

The Dodd-Frank Act and Housing Finance: Can It Restore Private Risk Capital to the Securitization Market?

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Private risk capital has virtually disappeared from the U.S. housing finance market since the market’s collapse in 2008. This Essay argues that private risk capital is unlikely to return in any scale until the informational problems in housing finance are resolved so that investors can accurately gauge and price the risks they assume.

The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 represents a first step in reforming U.S. housing finance. It takes a multi-layered approach by regulating both loan origination and securitization. Dodd-Frank’s reforms, however, fail to address adequately the opacity of credit-risk information in mortgage markets and thus are insufficient to restore private risk capital.

This Essay argues that such Dodd-Frank reforms as “skin-in-the-game” credit-risk retention fail to solve the informational problems in the housing finance market, as they merely replace one source of informational opacity with another. Instead, this Essay argues, it is necessary to institutionalize structural changes in the housing finance market, particularly the standardization of mortgage securitization, that force the production of information necessary for accurate risk-pricing.

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Introduction

The U.S. housing finance system is currently on government life support. In the wake of the housing bubble's collapse, the federal government has stepped into the breach that was created by both the failure of the financial institutions that created the secondary market for mortgage financing and the withdrawal of private risk capital from the housing finance system. Prior to 2008, private risk capital fueled the U.S. housing finance system. Almost all residential mortgages were funded through either the government-sponsored enterprises (GSEs)—Fannie Mae and Freddie Mac—private-label mortgage securitization (PLS), or portfolio lending by depositories.

The GSEs were federally chartered entities owned by private shareholders and were subject to federal oversight. The GSEs purchased mortgages, which they either held in their own portfolios or securitized. The GSEs financed their portfolio operations by issuing widely held corporate debt. The credit risk on the GSEs' mortgage-backed securities (MBS) was retained by the GSEs, which guaranteed their own MBS.¹ Private-label securitization involved exclusively private risk capital, with credit risk assumed by investors and private insurers, while the credit risk on loans funded by depositories was retained by the depositories.

Formally, then, at least, the federal government only bore the credit risk on the small segment of the market financed through loans originated by the Federal Housing Administration (FHA) or the Veterans Administration (VA) (many of which were then securitized with a guarantee from Ginnie Mae). In addition, the federal government bore risk contingently on depository-funded loans and depositories' investments in mortgage-backed securities through federal deposit insurance. Thus, for everything except the small percentage of

1. The GSEs are best understood as enormous monoline insurance companies. Like monolines, they sell bond insurance on MBS. They have investment portfolios and reserve requirements. GSEs differ from monoline insurance companies in that they produce the bonds that they guarantee and were not diversified across industries. When viewed in this light, the GSEs' regulatory problems appear to fit classic insurance regulation paradigms—a destructive rate-war via failure to charge increased guarantee fees for riskier MBS accompanied by under-reserving for losses. Moreover, when the GSEs are understood to be insurance companies, the parallels between them and AIG are even more apparent. For further discussion of this point, see Dwight M. Jaffee, *The Application of Monoline Insurance Principles to the Reregulation of Investment Banks and GSEs*, 12 RISK MGMT. & INS. REV. 11 (2009).

the pre-2008 market that was comprised of FHA-insured/VA-guaranteed products, private-risk capital was in the first-loss position.

Today, over ninety percent of new mortgages are either guaranteed directly by the government through Ginnie Mae and FHA/VA or indirectly through the federal government's eighty-percent ownership of Fannie Mae and Freddie Mac and its open-ended financial backstop of the GSEs.² This ad hoc federal intervention in the housing finance market has always been presented as a temporary intervention until the market can find its feet again.³

Regardless of whether the current federal involvement in housing finance is primarily a change in formalities, rather than economic realities, any sort of restoration of a private housing finance system in the United States requires the return of private risk capital to the system. Thus, the fundamental question for housing finance reform is how to get private risk capital to return to the mortgage market. This is, first and foremost, a question of restoring investor confidence in a once-burned, twice-shy world.

The centerpiece of any effort to restore private risk capital to the U.S. mortgage market is designing regulatory and market structures that give investors confidence in the level of credit risk they are assuming. Unless investors can accurately gauge the credit risk they are assuming, they will remain concerned that they are underpricing for risk. Underpricing for risk can, in turn, fuel a housing bubble and further exacerbate credit risk, thus making underpricing even more severe.

Credit risk has two components: default risk and loss severity upon default. The former is a matter of underwriting quality, while the latter is a combination of underwriting quality—especially loan-to-value (LTV) ratios—and mortgage servicing quality. Both are major areas of investor concern. The housing bubble was an object lesson for investors in the perils of poor underwriting. And the aftermath of the bubble has been an object lesson in the importance of mortgage-servicing quality in determining loss severities.⁴ Investors have discovered that loss severities on defaulted loans are heavily

2. See Jon Prior, *Private Investors, Issuers Tell Senate They're Ready for More RMBS Deals*, HOUSINGWIRE (May 18, 2011), <http://www.housingwire.com/2011/05/18/private-investors-issuers-tell-senate-theyre-ready-for-more-rmbs-deals> (noting that ninety percent of mortgage originations are supported by Ginnie Mae, Fannie Mae or Freddie Mac and that only two private-label residential mortgage-backed securities deals have been closed since fall 2008); Karen Sibayan & Paul Muolo, *Redwood Files for Second Jumbo RMBS Deal in 10 Months*, AM. BANKER (Feb. 15, 2011), http://www.americanbanker.com/issues/176_32/redwood-mortgage-backed-security-1033085-1.html?zkPrintable=true (noting that there have only been two private-label residential mortgage securitizations since the financial crisis); see also Derek Kravitz, *Fannie Mae Asks Taxpayers for Another Bailout*, CHRISTIAN SCI. MONITOR (Nov. 10 2011), <http://www.csmonitor.com/Business/Latest-News-Wires/2011/1110/Fannie-Mae-asks-taxpayers-for-another-bailout> (noting that GSEs and government agencies currently back over ninety percent of new originations).

3. This state of affairs arguably only makes explicit the federal support that has been implicit in the mortgage market.

4. See, e.g., Adam J. Levitin & Tara Twomey, *Mortgage Servicing*, 28 YALE J. ON REG. 1 (2011).

dependent on servicer behavior regarding loan modifications and foreclosures.⁵ Investors, however, have little ability to monitor servicer conduct or discipline wayward servicers.⁶

Already, legislative and regulatory attempts to restore investor confidence in the market have taken shape. There are three stages in attempts to restore private risk capital to the mortgage market. The first stage was the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, which took a multi-layered approach to ensuring the quality of mortgage lending and mortgage securitization—the major financing channel for U.S. mortgages.

The second stage, still yet to unfold, involves the restructuring of Fannie Mae and Freddie Mac—and the secondary mortgage market in general. These two stages are inextricably linked. The design of secondary mortgage markets affects behavior in mortgage-origination markets by controlling what risks remain with loan originators and what risks are passed on to secondary-market purchasers.⁷ But the regulation of primary origination markets also affects the risks that inhere in secondary markets.

The third stage is the reform of mortgage servicing. Servicing reform is likely to occur piecemeal through regulatory enforcement actions, litigation, and agency rulemaking, rather than through legislation.⁸ It remains unclear whether private risk capital will return to the U.S. housing finance market in any volume following the completion of any or all of these stages of reform.

This Essay examines the Dodd-Frank Act's approach to restoring investor confidence in mortgage markets. The Essay argues that the Dodd-Frank Act's reforms of the mortgage market represent a fundamental misunderstanding of what went wrong. It is now widely understood that the change in mortgage financing from an originate-to-hold (portfolio) lending model to an originate-to-distribute (securitization) lending model played a critical role in the housing bubble. But the problem with the originate-to-distribute market is often believed to be the lack of skin in the game by securitizers. Lacking a stake in the performance of mortgages, securitizers were willing to securitize poorly underwritten loans. Therefore, the reasoning goes, requiring skin-in-the-game

5. See, e.g., Amherst Sec. Grp., LP, *Servicer Behavior Matters—Take Advantage of the Opportunity*, AMHERST MORTGAGE INSIGHT, May 26, 2011 (on file with authors) (noting that “servicer differentials have a large impact on value”).

6. Levitin & Twomey, *supra* note 4.

7. Adam J. Levitin, *Hydraulic Regulation: Regulating Credit Markets Upstream*, 26 YALE J. ON REG. 143 (2009).

8. Sections 1461-1465 of the Dodd-Frank Act address a few servicing issues. Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, Pub. L. No. 111-203, §§ 161-165, 124 Stat. 1376, 2178-95 (codified at 12 U.S.C. § 2605 and 15 U.S.C. §§ 1638b, 1639d, 1639f). The sole proposed legislation on the issue is the Foreclosure Fraud and Homeowner Abuse Prevention Act of 2011 proposed by Rep. Brad Miller (D-NC). The FDIC has taken major action to reform the securitization market through changes to its securitization safe harbor rule. See Treatment by the Federal Deposit Insurance Corporation as Conservator or Receiver of Financial Assets Transferred by an Insured Depository Institution in Connection with a Securitization or Participation After September 30, 2010, 75 Fed. Reg. 60,287 (Sept. 30, 2010) (codified at 12 C.F.R. pt. 360).

via risk-retention requirements will correct the market by incentivizing securitizers to underwrite only sound loans.

This explanation for what went wrong is an agency problem story. Securitization is ultimately a form of financial intermediation between (consumer) borrowers and capital-market lenders. The financial institutions that intermediate between these end-borrowers and lenders in the securitization process act as economic (although not legal) agents. The Dodd-Frank Act sees the problems in the securitization market as agency problems first and foremost and attempts to correct them by forcing the agent into a partnership with the principal.

We do not dispute that agency problems played an important role in the financial crisis and in the development of the housing bubble in particular. But we believe that the agency problem in securitization was able to become so virulent because of an information problem. Securitization investors suffered from an information problem that led them to rely excessively on financial institution agents (securitizers) despite limited monitoring ability, including the inability to identify the formation of an asset bubble in real time. Put another way, the information problem in securitization amplified the endemic agency problem, and, as we argue, it is easier to deal with this information problem than it is to root out the agency problem.

Lack of skin in the game might well have contributed to the housing bubble, but it is important to recall that housing bubbles have been inflated and burst before with *portfolio* lending. The savings-and-loan (S&L) crisis, for example, involved portfolio lending, not securitization. Having complete skin-in-the-game did not prevent the S&Ls from making bad loans. Similarly, many troubled commercial-real-estate loans today are held in depositaries' portfolios. One does not need securitization to engage in poor credit underwriting. And indeed, one does not need securitization to have agency problems; they are rampant in portfolio lending too.

The real importance of the shift in the financing channel from originate-to-hold to originate-to-distribute was that it enabled a massive (and poorly underwritten) expansion of the capital base for mortgage lending. This had two effects. First, a larger capital base facilitated cheaper credit, which resulted in housing price inflation as buyers bid up prices with ever more leveraged bids. And second, the expansion of the capital base brought in a new class of less sophisticated mortgage investors (including collateralized debt obligations [CDOs] and CDO investors) who were placed at an informational disadvantage by their distance from the actual lending, a risk not compensated for by higher rates.⁹ These two factors set the stage for the mispricing of mortgage credit on a massive scale.

9. Investors were also sometimes further disadvantaged because of their reliance on agents (such as CDO managers) with misaligned incentives. See, e.g., MICHAEL LEWIS, *THE BIG SHORT*:

The Dodd-Frank Act is likely insufficient to ensure against future housing bubbles because it does not rectify the information problems inherent in housing finance markets that were at the center of the financial crisis. As things currently stand, neither regulators nor the market can determine—in anything close to real time—whether there is a housing bubble, and thus whether risk is being adequately priced.

At best, they can look to increases in the volume of housing finance or a decline in the price of credit. As this Essay shows, however, neither an increase in the volume of housing finance nor a decline in the price of credit is an adequate indicator of increased risk in the market. Both phenomena may simply reflect the removal of credit constraints or lower interest rates. Instead, the volume and cost of housing credit are useful indicators of market risk only if they can be tracked in a way that relates them to the level of risk in the market.

It is currently extremely difficult, however, to track changes in credit conditions in real time. Absent a market structure that enables the tracking of risk, market surveillance is not feasible. Thus, structural changes that force the production of information needed for accurate risk-pricing, particularly standardization of mortgage-backed securities, are the key to avoiding a repeat of the bubble and crash.

This Essay proceeds as follows: Part I explains the Dodd-Frank Act's multi-layered approach to regulating risk in the mortgage market. Part II explains the deficiencies in this approach. It shows that information problems in mortgage markets are not limited to securitization. It also shows that the Dodd-Frank Act failed to improve either investors' or regulators' ability to gauge credit risk in the mortgage market in real time. Part III discusses how standardization of securitization could improve the ability to gauge credit risk in real time. This Essay then concludes, and includes an Appendix describing a cause of real estate underpricing that affects commercial real estate, but not residential real estate.

I. Unraveling the Dodd-Frank Act's Regulatory Layers

A. *The Defense-in-Depth Approach*

The Dodd-Frank Act takes a multi-layered approach to regulating the mortgage market. First, title XIV of the Dodd-Frank Act, the Mortgage Reform and Anti-Predatory Lending Act, mandates significant reforms in the mortgage origination market.¹⁰ The centerpiece of title XIV is the requirement that mortgages only be originated if the lender has verified the borrower's ability to

INSIDE THE DOOMSDAY MACHINE 140-43 (2010) (describing the incentives of CDO manager Wing Chau).

10. Dodd-Frank Act §§ 1411-1498, 124 Stat. at 2142-2212 (codified in scattered sections of U.S.C.).

repay.¹¹ Failure to do so is a defense against foreclosure.¹² The Dodd-Frank Act provides a safe harbor for lenders with respect to the ability-to-repay requirement, which does not apply to “qualified mortgages” (QMs),¹³ as defined by Federal Reserve Board regulations. Non-QMs do not benefit from a presumption that the borrower is able to repay¹⁴ and are also prohibited from bearing prepayment penalties.¹⁵

Second, title IX, subtitle D of the Dodd-Frank Act undertakes a reform of asset-backed securities markets.¹⁶ The focal point of this title is a risk-retention requirement for asset securitizations, including mortgage securitizations, known as the “skin-in-the-game” requirement.¹⁷ Under regulations promulgated by a consortium of federal financial regulators, securitizers must retain a certain portion of credit risk on assets securitizations unless the securitized assets fall into certain exempt categories. The most important of those exemptions is for “qualified residential mortgages” (QRMs), again a term left to definition by the federal financial regulatory consortium.

The skin-in-the-game requirement is based on the theory that the “originate-to-distribute” mortgage lending model, meaning the origination of loans with the intention of reselling them in the secondary market, generally as part of securitizations, is deficient in providing sufficient incentive for originators to make good loans. The premise of the Dodd-Frank Act is that if the parties engaged in securitization are required to retain some credit risk on the securitized loans, they will be incentivized to ensure that the securitized loans are of higher quality, and that this will dry up the financing for shoddily underwritten loans.

The premise that originators who securitize will take care if they hold credit risk on their securitization reflects the belief that these originators/securitizers can take better care with underwriting. This belief is likely correct, but it is important to note the foundation of this belief, namely that originators/securitizers have the information necessary to engage in good underwriting. Related to this assumption is that originators/securitizers have an informational advantage over investors because they are closer to the underwriting of the loans. Thus, by aligning the interests of originators/securitizers and investors, the Dodd-Frank Act seeks to enable investors to piggyback on the informational advantages of originators/securitizers.

11. *Id.* § 1411, 124 Stat. at 2142 (codified at 15 U.S.C. § 1693c(a)).

12. *Id.* § 1413, 124 Stat. at 2148 (codified at 15 U.S.C. § 1640).

13. *Id.* § 1412, 124 Stat. at 2145 (codified at 15 U.S.C. § 1693c(b)).

14. *Id.*

15. Dodd-Frank Wall Street Reform and Consumer Protection Act at 2010, Pub. L. No. 111-203, § 1414, 124 Stat. 1376, 2149 (codified at 15 U.S.C. § 1693c(c)).

16. *Id.* §§ 941-946, 124 Stat. at 1890-98 (codified in scattered sections of U.S.C.).

17. *Id.* § 941, 124 Stat. at 1890 (codified at 15 U.S.C. § 78c).

There is an intuitive appeal to the skin-in-the-game theory. Yet, if the problem with the securitization model is the exploitation of inherent information failures by financial intermediaries, then the Dodd-Frank Act response will not be sufficient to right the course of housing finance going forward. Dodd-Frank relies on skin in the game to raise the cost—or at least the risk—to financiers that make risky mortgages. But it may simply fail to do so sufficiently to be an effective deterrent. If the bank is willing to “bet” the bank on mortgages whose long term performance is risky, for the purpose of booking short-run gains, a “tax” on those short-run gains in the form of a requirement to hold some of the long-term risk in house will not matter.

Ultimately, the conceit of skin in the game is that banks provide investors with a meaningful bonding function when they retain credit risk on securitized assets.¹⁸ Skin in the game is supposed to have a bonding function by assuring investors that a party with superior information is willing to assume the same or similar risks.

The problem with this bonding function is that investors cannot determine whether the bank is competent at evaluating the risk on mortgages. Banks’ financial reporting presents a composite picture of the banks’ overall performance (or often of a financial conglomerate’s overall performance). The performance of the banks’ securitization is just one factor out of many and may well be overshadowed by the performance of the banks’ other assets. Thus, a bank might be a poor judge of credit risk on mortgages but still be quite profitable overall. Indeed, the opacity of bank balance sheets¹⁹ mutes market discipline, and for larger banks, market discipline is further muted because of the moral hazard of investing in a too-big-to-fail financial institution.

The Dodd-Frank Act nonetheless anticipates that investors will make a judgment on the future credit risk of the mortgages based on the signals sent by the bank’s overall historical performance. The Dodd-Frank Act thus attempts to fix the securitization market by mandating bonding by an entity of unknowable quality. In essence, then, the Dodd-Frank Act merely replaces one informational problem—that of securitization—with another—that of financial conglomerates. Investors are left incapable of adequately gauging and pricing

18. The securitizer may also, separately, make representations and warranties to investors about the quality of the securitized assets. Such representations and warranties are contractual and not mandated by law. They are also not a guarantee of the loans’ performance, only a statement of facts about the loans upon which investors can rely. Representation and warranties in securitization have historically involved lengthy litigation and are only valuable to the extent the securitizer is solvent; if there are too many representation and warranty violations, the securitizer may not have the assets to repay them all. Thus, representations and warranties are protection against fraudulent underwriting, but only on a limited scale.

19. For an empirical discussion of bank opacity and its impact on the ratings of bank-issued securities, see Giuliano Iannotta, *Testing for Opaqueness in the European Banking Industry: Evidence from Bond Credit Ratings* (SDA Bocconi, Working Paper No. 122/04, 2004), available at <http://ssrn.com/abstract=570483>.

for risk. Accordingly, investors are unlikely to put much stock in the bonding function of skin-in-the-game.

Finally, titles X and I of the Dodd-Frank Act create a pair of backstops to the QM and skin-in-the-game concepts. Title X of the Act creates a new, independent Consumer Financial Protection Bureau (CFPB) within the Federal Reserve that is charged with regulating the mortgage lending among other areas and broadly empowered to do so.²⁰ The CFPB has the ability to regulate mortgage origination practices beyond the reforms in title XIV of the Dodd-Frank Act. It has the power to make rules under the Real Estate Settlement Procedures Act, the Truth in Lending Act, the SAFE Mortgage Licensing Act, the Interstate Land Sales Act, and Fair Debt Collection Practices Act,²¹ and also a broad power to proscribe unfair, deceptive, and abusive acts and practices.²²

Title I of the Dodd-Frank Act creates the ultimate catchall, the Financial Stability Oversight Council (FSOC), a “Justice League” of federal financial regulators that is to act as a financial über-regulator, charged with keeping the world safe from systemic risk, and supported by a new Office of Financial Research.²³ Thus, any problems that make their way through the sieve of titles IX, X, and XIV, should be caught by the FSOC as the ultimate line of defense.

The Dodd-Frank Act’s design of defense in depth, through specific statutory rules coupled with broad regulatory authority to regulate products and practices not specifically restricted by the Act might well work. Unfortunately, we will only know if it does not if and when it fails. Victories of regulatory deterrence are never visible.

B. Factors That Will Determine the Success of Dodd-Frank

The success or failure of the Dodd-Frank Act apparatus depends on three factors. First, it depends on whether the QM and QRM provisions are effective at crowding out non-QM and non-QRM products from the market by making them too expensive. Put differently, the Dodd-Frank Act relies on tilting the playing field sufficiently to make non-QM and non-QRM products noncompetitive, and therefore limited in market share, which reduces their systemic importance.

20. Dodd-Frank Act §§ 1001-1100H, 124 Stat. at 1955-2113 (codified in scattered sections of 12 U.S.C.).

21. *Id.* § 1002(12), 124 Stat. at 1957 (codified at 15 U.S.C. § 5481(12)) (defining “enumerated consumer laws” to include the Real Estate Settlement Procedures Act of 1974, the Truth in Lending Act, the S.A.F.E. Mortgage Lending Act of 2008, the Interstate Land Sales Full Disclosure Act, and the Fair Debt Collection Practices Act); *id.* § 1002(14), 124 Stat. at 1957 (codified at 15 U.S.C. § 5481(14)) (defining “federal consumer financial law” to include “enumerated consumer laws”); *id.* § 1022, 124 Stat. at 1980 (codified at 15 U.S.C. § 5512) (defining rulemaking authority for “federal consumer financial law”).

22. Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, Pub. L. No. 111-203, § 1031, 124 Stat. 1376, 2005 (codified at 12 U.S.C. § 5531). The CFPB also has the ability to regulate mortgage servicing across the entire servicing industry.

23. Dodd-Frank Act §§ 111-123, 124 Stat. at 1392-1412 (codified at 12 U.S.C. §§ 5321-5333).

Second, and relatedly, the Dodd-Frank Act's success depends on the definition of QM and QRM, because this will determine the extent of the loans and MBS that are affected by Dodd-Frank. Broad definitions will subject most mortgages to Dodd-Frank, but will allow "riskier" mortgages; narrow definitions will mean that the Act has little impact. If the "hard" lending characteristics of QMs and QRMs, like FICO score and loan-to-value (LTV) ratio, are defined too narrowly, then Dodd-Frank will be ineffective, as the QMs and QRMs will not crowd out the unregulated mortgage securitization market.²⁴ Thus, if QRMs have LTV requirements under eighty percent, meaning down payments of twenty percent or more would be required, a large non-QM/QRM market in much riskier, higher-LTV mortgages is more likely to develop.²⁵ At the same time, however, if the "soft" lending characteristics, such as servicing standards, are defined too broadly, the QM and QRM concepts will be ineffective at controlling risk, as everything will be QM and QRM, so neither will affect mortgage or MBS underwriting standards.

Third, if the QM and QRM provisions fail to crowd out poorly underwritten, riskier mortgage products, the fallback under Dodd-Frank is regulatory wisdom to identify and somehow contain risky practices. In terms of regulatory wisdom (and will), it is important to note that the CFPB's actions are subject to a regulatory veto by a two-thirds majority of the FSOC, so even if CFPB can identify and somehow contain risky practices, other regulators need to be on board.

More importantly, however, even if the CFPB and FSOC had the inclination to act when faced with a problematic practice or product, they would first have to identify the problem.²⁶ Therein lies the central problem with the Dodd-Frank Act in regard to the mortgage market: the Dodd-Frank Act fails to recognize that the housing bubble was caused by informational problems in the mortgage market that prevented investors and regulators from knowing the extent of credit risk in the market and responding appropriately.

The Dodd-Frank Act does nothing to rectify these informational problems, and as a result, the FSOC (and CFPB) are left with the same insufficient information as before the housing bubble. Investors are left with the same problem—post-Dodd-Frank they have no better ability to gauge credit risk than

24. We recognize that LTVs are not truly "hard" lending characteristics because they are based on appraisals, which have an inherently subjective nature.

25. LTV requirements, in particular, will likely subject the QRM and QM concepts to continued political pressure, as affordable housing advocates worry that narrow definitions—particularly high down-payment requirements—will harm consumers in two ways. In particular, these requirements will exclude too many consumers from the QRM/QM market, and the costs of risk-retention in the non-QRM/QM market will be too high, thereby shutting these consumers out of homeownership entirely. Financial institutions that wish to avoid risk retention are likely to find common cause with affordable housing advocates, demonstrating that affordable housing is sometimes in tension with both consumer protection and systemic risk prevention.

26. See Adam J. Levitin, *In Defense of Bailouts*, 99 GEO. L.J. 435, 461-78 (2011) (discussing limitations of systemic risk regulation).

they did pre-Dodd-Frank. In such circumstances, it is difficult to imagine that private-risk capital will quickly return to U.S. mortgage markets.

II. The Information Problem in Mortgage Markets

The price theory of demand postulates that demand for an asset or service is correlated with the price of that service. In an efficient, complete market, price is transparent to all potential buyers, so demand is set at the efficient level. This means that information is a *sine qua non* of market efficiency. Absent sufficient information, mispricing is likely to occur, and, if market participants are concerned about information quality, they may simply withdraw from the market.

Mortgage finance markets are beset with a variety of informational problems that make it difficult for mortgage investors to price risk. In the United States, mortgages are financed primarily through two methods—portfolio lending and securitization. Portfolio lending involves loans made by a depository institution. The depository institution keeps the loans on its balance sheet and funds them through its deposits and other borrowings. Securitization involves a chain of financial institutions that link capital market funders with consumer borrowers. With securitized mortgages, the mortgages' risk lie with the securitization investors and the guarantors, if any, of their securities.²⁷

A. Information Problems in Securitization

Both securitization and portfolio lending suffer from informational problems. The informational problems in securitization have been long noted.²⁸ Ultimately, homeowners know more about their risks than mortgage originators, who in turn have information advantages over other mortgage securitization intermediaries and MBS investors.²⁹ MBS investors receive limited information about the mortgages backing an MBS issuance, and the quality of that information is dubious.

A typical MBS is supported by several thousand home mortgages. An MBS investor will have access to the prospectus and, more importantly, the prospectus supplement. These documents tell investors about the weighted averages of a variety of loan, borrower, property characteristics, and underwriting characteristics—LTV, FICO, state, loan size, amortization, loan term, loan type, for example. It might also give some distributional breakdown,

27. We are oversimplifying here, of course. There is risk for the financial intermediaries, both while mortgages are in the securitization pipeline, and based on various representations and warranties that they make about the underwriting quality.

28. Claire A. Hill, *Securitization: A Low-Cost Sweetener for Lemons*, 74 WASH. U. L.Q. 1061, 1075 (1996); Adam J. Levitin & Susan M. Wachter, *Explaining the Housing Bubble*, 100 GEO. L.J. (forthcoming 2012), available at <http://ssrn.com/abstract=1669401>.

29. The intermediaries may also have information advantages over homeowners based on knowledge of product risks and performance.

by quintiles. What is impossible for investors to tell, however, in most cases, is the relationship between these terms.³⁰

Consider two securitizations, each of two loans. One has a loan with a high LTV and low FICO and another loan with a low LTV and high FICO. The other has a loan with high FICO and high LTV and a loan with low FICO and low LTV. The average FICO and LTV for both securitization pools may be the same, but it cannot be assumed that the pools present equal risks. Absent the ability to correlate loan characteristics, weighted averages are of limited use.

A further problem exists in terms of the sophistication and market-specific knowledge of securitization investor base. A significant portion of the MBS investor base consisted of foreign investors whose knowledge of the U.S. mortgage market may have been limited. Instead, most investors relied on informational proxies—rating agencies' ratings first and foremost, but also market analysis produced by sell-side firms—and exhibited significant herding to follow dominant investment strategies.³¹

B. Information Problems in Portfolio Lending

Portfolio lending has its own set of informational problems. International experience in recent decades is replete with examples of portfolio lenders making disastrous lending decisions. Market discipline cannot be relied upon to keep portfolio lenders in check *in real time* because of the opacity of most lending institutions.³²

Consider an entity like Bank of America, the largest consumer lender in the United States. The level of mortgage credit risk on Bank of America's balance sheet is impossible to determine with any certainty. Bank of America's financials do not provide sufficiently detailed information about its mortgage lending. Indeed, the more complex financial institutions become, the less transparent their financial reporting becomes relative to, say, a monoline

30. In theory, an MBS investor also has access to the loan tapes with this information for each loan. But in practice it seems that both MBS investors and monoline insurers of MBS often did not have the opportunity to review loan-level data. Moreover, the quality of loan-level data was itself highly suspect, as diligence procedures were flawed. See FIN. CRISIS INQUIRY COMM'N, THE FINANCIAL CRISIS INQUIRY REPORT: FINAL REPORT OF THE NATIONAL COMMISSION ON THE CAUSES OF THE FINANCIAL AND ECONOMIC CRISIS IN THE UNITED STATES 166-70 (2011), available at <http://www.gpoaccess.gov/fcic/fcic.pdf>.

31. For a lucid discussion of the problems with credit ratings of structured financial products, see Joseph R. Mason & Josh Rosner, Where Did the Risk Go? How Misapplied Bond Ratings Cause Mortgage Backed Securities and Collateralized Debt Obligation Market Disruptions (May 3, 2007) (unpublished manuscript), available at <http://ssrn.com/abstract=1027475>.

32. Richard Green et al., *Misaligned Incentives and Mortgage Lending in Asia*, in 18 FINANCIAL SECTOR DEVELOPMENT IN THE PACIFIC RIM, EAST ASIA SEMINAR ON ECONOMICS 95 (Takatoshi Ito & Andrew K. Rose eds., 2009); Richard Herring & Susan M. Wachter, *Bubbles in Real Estate Markets*, in ASSET PRICE BUBBLES: THE IMPLICATIONS FOR MONETARY, REGULATORY, AND INTERNATIONAL POLICIES 217 (William C. Hunter et al. eds., 2005).

lender.³³ The reporting opacity of large financial conglomerates frustrates market discipline.

As with securitization, portfolio lenders suffer from internal agency problems—executives are often compensated based on periodic, rather than long-term performance, which creates incentives to boost deal volume now and worry about the consequences later. Moreover, loan officers and brokers are typically compensated based on production. This creates an incentive for them to originate as many loans as possible.³⁴ Agency problems incentivize short-term gain at the expense of long-term risk.

The agency problem, however serious, is not *the* critical problem in either portfolio lending or securitization. The agency problem is one that can only grow in an environment with opaque information, which encourages principals to rely on agents and frustrates attempts at monitoring—including market-wide monitoring for the formation of asset bubbles. The agency problems in portfolio lending and securitization cannot be easily fixed. The informational problems, however, can be addressed; and ensuring that principals are able to receive better information will prevent economic agents from exploiting their principals' information problems. Fixing the information problems in lending, whether through portfolio lending or through securitization, enables the end-investors to deal better with the agency problem.

C. *The Limitations of Risk Retention*

Irrespective of the agency problems in the financing channel, the implicit put option on nonrecourse or functionally nonrecourse mortgages also creates a systemic risk problem that no amount of skin in the game can fix. On a nonrecourse mortgage, a homeowner has the option to “put” the house back to the bank by defaulting and surrendering the house. In other words, the strike price on this option is the value of the house. When the value of the house falls below the unpaid balance on the mortgage (meaning that the house is “upside down” or “under water” or there is “negative equity”), then the “put” option is “in the money.” The de facto nonrecourse status of many U.S. mortgages means that when there is current or expected negative equity, homeowners have an incentive to default on their mortgages.

Skin-in-the-game risk-retention requirements would, at first blush, seem to mitigate against a decline in underwriting standards. Loan originators would demand lower LTV ratios, for example, to decrease the likelihood of negative equity. But the upfront fees that lenders (and their agents) make on loans push for greater lending volume, both in terms of number of loans and size, and this pressure can overwhelm skin-in-the-game incentives if the put option is “in the

33. See Iannotta, *supra* note 19, at 18-19.

34. See Roman Inderst & Marco Ottaviani, *Misselling Through Agents*, 99 AM. ECON. REV. 883 (2009).

money.” In fact there is no expected “skin in the game” if loans are made that are not expected to perform long term. If origination fees are high enough, the skin-in-the-game can merely be a loss leader.

The likelihood that the put option is or will be in the money creates an anticipatory change in lending behavior that exacerbates declining credit standards.³⁵ Savvy financial intermediaries can foresee the put option coming into the money because credit risk levels are unsustainable and have led to an inflation of housing prices. If those intermediaries are compensated through short-term fees, they are incentivized to “make hay while the sun shines.” Thus, Goldman Sachs pushed forward with synthetic CDOs like Abacus 2007-AC1 despite an email from the Abacus team leader Jonathan Egol to his underling “Fab” Fabrice Toure urging that deals in progress be completed because “the cdo biz is dead we don’t have a lot of time left.”³⁶

Reputational constraints on credit quality dissipate if repeat business is not anticipated. Instead, there is a rush to expedite as many loan applications as possible, regardless of credit standards, before the crash comes. This phenomenon keeps bubbles going longer. Because the incentives are so strong at this point to make any and all loans before the market collapses, the volume of bad lending and the bubble supported by the lending may increase substantially.³⁷ At this point mortgages will be originated with long-term risks underpriced, since originators do not expect the loans’ long-term survival.

The smart-money response will, of course, be to go short in the above situation. The most attractive method of going short on the real estate market is through credit default swaps (CDS) on MBS.³⁸ But the existence of credit derivatives means that going short does not necessarily create market discipline in the short-term. Synthetic CDS do not themselves exert market pressure on MBS except through cash-synthetic CDS arbitrage.³⁹ Moreover, long-short strategies that involve taking out a long junior position and a short senior position in the same deal—such as those used by the Magnetar hedge fund—can effectively short-circuit market discipline.⁴⁰ Instead, it can actually fuel a bubble.⁴¹

35. When the put option is not in the money, skin in the game could conceivably *encourage* risk taking because it lowers the rate of return for securitizers. To compensate for lower rates of return due to skin in the game, securitizers may choose to take on riskier loans with higher returns.

36. Louise Story & Gretchen Morgenson, *S.E.C. Case Stands Out Because It Stands Alone*, N.Y. TIMES, June 1, 2011, <http://www.nytimes.com/2011/06/01/business/01prosecute.html>.

37. The activity of Countrywide and Washington Mutual, in particular, in 2007 exemplifies this phenomenon.

38. Levitin & Wachter, *supra* note 28 (manuscript at 69-70).

39. *Id.*

40. *Id.*; YVES SMITH, *ECONNED* 257-63 (2010).

41. SMITH, *supra* note 40, at 257-63; Levitin & Wachter, *supra* note 28;.

D. *The Limitations of Market Discipline in Informationally Shrouded Markets*

The risk of an undetected bubble, together with an undetected decline in credit standards, remains a major deterrent to the return of private risk capital to the housing finance market. The basis of the problem is a lack of information in assessing future credit risk and the lack of a signaling device for indicating heightened credit risk. If there is a signal in the market that points to heightened credit risk, then the market will sell off that product. This will cause rates to rise, stemming the continued issuance, origination, and acceptance of risky lending and stemming the growth of risk in that market.

In the market for government bonds, for example, “bond vigilantes” should, in theory,⁴² sell a country’s bonds when inflation risk (or interest rate risk) increases, causing a higher yield. This corrective acts as a deterrent to inflation-generating lax monetary policy. The response of credit generation to heightened inflation risk stops the generation of inflation risk.

In a market with shrouded or incomplete information on credit risk, there are no such signals. Without signals, market participants cannot know when to withdraw funding from a market that is increasing in risk. As a result, risk can snowball because asset prices themselves are increased by the issuance of debt to increasingly risky borrowers. Thus, the key question is: What informational factors are available to signal unsustainable increases in asset prices and credit quality?

The financial crisis of 2008 was due to the correlated risks of an asset bubble, and excess leverage and credit deterioration. Indeed, financial crises derive from asset bubbles in which the financial system is implicated and which have the possibility of a lending freeze, which has spillover effects across the economy. The severity of the future crisis is directly related to the buildup of the asset bubble and deteriorating credit standards, which are permitted to continue by the absence of information on the building up of these joint risks. From 2003 to 2006, the possibility of an asset bubble was acknowledged, but the deterioration of credit underwriting was shrouded. Thus, observers lacked the information necessary to explain the asset price bubble.

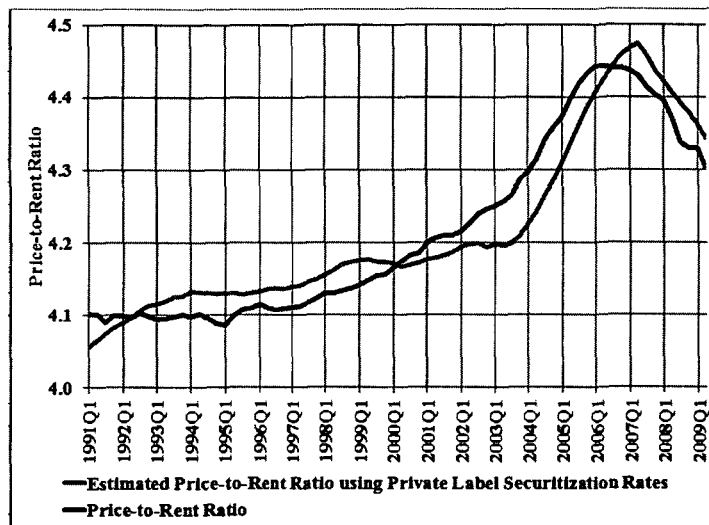
What factors could have been known to identify the “excess” increase in housing prices? And could these factors have been known at the time that the “bubble” in housing prices was generated?

Changes in volume in the financing channel could serve as such an indicator. Figure 1 shows for the United States the actual purchase price-to-rent

42. But see Paul Krugman, *Bond Vigilantes, Still Invisible*, N.Y. TIMES: CONSCIENCE OF A LIBERAL (Dec. 8, 2010, 12:16 PM), <http://krugman.blogs.nytimes.com/2010/12/08/bond-vigilantes-still-invisible> (arguing that there is no evidence of bond vigilantes in sovereign debt); Paul Krugman, *The Meaning of 2.71*, N.Y. TIMES: CONSCIENCE OF A LIBERAL (Aug. 11, 2010, 11:35 AM), <http://krugman.blogs.nytimes.com/2010/08/11/the-meaning-of-2-71> (“[A]nyone who believed the stuff about invisible bond vigilantes, and acted on it, has lost a lot of money.”).

ratio using Federal Housing Finance Agency data for price and consumer price index data for rent. It graphs that ratio against an estimation of the price-to-rent ratio based on the principal outstanding on mortgages in private-label (non-GSE) securitization pools. Figure 1 shows that when the ratio of PLS to overall volume of lending is used as an explanatory factor, the spike in the price-to-rent ratio is “explained.”

Figure 1. Estimated Price to Rent Ratio Using Private Label Securitization Rates and Actual Price to Rent Ratio



By itself, however, volume is an imperfect warning sign of increased risk. For instance, easing credit in an otherwise constrained market can drive growth without increasing unpriced risk or creating an asset bubble.⁴³ Volume alone, then, is not a conclusive indicator of risk.

Indeed, if volume of lending increases and if lending gets riskier, there may simply be a new, stable equilibrium if risk is appropriately priced. If, on the other hand, the increased lending is at increasing risk and markets do not recognize the increased risk and therefore do not raise the risk premium on this lending, the system will not be stable. Once the increased non-priced risk is recognized, the impact will be a spike in the risk premium. As interest rates rise to include the higher risk premium, there will be a decline in housing prices, as higher financing costs will keep buyers out of the market. Moreover, to the extent that existing borrowers need to roll-over their loans, higher interest rates

43. Full regression results are on file with the authors. For a discussion of the effect of the volume of securitization activities on the long-run price-to-rent ratio, see Helmut Herwartz & Fang Xu, *On Housing Booms and Credit Market Conditions: A State Space Model* (Apr. 2011) (unpublished manuscript), available at http://www.ems.bbk.ac.uk/research/Seminar_info/PDFs/Xu.pdf.

will lead to higher default rates, which result in an increase in foreclosure inventory, which further pushes down prices.

Lenders who have made loans during the bubble period without increasing the risk characteristics of their own loans will nonetheless be exposed to increased credit risk as the value of the collateral backing the loans declines: that is, as the consolidated LTV ratios rise. Thus investors need to know to what degree loans that they will make may be subject to deterioration in lending standards. *Ex ante*, such potential deterioration in lending standards creates correlated risk of housing price declines because the mispriced lending is recognized, leading to the scramble to “make hay while the sun shines.” Loan originators and securitizers—the intermediaries connecting capital market funders and home mortgage borrowers—are compensated largely based on the volume of loans they originate and securitize. When credit risk is underpriced, loan originators and securitizers can originate and securitize more loans than otherwise, thus increasing their own revenue. They will be incentivized to do so as long as the mispricing remains. *Ex post*, this results in increased defaults and foreclosures, which bring excess inventory of homes to the market putting further downward pressure on prices.

The crisis emerged when there was growth in lending volume and housing prices, and a continuing correlation between these two factors beyond the period of economy-wide interest rate declines. What mattered, however, in interpreting this correlation is whether higher housing prices and lending volume were sustainable. If the credit risk were correctly priced, even as constraints were overcome, the lending and the lending rates could be sustained. This demonstrates the importance of the question of the sustainability of the pricing of risk.

In 2005, as the crisis evolved, there were those who pointed to the possibility of a bubble emerging. We know now that this included economists at the Federal Reserve Board who estimated that prices were too high by about twenty percent in 2005.⁴⁴ In their deliberation of what to do, they ruled out the raising of interest rates to “prick” the bubble as this might throw the economy into recession. Moreover, according to the released record, they believed at the time that price acceleration would ease and that economic growth would allow rents to catch up to prices without a major price decline.

The Federal Reserve Board economists did not have information at the time on the increase in the risk of lending and the decrease in the price of this risk.⁴⁵ In other words, they did not track the risk premium that investors were

44. Sudeep Reddy, *Fed Felt Hamstrung by 2005 Housing Bubble*, WALL ST. J., Jan. 15, 2011, <http://online.wsj.com/article/SB10001424052748703959104576082313921593064.html>.

45. See Simon Potter, *The Failure To Forecast the Great Recession*, FED. RESERVE BANK OF N.Y. (Nov. 25, 2011, 6:00 PM), <http://libertystreeteconomics.newyorkfed.org/2011/11/the-failure-to-forecast-the-great-recession.html>

placing on MBS lending. Nor were they aware, it appears, except anecdotally, of decreases in lending standards.

While in theory Federal Reserve Board economists could have known the evolution of the pricing of MBS, this was in fact not easy to track, much less in real time. We have done so *ex post*, but only with difficulty.⁴⁶ Moreover, loan pricing should be tracked while holding quality of lending constant for a given risk. This raises difficult issues of how to identify the quality of lending in real time when the mix of loan products itself shifts. In any event, the Federal Reserve economists did not know, as we do now, that the underpricing of risk would in fact get worse and would occur along with a continued growth of a housing bubble. Unfortunately, the Dodd-Frank Act provides them with no additional tools in this regard.

E. The Limitations of Diagnosis from Market Symptoms

Having observed frequent and widespread deterioration of lending standards around the world, economists have developed symptoms of deteriorating lending standards based on observable market indicators. One such indicator is the Pavlov-Wachter symptom of underpricing in the lending market.⁴⁷ Specifically, Pavlov and Wachter use the correlation between asset prices and lending rates to distinguish between legitimate positive demand shocks and price increases due to lax lending standards.⁴⁸

The Pavlov-Wachter symptom is based on the fact that the price of an asset depends not only on the value of the asset itself but also on any mispricing of the loan through which the asset is financed. If a mortgage is priced correctly—that is, the market has properly accounted for expected future volatility with a sufficient yield spread (risk premium)—its market value equals its face value, and the transaction price equals the fundamental value of the asset. If a mortgage is mispriced, then the transaction price reflects not only the fundamental value of the asset, but also the mispricing of the mortgage.

According to this relation, in a market with diversified investors, an increase in asset volatility should have little effect on the transaction price, since it is fully reflected in the yield spread. If, however, the yield spread changes due to underpricing rather than an increase in asset volatility, the transaction price of the asset changes—in the opposite direction of the yield spread. A mortgage with underpriced risk therefore results in an overpriced asset.

Pavlov and Wachter verify empirically that markets that exhibit their underpricing symptom do experience larger price declines when a negative

46. Levitin & Wachter, *supra* note 28.

47. Andrey D. Pavlov & Susan M. Wachter, *Mortgage Put Options and Real Estate Markets*, 38 J. REAL EST. FIN. & ECON. 89 (2009).

48. The foregoing summary is laid out more rigorously in the Appendix.

demand shock occurs.⁴⁹ This larger decline is because the new (lower) prices reflect not only the reduced demand but also compensate for the disappearance of underpriced financing.

But the relation Pavlov and Wachter find between demand shocks and pricing applies only to markets with diversified investors.⁵⁰ In the real world, real estate investors—particularly homeowners—are likely to be undiversified. In this case, the relation indicates that the transaction price and the yield spread tend to move in opposite directions, regardless of the cause.⁵¹

It is, therefore, very difficult for market participants to determine whether the increase in asset prices is due to an underpricing of the yield spread or a true increase in the asset's value. Thus, we cannot rely on the correlation of asset price increases and yield spread declines to point to a likely bubble.

Nonetheless, the Pavlov-Wachter underpricing symptom can still be useful. Major residential market players are also likely to extend loans to commercial real estate investors. Because most of these investors are diversified, the underpricing symptom works as originally developed. Therefore, one can use the correlation between commercial real estate prices and commercial lending spreads to detect underpricing in the economy.

Emphatically, the Pavlov-Wachter symptom is only an indirect method of detecting bubbles. The ability to detect accurately underpriced financing in the residential real estate markets depends on tracking the relationship between the levels of lending standards and credit constraints and the cost of credit and housing prices. Housing prices be sustainable only when the cost of credit accurately reflects the impact of lending standards on credit risk.

III. Degrees of Standardization

If private risk capital is to return to the U.S. mortgage market, it is necessary to rebuild investor confidence by improving the information available about credit risk. One route, proposed by the SEC, would simply be to require securitization sponsors to provide investors with enormous amounts of loan-level data disclosure in XML format.⁵²

49. Pavlov & Wachter, *supra* note 47, at 93.

50. See Equation 2 in the Appendix, *infra*.

51. *Id.*

52. See 17 C.F.R. § 229.10 (2010); Howell E. Jackson, *Loan-Level Disclosure in Securitization Transactions: A Problem with Three Dimensions* (Harvard Joint Ctr. for Hous. Studies, Working Paper No. MF10-8, 2010), available at <http://www.jchs.harvard.edu/publications/MF10-8.pdf>; Press Release, Am. Securitization Forum, ASF Project RESTART Proposes Risk Retention & Issues Final RMBS Disclosure and Reporting Packages (July 15, 2009) available at <http://www.americansecuritization.com/story.aspx?id=3460> (proposing tracking of loan level information in securitizations). But see Scott Peppet, *Smart Mortgages, Privacy and the Regulatory Possibility of Infomediation* (Univ. of Colo. Law Sch. Legal Studies Research Paper Series, Working Paper No. 09-13, 2009), available at <http://ssrn.com/abstract=1458064> (critiquing the American Securitization Forum proposal).

The problem with such an approach, however, is that a deluge of information is of limited use absent proven credit risk models that can make sense of the relationships between the different variables disclosed. Those models do not exist. While it may be possible to design effective multivariate risk models, excess information and variables reduce the predictive ability of such models, especially when new terms are introduced. Moreover, it would require multiple business cycles to hone such models in real market conditions. Multiple—and changing—products, each with many potentially different loan characteristics, make the development of reliable credit models difficult, if not impossible.

The corrective to disclosure of data without information is product standardization. Standardization decreases the number of variables investors must account for and thereby facilitates analysis; it is much easier to solve a two-variable equation than a hundred-variable equation. We have discussed standardization as a response in detail in other work,⁵³ but essentially there are two ways by which it could be achieved.

First, it could be done either through the QM and QRM definitions or through explicit legislation. The QM and QRM concepts encourage mortgages and MBS to fit within regulatory guidelines. The question is whether the guidelines will result in sufficient standardization; the QM and QRM definitions could still permit significant variation among QMs and QRMs. Moreover, if QM and QRM are defined too narrowly, many mortgages might simply not be qualified and thus would not be standardized.

The alternative possibility is a government guarantee of the MBS. A government guarantee socializes credit risk on the mortgages, and thus standardizes it. From an investor standpoint, there is no difference between different full faith and credit obligations of the U.S. government. Thus, one Ginnie Mae MBS is already good delivery for another with the same coupon.⁵⁴ A utility with government-set standards for the mortgages used to back its debt could also effectively operate to produce such standardized mortgages.⁵⁵

Of course, standardization through such a guarantee requires that lending standards are maintained and do not countercyclically erode through

53. Levitin & Wachter, *supra* note 28. See also David A. Dana, *A Simple Approach To Preventing the Next Housing Crisis—Why We Need One, What One Would Look Like, and Why Dodd-Frank Isn't It*, 38 FORDHAM URB. L.J. 721, 726-28 (2011) (discussing standardization (citing Levitin & Wachter, *supra* note 28)).

54. We emphasize that this is conceptually a similar arrangement to that of the Danish covered bond market, where credit risk is separated from interest rate risk. Investors in Danish mortgage bonds assume solely interest rate risk, not credit risk, which rests with Danish mortgage banks (and given that the Danish mortgage bond market is larger than the Danish sovereign debt market, ultimately with the Danish government through an implicit guarantee).

55. Tony Dechario et al., *A Private Lender Cooperative Model for Residential Mortgage Finance*, in REINVENTING THE AMERICAN MORTGAGE SYSTEM: RETHINK, RECOVER, REBUILD (Susan Wachter & Marty Smith eds., forthcoming 2011), available at http://data.newyorkfed.org/research/staff_reports/sr466.pdf.

government-guaranteed lending, as did occur in the subprime lending crisis. Standardization through a government guarantee also ultimately concedes that private risk capital will not return to the U.S. mortgage market in sufficient volume. And this may well be the case.

Securitization has always had an internal tension regarding standardization. On the one hand, securitization itself functions as a form of standardization by turning a potentially disparate pool of assets into uniform securities. Instead of a hodge-podge of mortgages or credit card receivables or auto loans, investors can purchase securities, which are more liquid because they are more standardized than the underlying assets. On the other hand, however, a major benefit of securitization, it has been argued, is that it enables the bespoke tailoring of securities to fit investor demand, thus providing more efficient funding.⁵⁶

The tailoring of interest-rate risk in mortgage securitization was in response to investor demand. Some investors wanted short-term MBS, others wanted long-term. Some wanted front-pay MBS in order to reduce prepayment risk; others wanted back-pay MBS. Thus, starting in 1988, Freddie Mac began to issue collateralized mortgage obligations (CMOs) in addition to plain pass-through securities.⁵⁷ CMOs enabled the tailoring of securities to meet investor rate-risk preferences. No guarantee could be offered about rate risk (absent an interest rate or total return swap), so for rate-risk investors, the focus was on the tailoring, not the label.

The transposition of this bespoke tailoring to credit risk, however, worked differently. The particular tailoring of MBS for credit risk was not in response to investor demand per se, but was instead in response to rating agency criteria. MBS issuers sought to manufacture as many AAA-rated securities as possible from a pool of mortgages. Investor demand was for AAA-rated securities, not for the particular tailored iterations of credit risk that were utilized. For credit-risk investment, the focus was on the label provided by the rating agencies, not the tailoring.

We emphasize that we call solely for standardization of *credit*-risk factors, for which there is little investor interest in MBS structure variation, rather than standardization of interest-rate risk factors. While credit risk and interest-rate risk can never be completely disentangled (as a foreclosure is a prepayment event) and rate resets on adjustable-rate mortgages can increase default rates, a restoration of private risk capital in the U.S. mortgage market necessitates the

56. Hill, *supra* note 28, at 1075.

57. CMOs should not be confused with CDOs. A CMO is a mortgage-backed security that is divided into tranches to allocate prepayment risk, in contrast with a straight pass-through certificate in which the mortgage-backed security investors hold identical, undivided interests in a pool of mortgages. The term CMO is used only in reference to GSE MBS. A CDO is a more generic term for any securitization, but is typically used to refer to re-securitizations, which are securitizations of structured products or other asset classes, such as credit derivatives or—on rare occasion—whole loans. GSE MBS are never called CDOs; instead, CDO is used to refer to private-label re-securitizers.

provision of readily modelable information. That is currently lacking, and the Dodd-Frank Act's approach does not correct it.

Conclusion

Private risk capital in the U.S. mortgage market took several forms before the bubble. First, there were investors in GSE MBS. Second, there were investors in GSE debt. Third, there were investors in private-label MBS. And finally, there were investors in GSE stock. Investors in the first three categories—GSE MBS, GSE debt, and, perhaps surprisingly, PLS, did not generally see themselves as credit-risk investors.

GSE MBS were guaranteed by the GSEs, and the GSEs' debt (including via their guarantees) were perceived (accurately, in hindsight) as obligations of the U.S. government—functionally risk-free. Investors in PLS were nominally assuming credit risk, but the overwhelming majority of PLS were originally rated AAA by multiple rating agencies, and many investors assumed this meant that the PLS they purchased were functionally risk-free (albeit with slightly higher yields than Treasuries).⁵⁸ The non-investment grade PLS were purchased primarily by CDOs, which were laundering the non-investment grade PLS into another round of AAA-rated securities with more BBB-rate byproduct to be re-securitized yet again in CDO-squared securities.

Only investors in GSE stock saw themselves as representing private risk capital. The other types of mortgage investors were investing in what economist Gary Gorton has termed “informationally insensitive assets”—fixed income obligations on which there is no credit risk, only interest rate risk.⁵⁹ These investors generally did not conceive of themselves as assuming credit risk, even when investing in private-label securities. Prior to the implosion of the housing bubble, many investors understood AAA-rated assets to be devoid of credit risk and thus informationally insensitive, just like U.S. Treasury obligations. The reality check of 2008 removed that illusion; an asset is only AAA-rated and devoid of credit risk until it is not.

There is a real possibility that there is simply a limited supply of private-risk capital that wants credit risk as opposed to interest-rate risk. The global savings glut that fueled the housing bubble was comprised heavily of investors who were willing to accept interest-rate risk, but who have never showed any interest in assuming real credit risk.⁶⁰ Thus, the supply curve for credit-risk

58. Ben S. Bernanke et al., *International Capital Flows and the Returns to Safe Assets in the United States, 2003-2007* (Bd. of Gov. of the Fed. Reserve Sys. Int'l Fin. Discussion Papers, Working Paper No. 1014, 2011), available at <http://www.federalreserve.gov/pubs/iefdp/2011/1014/iefdp1014.htm>.

59. Gary B. Gorton, *Slapped in the Face by the Invisible Hand: Banking and the Panic of 2007* (May 11-13, 2009) (unpublished manuscript), available at <http://www.frbatlanta.org/news/Conferen/09finc/gorton.pdf>.

60. Elsewhere we argue, in contrast to Bernanke et al., *supra* note 58, that while the global savings glut provided the bulk of investment in AAA-rated MBS, this investment opportunity was not possible without the existence of a market for the non-investment grade pieces of MBS. Levitin &

investments might become increasingly vertical at a particular quantity. Thus, even if the U.S. mortgage market were to offer high yields relative to credit risk, doing so might only attract a limited supply of capital—almost undoubtedly less than the amount that flooded the U.S. market in 2004 to 2008.

This presents a fundamental problem: How is it possible to lure investors who have never shown any interest in assuming credit risk on U.S. mortgages to pony up their money as risk capital exposed to that credit risk? Put differently, if the U.S. mortgage system requires \$5 trillion in private-risk capital, how can we persuade interest-rate risk investors that they should also become credit-risk investors? Given the agency problems that are endemic to securitization, is there any way to make investors comfortable enough to assume the credit risk?

Not surprisingly, several of the proposals for reforming the housing finance system would entail federal guarantees of MBS (albeit with somewhat different triggers for when the guarantees kick in).⁶¹ These proposals would functionally address the information problem by providing standardized forms of credit risk, thereby lessening agency concerns. Others would take a utility approach and put institutional capital at risk, thereby attempting to align investor and securitizer interests, much like the skin-in-the-game requirement.⁶² These proposals would, in effect, put private risk capital in a first-loss position, but have the government insure against catastrophic (tail) risk, which would essentially combine the incentive alignment response to agency problems with an informational fix through standardization of the tail risk. Whether such arrangements would be sufficient to restore large volumes of private risk capital to U.S. mortgage markets is uncertain.

Having the federal government hold the credit risk—even catastrophic risk only—in the mortgage market raises reasonable concerns about the politicization of mortgage lending. With the federal government holding mortgage credit risk, it is the inescapable outcome. Of course this is not effectively different than the federal government backstop of banks through federal deposit insurance. For both private investors with at-risk capital and the

Wachter, *supra* note 28. This market was primarily from CDOs, so every dollar of investment in subordinate tranches of CDOs was effectively leveraged into hundreds of dollars of mortgage finance. Without the subordinated debt market, the structured product AAA-market cannot exist.

61. CTR. FOR AM. PROGRESS, MORTG. FIN. WORKING GRP., A RESPONSIBLE MARKET FOR HOUSING FINANCE: A PROGRESSIVE PLAN TO REFORM THE U.S. SECONDARY MARKET FOR RESIDENTIAL MORTGAGES (Jan. 2011), *available at* <http://www.americanprogress.org/issues/2011/01/pdf/responsiblemarketforhousingfinance.pdf>; MORTG. BANKERS ASS'N, MBA'S RECOMMENDATIONS FOR THE FUTURE GOVERNMENT ROLE IN THE CORE SECONDARY MORTGAGE MARKET (2009), *available at* http://www.mbaa.org/files/News/InternalResource/70212_RecommendationsfortheFutureGovernmentRoleintheCoreSecondaryMortgageMarket.pdf; Press Release, Credit Suisse Fixed Income Research, Mortgage Market Focus: 2010—Transitioning the MBS Market to a New Normal (Dec. 17, 2009) (on file with authors).

62. Dechario et al., *supra* note 55.

regulators working on behalf of the taxpayer with exposure to catastrophic risk, real time information is necessary to monitor risk.

Regardless of whether private actors or the government bear the credit risk on mortgages, it is necessary to find ways to price for risk appropriately, and doing so requires regulation that facilitates the information necessary to price risk and limit agency problems. The best and ultimately necessary method for doing so is the standardization of mortgage origination and securitization.⁶³

Appendix

In what follows we extend the Pavlov-Wachter symptom of loan underpricing analysis to demonstrate that it is only applicable to commercial real estate.⁶⁴ It cannot be used to detect loan underpricing in the residential markets. To demonstrate this, we first summarize the Pavlov-Wachter symptom as it applies to commercial real estate and then highlight the unique feature of residential real estate that breaks down the original argument.

The Pavlov-Wachter symptom is based on the fact that the transaction price of an asset financed through a nonrecourse loan is the composite of the fundamental value of the asset, V , the value of the mortgage loan, M , and the face value of the adjustable-rate mortgage loan, B :

$$P = V(\sigma) - M(\sigma, s(\sigma)) + B, \quad (\text{A1})$$

where σ denotes the expected future volatility of the asset and s denotes the spread of lending over deposit rates. This lending spread compensates the lender for the default risk they underwrite when they issue a nonrecourse mortgage.

If the lending spread does compensate the lender for the default risk, the market value of the mortgage equals the outstanding balance. In this case the transaction price equals the fundamental value of the asset. If the mortgage is mispriced, then the transaction price reflects not only the fundamental value of the asset, but also the difference between the face value of the mortgage and its market value, $B - M(\sigma, s(\sigma))$. If the mortgage is underpriced, then the transaction price exceeds the fundamental value of the asset because efficient equity markets take advantage of the mispricing, and the asset is assumed to be of fixed supply.

If the lending spread, s , rationally changes in response to changes in asset volatility σ , this leads to an increased default risk and the transaction price remains unchanged.

63. We recognize that standardization comes at the expense of some flexibility and innovation, but that is the price for systemic stability. Moreover, standardization of securitization does not prevent product experimentation by balance sheet lenders.

64. See Pavlov & Wachter, *supra* note 47.

$$\frac{\partial s}{\partial \sigma} > 0 \quad (A2)$$

$$\frac{\partial P}{\partial \sigma} = \frac{\partial V}{\partial \sigma} - \frac{\partial M}{\partial \sigma} - \frac{\partial M}{\partial s} \frac{\partial s}{\partial \sigma} = \frac{\partial V}{\partial \sigma} \approx 0$$

Since the spread adjusts to compensate the lender for the changes in the value of the put option imbedded in the mortgage loan, $\frac{\partial M}{\partial \sigma} + \frac{\partial M}{\partial s} \frac{\partial s}{\partial \sigma} = 0$. If the change in volatility of the asset is fully diversifiable, then $\frac{\partial V}{\partial \sigma} = 0$. If the increase in volatility affects the covariance of the asset return with the market, then $\frac{\partial V}{\partial \sigma} < 0$, but still relatively small.⁶⁵

The response of the asset price to the spread is:

$$\frac{\partial P}{\partial s} = \frac{\partial P / \partial \sigma}{\partial s / \partial \sigma} = \frac{\partial V / \partial \sigma}{\partial s / \partial \sigma} \approx 0 \quad (A3)$$

The bottom line of this analysis is that, the correlation between transaction prices and lending spread is zero if the increase in asset volatility is fully diversifiable, and close to zero if it affects the covariance between the asset and the overall market.

If, on the other hand, the spread changes because of underpricing, not in response to changes in expected future asset volatility, the response of the price to the spread is very different:

$$\frac{\partial s}{\partial \sigma} = 0, \frac{\partial V}{\partial s} = 0, \frac{\partial M}{\partial s} > 0, \quad (A4)$$

therefore,

$$\frac{\partial P}{\partial s} = \frac{\partial V}{\partial s} - \frac{\partial M}{\partial s} = -\frac{\partial M}{\partial s} < 0. \quad (A5)$$

Thus, the correlation between asset prices and lending spread is negative and driven by the sensitivity of the value of the mortgage to the lending spread, which is substantial.

While the above argument is very intuitive and empirically easy to verify, it only applies to markets in which investors are diversified. Unfortunately, most owners of residential real estate are not diversified, and the relationship of Equation (2) breaks down. In particular,

65. The price impact of real estate volatility changes through the covariance with the overall market are likely to be far smaller than the impact through changing the value of the option to default.

$$\begin{aligned} \frac{\partial s}{\partial \sigma} &> 0 \\ \frac{\partial P}{\partial \sigma} &= \frac{\partial V}{\partial \sigma} - \frac{\partial M}{\partial \sigma} - \frac{\partial M}{\partial s} \frac{\partial s}{\partial \sigma} = \frac{\partial V}{\partial \sigma} < 0 \end{aligned} \quad , \quad (\text{A6})$$

because the undiversified investor (homeowner) avoids volatility. This implies that the relationship between spread and transaction price is negative,

$$\frac{\partial P}{\partial s} = \frac{\partial P / \partial \sigma}{\partial s / \partial \sigma} = \frac{\partial V / \partial \sigma}{\partial s / \partial \sigma} < 0. \quad (\text{A7})$$

Thus, we obtain the same outcome (negative correlation between spread and price) regardless of whether loan underpricing is prevalent. This makes it very difficult to detect underpriced lending in the residential market, and, consequently, nearly impossible to distinguish between rational price increases and price bubbles due to lax lending standards, unless those standards are known.