ARTICLE

NEXT-GENERATION SECURITIZATION: NFTS, TOKENIZATION, AND THE MONETIZATION OF "THINGS"

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ABSTRACT

For decades, businesses have used securitization to monetize assets by selling to investors interests in the assets' future value. Traditionally, securitization has monetized so-called financial assets, which generate cash flow to pay the investors. That payment source, coupled with the ability of investors to resell their interests, can create a highly liquid and attractive investment. Even so, securities laws generally restrict these investments to sophisticated and institutional investors.

In recent years, securitization has spawned a new generation of transactions that monetize nonfinancial assets and other rights that do not ordinarily generate cash flow, such as art, collectible cars, access to basketball video highlights, prestigious real estate, and even fictitious real estate used in video games. Industry observers variously use the terms "tokenization" and nonfungible tokens, or "NFTs," to refer to these non-cash-flow monetization transactions. Moody's and others believe that these transactions have "transformative potential," including the prospect of creating greater financial inclusion.

However, because non-cash-flow monetizations do not generate cash, investors in these transactions lack that source of payment. Selling the

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This title analogizes next-generation advances in securitization to next-generation Internet advances, termed the "Internet of Things." That concept refers to extending Internet connections to virtually everything that could benefit from sharing and using information—such as a commuter's alarm clock that sets its ring time each morning based on information about traffic and weather-related driving conditions. *See* Jen Clark, *What Is the Internet of Things (IoT)?*, IBM: BUS. OPERATIONS BLOG (Nov. 17, 2016), [https://perma.cc/H2NS-VVMG]. This Article, by analogy, examines securitization's extension to the monetization of virtually all assets, even those that do not generate cash flow.

underlying nonfinancial assets could generate another payment source, but the relative uniqueness (and sometimes fictitious nature) of those assets can make them difficult to sell—and owners of those assets may contractually restrict their sale. For payment, investors therefore must rely primarily on the ability to resell their interests to other investors, hoping a viable resale market exists. The reality, though, is that the pricing in such a resale market is extremely volatile, and even the market's existence is unpredictable.

Non-cash-flow monetization transactions thus create enormous liquidity risk for investors, who currently include both individuals and institutions. Although illiquidity is the central cause of bankruptcy, as well as a major systemic threat to the financial system, many investors ignore that risk. They are attracted, among other things, by the cachet of the underlying assets and by the hype associated with blockchain and other financial technology ("FinTech") which often is used to evidence the ownership and facilitate the transfer of interests in these transactions. Investors also appear, mistakenly, to conflate the ease by which FinTech can facilitate the transfer of those interests with the existence of market demand to purchase such interests. Furthermore, because those interests are often referred to as tokens or coins, many investors fail to recognize that they are investing in securities. Worse, unsophisticated investors might not even understand the basics of what they are buying.

This Article has two goals, one descriptive, the other normative. The descriptive goal is to help regulators, investors, and other market participants understand non-cash-flow monetization transactions, including their risks and benefits. The normative goal is to analyze how those transactions should be regulated to preserve their benefits and minimize their risks.

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INTRODUCTION

Businesses have long used securitization to monetize assets—effectively, transforming them into cash by selling to investors interests[1] in the assets' future value.[2] By 1992, the Securities and Exchange Commission ("SEC") observed that securitization was "becoming one of the dominant means of capital formation in the United States."[3] Shortly thereafter, the amount of securitization financing jumped from $2.9 trillion in 1996[4] to $11.3 trillion in 2008.[5] Although the global financial crisis of 2007-2008 (the "global financial crisis") caused a temporary lull in the securitization market,[6] securitization has since been rebounding in the United States[7] and skyrocketing overseas.[8]

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[1] *See* JASON H.P. KRAVITT, MAYER BROWN LLP, SECURITIZATION OF FINANCIAL ASSETS § 17.06[C][2][c][v] (3d ed. Supp. 2019). These interests are sometimes called undivided percentage interests because the claims of their holders typically have *pari passu* priority to the assets' cash flow, based on the percentage represented by each holder's interest. *Id.* For example, a holder of an interest that represents twenty-five percent of future cash flow would have an undivided twenty-five percent interest in each dollar of that cash flow, as and when generated.

[2] A typical securitization is a financial transaction in which a sponsor purchases a pool of loans or other rights to payment (financial assets) from firms originating those assets, such as mortgage lenders, and then sells them to a special purpose vehicle ("SPV"). *See* Steven L. Schwarcz, *What Is Securitization? And for What Purpose?*, 85 S. CAL. L. REV. 1283, 1292-93 (2012) [hereinafter Schwarcz, *What Is Securitization?*]. The SPV pays for those assets by issuing debt securities to investors; those securities are repayable from collections on the financial assets. *See id.* at 1295-98.

[3] Structured Financings, Investment Company Act Release No. 19105, [1992 Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 85,062, at 83,500 (Nov. 19, 1992).

[4] Barbara Casu & Anna Sarkisyan, *Securitization*, *in* THE OXFORD HANDBOOK OF BANKING 503, 506 (Allen N. Berger, Philip Molyneux & John O.S. Wilson eds., 3d ed. 2019).

[5] To calculate this figure, see *Fixed Income Outstanding*, SIFMA, https://www.sifma.org/resources/research/fixed-income-chart/ [https://perma.cc/FY4M-9MRZ] (last visited Apr. 18, 2023) (showing aggregate asset-backed and mortgage-backed securities equaled $11.3 trillion in 2008). To put these figures into perspective, the Gross Domestic Product of the United States was $14.8 trillion in 2008. *GDP (Current US$)—United States*, WORLD BANK, https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=US&view=chart [https://perma.cc/2GM5-89FN] (last visited Apr. 18, 2023).

[6] Even during the global financial crisis, the U.S. Federal Reserve created a government-run commercial paper funding facility to ensure the availability of securitized funding. JASON H.P. KRAVITT, SECURITIZATION OF FINANCIAL ASSETS § 21.02 (3d ed. Supp. 2023).

[7] Outstanding securitized debt in the United States fell from 2009 to 2012, where it bottomed out at $10.1 trillion, but has increased every year since 2012, slightly surpassing 2008 levels to reach $11.35 trillion in 2018 and reaching as high as $13.79 trillion in 2021. To calculate these figures, see *Fixed Income Outstanding*, *supra* note 5.

[8] *See, e.g.*, S&P GLOB. RATINGS, TEN YEARS AFTER THE FINANCIAL CRISIS, GLOBAL SECURITIZATION LENDING TRANSFORMED BY REGULATION AND ECONOMIC GROWTH 22 (2017) (noting China's emergence as second largest securitization market in world, with securitizations increasing fifty percent year-over-year in 2014 and first half of 2017, while strong international and domestic demand for residential mortgage-backed securities has

Traditionally, securitization has monetized so-called financial assets, like accounts receivable and loans, which by their terms or their nature convert into cash within a finite time period.[9] Singer-songwriters, like David Bowie, have even used securitization to monetize their rights to future music royalties.[10] The cash generated by the financial assets for repayment, coupled with the ability of investors to resell their interests, provide "two ways out" for investors,[11] creating a highly liquid and attractive investment.

Beyond its traditional origins, securitization also has been extended to monetizing the future value of corporate structures that utilize financial assets to generate cash, such as risk securitizations[12] and certain types of collateralized debt obligations ("CDOs").[13] Scholars recently have shown how risk securitization could be used to monetize an insurance pool to cover pandemic-related losses.[14] Certain other widely used structured financing transactions are

revived securitization in Australia and increased issuance by forty percent as of June 2017, more than double June 2016 levels); *see also* JAMES MANZI, TOM SCHOPFLOCHER & BRENDEN KUGLE, S&P GLOB. RATINGS, GLOBAL STRUCTURED FINANCE 2022 OUTLOOK 1 (2022), https://www.spglobal.com/ratings/en/research/pdf-articles/220112-global-structured-finance-2022-outlook-100993747 ("Following a 43% year-over-year increase in global [structured finance] issuance in 2021 . . . , we forecast another robust year, with a slight gain to $1.56 trillion."); Tom Schopflocher, James Manzi & Travis Erb, *Global Structured Finance 2019 Securitization Energized with $1 T in Volume*, S&P GLOB. (Jan. 7, 2019), https://www.spglobal.com/en/research-insights/articles/global-structured-finance-outlook-2019-securitization-continues-to-be-energized-with-potential-1-trillion-in-volume-expected-ag [https://perma.cc/SF3F-324Z] ("The U.S., China, Japan, Europe, and Canada all showed volume increases, while issuance in Australia and Latin America (LatAm) declined.").

[9] *Cf.* 17 C.F.R. § 270.3a-7(b)(1) (2022) (defining "eligible assets" in traditional securitizations as "financial assets, either fixed or revolving, that by their terms convert into cash within a finite time period"). Rule 3a-7 nonetheless recognizes that a small portion of securitized assets could be non-cash-generating. *See id.* § 270.3a-7(a)(1) (stating that issued securities need only "depend primarily on the cash flow from eligible assets"). In the Author's experience as a major law firm partner, such non-cash-generating assets have included the residual value in railcars or other high value assets that, at the end of their current lease term (such current lease being the original financial asset), are re-leased to generate additional cash flows.

[10] *See* Tom Espiner, *'Bowie Bonds'—The Singer's Financial Innovation*, BBC: NEWS (Jan. 11, 2016), https://www.bbc.com/news/business-35280945 [https://perma.cc/2QN3-ZQH6].

[11] In the Author's experience, a prudent lender typically requires "two ways out" of a loan, meaning two alternative means of repayment.

[12] *See generally* Paul U. Ali, *Risk Securitization*, *in* STEVEN L. SCHWARCZ, STRUCTURED FINANCE: A GUIDE TO THE PRINCIPLES OF ASSET SECURITIZATION § 12 (Adam D. Ford ed., 3d. ed. 2002 & Supp. 2010) [hereinafter SCHWARCZ, STRUCTURED FINANCE].

[13] Liz Manning, *Synthetic CDO: Definition, How It Works in Finance, and Example*, INVESTOPEDIA (June 15, 2022), https://www.investopedia.com/terms/s/syntheticcdo.asp [https://perma.cc/M2RB-6VPH].

[14] *See* Howell E. Jackson & Steven L. Schwarcz, *Protecting Financial Stability: Lessons from the COVID-19 Pandemic*, 11 HARV. BUS. L. REV. 193, 219-21 (2021); Lorilee A. Medders & Steven L. Schwarcz, *Securitizing Pandemic-Risk Insurance*, 25 RISK MGMT. &

also closely related to cash-flow securitization. In project finance, for example, sponsors raise money to build cash-generating projects, such as power plants or toll roads, and use the future-generated cash flows to repay the investors.[15] Like traditional securitizations, these transactions give investors two ways out: the cash they generate, and the ability of investors to resell their interests. That, again, makes the transactions highly liquid and attractive investments.[16]

In recent years, though, securitization has spawned a new generation of transactions that monetize "nonfinancial assets,"[17] meaning non-cash-generating assets and other rights that do not ordinarily generate cash flow, such as art (including digital art, which is any art made or presented using digital or electronic technology),[18] collectible cars, access to basketball video highlights, prestigious real estate, and even fictitious real estate used in video games.[19]

INS. REV. 551, 554-55 (2022). An insurance company could insure against pandemic-related risk by issuing catastrophe bonds ("CAT bonds") through an SPV:

> The SPV would invest the proceeds of its bond issuance in liquid and highly rated debt securities . . . . In exchange for premium payments . . . , the SPV . . . would promise to indemnify the insurer should the extreme event, e.g., a pandemic of specified magnitude, occur. The CAT bonds would bear interest based not only on the SPV's investment returns but also on its receipt of the premium payments. Repayment of the CAT bonds would be subordinated, however, to the insurer's right to indemnification . . . .

Steven L. Schwarcz, *Insuring the 'Uninsurable': Catastrophe Bonds, Pandemics, and Risk Securitization*, 99 WASH. U. L. REV. 853, 861-62 (2021) [hereinafter Schwarcz, *Insuring the 'Uninsurable'*] (footnotes omitted).

[15] Steven L. Schwarcz, *Securitization and Structured Finance*, *in* HANDBOOK OF KEY GLOBAL FINANCIAL MARKETS, INSTITUTIONS, AND INFRASTRUCTURE 565, 565 (Gerard Caprio Jr., Douglas W. Arner, Thorsten Beck, Charles W. Calomiris, Larry Neal & Nicolas Veron eds., 2013) [hereinafter Schwarcz, *Securitization and Structured Finance*]. *See generally* IJGLOBAL, Q3 2019 INFRASTRUCTURE AND PROJECT FINANCE LEAGUE TABLE REPORT (2019) (detailing hundreds of billions of dollars in bonds sold to investors in project finance deals between Q3 2018 and Q3 2019).

[16] *See supra* note 11 and accompanying text (explaining "two ways out").

[17] As a generational connection, even traditional securitization sometimes includes nonfinancial assets as a small portion of the securitized assets. *See supra* note 9 and accompanying text.

[18] *What Is Digital Art*, EDEN GALLERY (Sept. 9, 2021), https://www.eden-gallery.com/news/what-is-digital-art [https://perma.cc/QZG5-UYHJ]. This Article does not—nor does it need to—distinguish between digital and other types of assets. Rather, it distinguishes between cash-generating and non-cash-generating assets, whatever their form.

[19] *See, e.g.*, Joshua A.T. Fairfield, *Tokenized: The Law of Non-Fungible Tokens and Unique Digital Property*, 97 IND. L.J. 1261, 1273-78 (2022) (listing and explaining examples of NFTs); Debra Kamin, *Investors Snap Up Metaverse Real Estate in a Virtual Land Boom*, N.Y. TIMES (Dec. 3, 2021), https://www.nytimes.com/2021/11/30/business/metaverse-real-estate.html; Thomas Kika, *Multimillion-Dollar U.S. Home To Sell as NFT*, NEWSWEEK (Apr. 18, 2022, 3:39 PM), https://www.newsweek.com/multimillion-dollar-u-s-home-sell-nft-1698710 [https://perma.cc/2YSN-498P]; *RM Sotheby's Turning Classic Cars into Digital Collections*, MOTOR SPORTS NEWSWIRE (Dec. 7, 2021), https://motorsportsnewswire.com/2021/12/07/rm-sothebys-turning-classic-cars-into-digital-collections/ [https://perma.cc/33BE-LKAC].

Industry observers variously use the terms "tokenization" and nonfungible tokens, or "NFTs," to refer to these transactions, creating semantic confusion. For clarity, this Article hereinafter will refer to tokenization, NFTs, and any other transactions that monetize nonfinancial assets as "non-cash-flow monetizations."[20] This Article also will refer to the interests of investors in non-cash-flow monetizations as "interests" and to the sponsors or other organizers or arrangers of non-cash-flow monetizations as "sponsors."

The prominent rating agency Moody's, among others, believes that non-cash-flow monetizations have "transformative potential."[21] Among other benefits, they can create "greater financial inclusion" by "giv[ing] smaller borrowers," such as start-up companies and small and medium-sized enterprises ("SMEs"), "access to previously illiquid, unaffordable or inaccessible financing."[22] Until now, "access to finance [has been] a key constraint to SME growth."[23] Non-cash-flow monetizations could increase SME access to finance in at least two ways: "an asset can be represented as millions or even billions of tokens"—i.e., interests—"creating fractional ownership and expanding the potential buyer pool"[24]; and non-cash-flow monetizations could monetize, and thereby generate cash from, nonfinancial assets that otherwise would have a "limited investor base."[25] Promoting SME growth is critical because SMEs "play a major role in most economies, particularly in developing countries," and also "are important contributors to job creation and global economic development."[26]

Notwithstanding these benefits, this Article explains why unregulated non-cash-flow monetizations can be dangerous to investors and society. This Article also analyzes how non-cash-flow monetizations should be regulated to control

[20] Although securitization spawned these transactions, the term monetization is marginally more generic than securitization, and the term non-cash-flow monetization is more easily distinguished from cash-flow securitization. Furthermore, the term monetization is more neutral as to whether the transaction creates securities—an issue this Article substantively addresses. *See infra* notes 166-76 and accompanying text. Otherwise, the terms monetization and securitization are synonymous. This Article also synonymously refers to non-cash-flow monetizations and non-cash-flow monetization transactions.

[21] MOODY'S INVS. SERV., ASSET TOKENIZATION HAS POTENTIAL TO DEEPEN AND DIVERSIFY FINANCIAL MARKETS 1 (2021); *see also* EY, TOKENIZATION OF ASSETS 8-9 (2020), https://assets.ey.com/content/dam/ey-sites/ey-com/en_ch/topics/blockchain/ey-tokenization-of-assets-broschure-final.pdf [https://perma.cc/J5BP-A6J9] (describing tokenization's "manifold" benefits, including operational efficiency, assets fractionality, transparency, and "single source of truth for extended ecosystems"); OECD, THE TOKENISATION OF ASSETS AND POTENTIAL IMPLICATIONS FOR FINANCIAL MARKETS 16-18 (2020), https://www.oecd.org/finance/The-Tokenisation-of-Assets-and-Potential-Implications-for-Financial-Markets.pdf [https://perma.cc/M9BZ-Q8BR].

[22] MOODY'S INVS. SERV., *supra* note 21, at 1, 5.

[23] *Small and Medium Enterprises (SMEs) Finance*, WORLD BANK, https://www.worldbank.org/en/topic/smefinance [https://perma.cc/3U5K-KYRA] (last visited Apr. 18, 2023).

[24] MOODY'S INVS. SERV., *supra* note 21, at 5.

[25] *Id.* at 6.

[26] *Small and Medium Enterprises (SMEs) Finance*, *supra* note 23.

the danger. The risk is real because the market for these transactions appears to already be in the tens of billions of dollars and rapidly growing,[27] yet there is virtually no regulation.[28]

To provide perspective, most would agree that investing in nonfinancial assets poses little or no danger, per se. Many people, this Author included, would be delighted to invest in art, fancy cars, and prestigious real estate—perhaps less so in basketball video highlights and fictitious real estate (although those latter investments would normally pose no danger). The danger can become serious, however, when investors buy interests in nonfinancial assets thinking that the interests themselves are liquid.

Non-cash-flow monetization interests in nonfinancial assets are illiquid, having neither repayment rights nor market liquidity. Because nonfinancial assets, by definition, do not normally generate cash flow, investors lack that source of repayment. Likewise, with limited exceptions,[29] investors cannot reasonably expect the owners to sell those underlying nonfinancial assets to generate cash; the relative uniqueness (and sometimes fictitious nature) of those assets can make them difficult to sell, and their owners may contractually restrict their sale. The owner of a fancy car, which serves as the underlying nonfinancial asset, may well prefer to keep and drive the car, for example, rather than selling it and using the sale proceeds to pay investors. Nor do investors normally have any direct recourse to those owners for repayment.[30]

Investors therefore must rely, for payment, primarily on the ability to resell their interests to other investors, hoping to find a viable resale market.[31] Because

[27] *Cf.* Tim Bradshaw, *When You Count Users Instead of Dollars, the NFT World Is Tiny*, FIN. TIMES (Feb. 15, 2022), https://www.ft.com/content/e5298295-8e79-411c-a054-a58f639ea8fa [https://perma.cc/NUW8-RE8W] ("Twitter, Instagram and YouTube are all jumping on the NFT bandwagon. OpenSea, the biggest NFT marketplace, was valued at more than $13bn last month. . . . Measured in financial terms, [the NFT market] sure looks big: some $24bn worth of NFTs have been traded to date, according to market tracker Cryptoslam.io, including more than $4bn in January alone.").

[28] *But cf. infra* notes 174-76 and accompanying text (discussing debate in United States whether sale of interests in such monetizations should be subject to federal securities laws).

[29] *Cf. infra* note 71 (noting that, in Masterworks transaction, SPV agrees to sell artwork and use sale proceeds to pay investors).

[30] Securitization (including non-cash-flow monetization) and secured financing are forms of asset-based financing, in which parties utilize the value of their assets to raise money. *See* Schwarcz, *Securitization and Structured Finance*, *supra* note 15, at 565. Secured financing refers to borrowing money by granting a lien on assets, as collateral, to secure the loan's repayment. James Chen, *Secured Debt*, INVESTOPEDIA (June 30, 2021), https://www.investopedia.com/terms/s/secureddebt.asp [https://perma.cc/8B3H-UD6N]. Lenders typically have recourse both to the borrower itself and to the collateral for repayment. *Id.* Securitization transactions, in contrast, are called nonrecourse, meaning that the investors have recourse only to their interests in the assets for repayment. Schwarcz, *Securitization and Structured Finance*, *supra* note 15, at 569.

[31] Although unclear from publicly available documents, it vaguely appears that some sponsors might offer investors a redemption option, under which an investor could tender its

such a market's pricing is extremely volatile[32] and even its existence is unpredictable,[33] this limited source of repayment creates enormous—but to date, largely ignored—liquidity risk for investors.[34] To better appreciate this risk, consider that the extension of monetization transactions from cash-flow monetizations (like securitization) to non-cash-flow monetizations raises a distinction somewhat akin to that between debt securities and equity securities.[35] Investments in debt securities, like investments in cash-flow monetizations, depend primarily on payments and secondarily on the ability to resell the securities.[36] In contrast, investments in a firm's equity securities, like investments in non-cash-flow monetizations, depend primarily on the ability to resell the securities and secondarily on dividend payments.[37] Investments in

interests to the sponsor for cash or cryptocurrencies. *See, e.g.*, Cadence, *What Is a Token Redemption?*, MEDIUM (Mar. 20, 2019), https://medium.com/@withcadence/what-is-a-token-redemption-df282fd92f88 [https://perma.cc/DR96-YPY5]; Oleksii Konashevych, *Do You Have the Right To Redeem Your Stablecoin?*, COINTELEGRAPH (May 21, 2022), https://cointelegraph.com/news/do-you-have-the-right-to-redeem-your-stablecoin [https://perma.cc/TAB7-XK7L]. Although such an option theoretically could increase investor liquidity, it would be worth little in practice unless the sponsor were a well-capitalized entity. Otherwise, at the time a redemption is demanded, the sponsor might be unwilling or unable to perform (like what could happen with a money-back guarantee from a start-up firm; or like what did happen with mortgage-loan sponsors during the global financial crisis, who were unable or unwilling to satisfy their representations and warranties to investors). If the redemption is for a cryptocurrency, investors also take the pricing risk that the cryptocurrency may no longer have real value or even exist when redemption is demanded. Worse, there appears to be a correlation between the secondary-market value of the interests and the willingness of sponsors to redeem: the lower that value, the more likely an investor would demand—but the less willing a sponsor would be to perform—redemption.

[32] *See infra* notes 48-49 and accompanying text (discussing pricing volatility and its consequences).

[33] *Cf.* Jordan Awoye, Opinion, *The Good, the Bad and the Ugly When It Comes to Non-Fungible Tokens*, CNBC: ADVICE & ADVISOR (Feb. 2, 2022, 12:39 PM), https://www.cnbc.com/2022/02/02/here-are-the-pros-and-cons-when-it-comes-to-non-fungible-tokens.html ("NFTs are illiquid and speculative investments. Since it is a new asset and marketplace, there is not a lot of historical data to research.").

[34] This also creates insolvency risk. *See infra* notes 47-54 and accompanying text.

[35] The Author thanks Todd H. Baker, a Senior Fellow at the Richard Paul Richman Center for Business, Law, and Public Policy at Columbia University, for helping to develop this analogy.

[36] *See, e.g.*, Metro. Life Ins. Co. v. RJR Nabisco, Inc., 716 F. Supp. 1504, 1518 (S.D.N.Y. 1989) (holding "substantive 'fruits'" of debt securities "include [only] the periodic and regular payment of interest and the eventual repayment of principal"). *But cf.* Steven L. Schwarcz, *Rethinking Corporate Governance for a Bondholder Financed, Systemically Risky World*, 58 WM. & MARY L. REV. 1335, 1343 (2017) (arguing ability to resell publicly traded bonds is critical to investors).

[37] *See, e.g.*, Steven L. Schwarcz, *Compensating Market Value Losses: Rethinking the Theory of Damages in a Market Economy*, 63 FLA. L. REV. 1053, 1064 (2011) ("Equity securities are almost always resold to realize their full value because, as presently structured,

equity securities with neither the ability to resell the securities nor the receipt of dividend payments would have little value.[38] Likewise, investments in non-cash-flow monetizations with uncertain ability to resell the interests therein would have uncertain value.

Illiquidity is not only the main cause of bankruptcy[39] but also, as will be explained, a major systemic threat to the financial system.[40] At least for investors who buy their interests with the expectation of repayment—which might well be a significant portion[41]—illiquidity should be a warning sign. Why, then, do investors ignore liquidity risk?

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equity securities generally pay investors only dividend payments, which represent a rate of return, and do not return the underlying equity investment until the corporate issuer of the securities liquidates." (footnote omitted)).

[38] Such investments would resemble, for example, owning non-dividend-paying shares in a privately held firm without the right to wind up the firm to recognize its value.

[39] *See, e.g.*, Kenneth Ayotte & David A. Skeel Jr., *Bankruptcy Law as a Liquidity Provider*, 80 U. CHI. L. REV. 1557, 1557 (2013) ("Since the outset of the [global] financial crisis, liquidity problems have been cited as the cause behind the bankruptcies and near bankruptcies of numerous firms, ranging from Bear Stearns and Lehman Brothers in 2008 to Kodak more recently."). Ayotte and Skeel also stress how tightly linked liquidity is to corporate bankruptcy. *Id.* at 1560; *see also* Inmaculada Aguiar-Díaz & María Victoria Ruiz-Mallorquí, *Causes and Resolution of Bankruptcy: The Efficiency of the Law*, 13 SPANISH REV. FIN. ECON. 71, 76 (2015) ("Liquidity problems are one of the primary reasons for [firm] bankruptcy filings.").

[40] *See, e.g.*, Allan M. Malz, *Liquidity Risk After the Crisis*, 38 CATO J. 35, 37 (2018) ("Financial crises are often triggered by liquidity [risk] events coinciding with abrupt changes in sentiment."). Illiquidity was a defining characteristic of the global financial crisis. IMF, *Durable Financial Stability: Getting There from Here*, Global Financial Stability Report 75-76 (Apr. 2011). Liquidity risk comes in different forms, such as market liquidity risk, the risk that a firm will not be able to sell an asset quickly without materially affecting the price, and funding liquidity risk, which is the risk that a firm will not be able to meet expected cash flow requirements (future and current) by raising funds on short notice. *Id.* at 77. The presence of both types of illiquidity can create a downward spiral which can affect multiple financial institutions and create a systemic financial crisis. *Id.* at 77-78. In the global financial crisis, banks hoarded liquidity, which caused financial institutions to fire sale securities and reduce lending, creating instability in the financial sector. *See* Thomas King, Travis D. Nesmith, Anna Paulson & Todd Prono, *Central Clearing and Systemic Liquidity Risk* 4 (Fin. & Econ. Discussion Series, Working Paper No. 2020-009, 2020), https://www.federalreserve.gov/econres/feds/files/2020009pap.pdf [https://perma.cc/7Q26-EVHR]. The lack of lending from financial institutions, which feared insolvency among their counterparties, caused significant funding disruptions and the resulting systemic crisis. IMF, *supra*, at 77. These events further revealed the close link between illiquidity and default risk of financial institutions. *Id.*

[41] *Cf.* Tyler Pathe, *NFTs: What's in It for Players of the Payments Market?*, FINTECH TIMES (Nov. 1, 2021), https://thefintechtimes.com/nfts-whats-in-it-for-payments-market-players/ [https://perma.cc/DZ2Z-DG7D] (attributing NFT appeal to "staying on-trend, *liquidity*, and its massive future potential" (emphasis added)); *Top 5 NFT Investment Strategy—2022 | An Investment Pays the Best Interest*, FINEXTRA (Jan. 3, 2022) [hereinafter *Top 5 NFT Investment Strategy*], https://www.finextra.com/blogposting/21510/top-5-nft-investment-strategy--2022-an-investment-pays-the-best-interest [https://perma.cc/7TGR-T8JV] (describing NFT

The answer is not yet clear. Investors might be attracted, for example, by the cachet of the underlying assets and might view those assets as a hedge against inflation.[42] Or they might be daunted by the financial technology ("FinTech") which often is used to evidence the ownership and facilitate the transfer of their interests—especially those that are evidenced by blockchain-based digital ownership.[43] Furthermore, some investors might mistakenly conflate the ease by which blockchain (or other FinTech cryptography) can facilitate the transfer of their interests with the existence of market demand to purchase those interests, creating a misleading perception of liquidity.[44] Additionally, because the interests are often referred to as tokens (or even coins), many investors fail to recognize they are investing in securities.[45] Worse, unsophisticated investors might not even understand the basics of what they are buying.[46]

In addition to liquidity risk, investors in non-cash-flow monetizations also take insolvency risk: the risk that an investor heavily invested in non-cash-flow monetizations could become insolvent if the value of its interests plummets.[47] That possibility exists because the pricing of non-cash-flow monetization

investments as "very safe way to experience some profit" and "overall, . . . a good investment").

[42] Paul Sullivan, *Want To Own a Warhol? Now, You Can Buy a Piece of One*, N.Y. TIMES (July 26, 2019), https://www.nytimes.com/2019/07/26/your-money/luxury-cars-investment.html (suggesting those motivations).

[43] *See, e.g.*, *Top 5 NFT Investment Strategy*, *supra* note 41 ("NFTs are stored on a blockchain . . . .").

[44] *Cf.* Alfredo de Candia, *Want To Buy NFTs!? Here Are 7 Reasons You Should!*, HACKERNOON (Mar. 11, 2022), https://hackernoon.com/wanna-buy-nfts-heres-7-reasons-you-should [https://perma.cc/N8GJ-PDDL] (arguing ease of selling and transferring NFTs helps overcome difficulty of finding buyer and allows holders "to liquidate and monetize the work at any time, at any price").

[45] *Cf. id.* (describing problems associated with physical transfer of assets and arguing "all these problems are magically deleted with the use of the NFTs of the related works, as I can send this NFT to any person, regardless of where they are, and without incurring costs and problems related to the shipment of the work itself").

[46] The January 2022 purchase for $3 million of a rare copy of *Dune*, valued at $40,000, exemplifies this misunderstanding. Spice Dao, a group of anonymous NFT and crypto enthusiasts, purchased the physical book with the intent to make it public, create an original animated series inspired by the book, and "convert the book into NFTs [and] burn the physical copy." *See* Adrienne Westenfeld, *The Saga of the* Dune *Crypto Bros and Their Very Pricey Mistake Is at Its End*, ESQUIRE (July 28, 2022), https://www.esquire.com/entertainment/books/a38815538/dune-crypto-nft-sale-mistake-explained/ [https://perma.cc/A38F-5WSS]. The investors clearly did not understand copyright law, much less its relationship with NFTs: "[L]ittle did they know, the purchase didn't mean they actually own the copyright to *Dune*. All they own is one very, very expensive book." *Id.*

[47] Insolvent would mean that the value of an investor's assets is less than the investor's liabilities. 11 U.S.C. § 101(32)(A).

interests is extremely volatile.[48] Some argued in 2021 that the pricing was a "bubble waiting to pop."[49] Investors nonetheless appeared to ignore the insolvency risk, hoping, if not expecting, that the volatile pricing—at the time, mostly rising—would yield them a huge profit.[50] Even after the cryptocurrency crash and decline in NFT trading in 2022, the "crypto faithful" are undeterred,[51] and the NFT market appears to be growing again.[52] Also, insolvency risk is not as threatening as liquidity risk; an insolvent investor that remains liquid (that is, able to pay its debts as they come due) could still be financially viable.[53] This Article analyzes insolvency risk when examining whether securities law should limit purchases of interests by unsophisticated investors.[54]

This Article has two goals, one descriptive, the other normative. The descriptive goal is to help regulators, investors, and other market participants understand non-cash-flow monetizations, including their risks and benefits. The normative goal is to analyze how non-cash-flow monetizations should be regulated to preserve their benefits and minimize their risks.

To that end, Part I of the Article adapts and applies a model of non-cash-flow monetizations, building on a conceptual foundation originally advanced for modeling cash-flow securitization transactions. Part II of the Article then

[48] *See, e.g.*, Tim Levin, *NFTs Could Be the Future of Collecting—Or a Huge Bubble. We Talked to 3 Experts About the Risks To Consider Before Buying In.*, BUS. INSIDER (Mar. 13, 2021, 8:17 AM), https://www.businessinsider.com/what-are-risks-of-investing-in-nft-2021-3 ("The NFT market suffers from massive volatility . . . .").

[49] *See id.* (quoting Nicholas Weaver, UC Berkeley Professor of Computer Science, as saying NFT pricing is "pure speculative mania").

[50] *Cf.* Clive Thompson, *The Untold Story of the NFT Boom*, N.Y. TIMES MAG. (Aug. 12, 2021), https://www.nytimes.com/2021/05/12/magazine/nft-art-crypto.html ("Who exactly is paying such sums for an NFT? Generally, they are young men who have invested in cryptocurrencies for years and seen those holdings reach many millions in value.").

[51] *See* David Segal, *Crypto Meltdown, What Crypto Meltdown?*, N.Y. TIMES (Feb. 10, 2023), https://www.nytimes.com/2023/01/17/business/crypto-market-meltdown-nft-blockchain.html (describing crypto enthusiasts' confidence that "blockchain will transform the world," despite $2 trillion losses, "gruesome bankruptcies," and FTX scandal in 2022).

[52] *Compare* Sidhartha Shukla, *NFT Trading Volumes Collapse 97% from January Peak*, BLOOMBERG (Sept. 28, 2022, 4:49 AM), https://www.bloomberg.com/news/articles/2022-09-28/nft-volumes-tumble-97-from-2022-highs-as-frenzy-fades-chart#xj4y7vzkg (reporting drop in NFT trading volume from $17 billion to $466 million between January and September 2022), *with* Anushree Dave, *Why NFTs Saw $946 Million in Trading Volume in January—the Highest Since June 2022*, MARKETWATCH (Feb. 4, 2023, 5:05 PM), https://www.marketwatch.com/story/why-the-nft-art-market-saw-941-million-in-trading-volume-in-january-highest-since-june-2022-11675357798, *and* Sara Gherghelas, *NFT Market Roars Back from Pre-Luna Crash with $2 Billion in Trading Volume*, DAPPRADAR (Mar. 2, 2023), https://dappradar.com/blog/nft-market-roars-back-from-pre-luna-crash-with-2-billion-in-trading-volume#Chapter-4 (reporting $2 billion trading volume in February 2023).

[53] *Compare* 11 U.S.C. § 301 (not linking bankruptcy to insolvency), *with* 11 U.S.C. § 303(h)(1) (listing illiquidity as basis for creditors to file involuntary bankruptcy case against debtor).

[54] *See infra* notes 144, 187-88 and accompanying text.

analyzes how non-cash-flow monetizations should be regulated, focusing on the components of that model to attempt to identify and correct market failures. Part III of the Article examines whether the benefits of the proposed regulation are likely to exceed the costs.

I. MODELING NON-CASH-FLOW MONETIZATIONS

In related articles, Jonathan Lipson and this Author designed a model for analyzing cash-flow securitization transactions.[55] This Article next adapts and applies that model to analyze non-cash-flow monetizations.[56]

The model facilitates analysis by breaking down a securitization—which is, generically, a monetization[57]—transaction into its essential components: its inputs, its intermediate structure, and its outputs.[58] The inputs are rights to payment.[59] The intermediate structure normally is a "bankruptcy-remote"[60] special purpose vehicle ("SPV"), also called a special purpose entity ("SPE"), that issues securities to investors and uses the proceeds to purchase or otherwise acquire the rights to payment (i.e., the inputs) from the sponsor or other originator of those rights.[61] The securities so issued by the SPV are the outputs.[62] Next, this Article examines how to apply that model to non-cash-flow monetizations.

A. *Inputs*

In a cash-flow securitization, the inputs are rights to payment.[63] In a non-cash-flow monetization, however, the inputs—as next described, initially using the industry distinction between tokenization and NFT transactions—are nonfinancial assets.

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[55] *See* Jonathan C. Lipson, *Re: Defining Securitization*, 85 S. CAL. L. REV. 1229, 1233 (2012); Schwarcz, *What Is Securitization?*, *supra* note 2, at 1283-84.

[56] That use should be appropriate because, as observed, other than monetization being only marginally more generic than securitization, the terms are synonymous. *See supra* note 20 and accompanying text (explaining why this Article refers to non-cash-flow monetizations rather than non-cash-flow securitizations).

[57] *See supra* note 20 and accompanying text.

[58] *See* Schwarcz, *What Is Securitization?*, *supra* note 2, at 1284 (citing Lipson, *supra* note 55, at 1233).

[59] *Id.* at 1283-85.

[60] *Id.* at 1286-87. Bankruptcy remoteness means that the SPV is unlikely to be impaired by the sponsor's possible bankruptcy. *See* Schwarcz, *Insuring the 'Uninsurable*,*' supra* note 14, at 872-74.

[61] Schwarcz, *What Is Securitization?*, *supra* note 2, at 1286-87.

[62] *Id.* at 1283, 1287.

[63] *See supra* note 59 and accompanying text.

1. Tokenization

Tokenization typically refers, in industry terms, to the monetization of high-value nonfinancial assets, like fine art, collectible cars, rare books, and prestigious real estate,[64] by creating and issuing to investors interests in those assets.[65]

For example, a company called Maecenas partners with artists, art galleries, and art collectors to raise capital on the value of their artwork.[66] The artworks themselves are the inputs.[67] Maecenas has created an SPV to issue digitally evidenced certificates, which it calls "Asset Tokens," to investors and use the proceeds to purchase the artworks.[68] The SPV is the intermediate structure, as discussed further in Section I.B, and the Asset Tokens are the outputs, as discussed further in Section I.C. Similarly, Masterworks tokenizes fine art by

[64] *See, e.g.*, Sullivan, *supra* note 42. For other examples of tokenization, see David Kemmerer, *The Tokenization of Securities Is Happening Right Now and No One Is Noticing*, VENTUREBEAT (July 31, 2019, 3:15 PM), https://venturebeat.com/2019/07/31/the-tokenization-of-securities-is-happening-right-now-and-no-one-is-noticing/ [https://perma.cc/M7TF-CYSS]; and Rohit Kulkarni, *7 Ways Tokenizing Traditional Assets Will Launch Security Tokens to Main Street in 2019*, FORBES (Nov. 1, 2018, 3:56 PM), https://www.forbes.com/sites/rkulkarni/2018/11/01/seven-ways-tokenizing-traditional-assets-will-launch-security-tokens-to-main-street-in-2019 (discussing securitization of "venture capital funds, real estate, precious metals, currency, art, [and] sports teams").

[65] *See, e.g.*, Stephen O'Neal, *Tokenization, Explained*, COINTELEGRAPH (June 2, 2019), https://cointelegraph.com/explained/tokenization-explained [https://perma.cc/VA3X-H7T4].

[66] *See What Is Maecenas?*, MAECENAS, https://www.maecenas.co/whats-maecenas/ [https://perma.cc/K9L4-7RSR] (last visited Apr. 18, 2023).

[67] *See id.* Maecenas allows an owner to sell only up to forty-nine percent of the ownership interests and value of an artwork, meaning the original owner will always retain majority ownership of the art. Maecenas, *Maecenas FAQ*, MEDIUM (June 25, 2018) [hereinafter *Maecenas FAQ*], https://medium.com/maecenas/maecenas-faq-6bec8ae49997 [https://perma.cc/Z24Q-NEM4]. An owner may choose to or be required to transfer physical ownership of the art to a reputable custodian for safekeeping. *Id.*; *cf. Parties Involved in Securitisation Transactions*, PWC LUX., https://www.pwc.lu/en/securitisation/parties-involved-in-securitisation-transactions.html [https://perma.cc/K3XC-PDWY] (last visited Apr. 18, 2023) (describing custodian's role in securitizations).

[68] *Frequently Asked Questions*, MAECENAS [hereinafter *Maecenas Frequently Asked Questions*], https://www.maecenas.co/faq [https://perma.cc/MWA9-5JPF] (last visited Apr. 18, 2023) ("Asset Tokens are digital certificates of ownership in real assets. The bearer of the assets [sic] tokens becomes the owner of a percentage of the underlying asset."); *see* MAECENAS, THE DECENTRALISED ART GALLERY 10 (2019) [hereinafter MAECENAS WHITE PAPER], https://www.allcryptowhitepapers.com/wp-content/uploads/2018/05/Maecenas.pdf [https://perma.cc/YL62-LWGR] (depicting Maecenas's use of SPV to issue tokens and purchase artwork). Investors can purchase Asset Tokens at a discount using Maecenas's ART tokens. *What Is Maecenas?*, *supra* note 66. ART tokens also are characterized as a cryptocurrency that can be sold for cash on the Ethereum blockchain. *Maecenas FAQ*, *supra* note 67.

using artworks as the inputs.[69] For each relevant artwork, Masterworks creates an SPV to issue interests to investors and use the proceeds to purchase the artwork.[70] Again, the SPV is the intermediate structure and the interests issued to investors are the outputs.[71]

2. NFT Transactions

NFTs originally represented (using industry terminology) interests in utility and license rights. These rights are the inputs. Utility rights comprise an underlying use or application, such as providing special access, perquisites, or opportunities.[72] NFT interests in utility rights (sometimes called utility NFTs) provide, for example, special access to premium online limited content[73] or special opportunities such as guaranteed front-row concert tickets and merchandise.[74] License rights comprise a right to do something that (without such right) one ordinarily could not do—roughly approximating the traditional legal definition of a license.[75] NFT interests in license rights include, for example, the right to use and/or display photography, digital art, domain names,

[69] *See A Complete Platform for Investing in Art*, MASTERWORKS, https://www.masterworks.io/about/how-it-works [https://perma.cc/5E7P-EMHR] (last visited Apr. 18, 2023). Masterworks appears to purchase the artwork using its own funds, which would be similar to a sponsor that warehouses financial assets for a later securitization. *See id.*

[70] *See FAQ*, MASTERWORKS, https://www.masterworks.com/about/faq [https://perma.cc/BCD2-NHWH] (last visited Apr. 18, 2023) (explaining Masterworks uses Delaware LLC to issue shares and purchase artwork). Similarly, a company called BitCar tokenized exotic luxury automobiles. Crypto Inferno, *Tokenised Car Ownership with BitCar*, MEDIUM (July 15, 2019), https://medium.com/cryptoinferno/tokenised-car-ownership-with-bitcar-b483b5ece635 [https://perma.cc/VA5E-B3T3]. The automobiles themselves were the inputs.

[71] Masterworks tokenizes artwork in a manner that is similar to cash-flow securitization, insofar as investors ultimately can be paid from cash proceeds to be received from selling the underlying artwork after three to ten years. *A Complete Platform for Investing in Art*, *supra* note 69.

[72] *See, e.g.*, Ben Arnon, *Utility Is the Future of NFTs*, CRYPTONEWS (Mar. 4, 2022, 12:00 PM), https://cryptonews.com/exclusives/utility-future-of-nfts.htm [https://perma.cc/9J6H-2GVV] ("'NFT 1.0' was built on FOMO (fear of missing out), scarcity, and price appreciation. 'NFT 2.0' is set to be about utility, value, innovation, and storytelling.").

[73] *See, e.g.*, METAKEY, https://themetakey.com [https://perma.cc/PC3S-62E6] (last visited Apr. 18, 2023) (stating Metakey NFT provides access to "avatars, game assets, course materials, discounts and anything else our team and partners can dream of"); 3LAU, https://nft.3lau.com/#/auction [https://perma.cc/3RUZ-874W] (last visited Apr. 18, 2023) (describing NFT auction where winners can redeem NFT for rewards, including "exclusive content" from musician 3LAU).

[74] Samantha Hissong, *Kings of Leon Will Be the First Band To Release an Album as an NFT*, ROLLING STONE (Mar. 3, 2021), https://www.rollingstone.com/pro/news/kings-of-leon-when-you-see-yourself-album-nft-crypto-1135192/.

[75] *Cf. License*, BOUVIER LAW DICTIONARY (Stephen Michael Sheppard ed., desk ed. 2012) (defining "license" as "authorization to do something, without which one ordinarily could not do what one is licensed to do").

trading cards and collectibles, and digital/virtual items.[76] Although they do not always agree on terminology,[77] industry observers now recognize that NFTs can represent interests in *any* nonfinancial asset.[78]

Tokenization transactions and NFT transactions thus use different terminology but conceptually are the same. In both types of transactions, the interests are in underlying nonfinancial assets. The fact that tokenization transactions have focused to date more on tangible assets like art and collectible cars, whereas NFT transactions have focused more on less tangible assets like guaranteed front-row concert tickets or the right to use or display photography or digital art, is not directly relevant to this Article's analysis.[79] None of these assets, by its terms or nature, converts into cash within a finite time period.[80] Similarly, in both types of transactions, the interests normally are evidenced and transferable using blockchain (or other FinTech cryptography).[81]

B. *Intermediate Structure*

Monetizations utilize an intermediate structure for two reasons. To protect investors against bankruptcy risk, the intermediate structure in a cash-flow securitization normally is a bankruptcy-remote SPV that issues securities to investors and uses the proceeds to purchase the inputs.[82] The investors thus hold securities of an issuer that should be unimpaired by the sponsor's possible bankruptcy. The intermediate structure also can help to facilitate the aggregation

[76] *See, e.g.*, Fairfield, *supra* note 19, at 1272-74 (describing examples of NFT interests in license rights).

[77] For example, the industry variously refers to NFTs, fractionalized NFTs (also called F-NFTs, f-NFTs, or shards), and NFT deeds without clearly distinguishing them. *Cf.* Karen Garnett, Jeffrey Neuburger & Frank Zarb, Proskauer Rose, LLP, *NFTs Are Interesting but Fractionalized Non-Fungible Tokens (F-NFTs) May Present Even More Challenging Legal Issues*, JD SUPRA (Apr. 23, 2021), https://www.jdsupra.com/legalnews/nfts-are-interesting-but-fractionalized-9904209/ [https://perma.cc/F3WQ-W73D] (discussing some of that terminology).

[78] *See, e.g.*, Levin, *supra* note 48 ("Anyone on the internet can create an NFT out of literally anything . . . .").

[79] That difference might be indirectly relevant to the extent (which currently is unknown) investors price interests in non-cash-flow monetizations consisting solely of utility and license rights for their use, not their investment value. *Cf. infra* notes 122, 170 and accompanying text (observing that formerly high perceived value of interests in non-cash-flow monetizations and recent growth in NFT trading suggest that investors are also looking to resale value and thus interests should be treated as securities).

[80] *Cf. supra* note 9 and accompanying text (defining financial asset).

[81] *See supra* note 43 and accompanying text. For example, Maecenas's interests in fine art are represented by Asset Tokens. *See supra* note 68 and accompanying text. Such interests also could be represented by NFTs or any other type of cryptographic evidencing of ownership and transfer.

[82] *See supra* notes 60-61 and accompanying text.

of assets into a single entity to minimize transaction costs relative to the amount of the financing—and thereby make the financing more economically viable.[83]

The intermediate structures in non-cash-flow monetizations bear many, but not necessarily all, of these characteristics. Both the Maecenas and Masterworks transactions, for example, utilize SPVs that issue interests to investors and use the proceeds to purchase the inputs (in those transactions, artwork).[84] It is unclear, though, whether those SPVs are bankruptcy remote; the disclosures for these transactions do not clarify that. Moreover, some non-cash-flow monetizations do not appear to utilize any intermediate structure.[85]

The intermediate structure in non-cash-flow monetizations also can help to aggregate the inputs to make the financing more economically viable. In the Rally transaction, for example, when Rally (or one of its subsidiaries) acquires enough inputs to make a financing economically viable, it creates an SPV to issue interests to investors and use the proceeds to purchase the inputs.[86]

C. *Outputs*

In a cash-flow securitization, the outputs are securities issued by the SPV to investors.[87] In a non-cash-flow monetization, the outputs are the interests sold to investors. In both cases, these outputs represent direct or indirect interests in the assets that constitute the inputs.[88] In non-cash-flow monetizations, sponsors typically use blockchain (or other FinTech cryptography) to securely record ownership and transfers of the interests.

In the Maecenas transaction, for example, the SPV issues the digitally evidenced Asset Tokens to investors,[89] entitling them to undivided interests in

[83] ABE WAPNER, ROB YOUNGS & COAL. FOR GREEN CAP., AGGREGATION AND SECURITIZATION 6 (2019), https://greenbanknetwork.org/wp-content/uploads/2019/04/Green-Bank-Aggregation-and-Securitization-Coalition-for-Green-Capital.pdf [https://perma.cc/35XG-P7BH] (explaining aggregation and securitization reduce diligence costs and attract investment).

[84] *See supra* notes 66-71 and accompanying text.

[85] For example, Syndicate allows investors to create "investment clubs," where small groups pool resources and invest in NFTs without intervention by an SPV or other intermediate structure. *See Investment Clubs*, SYNDICATE, https://guide.syndicate.io/en/support/faqs/investment-clubs [https://perma.cc/689N-J5E9] (last visited Apr. 18, 2023).

[86] *See* RALLY, https://rallyrd.com/ [https://perma.cc/N8TH-YF7Y] (last visited Apr. 18, 2023) (describing "platform for buying and selling equity shares in collectible assets"). Masterworks similarly appears to use such a warehousing approach, first acquiring enough inputs to make the monetization economically viable. *See supra* note 69.

[87] *See supra* note 62 and accompanying text.

[88] *See supra* notes 1-2 and accompanying text.

[89] *See supra* note 68 and accompanying text.

the SPV that owns the inputs.[90] These interests are recorded using blockchain cryptography.[91]

II. REGULATING NON-CASH-FLOW MONETIZATIONS

The analytical framework for regulating non-cash-flow monetizations should build on the more general framework for regulating financial transactions, of which cash-flow and non-cash-flow monetizations are subsets.[92] The primary goal of that regulatory framework is to correct market failures.[93] The secondary, but still essential, goal of that regulatory framework is to ensure that the benefits of any resulting regulation exceed the regulation's costs.[94]

This Article follows that regulatory framework. Section II.A next attempts to identify the market failures associated with non-cash-flow monetizations, focusing in turn on the three essential components of these transactions: their inputs, their intermediate structure, and their outputs. Thereafter, Section II.B of the Article analyzes how to design regulation to correct those market failures. Finally, Part III of the Article engages in a cost-benefit analysis of that regulation to determine if the benefits would be likely to exceed the regulation's costs.

This Article's analysis takes a realistic approach. To the extent non-cash-flow monetization neither changes the fundamental business of how monetization is conducted nor creates new risks, it should be regulated like cash-flow monetization transactions. That reflects the widely followed "'same business, same risks, same rules' principle."[95] This Article does not reiterate the basic

[90] *See* MAECENAS WHITE PAPER, *supra* note 68, at 9 (describing issuance of "crypto shares" to investors); *cf. supra* note 1 and accompanying text (explaining why interests often are undivided).

[91] *Cf. Maecenas Frequently Asked Questions*, *supra* note 68 (observing that Maecenas uses ERC20 tokens on Ethereum blockchain platform).

[92] A financial transaction is a transaction "involving payment, deposits, borrowing money, buying property, or selling property." *Financial Transaction*, LAW DICTIONARY, https://thelawdictionary.org/financial-transaction/ [https://perma.cc/ZM5Q-ZARN] (last visited Apr. 18, 2023). A non-cash-flow monetization is a type of financial transaction because it involves investors paying money and buying property (interests in the nonfinancial assets). A non-cash-flow monetization is also a financial transaction from the standpoint of the sponsor, which is raising financing based on the nonfinancial assets.

[93] *See, e.g.*, DAVID GOWLAND, THE REGULATION OF FINANCIAL MARKETS IN THE 1990S, at 21 (1990) (characterizing regulating markets to correct market failure as "public interest theory"); *cf.* PAUL A. SAMUELSON & WILLIAM D. NORDHAUS, ECONOMICS 750 (16th ed. 1998) (defining market failure as "imperfection in a price system that prevents an efficient allocation of resources").

[94] *See infra* note 201 and accompanying text (citing arguments for cost benefit analysis of financial regulation).

[95] *Cf.* FIN. STABILITY BD., REGULATION, SUPERVISION AND OVERSIGHT OF "GLOBAL STABLECOIN" ARRANGEMENTS 2, 17 (2020), https://www.fsb.org/wp-content/uploads/P131020-3.pdf [https://perma.cc/A4C4-ZRC4] (observing that stablecoin regulation should start by "identify[ing] the activity performed by a stablecoin arrangement and the participants

regulation that generally governs securitization and other structured finance transactions.[96] Rather, it focuses on how non-cash-flow monetization changes the business of monetization to create new risks that should be regulated.

Non-cash-flow monetization changes the monetization business to create new risks in two ways. One change is to use blockchain (or other FinTech cryptography) to evidence the transfer of interests. This change primarily affects the process, not the actual substance, of the interests being transferred: "[B]lockchains achieve bookkeeping without a bookkeeper and allow individuals to make transactions anonymously and quickly. But the innovation pretty much ends there."[97] Another change is more substantive: non-cash-flow monetization broadens investments that previously were limited to interests in financial assets to include interests in nonfinancial assets. The analysis next focuses on how the law should develop to regulate the risks associated with these changes.

A. *Identifying Market Failures*

As discussed, the primary goal of regulating non-cash-flow monetizations should be to correct market failures.[98] This Section seeks to identify those market failures as a foundation for Section II.B, which seeks to design regulation to correct those market failures.

The identification of market failures is more of an art than a science, partly because what constitutes "imperfection[s] in a price system that prevent[] efficient allocation of resources"[99] can vary according to the circumstances.[100] Furthermore, some use the term market failure differently to "refer[] to any situation in which commercial activity fails to solve a perceived problem."[101] However that term is defined, economists and legal scholars conventionally include information asymmetry, agency costs, and externalities[102] as examples

involved, and apply[ing] the relevant existing regulation to that activity or entity according to the '*same business, same risks, same rules*' principle").

[96] For a comprehensive guide to that regulation, see generally SCHWARCZ, STRUCTURED FINANCE, *supra* note 12.

[97] Steve H. Hanke & Matt Sekerke, Opinion, *Cryptocurrency Doesn't Amount to Much*, WALL ST. J. (Jan. 24, 2022, 6:21 PM), https://www.wsj.com/articles/cryptocurrency-doesnt-amount-to-much-bitcoin-stablecoins-lobby-innovation-finance-11643063060.

[98] *See supra* notes 92-93 and accompanying text.

[99] SAMUELSON & NORDHAUS, *supra* note 93, at 750.

[100] *Cf.* Jerry Brito & Jerry Ellig, *A Tale of Two Commissions: Net Neutrality and Regulatory Analysis*, 16 COMMLAW CONSPECTUS 1, 16 n.89 (2007) (observing that "term 'market failure' is perhaps an unfortunate piece of economics jargon").

[101] *Id.*

[102] Although externalities are technically the consequences of market failures, they conventionally are included as examples of such failures. *See* Steven L. Schwarcz, *Regulating Shadows: Financial Regulation and Responsibility Failure*, 70 WASH. & LEE L. REV. 1781, 1799-1800 (2013).

of market failures.[103] This Article will reference those conventional market failures as well as failures related to the FinTech that is used to securely record ownership and transfer of investor interests ("FinTech-related market failures").[104]

1. Identifying Market Failures Associated with the Inputs

The primary change in the inputs is their inability to generate cash. As observed, this inability can become serious when investors buy interests in nonfinancial assets thinking that the interests themselves are liquid.[105] That market failure is one of information asymmetry. This Article more directly examines information asymmetry when discussing the outputs and related disclosure requirements.[106]

The inability of the inputs to generate cash, and the uncertainties associated with resale of the interests, can create externalities if illiquidity causes investors to fail. If those investors are systemically important financial institutions ("SIFIs"),[107] their failure can contribute to a systemic economic collapse, creating massive externalities.[108]

Agency costs represent another market failure associated with the inputs if the value of the inputs depends on the sponsor performing servicing or other actions as agent for the investors. That dependence might occur, for example, for NFTs that represent interests in utility and license rights.[109] Additionally, if a sponsor "goes out of business and stops [maintaining computerized files evidencing or otherwise representing the underlying] digital artworks, basketball trading cards, or other media, buyers could be left with tokens pointing to files that no longer exist."[110] This market failure would be a subtle change from cash-

[103] *See, e.g.*, Justin M. Ross, *What Should Policy Makers Know When Economists Say "Market Failure"?*, 14 GEO. PUB. POL'Y REV. 27, 27-28 (2009) ("When individual decision making [does not direct resources to their most valued use under certain conditions,] an economist will commonly label the problem a 'market failure' in the process. The common sources of such failures can generally be classified into externalities, inadequate provision of public goods, a lack of competition, and information problems.").

[104] *See infra* Section II.A.3.b.

[105] *See supra* text accompanying notes 27-30.

[106] *See infra* Section II.A.3.a.

[107] *Cf.* Simon Cocking, *Is Asset Tokenisation Still the Hottest Trend in FinTech?*, IRISH TECH NEWS (July 25, 2019), https://irishtechnews.ie/is-asset-tokenisation-still-the-hottest-trend-in-fintech/ [https://perma.cc/GL4Q-G4LP] (reporting that tokenization has "been attracting major interest on the part of legacy financing institutions," suggesting that SIFIs might invest heavily).

[108] FIN. STABILITY BD., CONSULTATIVE DOCUMENT: EFFECTIVE RESOLUTION OF SYSTEMICALLY IMPORTANT FINANCIAL INSTITUTIONS 17 (2011) [hereinafter EFFECTIVE RESOLUTION OF SIFIS], https://www.fsb.org/wp-content/uploads/r_110719.pdf [https://perma.cc/MZD3-3HYJ].

[109] *See supra* notes 72-76 and accompanying text.

[110] Levin, *supra* note 48.

flow securitizations, which depend on servicer performance to collect the cash flow from the inputs.[111]

2. Identifying Market Failures Associated with the Intermediate Structure

If the intermediate structure is not bankruptcy remote, a bankruptcy of the sponsor would result in externalities consisting of investor losses and possibly defaults.[112] As previously observed, the failure of investors that are SIFIs could also create massive externalities.[113] A sponsor's bankruptcy could cause these externalities because (absent a bankruptcy-remote structure) the underlying nonfinancial assets would ostensibly be owned by the sponsor. Therefore, the claims of the sponsor's creditors against those assets would have priority over,[114] be *pari passu* with,[115] or be subordinate to[116] the investors' interests depending on whether such interests are characterized as equity interests, debt claims, or property rights. Scholars disagree on how to characterize those interests.[117]

[111] *See* Schwarcz, *What Is Securitization?*, *supra* note 2, at 1297.

[112] *Cf.* ANDREW BAUM, OXFORD FUTURE OF REAL EST. INITIATIVE, TOKENISATION: THE FUTURE OF REAL ESTATE INVESTMENT? 59 (2020), https://www.sbs.ox.ac.uk/sites/default/files/2020-01/tokenisation.pdf [https://perma.cc/W9RQ-7X4K] ("We conclude that an intermediate structure is likely to be both necessary and convenient when fractionalising a single asset."); DAVID UZSOKI, INT'L INST. FOR SUSTAINABLE DEV., TOKENIZATION OF INFRASTRUCTURE: A BLOCKCHAIN-BASED SOLUTION TO FINANCING SUSTAINABLE INFRASTRUCTURE 15 (2019), https://www.iisd.org/system/files/publications/tokenization-infrastructure-blockchain-solution.pdf [https://perma.cc/UCV2-RZPM] (arguing that to "represent a legal ownership of an asset in a way that is recognizable in court," sponsors "need to create a special purpose vehicle off-chain, which becomes the legal owner of the underlying asset and issues its equity tokens").

[113] *See supra* note 108 and accompanying text.

[114] The claims of the sponsor's creditors would have priority over the investors' interests if those interests are characterized as equity interests in the sponsor. *See* 11 U.S.C. § 726(a) (setting forth "absolute priority" rule in bankruptcy, which prioritizes debt claims over equity interests).

[115] If the investors' interests are characterized as debt claims, they would have equal priority with the debt claims of the sponsor's creditors. *See id.*

[116] If the investors' interests are characterized as property rights in those assets, debt claims of the sponsor's creditors should be subordinate, or possibly not attach, to those assets. *Cf. infra* notes 157-61 and accompanying text.

[117] For example, some scholars argue that NFTs could create property rights in the underlying nonfinancial assets. *Cf.* Fairfield, *supra* note 19, at 1282 (observing that although "claims of ownership over NFTs are . . . less than the absolute package of ownership rights that NFT creators often promote to their purchasers," that "by no means prevents the creation of enforceable property interests, any more than the ability to forge a deed prevents us from owning houses"). Other scholars argue that NFTs do not convey either a claim against or property right in the underlying assets. *See* Juliet M. Moringiello & Christopher K. Odinet, *The Property Law of Tokens*, 74 FLA. L. REV. 607, 635 (2022) (surveying NFT marketplaces and finding terms of service "all deny that the owner of an NFT has any rights in the underlying asset"); *cf.* BITCAR, TOKENISATION OF EXOTICS DISCLOSURE DOCUMENT 5 (2017), [https://web.archive.org/web/20180316020112/https:/bitcar.io/data/Disclosure%20Documen

One market failure associated with the intermediate structure in securitization transactions would not, however, apply to non-cash-flow monetizations. In securitization transactions, the SPV issues debt securities that are repayable from collections on the underlying financial assets.[118] That creates a "maturity transformation" risk of a timing mismatch between those collections and the repayment maturities due on the debt securities. This problem of SPV illiquidity—which is different from the later-discussed problem of investor illiquidity[119]—would not apply to non-cash-flow monetizations because interests issued in such monetizations do not normally have repayment maturities.[120]

3. Identifying Market Failures Associated with the Outputs

There appear to be at least two market failures associated with the outputs: information asymmetry and FinTech-related market failures. Consider each in turn.

a. *Information Asymmetry*

The primary market failure associated with the outputs is information asymmetry—a lack of understanding about what investors are buying.[121] The relatively high perceived value of the interests in non-cash-flow monetizations suggests that some investors, possibly influenced by the history of rapidly rising prices, are looking to resale value.[122] There is, however, no assured secondary market.

As observed, there is evidence that this market failure is at least partly the result of investors mistakenly conflating the ease by which blockchain can facilitate the transfer of their interests with the existence of market demand to purchase those interests, resulting in a misleading perception of liquidity.[123] Such an overemphasis on the technology might reflect, in part, that transaction

t.pdf] (explaining rights (or lack thereof) associated with BITCAR tokens). Sadly, NFT platforms themselves are "sending mixed messages about what is being offered and what the buyer (or seller, for that matter) can actually expect." Moringiello & Odinet, *supra*, at 664.

[118] *See supra* note 2 and accompanying text.

[119] For a discussion on investor illiquidity, see *infra* notes 140-44 and accompanying text.

[120] Indeed, interests issued in non-cash-flow monetizations could not feasibly have repayment maturities because the underlying nonfinancial assets do not generate cash to pay such maturities.

[121] *Cf. supra* note 46 and accompanying text (observing that investors were confused about tokenizing interest in book *Dune*).

[122] *See supra* notes 48-52 and accompanying text; *see also* Dave, *supra* note 52 (attributing recent rise in NFT trading to new utility NFT releases, suggesting buyers are seeking higher returns and focusing on underlying value).

[123] *See supra* note 44 and accompanying text (observing that investors may think they can easily sell interests that are easily transferable, confusing ease of transferability with market demand for the transfer).

sponsors tend to be FinTech firms.[124] Just like "to a cobbler there's nothing like leather,"[125] these firms naturally emphasize their craft, using blockchain (or other FinTech cryptography) to evidence the interests issued to investors and sometimes even requiring investors to purchase those interests with cryptocurrencies.[126] Focusing on complex technology, investors can lose their focus on market realities. Somewhat similar confusion may have occurred prior to the global financial crisis when investors purchased highly complex asset-backed security collateralized debt obligation ("ABS CDO") securities in private placements thinking, incorrectly, that they could resell those securities.[127]

A market failure related to information asymmetry is what this Author has called a "mutual misinformation" problem: that none of the transaction parties—in our case, neither the sponsor nor the investors—fully understands a highly complex transaction.[128] In certain complex leveraged resecuritizations of underlying mortgage loans that led to the global financial crisis, for example, it appears that neither the sponsor of the securitizations nor the investors fully understood the transactional risks.[129] The complexity of non-cash-flow monetization transactions raises that same possibility.

b. *FinTech-Related Market Failures*

Market failures related to FinTech, blockchain, and the secure recording of ownership and transfer of investor interests would result primarily from

[124] *See, e.g.*, *Discover 5 Top Tokenization Solutions Impacting Financial Services*, STARTUS INSIGHTS: RSCH. BLOG, https://www.startus-insights.com/innovators-guide/discover-5-top-tokenization-solutions-impacting-financial-services/ [https://perma.cc/EEE8-9PZA] (last visited Apr. 18, 2023) (finding hundreds of FinTech startups in tokenization field).

[125] ISAIAH BERLIN, THE HEDGEHOG AND THE FOX 27 (Henry Hardy ed., 2d ed. 2013).

[126] *See, e.g.*, *Buy BITCAR Tokens*, BITCAR, [https://web.archive.org/web/20180220105827/https://mainsale.bitcar.io/] (last visited Apr. 18, 2023) (noting Ethereum, Bitcoin, and Litecoin as only payment options for BITCAR tokens). In the BitCar transaction, *see supra* note 70, although BitCar could have issued CAR tokens to investors in exchange for cash, it chose instead to require investors first to purchase so-called BITCAR tokens and then to use the BITCAR tokens to buy the CAR tokens. *See* BITCAR, TERMS AND CONDITIONS 4 (2017), [https://web.archive.org/web/20180830204532/https://bitcar.io/documents/Terms_and_Conditions.pdf]. On its face, that two-step purchase process makes no sense and possibly adds transaction costs. A possible reason is that BitCar issued the BITCAR tokens as a cryptocurrency on the Ethereum blockchain platform. *See id.*

[127] *Cf.* Steven L. Schwarcz, *Disclosure's Failure in the Subprime Mortgage Crisis*, 2008 UTAH L. REV. 1109, 1116 ("It does not even appear that ABS CDO securities[, which were issued in private placements,] always had a secondary market for trading.").

[128] *See* Steven L. Schwarcz, *Regulating Complexity in Financial Markets*, 87 WASH. U. L. REV. 211, 241-42 (2009) (explaining underwriters purchased ABS CDO securities because they failed to understand risks, "inadvertently mislead[ing] investors into buying those securities").

[129] *See* Steven L. Schwarcz, *Systematic Regulation of Systemic Risk*, 2019 WIS. L. REV. 1, 18-19 [hereinafter Schwarcz, *Systematic Regulation*].

breaches of cybersecurity and failures of operational resilience.[130] The primary cybersecurity risk is that the cryptology protecting the ownership and transfer of investor interests may fail or be compromised, enabling cyberattacks.[131] Cyberattacks can heavily impact the financial sector.[132] For example, "PolyNetwork briefly lost $600 million of its customers' assets to hackers, much of which was returned only after the site's founders begged the thieves to relent."[133] Even more dramatically, the 2021 ransomware-based[134] cyberattack on Colonial Pipeline disrupted the fuel supply to millions of Americans along the east coast.[135] Failures of operational resilience, in contrast, could undermine the secure recording of ownership and transfer of investor interests by disrupting electronic records.[136]

[130] *See* Jo Ann Barefoot, *Digital Technology Risks for Finance: Dangers Embedded in Fintech and Regtech* 2-4 (M-RCBG Assoc. Working Paper Series, Paper No. 151, 2020), https://www.hks.harvard.edu/sites/default/files/centers/mrcbg/files/AWP_151_final.pdf [https://perma.cc/3LAD-9H3U]. Fraud is another possible FinTech-related market failure. Levin, *supra* note 48 ("Experts say buyers should be aware of . . . fraud in the budding [NFT] market."). Levin quotes FinTech professional Nadya Ivanova as saying, "Anybody can theoretically mint an NFT out of a file that doesn't belong to them and pass it off as their own to unsuspecting buyers." *Id.* Levin also observes that "[v]arious types of [price] manipulation prevalent in other markets [such as wash trading] also may be happening" in the NFT market. *Id.* The broader issue of FinTech and Internet fraud is beyond the scope of this Article.

[131] Barefoot, *supra* note 130, at 2-4.

[132] Anton N. Didenko, *Cybersecurity Regulation in the Financial Sector: Prospects of Legal Harmonization in the European Union and Beyond*, 25 UNIF. L. REV. 125, 129 (2020).

[133] Eric Lipton & Ephrat Livni, *Crypto's Rapid Move into Banking Elicits Alarm in Washington*, N.Y. TIMES (Nov. 1, 2021), https://www.nytimes.com/2021/09/05/us/politics/cryptocurrency-banking-regulation.html.

[134] Ransomware is a form of malware that maliciously encrypts files on a device, to be decrypted in exchange for ransom. *Stop Ransomware*, CYBERSECURITY & INFRASTRUCTURE SEC. AGENCY, https://www.cisa.gov/ransomware [https://perma.cc/U963-ZNGW] (last visited Apr. 18, 2023). There were almost 400 ransomware attacks on critical infrastructure in 2020. Meryl Kornfield & Hannah Knowles, *Ransomware Attacks Could Reach 'Pandemic' Proportions. What To Know After the Pipeline Hack.*, WASH. POST (May 12, 2021, 7:17 PM), https://www.washingtonpost.com/business/2021/05/12/ransomware-attack/.

[135] *See, e.g.*, Marisa Peñaloza, *Ransomware Attack Shuts Down a Top U.S. Gasoline Pipeline*, NPR (May 9, 2021, 11:07 AM), https://www.npr.org/2021/05/08/995040240/cybersecurity-attack-shuts-down-a-top-u-s-gasoline-pipeline [https://perma.cc/B8M3-87QJ].

[136] *See generally* Tanai Khiaonarong, Harry Leinonen & Ryan Rizaldy, *Operational Resilience in Digital Payments: Experiences and Issues* (Int'l Monetary Fund, Working Paper No. 21/288, 2021), https://www.imf.org/en/Publications/WP/Issues/2021/12/10/Operational-Resilience-in-Digital-Payments-Experiences-and-Issues-510393 [https://perma.cc/57PN-BTTE] (explaining inevitable risks of operational disruptions to digital payment systems and new concerns associated with growing demand and emerging technologies); Cedric Pernet, *NFTs: The Growing Cybercrime Risks and How To Avoid Them*, TECHREPUBLIC (Mar. 14, 2022, 6:00 AM), https://www.techrepublic.com/article/nfts-cybercrime-risks-avoid-them/ [https://perma.cc/PF6H-KCQH] (listing some of NFTs' vulnerabilities to cybercrime).

B. *Designing Regulation To Correct the Market Failures*

Next, consider how to design regulation to correct the foregoing market failures.

1. Correcting Market Failures Associated with the Inputs

As observed, the inability of the inputs to generate cash can become serious when investors buy interests in nonfinancial assets thinking that the interests themselves are liquid. When discussing the outputs, this Article examines how securities law and better disclosure might correct that information asymmetry.[137]

To control the externalities caused by illiquidity, regulators could focus on increasing liquidity. For example, regulation might require that investors have the right (perhaps by supermajority vote) to force a sale of the underlying nonfinancial assets under specified circumstances to create liquidity.[138] That approach would be rather paternalistic, though, and (as later discussed)[139] it would produce only marginal benefits and could be costly.

In considering that approach, regulators should take into account that not all externalities justify regulation. In business, for example, firms routinely engage in risk-taking that causes externalities, "yet regulation controls few of those externalities. Regulation cannot, realistically, control all corporate externalities."[140] Regulation nonetheless should protect against systemic externalities, which can "impact the real economy"[141] and lead to "widespread poverty and unemployment."[142] Illiquidity that affects SIFIs could cause systemic externalities.[143] Politically, however, regulators might be accused of favoring large institutions if they limited to SIFI investors the right to force a sale of the underlying nonfinancial assets. A more targeted way to protect SIFIs from illiquidity might be simply to restrict the amount of (illiquid) non-cash-flow monetization interests that a SIFI may hold.[144]

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[137] *See infra* Section II.B.3.a.

[138] *Compare supra* text accompanying note 29 (observing that investors do not usually have that right), *with supra* note 71 and accompanying text (observing that Masterworks tokenizes artwork in manner similar to cash-flow securitization insofar as investors ultimately can be paid with cash proceeds received from selling underlying artwork).

[139] *See infra* note 208 and accompanying text.

[140] Steven L. Schwarcz, *Misalignment: Corporate Risk-Taking and Public Duty*, 92 NOTRE DAME L. REV. 1, 16 (2016) (footnote omitted).

[141] *Id.* at 17.

[142] Steven L. Schwarcz, *Systemic Risk*, 97 GEO. L.J. 193, 207 (2008).

[143] *See supra* note 108 and accompanying text.

[144] SIFIs are subject to restrictions, for example, on their investments in securities that, in the event of certain contingencies, could convert from debt to equity. *See* MARC LABONTE, CONG. RSCH. SERV., R45711, ENHANCED PRUDENTIAL REGULATION OF LARGE BANKS 11-12 (2019), https://sgp.fas.org/crs/misc/R45711.pdf [https://perma.cc/5YDS-JFAQ]. Likewise, Regulation A restricts purchases by nonaccredited investors in unregistered securities. *See infra* notes 187-88 and accompanying text.

Finally, there are somewhat blunderbuss ways to try to correct market failures associated with the inputs. One would be to align the sponsor's and investors' interests to better assure the quality of what is sold.[145] For example, regulation could require that the sponsor retain some minimum (unhedged) investment in the interests sold to investors. This regulatory approach would parallel the post-global financial crisis legislation enacted to address moral hazard[146] that supposedly arose out of the originate-to-distribute model of asset origination.[147] Another, which this Article does not recommend, might even be to ban highly complex non-cash-flow monetizations.[148]

2. Correcting Market Failures Associated with the Intermediate Structure

These market failures are the externalities that would result from the intermediate structure not being bankruptcy remote.[149] Regulation ensuring that non-cash-flow monetizations always utilize a bankruptcy-remote structure would redress those externalities. Securitization transactions provide a time-tested template for making the intermediate structure bankruptcy-remote.[150] Under the same-business, same-risks, same-rules principle,[151] that template also should work for non-cash-flow monetizations.

Besides being rather paternalistic,[152] regulation requiring non-cash-flow monetizations to utilize bankruptcy-remote structures would introduce significant transaction costs. In the context of securitization, those transaction costs are justified because they are relatively small compared to the typical

[145] Misalignment of such interests could create externalities but would not technically constitute a market failure unless the sponsor were an agent for the investors. *Cf. supra* notes 109-10 and accompanying text (discussing scenarios in which value of inputs depends on sponsor performing servicing or other actions as agent for investors).

[146] Moral hazard refers to the temptation for "persons protected from the negative consequences of their risky actions . . . to take more risks." Steven L. Schwarcz, *Too Big To Fool: Moral Hazard, Bailouts, and Corporate Responsibility*, 102 MINN. L. REV. 761, 761 (2017).

[147] *See* Luis A. Aguilar, *Skin in the Game: Aligning the Interests of Sponsors and Investors*, U.S. SEC. & EXCH. COMM'N (Oct. 22, 2014), https://www.sec.gov/news/public-statement/2014-spch102214laa [https://perma.cc/S9BD-SZNW] ("[The credit] risk retention rules are intended to align the incentives of sponsors and ABS investors by requiring sponsors to retain a financial interest and maintain skin in the game. In particular, the final rules require that, unless an exemption is available, sponsors must retain at least a 5% economic interest in the credit risk of the securitized assets.").

[148] *Cf. infra* notes 204-06 and accompanying text (comparing costs and benefits of such ban).

[149] *See supra* note 112 and accompanying text (explaining these externalities include investor losses and possibly defaults).

[150] *See* Schwarcz, *What Is Securitization?*, *supra* note 2, at 1283.

[151] *See supra* note 95 and accompanying text.

[152] *Cf. supra* notes 138-39 and accompanying text (observing that regulation requiring investors to have right to force sale of underlying nonfinancial assets would be rather paternalistic).

transaction size (typically in the hundreds of millions of dollars)[153] and because rating agencies require bankruptcy remoteness before providing credit ratings to the securities.[154] Non-cash-flow monetization transactions, however, tend to be much smaller (typically a fraction of the size of a securitization transaction),[155] and rating agencies do not rate the interests that are sold to investors.[156]

Another possible solution to these risks would be to enact regulations providing that interests in non-cash-flow monetizations represent direct property rights in the underlying nonfinancial assets. This would parallel how commercial law responded to the advent of the indirect holding system for securities, which changed the evidencing of investment securities from paper to electronic form and also changed their transfer from physical possession to notation on the transferor's records.[157] Each transferor thus became an intermediary in the transfer process.[158] That created potential "intermediary risk": the risk that the claims of an intermediary's creditors could impair the interests of transferees of securities from that intermediary.[159] To address intermediary risk, the Uniform Commercial Code was amended in America to clarify that such transferees have property, not merely contract, rights in the transferred securities[160]—and thus their rights are not subject to claims of transferors' creditors.[161]

Recall that another risk associated with the intermediate structure is that the sponsor's failure would harm the investors if the sponsor no longer could perform any servicing or other actions as agent for the investors.[162] A possible (at least partial) solution might be to require the sponsor to separately maintain

[153] These numbers are based on the Author's experience as a major law firm partner.

[154] *See* Schwarcz, *What Is Securitization?*, *supra* note 2, at 1286 (explaining that intermediate structure (SPV) must be bankruptcy remote or originator must be investment grade).

[155] *Cf.* Koba Molenaar, *NFTs Statistics—Sales, Trends and More [2022]*, INFLUENCER MARKETINGHUB (Jan. 20, 2022), [https://web.archive.org/web/20220125080500/https://influencermarketinghub.com/nfts-statistics/] (reporting that, as of January 2022, aggregated total of "NFT sales on average tend to range anything between $10 million to $20 million per week").

[156] Research has not revealed any rated interest in a non-cash-flow monetization. That is not surprising; rating agencies normally limit their ratings to debt securities that have a repayment schedule.

[157] Steven L. Schwarcz, *Intermediary Risk in a Global Economy*, 50 DUKE L.J. 1541, 1547-48 (2001) [hereinafter Schwarcz, *Intermediary Risk*].

[158] *Id.*

[159] *Id.* at 1544.

[160] *See id.* at 1553-57; U.C.C. § 8-503 (AM. L. INST. & UNIF. L. COMM'N 1994).

[161] *See* Schwarcz, *Intermediary Risk*, *supra* note 157, at 1556; *cf. supra* note 116 and accompanying text (explaining that if investors' interests are characterized as property rights in underlying assets, debt claims of the sponsor's creditors should be subordinate, or possibly not attach, to those assets).

[162] *See supra* notes 109-10 and accompanying text.

back-up computerized files relating to the underlying assets.[163] Other solutions might parallel the independent servicing and back-up servicer protections traditionally used in securitization transactions.[164]

3. Correcting Market Failures Associated with the Outputs

Next, consider how to correct the market failures associated with the outputs: information asymmetry and FinTech-related market failures.

a. *Information Asymmetry*

Securities law, which generally imposes a disclosure requirement, is the body of law designed to correct information asymmetry. There is controversy, though, whether interests in non-cash-flow monetizations are securities—and thus should be subject to securities law.[165] The interests generally are characterized as tokens or coins,[166] and some argue that their sale should not represent the issuance of securities where the funds raised are used for nontraditional investments, such as purchasing goods on a blockchain platform.[167]

If interests in non-cash-flow monetizations are not treated as securities, securities regulators may be unable to protect investors in those interests (although legislators could consider amending securities laws to include such interests as securities).[168] Even financially unsophisticated individuals—

[163] *Cf.* Levin, *supra* note 48 (suggesting "storing [computerized] files using decentralized services").

[164] *See* STRUCTURED FINANCE, *supra* note 12, § 4:5, at 4-9 to 4-10; *see also Parties Involved in Securitisation Transactions*, *supra* note 67.

[165] *See generally* Michael Mendelson, *From Initial Coin Offerings to Security Tokens: A U.S. Federal Securities Law Analysis*, 22 STAN. TECH. L. REV. 52 (2019).

[166] Alon Harnoy, *Initial Coin Offerings (ICOs): SEC Regulation and Available Exemptions from Registration*, SMITH, GAMBRELL & RUSSELL, LLP, https://www.sgrlaw.com/initial-coin-offerings-icos-sec-regulation-and-available-exemptions-from-registration/ [https://perma.cc/7G6M-WHZG] (last visited Apr. 18, 2023).

[167] Matt Levine, *The SEC Really Doesn't Like ICOs*, BLOOMBERG (Oct. 14, 2019, 12:04 PM), https://www.bloomberg.com/opinion/articles/2019-10-14/the-sec-really-doesn-t-like-icos. Although similar to the initial public offering of debt or equity securities to investors, the initial public offering of tokenized interests commonly is called an initial coin offering ("ICO"). ICOs are reputed to have raised $7.8 billion in 2018 alone. Harnoy, *supra* note 166.

[168] *See* Matt Robinson, *SEC Scrutinizes NFT Market over Illegal Crypto Token Offerings*, BLOOMBERG (Mar. 2, 2022, 4:56 PM), https://www.bloomberg.com/news/articles/2022-03-02/sec-scrutinizes-nft-market-over-illegal-crypto-token-offerings ("A key legal question is whether digital assets including NFTs are securities, and therefore subject to the same rules as stocks."); *cf.* Cheyenne Ligon, *SEC Commissioner Hester Peirce Says Washington Doesn't Need a New Crypto Regulator*, COINDESK (Jan. 3, 2022, 10:08 AM), https://www.coindesk.com/policy/2021/12/30/sec-commissioner-hester-peirce-says-washington-doesnt-need-a-new-crypto-regulator/ (quoting Hester Peirce, SEC Commissioner, as saying, "Given the breadth of the NFT landscape, certain pieces of it might fall within our jurisdiction").

including investors who do not understand the basics of what they are buying[169]—could then invest in those interests, without regulatory protection.

The formerly high perceived value of interests in non-cash-flow monetizations and the recent growth in NFT trading in response to new NFT releases suggest that they should be treated as securities because investors are looking to profit on their resale value.[170] That value far exceeds what those interests would be worth merely as a grant of practical utility. For example, Nyan Cat, an animated meme of a flying cat, sold for $580,000,[171] EtherRock, a digital image of a rock, sold for $1.3 million,[172] and a digital fragrance by Look Labs sold for $18,000.[173] The only explanation for these high values is that investors purchase those interests not only for practical utility but also for their investment value. That would signal that they are investing in securities.

In the United States, the Securities and Exchange Commission ("SEC") similarly believes that interests in non-cash-flow monetizations are securities. There have been several enforcement actions, for example, alleging that initial coin offerings constitute the issuance of unregistered securities.[174] Former SEC Chairman Jay Clayton publicly announced that merely calling a token a "'utility' token" or a "currency," or highlighting the token's utility function, does not avoid the token being a security.[175] In characterizing the issuance of tokens under the federal securities laws, the SEC will look to the substance of the transaction, not the form—thus, "[t]okens and offerings that incorporate features and marketing efforts that emphasize the potential for profits based on the entrepreneurial or managerial efforts of others continue to contain the hallmarks

[169] *Cf. supra* note 46 and accompanying text.

[170] *See supra* notes 79, 122 and accompanying text.

[171] Erin Griffith, *Why an Animated Flying Cat with a Pop-Tart Body Sold for Almost $600,000*, N.Y. TIMES (May 27, 2021), https://www.nytimes.com/2021/02/22/business/nft-nba-top-shot-crypto.html.

[172] MacKenzie Sigalos, *Somebody Just Paid $1.3 Million for a Picture of a Rock*, CNBC: CRYPTO DECODED (Aug. 23, 2021, 9:37 PM), https://www.cnbc.com/2021/08/23/people-are-paying-millions-of-dollars-for-digital-pictures-of-rocks.html.

[173] James Parkes, *Look Labs Creates "World's First Digital Fragrance" as NFT*, DEZEEN (Apr. 8, 2021), https://www.dezeen.com/2021/04/08/look-labs-digital-fragrance-nft/ [https://perma.cc/VKB4-7A3N]. The buyer cannot smell the digital perfume but can view the digital visualization of the molecular wavelengths. *See id.* ("Look Labs has created a digital fragrance using near-infrared spectroscopy to create a digital reflection of the scent, which has been encoded as an NFT.").

[174] *Initial Coin Offerings (ICOs)*, U.S. SEC. & EXCH. COMM'N, https://www.sec.gov/ICO [https://perma.cc/8BD4-25AB] (last updated Apr. 11, 2023).

[175] Jay Clayton, *Statement on Cryptocurrencies and Initial Coin Offerings*, U.S. SEC. & EXCH. COMM'N (Dec. 11, 2017), https://www.sec.gov/news/public-statement/statement-clayton-2017-12-11 [https://perma.cc/M6F6-H7WQ].

of a security under U.S. law."[176] Companies like Masterworks explicitly advertise such a relationship on their websites.[177]

Certain sponsors already comply with U.S. securities law,[178] but one might question whether that compliance should be sufficient. Such sponsors of tokenized offerings as Masterworks and Rally comply with securities law by conducting private offerings through Regulation D and public sales through Tier II of Regulation A.[179] The former, but not the latter, protects unsophisticated retail investors.

Regulation D provides a private offering exemption from the general rule that securities must be registered with the SEC. Under Rule 506, issuers may sell securities to an unlimited number of accredited investors and up to thirty-five sophisticated nonaccredited investors.[180] Rule 506 also permits an issuer to "broadly solicit and generally advertise the [securities] offering"[181] so long as the issuer takes reasonable steps to verify that the investors are accredited.[182] However, Regulation A[183] provides minimal protection for unsophisticated retail investors. It merely requires that the issuer file an offering statement with the SEC,[184] which serves as the disclosure document for investors. If the offering does not exceed $20 million in a twelve-month period, there are no qualification

[176] *Id.* Under the Securities Act of 1933, the definition of a security includes a "certificate of interest or participation in any profit-sharing agreement," a "transferable share," and an "investment contract." 15 U.S.C. § 78c(a)(10). The last includes a contract for (1) an investment of money, (2) in a common enterprise, and (3) with a reasonable expectation of profits, (4) to be derived from the entrepreneurial or managerial efforts of others. SEC v. W.J. Howey Co., 328 U.S. 293, 298-99 (1946).

[177] *See A Complete Platform for Investing in Art*, *supra* note 69 (offering investors "diversified portfolio of iconic works of art curated by [Masterworks'] industry-leading research team").

[178] *See, e.g.*, Otis Collection LLC, Preliminary Offering Circular Statement (Form 1-A/A) (June 17, 2021), https://www.sec.gov/Archives/edgar/data/1795168/000179516821000008/f1aa2021_otiscollection.htm#tocAnchor1-0 [https://perma.cc/YBQ4-3BW3] (describing Otis Collection LLC's offering through Regulation A).

[179] MASTERWORKS, https://www.masterworks.com/ [https://perma.cc/P8AN-WTGP] (last visited Apr. 18, 2023) (providing at bottom of webpage link to "important disclosures" concerning SEC filings); RSE COLLECTION, LLC, OFFERING OF SERIES #77LE1 INTERESTS (2016), https://rallyrd.com/wp-content/uploads/2021/05/77LE1_legal-min.pdf [https://perma.cc/R75A-ND33]; *cf.* Harnoy, *supra* note 166 (discussing U.S. securities law exemptions for ICOs).

[180] 17 C.F.R. § 230.506 (2023); *see also Rule 506 of Regulation D*, U.S. SEC. & EXCH. COMM'N, https://www.investor.gov/introduction-investing/investing-basics/glossary/rule-506-regulation-d [https://perma.cc/LJU2-45KP] (last visited Apr. 18, 2023).

[181] *Rule 506 of Regulation D*, *supra* note 180.

[182] 17 C.F.R. § 230.506(c).

[183] 17 C.F.R. §§ 230.251-.263; *see also Regulation A*, U.S. SEC. & EXCH. COMM'N, https://www.sec.gov/smallbusiness/exemptofferings/rega [https://perma.cc/5NYW-4UCX] (last updated Apr. 6, 2023).

[184] 17 C.F.R. § 230.251(d).

requirements for investors or limits on the amount a person may invest.[185] Even if the offering exceeds $20 million (but does not exceed $75 million in a twelve-month period), Regulation A imposes only limited restrictions[186]: there are no qualification requirements for investors, although the rule limits purchases by nonaccredited (effectively unsophisticated)[187] investors to no more than ten percent of the greater of the investor's annual income or net worth.[188]

Regulators should further study how to design disclosure and other securities law protections to better safeguard investors, especially unsophisticated retail investors. For example, should unsophisticated retail investors ever be allowed to invest in non-cash-flow monetization? Even for sophisticated investors, disclosure will not be a panacea. For example, disclosure cannot solve the mutual misinformation problem.[189] If the sponsor itself does not fully understand its non-cash-flow monetization transaction, its disclosure will necessarily be imperfect.

Disclosure also is unlikely to change human nature.[190] Some investors, possibly influenced by the recent history of rapidly rising prices of interests in non-cash-flow monetizations, may be looking to resale value of their interests.[191] Disclosure alone is unlikely to convince them that those rising prices may simply represent a bubble.[192] History also suggests that disclosure alone may not adequately address investor misconceptions about the relatively illiquid nature of complex securities, such as the interests in non-cash-flow monetization transactions. Prior to the global financial crisis, for example, "lack of liquidity [for certain complex, privately placed mortgage-backed securities] appears to

[185] *Id.* § 230.251(a)(1) (establishing requirements for so-called Tier 1 offerings). Moreover, there is no requirement to provide Exchange Act reports until the issuer has more than 500 shareholders and $10 million in assets. *See* Will Kenton, *What Is Regulation A? Definition, Update, Documenation* [sic]*, and Tiers*, INVESTOPEDIA (Feb. 3, 2021), https://www.investopedia.com/terms/r/regulationa.asp [https://perma.cc/693M-QNUE]. The issuer nonetheless "must issue a report on the offering's final status." *Id.*

[186] 17 C.F.R. § 230.251(a)(2) (establishing requirements for so-called Tier 2 offerings). Tier 2 issuers are required, however, to produce audited financial statements and file continual reports. *See* Kenton, *supra* note 185.

[187] An "accredited" investor is one who meets certain income and net worth standards, which implicitly stand in to demonstrate their financial sophistication. 17 C.F.R. § 230.501(a).

[188] *Id.* § 230.251(d)(2)(C).

[189] *See supra* notes 128-29 and accompanying text (discussing mutual misinformation problem).

[190] *Cf.* Steven L. Schwarcz, *Regulating Complacency: Human Limitations and Legal Efficacy*, 93 NOTRE DAME L. REV. 1073, 1099 (2018) [hereinafter Schwarcz, *Regulating Complacency*] (arguing some human failures need behavioral psychology-related solutions and cannot be solved by disclosure alone).

[191] *See supra* notes 121-22 and accompanying text.

[192] *Cf.* Schwarcz, *Regulating Complacency*, *supra* note 190, at 1085 (observing that cognitive biases can combine to create a tendency to define future events by recent past).

have been a standard disclosure item."[193] Nonetheless, "the problem was less issuer failure to disclose the illiquidity risk than investor failure to appreciate that disclosure," including the failure to recognize the extent of the illiquidity risk.[194]

b. *FinTech-Related Market Failures*

Finally, consider how regulation should address cybersecurity risk and the risk of failures of operational resilience. Recall that the primary cybersecurity risk is that the cryptology protecting the ownership and transfer of investor interests may fail or be compromised, enabling cyberattacks.[195] Governments worldwide already are trying to devise effective protection against cyberattacks.[196] In the United States, for example, President Joe Biden signed an executive order, shortly after the Colonial Pipeline attack, to begin improving cybersecurity in the private sector.[197] The need for any more specialized regulation regarding ownership and transfer of investor interests should probably be reassessed after these broader efforts are completed.

Recall also that failures of operational resilience could undermine the secure recording of ownership and transfer of investor interests by disrupting electronic records.[198] Regulation could help to protect against this threat of disruption by requiring the electronic infrastructure for the recording of ownership and transfer of investor interests to include secure hardware technology, additional security

[193] Steven L. Schwarcz, *Protecting Financial Markets: Lessons from the Subprime Mortgage Meltdown*, 93 MINN. L. REV. 373, 380 n.35 (2008) ("There is no assurance that . . . a secondary market [in the securities] will develop or, if it develops, that it will continue. Consequently, you may not be able to sell your [securities] readily or at prices that will enable you to realize your desired yield. The market values of the [securities] are likely to fluctuate; these fluctuations may be significant and could result in significant losses to you." (alterations in original) (quoting Soundview Home Loan Trust 2007-WMC1, Prospectus Supplement (Form 424B5) (Mar. 12, 2007), https://www.sec.gov/Archives/edgar/data/1386634/000088237707000805/d651935_424b5.htm [https://perma.cc/9SRX-RM7M])).

[194] *Id.*

[195] *See supra* notes 131-35 and accompanying text.

[196] *See, e.g.*, Didenko, *supra* note 132, at 129.

[197] *FACT SHEET: President Signs Executive Order Charting New Course To Improve the Nation's Cybersecurity and Protect Federal Government Networks*, WHITE HOUSE (May 12, 2021), https://www.whitehouse.gov/briefing-room/statements-releases/2021/05/12/fact-sheet-president-signs-executive-order-charting-new-course-to-improve-the-nations-cybersecurity-and-protect-federal-government-networks/ [https://perma.cc/YH68-T8TE]. Among other things, the executive order removed barriers to information sharing on data breaches and cyberattacks between the government and private sector, improved the federal government's cybersecurity standards, heightened security standards for software sold to the government, and established a Cybersecurity Safety Review Board. *Id.*

[198] *See supra* note 136 and accompanying text.

mechanisms, and cryptographic protections.[199] Regulation also could require sponsors of non-cash-flow monetizations to back up their cryptology through separate networks.[200]

III. COST-BENEFIT ANALYSIS

Financial regulation is justified only if its benefits exceed its costs.[201] The logic follows Kaldor-Hicks efficiency, the practical standard used by economists to assess the economic desirability of a project. A project is Kaldor-Hicks efficient if its overall benefits exceed its overall costs, regardless of who bears the costs and who receives the benefits.[202]

As discussed below, this Article's cost-benefit balancing is based on rough approximations and certain untested assumptions. The Article therefore cannot, and does not purport to, conclude definitively that any particular regulatory proposal should (or should not) be justified. Nonetheless, this Article's approach to cost-benefit balancing should provide a useful way of thinking about whether regulators should implement a given proposal. The discussion next applies that balancing to regulating the inputs, the intermediate structure, and the outputs.

A. *Regulating the Inputs*

This Article proposes several ways to regulate liquidity risk, the primary risk associated with the inputs. Because illiquidity is the main cause of bankruptcy and a major threat to the financial system,[203] successful regulation of that risk would provide significant benefits.

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[199] *Cf.* Sarah Allen, Srđjan Čapkun, Ittay Eyal, Giulia Fanti, Bryan A. Ford, James Grimmelmann, Ari Juels, Kari Kostiainen, Sarah Meiklejohn, Andrew Miller, Eswar Prasad, Karl Wüst & Fan Zhang, *Design Choices for Central Bank Digital Currency: Policy and Technical Considerations* 54-61 (Nat'l Bureau of Econ. Rsch., Working Paper No. 27634, 2020), https://www.nber.org/system/files/working_papers/w27634/w27634.pdf [https://perma.cc/39TC-999Q] (discussing those protections in context of cryptocurrencies).

[200] In the context of digital currencies, for example, the most likely failure might occur if certain validator nodes are compromised or stop operating. FIN. STABILITY BD., ADDRESSING THE REGULATORY, SUPERVISORY AND OVERSIGHT CHALLENGES RAISED BY "GLOBAL STABLECOIN" ARRANGEMENTS 13 (2020), https://www.fsb.org/wp-content/uploads/P140420-1.pdf [https://perma.cc/PNR4-H4GN]. In the event of validator failure, transaction processing could be delayed with "large volumes of transactions [that] might amplify users' loss of confidence, and trigger further redemption requests." *Id.* Regulators might be able to protect against that risk by requiring the stablecoin issuer to maintain backup validators.

[201] *See, e.g.*, Eric A. Posner & E. Glen Weyl, *Benefit-Cost Paradigms in Financial Regulation*, 43 J. LEGAL STUD. (SPECIAL ISSUE) S1, S3 (2014) (arguing financial regulation should be subject to cost-benefit analysis); Cass R. Sunstein, *Financial Regulation and Cost-Benefit Analysis*, 124 YALE L.J.F. 263, 263 (2015) ("Cost-benefit analysis is best understood as a way for agencies to ensure that their decisions are informed . . . .").

[202] ROBIN PAUL MALLOY, LAW IN A MARKET CONTEXT: AN INTRODUCTION TO MARKET CONCEPTS IN LEGAL REASONING 190 (2004).

[203] *See supra* notes 39-40 and accompanying text.

Probably the least costly regulatory approach would be to require better disclosure to make investors more aware of the risk. As discussed, however, disclosure may be insufficient.[204] As an alternative response, regulators might consider banning highly complex non-cash-flow monetizations. Such a ban, however, would eliminate any benefits from those transactions, such as the benefit of increasing financial inclusiveness—although this Article later shows how roughly half of those benefits could be achieved by applying FinTech to fractionalize virtually any investment security.[205] It also would create the almost insoluble problem of trying to define what level of complexity might justify such a ban. For that reason, among others, the problem of "complexity may well pose the greatest 21st century challenge to the financial system."[206]

Another way to regulate liquidity risk would be to give investors the right to force a sale of the underlying nonfinancial assets under specified circumstances.[207] Although that would directly address liquidity risk, the benefits would be marginal because, among other impediments, the unique and sometimes fictitious nature of those assets can make them difficult to sell.[208] That approach also could be costly: it could create conflicts between owners of those assets and investors, and possibly also among investors regarding timing of sales. If only SIFIs had the right to force a sale, those costs might be justified. Using the global financial crisis as a rough measure, for example, avoiding another systemic financial collapse could save many trillions of dollars.[209] As observed, however, restricting that right to SIFIs would not appear to be politically feasible.[210]

This Article proposes a more targeted way to protect SIFIs from illiquidity: restrict the amount of non-cash-flow monetization interests that a SIFI may hold. This approach would provide significant benefits by helping to avoid SIFI

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[204] *See supra* notes 128-29 and accompanying text (explaining "mutual misinformation problem"); *supra* notes 189-94 and accompanying text (discussing disclosure's limitations).

[205] *Cf. infra* note 223 and accompanying text (explaining that blockchain and other FinTech applications could be used to fractionalize virtually any investment security into multitude of interests, thereby hugely expanding investor pool).

[206] Schwarcz, *Systematic Regulation*, *supra* note 129, at 27.

[207] *See supra* note 138 and accompanying text.

[208] *See supra* note 29 and accompanying text.

[209] Eleazar David Melendez, *Financial Crisis Cost Tops $22 Trillion, GAO Says*, HUFFPOST (Feb. 14, 2013, 7:49 PM), https://www.huffingtonpost.com/2013/02/14/financial-crisis-cost-gao_n_2687553.html [https://perma.cc/GE7K-RXXF] (citing U.S. GOV'T ACCOUNTABILITY OFF., GAO-13-180, FINANCIAL REGULATORY REFORM: FINANCIAL CRISIS LOSSES AND POTENTIAL IMPACTS OF THE DODD-FRANK ACT 17, 21 (2013), https://www.gao.gov/assets/files.gao.gov/assets/gao-13-180.pdf [https://perma.cc/239G-S6BN]); *cf.* FED. RSRV. BANK OF MINNEAPOLIS, THE MINNEAPOLIS PLAN TO END TOO BIG TO FAIL 60 (2017), https://www.minneapolisfed.org/~/media/files/publications/studies/endingtbtf/the-minneapolis-plan/the-minneapolis-plan-to-end-too-big-to-fail-final.pdf?la=en [https://perma.cc/829M-EJ68] (observing financial crisis destroyed "trillions of dollars in American wealth").

[210] *See supra* notes 143-44 and accompanying text.

failures that could lead to another systemic financial collapse. Its costs would be low, and, politically, it would build on the post-global-financial-crisis legislation that seeks to regulate a SIFI's capital structure to minimize risk.[211]

Additionally, the Article suggests that requiring the sponsor to retain some minimum (unhedged) investment in the interests sold to investors could help to regulate liquidity risk by aligning the sponsor's and investors' interests, thereby better assuring the quality of what is sold. The benefits of this approach might be low, but the costs would also be low. Moreover, politically, this approach has direct precedent in the post-global-financial-crisis legislation that requires sponsors of securitization transactions to maintain at least a five percent (unhedged) investment in the securities sold to investors.[212]

B. *Regulating the Intermediate Structure*

Recall the risks associated with the intermediate structure: that in a bankruptcy of the sponsor, the rights of investors to the underlying assets could be subject to claims of the sponsor's creditors, or the investors might even lack any rights to those assets.[213] Because those risks could result in investor losses and defaults,[214] successful regulation could (again) provide significant benefits. This Article proposes two ways to regulate those risks.

One way would be to require sponsors of non-cash-flow monetizations to utilize a bankruptcy-remote structure.[215] That requirement, however, might undermine the cost effectiveness of non-cash-flow monetization transactions. Although the transaction costs of creating a bankruptcy-remote structure are justified in securitization transactions because of their large size (and also because rating agencies require such a structure to rate the securities), non-cash-flow monetization transactions tend to be much smaller in size (and rating agencies do not rate the interests that are sold to investors).[216]

Another way to regulate those risks would be equally effective but much less costly: enact legislation providing that investor interests in non-cash-flow monetizations represent direct property rights in the underlying nonfinancial assets. As discussed, this would parallel how commercial law responded to intermediary risk in the indirect holding system for securities.[217] Because it would be imposed by legislative fiat, this approach would have little or no direct cost. Also, by avoiding the need for a bankruptcy-remote structure, it would eliminate the transaction costs of creating such a structure. Enacting that legislation might, however, have indirect costs: the costs of generating the

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[211] *See supra* note 144 and accompanying text.

[212] *See supra* note 147 and accompanying text.

[213] *See supra* notes 112-17, 157-61 and accompanying text.

[214] *See supra* notes 112-13 and accompanying text.

[215] *See supra* notes 149-51 and accompanying text.

[216] *See supra* notes 153-56 and accompanying text.

[217] *See supra* notes 157-61 and accompanying text.

political will to make such a fundamental change in law,[218] and any unforeseen consequential costs of making that change.

C. *Regulating the Outputs*

Recall that two risks are associated with the outputs: information asymmetry and FinTech-related market failures. Although requiring disclosure (or at least, better disclosure) would help to reduce information asymmetry, the effectiveness of such a requirement would be limited.[219] This Article nonetheless proposes a disclosure requirement because of its relatively low cost. Also, because unsophisticated retail investors would be most susceptible to information asymmetry and to suffering harm from losses, this Article proposes that regulators further study how to design disclosure and other securities law protections to protect such investors, including by possibly limiting their investments in non-cash-flow monetizations.[220]

Finally, this Article argues that regulation is essential to address the two FinTech-related market failures: cybersecurity risk and the risk of failures of operational resilience. Because governments worldwide are already trying to devise effective protection against cyberattacks, the need for any more specialized regulation should be reassessed after these broader efforts are completed.[221] To address failures of operational resilience, the Article proposes requiring the electronic infrastructure for recording of ownership and transfer of investor interests to include secure hardware technology, in addition to cryptographic protections. It also proposes requiring sponsors to back up their cryptology through separate networks.[222] Although these protections would impose transaction costs, such costs should be justified given the potential harm to the non-cash-flow-monetization industry should a failure of operational resilience undermine the secure recording of ownership and transfer of investor interests.

CONCLUSION

Securitization has spawned a new generation of highly complex transactions that monetize nonfinancial assets and other rights that do not ordinarily generate cash flow. Although these so-called NFT and tokenization transactions promise greater financial inclusion and other benefits, they create enormous liquidity risk for investors. Illiquidity is the main cause of bankruptcy as well as a major systemic threat to the financial system.

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[218] *See* EFFECTIVE RESOLUTION OF SIFIS, *supra* note 108, at 69 ("[A]ny change in the statutory hierarchy of claims will have far reaching implication for the overall ranking of claims in insolvency . . . [and] would therefore require strong political support.").

[219] *Cf. supra* notes 128-29, 189 and accompanying text (discussing disclosure's limitations in context of non-cash-flow monetizations).

[220] *See supra* notes 204-06 and accompanying text.

[221] *See supra* notes 195-97 and accompanying text.

[222] *See supra* notes 198-200 and accompanying text.

To inform regulators, investors, and other market participants, this Article attempts to describe and demystify these transactions and to examine their risks and benefits. This Article explains, for example, how these transactions utilize blockchain cryptography and other FinTech to evidence the ownership and facilitate the transfer of investment interests. Thereafter, this Article analyzes how these transactions should be regulated to preserve their benefits and to minimize their risks.

Even beyond these contributions, an understanding of these transactions illustrates how their technological advances—and the benefits thereof—could be applied to virtually all types of financing. Their use of blockchain and other FinTech to evidence the ownership and transfer of investment interests, which underlies their promise of greater financial inclusion, should be able to be applied to fractionalize virtually any investment security into a multitude of interests. That, in turn, could hugely expand the investor pool, which not only would increase the financial access of small and medium-size businesses but potentially could provide lower-cost and much more accessible credit for all.[223] Significantly, if limited to investment securities that are cash-flow generating (like debt securities) or that have robust trading markets (like publicly traded equity securities), fractionalizing investment securities in that way could provide the foregoing benefits without increasing liquidity risk.[224]

[223] As a next step, scholars may wish to study the feasibility and merits of that outwardly radical, though likely inevitable, financial advance. The Author is currently engaging in this study. *See generally* Steven L. Schwarcz & Robert Bourret, *Fractionalizing Investment Securities: Using FinTech To Expand Financial Inclusion*, 84 OHIO ST. L.J. (forthcoming 2023), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4391083 [https://perma.cc/C5YH-B426].

[224] *Cf. supra* notes 35-38 and accompanying text (observing that investments in debt securities should not raise material liquidity risks because of their cash flow and that investments in equity securities should not raise material liquidity risks if investors can easily resell securities).