NOTES

THE PERILS OF FRAGMENTATION AND RECKLESS INNOVATION

In June 2009, the Financial Crisis Inquiry Commission (FCIC) was constituted to "examine the causes, domestic and global, of the current financial and economic crisis in the United States."[1] More than eighteen months later, it released a report concluding that the impacts of the crisis were "likely to be felt for a generation,"[2] and revealing that "more than 26 million Americans . . . [were] out of work" or unable to find full-time employment, roughly four million families had lost their homes to foreclosure (and nearly four and a half million more were "seriously behind" on mortgage payments), and "[n]early $11 trillion in household wealth ha[d] vanished."[3] The FCIC also cautioned that the United States' financial sector continued to be unstable and emphasized that serious issues remained that "must be addressed and resolved to restore faith in our financial markets [and] to avoid the next crisis."[4]

In response to the conclusions of the FCIC, numerous commentators were quick to offer their own analyses of the roots of the crisis.[5] Although none went so far as to blame the financial crisis on a sole cause, there was broad agreement that the creation of and widespread reliance on one popular type of securitization — collateralized debt obligations (CDOs) — played a significant role in the development of the housing bubble, as these instruments often relied upon real property as their primary underlying asset.[6] These securities appear to have been misunderstood by significant players in the market, which eventually

---

[1] *History of the Commission*, FINANCIAL CRISIS INQUIRY COMMISSION, http://fcic.law.stanford.edu/about/history (last visited Mar. 25, 2012) (quoting Fraud Enforcement and Recovery Act of 2009, Pub. L. No. 111-21, § 5, 123 Stat. 1617, 1625 (codified as amended in scattered sections of 18 and 31 U.S.C.)).

[2] FIN. CRISIS INQUIRY COMM'N, THE FINANCIAL CRISIS INQUIRY REPORT xvi (2011), *available at* http://fcic-static.law.stanford.edu/cdn_media/fcic-reports/fcic_final_report_full.pdf.

[3] *Id.* at xv. These figures were accurate as of January 2011.

[4] *Id.* at xxviii.

[5] *See, e.g.*, Joe Nocera, *Inquiry is Missing Bottom Line*, N.Y. TIMES, Jan. 29, 2011, at B1 (laying the blame on the public's "mass delusion" about continuing upward trends in housing prices); Dean Baker, *The Wrong Crisis: The FCIC Forgets the Housing Bubble*, BOS. REV. (Feb. 7, 2011), http://www.bostonreview.net/BR36.1/baker-fcic-housing.php (criticizing the FCIC for focusing on "risky investments, lax regulation, [and] excessive leverage").

[6] *See, e.g.*, Felix Salmon, *A Formula for Disaster*, WIRED, Mar. 2009, at 74; David Fiderer, *The CDOs that Destroyed AIG*, HUFFINGTON POST (Mar. 15, 2010, 5:17 PM), http://www.huffingtonpost.com/david-fiderer/the-cdos-that-destroyed-a_b_499875.html.

led to severe financial instability.[7] Thus, abstracted to an extremely basic and simplistic level, the financial crisis can be viewed partially as a consequence of the market's moving away from a unitary, straightforward conception of a property interest to a more complex one without sufficient attention to the risks that accompanied such a modification.

Property theory can help explain why reliance on this innovative financial vehicle logically would lead to financial instability and ultimately recession.[8] To date, only a handful of commentators have attempted to explain the crisis using established property law theories as an analytical tool.[9] Those who have done so focus on what the financial crisis has revealed about "the nature of property, ownership, and community"[10] — in other words, on what the crisis reveals about the very *conception* of property itself — rather than on what theories about use and management of property can reveal about the origins of the financial crisis.

This Note endeavors to take this second approach. By applying two prominent property theories — the concept of the tragedy of the anticommons, and the rationale of the *numerus clausus* principle — it reveals how the concerns animating these theories contributed to the advent of the financial crisis. Part I provides a broad overview of the events leading up to the 2008 collapse. Part II details the development and functioning of CDOs, explaining why this type of securitization is ubiquitous in varying accounts of the economic meltdown. Part III details two important theories in property law — Professor Michael Heller's fragmentation or anticommons theory, and Professors Thomas Merrill and Henry Smith's justification for the existence and endurance of the *numerus clausus* principle — and explicates how both illuminate the events that precipitated the crisis.

I. OVERVIEW OF THE FINANCIAL CRISIS

Thousands of pages have already been written in an attempt to explain the origins of the 2008 financial crisis. This Part does not purport to provide the same kind of comprehensive background that can

---

[7] *See generally* MICHAEL LEWIS, THE BIG SHORT (2010) (recounting how almost no one in the financial sector recognized the extreme risks they were taking by investing heavily in these new financial instruments).

[8] *Cf.* Edward J. Janger, *Privacy Property, Information Costs, and the Anticommons*, 54 HASTINGS L.J. 899, 921–22 (2003) (suggesting there may be a set of costs well understood by property theorists but not by policymakers regarding the effect of modification on property interests).

[9] *See, e.g.*, Nestor M. Davidson & Rashmi Dyal-Chand, *Property in Crisis*, 78 FORDHAM L. REV. 1607, 1607 (2010) (discussing how the financial crisis has caused many to reevaluate "fundamental questions about the nature of ownership").

[10] *Id.* at 1611.

be found in many longer narratives,[11] but instead serves as a basic roadmap of events, in order to provide context for the analysis that follows.

A. Early Foundation

With the benefit of hindsight, many scholars trace the origins of the 2008 financial crisis to two significant developments in the financial landscape that occurred in the late 1990s: national politicians' pushing the mortgage industry to expand home-ownership opportunities to Americans for whom this had long been an impossibility, and the passage of the Gramm-Leach-Bliley Act.[12] The first of these developments led to the extension of home loan options to high-risk, often low-income borrowers, with politicians pushing ownership in part by lessening the regulatory controls for obtaining a loan.[13] In 1999, Congress passed the Gramm-Leach-Bliley Act,[14] repealing certain banking regulations that had been in place for over sixty years. Notably, the Act eliminated provisions that prohibited a bank holding company from owning other financial institutions, a change that "enabled banks to become retail and investment operations and combine with insurance companies."[15] As a consequence, no structure remained in place to prevent massive consolidation of banking institutions.[16]

Against this backdrop, banks began to facilitate home ownership by offering loans to risky borrowers[17] and through the creation of a variety of other offerings — such as adjustable-rate mortgages[18]

---

[11] *See, e.g.*, LEWIS, *supra* note 7; ROGER LOWENSTEIN, THE END OF WALL STREET (2010) (chronicling business miscalculations that led to excessive risk taking); LAWRENCE G. MCDONALD WITH PATRICK ROBINSON, A COLOSSAL FAILURE OF COMMON SENSE (2009) (focusing on collapse of Lehman Brothers); ANDREW ROSS SORKIN, TOO BIG TO FAIL (2009) (highlighting role of Washington politicians).

[12] *See, e.g.*, Stephen Rose, *Understanding the Financial Crisis*, STATS (Sept. 26, 2008), http://stats.org/stories/2008/understanding_financial_crisis_sept28_2008.html.

[13] *Id.*

[14] Pub. L. No. 106-102, 113 Stat. 1338 (1999) (codified in scattered sections of 12 and 15 U.S.C.).

[15] Jill Treanor, *Never Again: The Great Depression–Inspired Law to Protect Deposits*, GUARDIAN, Jan. 22, 2010, at 7.

[16] Mark Sumner, *John McCain: Crisis Enabler*, NATION (Sept. 21, 2008), http://www.thenation.com/article/john-mccain-crisis-enabler.

[17] The term "risky borrower" may understate the extent to which banks abdicated their role as a gatekeeper. The FCIC, for example, found that "[m]any mortgage lenders set the bar so low that lenders simply took eager borrowers' qualifications on faith, often with a willful disregard for a borrower's ability to pay." FIN. CRISIS INQUIRY COMM'N, *supra* note 2, at xxiii.

[18] *See* Gary B. Gorton, *The Panic of 2007*, at 12–13 (Nat'l Bureau of Econ. Research, Working Paper No. 14358, 2008), *available at* http://www.nber.org/papers/w14358. The payments on such loans change over time with changing interest rates, permitting borrowers to lower their initial payments if they are willing to assume the risk of such changes. However, many of these loans have "teaser periods" of extremely low rates to entice unsophisticated borrowers who may not fully understand the consequences of signing such a loan. *See* Rose, *supra* note 12.

(ARMs), which allowed individuals with little de facto income to meet their payments through refinancing.[19] This model of repayment therefore was highly contingent upon continued home value appreciation, which allowed the mortgagor "to refinance to a lower rate mortgage before the ARM rate increase kicked in."[20] Simultaneously, government-sponsored enterprises — such as Fannie Mae and Freddie Mac — and major U.S. investment banks also began extending loans to higher-risk individuals in order to facilitate such home mortgages.[21] Indeed, the incentives for loan originators, who "were paid on the basis of how many loans they could sell without much consideration of what the future default rate would be," led to widespread promotion and adoption of instruments like ARMs.[22] By buying mortgages from banks or other lenders and either reselling them to Wall Street investors or holding onto them, these entities allowed bank loans to proliferate further, expanding the pool of homeowners while reaping hefty profits themselves.[23]

B. The Securitization of Property-Based Investments

It did not take long for Fannie, Freddie, and other financial entities to recognize that selling different components of the underlying home loans or packaging them together into new debt vehicles had the potential to be extremely lucrative.[24] The involvement of government entities and financial institutions in the loan market thus eventually led to the creation of numerous innovative securities — such as mortgage-backed securities (MBSs) and CDOs — that used pools of loans as their underlying raw material.[25]

Financial players soon relied heavily on mortgage-related securities; in retrospect it appears that they severely misunderstood the risks of holding these instruments.[26] Indeed, the complexity of the newly de-

---

[19] *See* Steven L. Schwarcz, *Keynote Address: Understanding the Subprime Financial Crisis*, 60 S.C. L. REV. 549, 550–51 (2009).

[20] *Id.* at 551.

[21] *See, e.g.*, Charles Duhigg, *Pressured to Take More Risk, Fannie Reached Tipping Point*, N.Y. TIMES, Oct. 5, 2008, at A1 ("Fannie [Mae] . . . had long helped Americans get cheaper home loans by serving as a powerful middleman . . . .").

[22] Rose, *supra* note 12.

[23] Duhigg, *supra* note 21.

[24] *See* Rose, *supra* note 12 (stating that such techniques were "a great way to add more money to the mortgage market"); *see also* Kathryn Judge, *Fragmentation Nodes: A Study in Financial Innovation, Complexity, and Systemic Risk*, 64 STAN. L. REV 657, 671 (2012) ("The insight at the core of securitization is that the party in the best position to originate a home loan . . . may not be in the best position to hold the risks and expected returns on that loan. Separating the two roles allows each to be played by the party best suited to that role.").

[25] *See* Judge, *supra* note 24, at 669–84.

[26] *See, e.g.*, Press Release, White House, Declaration of the Summit on Financial Markets and the World Economy (Nov. 15, 2008), *available at* http://georgewbush-whitehouse.archives

veloped financial assets made them difficult to value.[27] Nevertheless, "investors were reassured by the fact that both the bond rating agencies and bank regulators accepted presumably sophisticated models, which showed the risks were small."[28] These models were complicated, often involving a process called tranching, which "divides a pool [of underlying assets] and allows for the creation of safe bonds with a risk-free triple-A credit rating."[29] Rating agencies, and thus investors, believed that triple-A tranches were incredibly safe — they posited that the probability that hundreds of homeowners would simultaneously default on their loans was vanishingly small, and thus they assumed that the underlying mortgage pool would be a fairly secure investment as a whole.[30] This assumption developed into a widespread expectation that the value of housing markets would continue to rise.

Through tranching, any number of securities could be bundled and turned into a "risk-free" bond, with the consequent pools being CDOs.[31] These CDOs could be tranched to create a triple-A security, even if the individual components comprising the security had low credit ratings.[32] And, when MBS and CDO securities proved lucrative, Wall Street created even more novel and complex securities — such as the CDO-squared[33] and synthetic CDO[34] — along with other composite products, such as credit default swaps[35] (CDSs). In essence, a basic two-party home loan had become incorporated into a "complex web of arrangements" granting numerous disconnected persons a financial stake in the asset.[36] Through this process, "[t]rillions of dollars

.gov/news/releases/2008/11/20081115-1.html ("[M]arket participants sought higher yields without an adequate appreciation of the risks and failed to exercise proper due diligence.").

[27] *See infra* pp. 1817–18.

[28] Floyd Norris, *Another Crisis, Another Guarantee*, N.Y. TIMES, Nov. 25, 2008, at B1.

[29] *See* Salmon, *supra* note 6, at 77 ("Investors in the first tranche, or slice, are first in line to be paid off. Those next in line might get only a double-A credit rating on their tranche of bonds but will be able to charge a higher interest rate for bearing the slightly higher chance of default. And so on.").

[30] *Id.*

[31] *Id.*; *see also id.* at 78–79.

[32] *Id.* at 79.

[33] *Id.* (defining CDO-squared as an instrument created by "tak[ing] lower-rated tranches of *other* CDOs, put[ting] them in a pool, and tranch[ing] them . . . which at that point was so far removed from any actual underlying bond or loan or mortgage" as to be incomprehensible).

[34] *See* Judge, *supra* note 24, at 682 ("Synthetic CDOs are backed by a pool of credit default swaps referencing MBSs or other assets, rather than actual cash-producing assets.").

[35] FIN. CRISIS INQUIRY COMM'N, *supra* note 2, at xxiv. CDSs were "sold to investors to protect against the default or decline in value of mortgage-related securities backed by risky loans," *id.*, but were as poorly understood as the securitized markets they were intended to insure against, *see generally* LEWIS, *supra* note 7.

[36] Judge, *supra* note 24, at 676; *see also* Salmon, *supra* note 6, at 79 ("The CDS and CDO markets grew together, feeding on each other. At the end of 2001, there was $920 billion in credit default swaps outstanding. By the end of 2007, that number had skyrocketed to more than $62 *trillion*. The CDO market, which stood at $275 billion in 2000, grew to $4.7 trillion by 2006.").

in risky mortgages [became] embedded throughout the financial system, as mortgage-related securities were packaged, repackaged, and sold to investors around the world."[37]

C. Bursting the Bubble

Although "the vulnerabilities that created the potential for crisis were years in the making," many scholars and analysts believe that the housing market collapse ultimately sparked the all-out crisis.[38] Bankers' models for securitizing mortgages were extremely sensitive to housing price fluctuations.[39] The risk assessment of tranches had been based on the assumption that a wide pool of underlying housing assets mitigated the risk presented by the possibility of individual defaults, thus creating a stable security; however, the downtick in home value affected all owners at once.[40] After peaking in 2006, housing prices began to decline steadily.[41] Borrowers with ARMs quickly discovered that they were unable to refinance to avoid the higher payments associated with rising interest rates, and defaulted on their home loans en masse. Moreover, because housing defaults can be correlative,[42] foreclosure rates began rising steeply throughout the nation.[43]

When the housing market crashed, people holding the newly created securities (which had repackaged mortgage pools as their underlying assets) were in trouble.[44] Suddenly financial institutions found themselves on the hook for billions, possibly more, and unable to accurately price the risk they had assumed as market conditions continued to change.[45] This predicament led to widespread institutional instability,[46] the economic reverberations and consequences of which are still being felt today.

---

[37] FIN. CRISIS INQUIRY COMM'N, *supra* note 2, at xvi.

[38] *Id.*

[39] Salmon, *supra* note 6, at 112.

[40] *See id.*

[41] *A Helping Hand to Homeowners*, ECONOMIST, Oct. 25, 2008, at 92, 92 (graphing the twenty percent decline in housing prices from 2006 to 2008).

[42] *See* Salmon, *supra* note 6, at 77 ("If home values in your neighborhood decline and you lose some of your equity, there's a good chance your neighbors will lose theirs as well. If, as a result, you default on your mortgage, there's a higher probability they will default, too.").

[43] *See, e.g.*, RealtyTrac Staff, *U.S. Foreclosure Activity Increases 75 Percent in 2007*, REALTYTRAC (Jan. 30, 2008), http://www.realtytrac.com/content/press-releases/us-foreclosure-activity-increases-75-percent-in-2007-3604?accnt=64847.

[44] *See* Salmon, *supra* note 6, at 112.

[45] *See* FIN. CRISIS INQUIRY COMM'N, *supra* note 2, at xvi, xx.

[46] The story of the bank bailouts and the failure of various financial institutions, such as Lehman Brothers, is beyond the scope of this Note. For narratives on these subjects, see, for example, MCDONALD WITH ROBINSON, *supra* note 11; and SORKIN, *supra* note 11.

II. NARROWING THE FOCUS: CDOS

Most commentators agree that the creation of and widespread reliance on CDOs played a significant role in the unraveling of the economy.[47] The term CDO is an "umbrella term" for securitization vehicles that contain a portfolio of assets that could include bonds, loans, asset-backed securities (including MBSs), or credit derivatives.[48] However, when this Note uses the term, and more generally in the context of the 2008 financial crisis, it is most frequently referencing those CDOs backed "exclusively or in significant part by MBSs."[49]

A. How CDOs Operate

A CDO is split into tranches according to different risk classes and return characteristics.[50] This process subdivides the security into parcels that appeal to different kinds of investors.[51] When profits are created by the CDO, holders of the higher tranches are paid first, and persons in the lower tranches — those who assumed the most default risk — are subsequently paid in a sequence customized for each CDO.[52] The simplest CDOs consist of three tranches, typically denoted as senior, mezzanine, and equity. The senior tranche has the first contractually specified claim on the mortgage portfolio:

> If the return on the mortgage portfolio falls short of this claim, the holders of the senior tranche get the entire return and share it according to the shares of the senior tranche that they hold. If the return on the mortgage portfolio exceeds the claim of the senior tranche, the claim of the senior tranche is paid off.[53]

Holders of the mezzanine tranche also have contractually specified claims on the asset portfolio, but these claims are only addressed after the senior tranche claims have been satisfied. Any excess return over the claim of the senior tranche is split among mezzanine tranche hold-

---

[47] *See, e.g.*, Salmon, *supra* note 6, at 76; Fiderer, *supra* note 6.

[48] *See* Salmon, *supra* note 6, at 79 (noting that a CDO could contain "whatever you liked").

[49] Judge, *supra* note 24, at 681. Remember that an MBS "is a pool of thousands of risky mortgages." *This American Life: The Giant Pool of Money*, Chicago Public Radio (May 9, 2008), *available at* http://www.thisamericanlife.org/radio-archives/episode/355/the-giant-pool-of-money [hereinafter *Giant Pool of Money*]. Thus a CDO was simply a pool of these smaller mortgage pools.

[50] *See infra* p. 1811.

[51] Catherine Donnelly & Paul Embrechts, *The Devil is in the Tails: Actuarial Mathematics and the Subprime Mortgage Crisis*, 40 ASTIN BULL. 1, 5 (2010).

[52] *See* Judge, *supra* note 24, at 681 ("Cash flows, in the form of interest and principal from the underlying assets . . . [are] paid out to investors or retained in the vehicle pursuant to detailed waterfall provisions put into place when the transaction is consummated."); *see also* Felix Salmon et al., *What's a C.D.O.?*, PORTFOLIO (Dec. 5, 2007), http://www.portfolio.com/interactive-features/2007/12/cdo.

[53] Martin F. Hellwig, *Systemic Risk in the Financial Sector: An Analysis of the Subprime-Mortgage Financial Crisis*, 157 DE ECONOMIST 129, 139 (2009).

ers according to share.[54] Holders of the lowest tranche, the equity tranche, receive whatever remains after the claims of the other tranches have been served.[55]

Credit agencies determine the seniority of a tranche through use of a published, standardized process that discerns the risk involved and then rate and divide the CDO and its underlying assets based on this formula.[56] Before the crisis, it was taken as axiomatic that strong diversification within a CDO reduced the security's risk, and thus investors commonly pursued a strategy of combining divergent MBSs into a common pool to form a CDO.[57] Additionally, asset managers often set guidelines establishing loan characteristic criteria, which allowed for partial standardization of payment to investors while permitting CDOs to be fairly customizable.[58]

A mortgage servicer (who does not own any part of the mortgages) services the mortgages in a securitized pool according to a Pooling and Servicing Agreement (PSA) and receives investor fees proportional to the total principal of the underlying mortgages.[59] These servicers have the ability, subject to the terms of the PSA, to modify the terms of the underlying mortgages. Although "[s]ervicers have a duty to service loans in the best interest of the aggregate investor and to maximize the net present value on loans," making modifications in underlying assets can sometimes help certain investors at the expense of the others.[60] Moreover, such modifications sometimes result in reduced servicer compensation, which introduces an element of moral hazard into the process.[61]

B. The Role of CDOs in the Financial Crisis Examined

CDOs not only exacerbated the financial crisis once panic struck the marketplace, but they also financed the housing bubble that engendered crisis in the first instance. By 2007, there was roughly $70 trillion worth of global savings in fixed-income securities available for

---

[54] *Id.*

[55] *Id.*

[56] Kenneth Ayotte & Patrick Bolton, *Covenant Lite Lending, Liquidity, and Standardization of Financial Contracts*, *in* RESEARCH HANDBOOK ON THE ECONOMICS OF PROPERTY LAW 174, 174 (Kenneth Ayotte & Henry E. Smith eds., 2011).

[57] *See id.*

[58] *Id.* ("These restrictions provide a list of characteristics to which the manager must adhere in assembling the loans in the pool."); *see also* Judge, *supra* note 24, at 681 (stating that because the assets underlying a CDO are so diverse, "the process of compiling assets and designing waterfalls to determine when interest and principal are to be paid to investors is often . . . complex").

[59] *See* David A. Dana, *The Foreclosure Crisis and the Antifragmentation Principle in State Property Law*, 77 U. CHI. L. REV. 97, 104 (2010).

[60] CONG. OVERSIGHT PANEL, FORECLOSURE CRISIS: WORKING TOWARD A SOLUTION 43 (2009).

[61] *Id.* at 43–44.

investment, but too few low-risk investments available in the marketplace to satisfy investors looking to grow that pool of money.[62] Investors had traditionally turned to "safe" investments, such as treasury and municipal bonds, to both protect and systematically increase the value of their portfolios, but were now becoming frustrated by the low yields these instruments consistently offered.[63] Recognizing a great demand for relatively safe, income-generating investments, investment banks on Wall Street formulated ways to capture the higher yield attributes of a mortgage investment without "the hassle and risk."[64] One of the most successful and profitable tools created was the CDO, which appeared nearly risk free due to its unique structure but nevertheless generated consistent positive returns.[65]

CDOs soon became "almost exclusively" purchased by "institutional investors with substantial assets and resources," who were presumed to be sophisticated actors.[66] Simultaneously, investment entities reaped significant profits from the sale of CDOs by amassing fees at every step along the supply chain of CDO production, transfer, and sale.[67] Many investment banks themselves began to hold and trade a large volume of CDOs in order to obtain a share of the profits that these securities generated.[68]

However, the strong demand for CDOs drove down the lending standards for the home loans underlying the mortgages as originators sought to create more assets that investors could use as raw material for these and other securities.[69] These lowered standards eventually led to the housing bubble; as more Americans began to enter the housing market, housing prices steadily rose.[70] The bubble led to more CDO creation, as the security seemed ever more profitable and riskless.[71] But when the bubble burst, CDOs quickly became liabilities for the many financial institutions that held them, which led to the instability of major financial institutions.[72] By 2008, it was estimated

---

[62] *Giant Pool of Money*, *supra* note 49. The $70 trillion figure had doubled since 2000 due to a variety of factors — including discovery of oil and rapid industrialization in foreign nations — that produced a marketplace with "twice as much money looking for investments, but . . . [without] twice as many good investments." *Id.*

[63] *Id.*

[64] *Id.*

[65] *See supra* p. 1803.

[66] Judge, *supra* note 24, at 682.

[67] *Cf. Giant Pool of Money*, *supra* note 49.

[68] *See generally*, *e.g.*, SORKIN, *supra* note 11.

[69] *See Giant Pool of Money*, *supra* note 49.

[70] *Id.*

[71] *Id.* ("It's obvious that [CDOs] performed well, now, because their property kept increasing in value.").

[72] *See* Mark Pittman, *Bear Stearns Fund Collapse Sends Shock Through CDOs*, BLOOMBERG (June 21, 2007, 9:35 AM), http://www.bloomberg.com/apps/news?pid=newsarchive

that "most of the AAA rated mortgage-backed CDOs that the industry created since 2006 [were] now worth less than half their value."[73]

III. A PROPERTY THEORY EXPLANATION

The economic story of the CDO's role leading up to and through the crisis is "deeply grounded in and evocative of property,"[74] given that the security utilized pools of real property as its underlying assets. This Part examines how lessons derived from the theory of the anticommons and the *numerus clausus* shed light on the problems experienced by financial actors dealing with CDOs.

A. Fragmentation and the Anticommons

Legal scholars generally justify recognition of property rights as one means of ensuring that people do not squander or degrade resources of value through poor management or misuse. In *The Tragedy of the Commons*, Professor Garrett Hardin set forth the now-familiar common-property dilemma: when rational beings — each independently seeking to maximize his gain — have entry to shared or open-access property, those individuals will overconsume the common resources found therein to the detriment of all parties' long-term welfare.[75] Hardin concluded that some allocation of rights was necessary in order to prevent the tragedy of the commons from devaluing open-access resources.[76]

But many subsequent property theorists — including, perhaps most prominently, Professor Michael Heller — have posited that *excessive* rights allocation can lead to devaluation as well.[77] These scholars ar-

---

&sid=ahWfhEJ7dra4 ("An auction that confirms concerns that CDOs are overvalued may spark a chain reaction of writedowns that causes billions of dollars in losses for everyone from hedge funds to pension funds to foreign banks.").

[73] *Giant Pool of Money*, *supra* note 49.

[74] Davidson & Dyal-Chand, *supra* note 9, at 1610. "The run-up to the crisis grew fairly directly from ownership of that most iconic of possessions, the home. . . . The result was a corresponding proliferation of subprime residential mortgage-backed securities and the downstream financial structures that fueled, and were fueled by, a housing bubble." *Id.* at 1634.

[75] *See* Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243, 1244 (1968) ("Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all."). Hardin was not the first scholar to identify this problem. *See, e.g.*, Peder Anderson, *"On Rent of Fishing Grounds": A Translation of Jens Warming's 1911 Article, with an Introduction*, 15 HIST. POL. ECON. 391, 395 (1983); H. Scott Gordon, *The Economic Theory of a Common-Property Resource: The Fishery*, 62 J. POL. ECON. 124, 129 (1954).

[76] *See* Hardin, *supra* note 75, at 1245 (suggesting that creation of private property rights, allocating the right to enter, auctioning access, setting standards of entry, or enacting a system of regulation are possible solutions).

[77] *See, e.g.*, Michael A. Heller, *The Boundaries of Private Property*, 108 YALE L.J. 1163, 1166 (1999) (asserting that strong exclusionary rights in parcelized property can lead to an unproduc-

gue that the same boundary-drawing strategies used to mitigate or avoid the tragedy of the commons can, when overutilized, lead to an equally undesirable outcome — the development of an "anticommons."[78] An anticommons essentially creates the inverse of the tragedy of the commons problem: namely, because multiple persons retain the right to exclude others from using a valuable resource, that resource will end up being used inefficiently as each individual makes rational choices to maximize and internalize his own benefit from that resource, while imposing costs on other rightsholders or on third parties seeking access. As a consequence, anticommons result in systemic underutilization of property resources, thereby creating inefficiencies that burden society.

1. Excessive Fragmentation Leads to Coordination Problems. — When a legal regime grants protection to fragments of property, it gives multiple owners rights to use (or exclude others from) a common resource.[79] However, this fragmentation "creates conditions for suboptimal use" of the property: because the costs of enforcing rights are not fully internalized by the multiple holders, rightsholders may choose to exercise exclusion more frequently than is socially desirable.[80] Thus, even if a certain use of property might create net social benefits, each of the nonbenefiting individuals — acting competitively and rationally — is still incentivized to block this use of the common property because he personally will not share in the reward of allowing the activity to occur and will suffer little to no cost by prohibiting it.

Heller explained the dilemma of the anticommons through discussion of the empty storefronts pervasive throughout Moscow shortly after the fall of Communism.[81] According to Heller, despite several years of reform away from a socialist economy, coveted and valuable

---

tive anticommons); Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 SCIENCE 698, 698 (1998) (exploring the impacts of robust intellectual property rights on downstream development and innovation in health products); Norbert Schulz et al., *Fragmentation in Property: Towards a General Model*, 158 J. INSTITUTIONAL & THEORETICAL ECON. 594, 610 (2002) (offering a model showing that excluders' private incentives do not capture all negative externalities that individual decisions to utilize this right creates).

[78] Professor Frank Michelman expressed the idea of an anticommons through his term "regulatory regime": a property regime "in which everyone always has rights respecting the objects in regime, and no one, consequently, is ever privileged to use any of them except as particularly authorized by others." Frank I. Michelman, *Ethics, Economics and the Law of Property*, *in* NOMOS XXIV: ETHICS, ECONOMICS, AND THE LAW 3, 6 (J. Roland Pennock & John W. Chapman eds., 1982).

[79] *See* Heller, *supra* note 77, at 1165–66. Fragmentation can also sometimes simply result in small, economically inefficient parcels of property that are prone to waste through overuse or underuse. *Id.*

[80] Schulz et al., *supra* note 77, at 594–95.

[81] Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621, 633–40 (1998).

storefront properties in Moscow remained barren and unutilized, even as less desirable and less secure metal kiosks offering consumer goods sprung up throughout the city streets.[82] To account for this puzzling state of affairs, Heller examined the ownership structures of the storefronts in the city; he discerned that, when moving from a system of collective ownership to one recognizing private ownership over property resources, Russia's transitional regime "failed to endow any individual with a bundle of rights that represent[ed] full ownership of storefronts."[83] Instead, the government allocated property rights as extremely fragmented portions of the ownership interest; "one owner may be endowed initially with the right to sell, another to receive sale revenue, and still others to lease, receive lease revenue, occupy, and determine use."[84]

As a consequence of this fragmentation, the storefront property became frustratingly difficult to utilize effectively, for two primary reasons. First, the holders of the different fragmented portions of ownership sometimes had contradictory ideas about how to maximize their interests, such that they pursued incompatible uses — this led to collective action problems whereby no action was possible as some rightsholders blocked the actions of the others.[85] Second, "because multiple parties may hold the same right," even parties with the same goals had to engage in costly bargaining and coordination efforts, which made taking steps to productively use the property dramatically more difficult, time-consuming, and resource-intensive.[86] Heller concluded that "[m]oving a storefront from anticommons to private property ownership requires unifying fragmented property rights into a usable bundle," or else the resource is likely to languish in its socially inefficient state.[87]

As the Moscow storefronts example illustrates, the development of an anticommons results in the systematic underutilization of common resources and creates an environment where "common resources will remain idle even in the realm of positive marginal productivity."[88] Thus, valuable resources become "prone to waste,"[89] which in turn may create dynamic societal externalities since "underuse of productive

---

[82] *See id.* at 633.

[83] *Id.* at 623.

[84] *Id.*

[85] *See id.* at 639 ("The tragedy of the storefront anticommons is that owners waste the resource when they fail to agree on a use.").

[86] *Id.*; *see also id.* at 623 ("No one can set up shop without collecting the consent of all the other owners.").

[87] *Id.* at 640.

[88] Schulz et al., *supra* note 77, at 595.

[89] Heller, *supra* note 77, at 1166.

inputs today bears consequences into the future."[90] This problem is further exacerbated by the fact that division of property into ever-smaller fragments can operate as "a one-way ratchet."[91] Because "re-unifying fragmented property rights usually involves transaction and strategic costs higher than those incurred in [dividing the property]," disaggregation, once effectuated, can often only be undone after considerable time and effort.[92]

2. CDOs Resulted in Fragmentation of the Right to Modify Home Loan Terms, Contributing to the Devaluation of Homes Throughout the Nation. — Fragmentation of property interests, as described by Heller, occurred in the financial sector in the years leading up to the 2008 financial crisis through the creation of various securities that gave more parties interests in the home loan process. Prior to the creation of securitized pools of home loans (such as CDOs), the process of obtaining secured credit on a home was fairly straightforward — it entailed a bilateral arrangement between the loan-originating bank and the party borrowing financing for the home.[93] In such an arrangement, the bank had the unilateral ability to modify a problematic loan if it believed the benefits of doing so exceeded the gains that would result from foreclosure.[94] This meant that foreclosure could be forestalled through simple negotiations by two parties resulting in a changed arrangement that would be mutually beneficial, albeit different from the original agreement. It also meant, however, that originator banks alone benefited from the interest paid on the home loan.

The development of innovative financial instruments by Wall Street fundamentally changed this basic structure. Instead of a bilateral arrangement between a bank and a borrower, a single mortgage could be "transformed into tens or hundreds or even thousands of distinct investment interests."[95] The advent of these new securities turned a home loan into an arrangement involving a multitude of actors, each with a stake in how the underlying loan was modified or paid off.[96] This arrangement caused few problems when home values were on the rise, as modification of the underlying home loans was not a necessary or pressing issue to the holder of a CDO or to the homeowner himself. Once the housing bubble burst, however, it was clear that many mortgage agreements would need to undergo significant

---

90 Schulz et al., *supra* note 77, at 595.
91 Heller, *supra* note 77, at 1165; *see also id.* at 1165–66.
92 Francesco Parisi, *Entropy in Property*, 50 AM. J. COMP. L. 595, 596 (2002).
93 *See* Dana, *supra* note 59, at 102.
94 *See id.* at 102–03.
95 *Id.* at 103.
96 *See supra* section II.A, pp. 1805–06.

modifications — and quickly — to prevent widespread foreclosure and value loss to investors.[97]

But difficulties akin to those attending the fragmentation of ownership interests in the Moscow storefronts also accompanied these modern-day liquidity enhancements. First, much as Russian owners holding different kinds of ownership interests sometimes found themselves operating at cross-purposes when determining how to put a Moscow property to effective use, so too did investors in different tranches of the same CDO have opposing ideas about the best way to manage their mortgage investment when the underlying assets were in trouble. The same event would affect different kinds of investors differently, since a movement of assets within the pool often could "produce opposite effects on different tranches in a CDO."[98] As a consequence, the affected parties often had opposing priorities and incentives regarding the desirability of allowing modification of the terms of the underlying original loan, which led to gridlock in the decisionmaking process.[99] Whereas under the traditional structure, negotiations could quickly commence between the borrower and the bank because each party clearly understood its objectives, under the new regime it was difficult for many parties, interconnected by their shared property interest in a CDO, to settle upon a single goal. For example, within a single CDO, different investors would have different attitudes regarding PSA changes for a floundering pool of assets — even if the short-term cost of modification could result in long-term net positive arrangements for both the homeowner-borrower and the investors overall:

> [S]enior tranches will want the more certain and immediate recovery on a defaulted loan because they will be shielded from losses by the subordinated tranches. Therefore, the senior tranches are likely to push for quick foreclosure. By contrast, the subordinated tranches stand to lose significantly in foreclosure, and may push for the possibility of a larger recovery in a modification.[100]

---

[97] *See supra* section I.C, p. 1804.

[98] *CDOs in Plain English*, NOMURA FIXED INCOME RESEARCH 3 (Sept. 13, 2004), http://www.vinodkothari.com/Nomura_cdo_plainenglish.pdf ("Senior tranches tend to benefit from low correlation of credit risk among the assets in the underlying portfolio. Conversely, the junior tranches tend to benefit from high correlation."); *see also* Judge, *supra* note 24, at 702 ("[M]odification to the terms of an underlying home loan will affect each tranche differently depending upon whether the interest rate, principal, or some other term is modified.").

[99] Henry T.C. Hu & Bernard Black, *Debt, Equity and Hybrid Decoupling: Governance and Systemic Risk Implications*, 4 EUR. FIN. MGMT. 663, 691 (2008); *see also* Judge, *supra* note 24, at 703.

[100] CONG. OVERSIGHT PANEL, *supra* note 60, at 45.

This arrangement resulted in "tranche warfare,"[101] whereby investors holding disparate interests but facing a common-resource management problem pushed for solutions that directly conflicted with one another, resulting in the very stagnation that Heller's anticommons theory forecasts.

Second, even when different kinds of investors could agree on which steps would be needed to effectively modify a mortgage contained within a CDO, it was still very difficult to "obtain the necessary agreement of all of the owners of a direct or indirect interest in the mortgage" because so many people needed to be contacted to coordinate actions regarding their shared rights.[102] Indeed, none of the steps of the collective-bargaining process were simple — most homeowners had no idea who owned their loan, so simply locating the multiple parties sharing the same ownership interests as a jumping-off point for negotiation was a difficult, unwieldy process.[103] In the case of CDOs, this inquiry was even more convoluted, as it became necessary to determine not only who held portions of the loans, but also who had the power to approve changes to the underlying loans.[104] Consequently, the parties to mortgage interests found that the increased coordination costs imposed by having to reach consensus among the multiple parties sharing a property right inhibited effective use of their joint resource and often led to undesirable foreclosures and inefficiencies, just as they had decades before for Moscow storefront joint rightsholders.

Thus, fragmentation via CDOs ultimately helped precipitate the 2008 financial crisis. By carving up the capital structure of the home loan into small pieces through the use of derivatives, "multiple owners were granted rights of rejecting attempts at modification, producing an atmosphere of instability, insecurity, and inability to exercise predictable and productive rights of use."[105] When housing prices began to decline and individuals became unable to meet their obligations, it was difficult to make the necessary changes to mortgage agreements that would have slowed the rising tide of defaults. "[D]efaults which could have been avoided if loans could have been renegotiated" instead proliferated, and society suffered "a macro-level collapse in housing pric-

---

101 *Id.* (quoting Kurt Eggert, *Comment on Michael A. Stegman et al.'s "Preventive Servicing Is Good for Business* and *Affordable Homeownership Policy": What Prevents Loan Modifications?*, 18 HOUSING POL'Y DEBATE 279, 290 (2007)) (internal quotation marks omitted).

102 Dana, *supra* note 59, at 104.

103 *See Giant Pool of Money*, *supra* note 49 ("Kerry wants to propose [a modification] to whoever owns the loan, but this brings him to this peculiar problem mortgage owners face now. They have no idea who that is. Richard's loan has been bought, and sold, and resold, and put into one of those pools owned by investors . . . .").

104 Judge, *supra* note 24, at 703.

105 *See* Davidson & Dyal-Chand, *supra* note 9, at 1642.

es."[106] In sum, instead of being able to circumvent widespread default through swift, bilateral modification of individual loans to the mutual benefit of the homeowner and the loan originator, fragmentation of the securitized interest meant that multiple parties needed to be consulted, considered, and mobilized.[107] When conflicting interests and high coordination costs made such collective action impossible — a predictable consequence of fragmented property interests, according to property theory literature[108] — the housing bubble burst swiftly, leading to rapid decline of home values, high levels of foreclosure, and the obliteration of the value of innumerable investments made by major financial institutions.

B. The Numerus Clausus *and Information Costs*

Property law embraces extensive standardization, despite its costs. Under the *numerus clausus* principle, the "number of forms of property is closed and limited."[109] Indeed, "the law will enforce as property only those interests that conform" to the standardized list of established forms and refuses to acknowledge unique or modified property rights.[110] In marked contrast, "[c]ontracting parties are allowed to be as idiosyncratic as they like."[111] Because of this unique feature of property law, property scholars have long explored the benefits and drawbacks of rigid standardization. These scholars have suggested a number of justifications for the *numerus clausus* principle: it is necessary to guard against property's tendency toward fragmentation, discussed above;[112] it helps to protect future parties by providing com-

---

[106] Hu & Black, *supra* note 99, at 691.

[107] *Cf. Giant Pool of Money*, *supra* note 49 ("This one CDO factory, this one office, owns a share of 16 million homes. And each of these homes has lots of other owners, people in other CDO offices around the world — there are lots of them — and other investors. You start to see what a crazy web of confusing interconnections this whole process is.").

[108] *See supra* section III.A.1, p. 1809–11.

[109] *See* Stephen R. Munzer, *The Commons and the Anticommons in the Law and Theory of Property*, *in* THE BLACKWELL GUIDE TO THE PHILOSOPHY OF LAW AND LEGAL THEORY 148, 156 (Martin P. Golding & William A. Edmundson eds., 2005).

[110] Thomas W. Merrill & Henry E. Smith, *Optimal Standardization in the Law of Property: The* Numerus Clausus *Principle*, 110 YALE L.J. 1, 3 (2000).

[111] Henry E. Smith, *Modularity in Contracts: Boilerplate and Information Flow*, 104 MICH. L. REV. 1175, 1176 (2006).

[112] *See* Heller, *supra* note 77, at 1177 (citing the "evisceration of the fee tail and life estate . . . [as] an example of the social benefits from consistent application of the boundary principle prevailing (to an extent) over owners' desire for unrestricted temporal fragmentation"); *see also* Bernard Rudden, *Economic Theory v. Property Law: The* Numerus Clausus *Problem*, *in* OXFORD ESSAYS IN JURISPRUDENCE 239, 259 (John Eekelaar & John Bell eds., 3d series 1987) ("If . . . the property entitlement and correlative burdens are widely dispersed, there will be hold-out and free-rider difficulties. Perhaps, then, there is sense in limiting the occasions for any of these expensive situations by restricting, ere their birth, the class of real rights.").

monly understood interests;[113] or it provides property law with a verification function of ownership rights offered for conveyance, reducing the information costs associated with transfers.[114] However, "the principal effort to rationalize the law's limits on property rights takes the form of several recent articles by [Professors] Thomas Merrill and Henry Smith,"[115] who suggest another argument for standardization: standardization can be viewed as a mechanism that reduces the information costs that individuated possessory interests impose on third parties.[116] Thus, the property law literature on the *numerus clausus* further casts doubt upon the desirability of introducing partially or fully customizable interests into the marketplace.

1. The Rationale Behind Standardization. — Part of what accounts for the difference in the degree of customizability permitted in property law as compared to contract law is the fact that property rights are in rem — "binding or operative on the world as a whole"[117] — while contract rights are in personam and "apply simply to [the parties'] own dealings."[118] As a consequence of binding all the world, property rights — when created or transferred — require third parties to "discover what exactly the rights are, who holds them, whether there are exceptions to or limitations on them," and to discern any other idiosyncrasies if the third parties hope to avoid violating rightsholders' interests.[119] Thus, the creation of unique property rights makes "the information processing costs of all persons who have existing or potential interests in [that] type of property go up."[120] Individuals wishing to respect or purchase a property interest must take pains to understand which duties are placed on them by the particular nature of the property at issue.

Merrill and Smith illustrate this point by detailing a hypothetical world that permits a unique property right in a wristwatch, outside of established, permitted interests.[121] In this world consisting of one hundred watch owners, one owner decides to create a property right that is akin to having a time-share in his watch, permitting his neigh-

---

[113] *See* Carol M. Rose, *What Governments Can Do for Property (and Vice Versa)*, *in* THE FUNDAMENTAL INTERRELATIONSHIPS BETWEEN GOVERNMENT AND PROPERTY 209, 213–14 (Nicholas Mercuro & Warren J. Samuels eds., 1999).

[114] *See* Henry Hansmann & Reinier Kraakman, *Property, Contract, and Verification: The* Numerus Clausus *Problem and the Divisibility of Rights*, 31 J. LEGAL STUD. S373, S374 (2002).

[115] *Id.*

[116] *See generally* Merrill & Smith, *supra* note 110.

[117] Nestor M. Davidson, *Standardization and Pluralism in Property Law*, 61 VAND. L. REV. 1597, 1605 (2008).

[118] Smith, *supra* note 111, at 1176.

[119] Munzer, *supra* note 109, at 156.

[120] Merrill & Smith, *supra* note 110, at 27.

[121] *Id.*

bor to use the watch on Mondays but only on Mondays. This arrangement makes that party's watch less valuable to potential future buyers — because ownership of the watch now does not come with Monday possession rights — but the time-sharing owner has already internalized this cost; he derives utility from being able to do exactly what he wants with his existing interests (here, splitting weekday ownership of his watch), and has presumably anticipated this negative impact but determined that he is willing to bear it. However, in creating this idiosyncratic right, the time-sharing owner has simultaneously also imposed a large external cost on other market participants looking to purchase any watch: "[g]iven the awareness that someone has created a Monday-only right, anyone else buying a watch must now also investigate whether any particular watch does not include Monday rights," even though ninety-nine of the remaining watches in the marketplace still transfer full ownership rights.[122]

Thus, the *numerus clausus* principle can be understood as a means of reducing the information costs that property interests impose on third parties through confining property rights to a limited number of standard forms.[123] Such standardization "reduces the costs of measuring the attributes" of property rights because it simplifies the information-gathering process for third parties to a basic exercise: determination of "whether the interest does or does not have the features of the forms on the menu."[124] As a consequence, adherence to *numerus clausus* standardization can increase liquidity in markets since it reduces processing costs and network externalities.[125]

However, standardization itself imposes costs. As Merrill and Smith acknowledge, "[m]andatory rules sometimes prevent the parties from achieving a legitimate goal cost-effectively," which can "frustrate the parties' intentions."[126] A partial solution to this problem is that the *numerus clausus*'s standardized forms can be circumvented by parties (to a certain extent) by creating "more complex combination[s] of the standardized building blocks of property."[127] However, although a "customized" property right is *possible*, it is made *more difficult* by the imposition of limitations on form.[128] Since utilizing unique and complicated property forms is thus inconvenient, idiosyncratic property rights will rarely be generated or used if alternative, less costly proper-

---

122 *Id.*

123 *See id.* at 38–40.

124 *Id.* at 33.

125 *See id.* at 47–51.

126 *Id.* at 35.

127 *Id.*

128 *See id.* (analogizing to price discrimination, where "[p]arties willing to pay a great deal for an objective can achieve it by incurring higher planning and information costs").

ty forms are available that adequately, if imperfectly, protect a rightsholder's interests.[129] As a consequence, the costs imposed on individuals by instituting a system of limited but recursive forms that discourages the creation of idiosyncratic rights are worth imposing because the system generates lower information costs on the whole. Therefore, adherence to the *numerus clausus* principle creates a more efficient legal regime.[130]

2. Inadequate Standardization of CDOs Imposed High Information Costs on the Securities Market and on the Financial Sector as a Whole. — CDOs and the other securities created out of home mortgages and loans did not adhere to strict limitations similar to those imposed on property forms through the *numerus clausus*. Rather, these instruments were only partially restricted through a type of "open-ended" standardization, which facilitated creation of more complex structures.

The first negative externality that arose as a consequence of this relatively low level of standardization was that participants in the CDO market faced large informational burdens when they sought to determine the value of the investments they had acquired, much like the parties in the market for a new watch in Merrill and Smith's example. As an initial matter, each CDO contained a multitude of tiny invisible adjustments that deviated from the default standard forms, and it was thus difficult for third-party investors to price CDOs accurately. The amount of energy that had to be expended in determining the obligations, risk assumptions, and features of even a single CDO investment was staggering,

> requir[ing] a multi-faceted analysis of a considerable amount of both legal and financial data, ranging from an estimation of the default and prepayment risks of hundreds (potentially thousands) of underlying assets, analysis of the particular overcollateralization and subordination provisions attaching to particular tranches of CDO securities, and an assessment of potential counterparty risk of the CDO's various hedge counterparties.[131]

Because CDOs were largely made up of MBSs — and "an [MBS] investor would face a massive informational burden if it actually sought to understand all of the loans underlying its investment"[132] — it is es-

---

[129] *See id.*

[130] *Cf.* Kenneth Ayotte & Patrick Bolton, *Optimal Property Rights in Financial Contracting*, 24 REV. FIN. STUD. 3401, 3428 (2011) ("When observability [of others' rights] is costly . . . there can be a role for the legal system to limit the space of property rights that are enforceable.").

[131] Robert P. Bartlett III, *Inefficiencies in the Information Thicket: A Case Study of Derivative Disclosures During the Financial Crisis* 4 (UC Berkeley Public Law Research Paper No. 1585953, 2010), *available at* http://ssrn.com/abstract=1585953.

[132] Judge, *supra* note 24, at 691.

timated that obtaining a truly accurate understanding of a typical CDO would have required reading 30,000 pages of documentation.[133]

Besides the information costs of assessing the loan terms themselves, the idiosyncratic structures of individual CDOs imposed their own substantial costs.[134] CDO constructors could utilize "an almost endless array of spigots" to structure different payment "waterfalls."[135] Thus, third parties looking to value the CDO held by another investor would have to examine not only the underlying assets forming the pool of securities, but also the manner in which the cash flows derived from those underlying securities would be distributed to various investors in each tranche of the CDO. Furthermore, even when investors could acquire holdings data and structural information for a CDO at one point in time, the possibility remained that the instrument was a "dynamically-managed CDO[] with frequent changes in holdings."[136] For these CDOs, the labor-intensive process of acquiring and analyzing information would have to be undertaken multiple times as the contents of the securitized pools changed. In short, "the nature of the securitization process . . . made it extremely difficult to determine and follow losses and increasing risk from one tranche and pool to another, and to reach the information about the original borrowers that [was] needed to estimate future cash flows and price."[137]

Investors quickly determined that these complex and opaque financial products were difficult to evaluate efficiently, and that shouldering the information costs associated with determining an accurate pricing of the instrument was not feasible.[138] However, rather than walking away from acquisition of CDOs, investors "were generally content to rely instead on the collateral eligibility requirements set forth in offering memoranda and rating agency guidance and on periodic trustee reports."[139] Rating agencies attempted to mitigate the securities' informational problems by utilizing "a closed set of loan characteristics"

---

133 Matthew Valencia, *The Gods Strike Back*, ECONOMIST, Feb. 13, 2010, at 3, 4.

134 Judge, *supra* note 24, at 691.

135 *Id.*

136 Christopher L. Culp & J. Paul Forrester, *The Shape of CDOs to Come*, CAYMAN FIN. REV. (Jan. 5, 2010), http://www.compasscayman.com/cfr/2010/01/05/The-shape-of-CDOs-to-come/.

137 Kenneth E. Scott & John B. Taylor, Op-Ed., *Why Toxic Assets Are So Hard to Clean Up*, WALL ST. J., July 20, 2009, at A13.

138 *Cf.* Steven L. Schwarcz, *Protecting Financial Markets: Lessons from the Subprime Mortgage Meltdown*, 93 MINN. L. REV. 373, 381 (2008) (suggesting individual investors might not have done better than rating agencies at performing due diligence because of "agency-cost conflicts and lack of economy of scale" (footnote omitted)).

139 Culp & Forrester, *supra* note 136; *see also* Donald R. van Deventer, *Fair-Value Accounting, CDOs and the Credit Crisis of 2007–2008*, BANK ACCT. & FIN., Oct.–Nov. 2008, at 3, 4 ("The most naïve investors simply looked at the ratings on CDO tranches and then bought the tranche if they liked the rating — they didn't even attempt to confirm if the price they were asked to pay was 'fair value.'").

to determine a basic rating of the riskiness of CDO pools.[140] But "these [enumerated] characteristics [did] not provide a complete description of the rights and obligations in each loan contract being originated and sold."[141] Thus, rating agencies provided investors with a framework for comparing financial vehicles that resulted in gross oversimplification of securities' actual complexity: not all of the pertinent information about the CDO instrument was readily or costlessly conveyed to investors, and specific contractual terms in individual loans, though difficult to see, could nevertheless "modify the lender[']s rights in important ways that a standardized rating model may not capture."[142]

Because the rating agencies oversimplified CDOs and other instruments, these derivatives still were seen as "more liquid because they reduce[d] reading costs for buyers" in the market.[143] Thus, open-ended standardization caused much of the complexity of the CDO instrument to be less noticeable and concerning to the investor and "fail[ed] to limit over-borrowing and excess continuation by the borrowing firm."[144] As a consequence, CDOs became widely distributed to important financial players in the marketplace, despite the fact that these parties had incomplete information about the nature of these holdings.[145] Investors showed no concern about the complexity externalities created by the customizable derivatives they held until the subprime mortgage market began to deteriorate rapidly.[146] However, once this market — which contained many of the assets underlying the pools of securities that had been merged to create the CDOs — began to stumble, financial players quickly became "uncertain about valuations of a range of complex or opaque structured credit products,"[147] and major entities began to realize enormous unanticipated losses as the worthlessness of subprime and other CDOs became apparent.[148]

This system led to a second major externality resulting in part from insufficient standardization of CDOs: spillover of the third-party information cost problems of the CDO market — and its subsequent pa-

---

140 Ayotte & Bolton, *supra* note 56, at 174.

141 *Id.*

142 *Id.* (describing a theoretical model).

143 *Id.*

144 *See id.*

145 *See supra* section II.A, pp. 1805–06.

146 *Cf.* Ben S. Bernanke, Chairman, Fed. Reserve, The Recent Financial Turmoil and its Economic and Policy Consequences (Oct. 15, 2007), *available at* http://www.federalreserve.gov/newsevents/speech/bernanke20071015a.htm ("[T]he developments in subprime were perhaps more a trigger than a fundamental cause of the financial turmoil.").

147 *Id.*

148 *See* Scott & Taylor, *supra* note 137.

ralysis — into the financial sector as a whole.[149] "[T]he rapidly declining prices of . . . CDOs forced investors to recognize how little they knew about the fundamental value"[150] of such complex assets, which contributed to widespread panic among financial institutions as they began to doubt *all* of the models they had previously used to analyze the risk of various innovative instruments.[151] Because each CDO instrument had created idiosyncratic rights for its holders, no investors were quite sure of what exactly they, or other entities holding similar CDOs, were entitled to, let alone what the value of those holdings might be.[152] This uncertainty exacerbated problems occurring throughout the financial system, as markets started to freeze entirely and institutions and investors became too paralyzed with doubt and lack of information to be willing to make any moves.[153] Thus, the subprime market crash "became a full-blown financial crisis," as market players were forced to recognize the extent to which they were uninformed about their own risk exposure.[154]

Ultimately, it is clear that failure to adhere to some strict and limited system of optimal standardization, such as that imposed in traditional property law by the *numerus clausus*, significantly contributed to the rising information costs that both precipitated and exacerbated the 2008 financial crisis. By allowing complex and customizable instruments to be traded as if they were more standardized and limited, the market imposed prohibitive information costs on any third parties who may have sought to discern the true value of the instruments. As a consequence, many parties simply did not do the work required to understand the investments they were making, and in the process investors exposed themselves and other financial players and institutions to staggering amounts of risk.[155]

---

[149] Again, CDOs are only a part of the origins of the financial crisis, and the complex design of CDOs is in turn only a small part of the story of that security's market failure. *See supra* sections I.A–C, pp. 1801–04. At a high level, the losses generated from CDOs arose from three related problems: complexity, bad rating agency models, and investors who exercised poor judgment in failing to perform independent due diligence on these models. Although complexity was a necessary but not isolated part of the CDO market breakdown, discussion of market players' moral hazard problems or of the broader context of the crisis exceeds the scope of this Note; thus, the design problems of CDOs will be the primary focus here.

[150] Judge, *supra* note 24, at 700.

[151] *See, e.g.*, Bernanke, *supra* note 146 ("They also reacted to market developments by increasing their assessment of the risks associated with a number of assets and, to some degree, by reducing their willingness to take on risk more generally.").

[152] *Cf.* Pittman, *supra* note 72 ("A sale would give banks, brokerages and investors the one thing they want to avoid: a real price on the [CDOs] in the fund that could serve as a benchmark.").

[153] *See* Bernanke, *supra* note 146.

[154] Judge, *supra* note 24, at 701; *see also supra* section I.C, p. 1804.

[155] *See* Schwarcz, *supra* note 138, at 381.

The extent of these instruments' idiosyncrasies further underscores the fact that optimal standardization — rather than mere "notice" or "disclosure" of the contents of the CDO instruments — was likely one of the only remedies that would have been able to curtail the escalating complexity externalities that the unregulated system engendered. As numerous scholars have noted since the crisis began, the sheer "complexity of many credit derivatives (especially those tied to structured finance vehicles such as CDOs) may make it impossible for markets to incorporate additional information in a meaningful way."[156] That is, because the information costs of CDOs derive from the complexity of the instrument itself, "enhancing derivative disclosures [would] simply add to the burden of periodic reporting requirements for financial institutions," without actually making the process of assessing and analyzing that information less intensive and costly.[157] While merely making complex and voluminous information needed for evaluation more readily available to investors would not alleviate or minimize the third-party information costs created by CDOs, limiting and strictly enforcing a closed set of forms out of which CDOs could be constituted might do just that.

CONCLUSION

Scholars and pundits will surely continue to dissect the events of the 2008 financial crisis, but it is clear that well-established property theories bring valuable insights to this analysis. Professor Heller's theory of the anticommons and fragmentation helps explain how continued division of interests in home loans could lead to both coordination and transactional problems, the end result being inefficient use and devaluation of valuable societal resources. Similarly, Professors Merrill and Smith's conceptualization of standardization (embodied in property law as the principle of the *numerus clausus*) as a tool for reducing systemic third-party information costs helps shed light on why permissive customization in the markets of already complex securities could contribute to market destabilization and paralysis.

---

156 Bartlett, *supra* note 131, at 4; *see also supra* p. 1818.

157 Bartlett, *supra* note 131, at 4.