

Securitization and the Global Financial Crisis: Can Risk Retention Prevent Another Crisis?

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Abstract: *Prima facie* securitization played a prominent role in the recent global financial crisis. Moral hazard associated with securitization is the key element behind the failure of securitization. Risk retention is the U.S legislator's response to address the moral hazard issue associated with the originate-to-distribute model. This paper adopts a lexieconomic framework to analyse the risk retention provisions of the *Dodd-Frank Act* and proves that said provisions are not capable of eliminating moral hazard associated with securitization. This paper argues that in order to ensure proper screening of the borrower, the cost for the lender for not engaging in proper screening and monitoring should be higher than the benefits she gains by not screening. *Inter alia* this paper further argues that the inclusion of non-recourse mortgages would make securitization schemes susceptible to changes in home prices.

Key words: securitization, moral hazard, risk retention, Dodd-Frank Act, sub-prime mortgages.

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1. Introduction

Securitization has played a major role in the new millennium's first Global Financial Crisis (GFC) (Peicuti, 2013; Senarath and Copp, 2015). The GFC has been identified as the largest banking crisis since the Great Depression (Acharya et al., 2013; Foster, 2010). Since much of the blame for the current GFC is wretched on securitization, the focus of this article is to look into the mechanism behind securitization with the view of regulating the same in order to prevent a similar crisis in the future. In doing so, this paper looks into post-GFC regulatory reforms and literature that ought to make securitization a safer means of financing. This paper also evaluates the extent to which post-GFC risk retention regulatory provisions are capable of preventing a similar financial crisis. In contrast to the emerging asset-based financingⁱ model, in traditional entity-based financing the borrower's credibility and conduct matters. Asset-based financing deviates from the borrower, but lies on the asset. In a strict traditional entity based lending, a lender faces the challenge of understanding the credit-assessment of the borrower, which is a subjective matter. On the other hand a lender who focuses on the asset, but not on the entity stands a better chance of recovering her finance. As a result, the credit worthiness of the borrower is becoming less important while the comparative importance of the underlying asset is becoming more important (Kothari, 2006; Stone and Zissu, 2012; Davidson et al., 2003; Demir, 2007).

While securitization breaks the link between loan originator and the loan risk (Peicuti, 2013), asset securitization is an important and prominent financial tool in modern economies (Schwarcz 2005).ⁱⁱ By isolating specified assets from its originator and then securitizing them, the originator is able to fund its operations at a lower effective interest rate compared to traditional financing methods (Dov, 2012; Kothari, 2006). Theoretically, securitization should improve the efficiency of capital markets via risk tiering and geographic diversification, while on the other hand it reduces transaction cost and enhances flexibility in financial operations (Peicuti, 2013). Securitization can transfer risks from the banking sector to outside investors and hence is capable in scattering financial risks across the economy (Acharya et al. 2013; Langley 2008), while allowing banks to reduce regulatory capital requirements (Acharya et al., 2013). From a theoretical point of view, securitization reduces intermediation cost, increases risk sharing and diversifies the risk. This paves the way for mortgage assets to be more liquid and risk is shared by a larger group (Hess and Smith, 1988). Securitisation is capable of extending the pool of available fund sources without

confining to conventional lenders (Kothari, 2006). Schwarcz (2009) states that the GFC has questioned the future of securitization due to negatives (in securitization) identified by the subprime crisis. However, we understand that securitization brings a number of benefits to financial markets and thus has makes a considerable contribution to the development of the global financial system. The motivation behind this paper is to ensure that securitization is properly regulated and that no future financial crisis is possible via securitization.

The key regulatory response to the GFC is the U.S *Dodd–Frank Wall Street Reform and Consumer Protection Act 2010* (hereinafter *Dodd-Frank Act*). While some argue that the Dodd-Frank is a job-cutting *coup de main* our research question is whether Dodd-Frank provisions are capable of preventing a similar crisis. This paper argues that post-GFC literature, together with post GFC-regulatory solutions, fail to identify an effective “risk retention mechanism” that will minimize the moral hazard issue(s) in the bank-borrower relationship. Hence, the objective of this paper is to enhance current literature by suggesting *inter alia* a “skin-in-the- game” solution for securitization that would minimize the moral hazard issue associated with securitization. This study is significant to the extent that it attempts to regulate securitization in a manner in which the benefits of securitization will remain. This paper suggests solutions that will enhance the current practices of securitization, while making it safer and less viable for economic recessions. The structure of the paper is as follows: Section 2 of the paper is the literature review. Section 3 describes the methodology. Section 4 analyzes the legal mechanism behind securitization and suggests how it should be regulated. Section 5 is the conclusion.

2. Literature Review

This literature review is twofold. The first part of the literature review focuses on what literature identifies as key issue(s) in securitization in the initial bank-borrower relationship that leads to moral hazard issues and ultimately results in creation of “lemon”ⁱⁱⁱ mortgages. The second part of the literature review focuses on the literature about retention rule, which is the key regulatory solution put forward in solving the moral hazard issue associated with securitization.

Keys et al (2013) and Peicuti (2013) suggest that is it not only a lack of screening which paved the way for failure in securitization but also the complex nature of securitised financial products. The complex multiple sub-layer fraction of securitized assets as well as lack of information about the products has made it difficult for investors to identify the risk involved in those products and thus investors have to rely on ratings provided by rating agencies. Schwarcz (2009) identifies five negatives that can fade away the positives of securitization. They are (i) sub-prime mortgages should not be securitized, (ii) the originate-to-distribute model of securitization tends to create moral hazard, (iii) these are servicing conflicts in securitization (iv) Securitization can foster overreliance on mathematical models, and (v) investors in securitization transactions (essentially pension funds, mutual funds, hedge funds, banks and insurance companies) may over-rely on rating-agency ratings. Jung-hyun and Breton (2014) also agree with the view that securitization results in a reduction in monitoring intensity and they also state that securitization results in exploitation of informational asymmetries in the secondary loan market. Morrison (2005) and Parlour and Plantin (2008) identify that credit risk transfer instruments reduce banks' incentives to monitor borrowers, especially when there is informational asymmetry between the seller (bank) and the buyer (investor), and that this situation is harmful in terms of social welfare. In an empirical study on default rates of mortgages in America, Keys et al (2009) identifies that mortgages that are for securitization have a 20% higher default rate compared to mortgages that are not for securitization. This study concludes that existing securitization practices did adversely affect the screening incentives of subprime lenders. Further, Dell'Ariccia et al., (2008) concludes that securitization on one hand results in a decline in the average quality in credit in the economy, while on the other hand it results in a decline in the average quality of mortgages, where lending standards decline more than is justified by economic fundamentals. Borod and Sorka (2013) argues that the root causes of the financial collapse were lax regulation and abuse of securitization process which created poorly underwritten mortgages and they also blame government-sponsored enterprises Fannie Mae and Freddie Mac for making credit available on "overly generous" terms to unqualified homeowners. After studying the *ex-ante* risk nature of mortgages, Krainer and Laderma (2014) state that mortgages loans that were retained by the original lender were safer than those sold (securitized) by the original lender.

As far as solutions are concerned, risk retention is the key regulatory solution of the U.S. and the European Union. Risk retention intends to protect the uninformed investor from the information asymmetry and moral hazard associated with securitization.^{iv} Sec. 15G of the

Dodd-Frank Act states that a securitizer is required to retain not less than 5% of the credit risk for any asset if (i) the mortgage is not a qualified residential mortgage, and (ii) any one or more of the assets that collateralize the asset-back security are not qualified residential mortgages. Sec.15G further states that a securitizer is not required to retain any part of the credit risk for an asset if all the assets that collateralize the asset-back security are qualified mortgages. Hattori and Ohashi (2011) argue that due to risk retention, the originators tend to securitize fewer loans, and thus have a smaller incentive to screen the borrowers. Fender and Mitchell (2009) considered different retention mechanisms (retaining any tranche, or equity tranche, or mezzanine tranche) and show that retaining the equity tranche can increase the originator's screening effort only when the retained equity tranche is thick enough and the economic state is relatively good. In an economic environment where the equity tranche is not sufficient to absorb all losses, the originator holding the equity tranche will not encourage her to engage in better screening (Fender and Mitchell, 2009). Orkun (2013) proposes aligning incentives of originators/securitiser and investors in order to prevent the negative impact caused by the originate-to-distribute model.

Guo and Wu (2014) points out that most of the literature focus on bank's screening and monitoring of the borrower and identifies the same (screening and monitoring) as the core issue in securitization. They argue that a flat retention ratio can aggravate the moral hazard issue. Further this study focuses on the risk retention rule and concludes that the issuer disclosing certain key information about securitized assets to the investor is a solution to the information asymmetry associated with securitization. Pagès (2013) argues that if a loan is non-monitored and non-defaulted the bank has a gain. A fixed portion of skin in the game for asset-back securities is not the optimal solution. However, there is more literature suggesting that the risk retention ratio should not be a fixed one but should change according to the economic status. For example Fender and Mitchell (2009) studied the level of screening by the originator depending on the nature of risk she retains. They conclude that equity tranche retention is not always the most effective mechanism. If the choice of how much and in what form to retain is left to the originator, the retention mechanism may lead to low screening effort. This study suggests varying risk retention based on the economic status. In line with Fender and Mitchell (2009), IMF (2009) is of the view that the underlying quality of assets together with the economic status should be considered in deciding the retention ratio.

In this manner we can note that (i) the moral hazard issue arising from the originate-to-distribute market model has been identified as a key cause for the GFC. (ii) The risk retention solution has been subjected to criticism on the basis that it is not capable of preventing moral hazard. This paper argues that post-GFC literature fails to identify an effective “risk retention mechanism” in order to minimize the moral hazard concern that exists in the bank-borrower relationship. Thus, this paper makes a contribution to the existing literature by suggesting a solution (perhaps a second-best solution) that would minimize the moral hazard issue associated with securitization.

3. Methodology

This paper adopts a lexonomic (economic-analysis-of-law) approach, embedded in the second best efficiency criteria, following the tradition of Mishan and Quah (1982), Little (2002), Posner (2003) and Kolsen (1968). Data for this research is actual securitization contracts, applicable legislation and policy reports. The paper analyses the actual securitization contract arrangements and compares them against the theoretically optimal contracting and regulatory arrangements derived from the welfare and financial economics literatures, which are used as benchmarks for the analysis. Significant shortfalls between actual and theoretically optimal arrangements form the basis of recommendations to reform the law or practice, either in the interests of “better” contractual design or (perhaps) more effective regulatory design, whether within or between jurisdictions. The formulated benchmark (or in other words, the theoretically best provisions) may not be achievable in the practical world due to constraints (e.g., consumer protection considerations). Thus, this analysis essentially follows the second-best efficacy criteria.^v

4. Analysis

4.1 Securitization: The Process

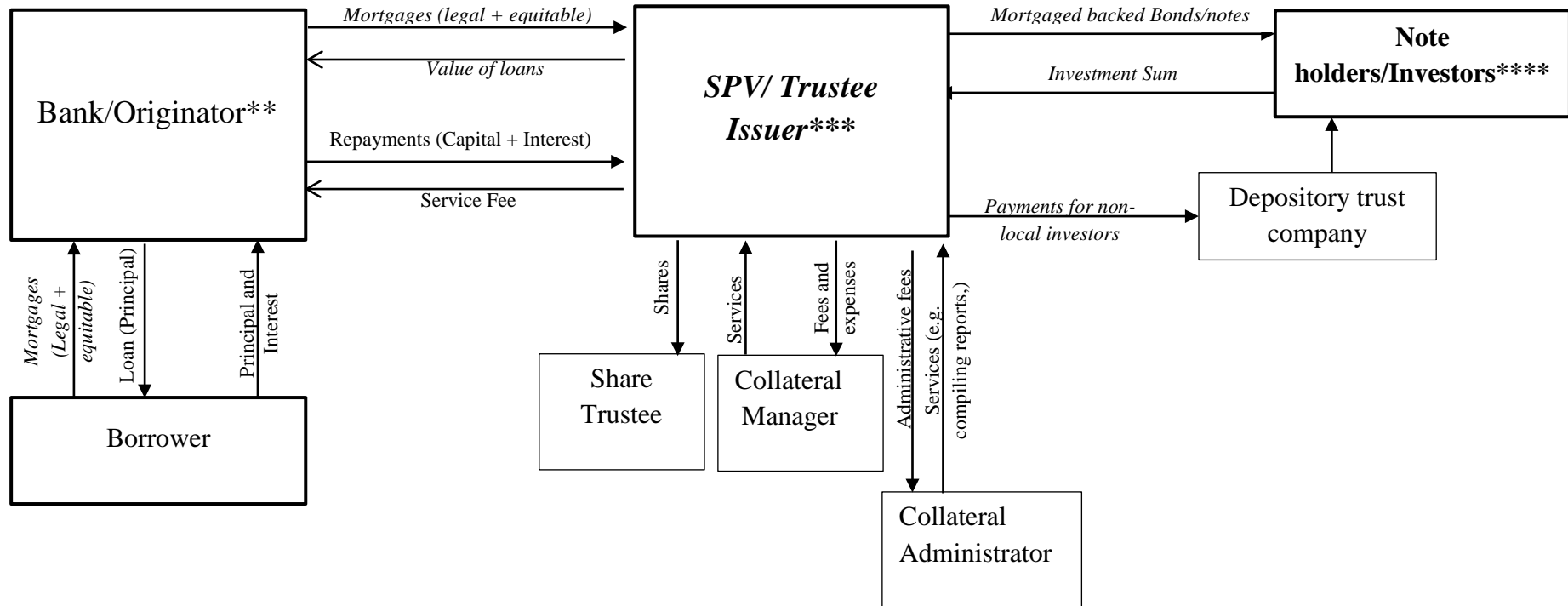
Securitization is a financing technique that involves the creation and pooling of categories of similar assets and securities from many borrowers, and the subsequent ‘sale’ of the income stream they generate. The assets are then re-packaged, underwritten and sold as asset-backed or other securities. Securitization is used to transfer credit risk and liquidity risk, to lower bank funding costs, for product diversification, and for balance sheet management purposes (Ayotte and Gaon, 2011; Schwarcz, 2009)

The securitisation process begins with a lender (e.g., a bank) granting a loan to a borrower. The bank (or the lender) then equitably assigns its rights (including mortgagee rights) to a Special Purpose Vehicle (SPV).^{vi} These assets represent borrowers' payment obligations (e.g. in case of a mortgage loan) or interest payments (e.g. in case of a student loan). The SPV funds the amount payable to the originator by issuing securitized bonds. The SPV then issues notes based on the assets to institutional investors around the world. The initial lender will be (in most cases) appointed as the "servicer" to collect payments received from the initial borrowers on behalf of the SPV. The servicer will transfer the collection to the SPV. In the case of a default by the initial borrower, the servicer, as the agent of the SPV may bring foreclosure actions against the borrowers. The servicer will be paid a fee for her service. At the end of the process those illiquid assets have turned into tradable, (more) liquid debt securities. The principal and interest repayments by the initial borrower constitute a contingent receivable for the SPV. The investors who hold asset-backed bonds are paid by these incoming cash flows. As long as the net interest income exceeds the payments of interests and other costs, each stage of the process generates a profit (Kothari, 2005; Davidson et. al, 2003; Rajapakse, 2011).

A securitization program can be either a "pass-through" or a "pay-through". A pass-through structure is the most basic structure in securitization. In a pass-through the SPV is a mere distributing vehicle. Investors are paid proportionately based on the cash inflow to the SPV. In a pay-through structure, apart from purchasing assets of the originator, the SPV can engage in reinvestments including buying new assets. In other words SPV acts as a corporate. Yet, the scope with which it acts is limited to bridging the gap between maturity of assets and liabilities (Kothari, 2006).

The SPV is normally established in a tax haven (e.g. the Cayman Islands). In this manner SPV will not be taxed in the originator's jurisdiction (for example, if the originating bank is a U.S. bank, and if the SPV is established on U.S. soil, the SPV will be taxed separately in the U.S, since it is a separate company from its originator). The other advantage of shifting to a tax haven is that, most tax havens provide long no-tax periods. For example, the Cayman Islands provide 20 years tax holidays, which can be further extended based on the requirements (Ashman, undated).^{vii}

Figure 1: Structure of a securitization program *



* This securitization follows the general structure of an inter-jurisdiction securitization scheme. If the securitization program is domestic, the originator, SPV and other entities will be in the same jurisdiction in contrast to this diagram.

** In a practical sense, the originator needs not to be the lender. In practice smaller banks would sell their mortgages to banks that sponsor securitization programs.

*** Also known as the Special Purpose Entity (SPE), Financial Vehicle Corporation (FVC) or trustee

**** Normally there are a number of classes of investors (note/bond holders). This particular securitization scheme consist four classes. Namely Class A, Class B, Class C and Subordinate note class.

4.2 Securitization: Problems and Solutions

As we have already understood, in the traditional originate-to-hold business model banks would engage in thorough screening of the intended borrower before granting approval to her loan application. The bank would also monitor the borrower after granting the loan. In this manner loans are granted to the “best” borrowers (in the bank’s point of view), who are capable of repaying. The bank will tie its capital during the loan period and will also earn interest during the period, from which the bank earns a profit. With the development of the originate-to-distribute model, banks grant loans not to keep with them in their balance sheet but to sell them. Banks then tend not to concern themselves much about the credit worthiness of the borrower, which gives rise to a moral hazard issue.

Post-GFC literature over emphasises the creation of lemon mortgages which essentially arises due to originate-to-distribute model. Post-GFC literature identifies this as a key contribution towards the failure of securitization, which ultimately resulted in the GFC. The regulatory solution that the U.S. government came up with is the *Dodd-frank Act* which ought to provide legislation to make sure that bank have a skin in the game and thus will not create lemons deliberately, since the bank will be the first to suffer in case of a default. Post GFC literature fails to identify that the *Dodd-frank Act* is incapable of fully addressing the moral hazard issue underlying securitization. We argue that a similar financial crisis is still possible well within the legislative provisions of the Dodd frank Act. Our prime focus is to demonstrate the manner in which Doff-Frank fails to prevent failure in securitization.

This paper does not identify its solutions as complete. The attempt is to minimise *inter alia* the moral hazed issue(s) related to securitization. However this paper understands that moral hazard issues cannot be fully illuminated, and thus this analysis essentially lies in the second best efficiency criteria.

Non-inclusion of non-recourse mortgages: Soloman and Minnes (2011) and Feldstein (2008) state that US mortgage market is characterised by non-recourse loans and minimal down payments (or perhaps no downpayment at all).^{viii} This could take place either by law or in practice (Feldstein, 2008). In a non-recourse mortgage, the mortgage is secured (only) by the real estate asset purchased with the mortgage. In other words in a non-recourse loan the

borrowers liability is limited only to the asset in question (Chen et al, 2010). Thus in a non-recourse loan the lenders remedy to sue the borrower for deficiency between the sale price (or foreclosure price) and the outstanding mortgage value is limited (Zywicki and Adamson, 2009). In some U.S states (e.g. Arizona and California) foreclosure laws have anti-deficiency judgement legislation, preventing the lender gaining access to other assets of the borrower (Bar-Gill, 2009; Solomon and Minnes, 2011). It is more likely that a non-recourse borrower may tend to default the mortgage when the house prices have declined.^{ix}

Our concern here is with asset pools in securitization. If the originator has included non-recourse mortgages in the asset pool, it essentially means the assets are more susceptible to defaults in an economic recession disregarding whether the mortgages are sup-prime or not (perhaps one can argue that non-recourse sub-prime loans are more susceptible to defaults in a recession or in a decline in house prices). Let us assume a non-sub-prime mortgage pool which consists of non-recourse mortgages in the asset pool. As per the Dodd-Frank provisions, the lender does not need to retain any default risk. If the house prices go down, the borrowers will start defaulting. The lender (or its assignee) will sell the property to recover losses. Since the house prices have gone down, there will be a difference between the foreclose price and the value of the mortgage. This results in a similar situation that occurred prior to the GFC, where sub-prime borrowers defaulted in response to declining house prices. In this manner provision of the *Dodd-Frank Act* will be ineffective if non-recourse mortgages are allowed in securitization.

Hence, if house prices go down, as a result the non-recourse borrower defaults (perhaps a deliberate default provided the outstanding loan is higher than the initial mortgage), essentially the foreclosure price will be lesser than the initial mortgages. This transforms the secured inventor into a ‘partially unsecured’ position, setting the stage for a chain of likely bankruptcies. Thus, inclusion of non-recourse mortgages in a securitization should be strictly prohibited.

Guarantees on mortgages sold to SPVs by banks: This paper suggests incorporating the concept of guarantees^x into the proposed regulatory reforms for securitization. As a measure to minimise the risk of failure of a securitizations scheme, we could impose (legislate) a guarantee on mortgages that are sold by a bank. If a particular mortgage defaults before maturity we can consider such a mortgage as ‘not up to a specified quality’ (this is similar to

a guarantee a consumer may receive). In this manner, banks are held liable for the assets they have sold to securitize. Henceforth we can minimise inclusion of lemons mortgages in a securitization mortgage pool.

Accounting treatment for guarantees: Under the current practice, banks can sell their mortgages (disregarding whether they are subprime or not) to an SPV and take such assets off their balance-sheets. Since no liability in terms of assets sold remains with the bank, there is no requirement to mention any liability in the bank's balance sheets. This gives incentive for banks to grant lemon loans and sell them. If banks should give guarantees for the mortgages they have sold, as recommended in this paper, these should also reflect in the bank's balance sheet. The rest of this section looks into accounting standards for guarantees, and develops a "contingent liability accounting standard" for banks engaged in securitization.

As per the Statement of *Financial Accounting Concepts No. 6* (1985) (as amended) accounting generally recognizes an entity's obligation as a liability if the obligation has three essential characteristics: (i) The obligation involves a probable future sacrifice of resources the firm can measure, with reasonable precision, the cash equivalent value of resources needed to satisfy the obligation. (ii) The firm has little or no discretion to avoid the transfer. (iii) The transaction or event giving rise to the entity's obligation has already occurred.

A contingent obligation is not a liability if the first criterion is not satisfied, for example, if the probability of loss is less than 0.5%, or the amount of loss is not measurable with reasonable precision. Thus, guarantees are not necessarily considered liabilities and are not necessarily recognized on a reporting entity's balance sheet. Traditional accrual accounting generally requires their disclosure in notes to the accounts unless the probability of loss is remote (Stickney and Roman, 1997). The question whether a liability is 'likely' or not causes controversy. In terms of securitization, this can be sorted out by rating banks based on their 'securitized-loans-default rates'. These rating can be provided by the rating agencies. Based on such ratings, bank can be given percentages of liabilities that they should recognize in their balance sheets.

The motive of a guarantee is to encourage banks to make "better" loans for the purpose of securitization. If the bank has a higher securitization rating (in other words if defaults are comparatively lower), the bank can have little (or no) liability in their balance sheets based on

the guarantees they have provided for securitised loans. Hence if banks are securitizing lemon mortgages they are liable to claim a higher liability for the guarantees they have given.

A frame work for the intended accounting standard is provided in table 1: Recognition of Guarantees as Contingent Liabilities. Please note that the values are indicative only. A1 to A5 denotes categorising (or rather rating) banks based on their ‘default level of securitized loans’ and the amounts of contingent liability a bank should recognize based on the (i) rating of the bank and (ii) nature of the mortgage (sub-prime or not). However, this paper suggests only a potential framework for a future accounting standard. Developing this concept is left for future research.

Table 1: Recognition of Guarantees as Contingent Liabilities

Rating of the bank based on the default rates	A1 (Highest)	A2	A3	A4	A5 (lowest)
Sub-prime	Recognize 10% of the value as contingent liability	Recognize 20% of the value as contingent liability	Recognize 30% of the value as contingent liability	Recognize 40% of the value as contingent liability	Recognize 50% of the value as contingent liability
Non-Sub-Prime	Ignore	Ignore	Recognize 5% of the value as contingent liability	Recognize 10% of the value as contingent liability	Recognize 15% of the value as contingent liability

** As already mentioned in the text percentage values are indicative only.*

Not to securitize sub-prime mortgages: Let us consider a situation where the mortgage pool consists of non-qualified mortgages. The bank is required to retain at least 5% of credit risk for all mortgages in the pool. In other words, in case of a default the bank will suffer 5% of the loss. When a bank makes a loan to a borrower, this would tie its capital for the loan period (say for 20 years). Banks need to maintain a capital margin to meet up with the risk associated with the loan. Let us assume the bank sells these subprime mortgage(s) to a SPV, retaining a 5% risk. The bank does not have to maintain capital margins, since the loan has

been sold. Bank will still make a profit from the sale (in terms of interest, and servicing fees as the servicing agent). As time passes mortgages keep on paying off. After a certain period of time, the bank will earn sufficient profits from the mortgages, which are sufficient to meet the bank's 5% burden. After this point the bank would not concern itself about defaults in mortgages. It is noteworthy that after every repayment by the borrower the due amount becomes less. As time passes the actual value of the 5% risk retained by the bank declines. This results in a comparatively smaller loss to the bank, which will be covered by the profits earned by the bank. In this manner, the 5% risk retention provisions of the *Dodd-Franck* are investive (i) if the mortgages pool contains non-recourse loans, and (ii) if the pool contains sup-prime mortgages.

Conflicts of interests: *Prima facie* there is an obvious conflict of interest regarding the role of rating agencies in securitization. Rating agencies are paid by the originating bank or the SVP, which gets the rating. Peicut (2013) states that rating agencies face an oligopolistic market. If one rating agency denied providing the requested rating for the customer it is more likely they will seek another rating agency for the same service. On the one hand rating agencies play the role of auditors and advisers for securitization schemes while on the other hand are the evaluators of the same entity. This obvious conflict of interest does not guarantee an objective estimation of the risk associated with the underlying mortgage pool. We need to make sure that this conflict of interest does not occur in ratings. Solutions can be two fold.

i) Let the investor pay for the rating:

Since the rating is provided for the investor and the accuracy of the rating mostly affects the investor, it is justifiable (in order to eliminate the conflict of interest) to make the investor pay for the rating agency. In this way the rating agency can be held liable for the rating they provided to the investor, who then becomes their client (in contrast to the existing practice where the client is the SVP or the originating bank).

ii). Create a government agency to oversee complex rating processes:

The other alternative solution would be to appoint a government body to oversee the rating agency. Securitization products are inherently complex; thus, cannot be understood by the average person or an investor. Literature states that even a sophisticated investor could not identify the risk behind these assets. Therefore, it is appropriate for a government agency to

oversee the methodology of the rating agencies to make sure rating is conducted in a transparent manner. However, a detailed study on the role of rating agencies in minimizing moral hazard associated with securitization is left for future research.

5. Conclusion

This paper proves *possidet, non limitatum ad* that *Dodd-Frank* risk retention provisions are least capable of addressing the moral hazard issue associated with securitization mechanism. This is mainly because inclusion of non-recourse and sub-prime loans may still lead to a chain of bankruptcies in an economic recession. As a result, the 5% fixed risk retention proposed by the *Dodd-Frank Act* can be easily ‘manipulated’ by banks. Hence this research *inter alia* proposes non-inclusion of non-recourse loans and imposing the principle of “guarantees” to the mortgages sold by the bank, while providing an accounting standard in order to account for guarantees provided by the originator. The idea of the accounting standard is to create a contingent liability on the originator’s balance-sheet, forcing the originator to engage in ‘proper’ screening and monitoring of the borrower. If on the other hand if banks engage in ‘careless’ lending, the likely deterioration of bank’s rating will hurt the bank by imposing additional weight on the balance sheet as contagion liabilities. Applying the above solutions will discourage securitization of lemon loans by ensuring that the cost of securitizing such lemon loans is costly to the originator.

Further, this research suggests that the role of the rating agencies is not one of addressing the moral hazard issue due to conflict of interests and hence suggests re-defining the role of rating agencies. As far as the implications of these solutions are concerned, one can argue that banks would not intend to sell their good loans but retain them. Banks, on the other hand, would intend to sell their lemons, and our solutions can hinder the profits banks generate from those activities. It is true that short term profits of banks will decline due to these solutions. The number of mortgages made by banks (specifically sub-prime) loans may decline since banks can no longer sell them. However if banks are encouraged by government to grant loans to less credit-worthy borrowers banks can still do so, but without securitizing such risky loans.

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ⁱ Asset-based financing is in where the lender relies primarily on cash flows generated by the asset financed to repay the loan. See "Asset-Based Financing" in Alice C. Lee and Lee C (2006), *Encyclopaedia of Finance, Gale Virtual Reference Library*.

ⁱⁱ It is worth considering the difference between the "originate-to-distribute" model in contrast to the traditional "originate-to-hold" model. In simple terms, under the traditional originate-to-hold model, banks made loans to retain with them in their balance sheets. In contrast the modern banks make loans to sell. For a detailed description of originate-to-distribute model. See Purnanandam, 2010 and Bord and Santos, 2012.

ⁱⁱⁱ Akerlof (1970) uses the term "lemon" in order to refer to "bad" cars in the second-hand car market. We use the word 'Lemon' to refer to sub-prime or lower quality mortgages.

^{iv} See for example Nuwangi, S. M., et al. (2012; 2013) for information asymmetry in similar inter-jurisdictional businesses structures.

^v For an explanation of the second-best theory, see Verhoef, (2005) and Rees, (1968). For a typical example of an economic analysis of law embedded in second-best efficiency criteria, see Senarath et al, (2015) . Also see Senarath and Vithanagama, (2010).

^{vi} An SPV is a legal entity set up for a specific, limited purpose by the sponsor of the securitizations scheme. An SPV can take the form of a corporation, trust, partnership, or a limited liability company. See for example Gorton and Souleles, (2007)

^{vii} Cayman Island is a tax-neutral jurisdiction. There are no corporate taxes on companies dealing with domestic or offshore businesses on Cayman soil. This facility is supported by written tax from the Cayman Island government that for a period of 20 years there will be no tax on the SPV or the holders of its securities. This period can be further extended based on the requirements. See Ashman, I., and Bestwick, H. (undated), "Securitization in the Cayman Island", Walkers, Cayman Islands. Also see Walkers, firm memorandum, "Cayman Islands off-balance sheet Financings" available at <www.walkersglobal.com>, Accessed on <05.08.2015>.

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- ^{viii} However, it has been argued that Europe has much lower default rates because mortgages in Europe are recourse loans, in contrast to lending practices in the U.S. See Leland, J. (2008).
- ^{ix} For example let us assume person 'A' mortgages a house for the value of \$ 100,000. If the current house price go down to (let us say,) \$ 75, 000 it is more logical to assume that A will default his mortgage provided the mortgage is non-recourse.
- ^x A Guarantee is an essential term of a contract. A guarantee is a formal assurance that certain conditions will be fulfilled. Normally this assurance is that a particular product will be up to a specified quality. In a guarantee, since it is about the standard quality of a product there is no time limit as in warranties. Guarantees are non-excludable (See Consumer Law in Australia: Schedule 2 of the Competition and Consumer Act 2010). On the other hand if the product is not up to the specified quality, the parties to the contract can consider the contract void. Good can be returned and the consideration will be paid back.