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## Article

### The Future of Securitization

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*Securitization, a process in which firms can raise low-cost financing by efficiently allocating asset risks with investor appetite for risk, has been one of the most dominant and fastest-growing means of capital formation in the United States and the world. The subprime financial crisis, however, has revealed certain defects with how securitization is sometimes utilized. This Article examines these defects and the extent they can, and should, be remedied going forward.*

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# The Future of Securitization

STEVEN L. SCHWARCZ\*

## I. INTRODUCTION

This Article examines the future viability of securitization in light of its involvement in the subprime-mortgage financial crisis (“subprime crisis”).<sup>1</sup> The Article concludes that securitization should, and indeed likely will, have a viable if not vibrant future. There are many reasons for this. Securitization efficiently allocates risk with capital. It enables companies to access capital markets directly, in most cases at lower cost than the cost of issuing direct debt (such as bonds or commercial paper), and it avoids middleman inefficiencies. Moreover, when the securitized assets are loans, securitization helps to transform the loans into cash from which banks and other lenders can make new loans.<sup>2</sup>

These positives might be outweighed, however, by securitization’s negatives revealed by the subprime crisis. There are four such potential negatives: subprime mortgages may be a flawed asset type that should not have been securitized; the originate-to-distribute model of securitization might create moral hazard; securitization can create servicing conflicts; and securitization can foster overreliance on mathematical models. This Article examines these negatives and the extent to which they can be

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<sup>1</sup> Securitization refers to the process of turning financial assets into securities issued by a special purpose vehicle. Steven L. Schwarcz, *The Alchemy of Asset Securitization*, 1 STAN. J.L. BUS. & FIN. 133, 135 (1994).

<sup>2</sup> See STEVEN L. SCHWARCZ, STRUCTURED FINANCE, A GUIDE TO THE PRINCIPLES OF ASSET SECURITIZATION §1:1, §§11:1–11:2 (3d ed. & supps. 2008); Steven L. Schwarcz, *Securitization Post-Enron*, 25 CARDOZO L. REV. 1539, 1565 (2004) (concluding why securitization should “create[] net value [even] for unsecured creditors”); Charles W. Calomiris & Joseph Mason, *Credit Card Securitization and Regulatory Arbitrage* 4 (Fed. Reserve Bank of Pa., Working Paper No. 03-7, 2003), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=569862](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=569862) (finding that the empirical evidence for credit card securitization “is more consistent with the efficient contracting view . . . of securitization”); see also JASON KRAVITT, FOREWORD: SOME THOUGHTS ON WHAT HAS HAPPENED TO THE CAPITAL MARKETS AND SECURITIZATION AND WHERE SECURITIZATION IS GOING 3–4 (2008), available at <http://www.pli.edu/public/17984/foreword.pdf> (arguing that “securitized products, when structured properly and used wisely, have the potential to be one of the most valuable financial innovations of the modern financial era”); Martin Hellwig, *Systemic Risk in the Financial Sector: An Analysis of the Subprime-Mortgage Financial Crisis* 7 (Nov. 2008 preprint of the Max Planck Institute for Research on Collective Goods, Bonn, No. 2008/43), available at [www.ssrn.com/abstract=1309442](http://www.ssrn.com/abstract=1309442) (explaining why “the securitization of [residential real estate] risks should be regarded as a good idea”).

remedied in the future.

The subprime crisis also revealed a possible fifth negative: investors in securitization transactions—essentially pension funds, mutual funds, hedge funds, banks, insurance companies, and other institutional investors<sup>3</sup>—may over-rely on rating-agency ratings.<sup>4</sup>

To follow the analysis below, the reader should note the following terminology. Subprime mortgage securitization, the type of securitization whose failure initially triggered the chain of failures that became the subprime crisis,<sup>5</sup> is a subset of mortgage securitization. In the most basic form of mortgage securitization, mortgage-backed securities (MBS) are issued by a special-purpose vehicle (SPV),<sup>6</sup> and payment on the securities is derived directly from collections on mortgage loans owned by the SPV. More complex forms of mortgage-backed securities include collateralized debt obligation (CDO) securities in which payment derives directly from a mixed pool of mortgage loans and sometimes, also, from other financial assets owned by the SPV; and “ABS CDO” securities in which payment derives from MBS and CDO securities owned by the SPV (and thus indirectly from the mortgage loans and other financial assets underlying those owned securities).<sup>7</sup> Subprime mortgage securitization can mean any of these types of mortgage securitization where all or a portion of the underlying financial assets consists of subprime mortgage loans.<sup>8</sup>

Prior to the subprime crisis, most MBS, CDO, and ABS securities were highly rated by rating agencies.<sup>9</sup>

## II. WHAT WENT WRONG, AND WHAT NEEDS TO BE FIXED?

This Article identifies certain potential negatives of securitization revealed by the subprime crisis and examines the extent to which these negatives can be remedied in the future.

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<sup>3</sup> GREENWICH ASSOCIATES, SURVEY OF SECURITIZATION MARKET INVESTORS 2 (2005).

<sup>4</sup> See Steven L. Schwarcz, *Private Ordering of Public Markets: The Rating Agency Paradox*, 2002 U. ILLINOIS L. REV. 1, 2–5, 8 (2002) [hereinafter Schwarcz, *Private Ordering of Public Markets*] (providing an introduction to ratings, rating agencies, and the ratings process). For an analysis of the integrity of the ratings process and of the extent that investors should appropriately rely on ratings, see Steven L. Schwarcz, *Protecting Financial Markets: Lessons from the Subprime Mortgage Meltdown*, 93 MINN. L. REV. 373, 380–82 (2008) [hereinafter Schwarcz, *Protecting Financial Markets*]. The extent of appropriate reliance on ratings, and indeed the integrity of the ratings process itself, are questions beyond this Article’s scope.

<sup>5</sup> For an examination of how a market failure can trigger a chain of failures resulting in a financial crisis, see Steven L. Schwarcz, *Systemic Risk*, 97 GEO. L.J. 193, 194–200 (2008) (providing several examples of individual market failures causing a domino effect across several markets or industries).

<sup>6</sup> An SPV is sometimes called a special-purpose entity, or “SPE.” Schwarcz, *Protecting Financial Markets*, *supra* note 4, at 376.

<sup>7</sup> Schwarcz, *Protecting Financial Markets*, *supra* note 4, at 376–77.

<sup>8</sup> See *infra* note 10 and accompanying text.

<sup>9</sup> Schwarcz, *Protecting Financial Markets*, *supra* note 4, at 106.

### A. *Flawed Asset Type*

Subprime mortgage securitization failed, initially triggering the chain of failures that became the subprime crisis, because of the particular and almost unique nature of the underlying subprime mortgage loans. These are high-interest-rate home mortgage loans made to risky borrowers.<sup>10</sup> Many of these borrowers relied on refinancing their appreciating home values to repay their loans.<sup>11</sup> This model was successful as long as home prices appreciated,<sup>12</sup> as they had been doing for decades.<sup>13</sup>

However, when home prices stopped appreciating and began collapsing, those borrowers were unable to refinance. Furthermore, many subprime mortgage loans had adjustable rates which increased after an initial “teaser” period.<sup>14</sup> Borrowers who could not afford the rate increases had expected to refinance at lower interest rates.<sup>15</sup> That likewise was stymied by collapsing home prices. As a result, many risky borrowers began defaulting, causing some of the highly rated MBS, CDO, and ABS CDO securities—whose payment depended on collections from the underlying financial assets<sup>16</sup>—to default or to have their credit ratings downgraded.<sup>17</sup> These defaults and downgrades, in turn, caused investors in rated securities to begin losing confidence in the financial markets.<sup>18</sup>

The failure of subprime mortgage securitization was thus caused by its almost absolute dependence on home appreciation. Some believe this sensitivity to the decline in housing prices was unique.<sup>19</sup> From that perspective, parties structuring securitization transactions can minimize future problems by excluding, or at least limiting and better managing,

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<sup>10</sup> Although subprime mortgage loans were sometimes made to affluent borrowers in amounts that may be difficult for such borrowers to repay, a significant amount of subprime mortgage loans were made to non-affluent or poor borrowers. To some extent this followed the U.S. Government’s strong encouragement of lenders to make mortgage loans to low-income, often disproportionately minority, borrowers; to some extent it also may have reflected greed due to the high interest rates charged to risky borrowers. Steven L. Schwarcz, *Understanding the ‘Subprime’ Financial Crisis*, 60 S.C. L. REV. (forthcoming 2009).

<sup>11</sup> *Id.*

<sup>12</sup> This model’s viability also relied on interest rates not rising so high as to make refinancing uneconomic. Although the subprime crisis was not caused by rising interest rates, the model’s additional susceptibility to rate risk buttresses the view that any securitization of subprime mortgage loans should be limited and better managed. See *infra* notes 19–20 and accompanying text (discussing the management of risks caused by subprime mortgages).

<sup>13</sup> Schwarcz, *supra* note 10, at 2.

<sup>14</sup> *Id.*

<sup>15</sup> *Id.*

<sup>16</sup> See *supra* notes 6–7 and accompanying text (introducing different types of mortgage-backed securities).

<sup>17</sup> Schwarcz, *supra* note 10. The CDO and especially ABS CDO securities were particularly hard hit because of their highly magnified leverage. *Id.*

<sup>18</sup> Schwarcz, *supra* note 10.

<sup>19</sup> Gary B. Gorton, *The Panic of 2007* 67 (Yale ICF, Working Paper No. 08-24, 2008), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1255362](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1255362).

subprime mortgage loans as an eligible type of underlying financial asset,<sup>20</sup> and also by conservatively assessing the payment prognosis for other types of financial assets underlying securitizations.<sup>21</sup> This is important not only to protect the integrity of securitization transactions but also to avoid the unintended consequence that securitization of a flawed asset type can motivate greater origination of that asset type, effectively magnifying the flaw.

This is not to say these procedures will be failsafe. Parties to, and investors in, securitization transactions must always be diligent to recognize and try to protect against the possibility that the underlying financial assets might, as in the case of subprime mortgage loans, fail in unexpected ways. What would happen to automobile loan securitizations, for example, if a technological innovation makes cars obsolete, depriving even financially healthy borrowers of the incentive to repay their loans?<sup>22</sup> The invention of a new form of personal transportation is at least as plausible as the idea that home prices—which generally had only risen since the 1930s—would suddenly collapse in value at a rate higher than that seen during the Great Depression, as happened in the subprime crisis.<sup>23</sup>

The subprime crisis also teaches us the danger of mixing politics and finance. Before the crisis, there was political pressure to securitize risky subprime mortgage loans to facilitate financing for the poor.<sup>24</sup> We might see the same type of future political pressure, for example, to securitize risky microfinance loans to facilitate financing for the poor and disadvantaged.

#### B. *Originate-to-Distribute Moral Hazard*

Some argue that securitization facilitated an undisciplined mortgage lending industry.<sup>25</sup> By enabling mortgage lenders to sell off loans as they

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<sup>20</sup> Any such managing should also take into account rate risk.

<sup>21</sup> Assessments of payment prognosis should, bottom line, strive to be as accurate as possible. But where a prognosis has a margin of error, perhaps one should err, in structuring transactions, on the more conservative side of that margin.

<sup>22</sup> I am not suggesting that auto loans might be a flawed asset type but merely illustrating how underlying financial assets could fail in unexpected ways. Even if financially healthy borrowers lost their incentive to repay auto loans, they could be sued for payment and—unlike subprime mortgage borrowers—would have the means to pay. Such lawsuits, though, would generate relatively high transaction costs which, if not recoupable from the collateral or the borrowers, would reduce funds available to pay the securitized notes.

<sup>23</sup> Compare, for example, the fear around turn of the century New York City, before the invention of the automobile, that horse manure would create a public health hazard. *See* JOHN DUFFY, *A HISTORY OF PUBLIC HEALTH IN NEW YORK CITY 1866–1966*, at 126–27 (1974); Clay McShane & Joel A. Tarr, *The Centrality of the Horse in the Nineteenth-Century American City*, in *THE MAKING OF URBAN AMERICA* 105, 120–21 (Raymond A. Mohl, ed., 2d ed. 1997).

<sup>24</sup> *See supra* note 10.

<sup>25</sup> *See, e.g.*, Martin Feldstein, *How to Stop the Mortgage Crisis*, WALL ST. J., Mar. 7, 2008, at A15, available at LEXIS, News Library, WSJNL File (describing lax lending standards that gave rise to mortgages with loan-to-value ratios of nearly 100% and citing the 1.8 million mortgages then in

were made (a concept called “originate-to-distribute” or “originate-and-distribute”), securitization is said to have created moral hazard since these lenders did not have to live with the credit consequences of their loans.<sup>26</sup> Mortgage underwriting standards therefore fell, exacerbated by the fact that mortgage lenders could make money on the volume of loans originated.<sup>27</sup>

I find the moral hazard argument weak. Mortgage underwriting standards may have fallen, but there are other explanations. For example, lower standards may well reflect distortions caused by the liquidity glut of that time, in which lenders competed aggressively for business and allowed otherwise defaulting home borrowers to refinance.<sup>28</sup> They also may reflect conflicts of interest between firms and their employees in charge of setting those standards, such as where employees were paid for booking loans regardless of the loans’ long-term performance.<sup>29</sup> Blaming the originate-to-distribute model for lower mortgage underwriting standards also does not explain why standards were not similarly lowered for originating non-

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default); David Henry & Matthew Goldstein, *The Bear Flu: How it Spread*, BUS. WK., Dec. 31, 2007, at 30, available at LEXIS, News Library, BUSWK File (arguing that the distance between mortgage-loan originators and the ultimate holders of the loans encouraged lax lending); cf. John C. Dugan, Speech Given at The Annual Convention of The American Bankers Association, Oct. 8, 2007, at 5, available at <http://www.occ.treas.gov/ftp/release/2007-109a.pdf> (observing that with the increasing use of the originate-to-distribute model of lending, lending standards shifted from evaluating the likelihood of repayment to evaluating the likelihood that the loan could be sold). But cf. Gorton, *supra* note 19, at 67–68 (disagreeing with this explanation, although observing that the originate-to-distribute model and resulting moral hazard are the “dominant explanation” for the financial panic); Effi Benmelech, Jennifer Dlugosz, & Victoria Ivashina, *What Lies Beneath: A Look Inside CLO Collateral 2*, available at [http://ssrn.com/abstract\\_id=1344068](http://ssrn.com/abstract_id=1344068) (finding, empirically, that bank loans that are securitized perform no worse than bank loans that are held).

<sup>26</sup> Schwarcz, *Protecting Financial Markets*, *supra* note 4, at 387–88.

<sup>27</sup> See, e.g., *Legislative and Regulatory Options for Minimizing and Mitigating Mortgage Foreclosures: Hearing Before the H. Comm. on Financial Serv.*, 110th Cong. 74 (2007), available at [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=110\\_house\\_hearings&docid=f39540.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=110_house_hearings&docid=f39540.pdf) (statement of Ben S. Bernanke, Chairman, Fed. Reserve System) (“When an originator sells a mortgage . . . much or all of the risks are passed on to the loan purchaser. Thus, originators who sell loans may have less incentive to undertake careful underwriting . . .”). There is also speculation that some mortgage-loan originators might have engaged in fraud by manipulating borrower income, and that some borrowers may have engaged in fraud by lying about their income, in each case to qualify borrowers for loans. See, e.g., Vikas Bajaj, *A Cross-Country Blame Game*, N.Y. TIMES, May 8, 2007, at C1, available at LEXIS, News Library, NYT File (noting the recent practice of mortgage companies giving out loans based on limited documentation). If such fraud occurred, it would exacerbate but is unlikely to be significant enough to have caused the subprime financial crisis.

<sup>28</sup> See Ravi Balakrishnan et al., *Globalization, Gluts, Innovation or Irrationality: What Explains the Easy Financing of the U.S. Current Account Deficit?* 5 (Int’l Monetary Fund, Working Paper No. 07/160, 2007), available at <http://www.imf.org/external/pubs/ft/wp/2007/wp07160.pdf> (discussing the liquidity and savings glut).

<sup>29</sup> See, e.g., Steven L. Schwarcz, *Conflicts and Financial Collapse: The Problem of Secondary-Management Agency Costs* (work-in-progress, on file with the *Connecticut Law Review*); Steven L. Schwarcz, *Regulating Complexity in Financial Markets*, 87 WASH. U. L. REV., Issue 2 (forthcoming 2009), available at [http://ssrn.com/abstract\\_id=1240863](http://ssrn.com/abstract_id=1240863) [hereinafter Schwarcz, *Regulating Complexity*] (arguing that conflicts of interest independent of the originate-to-distribute model, involving ordinary agency costs, as well as a combination of herd mentality and complacency, can explain the lowered investing standards).

mortgage financial assets used in other types of securitization transactions.<sup>30</sup> Nor does it explain why the ultimate owners of the mortgage loans—the investors in the mortgage-backed securities—did not govern their investments by the same strict lending standards that they would observe but for the separation of origination and ownership.<sup>31</sup>

Although I do not believe the originate-to-distribute model was a material cause of the subprime crisis,<sup>32</sup> the model may need fixing to avoid its perception as the cause. There is little question, though, that the model should remain largely intact. It is critical to the underlying funding liquidity of banks and corporations.<sup>33</sup> Furthermore, scholars have at least tentatively concluded that, despite the subprime crisis, it has created value in the financial markets.<sup>34</sup> The goal therefore should be to minimize any potential moral hazard resulting from the originate-to-distribute model without undermining the model's basic utility.

There are various ways this could be done. Potential moral hazard problems could be managed, for example, by requiring mortgage lenders and other originators to retain some realistic risk of loss.<sup>35</sup>

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<sup>30</sup> Gorton, *supra* note 19, at 73–74.

<sup>31</sup> See generally William P. Alexander, et al., *Some Loans are More Equal than Others: Third-Party Originations and Defaults in the Subprime Mortgage Industry* (2001), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=281233](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=281233) (finding that although agency problems between lenders and third-party originators of subprime mortgage loans appear to make certain third-party-originated loans more likely to default, that higher default rate becomes recognized and priced in the loan interest rate).

<sup>32</sup> Jason Kravitt likewise believes that the originate-to-distribute model was not a material cause of the subprime crisis. KRAVITT, *supra* note 2, at 22. He argues that the parties involved in subprime mortgage securitization transactions suffered serious losses and ruined reputations, and hence there was no moral hazard. That does not obviate the possibility, though, that moral hazard motivated those parties to act as they did. Moral hazard must be judged *ex ante*, not *ex post*.

<sup>33</sup> See, e.g., Steven L. Schwarcz, *Protecting Financial Markets: Lessons from the Subprime Mortgage Meltdown*, 93 MINN. L. REV. 373, 388 n.74 (citing Joseph R. Mason, Assoc. Professor of Fin. & LeBow Research Fellow, Lebow Coll. of Bus., Drexel Univ., Presentation to the Federal Reserve Bank of Cleveland: Mortgage Loan Modification: Promises and Pitfalls (Nov. 20, 2007)) (presentation notes on file with author) (showing that fifty-eight percent of mortgage liquidity in the United States, and seventy-five percent of mortgage liquidity in California has come from structured finance).

<sup>34</sup> See Xudong An et al., *Value Creation Through Securitization: Evidence from the CMBS Market 3* (SSRN Working Paper No. 1095645, 2008), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1095645](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1095645) (“Despite recent constraints on secondary market funding and liquidity, securitization appears to have created value in financial markets.”).

<sup>35</sup> Schwarcz, *Protecting Financial Markets*, *supra* note 4, at 116; cf. Jan Pieter Krahnen & Guenter Franke, *The Future of Securitization* (SSRN, Working Paper No. 1284989, 2008), available at [http://www.ifk-cfs.de/fileadmin/downloads/publications/wp/08\\_31.pdf](http://www.ifk-cfs.de/fileadmin/downloads/publications/wp/08_31.pdf) (arguing for the importance of equity piece retention). Requiring originators to retain a risk of loss, however, is a two-edged sword because it also can create a “mutual misinformation” problem. See Schwarcz, *Regulating Complexity*, *supra* note 29, at 16–18 (observing that many underwriters of ABS CDO and other complex mortgage-backed securities did not fully understand the risks associated with their retained tranches, thereby signaling unjustified confidence in the securities being sold). Professor Mason also has argued that originator risk retention can create “cliff risk.” Joseph R. Mason, *Cliff Risk and the Credit Crisis* 12–14 (SSRN, Working Paper No. 1296250, 2008), available at <http://ssrn.com/abstract=1296250>.



In many non-mortgage securitization transactions, for example, it is customary for originators to bear a direct risk of loss by overcollateralizing the receivables sold to the SPV.<sup>36</sup> This was not always done in mortgage securitization because mortgage loans traditionally are overcollateralized by the value of the borrower's equity in the real-estate collateral,<sup>37</sup> and thus investors can effectively be overcollateralized even if the originator bears no separate risk of loss.<sup>38</sup>

Moral hazard problems also could be managed by regulating the loan underwriting standards applicable to mortgage lenders. The U.S. government took this type of approach, for example, in response to the margin loan underwriting failures that helped trigger the Great Depression. When stock values began depreciating in 1929, margin loans (that is, loans to purchase publicly-listed stock) became undercollateralized, resulting in a high loan default rate which, in turn, caused bank lenders to fail.<sup>39</sup> To protect against a recurrence of this problem, the Federal Reserve promulgated margin regulations G, U, T, and X, requiring margin lenders to maintain two-to-one collateral coverage when securing their loans by margin stock that has been purchased, directly or indirectly, with the loan proceeds.<sup>40</sup>

A similar type of approach, such as imposing a minimum real-estate-value-to-loan collateral coverage ratio on all mortgage loans secured by the real estate financed, would protect against a repeat of the subprime crisis. This protection would come at a high price, however, potentially impeding and increasing the cost of home ownership and imposing an administrative burden on lenders and government monitors.<sup>41</sup> Nor would it protect against different types of financial crises that might arise in the future.<sup>42</sup> Any regulatory approach, to be viable, should have to demonstrate that its benefits are at least likely to exceed its costs.<sup>43</sup>

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<sup>36</sup> Schwarcz, *Protecting Financial Markets*, *supra* note 4, at 116.

<sup>37</sup> In subprime mortgage securitizations, though, borrowers are not always required to put in equity. Investors therefore would have had greater justification in asking originators to bear a direct risk of loss by overcollateralizing subprime mortgage loans sold to SPVs.

<sup>38</sup> Schwarcz, *Protecting Financial Markets*, *supra* note 4, at 116. For an analysis of why investors and other parties, such as credit insurers, who, as a result of the originate-to-distribute model, ultimately bore the risk of loss in subprime mortgage securitizations did not adequately monitor the underlying mortgage loans, see Schwarcz, *Protecting Financial Markets*, *supra* note 4, at 117; Schwarcz, *Regulating Complexity*, *supra* note 29, at 16.

<sup>39</sup> Schwarcz, *Protecting Financial Markets*, *supra* note 4, at 107–08.

<sup>40</sup> 12 C.F.R. § 221.3 (2008).

<sup>41</sup> Schwarcz, *Protecting Financial Markets*, *supra* note 4, at 118 (examining this approach as well as other types of mortgage loan suitability standards).

<sup>42</sup> *Id.* at 111.

<sup>43</sup> Schwarcz, *supra* note 5, at 234–35.

### C. *Servicing Conflicts*

There is general agreement that mortgage securitization has made it difficult to work out problems with the underlying mortgage loans because the beneficial owners of the loans are no longer the mortgage lenders but a broad universe of financial-market investors in the MBS and other securities. Although servicers theoretically bridge the gap between investors (as beneficial owners of the loans) and the mortgage lenders, retaining the power to restructure the underlying loans “in the best interests” of those investors, the reality is problematic.

Servicers may be reluctant to engage in restructuring if there is uncertainty that their transactions will generate sufficient excess cash flow to reimburse their costs, whereas all foreclosure costs are reimbursed.<sup>44</sup> Servicers also may sometimes prefer foreclosure over restructuring because the former is more ministerial and thus has a lower litigation risk. In many CDO and ABS CDO mortgage securitization transactions, cash flows deriving from principal and interest are separately allocated to different investor tranches.<sup>45</sup> Therefore, a restructuring that, for example, reduces the interest rate, would adversely affect investors in the interest-only tranche, leading to what some have called “tranche warfare.”<sup>46</sup>

These problems—which currently are mostly confined to mortgage securitization<sup>47</sup>—can, and in the future should, be fixed. Parties should write underlying deal documentation that sets clearer and more flexible guidelines and more certain reimbursement procedures for loan restructuring, especially when restructuring appears to be superior to foreclosure.<sup>48</sup> They also should try to minimize allocating cash flows to investors in ways that create conflicts.<sup>49</sup> And consideration should be given to protecting servicers, whether contractually or through legislation, from liability for taking actions in good faith, akin to the business

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<sup>44</sup> Schwarcz, *Protecting Financial Markets*, *supra* note 4, at 121.

<sup>45</sup> The classes, or “tranches,” of securities issued in securitization transactions are “typically ranked by seniority of payment priority.” *Id.* at 105.

<sup>46</sup> *Id.* at 121.

<sup>47</sup> *Id.* at 116.

<sup>48</sup> In the subprime crisis, the underlying deal documentation is already in place and cannot be easily renegotiated. The government therefore might consider legislating changes, recognizing that any such changes that are subsidized in whole or part by government could foster moral hazard, potentially making future homeowners more willing to take risks when borrowing. Another approach, with less potential for moral hazard, is for government to legislatively insulate servicers from liability for taking actions in good faith, akin to the business judgment rule applied to performance of corporate directors. *Cf.* Steven L. Schwarcz & Gregory Sergi, *Bond Defaults and the Dilemma of the Indenture Trustee*, 59 ALA. L. REV. 1037, 1040–41 (2008) (explaining why indenture trustees on public bonds, presently obligated to act under a “prudent man” standard, should be protected by this rule). With this protection, servicers are more likely to engage in restructuring if, in their judgment, they believe that restructuring is likely to maximize overall value.

<sup>49</sup> *Cf.* AMERICAN SECURITIZATION FORUM ET AL., RESTORING CONFIDENCE IN THE SECURITIZATION MARKETS 7 (2008) [hereinafter RESTORING CONFIDENCE] (recommending harmonizing and improving securitization servicing standards).

judgment rule applied to performance of corporate directors.<sup>50</sup> With this protection, servicers would be more likely to engage in restructuring if, in their judgment, they believe that restructuring is likely to maximize overall value.

#### D. *Overreliance on Mathematical Models*

To some extent the subprime crisis resulted from an abandonment of common sense and an overreliance on complex mathematical models.<sup>51</sup> Models are essential to securitization because of the need to statistically predict what future cash flows will become available from the underlying financial assets to pay the securities issued by the SPV.<sup>52</sup>

Models can bring insight and clarity. If the model is realistic and the inputted data are reliable, models can yield accurate predictions of real events. However, if the model is unrealistic or the inputted data are unreliable, models can be misleading—creating the danger of “garbage in, garbage out.”<sup>53</sup>

Subprime mortgage securitization models relied on assumptions and historical data which, in retrospect, turned out to be incorrect and therefore made the valuations incorrect.<sup>54</sup> The models incorrectly assumed, for example, that housing would not depreciate in value to the levels presently seen.<sup>55</sup> Valuation errors were further compounded to the extent subprime mortgage loans increasingly were made with innovative terms, such as adjustable rates, low-to-zero down payment requirements, interest-only payment options, and negative amortization.<sup>56</sup> These terms were so

<sup>50</sup> See *supra* note 48.

<sup>51</sup> Cf. Karl S. Okamoto, *After the Bailout: Regulating Systemic Moral Hazard* 23 (SSRN, Working Paper No. 2009-W-01, 2008), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1292476](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1292476) (observing that underlying the subprime financial crisis “was an enormous faith in the market’s ability to analyze and measure risk”). Some of the overreliance may reflect that the complexity of the mortgage-backed securities made it difficult for investors to fully appreciate the risks they were incurring, tempting them to rely on such imperfect substitutes as rating-agency ratings and the results of mathematical models. Cf. Schwarcz, *Regulating Complexity*, *supra* note 29, at 32–40 (discussing why disclosure failed in the subprime crisis and the consequences of such failure).

<sup>52</sup> Schwarcz, *Regulating Complexity*, *supra* note 29, at 16–17 (discussing how statistical models utilized by monolines did not adequately test for the scenario of rapidly falling house prices, which led to many mono lines losing their AAA ratings).

<sup>53</sup> Cf. Emanuel Derman & Paul Wilmott, *Perfect Models, Imperfect World*, BUS. WK., Jan. 12, 2009, at 59, available at LEXIS, News Library, BUSWK File (discussing cash-flow modeling and concluding that, “[a]t bottom, financial models are tools for approximate thinking, a way to help transform one’s intuition about the future into a” useable number).

<sup>54</sup> Schwarcz, *Protecting Financial Markets*, *supra* note 4, at 398; see also Eugene Ludwig, Founder and CEO, Promontory Fin. Group, 10th William Taylor Memorial Lecture at the International Conference of Banking Supervisors 3 (Sept. 25, 2008) (stating that “it is widely accepted” now that the subprime mortgage securitization models used by rating agencies and other market participants relied on “insufficient data and faulty assumptions”).

<sup>55</sup> See *supra* notes 13–17 and accompanying text.

<sup>56</sup> EDWARD VINCENT MURPHY, CONG. RESEARCH SERV., ALTERNATIVE MORTGAGES: RISKS TO CONSUMERS AND LENDERS IN THE CURRENT HOUSING CYCLE 2 (2006), available at

complex that some borrowers did not fully understand the risks they were incurring.<sup>57</sup> As a result, they defaulted at a much higher rate than would be predicted by the historical mortgage-loan default rates relied on by loan originators in extending credit.<sup>58</sup>

Securitization models also have been used, sometimes erroneously, to substitute for real market information. For example, some CDO and ABS CDO securities did not have an active trading market, so investors instead relied on mark-to-model valuation of these securities. When assumptions underlying the models turned out to be wrong,<sup>59</sup> investors panicked because they did not know what the securities were worth.<sup>60</sup>

In theory, this overreliance on mathematical models is self-correcting because the subprime crisis, by its existence, has shaken faith in the market's ability to analyze and measure risk through models.<sup>61</sup> Securitization products are likely to be confined, at least in the near future, to those that can be robustly modeled. The only question will be the longevity of the lesson that future risks cannot always be predicted through mathematical models.<sup>62</sup>

### III. CONCLUSIONS

Because securitization, properly utilized, is an efficient financial tool,<sup>63</sup> its future should be assured no matter how investors or politicians might temporarily overreact. Nor should they overreact. As Professor Gorton observes,

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[http://assets.openers.com/rpts/RL33775\\_20061227.pdf](http://assets.openers.com/rpts/RL33775_20061227.pdf).

<sup>57</sup> PATRICIA A. MCCOY & ELIZABETH RENUART, JOINT CTR. FOR HOUS. STUDIES, HARVARD UNIV., THE LEGAL INFRASTRUCTURE OF SUBPRIME AND NONTRADITIONAL HOME MORTGAGES 17 (2008), available at [http://www.jchs.harvard.edu/publications/finance/understanding\\_consumer\\_credit/papers/ucc08-5\\_mccoy\\_renuart.pdf](http://www.jchs.harvard.edu/publications/finance/understanding_consumer_credit/papers/ucc08-5_mccoy_renuart.pdf).

<sup>58</sup> *Subprime Mortgage Market Turmoil: Examining the Role of Securitization: Hearing Before the S. Subcomm. on Securities, Insurance and Investments*, 110th Cong. 3–4 (2007) (statement of Kurt Eggert, Professor of Law, Chapman University School of Law), available at [http://banking.senate.gov/public/\\_files/eggert.pdf](http://banking.senate.gov/public/_files/eggert.pdf); EDWARD GOLDING, RICHARD K. GREEN, & DOUGLAS A. MCMANUS, JOINT CTR. FOR HOUS. STUDIES, HARVARD UNIV., IMPERFECT INFORMATION AND THE HOUSING FINANCE CRISIS 14 (2008), available at [http://www.jchs.harvard.edu/publications/finance/understanding\\_consumer\\_credit/papers/ucc08-6\\_golding\\_green\\_mcmanus.pdf](http://www.jchs.harvard.edu/publications/finance/understanding_consumer_credit/papers/ucc08-6_golding_green_mcmanus.pdf).

<sup>59</sup> Some of these wrong assumptions are discussed *supra* notes 55–56 and accompanying text.

<sup>60</sup> Schwarcz, *Regulating Complexity*, *supra* note 29, at 18; cf. RESTORING CONFIDENCE, *supra* note 49, at 7 (recommending the improvement of independent valuation procedures). This may include procedures for the valuation of securitized products that will not have active markets.

<sup>61</sup> Cf. *supra* note 51 (discussing the overreliance on faulty risk models by investors).

<sup>62</sup> Cf. Larry Light, *Bondholder Beware: Value Subject To Change Without Notice*, BUS. WK., Mar. 29, 1993, at 34, available at LEXIS, News Library, BUSWK File (discussing that within years after the Marriott “split,” investors favor higher interest rates over “event-risk” covenants, once the examples of events justifying the covenants have receded in memory).

<sup>63</sup> See Schwarcz, *supra* note 1, at 146 (discussing the cost-efficiency of securitization); *supra* note 2 and accompanying text (discussing the efficiency of securitization); see also Gorton, *supra* note 19, at 75 (concluding that “[s]ecuritization is an efficient, incentive-compatible, response to bankruptcy costs and capital requirements”); Ethan Penner, *The Future of Securitization*, WALL ST. J., July 10, 2008, at A15, available at LEXIS, News Library, WSJNL File (observing that “[s]ecuritization will continue to play an important role—if adapted appropriately”).

[t]here are no such issues [as occurred in the subprime crisis] with securitization generally, or with the use of off-balance sheet vehicles for the securitization of those [other] asset classes. Other securitizations are not so sensitive to the prices of the underlying assets and so they are not so susceptible to bubbles.<sup>64</sup>

Nonetheless, in the near future at least, it is likely that securitization transactions will need to refocus on basic structures and asset types in order to attract investors.<sup>65</sup> In particular, there will likely be an emphasis on cash-flow securitizations in which there are the traditional “two-ways out.”<sup>66</sup> Furthermore, we are not likely to see many highly complex securitization products, like CDO and ABS CDO transactions, which magnify leverage.<sup>67</sup>

In the medium term, securitization’s future will be at least marginally influenced by the extent to which the intrinsic values of mortgage-backed securities turn out to be worth more than their market values. I have argued that, as a result of irrational panic, the market prices of mortgage-backed securities collapsed substantially below the intrinsic value of the mortgage loans underlying those securities.<sup>68</sup> A large differential would indicate that the problem was more investor panic than intrinsic lack of worth.

Whether securitization will remain vibrant and inventive in the long term, however, will turn on our ability to better understand the problems of complexity, which was at the root of many of the failures that gave rise to the subprime crisis.<sup>69</sup>

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<sup>64</sup> Gorton, *supra* note 19, at 67.

<sup>65</sup> See generally Douglas Gale, *Standard Securities*, 59 REV. ECON. STUD. 731 (1992) (arguing that the cost of becoming informed about unfamiliar securities may lead to gains from standardizing securities); Andrew Davidson, *Reinventing Securitization: If It Ain’t Broke, Don’t Fix It. But What if It is Broken?*, THE PIPELINE, Feb. 2008, <http://www.ad-co.com/newsletter/2008/Feb08/Credit.htm> (advocating simpler securitization structures).

<sup>66</sup> In contrast, subprime mortgage securitizations had only one way out: home appreciation. See Schwarcz, *supra* notes 10–11 and accompanying text (discussing how home appreciation allowed mortgagors to refinance to lower mortgage rates). Similarly, we are unlikely to see many securitization transactions with balance sheet motivations. Cf. KRAVITT, *supra* note 2, at 14–15 (observing that “when securitization becomes an end in itself as opposed to a needed source of financing, certainly there is at least the potential for abuse”).

<sup>67</sup> Cf. Schwarcz, *supra* note 10; *supra* text accompanying notes 61–62. For a more detailed prediction of how practices will improve in the securitization industry, see KRAVITT, *supra* note 2, at 23–25.

<sup>68</sup> Schwarcz, *supra* note 10, at 23 n.75 (estimating the intrinsic value by examining the mortgage loans underlying the securities and ascertaining which were subprime, which were prime, and which were delinquent or in default).

<sup>69</sup> See *supra* notes 6–7, 44–46, 51, 57–58 and accompanying text (indicating where problems of complexity contributed to the subprime crisis); cf. Schwarcz, *Regulating Complexity*, *supra* note 29, at 2–4 (examining how the complexities of modern financial markets and investment securities can trigger market failures).