over-capitalization requirements.

It is apparent that securitization can be a powerful facilitator of economic growth if implemented judiciously. One thing that is crucial is to restore investor confidence. The former Comptroller of the Currency, John Dugan has stated “...*we are at a crossroads: the collective decisions we make in the next year in an effort to reform and revitalize the securitization market will have profound consequences for consumer and business credit in the United States and*

*abroad*³⁰. Global regulatory reform has been gradual but is necessary for confidence gains in financial markets. Questions remain about how the securitization market should be designed, supervised and regulated in the future. It is difficult to find a “single bullet” solution because of competing factors such as different coupon types, maturity profiles, asset types and interest rate determination techniques. Different, legal, cultural and market frameworks add to this complexity. Yet securitization is perceived as having long term social value, or as Andy Haldane phrases it, “*a financing vehicle for all seasons*³¹.”

References

Affinito M., and Tagliaferri, E. (2008) Why do Banks Securitize their Loans? Evidence from Italy, Working Paper.

Akerlof, G. (1970) The Market for ‘Lemons’: Quality Uncertainty and the Market Mechanism. *Quarterly Journal of Economics*, 84 (3), 488 – 500.

Allen, F and Yago, G. (2010) *Financing the Future: Market-Based Innovations for Growth*, Wharton School Publishing.

Arnold, T., Buchanan, B., and Robertson, J.F. (2012) The Economics of Sallie Mae. *Journal of Structured Finance*, 18 (2), 65-76.

Arnold, T., and Buchanan, B. (2010) Furniture as a Conduit for Credit, *Journal of Structured Finance*, 16 (2), 10-17.

Arnold, T., and Buchanan, B. (2009) The Ghost of Credit Past: The Specter of the Heilig-Meyers Fiasco Haunts Today’s Failed Lenders, *Investment Professional*, 2(2), 20-24.

Ashcraft, A. and Schuermann, T. (2008) Understanding the Securitization of Subprime Mortgage Credit, Working paper, Federal Reserve Bank of New York.

Blommenstein, H.J., Keskinler, A. and Lucas, C. (2011) Outlook for the Securitization Market, *OECD Journal – Financial Market Trends*, 1-18.

Boatright, J. (2010) Why Financial Innovation Seems to be Associated with Scandals, Crises, Mischief and Other Mayhem. In *Risks and Rewards of Financial Innovation: Creative Destruction or Destructive Creation*. (ed) A. Pollack, T. Savage and J. R. Boatright. CME Group Foundation.

Boatright, J. (2014) Why Risk Management Failed: Ethical and Behavioral Aspects. Loyola University Working Paper.

Bolton, P., Freixas, X. and Shapiro, J. (2012) The Credit Ratings Game, *Journal of Finance*, 67, 85-111.

Buchanan, B. (2014) Back to the Future: 900 Years of Securitization, *Journal of Risk Finance*. Forthcoming.

Calomiris, C.W., Mason, J.R. (2004) Credit Card Securitization and Regulatory Arbitrage, *Journal of Financial Services Research*, 26, 5-27.

Cantor, R. and Demsetz, R. (1993) Securitization, Loan Sales and the Credit Slowdown, *Quarterly Review*, Federal Reserve Bank of New York, 27-38.

Cardone-Riportella, Clara, R., Samaniego and Trujillo-Ponce, A. (2010) What Drives Bank Securitization? The Spanish Experience, *Journal of Banking & Finance*, 34 (11), 2639-2651.

Cerrato, M., Choudhry, M., Crosby, J., and Olukuru, J. (2012) Why do UK Banks Securitise? Working Paper. Available at <http://ssrn.com/abstract=2051379>.

Cheng, I.H., Raina, S and Xiong, W. (2014) Wall Street and the Housing Bubble, *American Economic Review*, 104 (9): 2797-2829.

Cummins, J.D. and Weiss, M.A. (2009) Convergence of Insurance and Financial Markets: Hybrid and Securitized Risk-Transfer Solutions, *The Journal of Risk and Insurance*, 76 (3), 493-545.

Diamond, Douglas W, (1984) Financial Intermediation and Delegated Monitoring, *Review of Economic Studies*, 51(3), 393-414.

Donaldson, T. (2012) Three Ethical Roots of the Economic Crisis, *Journal of Business Ethics*, 106, 5-8.

Eggert, K. (2009) The Great Collapse: How Securitization Caused the Subprime Meltdown, *Connecticut Law Review*, 41(4), 1257-1312.

Fabozzi, F. (2005) The Structured Finance Market: An Investor's Perspective, *Financial Analysts Journal*, May/June, 27-40.

The Financial Crisis Inquiry Report: Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States (2011), available at http://fcic-static.law.stanford.edu/cdn_media/fcic-reports/fcic_final_report_full.pdf.

Franke, G. and Krahnen, J. (2008) The Future of Securitization, CFS Working Paper No. 2008/31.

Frederiksen, D.M. (1894) Mortgage Banking in Germany, *Quarterly Journal of Economics*, 9, 47-76.

Frehen, R. Goetzmann, W.N. and Rouwenhorst, K.G. (2013) Dutch Securities for American Land Speculation in the Late-Eighteenth Century, Working Paper.

Gabaix, X and Laibson, D. (2006) Shrouded Attributes, Consumer Myopia, and Information Suppression in Competitive Markets, *Quarterly Journal of Economics*, 121 (2), 505-546.

Gorton, G. (2012) *Misunderstanding Financial Crises: Why We Don't See Them Coming*, Oxford University Press.

Gorton, G., and Metrick, A. (2012) Securitization, NBER Working Paper, No. 18611.

- Graafland, J.J. and van de Ven, B.W. (2011) The Credit Crisis and the Moral Responsibility of Professionals in Finance, *Journal of Business Ethics*, 103, 605-619.
- Green, C.F. (1989) Business Ethics in Banking, *Journal of Business Ethics*, 8, 631-634.
- Greenbaum, S.I. and Thakor, J.V. (1987) Bank funding modes: securitization versus deposits, *Journal of Banking and Finance*, 11(3), 379-92.
- Haldane, A. (2009) Rethinking the Financial Network, Bank of England Speech.
<http://www.bankofengland.co.uk/archive/Documents/historicpubs/speeches/2009/speech386.pdf>
- He, J., Qian, J and Strahan, P.E. (2012) Are All Ratings Created Equal? The Impact of Issuer Size on the Pricing of Mortgage-Backed Securities, *Journal of Finance*, 67(6), 2097-2137
- Hocquet, J.C. (1995) City-State and Market Economy. In *Economic Systems and State Finance* (ed) Richard Bonney. European Science Foundation. Clarendon Press.
- Holstrom, B. and Tirole, J. (1997) Financial Intermediation, Loanable Funds and the Real Sector, *Quarterly Journal of Economics*, 112(3), 663-691.
- Hubbard, Douglas W. (2009) *The Failure of Risk Management: Why It's Broken and How to Fix It*. New York: Wiley.
- Humphreys, P., and Jaffe, B. (2012) Regulatory Developments in the United States and Europe: an Analysis of Recent Reforms Affecting Securitization Transactions, *Journal of Structured Finance*, 18 (3), 8-17.
- Kindleberger, C. (2011) *Manias, Panics, and Crashes: A History of Financial Crises*. Palgrave Macmillan, 6th edition.
- Kolb, R.W. (2011) Risk Management and Risk Transfer: Distributive Justice in Finance, *Journal of Alternative Investments*, Spring, 90-98.
- Kohn, M. (1999) The Capital Market Before 1600, Working Paper 99-06.
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=151868
- Krippner, G. (2009) *Capitalizing on Crisis: The Political Origins of the Rise of Finance*. Harvard University Press, 2012.
- Laeven, L. and Valencia, F. (2009) Resolution of Banking Crises: The Good, The Bad and the Ugly, IMF Working Paper WP/10/146.
- Lanchester, J. (2014) *How to Speak Money: What the Money People Say and what it Really Means*. W.W. Norton and Co. 1st edition.

- Li, D. (2000) On Default Correlation: A Copula Function Approach, *Journal of Fixed Income*, 9 (4), 43-54.
- Loutskina, E. (2011) The Role of Securitization in Bank Liquidity and Funding Management, *Journal of Financial Economics*, 100, 663–684
- McConnell, J and Buser, S. (2011) The Origins and Evolution of the Market for Mortgage Backed Securities, *Annual Review of Financial Economics*, 3(1), 173-192
- Mian, A. and Sufi, A. (2009) The Consequences of Mortgage Credit Expansion: Evidence from the U.S. Mortgage Default Crisis, *Quarterly Journal of Economics*, 124(4), 1449-1496.
- Minsky, H. (2008) Securitization, Levy Institute Publications.
- Minton, B.A., Sanders, A. and Strahan, P. (2004) Securitization by Banks and Finance Companies: Efficient Financial Contracting or Regulatory Arbitrage? Working Paper 2004-25, Ohio State University.
- Mukunda, G. (2014) The Price of Wall Street's Power, *Harvard Business Review*, June, 70-79.
- Munro, J.M. (2003) The Medieval Origins of the Financial Revolution: Usury, Rentes and Negotiability, *International History Review*, 25, 505-562.
- Murray A. (2001) Has Securitization Increased Risk To The Financial System? *Business Economics*, 36(1), 63-67.
- Nini, G. (2008) How Non-Banks Increased the Supply of Bank Loans: Evidence from Institutional Term Loans, Working Paper, University of Pennsylvania.
- Nurnberg, H. and Lackey, D.P. (2010) The Ethics of Life Insurance Settlements: Investing in the Lives of Unrelated Individuals, *Journal of Business Ethics*, 96, 513–534.
- Orhangazi, O. (2008) *Financialization and the U.S. Economy*. Northhampton, MA: Edward Elgar.
- Pennacchi, G.G. (1988) Loan sales and the Cost of Bank Capital, *Journal of Finance*, 2, 375-396.
- Petersen, M.A. and Rajan, R. G. (2002) Does Distance Still Matter? The Information Revolution in Small Business Lending, *Journal of Finance*, 57 (6), 2533-2570.
- Philips, K. (1994) *Arrogant Capital: Washington, Wall Street and the Frustration of American Politics*. New York. Little Brown and Company.
- Raines, J.P. and Leathers, C.G. (1994) Financial Derivative Instruments and Social Ethics,

Journal of Business Ethics, 13, 197–204.

Rajan, R. (2010) *Fault Lines*, Princeton University Press.

Riley J. (1980) *International Government Finance and the Amsterdam Capital Market 1740-1815*. Cambridge University Press.

Rouwenhorst, G.K. (2005) The Origins of Mutual Funds. In: Goetzmann, William N. and K. Geert Rouwenhorst (Eds) *Origins of Value: The Financial Innovations that Created Modern Capital Markets*. Oxford University Press.

Scalet, S. and Kelly, T.F. (2012) The Ethics of Credit Ratings Agencies: What Happened and the Way Forward, *Journal of Business Ethics*, 111, 497-490.

Schwarcz, S. (2013) Securitization and Structured Finance. In: Caprio, G. (Ed) *Key Global Financial Markets, Institutions, and Infrastructure*. Academic Press.

Schwarcz, S. (2009) The Future of Securitization. In: Kolb, Robert. W. (Ed) *Lessons from the Financial Crisis: Causes, Consequences, and Our Economic Future*. Wiley Publishing.

Schwarz, S. (1991) The Alchemy of Asset Securitization, *Stanford Journal of Law, Business and Finance*, 1, 133-154.

Sellon, G.H. and VanNahmen, D. (1988) The Securitization of Housing Finance, *Economic Review*, (July/August), 3-20.

Snowden, K. A. (1995) Mortgage Securitization in the US; Twentieth Century Developments in Historical Perspective. In Michael D Bordo and Richard Sylla (Eds). *Anglo-American Financial Systems: Institutions and Markets in the Twentieth Century*, Burr Ridge. Irwin.

Solomon, D. (2012) The Rise of a Giant: Securitization and the Global Financial Crisis, *American Business Law Journal*, 49(4), 859-890.

Soros, G. (2008) *The Crash of 2008 and What It Means: The New Paradigm for Financial Markets*. Public Affairs. New York.

Tapscott, D and Williams, A.D. (2010) *Macrowikinomics*. Penguin Press.

Tett, G. (2009) *Fool's Gold: How Unrestrained Greed Corrupted a Dream, Shattered Global Markets and Unleashed a Catastrophe*, Little Brown, London.

Uzun H., and Webb, E. (2007) Securitization and Risk: Empirical evidence on US banks, *The Journal of Risk Finance* 8, 11-23.

Wandschneider, K. (2013) Lending to Lemons: Landschafts Credit in the 18th Century Prussia,

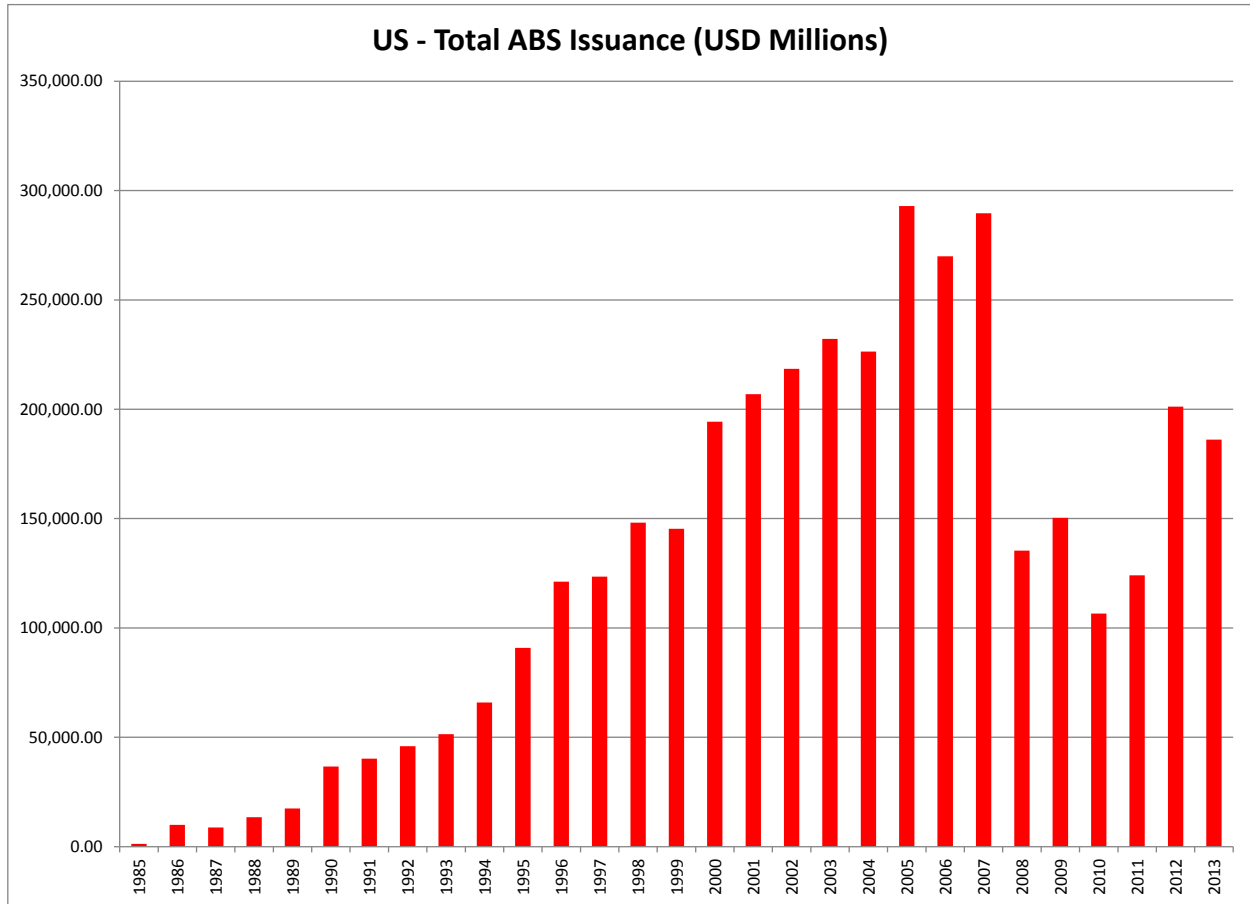
Working Paper.

Table 1
Climbing the Securitization Complexity Tree – Typical Contract Details

| | |
|--|-------|
| [1] Pages in CDO ² prospectus | 300 |
| [2] Pages in ABS CDO prospectus | 300 |
| [3] Pages in RMBS prospectus | 200 |
| [4] Number of ABS CDO tranches in CDO ² | 125 |
| [5] Number of RMBS in a typical CDO | 150 |
| [6] Number of mortgages in a typical RMBS | 5,000 |

Source: Haldane, A (2009)

Figure One

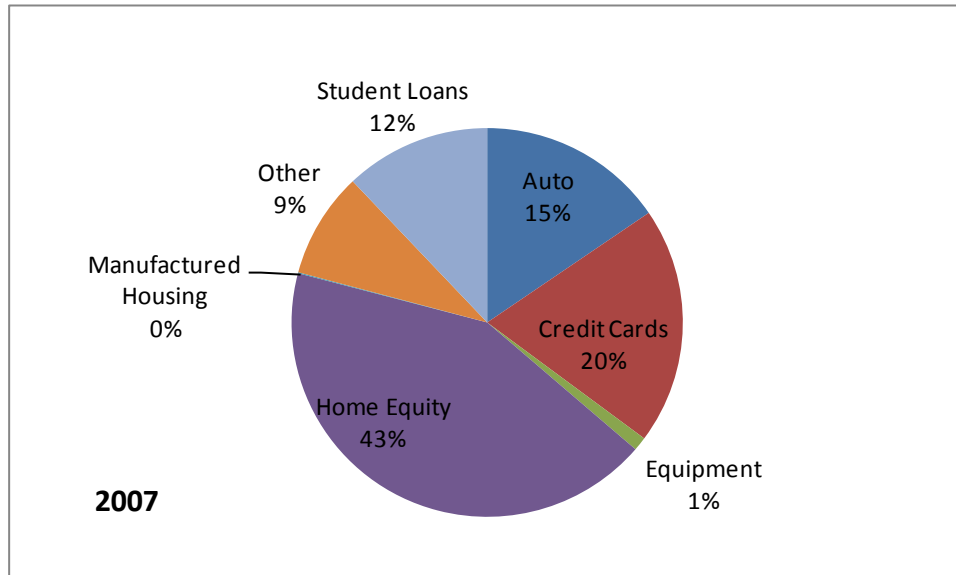


Source: SIFMA

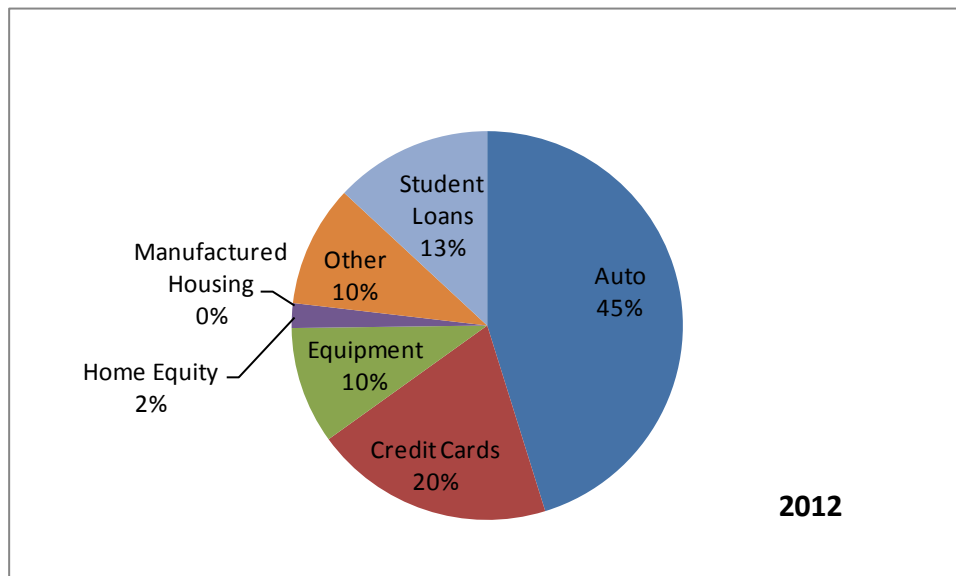
Figure Two

US Asset Backed Securitization – Collateral Type

Panel A

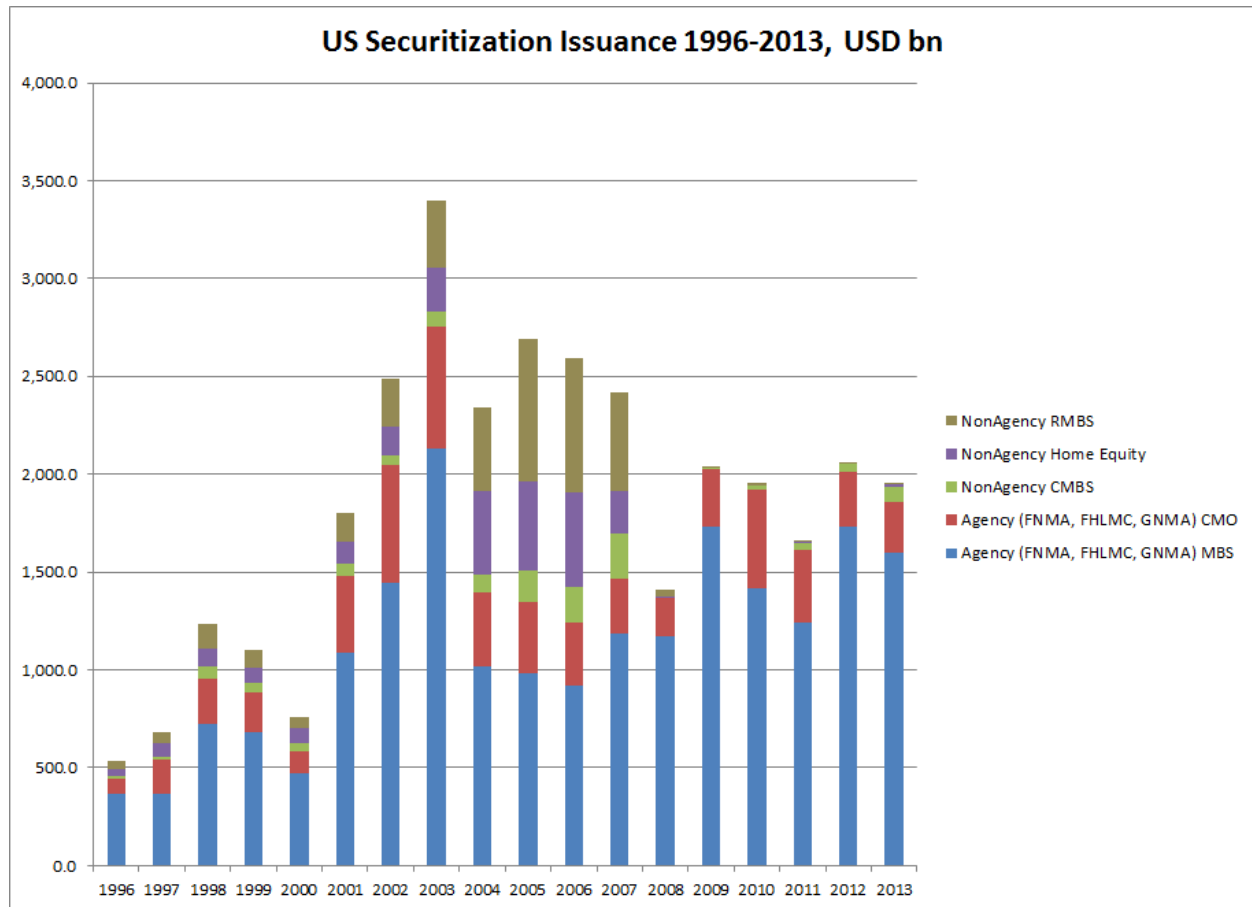


Panel B



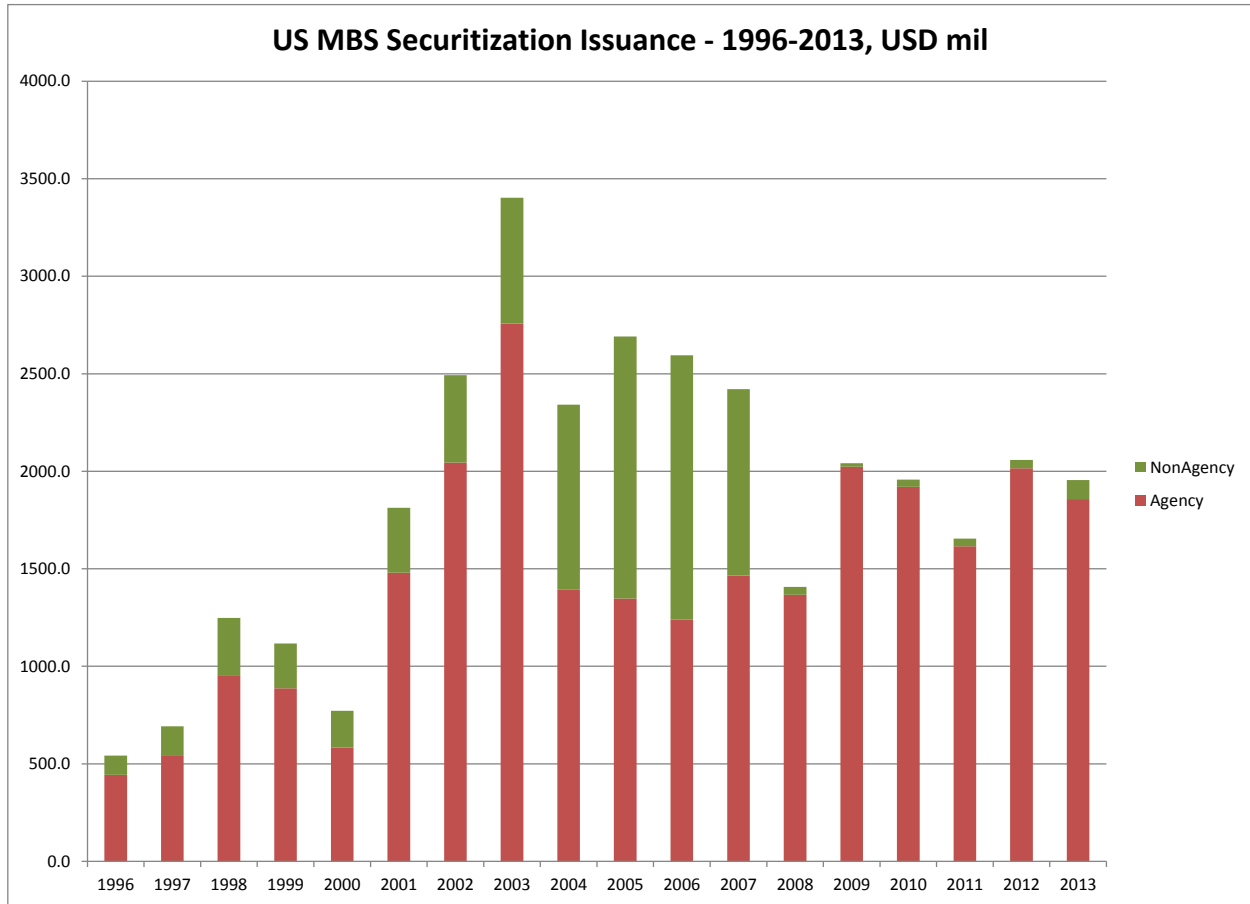
Source: SIFMA

Figure Three



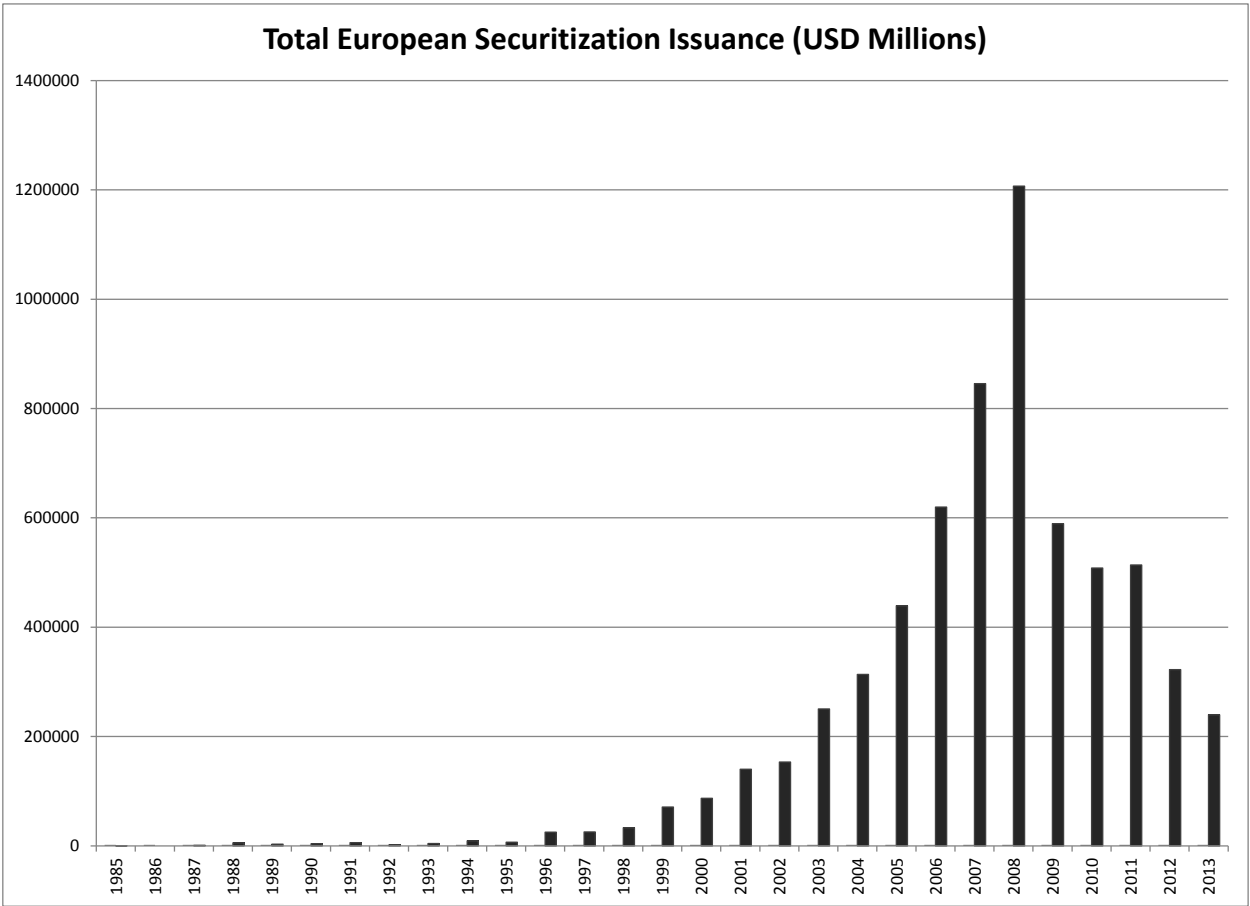
Source: SIFMA

Figure Four



Source: SIFMA

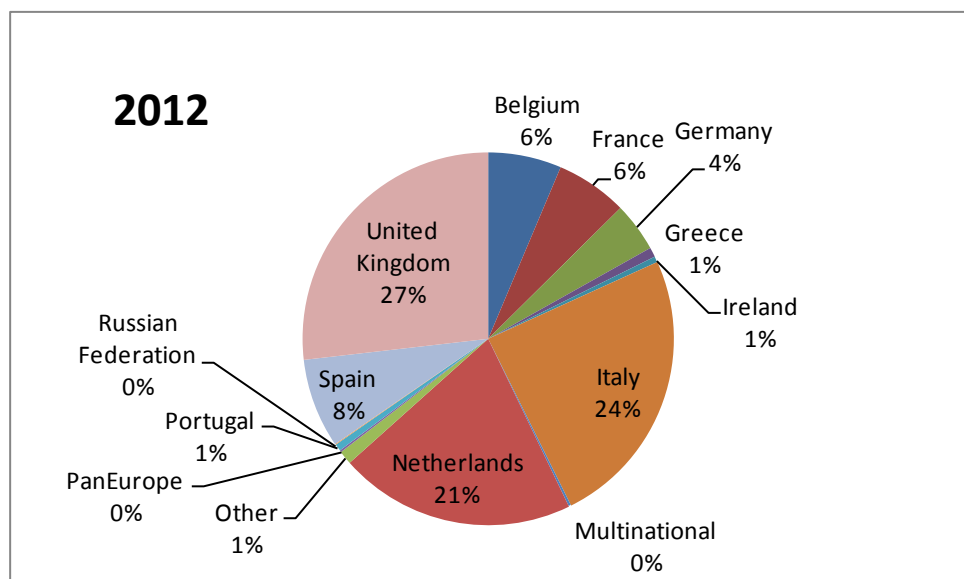
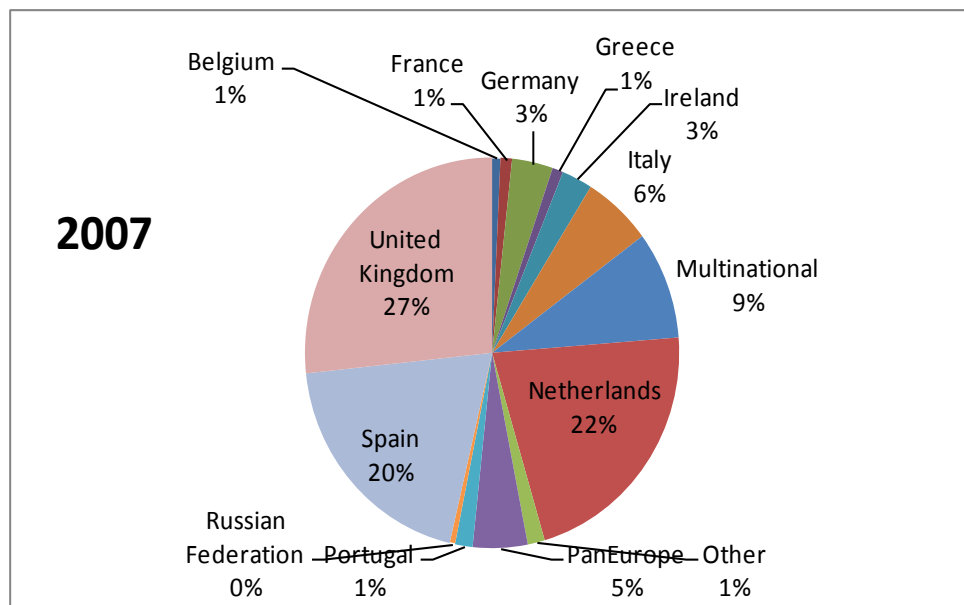
Figure Five



Source: SIFMA

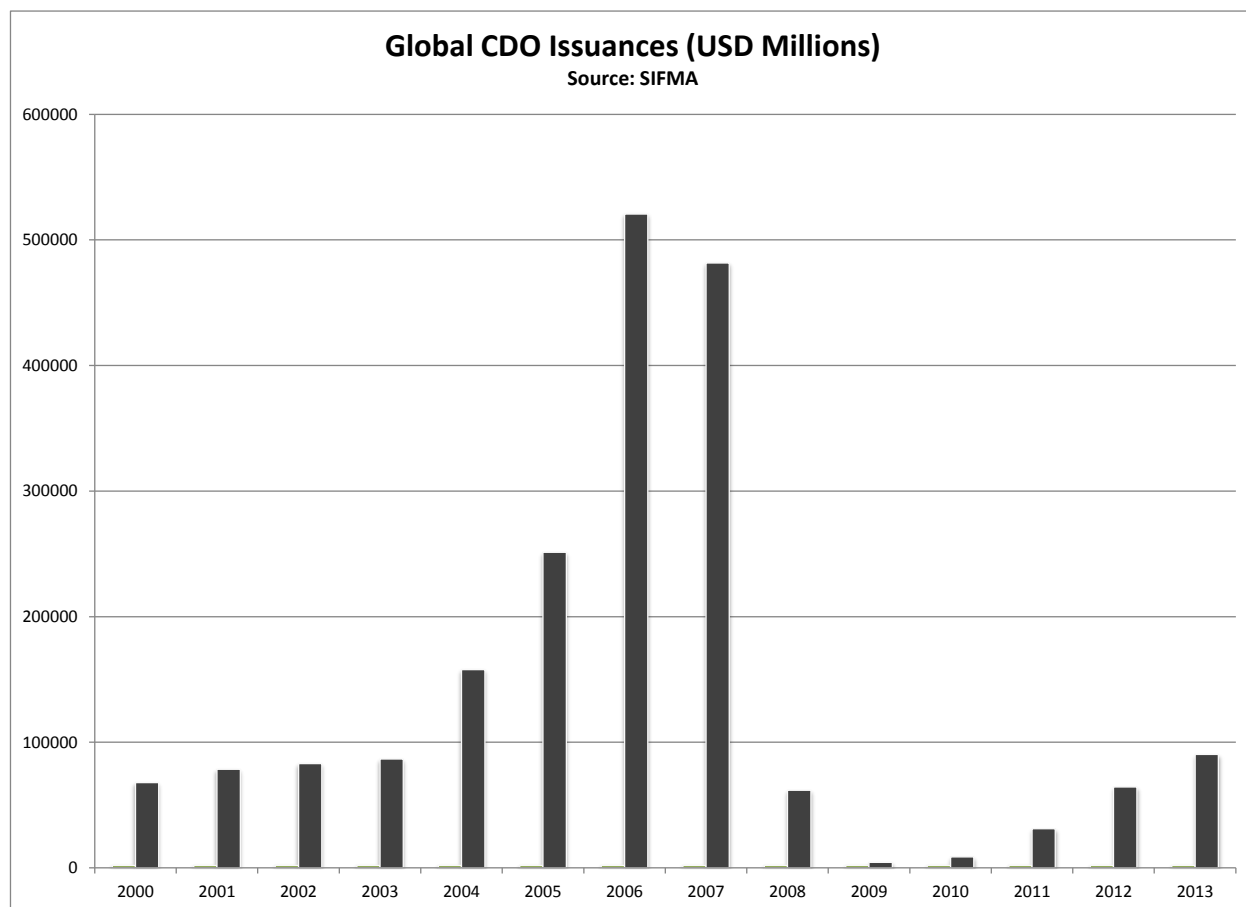
Figure Six

European Securitization Issuance (by Country)



Source: SIFMA

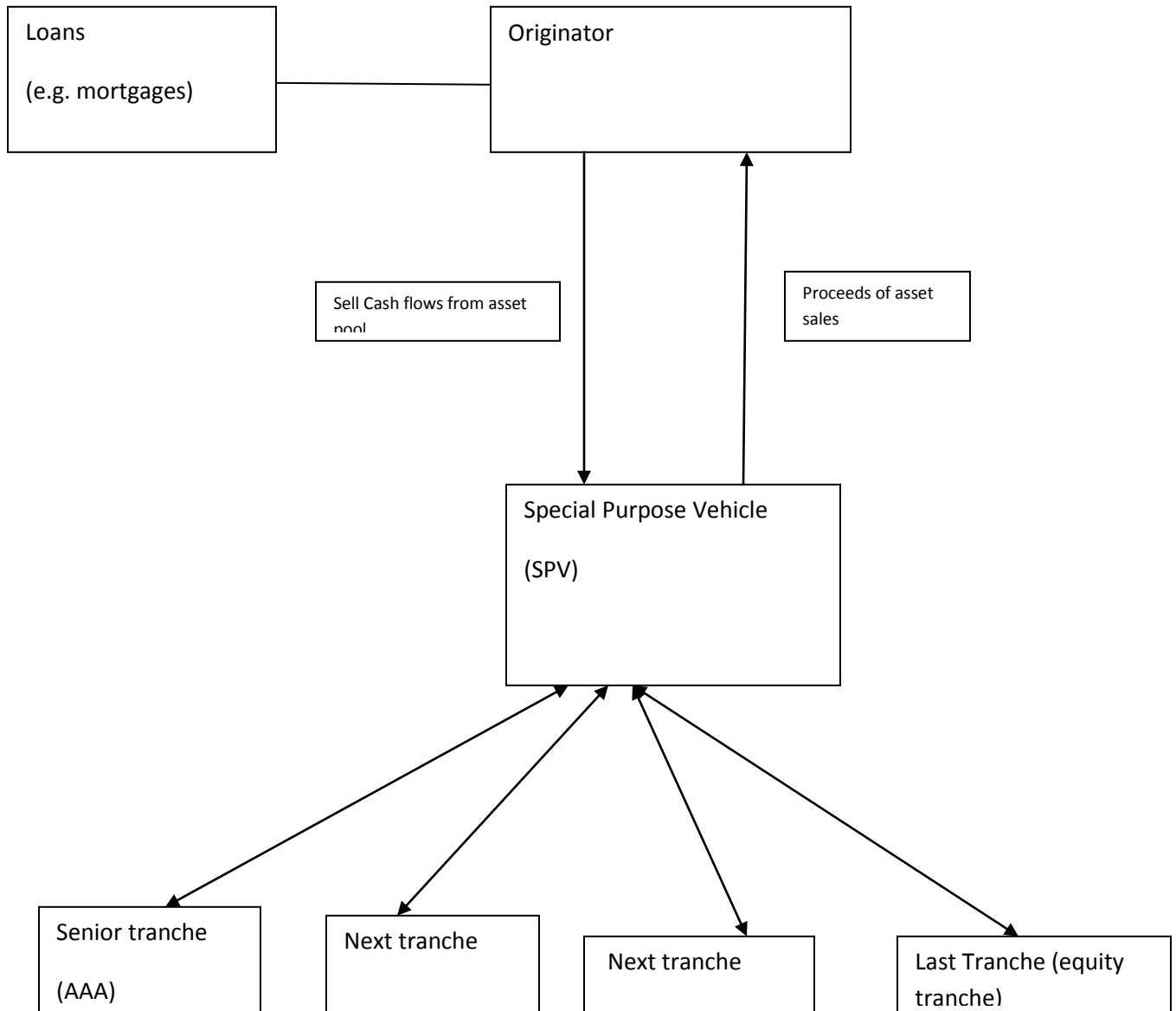
Figure Seven



Source: SIFMA

Appendix One

Securitization Framework



-
- ¹ John Authers, Banks Can't Lend if They Can't Find Borrowers
- ² "BoE Policy Makers Backs "bogeyman" of bundled debt," Financial Times, December 10, 2013
- ³ The Oxford Dictionary of Quotations, Partington, Angela (ed), Oxford University Press, 1992.
- ⁴ A staff report at the FRBNY defines a shadow bank as "*financial intermediaries that conduct maturity, credit and liquidity transformation without explicit access to central bank liquidity or public sector credit guarantees*". Examples of shadow banks include hedge funds, REITs, ABCP conduits, automobile and equipment finance companies.
- ⁵ Too Big to Swallow, The Economist, May 2007.
- ⁶ Mortgage Daily.Com <http://www.mortgagedaily.com/MortgageGraveyard.asp>. Last accessed May 4, 2014.
- ⁷ Factbox – European, US Bank Writedowns, Credit Losses. Reuters February 24, 2011.
- ⁸ SIFMA, 2014.
- ⁹ Eurozone securitization reaches crisis low, Ralph Atkins, Financial Times, November 19, 2012.
- ¹⁰ Smith, David (2010) The Age of Instability
- ¹¹ World Finance, July/August 2010
- ¹² FCIC Report
- ¹³ Why Can't the Banking Industry solve its Ethics Problems? Neil Irwin. New York Times. July 30, 2014.
- ¹⁴ "Banks Seek to Revive Mortgage Bond Market," Financial Times, August 6, 2014.
- ¹⁵ US Accuses S&P of Fraud in Suit on Loan Bundle, Andrew Ross Sorkin and Mary Williams Walsh, New York Times, February 4, 2013.
- ¹⁶ US Accuses S&P of Fraud in Suit on Loan Bundle, Andrew Ross Sorkin and Mary Williams Walsh, New York Times, February 4, 2013.
- ¹⁷ Although the Enron transactions were not actual securitizations
- ¹⁸ The author thanks John Boatright for this conversation.
- ¹⁹ These Bonds Aren't Peanuts by Jen Wieczner, Fortune.Com. April 7, 2014.
- ²⁰ The Eurozone target is 60 percent.
- ²¹ A medieval credit market, (Kohn, 1999; Hocquet, 1995; and Munro, 2003) the *compera* was based on expected tax receipts.
- ²² "Instruments of Destruction", Frank Partnoy, NYTimes, Room for Debate, April 27, 2010.
- ²³ Financial Times, July 7, 2009.
- ²⁴ In September 2010, the Federal Deposit Insurance Corporation (FDIC) passed a "safe harbor rule" which includes a 5 percent risk retention and this is the only US risk retention ratio that has been finalized at the time of writing.
- ²⁵ Various alternatives have been suggested with respect to what is retained. Is it the equity or first loss tranche, vertical slices (equal amounts of each tranche), or representative sample of underlying loans?
- ²⁶ Public comments on the Basel III securitization reforms closed on March 15, 2013.
- ²⁷ The minimum total capital has increased from 8 to 10.5 percent.
- ²⁸ Appetite for French and Spanish bonds remains solid. Financial Times, October 20, 2011.
- ²⁹ "Banks Seek to Revive Mortgage Bond Market," Financial Times, August 6, 2014.
- ³⁰ Remarks made before the American Securitization Forum on Feb 2, 2010. "Securitization, "Skin-in-the-Game" Proposals, and Minimum Mortgage Underwriting Standards.
- ³¹ "BoE Policy Makers Backs "bogeyman" of bundled debt," Financial Times, December 10, 2013

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