

University of Colorado L

From the Selected Works of Erik F. Gerding

2016

Inside Safe Assets

Erik F. Gerding



Available at: https://works.bepress.com/erik_gerding/17/

Inside Safe Assets

Anna Gelpern and Erik F. Gerding¹

Abstract

“Safe assets” is a catch-all term for financial contracts that market participants treat as if they were risk-free. These may include government debt, AAA corporate debt, bank debt, and asset-backed securities, among others. The International Monetary Fund estimated potential safe assets at more than \$114 trillion worldwide in 2011, over seven times the U.S. economic output that year.

To treat any contract as if it were risk-free seems delusional after apparently super-safe public and private debt markets collapsed overnight. Nonetheless, safe asset supply and demand have been invoked to explain shadow banking, financial crises, and prolonged economic stagnation. The economic literature speaks of safe assets in terms of poorly understood natural forces or essential particles newly discovered in a super-collider. Law is virtually absent in this account.

Our Article makes four contributions that help to establish law’s place in the safe asset debate and connect the debate to post-crisis law scholarship. First, we describe the legal architecture of safe assets. Existing theories do not explain where safe assets get their safety. Understanding this is an essential first step to designing a regulatory response to the risks they entail. Second, we offer a unified analytical framework that links the safe asset debate with post-crisis legal critiques of money, banking, structured finance and bankruptcy. Third, we highlight sources of instability and distortion in the legal architecture, and the political commitments embedded in it. Fourth, we offer preliminary prescriptions to correct some of these failings.

Precisely because there are no risk-free contracts, state intervention supplies the essential infrastructure to let people act as if some contracts were risk-free. The law constructs and maintains safe asset fictions, and it places them at the foundation of institutions and markets. This project is unavoidably distributive and fraught with distortions.

¹ Gelpern is Professor at Georgetown Law and a Non-Resident Senior Fellow at the Peter G. Peterson Institute for International Economics; Gerding is Professor and Associate Dean for Academic Affairs at Colorado Law. We are grateful to Nicholas Brock, Esther Cho, Alexander Dunn, Katherine Incantalupo, Marilyn Raisch, Emily Shroder, Sebastian Roing, and Longhao Wang for excellent research assistance, and to the organizers and participants in the conference “Reconceptualising Global Finance and its Regulation” at the University of Hong Kong for comments that launched this project. For helpful conversations and comments on the manuscript, we thank Michael Barr, Lawrence Baxter, Tamim Bayoumi, Donald Bernstein, William Bratton, Christine Desan, Della Fok, Joseph Gagnon, Morris Goldstein, Mitu Gulati, Robert Hockett, Ted Janger, Olivier Jeanne, Simon Johnson, Kathryn Judge, Donald Langevoort, Adam Levitin, Patricia McCoy, Geoffrey Miller, Saule Omarova, Avinash Persaud, Amiyatosh Purnanandam, Mark Roe, Ethan Scheinberg, Heidi Schooner, Brad Setser, Michele Shannon, Robert Thompson, Edwin M. Truman, and Theodore Yale, as well as participants in workshops and conferences at Brooklyn, Cornell, Georgetown, Glasgow, Harvard, Fordham, Michigan, and UCLA law schools, the law faculty at Oxford, the Federal Reserve Bank of Chicago, and the American Society for International Economic Law Interest Group Biennial Research Conference. Portions of this Article are adapted and expanded from a chapter, *Rethinking the Law in “Safe Assets”*, in the University of Hong Kong conference volume, *RECONCEPTUALISING GLOBAL FINANCE AND ITS REGULATION* (Ross P. Buckley, Emiliios Avgouleas & Douglas A. Arner eds., Cambridge U. Press 2016), as well as a companion symposium essay, *Private and Public Ordering in Safe Asset Markets*, 10 *BROOK. J. CORP. FIN. & COM. LAW* 97 (2015).

Table of Contents

Table of Contents	3
Introduction.....	4
I. What Are Safe Assets, What Do They Do, and Why Do They Matter?.....	10
A. Functions and Attributes: An Overview.....	11
B. Theories of Safe Assets	18
1. Safe Assets as a Global Store of Value	18
2. Safe Assets as “Transactions Technology”	20
C. Safe Assets, Money, and Government Debt.....	22
D. Controversies.....	24
II. The Legal Architecture of Safe Assets	25
A. Made Safe(r).....	28
1. Issuers	28
2. Assets.....	30
3. Made Safe(r): Conclusions	32
B. Labeled Safe	33
1. Label as License	33
2. Label as Price.....	36
3. Labeled Safe: Conclusions	37
C. Guaranteed Safe	38
1. Credit Guarantees	38
2. Liquidity Guarantees	40
3. Guaranteed Safe: Conclusions.....	43
D. Implications So Far	44
III. What Can Go Wrong? Architecture, Revisited.....	45
A. Misuse, Composition, and Contagion	45
B. Misalignment.....	47
C. Distribution: The Politics of Safe Assets	50
IV. Preliminary Prescriptions.....	52
A. Dynamic Alignment	52
B. Fixing Labels	56
Conclusions.....	58

Introduction

Multi-trillion dollar global markets depend on participants' ability to treat entire categories of financial contracts as if they were risk-free. "Safe assets" is a catch-all term to describe such contracts, which have at various times included government debt, bank deposits, AAA-rated corporate debt and asset-backed securities, commercial paper (short-term tradable debt), and overnight repurchase agreements ("repos"), among others. Some of these assets collapsed in value overnight during the global financial crisis that began in 2007, and soon after, during the euro area crisis.² Panic selling, firm failures, and public rescues accompanied both episodes. The Federal Reserve became the largest holder of U.S. commercial paper;³ the European Central Bank stepped in to buy government bonds.⁴

These crises confirmed the obvious: there is no such thing as a risk-free financial contract. They also raised the academic and policy profile of safe assets. Since 2007, the idea of safe assets has been invoked to explain shadow banking, financial crises, and prolonged economic stagnation.⁵ In a landmark report, the International Monetary Fund (IMF) estimated the aggregate value of safe assets at more than \$114 trillion worldwide in 2011.⁶ By comparison, the total U.S.

² For instance, the value of top-rated commercial paper issued by U.S. firms stood at \$1.97 trillion in early 2007. It was a staple investment for money market mutual funds and other super-conservative savers. By October 2008, this market had shrunk by more than a quarter, as buyers demanded theretofore unfathomable risk premia. See Viral V. Acharya & Philipp Schnabl, *Do Global Banks Spread Global Imbalances? Asset-Backed Commercial Paper During the Financial Crisis of 2007-09*, 58 IMF ECON. REV. 37, 39 (2010), <http://www.palgrave-journals.com/imfer/journal/v58/n1/pdf/imfer20104a.pdf> (documenting borrowers' inability to roll over maturing debts, as well as a sharp spike in borrowing costs); Marcin Kacperczyk & Philipp Schnabl, *When Safe Proved Risky: Commercial Paper During the Financial Crisis of 2007–2009*, 24 J. ECON. PERSPECTIVES 29, 29-30 (2010) (reporting a drop in outstanding commercial paper volume from more than \$1.97 trillion at the start of 2007 to \$1.43 trillion in October 2008).

Euro-area government debt, a \$10 trillion market, traded as if default were inconceivable in April 2010. Less than one-third of this market still traded that way in February 2012, when Greece launched its bond restructuring. INT'L MONETARY FUND, GLOBAL FINANCIAL STABILITY REPORT: THE QUEST FOR LASTING STABILITY 18 (2012) [hereinafter IMF GFSR] (citing average sovereign Credit Default Swap (CDS) spreads under 150 basis points for 91% of selected Euro area government debt as of April 2010 and for only 29% of the same set as of November 2011 and February 2012; also citing average CDS spreads over 400 basis points for 42% of the same set of countries as of November 2011). The countries included in the set are Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, and Spain; they represent the bulk of the Euro area sovereign debt market (€6.2 trillion or over \$8 trillion in the first quarter of 2010 and €6.9 trillion or over \$9 trillion in the second quarter of 2011). *Id.* see also *id.* at 90 fig.3.6 (citing Euro area gross consolidated government debt at \$10.5 trillion in June 2011); UBS Center, Jean-Claude Trichet: "There Is No More Risk-Free Asset," YOUTUBE (Dec. 18, 2012), https://www.youtube.com/watch?v=CS9EvBZ_UOc.

³ Kacperczyk & Schnabl, *supra* note 2, at 2 (reporting that the U.S. Federal Reserve was the largest buyer of commercial paper in late 2008 and held over 20% of all outstanding commercial paper in January 2009).

⁴ See IMF GFSR, *supra* note 2, 17-19.

⁵ See sources cited *infra* note 6.

⁶ IMF GFSR, *supra* note 6, at 89. The \$114 trillion estimate is the sum of \$74.4 trillion in potential safe assets held by wholesale investors in June 2011, *id.* at 89 fig.3.4, and \$40 trillion in customer bank deposits at the end of 2010, *id.* at

economic output for 2011 was \$15.5 trillion. The term “safe assets” was mentioned in eight speeches by U.S. Federal Reserve (“Fed”) officials between April 30, 1998 and the end of 2007. From 2008 through August 2016, Fed officials referred to safe assets in seventeen speeches and, on three occasions, in Congressional testimony; some dealt with the subject at length.⁷ One such speech in July of 2016 highlighted risks to financial stability from some safe assets, alongside concerns about persistent market demand outstripping the limited supply of “genuinely safe assets.”⁸

The economic literature on safe assets has focused on imbalances in safe asset supply and demand and their implications for financial stability and growth.⁹ It speaks of safe assets in terms of poorly understood natural forces or essential particles newly detected in a super-collider.¹⁰ Law is mostly absent in this account, except as an occasional source of distortion.¹¹

Unlike the Higgs boson, safe assets are not to be found in nature. They exist in economic theory and in market vernacular. “Safe” in this context does not and cannot mean genuinely risk-free, but rather “safe enough” to ignore the risks for some purposes. We depart from the literature to ask what institutional design elements might make a financial contract safe enough, and what—or who—makes it possible for market participants to ignore the risks, and on what conditions. From this perspective, safe assets look a lot like legal fictions, a familiar device that inserts an

89 n.16. IMF staff analysis excludes deposits because (i) they reflect primarily household and nonfinancial firm holdings and (ii) present distinct financial stability concerns. *Id.* We add back deposits because claims on banks figure prominently in other leading treatments of safe assets. *See, e.g.*, INT’L MONETARY FUND, RETHINKING MACRO POLICY III: SESSION 6: INTERNATIONAL MONETARY AND FINANCIAL SYSTEM (Apr. 16, 2015), <http://www.imf.org/external/mmedia/view.aspx?vid=4179179480001>; Gary Gorton et al., *The Safe-Asset Share*, 102 AM. ECON. REV. 101 (2012). For U.S. economic output, see *GDP (Current US\$)*, WORLD BANK, <http://data.worldbank.org/indicator/NY.GDP.MKTP.CD> (last visited Mar. 12, 2015).

⁷ Board of Governors of the Federal Reserve System, http://search.newyorkfed.org/board_public/ (last visited August 26, 2016) (Select “Speeches/Testimony” from the drop-down menu, then search for “safe assets”).

⁸ Daniel K. Tarullo, Opening Remarks at the Center for American Progress and Americans for Financial Reform Conference (July 12, 2016), at <http://www.federalreserve.gov/newsevents/speech/tarullo20160712a.htm>

⁹ *See infra* Part I.

¹⁰ *See, e.g.*, Ricardo J. Caballero, *The “Other” Imbalance and the Financial Crisis* (Nat’l Bureau of Econ. Research, Working Paper No. 15636, 2010), <http://www.nber.org/papers/w15636> (“[T]he surge of safe assets demand is a key factor behind the rise in leverage and macroeconomic risk concentration in financial institutions in the U.S. (as well as the U.K., Germany, and a few other developed economies), as these institutions sought the profits generated from bridging the gap between this rise in demand and the expansion of its *natural supply*.”); Gorton et al., *supra* note 6, at 101 (“Given the rapid amount of change within the economy over the past 60 years, the relatively constant demand for safe debt suggests an underlying transactions technology that is not well understood.”).

¹¹ For example, stricter regulation requires banks and clearing houses to hold more traditional safe assets, such as government debt. Some writers predicted that this would lead other market participants to buy riskier assets, use them as if they were safe, and thereby seed the next crisis. *See* BANK FOR INT’L SETTLEMENTS, *82nd Annual Report* (2012); IMF GFSR, *supra* note 6; Gorton et al., *supra* note 6; Ralph Atkins, *Crunch Feared if Collateral Rules Enforced*, FIN. TIMES (Feb. 5, 2013), <http://www.ft.com/intl/cms/s/0/e7737740-6f85-11e2-b906-00144feab49a.html>.

assumption known to be false in a chain of reasoning, so as to solve a particular doctrinal problem.¹²

Precisely because there are no risk-free contracts, the law can conjure and maintain safe asset fictions, and place them at the foundation of institutions and markets. It therefore makes no sense to ask whether mortgage-backed securities, bank deposits or Italian government debt are “entirely risk-free.”¹³ Their safety, such as it is, ultimately rests on state capacity to regulate, collect taxes, and issue money, and state willingness to deploy these powers in specific ways for the sake of particular constituents and markets. Instead of asking whether a contract is risk-free, it pays to ask what purpose and whose interests might be served by a societal commitment to act “as if,” and to consider the cost of such a commitment. Whether anyone who acts “as if” believes in the inherent safety of safe assets, or chooses to ignore risks believing that she would be made whole, is also a second-order concern. State intervention can justify her actions either way.¹⁴ Safe

¹² See, e.g., LON L. FULLER, LEGAL FICTIONS 9 (1967) (“A fiction is either (1) a statement propounded with a complete or partial consciousness of its falsity, or (2) a false statement recognized as having utility.”). Safe assets can work as conventional legal fictions, for example, when it comes to the legislative, regulatory, or judicial designation of certain financial contracts as risk-free. See *infra* Part II.B. However, we hesitate to sweep the entire safe asset phenomenon under the heading of *legal* fictions because the role of market practice in the life of safe assets goes beyond the familiar realm of legal fictions and requires further elaboration beyond the scope of this Article. Cf. ANNELISE RILES, COLLATERAL KNOWLEDGE: LEGAL REASONING IN THE GLOBAL FINANCIAL MARKETS 172-175 (2011) (describing collateral as a legal fiction in derivatives transactions). Nonetheless, Fuller’s definition is a useful shorthand for now, not only because it is the most thoroughly specified and influential in the law literature, but also because his analytical framework partly derives from general concepts of fiction in math, science, philosophy, economics and other fields.

As fictions, safe assets combine known falsehood and practical utility. Like the more familiar fictions of corporate personality or tax residence, they meet functional needs. On corporate personality, see, for example, Sanford A. Schane, *The Corporation Is a Person: The Language of a Legal Fiction*, 61 TUL. L. REV. 563 (1987). On tax residence, see, for example, Vincent Boland, *Dublin Ditches Double Irish to Save Low Tax Regime*, FIN. TIMES (Oct. 14, 2014), <http://www.ft.com/intl/cms/s/2/1f740b46-539b-11e4-929b-00144feab7de.html> (describing tax planning structures that made the same company resident in Bermuda under Irish law, and in Ireland under U.S. law); cf. Danièle Nouy, *Is Sovereign Risk Properly Addressed by Financial Regulation?*, 16 BANQUE DE FRANCE FIN. STABILITY REV. 95, 96 (2012) (“From a prudential perspective, sovereign domestic local currency debt is . . . viewed as risk-free . . .”).

¹³ EUROPEAN SYSTEMIC RISK BD., REPORT ON THE REGULATORY TREATMENT OF SOVEREIGN EXPOSURES 151 (2015), <http://www.esrb.europa.eu/pub/pdf/other/esrbreportregulatorytreatmentsovereignexposures032015.en.pdf> [hereinafter ESRB, SOVEREIGN REPORT] (“In principle, sovereign debt is not entirely risk-free.”). Italian debt might be treated as if it were risk free for bank regulatory purposes in the same way as Twitter might be treated as an Irish company for tax purposes. Robert W. Wood, *Ireland Corks Double Irish Tax Deal, Closing Time for Apple, Google, Twitter, Facebook*, FORBES (Oct. 14, 2014, 2:37 AM), <http://www.forbes.com/sites/robertwood/2014/10/14/ireland-corks-double-irish-tax-deal-closing-time-for-apple-google-twitter-facebook>. Asking whether Italian government debt is really risk-free is akin to asking whether Twitter is really Irish. Both questions are beside the point. *Compare*, Tarullo, *supra* note 8.

¹⁴ Our view of safe assets is close to what Brunnermeier and Haddad have described in a recent presentation as the “Safe Asset Tautology” view, in which “an asset is safe as long as it is perceived to be safe.” Markus Brunnermeier & Valentin Haddad, *Safe Assets*, FED. RESERVE BANK OF N. Y. 2 (Oct. 17, 2014), https://www.newyorkfed.org/medialibrary/media/aboutthefed/pdf/FAR_Oct2014.pdf (contrasting the “Safe Asset Tautology” with the “Good Friend Analogy,” in which safe assets are “safe across any horizon,” including in crisis). In our view, while some assets might pay off in full in more states of the world, all require a leap of faith to be used as if they were risk-free. While we concur with the authors’ assessment of bubble and bust risks inherent in the safe asset tautology, we are hard-pressed to find safe assets outside the tautology.

assets thus emerge from a mix of public and private ordering, unavoidably distributive and fraught with distortions.¹⁵

This Article makes four contributions. First, we describe the legal architecture of safe assets, or where safe assets get their safety—an institutional question on which the economic literature is silent. Second, we offer a unified analytical framework that links the safe asset debate with post-crisis legal critiques of money, banking, structured finance and bankruptcy.¹⁶ Third, we highlight sources of instability and distortion in the legal architecture, and the political commitments it entails. Fourth, we offer preliminary prescriptions to correct some of these failings.

Our analysis fits in the realm of macroprudential policy, an approach to regulation concerned with the stability of financial systems and economic growth, ahead of the solvency of individual firms.¹⁷ This approach has gained currency since the turn of the twenty-first century, but has only started to receive attention from law scholars since the financial crisis. Its toolkit remains inchoate, especially when it comes to regulating asset markets—or “prudential market regulation.”¹⁸ Our study of safe assets shows how familiar legal and regulatory tools have been used to macroprudential effect, and how they might be used better to advance financial stability.

¹⁵ Compare Robert Hockett & Saule Omarova, *Finance Franchise*, CORNELL L. REV. (forthcoming 2017) (on file with author) (describing a modern financial system as a public franchise); Katharina Pistor, A Legal Theory of Finance, 41 J. OF COMP. ECON. 315 (May 2013) (arguing that financial markets “occupy a hybrid place ... between public and private”); MORGAN RICKS, *THE MONEY PROBLEM* (2016) (advocating public-private collaboration in monetary design).

¹⁶ On asset-backed securities, see, for example, Kenneth Ayotte & Stav Gaon, *Asset-Backed Securities: Costs and Benefits of “Bankruptcy Remoteness,”* 24 REV. FIN. STUD. 1299 (2011) and Jonathan C. Lipson, *Re: Defining Securitization*, 85 S. CAL. L. REV. 1229 (2012). On repos, see, for example, Edward R. Morrison et al., *Rolling Back the Repo Safe Harbors*, 69 BUS. LAW 1015 (2014), which argues for removal of the exemption for repos from standard bankruptcy rules; and David A. Skeel & Thomas H. Jackson, *Transaction Consistency and the New Finance in Bankruptcy*, 112 COLUM. L. REV. 152 (2012), which analyzes the same sets of exemptions for repos and derivatives). On money market mutual funds, see, for example, William A. Birdthistle, *Breaking Bucks in Money Market Funds*, 2010 WIS. L. REV. 1155; Jill E. Fisch, *The Broken Buck Stops Here: Embracing Sponsor Support in Money Market Fund Reform*, 93 N.C. L. REV. 935 (2015); and Jeffrey N. Gordon & Christopher M. Gandia, *Money Market Funds Run Risk: Will Floating Net Asset Value Fix the Problem?*, 2014 COLUM. BUS. L. REV. 313.

¹⁷ For an overview of early contributions, see Piet Clement, *The Term “Macroprudential”: Origins and Evolution*, BIS Q. REV. 59 (Mar. 2010). For legal approaches, see, e.g., ERIK F. GERDING, *LAW, BUBBLES, AND FINANCIAL REGULATION* 312-13 (2014); Robert Hockett, *The Macroprudential Turn: From Institutional ‘Safety and Soundness’ to Systematic ‘Financial Stability’ in Financial Supervision*, 9 VA. L. & BUS. REV. 201 (2015); Kristin N. Johnson, *Macroprudential Regulation: A Sustainable Approach to Regulating Financial Markets*, 2013 U. ILL. L. REV. 881; Robert B. Thompson, *Financial Regulation’s Architecture within International Economic Law*, 17 J. INT’L ECON. L. 807 (2014).

¹⁸ The focus of macroprudential regulation has been on banks and bank-like financial firms, for example, as in the identification and oversight of Systemically Important Financial Institutions (SIFIs). See, e.g., Viral V. Acharya & T. Sabri Öncü, *A Proposal for the Resolution of Systemically Important Assets and Liabilities: The Case of the Repo Market*, 9 INT’L J. OF CENTRAL BANKING 291 (2013). On the struggle for an approach to regulating markets for financial stability, see, e.g., Daniel K. Tarullo, *Thinking Critically about Nonbank Financial Intermediation*, Remarks at the Brookings Institution (Nov. 17, 2015) <http://www.federalreserve.gov/newsevents/speech/tarullo20151117a.htm> (arguing for “prudential market regulation” as “a policy framework that builds on the traditional investor-protection and market-functioning aims of market regulation by incorporating a system-wide financial stability perspective.”). See also, Paul Tucker, Deputy Governor for Fin. Stability, Bank of Eng., Speech at the International Council of

We proceed as follows. In Part I, we review the definitions and theories of safe assets, and discuss the relationship between safe assets and money. In Part II, we turn to legal architecture, and propose a three-part framework to analyze legal intervention to construct safe assets:

First, legal intervention can *make* assets safer. Contracts, statutes, regulations, and administrative agency practices promote full and timely repayment of some financial contracts. Corporate finance techniques and solvency and liquidity regulations construct firms capable of issuing low-risk debt. In all these cases, “making” is about risk reduction — a relative proposition.

Second, the law can *label* assets as absolutely or relatively safe, encouraging market participants to buy them. Regulation marks entire categories of assets as permitted or off-limits. It also affixes regulatory price tags to the assets and liabilities of regulated firms. Credit ratings do similar risk-assessment and gate-keeping work in private ordering.

Third, the law enables *guarantees* of safe assets, so that they pay out in multiple states of the world, even in the face of severe shocks. Some government guarantees, such as bank deposit insurance, are expressly authorized *ex ante* by statute. Most are extended *ex post*, in crisis, to make up for the latent risk in assets that had been used as if they were risk-free.

Making, labeling, and guaranteeing are analytical categories that help to clarify the object and method of legal intervention. Unpacking the elements of safe asset design is particularly important since, in practice, different kinds of intervention can overlap, frustrate, and generate feedback for one another.

We expand on vulnerabilities in the legal architecture in Part III. Our framework departs from the prevailing explanations of financial instability implicit in concepts such as shadow banking (unregulated intermediation), which highlight the boundary between the well-lit (regulated) and the shadowy (unregulated) in finance.¹⁹ We are more concerned with pervasive

Securities Associations (May 23, 2011), <http://www.bis.org/review/r110525a.pdf> (“In a debate often dominated by concerns about banks, the vital importance of resilient and effective capital markets is easily neglected.”); *Buttonwood’s Notebook: What’s Wrong with Finance*, ECONOMIST (May 1, 2015), <http://www.economist.com/blogs/buttonwood/2015/05/finance-and-economics>.

¹⁹ Research staff at the Federal Reserve Bank of New York were at the forefront of defining the phenomenon, although its precise contours remain subject to debate. *See, e.g.*, Zoltan Pozsar et al., *Shadow Banking* (Fed. Reserve Bank of N.Y., Staff Rep. No. 458, 2010) (describing how unregulated or lightly regulated segments of the capital markets transform illiquid long-term assets into short-term liabilities that can approximate the function of demand deposits at commercial banks); Zoltan Pozsar, *Institutional Cash Pools and the Triffin Dilemma of the U.S. Banking System*, 22 FIN. MKT. INST. & INSTRUMENTS 283 (2013) (emphasizing the importance of liquid long-term debt as a savings vehicle for “institutional cash pools”); *see also* Steven L. Schwarcz, *Regulating Shadow Banking: Inaugural Address for the Inaugural Symposium of the Review of Banking & Financial Law*, 31 REV. BANKING & FIN. L. 619, 623 (noting disagreements over the definition of shadow banking).

under-regulation, which can manifest itself, for example, in misalignment between “made safe” and “labeled safe.” An asset that is labeled safe, but not made safe enough for the way in which it is used, can lose value abruptly and set off damaging chain reactions. If the asset is used widely and the threat of contagion is high, the state may come under pressure to guarantee the difference between “made” and “labeled,” and to absorb the spillover costs.

Governments and private actors can exploit misalignment over time. Government officials can use labels to direct financing for their policy priorities, betting that they would not have to pay out on the implicit guarantees during their time in office. Market participants can boost their returns by issuing or buying risky assets labeled safe, counting on the state to absorb losses when risk materializes.

Misalignment is cyclical. It is easy to miss when credit is abundant, when “relatively safe” looks indistinguishable from “absolutely safe,” and different assets are used interchangeably as if they were risk-free. Risk-free labels look like self-evident descriptions, while making contracts safer for bad times seems unnecessary.²⁰ A crisis makes risk apparent and forces realignment. Labels either fail or are validated with government guarantees.

We end Part III with observations on the politics of safe assets. Safe asset policies distribute resources on a large scale and nurture powerful constituencies for risk-free treatment. Labels and technical jargon obscure the vested interests and distributional effects.²¹

Part IV contains preliminary policy prescriptions. We argue that legal intervention should promote dynamic monitoring and alignment among risk attributes, safety labels, and the public safety net throughout the credit cycle. Periodic stress tests applied to asset markets, rather than a subset of institutions, can help gauge the likely impact on financial stability of certain assets losing their safety. They can reveal contingent liabilities for the public sector, and encourage timely intervention to reduce latent risks. In addition, we argue that regulatory risk-free labels are especially problematic and should be discouraged. As a first step, we argue for presumptively treating labels as express guarantees by the labeling government.

We conclude with directions for further research. Economists have described safe assets as the cornerstone of the global financial system,²² the essential ingredient of finance in danger of

Gerding has argued that this framing of shadow banking as unregulated obscures how heavily law has intervened to create shadow banking markets and how deeply intertwined the regulated banking sector is with shadow banking markets. Erik F. Gerding, *The Shadow Banking System and its Legal Origins*, Unpublished manuscript (Jan. 24, 2012) available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1990816; GERDING, LAW, BUBBLES, AND FINANCIAL REGULATION 429-434, *supra* note 17.

²⁰ GERDING, *supra* note 17, at 383-84, 479.

²¹ *Cf.* Peter J. Smith, *New Legal Fictions*, 95 GEO. L.J. 1435, 1473 (2007) (noting that use of legal fictions can conceal normative choices made in fashioning legal rules).

²² *See* IMF GFSR, *supra* note 6, at 81.

getting “squelched” by overzealous regulation²³ — and at the opposite extreme, as a dangerous falsehood, a mutant meme whose replication must be stopped.²⁴ Legal fictions have elicited similar rhetoric for centuries: Jeremy Bentham memorably described them as “a syphilis,” a lie that makes the law rot from within.²⁵ Courts, legislatures, and administrators today show no sign of abandoning fictions.²⁶ So, too, with safe assets. In a world where no contract is risk-free, they meet functional needs of market participants and policymakers to act “as if.” The law is essential to constructing safe assets; it is just as essential to managing the risks they pose for financial stability.

I. What Are Safe Assets, What Do They Do, and Why Do They Matter?

At the highest level of generality, a safe asset is a financial contract used as if it were risk-free for one or more purposes. The phrase “safe asset” has appeared in economic research, policy papers, and law review articles for decades.²⁷ Until recently, it did not denote a general phenomenon or a policy challenge, but rather described low-risk investments, or served as shorthand for modeling assumptions.²⁸ The words “safe,” “riskless,” or “risk-free” remained

²³ See Gorton et al., *supra* note 6.

²⁴ See Richard Portes, *The Safe Asset Meme*, FED. RES. BANK OF DALLAS (June 2013), <http://www.dallasfed.org/assets/documents/institute/events/2013/526Portesslides.pdf>.

²⁵ JEREMY BENTHAM, *THE ELEMENTS OF THE ART OF PACKING, AS APPLIED TO SPECIAL JURIES, PARTICULARLY IN CASES OF LIBEL LAW* 62 (1821).

²⁶ For a sampling of contemporary scholarship, see, for example, John A. Miller, *Liars Should Have Good Memories: Legal Fictions and the Tax Code*, 64 U. COLO. L. REV. 1 (1993); and Schane, *supra* note 12; Seema K. Shah & Franklin G. Miller, *Can We Handle the Truth? Legal Fictions in the Determination of Death*, 36 AM. J.L. & MED. 540 (2010). For administrative and legislative uses of legal fictions, see, for example, Life at Conception Act, H.R. 1091, 113th Cong. § 3(1) (2013), which states that “[t]he terms ‘human person’ and ‘human being’ include each and every member of the species homo sapiens at all stages of life, including the moment of fertilization, cloning, or other moment at which an individual member of the human species comes into being”; and SOCIAL SEC. ADMIN., *SOCIAL SECURITY HANDBOOK* §1721, http://www.ssa.gov/OP_Home%2Fhandbook/handbook.17/handbook-1721.html (last visited May 5, 2015), which notes that the SSA presumes a person is dead if he or she has been missing from home and has not been heard from for seven years or more.

²⁷ A search of IMF, NBER, and Westlaw databases located hundreds of mentions between 1980 and 2007. A search for the phrase “safe asset” in the IMF eLibrary, which contains the IMF’s periodicals, books, working papers, and studies, and data and statistical tools resulted in 49 returns between 1980 and 2007 and 36 returns between 2008 and 2014. See IMF eLIBRARY, <http://www.elibrary.imf.org> (last visited August 25, 2016). A search for the phrase “safe asset” or “safe assets” on National Bureau of Economic Research (NBER) Working Papers, a database segment consisting of papers and articles published in journals resulted in 8 articles and papers between 1980 and 2007 and 18 articles and papers between 2008 and 2014. See NAT’L BUREAU ECON. RES., <http://www.nber.org> (last visited August 25, 2016). A search for the phrase “safe asset” on WestLaw’s Law Reviews & Journals database resulted in 49 articles between 1980 and 2007 and 60 articles between 2008 and 2014.

²⁸ The following examples are typical. In economics, JOHN LIPSKY ET AL., *INTERNATIONAL CAPITAL MARKETS: DEVELOPMENTS AND PROSPECTS* 34 (1983) (describing “institutional investors seeking relatively safe assets”); Peter Diamond & John Geanakoplos, *Social Security Investment in Equities I: Linear Case 4* (Nat’l Bureau of Econ. Res., Working Paper No. 7103, 1999) (“We assume that the returns to the real assets are such that both risky and safe assets are held in equilibrium when the safe asset exists.”); Morris Goldstein & Geoffrey Woglom, *Market-Based Fiscal Discipline in Monetary Unions: Evidence From the U.S. Municipal Bond Market* 8 (IMF Working Paper No. 91/89, 1991) (referring to safe assets as a baseline for bond interest rates); Garry J. Schinasi et al., *Asset Price Inflation in the 1980’s: A Flow of Funds Perspective* 21 (IMF Working Paper No. 93/77, 1993) (describing U.S. depository institutions taking on risk by “selling safe assets and retaining the relatively risky ones such as commercial

enclosed in quotation marks or preceded by “relatively.” Financial crises in the United States and Europe put safe assets at the center of public debates in the financial press and made them the focus of attention in elite academic and policy circles.

A. Functions and Attributes: An Overview

The IMF’s 2012 Global Financial Stability Report (GFSR)²⁹ was a milestone in safe assets’ rise to prominence. In a chapter entitled *Safe Assets: Financial System Cornerstone?*, the GFSR described a set of financial contracts that performed critical functions and were sometimes used interchangeably across financial markets. Their combined volume exceeded annual global economic output.³⁰ The GFSR identified five principal functions of safe assets:

- (i) as a store of value and portfolio capital cushion;
- (ii) as collateral in repo and derivatives markets;
- (iii) as a pricing benchmark for riskier assets;
- (iv) as a tool in monetary policy operations; and
- (v) as part of compliance with solvency and liquidity regulations.³¹

This list is influential, but it is far from the only possible taxonomy, and need not be exhaustive.³² For example, safe assets in the form of cash, demand deposits, and short-term debt

mortgages”). In law, Joseph Bankman & Thomas Griffith, *Is the Debate Between an Income Tax and a Consumption Tax a Debate About Risk? Does It Matter?*, 47 TAX L. REV. 377, 401 (1992) (considering the effects of taxation on investment choices, as when “the combination of taxable gains and nonrefundable losses will reduce the expected return of risky assets below the return of safe assets, causing all investors to purchase riskless assets”); Jonathan R. Macey & Elizabeth H. Garrett, *Market Discipline by Depositors: A Summary of the Theoretical and Empirical Arguments*, 5 YALE J. ON REG. 215, 218 (1988) (arguing that deposit insurance distorts bank managers’ incentives because “a managerial decision to shift the bank’s loan portfolio from a set of relatively safe assets to a set of highly risky assets will not affect in any way the interest the bank must pay to attract deposits”).

²⁹ IMF GFSR, *supra* note 6; compare Portes, *supra* note 24, at 5 (noting the role of IMF GFSR in validating and raising the profile of what the author describes as a harmful “safe asset meme”).

³⁰ See *GDP (Current US\$)*, WORLD BANK, <http://data.worldbank.org/indicator/NY.GDP.MKTP.CD> (last visited Feb. 19, 2016).

³¹ IMF GFSR, *supra* note 6, at 88-90.

³² For example, Peter Fisher identifies six functions of “risk-free” assets. See Peter R. Fisher, *Reflections on the Meaning of “Risk-Free,”* in BANK FOR INT’L SETTLEMENTS, SOVEREIGN RISK: A WORLD WITHOUT RISK-FREE ASSETS? 65 (2013), <http://www.bis.org/publ/bppdf/bispap72.pdf> [hereinafter BIS, A WORLD WITHOUT]. Other authors in the same BIS volume focus on a subset of safe asset functions performed by government debt, most often its role in asset pricing and portfolio construction. See, e.g., Alberto Giovannini, *Risk-Free Assets in Financial Markets*, in BIS, A WORLD WITHOUT 73; Hiroshi Nakaso, *Financial Markets without a Risk-Free Sovereign*, in BIS, A WORLD WITHOUT 79; Sergei Storchak, *Risk-Free Assets: An Unreachable Dream or a Must*, in BIS, A WORLD WITHOUT 82.

Similarly, Garry Schinasi and co-authors describe the financial market functions of government debt in 2001 as interest rate benchmarks, interest rate hedging, liquidity management, investment, and safe haven. Garry J. Schinasi, Charles F. Kramer & R. Todd Smith, *Financial Implications of the Shrinking Supply of U.S. Treasury Securities*, INT’L MONETARY FUND 12-15 (Mar. 20, 2001), <https://www.imf.org/external/pubs/ft/supply/2001/eng/032001.PDF>. While Schinasi and co-authors, among others, worried about the shrinking supply of U.S. Treasury securities from shrinking budget deficits at the turn of the 21st century, Bratton considered the implications of Treasury default and the

are widely used as a source of liquidity or payment media; these functions are subsumed in other line items and discussed throughout the report.

IMF researchers also did not discover safe asset functions. These functions are instantly recognizable, with minor variations, as staples in 20th Century finance theory, thoroughly embedded in financial market practice. The starting point in these theories is a hypothetical (fictional) risk-free contract or interest rate, which enables market participants to evaluate risks as departures from the riskless reference point. Theories of portfolio construction posit, in simplified form, that any given investor preference for risk, return, and volatility can be satisfied with a mix of “risk-free” and risky securities.³³ Risk-averse actors such as commercial banks or government reserve managers might insist on keeping healthy cushions of assets approximating the theory’s risk-free investments, to support risk-taking elsewhere in their portfolios.³⁴ Theories of liquidity preference hold that economic actors prefer to keep some cash, or “risk-free” financial instruments they can quickly turn into cash, to meet transactional needs and to pursue investment opportunities.³⁵ It follows that all savers might hold some safe assets as cash substitutes for current transactions; that savers might hold more safe assets when returns on risky assets are low; and that even traders with healthy risk appetites might demand cash-like, liquid collateral, both to hedge against particular transaction risks and to ensure access to cash for new investment opportunities.³⁶ Finally, asset pricing models typically stipulate a “risk-free” rate of return—to isolate “the *price of time*”³⁷—and express the risks associated with particular assets as a spread over the risk-free rate.³⁸ Such models help explain demand for interest rate benchmarks that can stand in for the

consequent loss of the safe asset status for U.S. Treasury securities amid the deficits and debt ceiling battles of 2012. Like the earlier authors preoccupied with budget surpluses, he highlights benchmark and hedging functions of U.S. Treasuries and concludes that “a world without Treasuries” is one where asset pricing and portfolio construction would be less efficient. William W. Bratton, *A World Without Treasuries?*, in IS U.S. GOVERNMENT DEBT DIFFERENT? 18-19 (Franklin Allen, Anna Gelpern, Charles Mooney, & David Skeel, eds., 2012), <http://finance.wharton.upenn.edu/FIC/FICPress/usdebt.pdf>.

³³ See, e.g., Harry Markowitz, *Portfolio Selection*, 7 J. FIN. 77 (1952); James Tobin, *Liquidity Preference as Behavior Towards Risk*, 25 REV. ECON. STUD. 65 (1958) (providing early foundational iterations of portfolio theory, depicting an optimal portfolio for a risk-averse investor as a mix of risk-free and risky assets). A leading account of how finance theory became embedded in financial market practice is DONALD MACKENZIE, *AN ENGINE, NOT A CAMERA: HOW FINANCIAL MODELS SHAPE MARKETS* (2006, 2008) (discussing portfolio theory at 45-51).

³⁴ This example illustrates safe asset functions (i) and (v) in the list above, with bank regulators requiring the safety cushion on the banks’ behalf.

³⁵ JOHN MAYNARD KEYNES, *THE GENERAL THEORY OF EMPLOYMENT, INTEREST AND MONEY* 194-209 (1936) (classifying motives for holding money as income, business, precautionary and speculative; the first two motives are transactional); Tobin, *supra* note 33, at 65-66 (drawing on Keynes).

³⁶ These examples illustrate safe asset functions (i), (ii), and (v) in the list above. As noted in the preceding paragraph, liquidity could just as easily be a separate line item in the functions list.

³⁷ William F. Sharpe, *Capital Asset Prices: A Theory of Market Equilibrium Under Conditions of Risk*, 19 J. FIN. 425, 426 (1964) (depicting asset risk as a combination of the price of time, or “pure interest rate risk,” and the price of risk particular to the asset).

³⁸ See, e.g., Robert C. Merton, *An Intertemporal Capital Asset Pricing Model*, 41 ECONOMETRICA 867 (1973); Stephen Ross, *The Arbitrage Theory of Capital Asset Pricing*, 13 J. ECON. THEORY 341 (1976).

theory's risk-free rate and, from a policy perspective, that can transmit interest rate signals cleanly and quickly across the economy.³⁹

The GFSR contribution (or infraction, depending on your perspective⁴⁰) was to observe that many different assets were being used, often interchangeably, as if they were risk-free, for different functions. This insight is significant because each theoretical function emphasizes different risks and consequently demands different asset safety attributes.⁴¹ At a minimum, a safe asset must deliver fixed repayment on time (this helps explain why debt and debt-like contracts dominate the category).⁴² It should minimize credit and idiosyncratic risks. In addition, an asset makes a good store of value if it has minimal inflation and exchange rate risk—retaining value over time, even if it is not fully liquid. Good trading collateral should have a deep market and a stable price, so that lenders can instantly turn it into cash at face value. Short-term instruments are prevalent in this category of safe assets. Deep markets and stable prices are also important for benchmark instruments; however, to supply reference prices for a variety of risky assets, benchmarks need to span a broader maturity spectrum. Assets used by central banks in monetary policy operations must also be liquid to convey policy signals. It is harder to pin down common attributes for safe assets used in regulatory compliance. Each government might define a different set in light of its policy objectives. However, governments also coordinate among themselves.⁴³

Assets with multiple safety attributes may have multiple functions, sometimes in different markets. Government debt is a particularly versatile safe asset since it often combines low credit risk and a deep and liquid market.⁴⁴ On the other hand, some functions can be accommodated with more than one safe asset. Government debt and bank deposits function as stores of value and, in the case of short-term debt and demand deposits, as transactional reserves. Both highly rated corporate debt and government debt have served as benchmarks, or proxies for pure interest rate

³⁹ This illustrates safe asset functions (iii) and (iv) in the list above.

⁴⁰ See Portes, *supra* note 24, at 31; Fisher, *supra* note 32, at 67.

⁴¹ There is further variation among safe assets in practice, because market participants use a variety of stand-ins for model assumptions, depending on availability. See Bratton, *supra* note 32, at 14 (observing that both 10-year and 30-year Treasury securities are used as proxies for the risk-free rate).

⁴² See Gary Gorton & George Pennacchi, *Financial Intermediaries and Liquidity Creation*, 45 J. FIN. 49, 65-66 (1990). Holmstrom expands on the idea of debt, and especially over-collateralized debt (very broadly defined), as a contract designed to deliver full payoff at a specified time, so much so that it requires little or no information discovery ex ante. At the other extreme, equity is a risk-sharing vehicle with varied returns, so that it pays to acquire information about the stock. Holmstrom notes starkly, “[e]quity is information-sensitive while debt is not.” Berndt Holmstrom, *Understanding the Role of Debt in the Financial System* 7 (Bank for Int’l Settlements, Working Papers No. 479, 2015). We return to the information sensitivity point later in this Part II. See also, Kathryn Judge, *Information Gaps and Shadow Banking* 8 U.V.A.L. REV (forthcoming 2017).

⁴³ IMF GFSR, *supra* note 6, at 84, 95-101; Pierre-Olivier Gourinchas & Olivier Jeanne, *Global Safe Assets* 53 (Bank for Int’l Settlements, Working Paper No. 399, 2012), <http://www.bis.org/publ/work399.pdf>; Fisher, *supra* note 32, at 68. On regulatory coordination, see, for example, CHRIS BRUMMER, *SOFT LAW AND THE GLOBAL FIN. SYSTEM* (2011) and Pierre-Hugues Verdier, *The Political Economy of International Financial Regulation*, 88 IND. L.J. 1405 (2013).

⁴⁴ See Hockett & Omarova, *supra* note 23 (arguing that government securities function as “base money” in the capital markets); see also, Schinasi et al., *supra* note 32, at 13-14.

risk.⁴⁵ Government debt and securitization claims have been used as substitutes to meet regulatory and trading requirements.⁴⁶

In practice, the term “safe assets” describes a varied and dynamic set. Under favorable credit conditions, contract and portfolio construction techniques can produce lots of new, bespoke safe assets to feed demand in different asset and geographical markets. Simple debt contracts become inputs in more complex and leveraged structures piggybacking on their safety.⁴⁷ More assets look safe “in general,” and come to substitute for one another. As they proliferate, safe assets knit together disparate parts of the financial system, where different actors use them as ingredients in designing a variety of contracts. In crisis, these connections can become pathways for contagion.

In theory and in market usage, the safety of safe assets works as a binary proposition: asset is either safe, or it is not. This is most apparent in trading and liquidity management, where collateral often needs to change hands instantaneously, “no questions asked.” On the other hand, safe assets are only useful if economic actors can count on them to stay safe for a long time. Otherwise, traders would have to invest in figuring out what is safe on any given day, and no asset could be traded “no questions asked.”⁴⁸ As a result, perceptions of safety tend to become entrenched: safe assets come to rest on a shared belief in their safety, and a societal commitment to act as if that safety is absolute, even though risk remains continuous.⁴⁹ When such beliefs are dislodged, the result is a shock, an abrupt loss in value, followed by contagion.

⁴⁵ Fisher points out that highly rated corporate debt, not government debt, was used as a safe asset for many purposes as recently as the 1970s. Fisher, *supra* note 32, at 76. The fact that the interest rate on risk-free debt is generally above zero illustrates a tension at the heart of the concept.

⁴⁶ See Ben S. Bernanke et al., *International Capital Flows and the Returns to Safe Assets in the United States, 2003-2007* (Bd. of Governors of the Fed. Reserve Sys. Int’l Fin. Discussion Papers No. 1014, 2011), <http://www.federalreserve.gov/pubs/ifdp/2011/1014/ifdp1014.pdf>. Substitution does not necessarily require that the assets be treated identically for regulatory purposes. For example, government debt and securitization claims held by banks may be subject to different capital requirements, but both may be more favorable than a simple corporate bond.

⁴⁷ Viral V. Acharya et al., *Manufacturing Tail Risk: A Perspective on the Financial Crisis of 2007-2009*, 4 FOUND. & TRENDS IN FIN. 247, 258 (2010) (examining growth and drivers of securitization and re-securitization). Some economists make a distinction in the safe asset literature between “inside” liquidity – that is assets that represent claims on financial firms and are traded within the financial sector – and “outside” liquidity – assets that represent claims on governments, non-financial businesses, or households. See, e.g., Bengt Holmström & Jean Tirole, *Private and Public Supply of Liquidity*, 106 J. POL. ECON. 1 (1998); Gourinchas & Jeanne, *supra* note 43, at 9-10 (adapting concepts in Holmström & Tirole to account for private safe assets); see also Ben S. Bernanke et al., *supra* note 46, at 13-16 (“pooling loans and establishing tranches with a pre-established priority ordering for payments allowed many securities to be deemed much safer than the average loan in the underlying pool.”).

⁴⁸ We are grateful to Olivier Jeanne for this formulation. See also Harold Cole, Daniel Neuhann and Guillermo Ordonez, *Debt Crises: For Whom the Bell Tolls*, (working paper, 2015), <http://www.sas.upenn.edu/~ordonez/pdfs/CNO.pdf> (modeling contagion in sovereign debt markets as a function of information acquisition dynamics).

⁴⁹ See Holmstrom, *supra* note 42 at 13-16, citing S. Morris and H.S. Shin, *Optimal Communication*, 5 J. OF EUR. ECON. ASS’N 594 (2007) and S. Morris and H.S. Shin, *Contagious Adverse Selection*, 4 AM. ECON. J.: MACROECONOMICS 1 (2012) on “shared understanding” and “commonality of beliefs” underlying liquidity in the money markets. Cf. RILES, *supra* note 12, describing a “collective commitment” to act as if legal fictions were facts.

Governments and private firms deploy financial engineering and legal tools to produce safe assets. Both can design contracts and capital structures to ensure payoff, using features such as tiered cash flows, short maturity, and collateral.⁵⁰ However, only governments can collect taxes, issue money, and regulate the economy. These powers support the safety of public debt in more states of the world. Governments can also extend these powers and the public safety net selectively to bolster the safety of private contracts, as we elaborate in Part III.

Safe asset supply and demand fluctuate with the credit cycle, but public and private safe assets behave differently. In a credit boom, many public and private contracts look safe, substitute for one another, and serve as inputs in new private safe assets. In a low-interest rate environment, private market participants can produce safe assets to exploit arbitrage opportunities, such as small differences in the rates of return on different contracts that are treated as if they were equally safe for some purposes.⁵¹ Financial crises follow rapid growth in private safe assets.⁵² Private safe assets as a group have a poor track record of keeping their value in crisis; even those that were uncorrelated in good times lose their safety together.⁵³ Public safe assets, such as government debt and money, are more likely to remain safe when private safe assets collapse.⁵⁴ Governments can rescue private safe assets by replacing them with money and public debt.⁵⁵ However, only a few governments have effectively unlimited capacity to issue money and debt. Even public safe assets can start to look risky, and launch a vicious cycle that brings down banks and financial markets.⁵⁶

⁵⁰ We explore private ordering in more detail in the companion symposium essay, *Public and Private Ordering in Safe Asset Markets*, 10 BROOK. J. CORP. FIN. & COM. L. 97 (2016); cf. RILES, *supra* note 12, at 4 (observing that public and private actors can use the same legal techniques, such as collateral, to manage or assume away risk); Markus K. Brunnermeier et al., *European Safe Bonds (ESBies)* (Sept. 30, 2011) (unpublished manuscript), <http://www.columbia.edu/~rr2572/papers/11-ESBies.pdf> (applying structured finance techniques to produce senior (safe) and subordinated euro area public debt); see also Gorton & Pennacchi, *supra* note 42.

⁵¹ See *infra* Part II.B.1; Bernanke et al., *supra* note 46, at 7.

⁵² See, e.g., Gourinchas & Jeanne, *supra* note 43, at 1-2.

⁵³ See *id.* at 36-37 (arguing that private safe assets are not designed to withstand shocks). Correlations that hold in good times break down in crisis. As a result, assets that could be used for portfolio hedging before can no longer perform this function. See, e.g., Bratton, *supra* note 32, at 17; Schinasi et al., *supra* note 32, at 14. Both papers describe the breakdown in correlations leading up to and following the collapse of Long-Term Capital Management in the fall of 1998. See HEDGE FUNDS, LEVERAGE, AND THE LESSONS OF LONG-TERM CAPITAL MANAGEMENT, Report of the President's Working Group on Financial Markets (April 1999), <https://www.treasury.gov/resource-center/fin-mkts/Documents/hedgfund.pdf> (providing the official account of the LTCM incident and the market disruptions, including breakdowns in correlations and flight to safety, before and after the fund's collapse).

⁵⁴ See, e.g., Brunnermeier & Haddad, *supra* note 14, at 5.

⁵⁵ See, e.g., Ricardo J. Caballero & Emmanuel Farhi, *The Safety Trap* (Nat'l Bureau of Econ. Research, Working Paper No. 19927, 2014), <http://www.nber.org/papers/w19927>; Gary B. Gorton & Guillermo Ordoñez, *The Supply and Demand for Safe Assets* (Nat'l Bureau of Econ. Research, Working Paper No. 18732, 2013), <http://www.nber.org/papers/w18732>; Gorton & Pennacchi, *supra* note 42, at 62; Robin M. Greenwood et al., *A Comparative-Advantage Approach to Government Debt Maturity*, J. OF FIN. (forthcoming), <http://nrs.harvard.edu/urn-3:HUL.InstRepos:14011000>.

⁵⁶ See, e.g., Jay C. Shambaugh, *The Euro's Three Crises*, BROOKINGS INST. 191 (2012) http://www.brookings.edu/~media/Projects/BPEA/Spring%202012/2012a_Shambaugh.pdf (describing the progression from banking to government debt crisis in Ireland, and the associated feedback loops); David Gardner et al., *Ireland: A Punt Too Far*, FIN. TIMES (Nov. 19, 2010), <http://www.ft.com/intl/cms/s/0/c1236fbc-f41e-11df-886b->

We have described safe assets so far as a family of contracts that solve specific market or policy problems expressed in established, institutionally embedded theoretical models. These contracts can be engineered to minimize particular risks and adapted to multiple uses. They are used on a vast scale across different markets. Table 1, adapted from the IMF GFSR taxonomy that began this Part, illustrates the range of financial contracts assets, the functions they perform, and the actors that use them.

00144feab49a.html; *see also* Brunnermeier et al., *supra* note 50, at 2-3 (describing a structured regional debt instrument).

Table 1: Safe Assets, Their Functions and Users

Asset Function- User	Sovereign debt	Claims on central bank	Quasi-sovereign debt (agency, municipal, supranat'l)	Bank debt	AAA corporate debt	Commercial Paper	Money market fund shares	AAA Asset- backed securities (ABS)	Repos
<i>Store of value</i> – central banks, official reserve mgrs, corporates, retail	✓	✓	✓	✓	✓	✓	✓	✓	
<i>Payments, Transactional reserves</i> – banks, corporates, retail	✓ (short-term debt)	✓	✓	✓		✓	✓		✓
<i>Collateral, portfolio hedge</i> – traders, banks, corporates, ABS vehicles	✓	✓	✓	✓	✓	✓	✓	✓	
<i>Benchmark</i>	✓				✓				
<i>Monetary policy, liquidity support</i> – Central banks, monetary authorities	✓	✓	✓	✓		✓ (crisis facilities)	✓ (crisis facilities)	✓	✓
<i>Regulatory mandate</i> – banks, mutual, pension funds, insurers, municipalities	✓	✓	✓	✓			✓	✓	

The table highlights the extent to which the same contracts are held by different state and market actors for different purposes, and the widespread practice of using safe assets as ingredients in other safe assets. Virtually all the users of safe assets in the left-hand column also issue safe assets, listed in the top row. Researchers have also suggested that users may rely on one another either to acquire or to ignore information about particular safe assets. For example, if banks buy ABS “no questions asked,” it may be reasonable for mutual funds, traders, and corporate treasurers to do the same—especially when credit is ample.⁵⁷ Extending this reasoning, if any category of users is no longer willing to treat an asset as safe, perceptions of risk could spike up and down the column. The loss of safety can deliver a severe balance sheet shock to some users, and lead to further contagion across the board.

Having roughly defined safe assets as a functional category of financial contracts and situated them against the background of post-crisis concerns about financial stability, we now turn to the prevailing economic theories of safe asset supply and demand.

B. Theories of Safe Assets

1. Safe Assets as a Global Store of Value

An early and influential strand of safe asset scholarship in the mid-2000s sought to explain capital flows from countries with high foreign currency savings and unmet development needs. Instead of investing at home, governments in these countries bought U.S. Treasury and Government-Sponsored Enterprise (GSE or Agency) securities.⁵⁸ Some economists attributed this preference to the combination of governments’ extreme risk-aversion, desire to self-insure against crisis, and inability to produce domestic stores of value; others blamed exchange rate policies.⁵⁹

⁵⁷ Cole et al. model contagion in sovereign debt markets as a function of similar strategic complementarity in information acquisition. See Cole et al., *supra* note 48, at 32-41. For the theory to apply to safe assets more broadly, market participants would need to believe, for example, that information sought or ignored by banks for portfolio hedging purposes would be equally relevant to traders, money market funds, and reserve managers.

⁵⁸ Ricardo J. Caballero et al., *An Equilibrium Model of “Global Imbalances” and Low Interest Rates*, 98 AM. ECON. REV. 358 (2008); Ricardo J. Caballero & Arvind Krishnamurthy, *Global Imbalances and Financial Fragility* (Nat’l Bureau of Econ. Research, Working Paper No. 14688, 2009), <http://www.nber.org/papers/w14688>. “Agency debt” refers to securities issued or backed by U.S. housing finance agencies, Fannie Mae, Freddie Mac, or Ginnie Mae. Fannie Mae (the Federal National Mortgage Association or FNMA) and Freddie Mac (the Federal Home Loan Mortgage Corporation or FHLMC) were taken over by the U.S. government in 2008. Even before the takeover, they were widely perceived as fully backed by the U.S. Government. See U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-09-782, FANNIE MAE AND FREDDIE MAC: ANALYSIS OF OPTIONS FOR REVISING THE HOUSING ENTERPRISES’ LONG-TERM STRUCTURES 3 (2009). Ginnie Mae (the Government National Mortgage Association or GNMA) has been wholly owned by the U.S. government since its establishment in 1968. See *Ginnie Mae & the GSEs*, GINNIE MAE, http://www.ginniemae.gov/consumer_education/Pages/ginnie_mae_and_the_gses.aspx (last updated Feb. 25, 2013).

⁵⁹ We stay out of the vigorous debate between those who explain such demand as a function of exchange rate manipulation by China and other exporters, and those who argue that they are motivated by emerging market governments’ desire to save and the scarcity of investment vehicles available to them. It affects our argument on the margins; we return to it briefly in the conclusion. See, e.g., C. FRED BERGSTEN & JOSEPH E. GAGNON, PETERSON INST.

This account of safe asset demand and scarcity emphasizes contracts' function as a store of value and a risk-free component in the portfolios of risk-averse investors. It adds a global dimension to the theory.⁶⁰ In some developing countries with large export earnings, domestic capital markets are thin and illiquid, while domestic investment opportunities are risky. The debt of rich, large, and stable economies offers developing country governments protection against volatility in cross-border capital flows and reduces currency mismatches between their assets and liabilities. In this way, risk aversion and higher government savings in low and middle-income countries feed demand for foreign government debt, and potentially contribute to global scarcity.

A later study by Ben Bernanke and co-authors at the U.S. Federal Reserve pointed to the implications of global store of value theories for private financial institutions and markets, and highlighted the role of regulatory arbitrage in safe asset demand.⁶¹ Unlike surplus country governments, banks in Europe and elsewhere did not have excess savings, nor were they infinitely risk-averse. They bought complex securitized debt with borrowed money. The authors suggested that banks took advantage of capital adequacy regulations to use off-balance sheet vehicles to invest in "private label" mortgage-backed securities (MBS), engineered to minimize credit risk, instead of buying and holding U.S. Treasury and Agency debt.⁶² Banks earned a higher return, but were not required to hold substantially more capital against what turned out to be much higher risk.⁶³ The private safe assets at the heart of this arbitrage strategy unraveled together in 2008.

The financial crisis story rests in important part on banks' ability to substitute MBS for U.S. Treasuries in good times, to treat both as if they were safe, and to forgo self-insurance in the

FOR INT'L ECON., CURRENCY MANIPULATION, THE US ECONOMY, AND THE GLOBAL ECONOMIC ORDER (2012); MARC LABONTE & JARED C. NAGEL, CONG. RESEARCH SERV., RS22331, FOREIGN HOLDINGS OF FEDERAL DEBT 5 (2014) ("Foreign official holdings are motivated primarily by a desire for a liquid and stable store of value for foreign reserves; relatively few assets besides U.S. Treasury securities fill this role well. Depending on the country, foreign reserves may be accumulated as a result of a country's exchange rate policy . . ."); BRAD W. SETSER, COUNCIL ON FOREIGN RELATIONS, SOVEREIGN WEALTH AND SOVEREIGN POWER (2008); Nouriel Roubini & Brad Setser, The US as a Net Debtor: The Sustainability of the US External Imbalances (Nov. 2004) (unpublished manuscript), <http://pages.stern.nyu.edu/~nrubini/papers/Roubini-Setser-US-External-Imbalances.pdf>.

⁶⁰ The domestic view of government debt as a safe asset is aptly described in a speech by Russia's government debt manager in 2013: "[T]he remarkable thing about risk-free assets is that any sovereign needs to keep in mind that within its own territory there are hundreds if not thousands of economic agents for whom sovereign bonds are risk-free assets, no matter what credit rating agencies think about them." Storchak, *supra* note 32, at 83. Caballero and others contend that some governments are unable to produce or get private actors in their economies to produce enough safe assets to meet the demand. See sources cited *supra* note [69].

⁶¹ Bernanke et al., *supra* note 46, at 13-14; see Acharya & Schnabl, *supra* note 2, at 1.

⁶² Ricardo J. Caballero, *The "Other" Imbalance and the Financial Crisis* (Nat'l Bureau of Econ. Research, Working Paper No. 15636, 2010), <http://www.nber.org/papers/w15636>. Private-label securities were not backed by Agency guarantees, were not subject to Agency underwriting standards, and were not seen as having the implicit backing of the U.S. government.

⁶³ See Bernanke et al., *supra* note 46, at 14. The arbitrage strategy took advantage of banks' ability to hold MBS off-balance sheet, and of lower capital requirements for MBS, compared to ordinary corporate debt. For an account of regulatory arbitrage in law scholarship, see, e.g., Victor Fleischer, *Regulatory Arbitrage*, 89 TEX. L. REV. 227 (2011). Bernanke and co-authors also fault loose underwriting standards in the United States for allowing the system to manufacture large volumes of risky debt that could be used as if it were safe.

form of higher capital.⁶⁴ In crisis, substitution runs in reverse: the state must produce safe assets to make up for the shortage of private ones.⁶⁵ As we noted in the preceding section, such a cyclical substitution pattern emerges as an important shared attribute of safe assets.

2. Safe Assets as “Transactions Technology”

Post-crisis risk aversion and tighter regulation in mature markets motivate a different strand of safe asset theories. Gary Gorton and co-authors have described safe assets as an essential ingredient in financial risk-taking, a poorly-understood “transactions technology.”⁶⁶ Economists who write in this vein study safe assets as collateral in trading, not as a long-term store of value. They point out that the pool of available collateral shrinks when regulations limit safe asset production or require firms to hold safe assets as buffers against shocks.⁶⁷

Gorton and co-authors argue that a shortage of high-quality collateral may drive traders to use risky collateral as if it were safe.⁶⁸ First, they observe that the ratio of safe assets to total financial assets in the U.S. economy (the “safe asset share”) has stayed between 30% and 35% from 1952 to 2010, while the ratio of financial assets as a share of the U.S. economy more than doubled.⁶⁹ Their study suggests that the safe asset share determines the size of the financial sector,

⁶⁴ See Gourinchas & Jeanne, *supra* note 43, at 1-2; Arvind Krishnamurthy & Annette Vissing-Jorgensen, *The Aggregate Demand for Treasury Debt*, 120 J. POL. ECON. 233 (2012); see also Caballero & Farhi, *supra* note 55, at 2-3 (discussing substitutability of safe assets). Surplus country governments and banks had subtly different objectives. While both might have sought U.S. dollar investments with minimal credit risk, the banks optimized risk and return while engaging in regulatory arbitrage.

⁶⁵ See Gorton & Ordoñez, *supra* note 55, at 26; Gourinchas & Jeanne, *supra* note 43, at 1-2; see also Simon Wren-Lewis, *Safe Assets and Government Debt*, MAINLYMACRO (Jan. 16, 2013, 1:12 PM), <http://mainlymacro.blogspot.com/2013/01/safe-assets-and-government-debt.html> (surveying arguments for reliance on public production of safe assets).

⁶⁶ Gorton et al., *supra* note 6, at 101, 105 (“The production of total assets appears to require safe debt as an input. Little is known about this transactions technology.”).

⁶⁷ See, e.g., Cardiff Garcia, *The Decline of “Safe” Assets*, FTALPHAVILLE (Dec. 5, 2011, 9:23 am) <http://ftalphaville.ft.com/2011/12/05/778301/the-decline-of-safe-assets/>; Gorton et al., *supra* note 6, at 105; CREDIT SUISSE FIXED INCOME RESEARCH, 2012 GLOBAL OUTLOOK: PIECING TOGETHER OR FALLING TO PIECES 143 (Dec. 1, 2011) https://doc.research-and-analytics.csfb.com/docView?language=ENG&format=PDF&source_id=em&document_id=932631241; John Carney, *How the Crash of Safe Assets Fueled the Financial Crisis*, CNBC (Jan. 13, 2014, 12:54 PM), <http://www.cnbc.com/id/101327578>.

⁶⁸ Gorton et al., *supra* note 6, at 105 (“Small policy changes . . . may well drive activity further into the shadow banking sector. Furthermore, since the demand for safe assets is roughly constant, attempts to squelch the shadow banking sector would simply push the production of safe debt into another, less efficient sector.”).

⁶⁹ Gorton et al., *supra* note 6, at 103, 105. The authors calculate the safe asset share based on Federal Reserve Flow of Funds data. They start with total liabilities produced by the government and financial sector. They then make a series of adjustments including removing government liabilities held by other governmental entities, removing certain financial sector liabilities (such as mutual fund shares) on the theory that these are not information-insensitive, and assume that 85% of mortgage-backed securities and other asset-backed securities are information-insensitive and qualify as safe assets. On the other hand, accounts using different metrics point to a sharp decline in federal government debt relative to the size of the U.S. credit market, from 50% to less than 20% between 1946 and 1974, as the economy grew and the government paid off wartime debt. See Schinasi, *supra* note 32, at 7.

but stops short of making the link to economic growth.⁷⁰ It argues that a shortage of safe assets would either slow financial sector growth, or, if growth continues despite the shortage, would push the frontier of safety into ever-riskier territory.

Safe assets as transactions technology are binary: safe or not. This quality is captured in the concept of “information-insensitive” debt, which makes for ideal collateral because it trades “no questions asked.”⁷¹ The moment it pays to research the risk attributes of a contract, it no longer qualifies as safe. A related paper co-authored by Gorton points to the perils of discontinuity: information-insensitive debt is prone to crashes and amplifies shocks to the financial system.⁷²

For proponents of transaction technology theories, information-insensitive debt is a fact of life and basically a good thing. Securitization and other forms of private safe asset production respond to an organic market need. The state might insure, license and supervise the issuers, but cannot and should not try to stop the activity. Regulations that unduly limit regulated firms’ ability to create safe assets almost by definition “squelch” natural processes, interfere with critical economic functions, and ultimately backfire, increasing risk in the system.⁷³ For critics, information-insensitive debt is a source of distortion and a way to hide tail risks.⁷⁴ Our analysis of legal architecture in Part II questions the portrayal of regulation as a constraint on natural forces in the transactions technology story; in our view, the thicket of enabling interventions to construct safe assets leaves little room for organic supply and demand.

⁷⁰ Gorton et al., *supra* note 6, at 104-05. The literature distinguishing between “inside” liquidity (claims on financial firms traded within the financial sector) and “outside” liquidity (claims on the real economy—governments, non-financial businesses, or households) is relevant here. See BENGT HOLMSTRÖM & JEAN TIROLE, *INSIDE AND OUTSIDE LIQUIDITY* 7-9 (2011); see also Gourinchas & Jeanne, *supra* note 43, at 9 (applying concepts of inside and outside liquidity to safe assets). Findings about the safe asset share do not distinguish between safe assets that originate and contribute to growth in the real economy, and those that originate and fuel growth in the financial sector.

⁷¹ Information-insensitive debt is “immune to adverse selection in trading because agents have no desire to acquire private information about the current health of the issuer.” Gorton et al., *supra* note 6, at 101; see also Holmstrom, *supra* note 42, Tri Vi Dang et al., *Ignorance, Debt and Financial Crises* (Mar. 11, 2013) (unpublished manuscript), http://www.columbia.edu/~td2332/Paper_Ignorance.pdf, and Judge, *supra* note 42. Judge highlights “information gaps” inherent in information-insensitive debt as a feature of unregulated capital markets intermediation, or shadow banking, that contributes to financial instability.

⁷² Crashes follow from discontinuity between information-insensitive and information-sensitive debt; the tendency to amplify follows from the view of safe assets as the common glue that binds transactions across the financial system. See Table 1, Part I.A *supra*, and Dang et al., *supra* note 71, at 36-37 (summarizing theoretical findings on the optimality of “debt-on-debt,” or debt collateralized by other debt in the money markets; describing a financial crisis as a response to the loss of information insensitivity; observing that fire-sales of formerly safe collateral at a deep discount can help restore information insensitivity).

⁷³ GARY GORTON, *SLAPPED BY THE INVISIBLE HAND: THE PANIC OF 2007* (2010) (arguing that the production of informationally-insensitive debt outside the banking sector is a legitimate banking activity, which should be licensed, insured, and supervised by the state). See also Gary Gorton et al., *The Safe-Asset Share*, *supra* note 6 and the accompanying text (on “squelching” safe asset production).

⁷⁴ See, e.g., Felix Salmon, *Is Informationally-Insensitive Debt a Good Thing?*, REUTERS (Apr. 15, 2011), <http://blogs.reuters.com/felix-salmon/2011/04/15/is-informationally-insensitive-debt-a-good-thing/> (criticizing informationally-insensitive debt as a repository of tail risk); see also Samuel G. Hanson & Adi Sunderam, *Are There Too Many Safe Securities? Securitization and the Incentives for Information Production*, 108 J. FIN. ECON 565 (2013) (arguing that economizing on knowledge acquisition in bad times produces inefficiencies).

C. Safe Assets, Money, and Government Debt

The relationship between safe assets and money is not straightforward and requires further clarification for purposes of this Article. Money has been described as “the safe asset par excellence,”⁷⁵ or even as the only safe asset.⁷⁶ In this Article we treat fiat money issued by a sovereign central bank and used as legal tender (including cash) as a subset of safe assets, at the safest extreme of the spectrum.⁷⁷ Central bank money is also the most abstract safe asset: it is safe so long as economic actors trust and obey the state.⁷⁸ The safety of all other safe assets—government bonds, bank deposits, repos and asset-backed securities, among others—is measured by their proximity to good central bank money.⁷⁹ The safest of the rest can turn into central bank money at par on demand. Legislation and regulation shape the relationship between central bank money and all other financial contracts.

⁷⁵ See, e.g., Pierpaolo Benigno & Salvatore Nisticò, *Safe Assets, Liquidity and Monetary Policy*, BANCA D’ITALIA 1 (2013), https://www.bancaditalia.it/pubblicazioni/altri-atti-seminari/2014/20140324_Benigno_paper.pdf (“There are some safe assets, like money, which can be perfect store of value and immediately resaleable”); Gourinchas & Jeanne, *supra* note 43, at 5.

⁷⁶ See, e.g., Lorenzo Bini Smaghi, Remarks at the Conference on the ECB and its OMT Programme: A Financial Market and Financial Stability Perspective on the OMT 9 (Sept. 2, 2013), <http://www.lorenzobinismaghi.com/documents/interventi/2013/berlin%20omt%20and%20ecb%20sept%2013.pdf> (“[I]nside money is the only safe asset in a fiat money system.”).

⁷⁷ Cash has no intrinsic value and derives its worth solely from the fact that a government declares it to have value. See, e.g., N. GREGORY MANKIW, *PRINCIPLES OF MACROECONOMICS* 326 (6th ed. 2011).

⁷⁸ Market participants are willing to hold money if they trust the issuer to maintain its value. For an extreme example, the U.S. dollar’s status as a global reserve currency is, in important part, a function of trust in the Federal Reserve and the extensive network of dealers ensuring dollar liquidity around the world. See Perry Mehrling, *Essential Hybridity: A Money View of FX*, 41 J. OF COMP. ECON. 355 (2013). At the other extreme, economic actors in a closed economy controlled by a totalitarian government may have little choice but to obey the state and use its legal tender. Such money may have no value beyond the jurisdiction of the state, but it can still function as safe domestically. Most economies lie along the spectrum between these two examples.

Describing money as a relatively simple safe asset does not mean that the institutional arrangements behind it are simple. The constitution of central bank money entails immensely weighty and complex political choices. CHRISTINE DESAN, *MAKING MONEY: COIN, BANK CURRENCY, AND THE COMING OF CAPITALISM* (2014).

⁷⁹ Long-term debt contracts can perform some of the same functions as short-term money-like claims. They store value, serve as benchmarks for pricing other assets, balance portfolio risk, satisfy regulatory requirements, and work as building blocks for other long- and short-term debt.

For example, an overnight sale and repurchase agreement (repo) of AAA-rated mortgage-backed securities transforms an asset understood to be safe as a store of value into one that is also a medium of exchange. See, Morrison et al., *supra* note 16 **Error! Bookmark not defined.**, at 1034. (“These [U.S. Treasury repos] are nearly equivalent to cash, are widely traded, and—due to government backing—[are] unlikely to lose their liquidity during crises.”). These functions of long-term debt entail assumptions about safety that can fail abruptly, with dramatic spillover effects. Panic sales of long-term debt that is no longer perceived as safe can drive down prices of other assets and cause transaction and firm failures. A government debt crisis might manifest itself a failed attempt to refinance long-term bonds. Currency devaluation can trigger mass insolvency.

A strand of law scholarship closely related to our project addresses “money claims,” or short-term stable-value debt used in transactions and vulnerable to panic redemptions (runs).⁸⁰ The focus of this literature is on institutional design to produce optimal quantities of money claims, while minimizing runs. Some scholars in this field reject any conflation of safe assets and money.⁸¹

Our primary focus is not on preventing runs and designing more robust short-term liabilities, although both are clearly relevant to our project. In this article, we consider the broader context in which any claim can be treated as risk-free—whether because of its contract features, such as maturity, the assets or collateral securing claim payoff, the claim’s seniority relative to other liabilities, state oversight of the claim issuer, third party guarantees, or any other factors.⁸² Understanding what makes a claim “safe” in the eyes of its users is, in our view, a first step to assessing the risks from safe assets, and designing an approach to manage such risks.

The economic literature we have surveyed in this Part describes a wide range of circumstances where market participants treat more-or-less risky debt contracts across the maturity spectrum as if they were risk-free. It offers no explanation for how assumptions about safety might come and go. This literature also documents the destructive potential of acting on these

⁸⁰ By definition, long-term debt cannot be redeemed for cash on demand. As a result, it lacks the transactional convenience (“moneyness”) and the vulnerability of short-term debt. On “moneyness,” see Greenwood et al., *supra* note 55, at 6. For examples of legal scholarship addressing short-term private claims that can function like money, see Margaret M. Blair, *Making Money: Leverage and Private Sector Money Creation*, 36 SEATTLE U. L. REV. 417 (2013); RICKS, *supra* note 15; Adam J. Levitin, *Safe Banking: Finance and Democracy*, 83 U. CHI. L. REV. 357 (2016); Hockett & Omarova, *supra* note 23; Morrison et al., *supra* note 16; Chrystin Ondersma, *Shadow Banking and Financial Distress*, 2013 COLUM. BUS. L. REV. 79 (2013).

For a canonical account of bank runs, see Douglas W. Diamond & Philip H. Dybvig, *Bank Runs, Deposit Insurance, and Liquidity*, 91 J. POL. ECON. 401 (1983). On runs outside the banking system, see, for example, Tobias Adrian et al., *Repo and Securities Lending* (Fed. Reserve Bank of N.Y., Staff Rep. No. 529, 2013), http://www.newyorkfed.org/research/staff_reports/sr529.pdf; Gary B. Gorton & Andrew Metrick, *Securitized Banking and the Run on Repo* (Nat’l Bureau of Econ. Research, Working Paper No. 15223, 2009); IMF GFSR, *supra* note 6, at 97.

⁸¹ See, e.g., Morgan Ricks, *A Regulatory Design for Monetary Stability*, 65 VAND. L. REV. 1289, 1300 (defining characteristics of “money-claims”). This definition builds on traditional views of the money supply. The Federal Reserve’s statistics divide the money supply into M1 and M2. See also, Morgan Ricks, *Reforming the Short-Term Funding Markets* (Harvard John M. Olin Center for Law, Econ., and Bus., Discussion Paper No. 713, 2012); Margaret M. Blair, *Financial Innovation, Leverage, Bubbles, and the Distribution of Income*, 30 REV. BANKING & FIN. L. 225, 229-32 (2010).

⁸² Put in slightly more technical terms, assumptions about safety are present both on the asset side and the liability side of financial intermediaries’ balance sheets. Money-like private claims are a particularly fragile subset of liabilities. Ricks has proposed to make them safer by licensing and securing claims on private issuers with claims on the state. The proposal rests on the assumption that the asset side of the money-issuing balance sheet can be made “default-free.” See Ricks, *supra* note 81, at 1290. We cannot make the same assumption because it is precisely what we are investigating.

For examples of contemporary proposals to reduce risks from money-like claims, see, for example, MERVYN KING, *THE END OF ALCHEMY: MONEY, BANKING AND THE FUTURE OF THE GLOBAL ECONOMY* (2016); George Pennacchi, *Narrow Banking*, 4 ANN. REV. FIN. ECON. 1 (2012) (banks licensed to issue claims against a pool of U.S. Treasury securities); RICKS, *supra* note 15 (government licensing, oversight and guarantees of all short-term claims); and Levitin, *supra* note 80 (100% reserve banking, where deposit claims may be issued only against cash or short-term U.S. Treasury securities).

assumptions but, lacking an institutional diagnosis, it does not supply a framework for institutional response. Our Article begins to fill both gaps, and extends to the political dimension of safe assets.⁸³

D. Controversies

Many parts of the economic literature on safe assets are contested. The term “safe assets” can mean different things to different people, which makes it look incoherent.⁸⁴ The explanatory power of safe asset theories as applied to the global financial crisis and its aftermath is also open to debate.⁸⁵ However, there is little disagreement about the basic fact that market participants treat trillions of dollars’ worth of financial assets as if they were risk-free.

With empirical research in early stages, most policy questions posed in the economic literature stand unanswered:

- Whether there is a shortage of safe assets, and how one might tell;⁸⁶
- Whether governments should issue more or less debt for the sake of financial stability, who should buy it, and how it should be treated for regulatory purposes;⁸⁷
- Whether governments should avoid restructuring their bonds to maintain their safe asset status at all costs, or move decisively to reduce unsustainable debts;⁸⁸

⁸³ Our interest in the distribution politics of safe assets relates closely to a strand of law scholarship, which explores the political and constitutional dimensions of central bank money. *See, e.g.*, Christine Desan, *Coin Reconsidered: The Political Alchemy of Commodity Money*, 11 THEORETICAL INQUIRIES L. 361 (2010); Roy Kreitner, *The Jurisprudence of Global Money*, 11 THEORETICAL INQUIRIES L. 177 (2010).

⁸⁴ *See, e.g.*, Fisher, *supra* note 32, at 3 (questioning the utility of combining disparate functions and instruments under one term); Portes, *supra* note 24, at 11 (criticizing safe assets as a damaging meme, and questioning the empirical claims in the literature).

⁸⁵ *Id.*

⁸⁶ *See, e.g.*, Caballero, *supra* note 10, at 37; Caballero & Farhi, *supra* note 55, at 2; Fisher, *supra* note 32, at 5; Gorton et al., *supra* note 6, at 105; IMF GFSR, *supra* note 6, at 11; Portes, *supra* note 24, at 31; *see also* DEP’T OF THE TREASURY ET AL., JOINT STAFF REPORT: THE U.S. TREASURY MARKET ON OCTOBER 15, 2014 (2015), http://www.treasury.gov/press-center/press-releases/Documents/Joint_Staff_Report_Treasury_10-15-2015.pdf.

⁸⁷ *See, e.g.*, Caballero & Farhi, *supra* note 55, at 35-36; Greenwood et al., *supra* note 55, at 23; Zoltan Poszar, *Institutional Cash Pools and the Triffin Dilemma of the U.S Banking System*, *supra* note 19, at 22 (arguing for more issuance of government debt); *see, e.g.*, Charles A. E. Goodhart, *The Macro-Prudential Authority: Powers, Scope and Accountability*, 2011 OECD J. 97; Nouy, *supra* note 12; Portes, *supra* note 24, at 32-33; ESRB, SOVEREIGN REPORT, *supra* note 13; Hervé Hannoun, Deputy Gen. Manager, Bank for Int’l Settlements, Speech at the Financial Stability Institute High-Level Meeting: Sovereign Risk in Bank Regulation and Supervision: Where Do We Stand? (Oct. 26, 2011), <http://www.bis.org/speeches/sp111026.htm> (arguing for raising risk premia, eliminating regulatory privileges); Jens Weidmann, President of Deutsche Bundesbank, Speech at Harvard University: Europe’s Monetary Union—Making It Prosperous and Resilient (Nov. 25, 2013), <http://www.bis.org/review/r131126b.htm>.

⁸⁸ *See, e.g.*, Hans J. Blommestein, *The Debate on Sovereign Risk, Safe Assets and the Risk-Free Rate: What are Possible Implications for Sovereign Issuers?*, 1 EKONOMI-TEK 55 (2012); Ashoka Mody, *The Ghost of Deauville*, VOXEU (Jan. 7, 2014), <http://www.voxeu.org/article/ghost-deauville> (criticizing general aversion to sovereign debt restructuring in the euro area); UBS Center, *supra* note 2 (observing the loss of safe assets status for euro area

- Whether private firms should be allowed to issue safe assets at all and, if yes, on what conditions;⁸⁹ and
- Whether regulators should require banks to hold more safe, liquid assets and what, if any, requirements along the same lines should apply to non-bank financial firms that issue safe assets.⁹⁰

We do not answer these questions directly below, but recast them. The current policy debate about safe assets adopts a focus on shortages and gluts from the macroeconomic literature, and mostly glosses over institutional and political choices. We move these choices to the foreground. Instead of asking whether state intervention would produce more or less safety, we ask how different forms of intervention might distribute safety attributes across the financial sector—for example, between bank intermediation and securities trading, or between public and private debt—and the subsidies implicit in this act of distribution. We consider the tools of safe asset construction, the respective roles of public and private ordering, and how public and private actors might manipulate the tools for their own ends.

II. The Legal Architecture of Safe Assets

Safe assets are deliberately constructed, nurtured, and adapted to meet the needs of particular constituents. Public and private actors make, label, and guarantee contracts to pay off in full and on time. *Making* a contract safe combines financial engineering and legal design to reduce risks to payoff. At the extreme, it is possible to reduce some risks to the point where they could be ignored, at least for some purposes. However, risk reduction is always relative—it never goes down to zero. A contract is *labeled* safe to attract buyers. An effective label dissuades market participants from acquiring additional information about the asset.⁹¹ *Guarantees* import safety from the outside, when issuer and contract attributes are not enough to secure risk-free treatment.

sovereign debt). *But see* Douglas A. Rediker & Angel Ubide, *A Disruptive Proposal for the IMF*, BLOOMBERG (Feb. 17, 2014), <http://www.bloombergvew.com/articles/2014-02-17/a-disruptive-proposal-by-the-imf> (criticizing IMF insistence on debt restructuring where countries' debts may not be sustainable, as a needless destruction of safe assets).

⁸⁹ *See, e.g.*, MARTIN WOLF, *THE SHIFTS AND THE SHOCKS: WHAT WE'VE LEARNED—AND HAVE STILL TO LEARN—FROM THE FINANCIAL CRISIS* (2014); *see also* RICKS, *supra* note 15 (advocating restrictions on private sector money creation).

⁹⁰ IMF GFSR, *supra* note 6, at 115 (noting that Basel liquidity requirements create demand pressure on safe asset markets); *see also* BASEL COMM. ON BANK SUPERVISION, *Basel III: The Liquidity Coverage Ratio and Liquidity Risk Monitoring Tools*, BANK FOR INT'L SETTLEMENTS (2013), <http://www.bis.org/publ/bcbs238.pdf>; FIN. STABILITY BD., *Identifying the Effects of Regulatory Reforms on Emerging Market and Developing Economies: A Review of Potential Unintended Consequences* (Report to the G20 Finance Ministers and Central Bank Governors) 15 (2012) http://www.fsb.org/wp-content/uploads/r_120619e.pdf (summarizing concerns about the Basel III liquidity framework due to a limited supply of high quality liquid assets (HQLA) in emerging and developing economies); *see also infra* Part II.B.

⁹¹ Dang et al., *supra* note 71, at 37.

In this Part, we spell out our framework for analyzing public intervention in safe assets. We describe the architecture of making, labeling, and guarantees, before turning to the risks in Part III.

As we illustrate in Table 2 and elaborate below, the basic three-part architecture of intervention is the same for public and private safe assets.⁹² However, states have a wider range of tools at their disposal than private market participants, by virtue of their powers to tax, print money, and regulate. States use their tools purposefully to endorse the safety of some private contracts and lend safety attributes to others. For their part, market participants design contracts around laws and institutions.⁹³ Most safe assets grow out of continuous public-private collaboration.⁹⁴

In Table 2, we separate legal intervention tools that operate primarily on institutions that issue safe assets, in the top half of the table, and those that operate on financial contracts directly, to transform them into safe assets. We highlight private ordering tools in *italics*.

⁹² On private tools to make and guarantee safe assets, see, for example, William W. Bratton & Adam J. Levitin, *A Transactional Genealogy of Scandal: From Michael Milken to Enron to Goldman Sachs*, 86 S. CAL. L. REV. 783, 800 (2013) (providing an autopsy of financial engineering and transactional techniques used to create claims with desired risk characteristics); Anna Gelpern & Adam J. Levitin, *Rewriting Frankenstein Contracts: The Workout Prohibition in Residential Mortgage-Backed Securities*, 82 S. CAL. L. REV. 1077, 1084-85 (2009) (describing formal, structural, and functional approaches to creating “rigid contracts” immune from variations in payoff).

On labeling by private credit rating agencies, see, for example, Frank Partnoy, *The Paradox of Credit Ratings*, in 9 RATINGS, RATINGS AGENCIES AND THE GLOBAL FINANCIAL SYSTEM 65 (Richard M. Levich et al., eds., 2002); and Stephen Choi, *Market Lessons for Gatekeepers*, 92 NW. U. L. REV. 916 (1998).

⁹³ For example, sponsors of asset-backed securitizations used pre-existing features of U.S. bankruptcy law, such as the limited definition of entities eligible to file for bankruptcy protection, to insulate securitized asset pools from restructuring in bankruptcy. Bratton & Levitin, *supra* note 92, at 801; Gelpern & Levitin, *supra* note 92, at 1094-98.

⁹⁴ See sources cited in *supra* note 23 on public-private collaboration. Our framing implies that purely private safe assets are rare. Even if the state were not involved in designing or endorsing the safety attributes, at a minimum, the assets’ systemic importance raises the possibility that they would be guaranteed *ex post*. This does not mean that private ordering is unimportant, but simply that it has limits. This is consistent with the analysis of public and private safe assets in the economic literature in Part I, *supra*.

Table 2: The Safety Toolkit—Public and *Private* Ordering

	Made Safe	Labeled Safe	Guaranteed Safe
Issuer	<ul style="list-style-type: none"> • Chartering qualifications (e.g., “fit and proper”) • Balance sheet regulation prescribing <ul style="list-style-type: none"> ○ Asset composition, incl. liquidity coverage ○ Tiered (senior-subordinate) liabilities ○ Net stable funding ○ Minimum capital • Activity restrictions • Affiliation restrictions • Risk retention • <i>Portfolio construction</i> • <i>Tiered (senior-subordinate) liabilities</i> • <i>Negative covenants</i> 	<ul style="list-style-type: none"> • Charter, license • Primary dealer designation • <i>Credit ratings</i> 	<ul style="list-style-type: none"> • Eligibility for LOLR loans • Eligibility for extraordinary support (institutions)⁹⁵ • Central bank swap lines • <i>Affiliate guarantees</i> • <i>Third party guarantees</i> • <i>Insurance and other credit enhancement</i>
Asset	<ul style="list-style-type: none"> • Underwriting and product standards • Collateral rules (minimum margin, haircut) • Central clearing requirements • Exemptions and priorities <ul style="list-style-type: none"> ○ Bankruptcy safe harbors ○ Depositor preference • <i>Short maturity</i> • <i>Collateral</i> 	<ul style="list-style-type: none"> • License to invest <ul style="list-style-type: none"> ○ Exemptions from concentration limits ○ Permitted investment designation ○ High Quality Liquid Asset designation • Asset risk weights • Regulatory accounting <ul style="list-style-type: none"> ○ Stable NAV • <i>Credit ratings</i> 	<ul style="list-style-type: none"> • Deposit insurance • Eligibility for central bank operations (monetary policy, lender of last resort) • Eligibility for extraordinary support (contracts)⁹⁶ • <i>Insurance and other credit enhancement</i> • <i>Affiliate support, including bringing off-balance sheet claims on balance sheet</i>

The table is illustrative, not exhaustive. We try to capture a range of statutory, regulatory, and contractual tools whose explicit objectives directly implicate asset safety. For the remainder of

⁹⁵ See, e.g., *The Federal Reserve’s Response to the Financial Crisis and Actions To Foster Maximum Employment and Price Stability*, BD. OF GOVERNORS OF THE FED. RESERVE SYS., http://www.federalreserve.gov/monetarypolicy/bst_crisisresponse.htm (last updated June 4, 2015).

⁹⁶ See, e.g., *id.*

Part II, we consider the three categories of tools in turn. We explore overlaps, misalignments, and hidden risks in Part III.

A. Made Safe(r)

The state can reduce the risks associated with would-be safe assets in two ways. First, it can promote “safe and sound” (solvent, liquid, and otherwise less risky) firms capable of issuing liabilities that function as safe assets. Second, it can reduce risks associated with particular contracts or categories of contracts to support full and timely repayment, stable prices, and trading at par in multiple states of the world—turning them into safe assets.

1. Issuers

Bank balance sheet regulation is the best-known example of making institutions safer, which in turn makes it possible for them to issue minimally risky liabilities to serve safe asset functions. Bank deposits function as safe assets for people and firms. They are both a store of value and a payment medium, available in full on demand. For a bank, deposits are senior liabilities whose payoff depends on the quality of its assets, the cushion of junior liabilities available to absorb losses, and the way in which the bank runs its business. To protect demand deposits, laws and regulations prescribe the composition of bank assets and junior liabilities; they also restrict bank activities and affiliations.⁹⁷ Balance sheet regulation is also prominent in the regulation of other financial intermediaries, such as money market mutual funds, as well as insurance underwriters and defined benefit plans.

On the asset side, regulation encourages some investments and restricts others, to make all of the firm’s liabilities safer. For example, deposit-taking banks may only hold enumerated assets and, within this set, are encouraged to hold some over others.⁹⁸ At the limit, scholars have argued that banks should hold cash reserves equal to their deposit liabilities—which would make deposits

⁹⁷ We defer the discussion of deposit insurance until Part II.C. *See, e.g.*, ANAT ADMATI & MARTIN HELLWIG, *THE BANKERS’ NEW CLOTHES: WHAT’S WRONG WITH BANKING AND WHAT TO DO ABOUT IT* (2013); HOWELL E. JACKSON & EDWARD L. SYMONS, *REGULATION OF FINANCIAL INSTITUTIONS* (1999); Robert C. Clark, *The Soundness of Financial Intermediaries*, 86 *YALE L.J.* 1 (1976); Arthur E. Wilmarth, Jr., *A Two-Tiered System of Regulation Is Needed to Preserve the Viability of Community Banks and Reduce the Risk of Megabanks*, 2015 *MICH. ST. L. REV.* 249 (2015).

⁹⁸ *E.g.*, National Bank Act, 12 U.S.C. § 24 (limiting the activities of U.S. banks—albeit to a surreally long list that reeks of political economy); Valentine V. Craig, *Merchant Banking: Past and Present*, *FDIC BANKING REV.*, Fall 2011, at 29 (2002), <https://www.fdic.gov/bank/analytical/banking/2001sep/br2001v14n1.pdf> (explaining historical development of restrictions on commercial banks’ merchant banking activities); *see infra* Part III.B.2.

even more cash-like, save for operational risk.⁹⁹ Money market mutual funds in the United States must maintain the market value of their assets within a very narrow range.¹⁰⁰

On the liability side, a senior-subordinated hierarchy protects senior debt from default. Legislation secures the privileged status of bank deposits (depositor preference) in a growing number of countries.¹⁰¹ Depositors are first in line to be paid under these laws when a bank fails. At the bottom of the hierarchy, capital adequacy regulations mandate a minimum cushion of residual liabilities (capital), so that deposits are repaid in full even when bank assets lose value.¹⁰²

Structural measures can be used in addition to or in lieu of balance sheet regulation, to help insulate firms that issue safe assets from risks elsewhere in the financial system. Activities such as trading securities or dealing in derivatives might be barred or severely curtailed, along with potentially risky affiliations.¹⁰³ Transactions with affiliates are also regulated partly out of concern that risk-taking within financial conglomerates might infect protected firms.

⁹⁹ See, e.g., Levitin, *supra* note 80 (proposing 100% cash reserve banking).

¹⁰⁰ 15 U.S.C. § 80a-1-64 (1940); 17 C.F.R. § 270.2a-7(a)(2) (2015) (allowing some money market mutual funds to report their daily net asset value, that is, the total value of their securities holdings divided by the number of shares outstanding, at a fixed price so long as the market value of these securities does not deviate from the reported amount by more than a small amount). This is a condition of issuing shares valued at par and redeemable on demand, a defining feature of money market mutual funds. Jill Fisch & Eric D. Roiter, *A Floating NAV for Money Market Funds: Fix or Fantasy?*, 2012 U. ILL. L. REV. 1003 (2012); see *infra* Part III.B.3.

¹⁰¹ See, e.g., Financial Services (Banking Reform) Act, 2013, c. 33, § 13 (U.K.); Council of the Euro. Union, Council Agrees Position on Bank Resolution (June 27, 2013), http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ecofin/137627.pdf (stating that “[u]nder the Council’s general approach agreed today, eligible deposits from natural persons and micro, small and medium-sized enterprises, as well as liabilities to the European Investment Bank, would have preference over the claims of ordinary unsecured, non-preferred creditors and depositors from large corporations”).

¹⁰² See, e.g., 12 C.F.R. §§ 3, 5, 6, 208, 217, 225 (2015) (setting forth U.S. capital adequacy regulations and Basel III implementation, including asset risk weights); BASEL COMM. ON BANKING SUPERVISION, *Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems* (June 2011), <http://www.bis.org/publ/bcbs189.pdf>; BASEL COMM. ON BANKING SUPERVISION, *Basel III: Leverage Ratio Framework and Disclosure Requirements* (Jan. 2014), <http://www.bis.org/publ/bcbs270.pdf>. Liability tiering need not accompany asset-side regulation: money market fund liabilities comprise mostly equity.

¹⁰³ These can either “ring-fence” traditional banking activities within a financial conglomerate (the prevailing approach in the United Kingdom and continental Europe) or separate the banking group from other parts of the financial system (as in the United States). See, e.g., Loi No. 2013-672 du 26 Juillet 2013 de séparation et de régulation des activités bancaires [Law 2013-672 of July 26, 2013 on the separation and regulation of banking activities]; Gesetz zur Abschirmung von Risiken und zur Planung der Sanierung und Abwicklung von Kreditinstituten und Finanzgruppen [Law concerning Separation of Risks and Restructuring and Winding-Up of Credit Institutions and Financial Groups], Aug. 12, 2013, BGBl. I at 3090, § 2 (Ger.) (Trennbankengesetz [German Bank Separation Law] is included in § 2); Liikanen et al., *High-Level Expert Group on Reforming the Structure of the EU Banking Sector* (Oct. 2012), http://ec.europa.eu/internal_market/bank/docs/high-level_expert_group/report_en.pdf; U.K. INDEP. COMM. ON BANKING, *Final Report Recommendations* (Sept. 2011), <http://webarchive.nationalarchives.gov.uk/20131003105424/https://hmt-sanctions.s3.amazonaws.com/ICB%20final%20report/ICB%2520Final%2520Report%5B1%5D.pdf>; Bd. of Governors of the Fed. Reserve Sys. et al., Agencies Issue Final Rules Implementing the Volcker Rule (Dec. 10, 2013), <http://www.federalreserve.gov/newsevents/press/bcreg/20131210a>; see José Viñals et al., *Creating a Safer Financial System: Will the Volcker, Vickers, and Liikanen Structural Measures Help?*, INT’L MONETARY FUND (May 2013), <http://www.imf.org/external/pubs/ft/sdn/2013/sdn1304.pdf>; Leonardo Gambacorta & Adrian van Rixtel, *Structural*

2. *Assets*

Statutes and regulations prescribe contract terms, contracting practices, and repayment priorities, and they shield some claims from impairment in bankruptcy. They work alongside private law techniques to reduce risk in contracts.

Margin and collateral requirements are assets-level analogues to minimum capital in institutional regulation. Brokers, exchanges, and public authorities have long required investors to make a minimum down payment (margin) when buying a security with borrowed funds.¹⁰⁴ Similarly, over-collateralization (haircuts) is common in securities-based lending, such as repos.¹⁰⁵ Post-2008 regulatory reform initiatives include minimum haircuts for contracts that do not clear through central counterparties, and, more broadly, for all securities financing transactions.¹⁰⁶ Collateral requirements here enhance the probability of full payoff, and encourage central clearing.

In a world where debt contracts serve as ingredients for multiple layers of other debt contracts, some or all of which are designed to function as safe assets, legal intervention can enhance safety at multiple contracting levels. Underwriting standards for asset-backed securities represent intervention at the repackaging level, but they are designed to reduce credit risk in the underlying mortgage contracts.¹⁰⁷ Criteria for debtors' ability to repay, minimum loan-to-value ratios, due diligence standards, and (less commonly) constraints on the financial terms reduce the

Bank Regulation Initiatives: Approaches and Implications, (BIS Working Papers No. 412, 2013), <http://www.bis.org/publ/work412.pdf>. Structural reform as a regulatory technique is not new; it was used to insulate deposit-taking banks since the nineteenth century, and most prominently to separate commercial banking from other financial activities in the Banking Act of 1933 (or the Glass-Steagall Act) in the United States. Banking Act of 1933, Pub. L. No. 73-66, 48 Stat. 162. Structural separation is also used to protect claims by contract and regulation outside banking, among other areas, in asset securitization, Gelpern & Levitin, *supra* note 92, and investment fund regulation, J.D. Morley, *The Separation of Funds and Managers: A Theory of Investment Fund Structure and Regulation* 123 YALE L.J. 1228 (2014).

¹⁰⁴ GERDING, *supra* note 17, at 379.

¹⁰⁵ In a repo transaction, one party sells a security to another and agrees to buy it back for a higher price at a future date. This is functionally equivalent to a loan by the buyer to the seller in the amount of the sale price, with the security acting as collateral. The difference between the sale and repurchase prices reflects implicit interest on the loan. The sale price is typically less than the market price of the security; as a result, the loan is effectively over-collateralized at the outset. The amount of over-collateralization, or the difference between the sale price and the market price of the security, is referred to as a "haircut." It is akin to debtor equity in the transaction. Buyers (lenders) demand a larger haircut (more collateral) when they worry about the risk of repayment or a decline in collateral value. GERDING, *supra* note 17, at 375; Tobias Adrian & Hyun Song Shin, *Money, Liquidity, and Monetary Policy*, 99 AMER. ECON. REV. 600, 602 (2009).

¹⁰⁶ FIN. STABILITY BD., *Strengthening Oversight and Regulation of Shadow Banking* (2014), http://www.financialstabilityboard.org/wp-content/uploads/r_141013a.pdf. Contracts secured by government debt would be exempt. *See also*, Tarullo, *supra* note 18 ("[W]e will be developing a regulation that would establish minimum haircuts for securities financing transactions (SFTs) on a market-wide basis, rather than just for specific classes of market participants.")

¹⁰⁷ Patricia A. McCoy & Elizabeth Renuart, *The Legal Infrastructure of Subprime and Nontraditional Home Mortgages*, JOINT CTR. FOR HOUS. STUDIES OF HARVARD UNIV. (Feb. 2008), http://jchs.harvard.edu/sites/jchs.harvard.edu/files/ucc08-5_mccoy_renuart.pdf.

risk of default on consumer loans. Once the loans are repackaged, these measures also support the performance of securitization claims.¹⁰⁸

Central clearing is a tool to mitigate counterparty risk in private financial contracts. A central counterparty stands between two sides in a financial contract, reducing the risk that one of them might fail without performing its side of the bargain.¹⁰⁹ In 2008, traders in derivatives and repo markets feared that their contract counterparties might fail; their individual efforts to manage the risk by demanding more collateral led to panic sales and more failures.¹¹⁰ In response, world leaders agreed in 2009 to require previously unregulated derivatives contracts to be cleared through central counterparties—regulated institutions that mutualize counterparty risk—and have since advocated similar reforms for repos.¹¹¹

¹⁰⁸ We do not suggest that consumer mortgages become safe assets for banks by virtue of complying with consumer protection regulations. However, post-crisis reforms of mortgage securitization expressly link consumer protection, mortgage underwriting standards, and the safety of mortgage-backed securities, which have functioned as safe assets. See 12 C.F.R. § 1026.43. A mortgage that meets the “qualified mortgage” requirements of the Consumer Financial Protection Bureau is exempt from the risk retention requirement (skin in the game) for securitization under the Dodd-Frank Act. See *id.* (defining “qualified mortgage”); Credit Risk Retention; Proposed Rule, 78 Fed. Reg. 57,928, 57,989 (Sept. 20, 2013).

Making asset-backed securities safe entails a mix of contract and balance sheet regulation. Laws that require lenders to retain a portion of the credit risk when selling off pools of loans try to promote more resilient cash flow structures and better monitoring. Covered bond laws, which leave the original lenders responsible for the performance of their repackaged loans, are an alternative approach to risk retention. Risk retention in securitization can resemble capital adequacy requirements elsewhere. Contract and institutional measures combined seek to align the incentives for safe asset engineers, issuers, investors, and parties to the underlying contracts. IMF GFSR, *supra* note 6, at 88-89. For background on covered bonds, see Edward V. Murphy, CONG. RESEARCH SERV., R41322, COVERED BONDS: BACKGROUND AND POLICY ISSUES 3 (Apr. 2013); STANDARD & POOR’S, *Covered Bonds—A Primer on the Top Five Global Jurisdictions* (Mar. 14, 2011), http://www.standardandpoors.com/spf/upload/Ratings_EMEA/2011-03-14_CoveredBondsAPrimerOntheTop5GlobalJurisdictions.pdf.

¹⁰⁹ A common objection to this requirement is that it replaces the risk of bilateral counterparty failure with the risk of central counterparty failure. The rich debate over the merits of central clearing is beyond the scope of this Article. We simply identify clearing requirements as an example of state intervention to ensure payoff for particular contracts. See Adam J. Levitin, *The Tenuous Case for Derivatives Clearinghouses*, 101 GEO. L.J. 445 (2013); Adam J. Levitin, *Prioritization and Mutualization: Clearinghouses and the Redundancy of the Bankruptcy Safe Harbors*, 10 BROOK. J. OF CORP., FIN., AND COMM. L. (forthcoming 2015), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2610469; Yesha Yadav, *The Problematic Case of Clearinghouses in Complex Markets*, 101 GEO. L.J. 387 (2013). While clearinghouses are an old device, regulations mandating that traders use them is new.

¹¹⁰ See, e.g., Gorton & Metrick, *supra* note 80.

¹¹¹ *Leaders’ Statement at the Pittsburgh Summit*, G20 9 (Sept. 24-25, 2009), https://www.treasury.gov/resource-center/international/g7-g20/Documents/pittsburgh_summit_leaders_statement_250909.pdf (leaders’ agreement on derivatives clearing). Regulators have also advocated central clearing for repos in domestic and international fora; however, they have stopped short of mandating it by law, and have relied instead on moral suasion. COMM. ON PAYMENT & SETTLEMENT SYS., *Strengthening Repo Clearing and Settlement Arrangements* (2010), <http://www.bis.org/cpmi/publ/d91.pdf>; Liz McCormick, *Financial Firms Move Closer to Central Clearing in Repo Market*, BLOOMBERG (Apr. 13, 2015, 1:18 PM), <http://www.bloomberg.com/news/articles/2015-04-13/financial-firms-move-closer-to-central-clearing-in-repo-market>.

The United States and other jurisdictions have since implemented the derivatives reforms. Dodd-Frank Wall Street Reform and Consumer Protection Act, tit. VII, sec. 761-774, Pub. L. No. 111-203, 124 Stat 1376, 1774-1802 (2010); FIN. STABILITY BD., *OTC Derivatives Market Reforms: Eighth Progress Report on Implementation* (Nov. 7, 2014), http://www.financialstabilityboard.org/wp-content/uploads/r_141107.pdf.

Bankruptcy priorities support payoff for senior debt even when the issuer is insolvent. Claims with absolute priority in liquidation are paid in full before those behind them get anything.¹¹² Priorities minimize credit, but not liquidity risk, since senior claims can be tied up in insolvency proceedings for a long time.¹¹³

Aptly named “safe harbors” in bankruptcy offer even stronger protections for eligible contracts. Unlike priorities, safe harbors address both credit and liquidity risks. In the United States, safe harbored contracts such as repos and derivatives escape automatic stay on creditor enforcement, rules against setoff, and against preferential transfers to creditors.¹¹⁴ They are “effectively exempt from bankruptcy.”¹¹⁵ For example, while other secured creditors must petition the court to sell their collateral, repo lenders can sell it immediately. Unlike other creditors, they can also accelerate and terminate their contracts.¹¹⁶ For repos, special treatment is justified expressly by the need to keep this vital funding market safe and liquid.¹¹⁷

3. *Made Safe(r): Conclusions*

Legal and regulatory intervention can make assets less risky. It directs the composition of firm balance sheets and restricts their activities and affiliations, so that they may issue safe assets.

¹¹² 11 U.S.C. § 507; *see also id.* § 1129(b) (providing that, in general, if a class of unsecured creditors rejects a debtor’s reorganization plan and is not paid in full, junior creditors and equity interest holders may not receive or retain any property under the plan).

¹¹³ *See, e.g.*, 11 U.S.C. § 507 (listing claims in order of priority); *id.* § 364 (providing that a party who provides post-petition financing to a debtor may negotiate a “superpriority”); *see also* *Dewsnup v. Timm*, 502 U.S. 410 (1992) (involving a prolonged adversary proceeding to determine validity and extent of note and trust deed held on debtors’ real property); *Morrison et al.*, *supra* note 16, at 8.

The example of depositor preference illustrates how repayment priority fits in the range of interventions to make assets safe. In the first instance, balance sheet regulation is supposed to prevent default. Central banks backstop balance sheet regulation with liquidity support; deposit insurance pays out when the bank must be closed. Depositor preference comes into play if deposit insurance is not enough. Daniel C. Hardy, *Bank Resolution Costs, Depositor Preference and Asset Encumbrance*, 22 J. FIN. REG. & COMPLIANCE 96 (2014).

¹¹⁴ *Morrison et al.*, *supra* note 16, at 1022.

¹¹⁵ For a review of arguments for and against safe harbors for various financial contracts, see DAVID SKEEL, *THE NEW FINANCIAL DEAL: UNDERSTANDING THE DODD-FRANK ACT AND ITS (UNINTENDED) CONSEQUENCES* 135 (2011); Stephen J. Lubben, *Transaction Simplicity*, 112 COLUM. L. REV. SIDEBAR 194 (2012); Ondersma, *supra* note 80, at 17-27. For repos, *see Morrison et al.*, *supra* note 16, at 1032-38.

¹¹⁶ In bilateral repos, sellers (borrowers) and buyers (lenders) deal with each other directly. In triparty repos, agents intermediate between them, stand ready to substitute collateral, and, in some cases, to provide intraday financing. As of January 2014, the U.S. repo market stood at just over \$3 trillion, with tri-party and bilateral repos each representing approximately \$1.4 trillion. In the U.S. market, most bilateral repos use U.S. Treasury debt as collateral; most tri-party repos use other assets. *See Morrison et al.*, *supra* note 16, at 1020, 1025-26.

¹¹⁷ *See Exploring Chapter 11 Reform: Corporate and Financial Institutions Insolvencies; Treatment of Derivatives Before the Subcomm. on Reg. Reform, Com. and Antitrust L. of the H. Comm. on the Judiciary*, 113th Cong. 31 (Mar. 26, 2014) (testimony of Seth Grosshandler, Partner, Cleary Gottlieb Steen & Hamilton LLP), https://judiciary.house.gov/wp-content/uploads/2016/02/113-90_87331.pdf. *But see id.* at 9 (testimony of Hon. Christopher S. Sontchi, Judge, U.S. Bankr. Ct., D. Del.).

It mandates contract terms and contracting procedures in an effort to turn financial contracts into safe assets. Statutes and regulations may even insulate debt contracts from the debtor's insolvency.

Reducing the risks associated with particular assets can follow two distinct approaches. The first seeks to reduce risk-taking in the financial system as a whole, as in the case of bank activity and affiliation restrictions. The second—inherent in any senior-subordinate structure, as well as in bankruptcy safe harbors and priorities—seeks to redistribute risk, making some claims safer at the expense of making others riskier, requiring them to absorb losses that would have been broadly distributed otherwise.

Making assets safer usually entails incremental moves to reduce particular risks. Multiple forms of intervention can operate simultaneously on the asset and its issuer, dialing safety precautions up or down. None tell buyers to treat the asset as if it were risk-free.¹¹⁸ Labels are different.

B. Labeled Safe

We use the shorthand “labels” for authoritative public statements about the riskiness of particular assets. Two kinds of labels are prominent in safe asset construction: label-as-license and label-as-price. Label-as-license permits regulated firms to issue liabilities that are treated as safe assets by the public; labels also attach to assets, and operate as permissions for regulated firms to buy assets that would otherwise be off-limits to them. Label-as-price can determine the cost of different investments for regulated firms, or the quoted value of their liabilities.

1. Label as License

Chartering rules for safe asset issuers are the simplest form of labeling. For example, a firm cannot simply call itself a bank and start selling demand liabilities to the public. Formal barriers to entry and continuing oversight requirements that go with the ability to issue safe assets fill many volumes of legal code and scholarship.¹¹⁹ Contemporary proposals to regulate shadow banking piggyback on existing licensing schemes.¹²⁰

On the asset side of regulated firms, labels such as “permitted investments” denote financial contracts that regulators deem to be “safe enough” for those firms. The label works as a

¹¹⁸ We address the possibility that intervention to “make safe” would convey incidental labels *infra* in Part III.

¹¹⁹ For an elementary overview of bank chartering requirements in the United States, see Board of Governors of the Federal Reserve System, *FAQ: How Can I Start a Bank?* https://www.federalreserve.gov/faqs/banking_12779.htm (last visited Aug. 28, 2016).

¹²⁰ See, e.g., RICKS, *supra* note 15, GORTON, *supra* note 73 (proposing bank-like licensing schemes for issuers of short-term claims).

license to invest. Some regulations specify permitted investments by name, as, for example, in U.S. federal bank regulations and the “legal lists” of bank investments published by U.S. states, which practically entrench the safe status of specific contracts.¹²¹ Others describe asset attributes. For instance, some state laws limit banks, municipalities and insurance firms to investments with stable net asset value (NAV).¹²² Exemptions operate as versions of licensing: U.S. government debt is exempt from prohibitions on affiliate transactions and proprietary trading under U.S. banking law.¹²³ European government debt is exempt from concentration limits under EU bank regulations.¹²⁴

Licensing operates as an on-off switch, potentially creating a market for an asset where there was none. It can also work as a railroad switch, redirecting large-scale financial flows from one sector or region to another. People fight over labels for decades because a lot rides on them. The history of bank regulation in the United States is a string of battles over permitted investments and activities, waged between commercial banks and their competitors in and outside the financial sector.¹²⁵

¹²¹ See, e.g., *supra* note 98; MASS. COMM. OF BANKS, *List of Legal Investments*, <http://www.mass.gov/ocabr/banking-and-finance/banking-services/list-of-legal-investments.html> (last updated July 2015) (listing investment deemed “legal” under Massachusetts General Laws chapter 167 section 15A); see also W. BRADDOCK HICKMAN, *CORPORATE BOND QUALITY AND INVESTOR EXPERIENCE* 211-77 (1957) (commenting on the performance of bonds on “Legal Lists.”).

¹²² INV. CO. INST., *REPORT OF THE MONEY MARKET WORKING GROUP* 27-28 & app. D (2009), https://www.ici.org/pdf/ppr_09_mmwg.pdf (“Many state laws and regulations also authorize municipalities, insurance companies, and other state regulated entities to invest in stable NAV funds, sometimes explicitly including funds operating in compliance with Rule 2a-7. Thus, absent a stable NAV, many state and local governments no longer would be able to use money market funds to help manage their cash.”); *Perspectives on Money Market Mutual Fund Reform: Hearing Before the U.S. Senate Committee on Banking, Housing and Urban Affairs*, 112th Cong. 31-32 (June 21, 2012) (testimony of Paul Schott Stevens, CEO, Investment Company Institute).

¹²³ The proprietary trading exemption also applies to some non-U.S. government debt under a limited set of circumstances. *Prohibitions and Restrictions on Proprietary Trading and Certain Interests in, and Relationships With, Hedge Funds and Private Equity Funds*, 79 Fed. Reg. 5536 (Jan. 2014) (to be codified at 12 U.S.C. 1851).

¹²⁴ *Capital Requirements Regulation (CRR)*, Regulation (EU) No 575/2013, Art. 400(2)(g) & (h), 2013 O.J. (L 176) 1; Bank of England, *Large exposures*, Supervisory Statement SS16/13, § 4 (Dec. 2013).

¹²⁵ HELEN GARTEN, *U.S. FINANCIAL REGULATION & THE LEVEL PLAYING FIELD* (2001) (describing the history of U.S. regulatory approaches to competition among banks and securities firms); Larry R. Mote, *Banks and the Securities Market: The Controversy*, 3 *ECON. PERSPECTIVES*, at 4 (Mar. 12, 1979), <https://www.chicagofed.org/publications/economic-perspectives/1979/mar-apr-mote-3>. The securities turf wars look quaint by comparison with more recent ones over derivatives, commodities, and proprietary trading, each with its own constellation of vested interests. On derivatives and commodities, see, for example, Saule T. Omarova, *The Merchants of Wall Street: Banking, Commerce & Commodities*, 98 *MINN. L. REV.* 265 (2012); Saule T. Omarova, *The Quiet Metamorphosis: How Derivatives Changed the “Business of Banking,”* 63 *U. MIAMI L. REV.* 1041 (2009) [hereinafter Omarova, *Quiet*]. On proprietary trading, see, for example, Ian Talley, *Could Volcker Rule Be a ‘Stealthier’ Way to Cut U.S. Debt?*, *WALL ST. J.* (Dec. 26, 2013, 10:00 AM), <http://blogs.wsj.com/economics/2013/12/26/could-volcker-rule-be-a-stealthier-way-to-cut-u-s-debt>; Cheyenne Hopkins, *U.S. Regulators Weight Volcker Rule Exemption for Sovereign Debt*, *BLOOMBERG* (Feb. 1, 2012, 12:01 AM), <http://www.bloomberg.com/news/articles/2012-02-01/u-s-regulators-weigh-volcker-exemption-for-sovereign-debt> (describing lobbying by top foreign officials to exempt their government debt from proprietary trading restrictions of the Volcker Rule under the Dodd-Frank Act).

When applied to assets, label-as-license does not call them risk-free, only safe enough to buy. By extension, it does not dispense with the need for regulated buyers to research the risk attributes of an asset. It just gets them over a regulatory threshold. Although labels might help market participants limit information-gathering costs, their stated purpose is to keep vulnerable firms away from the riskiest of investments.¹²⁶ Applied to firms, label-as-license comes closer to calling their liabilities safe and actively dissuading the public from acquiring private information about them.¹²⁷ We explore this point further in our discussion of money market mutual fund liabilities in the next section.

The distribution stakes in labels are on display in the protracted controversy over liquidity standards for big banks and certain other systemically important financial institutions. Following international agreement,¹²⁸ U.S. regulators mandated a Liquidity Coverage Ratio (LCR) for such firms as a buffer against sudden cash outflows of the sort that led to bailouts in 2008.¹²⁹ Only High Quality Liquid Assets (HQLA) with minimal credit risk and proven market liquidity are eligible for inclusion in LCR. The HQLA label in the draft and final rule covered U.S. federal and certain foreign government debt, but not state and municipal debt.¹³⁰ Comment letters threatened dire consequences for states and municipalities; one from a state treasurer implied that federal

¹²⁶ The functions of label-as-license are analogous to those of gatekeepers in securities markets. Rating agencies, accounting firms, investment banks, law firms, and others can serve as “reputational intermediaries who provide verification and certification services to investors.” John C. Coffee, Jr. *Understanding Enron: “It’s About the Gatekeepers, Stupid”*, 57 BUS. LAW. 1403, 1405 (2002); see also Choi, *supra* note 92, at 918. Gatekeepers can also restrict market access. Reinier H. Kraakman, *Gatekeepers: the Anatomy of a Third-Party Enforcement Strategy*, 2 J. L. ECON. & ORG. 53, 53 (1986) (referring to gatekeepers as “private parties who are able to disrupt misconduct by withholding their cooperation from wrongdoers”).

See also, Holmstrom, *supra* notes 51 and 59, discussing Morris and Shin, *supra* note 49, on the utility of “coarse” ratings that convey only approximate information about risk and change infrequently for coordinating market participants perceptions of risk.

¹²⁷ Tri Vi Dang, Gary Gorton, Berndt Holmstrom and Guillermo Ordonez, *Banks as Secret Keepers*, NBER Working Paper 20255 (Jun. 2014) <http://www.nber.org/papers/w20255>.

¹²⁸ BASEL COMM. ON BANK SUPERVISION, *supra* note 90, at 7.

¹²⁹ Liquidity Coverage Ratio: Liquidity Risk Measurement, Standards, and Monitoring; Proposed Rule, 78 Fed. Reg. 71,818, 71,868 (proposed Nov. 29, 2013) (to be codified at 12 C.F.R. §§ 50, 249 & 329), <http://www.gpo.gov/fdsys/pkg/FR-2013-11-29/pdf/2013-27082.pdf>; Liquidity Coverage Ratio: Liquidity Risk Measurement Standards; Final Rule, 79 Fed. Reg. 61,440, 61,541 (Oct. 10, 2014) (to be codified at 12 C.F.R. §. 50, 249, & 329), <http://www.gpo.gov/fdsys/pkg/FR-2014-10-10/pdf/2014-22520.pdf>. Europe is also in the process of implementing the liquidity coverage ratio. See, e.g., Nicholas Comfort, *Basel IV is the Buzzword as Europe’s Banks Brace for Costs*, BLOOMBERG (Aug. 6, 2015 11:29 A.M.), <http://www.bloomberg.com/news/articles/2015-08-06/basel-iv-is-the-buzzword-as-europe-s-big-banks-brace-for-costs> (noting that the liquidity coverage ratio is expected to be implemented in the E.U. by 2019).

¹³⁰ U.S. LCR regulations, *supra* note 129.

regulators favored Botswana over California.¹³¹ The authorities relented in May 2015, and offered to include some municipal debt in HQLA, only to face more pressure to include the rest.¹³²

2. *Label as Price*

Regulatory labels can function as price tags attached to the assets and liabilities of regulated firms. For example, a bank's assets are "weighted," or adjusted for risk, to determine the minimum level of capital it must hold to protect against unexpected loss.¹³³ If a corporate loan is weighted at 100% and a residential mortgage loan in the same amount is weighted at 50%, the first loan takes twice as much minimum capital as the second. Assets risk-weighted at zero, including bonds issued by some governments and international institutions, take no capital at all.¹³⁴ To the extent a bank pays more to issue capital compared to other liabilities,¹³⁵ it pays more to hold assets with higher risk weights. It is discouraged but not barred from buying such assets—and encouraged to herd into others with lower risk weights. Risk weights, like licenses, can also convey government assessments of risk.

Asset risk weights purport to recognize the attributes of an asset, but not alter them. This is not strictly accurate. Risk weights can be sharply discontinuous and static in a way that risk is not. For example, for much of the history of international capital adequacy regulation, governments had agreed on a "bucket" approach to risk—an approach that still substantially governs bank capital in the United States.¹³⁶ They divided bank assets into four credit risk

¹³¹ Letter from Bill Lockyer, Treasurer, State of California (Jan. 31, 2014), http://www.federalreserve.gov/SECRS/2014/February/20140221/R-1466/R-1466_022114_112029_567028751783_1.pdf. The letter from California is notable in light of the state's persistent fiscal crises and the fact that most of the foreign government securities listed in the letter would not in fact qualify for inclusion in LCR. *See, e.g.*, Stephanie Simon, *Cash-strapped California's IOUs: Just the Latest Sub for Dollars*, WALL ST. J. (Jul. 25, 2009), <http://www.wsj.com/articles/SB124846739587579877> (discussing California's decision to issue scrip in a 2009 financial crisis).

¹³² *Regulation WW: Liquidity Coverage Ratio: Treatment of Municipal Securities as High-Quality Liquid Assets*, BD. OF GOVERNORS OF THE FED. RESERVE SYS., http://www.federalreserve.gov/apps/foia/ViewComments.aspx?doc_id=R-1514&doc_ver=1 (last visited Aug. 28, 2015).

¹³³ We described regulatory capital earlier as a mandatory cushion of residual liabilities first in line to absorb losses when assets fail to pay as expected. *See supra* notes 97 & 102 and accompanying text. Governments have coordinated their approaches to capital adequacy regulations, including risk weights, since the 1980s under the auspices of the Basel Committee on Banking Supervision. The scope of coordination has broadened since 2008. BASEL COMM. ON BANKING SUPERVISION, *A Brief History of the Basel Committee* (Oct. 2014), <http://www.bis.org/bcbs/history.pdf>.

¹³⁴ *See* BASEL COMM. ON BANKING SUPERVISION, *International Convergence of Capital Measurement and Capital Standards* (1988), <http://www.bis.org/publ/bcbs04a.pdf>.

¹³⁵ The magnitude of the effect and explanations for it are subject to debate. *Compare* ADMATI & HELLWIG, *supra* note 97 (arguing that minimum capital requirements of 25 percent would not entail higher costs for banks) *with* INST. OF INT'L FIN., *Risk Sensitivity: The Important Role of Internal Models* (Oct. 2014), <https://www.iif.com/publication/regulatory-report/risk-sensitivity-important-role-internal-models> (arguing that higher capital would entail substantial cost and risk).

¹³⁶ Federal Reserve System, Office of the Comptroller of the Currency, "Regulatory Capital Rules: Regulatory Capital, Implementation of Basel III, Capital Adequacy, Transition Provisions, Prompt Corrective Action, Standardized Approach for Risk-Weighted Assets, Market Discipline and Disclosure Requirements, Advanced

categories, corresponding to zero, 20%, 50% and 100% risk weights depending on the nature of the issuer and the contract. Assets would not normally move between buckets.¹³⁷ Static labels might be good at herding investors and easier to monitor. However, the risk assessments they convey are crude at best.¹³⁸

Regulatory accounting rules applied to the liabilities of safe asset issuers can also serve as price tags directed at potential buyers. For example, as already noted, U.S. securities regulations have long permitted money market mutual funds to quote their shares at a stable net asset value (NAV), typically \$1 per share, provided the fluctuating market value of their asset portfolios (shadow NAV) stayed close to the quoted value.¹³⁹ Stable NAV allows buyers of money market fund shares to treat them as if they guaranteed repayment at par; it makes them more “money-like.”¹⁴⁰

A fixed regulatory value, such as \$1 per share for money market mutual funds, comes closest to declaring an asset to be safe. The \$1 label tells investors that there would be no deviation in payoff. In contrast, while zero-risk weighting in capital adequacy regulations might imply total safety, on its face, it only tells regulated investors that they need not hold regulatory capital against the asset.

3. *Labeled Safe: Conclusions*

Labels tell potential buyers that an asset is safe, or at least safe enough for their purposes. They can deter market-based information discovery, promote information insensitivity, and boost the liquidity of labeled assets. Unlike the tools we surveyed in Part I.A, labels do not make the issuer of labeled assets more creditworthy or payoff more certain.

Stark, discontinuous labels are best at coordinating potential asset buyers. They may also facilitate public oversight, since regulated firms would herd into a limited menu of licensed assets. “Zero-risk” and “\$1 per share” labels illustrate: they are transparent, administrable, and make

Approaches Risk-Based Capital Rule, and Market Risk Capital Rule,” 78 Fed. Reg. 62,018 (Oct. 11, 2015) (to be codified at 12 CFR pts. 3, 5, 6, 165, 167, 208 and 225).

¹³⁷ Discontinuity has diminished as standards evolved, for example, to permit limited use of internal risk models by the largest internationally active banks; however, it never disappeared altogether. See BASEL COMM. ON BANKING SUPERVISION, *supra* note 134. U.S. capital adequacy regulations implementing the latest revision of the Basel Accords set a minimum capital floor using a bucket-based standardized approach, even for firms that are otherwise eligible to use internal models. *Supra* note 137 (U.S. capital adequacy regulations).

¹³⁸ Compare to the discussion of “coarse” ratings in Holmstrom, *supra* note 42, citing Morris and Shin, *supra* note 49.

¹³⁹ The use of stable NAV was limited, but not eliminated, in post-crisis regulatory reform. 17 C.F.R. § 270.2a-7; Money Market Fund Reform; Amendments to Form PF, 79 Fed. Reg. 47736 (Aug. 14, 2014) (to be codified at XXX).

¹⁴⁰ See, e.g., Greenwood et al., *supra* note 55, at 4-5; Krishnamurthy & Vissing-Jorgenson, *supra* note 64, at 234; *supra* Part I.B. Some sophisticated institutional investors derive additional regulatory and accounting benefits from holding fund shares with stable accounting value; this resembles the label-as-license effect. INV. CO. INST., *supra* note 122, at 1-2.

better focal points for investors than labels reflecting fine risk gradations. They promote herding into assets labeled safe, but can also prompt runs and crashes when taken away.¹⁴¹

More than any other mode of intervention, labels traffic in fictions.¹⁴² They can authoritatively deem an asset category to be safe, not just a bit safer, and instruct regulated firms to act on the label in lieu of an independent risk assessment. Labels can save investors some of the cost of risk assessment if regulators have superior information or can do a better job evaluating risk. This is a big “if.” Public authorities do not have an information advantage with respect to financial assets in general, apart from their own debt and claims issued by the firms they regulate. Information advantage cannot fully explain why market participants would embrace public labels. Labels may make sense as tools to promote “symmetrical ignorance” in the trading of information-insensitive debt—but they can also be interpreted as representations of safety, or commitments to safety by the public authorities. Because market participants tend to adapt safe assets for multiple functions, it would be difficult to constrain the use of a labeled asset to the original narrow purpose of the label.¹⁴³

C. Guaranteed Safe

A government does have superior tools to ensure the safety of any given contract: it can adopt the contract as its own. Public backing for safe assets can take the form of credit and liquidity guarantees. It may be explicit or implicit, direct or indirect, *ex ante* or *ex post*. The law sets the terms of the explicit guarantees and creates the space for the implicit ones. We describe the key permutations below.

1. Credit Guarantees

Credit guarantees commit fiscal resources to the safety of private contracts. Full and unconditional credit guarantees turn private contracts into government debt. They can encourage excessive risk-taking by absolving private actors of the consequences. At the other extreme, partial and conditional guarantees do little for asset safety, because potential beneficiaries of the guarantee have no assurance of full payment. The ubiquitous pejorative “bailouts” describes *ex post* public rescues whose terms are not spelled out in advance. A bailout does shape expectations of future guarantees. In practice, unconditional guarantees of safe assets are rare. However, conditions specified in ordinary times rarely hold up in a systemic crisis.

¹⁴¹ See, e.g., Steinar Holden et al., *An Equilibrium Model of Credit Rating Agencies* (Norges Bank Res. Working Paper No. 2012-23, 2012), http://www.norges-bank.no/pages/92250/Norges_Bank_Working_Paper_2012_23.pdf (modeling rating agencies as solving coordination problems among investors).

¹⁴² See *supra* notes 12-13 and accompanying text (describing and applying the concept of legal fiction).

¹⁴³ See Table 1 and note 51, *supra*, and the accompanying text, elaborating multiple functions of safe assets and the concept of information-insensitive debt.

Bank deposit insurance is a widely known and relatively transparent credit guarantee, usually elaborated in statutes and regulations.¹⁴⁴ Although it attaches to deposits, insurance also supports the bank itself by dissuading depositors from running. While statutory guarantees make deposits “default-free” in the eyes of the public, they are rarely unconditional or full.¹⁴⁵ Caps, co-insurance, and insurance payout delays qualify the safety of deposits for depositors. For banks owners and creditors, the availability of insurance may depend in part on compliance with solvency and business conduct regulations, among other conditions.¹⁴⁶ In some cases, public funds may not be paid until after some combination of equity, junior debt, affiliate contributions, and industry financing is exhausted.¹⁴⁷ Insurance schemes try to get as close as possible to cash-like safety for the depositors without subsidizing other bank creditors.

Government commitments to pay no more and no less than promised fail in two situations. First, governments extend coverage to more claims and claimants in crisis, out of concern for system-wide spillovers. Both the United Kingdom and the United States did so in 2007-2008.¹⁴⁸

¹⁴⁴ On deposits as safe assets, see *supra* Part II.A.1; Asli Demirguc-Kunt & Edward J. Kane, *Deposit Insurance Around the Globe: Where Does It Work?*, J. ECON. PERSPECTIVES, Spring 2002 at 175; Asli Demirgüç-Kunt et al., *Deposit Insurance around the World: A Comprehensive Database*, (World Bank Pol’y Res. Working Paper no. 3628 2005); FIN. STABILITY BD., *Thematic Review on Deposit Insurance Systems* (Feb. 2012), http://www.financialstabilityboard.org/publications/r_120208.pdf.

¹⁴⁵ See Ricks, *supra* note 81, at 1290. In most cases, deposit insurance is capped to limit the benefit to small retail depositors who cannot protect themselves. In some cases, depositors are required to absorb a small portion of the losses. Deposits can become illiquid if insurance does not pay out immediately—this is a particular risk for insurance schemes that are not pre-funded. For an analysis of pre-funded and post-funded models, see Patricia A. McCoy, *The Moral Hazard Implications of Deposit Insurance: Theory and Practice*, in 5 CURRENT DEVELOPMENTS IN FINANCIAL AND MONETARY LAW 417 (International Monetary Fund, 2008) A combination of these factors made depositors in Northern Rock bank in the U.K. lose confidence in the safety of their deposits in September 2007. See H. OF COMMONS, TREASURY COMM. *The Run on the Rock* (Jan. 24, 2008), <http://www.publications.parliament.uk/pa/cm200708/cmselect/cmtreasy/56/56i.pdf>.

¹⁴⁶ In the United States, the Federal Deposit Insurance Corporation uses a distinct set of criteria for insurance termination, which only partly overlap with the broader regulatory regime. 12 U.S.C. § 1818(a)(2), (w).

¹⁴⁷ See, e.g., Jianping Zhou et al., *From Bail-out to Bail-in: Mandatory Debt Restructuring of Systemic Financial Institutions*, INT’L MONETARY FUND (April 2012), <https://www.imf.org/external/pubs/ft/sdn/2012/sdn1203.pdf>; see also Resolution of Systemically Important Financial Institutions: The Single Point of Entry Strategy, 78 Fed. Reg. 243 (Dec. 2013). Deposit insurance can justify intrusive regulation in light of moral hazard concerns. See, e.g., 12 U.S.C. §§ 1811-1835a (2015).

¹⁴⁸ See, for example, Jean Eaglesham et al., *UK to Guarantee Northern Rock Deposits*, FIN. TIMES (September 17, 2007 6:57 pm), <http://www.ft.com/cms/s/2/39199b78-6489-11dc-90ea-0000779fd2ac.html#axzz3CsFh6xOo>. For the terms of U.K. deposit insurance, before the crisis, see *Deposit Limits*, FIN. SERVS. COMP. SCHEME, <http://www.fscs.org.uk/what-we-cover/eligibility-rules/compensation-limits/deposit-limits/> (last visited Feb. 20, 2016) (“For claims against firms declared in default before 1 October 2007, the maximum level of compensation is £31,700 (100% of the first £2,000 and 90% of the next £33,000).”). See also FED. DEPOSIT INS. CORP., *Temporary Liquidity Guarantee Program*, <https://www.fdic.gov/regulations/resources/tlgp/> (last updated Feb. 27, 2013) (“On October 14, 2008, . . . the FDIC implemented the Temporary Liquidity Guarantee Program (TLGP). . . . The TLGP guaranteed in full all domestic noninterest-bearing transaction deposits, low-interest NOW accounts, and Interest on Lawyers Trust Accounts (IOLTAs) held at participating banks and thrifts through December 31, 2009.”); Anna Gelpern, *Financial Crisis Containment*, 41 CONN. L. REV. 1051 (2009) (describing blanket ex post bank guarantees in the U.K. and Korea).

Second, governments run out of resources or political capacity to honor the original guarantee and curtail coverage (or choose among the claimants) in crisis. When it became apparent that Iceland's deposit insurance scheme was bankrupt in 2008, Iceland paid its own nationals ahead of U.K. and Dutch depositors in Icelandic banks.¹⁴⁹

Bailouts reveal and deliver on implicit credit guarantees. The usual beneficiaries are national champions, too-big-to-fail financial firms, political subdivisions, and other entities whose failure would be macroeconomically or politically intolerable.¹⁵⁰ Implicit guarantees may be widely recognized *ex ante*, as in the case of U.S. housing finance Agencies, or GSEs.¹⁵¹ Investors accurately predicted that the economic and political significance of the housing finance agencies in the U.S. economy, U.S. and global financial markets would make their failure inconceivable. In other cases, expectations of guarantees are attenuated before the crisis, but might become entrenched after the bailouts materialize.¹⁵² Fear of moral hazard prompts new *ex ante* limits on bailout authority, even as fresh memories of bailouts detract from the credibility of such limits.¹⁵³

2. *Liquidity Guarantees*

¹⁴⁹ The risk is especially high in countries whose banking system is many times the size of the economy (Iceland's was nine times the size). The European Free Trade Area court upheld Iceland's decision. EFTA Surveillance Authority v. Iceland, EFTA Court Case E-16/11 (2013) (stating that in October 2008, U.K. and Netherlands depositors of Landesbanki, an Icelandic bank, lost access to their deposits).

¹⁵⁰ Adam J. Levitin, *In Defense of Bailouts*, 99 GEO. L.J. 435, 453-54 (2011).

¹⁵¹ See *supra* note 62 and accompanying text for a discussion of GSE debt; e.g., David Reiss, *The Federal Government's Implied Guarantee of Fannie Mae and Freddie Mac's Obligations: Uncle Sam Will Pick Up the Tab*, 42 GA. L. REV. 1019 (2008).

Agency debt was used by reserve and asset managers around the world as a stand-in for U.S. Treasury debt long before federal backing was made explicit in the summer of 2008, followed by government takeover. See WAYNE M. MORRISON & MARC LABONTE, CONG. RESEARCH SERV., RL34314, *CHINA'S HOLDINGS OF U.S. SECURITIES: IMPLICATIONS FOR THE U.S. ECONOMY* 7 (2013) (observing that Agency securities had accounted for more than 40% of China's overall holdings of U.S. securities before the crisis, but have since dropped substantially); N. ERIC WEISS, CONG. RESEARCH SERV., RS22916, *FANNIE MAE'S AND FREDDIE MAC'S FINANCIAL PROBLEMS: FREQUENTLY ASKED QUESTIONS* 2 (2008) ("The GSEs have a special relationship with the federal government—sometimes called an implicit guarantee—that has allowed them to borrow at interest rates only slightly above those paid by the federal government"); N. ERIC WEISS, CONG. RESEARCH SERV., R40800, *GSEs AND THE GOVERNMENT'S ROLE IN HOUSING FINANCE: ISSUES FOR THE 113TH CONGRESS* 2-4 (2013) (describing Agency conservatorship arrangements, including solvency guarantees from the U.S. Treasury).

¹⁵² See, e.g., Kacperczyk & Schnabl, *supra* note 2, at 48 (describing the consequences of federal rescue of commercial paper market); Marcin Kacperczyk & Philipp Schnabl, *Implicit Guarantees and Risk Taking: Evidence from Money Market Funds* (NBER Working Paper No. 17321, 2011), <http://www.nber.org/papers/w17321> (evaluating risk-taking after unexpected implicit federal guarantee was made explicit); see also FED. RESERVE BANK OF MINNEAPOLIS, *Special Studies – Too Big To Fail*, https://www.minneapolisfed.org/publications_papers/studies/tbtf (last visited Feb. 21, 2016) (debating the magnitude of the implicit subsidy for "Too Big to Fail" institutions before and after the financial crisis beginning in 2007).

¹⁵³ See FIN. STABILITY BD., ADEQUACY OF LOSS-ABSORBING CAPACITY OF GLOBAL SYSTEMICALLY IMPORTANT BANKS IN RESOLUTION (2014), <http://www.fsb.org/wp-content/uploads/TLAC-Condoc-6-Nov-2014-FINAL.pdf>; Allen Mattich, *Can You Really End 'Too Big To Fail'?*, WALL ST. J. MONEYBEAT (Nov. 10, 2014, 1:03 P.M.), <http://blogs.wsj.com/moneybeat/2014/11/10/can-you-really-end-too-big-to-fail>; see Arthur E. Wilmarth, Jr., *The Dodd-Frank Act: A Flawed and Inadequate Response to the Too-Big-To-Fail Problem*, 89 OR. L. REV. 951, [x] (2011).

If market participants could replace an asset at face value with central bank money at any time, they would have strong justification for using that asset as if it were risk-free. Central banks have multiple ways to make it happen. They can buy and sell assets as part of monetary policy operations.¹⁵⁴ They can make emergency loans to support solvent financial firms, and increasingly, asset markets. In theory, these interventions are distinct from credit guarantees, which remain the province of fiscal authorities. The trouble is that the line between liquidity and credit support—which tends to mark the boundary of central banks' legal and political mandates—is fuzzy.¹⁵⁵

The fuzziness follows from the mechanics of monetary policy and Lender of Last Resort (LOLR) operations. For example, under normal conditions, an independent central bank targeting prices across the economy, might buy and sell short-term government bonds in the secondary market, and quickly reverse the transactions. It typically tries to avoid influencing particular asset prices and holding a large stock of securities on its balance sheet.¹⁵⁶ In crisis, the same central bank might react to acute distress in discrete market segments or particular institutions. In a prolonged downturn, it might publicly commit to buy specific securities in large quantities and hold them for a long time, to induce a durable change in market and popular sentiment.¹⁵⁷ As a result, the central bank effectively guarantees the liquidity and boosts the price of specific assets eligible for its extraordinary operations.¹⁵⁸ Its counterparties (primary dealers) also benefit from the commitment to replace their securities with cash. Central banks take on credit risk and face political backlash.¹⁵⁹

Extraordinary measures by the European Central Bank (ECB) in response to the euro area financial crisis illustrate the monetary policy dilemma. As the Greek debt crisis intensified and threatened to spread across Europe in 2010, the ECB announced measures to buy government bonds in those countries hardest hit by the crisis. It then lent to banks at longer maturities against an expanding range of collateral.¹⁶⁰ While the ECB's stated goal was to overcome failures in

¹⁵⁴ The range of assets used for this purpose has expanded as central banks have resorted to unconventional monetary policies in the face of low growth and zero interest rates.

¹⁵⁵ We have addressed this point elsewhere. See, e.g., Gelpern, *supra* note 148.

¹⁵⁶ See, e.g., Stephen G. Cecchetti & Piti Disyatat, *Central Bank Tools & Liquidity Shortages*, F.R.B.N.Y. ECON. POL'Y REV. 33, 36 (Aug. 2010), <http://www.ny.frb.org/research/epr/10v16n1/1008cecc.pdf>.

¹⁵⁷ On unconventional asset purchase (quantitative easing) programs in the United States and the United Kingdom, see, for example, Jack Meaning & Feng Zhu, *The Impact of Recent Central Bank Asset Purchase Programmes*, BIS QUARTERLY REV., Dec. 2011, at 73 (2011), http://www.bis.org/publ/qtrpdf/r_qt1112h.pdf. On quantitative easing in the euro area, see *Asset Purchase Programmes*, EUR. CENTRAL BANK, <https://www.ecb.europa.eu/mopo/implementation/omt/html/index.en.html> (last updated Aug. 21, 2015); see also Gregory Claeys et al., *European Central Bank Quantitative Easing: The Detailed Manual*, BRUEGEL (Mar. 11, 2015), <http://bruegel.org/2015/03/european-central-bank-quantitative-easing-the-detailed-manual/>.

¹⁵⁸ See, e.g., Meaning & Zhu, *supra* note 157, at 74.

¹⁵⁹ Cecchetti & Disyatat, *supra* note 156, at 34 (discussing credit risk).

¹⁶⁰ The ECB conducts a unified monetary policy to achieve stable prices across the euro area, so that a euro in booming Germany has the same value as a euro in deeply depressed Greece. This is difficult to achieve when the interest rate on Greek government bonds is several times the rate on its German counterparts.

monetary policy transmission, distressed governments received important collateral benefits: lower borrowing costs and a ready buyer for their debt. Critics accused the ECB of violating treaty prohibitions on bailouts of member states (monetary financing).¹⁶¹ Accusations came from another direction in 2015, when the ECB curtailed lending to Greek banks against Greek government bonds as collateral: it was blamed for precipitating a political crisis.¹⁶²

The U.S. Federal Reserve came under criticism for stretching its LOLR mandate and extending government guarantees to more assets and institutions.¹⁶³ In 2008, it adapted legal authority dormant since the Great Depression to replace billions of dollars in private debt issued by banks, securities dealers, and money market mutual funds, as well as repos, mortgage-backed securities, and commercial paper¹⁶⁴ with public safe assets (money and government debt). Such

ECB tools include open market operations (buying and selling financial assets), secured lending to banks, and requiring banks to hold funds on reserve with it. Government bonds are an important channel for price transmission because (1) the cost of borrowing for other actors in the economy is based on the interest rate on government bonds, (2) a big drop in the value of government bonds can impair the balance sheets of banks and other important institutions that hold them, and (3) an illiquid government bond market can reduce the availability of collateral for other financial transactions. This can lead to less lending, higher interest rates, and economic contraction in the country whose government bond markets have seized up. *See Financial Markets in Early August 2011 and the ECB'S Monetary Policy Measures*, ECB MONTHLY BULL., Sept. 2011, at 53, https://www.ecb.europa.eu/pub/pdf/other/box5_mb201109en.pdf.

¹⁶¹ See, e.g., H.W. Sinn, *Responsibility of States and Central Banks in the Euro Crisis: Expert report commissioned by the German Constitutional Court, Second Senate Constitutional complaints 2 BvR 1390/12, 2 BvR 1439/12 and 2 BvR 1824/12 Organstreitverfahren (proceedings related to a dispute between supreme federal bodies) 2 BvE 6/12 (Ger.)* (Mar. 2014), https://berlinoeconomicus.diw.de/geldpolitik/wp-content/uploads/sites/4/2014/09/Stellungnahme_HWSinn_en.pdf (challenging crisis interventions by the ECB and other European institutions); see also Claire Jones & Stefan Wagstyl, *Mario Draghi Vindicated as Court Backs ECB Bond-Buying Plan*, FIN. TIMES (June 16, 2015), <http://www.ft.com/intl/cms/s/0/c200c62e-1402-11e5-9bc5-00144feabdc0.html> (reporting on a legal challenge to the ECB's €1.1tn quantitative easing program, and the court decision upholding it).

¹⁶² Claire Jones & Ferdinando Giugliano, *ECB Split Points to Sensitivity of Greek Liquidity Curbs*, FIN. TIMES (Feb. 5, 2015), <http://www.ft.com/intl/cms/s/0/8f36e752-ad5d-11e4-97c1-00144feab7de.html> (reporting criticism of the ECB's curbs on the use of Greek government debt as collateral).

¹⁶³ *Starr Int'l Co. v. United States*, 121 Fed. Cl. 428, 457-60, 469 (Fed. Cl. 2015).

¹⁶⁴ *Credit and Liquidity Programs and the Balance Sheet*, BD. OF GOVERNORS OF THE FED. RESERVE SYS., http://www.federalreserve.gov/monetarypolicy/bst_crisisresponse.htm (last visited Aug. 29, 2015); Michael J. Fleming, *Federal Reserve Liquidity Provision during the Financial Crisis of 2007-2009* (Fed. Reserve Bank of N.Y., Staff Reports No. 563, 2012), http://www.newyorkfed.org/research/staff_reports/sr563.pdf; Christian A. Johnson, *Exigent and Unusual Circumstances: The Federal Reserve and the U.S. Financial Crisis*, in LAW REFORM AND FINANCIAL MARKETS 269 (Kern Alexander & Niamh Moloney eds. 2012) (describing Federal Reserve liquidity facilities).

For statutory authority for this activity, see 12 U.S.C. § 343 (2006) (showing the authority before the Dodd-Frank Act); Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, tit. XI, sec. 1101, 124 Stat 1376, 2113-15 (2010) (amending 12 U.S.C. § 343); Extensions of Credit by Federal Reserve Banks, 79 Fed. Reg. 615 (Jan. 6, 2014) (proposing rules under the amended 12 U.S.C. § 343); *American International Group (AIG), Maiden Lane II and III*, BD. OF GOVERNORS OF THE FED. RESERVE SYS., http://www.federalreserve.gov/newsevents/reform_aig.htm (last update Aug. 2, 2013); *Bear Stearns, JPMorgan Chase, and Maiden Lane LLC*, BD. OF GOVERNORS OF THE FED. RESERVE SYS., http://www.federalreserve.gov/newsevents/reform_bearstearns.htm (last updated Aug. 2, 2013). For an academic analysis of the Fed's use of emergency powers, see e.g., PETER CONTI-BROWN, *THE POWER AND INDEPENDENCE OF THE FEDERAL RESERVE* 95-96 (2016); see also, Johnson, *supra* note 164.

aggressive intervention is a far cry from 19th century conceptions of LOLR, which stem panic by lending to already-solvent commercial banks against already-good collateral.¹⁶⁵ In theory, a LOLR does not make banks solvent or collateral safe. In practice, modern central banks have found themselves guaranteeing banks, non-banks, and asset markets, and lending against collateral of variable quality and uncertain value.¹⁶⁶ However, ex post guarantees can prompt a political backlash once the crisis is contained, usually on moral hazard grounds; in the United States, such backlash has resulted in legislative limits on the Federal Reserve's lending authority.¹⁶⁷

3. *Guaranteed Safe: Conclusions*

The examples cited in this section and throughout this Article suggest that laws and regulations specifically authorizing guarantees are poor predictors of government intervention in crisis. With the partial exception of retail deposit insurance (guarantees that visibly benefit consumers with premia charged to banks), large-scale commitments of fiscal resources and central bank liquidity to support safe assets in recent financial crises have been based on obscure, open-ended, or creatively adapted authorities. Here the law may not always shape buyers' bailout expectations ex ante—except to the extent that a bailout expressly or implicitly ratified by recourse to legal authority might create expectations of more to come. The law supplies an ex post safety valve, structuring and legitimating state intervention to bridge the gap between asset risk attributes and their use by market participants. Such use, in turn, is shaped by public and private labels embedded in laws, regulations, contracts, and institutional practices.

Many of the beneficiary assets—including commercial paper, money market mutual funds, repos, and asset-backed securities—had been labeled as safe or singled out for special treatment (other than guarantees) in the years leading up to the crisis.¹⁶⁸ In times of stress, governments might also effectively label and guarantee assets as safe when they use them in monetary policy operations, or accept them at face value as collateral for central bank lending.

In a letter to the Federal Reserve, the U.S. Treasury expressly assumed the credit risk associated with non-traditional assets bought by the Federal Reserve as part of the emergency programs. See Donald L. Kohn, Vice Chairman, Bd. of Governors of the Fed. Reserve Sys., Speech at Carleton University, Ottawa, Canada (May 13, 2010), <http://www.federalreserve.gov/newsevents/speech/kohn20100513a.htm>.

¹⁶⁵ WALTER BAGEHOT, *LOMBARD STREET: A DESCRIPTION OF THE MONEY MARKET* (1873). In theory, LOLR prevents a solvent bank from failing in a generalized panic, in contrast to deposit insurance, which compensates depositors after their bank has failed. See *supra* notes 80 (runs) & 144 (deposit insurance); *ELA Procedures*, EURO. CENTRAL BANK EUROSISTEM, https://www.ecb.europa.eu/pub/pdf/other/201402_elaprocedures.en.pdf (last visited Feb. 21, 2016) (explaining that the ECB does not have LOLR authority, which remains with national central banks. As a result, its emergency response has been framed in monetary policy, not LOLR terms.) A LOLR cannot guarantee the liquidity of assets denominated in a currency it does not issue.

¹⁶⁶ See, e.g., PERRY MEHLING, *THE NEW LOMBARD STREET: HOW THE FED BECAME THE DEALER OF LAST RESORT* (2010); Stephen G. Cecchetti & Piti Disyatat, *Central Bank Tools and Liquidity Shortages*, 16 *ECON. POL. REV.* 29 (2010); Hiroshi Nakaso, *The Financial Crisis in Japan During the 1990s: How the Bank of Japan Responded and the Lessons Learnt*, BANK OF INT'L SETTLEMENTS (OCT. 2001), <http://www.bis.org/publ/bppdf/bispap06.pdf>.

¹⁶⁷ See sources cited *supra* note 164 (discussing amendments to 12 U.S.C. § 343).

¹⁶⁸ See *supra* notes 103 (asset-backed securities), 112, 113 (repos), & 137 (money market mutual funds) and accompanying text; see also Bernanke et al., *supra* note 46, at 7-8.

Spelling out the terms of government guarantees for safe assets in full ahead of time risks moral hazard, and may entail up front budget costs that would take the option off the table for many governments. It may also be politically toxic and impractical, in light of the uncertain distinction between credit and liquidity support. The time inconsistency challenge is daunting. In lieu of paying for express guarantees, market participants are left to arbitrage risk-free and low-risk regulatory labels, and pressure governments to validate their expectations of being made whole using interpretive leeway and emergency authority.¹⁶⁹

D. Implications So Far

In contrast to the economic literature that is our departure point in Part I, our Article describes safe assets as products of legal intervention to reduce risks, attract buyers with risk-free labels, and ratify assumptions about safety with guarantees. Not all forms of intervention operate simultaneously in all safe assets. All three are clearly visible in private contracts used as if they were risk-free, including bank debt, repos, and asset-backed securities. Only labels are salient for national government debt denominated in the national currency.¹⁷⁰

A legal intervention tool can enhance the safety of an asset in multiple ways at once. For example, express intervention to “make safe” almost always comes with incidental labels, which separate regulated firms and safe harbored contracts from the rest.¹⁷¹ Express guarantees similarly convey labels. Labels that purport to describe also make assets more liquid.

¹⁶⁹ Gelpern, *supra* note 148 at 1055-1056, 1105-1106.

¹⁷⁰ Making safe (policy discipline, financial engineering) and third-party guarantees become more important with the weakening of government control over the means of payment and its authority over the market in which the debt is trading. Government debt denominated in a foreign currency or sold abroad needs more than the debtor’s own risk-free label to trade as if it were risk-free. Put differently, where a government functions like a private issuer, it needs more outside reinforcement to achieve risk-free treatment for its debt. *See supra* Part I.C.

For example, states are not normally subject to balance sheet or activities regulations. However, when a state gives up control of its currency in a monetary union, it may submit to external policy discipline and seek guarantees to have its debt treated as a safe asset. The Euro area treaty framework specifies key aspects of the economic policy mix for member states; it can resemble institutional regulation—“making safe.” *See, e.g.,* R. Daniel Kelemen & Terence K. Teo, *Law, Focal Points and Fiscal Discipline in the United States and the European Union*, 108 AM. POL. SCI. REV. 355, 365-67 (2014). However, the Euro area’s rejection of mutualization (guarantees) cast doubt on the status of weaker members’ bonds as safe assets. Policy reforms to make them safe were not enough for the markets. *See* UBS Center, *supra* note 2. On cashflow tranching, senior-subordinate structures, and debt mutualization, see Brunnermeier et al., *supra* note 50; Jakob von Weizsäcker & Jacques Delpla, *The Blue Bond Proposal*, BRUEGEL (May 5, 2010), <http://bruegel.org/2010/05/the-blue-bond-proposal/>.

¹⁷¹ National and global designations of systemically important financial firms illustrate incidental labeling. The stated purpose of systemic designation is stricter regulatory oversight. Critics claim that a label such as “Systemically Important Bank” (“SIB”) marks a firm as too economically and politically important to fail, so that its creditors are practically guaranteed a bailout. Press Release, Financial Stability Board, FSB Announces Update of Group of Global Systemically Important Banks (G-SIBs) (Nov. 6, 2014), http://www.financialstabilityboard.org/wp-content/uploads/pr_141106b.pdf. Whether the costs of such incidental labels, including guarantees and distortions, exceed the benefits of enhanced oversight in any given case is an empirical question.

While our analytical framework is new, it embraces familiar contractual, regulatory, and economic policy tools, long used and manipulated by governments and market participants—portfolio construction, covenant protections, prudential regulation, licensing, certification, and the use of third-party information intermediaries—as well as central bank lending and deposit insurance. All these tools perform their stated function and, at the same time, construct entire categories of safe assets. Our perspective implies a research and policy focus on interactions, misalignments, and tradeoffs among different forms of intervention, which we develop in Part III.

III. What Can Go Wrong? Architecture, Revisited

Many of the risks in the legal architecture of safe assets are simply those associated with any public intervention in finance. This is unsurprising, since the same tools are involved. Poor design, lax oversight, capture, and bailouts are not unique to the safe asset universe.

Policymakers make, label, and guarantee the safety of contracts that become safe assets at different times for many different purposes. Such interventions are not normally coordinated with the singular intent of creating a low-risk, highly liquid asset class. It is no surprise, then, that safe assets are especially prone to mismatches among their risk attributes, their regulatory treatment, and the functions they perform in the financial markets. Mismatches can come about in multiple ways and cause serious damage. *First*, safe assets breed new risks when market participants adapt them to different uses and combine them in structures far removed from the original purpose for which they had been made safe.¹⁷² *Second*, making, labeling, and guaranteeing can become dramatically misaligned. The misalignment is amplified by the credit cycle and exploited by public and private actors, fueling financial instability. *Third*, public and private actors use the safety toolkit, especially labeling, to redistribute resources on a large scale in nontransparent and unaccountable ways.¹⁷³ We examine these concerns in turn.

A. Misuse, Composition, and Contagion

A contract that is made and labeled safe for one purpose may be used for another. Such versatility is an important shared attribute of safe assets, covered at length in Part I. Table 1 suggested that versatility may have troubling implications: if one set of users of one safe asset loses faith in its safety, the others may follow, setting off contagion across institutional balance

¹⁷² Some legal fictions present similar risks. *See, e.g.*, Miller, *supra* note 26 (using examples from tax law to illustrate the risks of combining multiple legal fictions); Seema K. Shah, *Piercing the Veil: The Limits of Brain Death as a Legal Fiction*, 48 U. MICH. J.L. REFORM 301, 317-18 (2015) (noting legal fictions facilitate the treatment of different entities as if they were the same); *see also* FULLER, *supra* note 12, at 123 (pointing out the dangers of fictions unmoored from context).

¹⁷³ *Cf.* Smith, *supra* note 21, at 1473 (noting judges use legal fictions to mask normative choices).

sheets and markets where safe assets are repackaged and reconfigured to meet the needs of different users.

For a recent example, we return to the tangle of wires linking government debt, bank debt, money market fund shares, repos, and asset-backed securities (ABS). Commercial banks and money market mutual funds have long bought government debt as a condition of licensing and regulatory privilege.¹⁷⁴ Government debt holdings allowed bank and mutual fund liabilities to be labeled safe, and made them suitable as ingredients in a new round of safe assets. In the mid-2000s, ABS designed to meet regulatory requirements for permitted investments came to substitute for government debt on institutional balance sheets. New regulatory and bankruptcy exemptions encouraged market participants to herd into ABS contracts, including asset-backed commercial paper (ABCP) and mortgage-backed securities (MBS). Money market funds bought ABCP, while repos backed by MBS became an important source of bank funding. Layers of ABS, money market fund shares, and bank debt all derived from the same kernel of bespoke safety originally designed to meet regulatory labeling requirements. Until 2007, all this structuring produced positive spillovers, enhanced market liquidity, and seemed to justify continued expansion of safety labels. Shocks to the ABS market beginning in 2007 reverberated across the repo market, to banks and money market mutual funds. To contain the crisis, government debt and central bank money replaced ABS and other assets that had lost value.¹⁷⁵

Reconsidering the events of 2007-2009 through the lens of safe assets highlights the danger of mismatches between the risk attributes of financial contracts, the ways in which they are labeled and used, and the users' risk-bearing capacity—as well as the state's capacity (financial, political, and technical) to make up for these mismatches *ex ante* and *ex post*.¹⁷⁶ If safety were an inherent

¹⁷⁴ For banks, see, for example, National Bank Act of 1864, ch. 106, 13 Stat. 99 (codified as amended in scattered sections of 12 U.S.C.); Charles-Henri Weymuller, *Banks as Safety Multipliers: A Theory of Safe Assets Creation* (Working Paper 2013), http://scholar.harvard.edu/files/chweymuller/files/chweymuller_banksafe_22nov13.pdf. For money market mutual funds, see Fisch & Roiter, *supra* note 100, at 4.

¹⁷⁵ On bank holdings of ABS, see Acharya et al., *supra* note 47. In Europe, countries with outsize banking sectors saw dramatic feedback effects (the “doom loop”): bank rescues shook confidence in government debt, which in turn hurt newly rescued bank balance sheets, and made it harder for banks to borrow. See, e.g., Gardner et al., *supra* note 56, at (describing doom loop effects in the Irish financial crisis).

¹⁷⁶ Post-crisis regulatory reforms in consumer financial protection and asset securitization illustrate the challenge of reconciling multiple imperatives to make financial contracts safe for very different constituencies—including borrowers, lenders, and investors—while restoring access to credit.

Regulations that require lenders to ascertain borrowers' ability to repay can make loan contracts safer for consumers. Cf. Elizabeth Warren, *Unsafe at Any Rate*, DEMOCRACY J. (Summer 2007), <http://democracyjournal.org/magazine/5/unsafe-at-any-rate/>. By reducing the risk of default, the same regulations can make mortgages safer for bank lenders. 79 Fed. Reg. 77,602, 77,688 (Dec. 24, 2014) (“Consistent with these statistical models, historical data indicate that borrowers with residential mortgages that meet the [Consumer Financial Protection Bureau's Qualified Mortgage (QM)] criteria have lower probabilities of default than those with mortgages that do not meet the criteria.”). Like the fifty percent risk weight for residential mortgage loans (*see supra* notes 103, 134-137), the QM label marks a consumer mortgage as relatively safe, though not risk-free, for banks.

Rules that exempt securitization vehicles from equity-like risk-retention requirements, *see supra* note 108, because the underlying mortgages meet QM criteria (including loan-level disclosure) can signal that consumer safety translates directly into safety for capital markets investors. As U.S. regulators have observed, this is not always the case. Using the QM label to support securitization entails “a tradeoff between, on the one hand, promoting financial

attribute of an asset, it would matter little whether that asset were bought by a commercial bank, a central bank, a mutual fund, a currency reserve manager, or a currency trading desk. Yet these buyers have different investment horizons, cash needs, and legal and practical capacity to manage risks. There is a strong argument that no single asset would be safe for all of them at all times. Ignoring this argument may leave the financial system as a whole more exposed to asset price shocks.¹⁷⁷

In sum, the same features that make safe assets useful—their versatility and their capacity to serve as ingredients in financial transactions, including other safe assets—can fuel risks. When a contract designed to minimize particular risks for particular users comes to be used as if it were safe in general, it can collapse abruptly and fuel contagion. In terms of our three-part framework, the contract is not made safe enough for the ways in which it is used.

B. Misalignment

The spectacular failures of “zero-risk” and “AAA” financial contracts in 2007, 2008, and 2010 are often described in retrospect as crises of mislabeling,¹⁷⁸ followed by misguided bailouts.¹⁷⁹ It is more accurate to describe them as crises of misalignment. This is because neither the label nor the guarantee is inherently problematic; the threat to financial stability comes from a build-up of risk in contracts labeled safe—so safe that they become systemically important—but not made safe enough. If such contracts fail to pay off according to the label, they are likely to trigger ex post guarantees.

market recovery and borrower access to capital, and, on the other hand, adding additional credit requirements that may lessen the likelihood of future moral hazards related to the lending practices in the housing market but also further constrain mortgage credit.” 79 Fed. Reg. 77,602, 77,739 (Dec. 24, 2014). In light of the risks, regulators commit to revisit the relationship as consumer protection rules and securitization markets evolve. *Id.* A reassessment would be important if private label RMBS were used as safe assets again, as they had been before 2007.

¹⁷⁷ Avinash Persaud, *How Not to Regulate Insurance Markets* PETERSON INST. INT’L ECON. (Apr. 2015), <http://www.iie.com/publications/pb/pb15-5.pdf>; WARWICK COMM’N ON INT’L FIN. REFORM, IN PRAISE OF UNLEVEL PLAYING FIELDS 4, http://www2.warwick.ac.uk/research/warwickcommission/financialreform/report/executive_summary.pdf (last visited Feb. 21, 2016) [hereinafter WARWICK COMM’N] (criticizing “the erroneous view that there is a single thing called risk, and that it is inherent in the characteristics of an asset or financial instrument. . . . The notion that there are ‘safe’ instruments to be promoted and ‘risky’ ones to be banned creates a false sense of security. You can do a lot of risky things with apparently safe instruments, like a mortgage.”).

¹⁷⁸ See, e.g., ESRB, SOVEREIGN REPORT, *supra* note 13; Ben Moshinsky, *Holding Sovereign Debt with No Capital Is Risky*, IASB Chief Says, BLOOMBERG (Oct. 03, 2011), <http://www.bloomberg.com/news/articles/2011-10-03/holding-sovereign-debt-with-no-capital-is-risky-iasb-chief-says>; Robert Pozen & Theresa Hamacher, *Not All Money Market Funds Are Equal*, FIN. TIMES (Dec. 16, 2012), www.ft.com/cms/s/0/29e2d6d0-4393-11e2-a68c-00144feabdc0.html (stating that “[r]egulators have argued that a fixed NAV creates systemic risk in the financial system and misleads investors into thinking their investment is guaranteed.”).

¹⁷⁹ See, e.g., SKEEL, *supra* note 115.

Our view of financial instability stemming from misalignment among safety attributes and uses, and, related, among different modes of intervention—making, labeling, and guarantees—stands in contrast to other analytical frames for financial stability regulation, most notably shadow banking. The shadow banking paradigm broadly stipulates a regulated “inside” and an unregulated but functionally similar “outside,” separated by the regulatory perimeter. It implies a regulatory task of identifying unregulated but regulation-worthy institutions and activities, and bringing them inside the perimeter. The paradigm entrenches discontinuity between markets, actors, and transactions on opposite sides of the perimeter.¹⁸⁰

In contrast, based on our study of safe assets, we see a much more continuous landscape of legal and regulatory interventions to manage risk. Many of these interventions, including those very much inside the perimeter, fall short. All along, the state has a contingent liability for safe assets, filling gaps between “made safer” and “labeled safe.”¹⁸¹ Market perceptions of such gaps vary over the course of the credit cycle. Risk-free labels look like accurate descriptions when credit is ample, while regulation looks pointless and costly. To extend (let alone price) guarantees seems unnecessary and politically unthinkable in good times. The risk of misalignment is highest when no one is minding the gaps.

Some gaps are hard to avoid because labels tend to be discontinuous. Permitted or forbidden investment, fixed or floating NAV, zero or 50% risk weight are sharp distinctions, useful precisely because they help coordinate market participants in a world of infinite risk gradations. Bright lines help herd market participants into a limited set of investments, which regulators may find easier to monitor. However, discontinuity necessarily implies a measure of misalignment. As we noted in Part II, tools to make contracts safe often operate incrementally. They work as dials, while labels work as switches. When investors observe a big enough gap between actual and advertised risk, they may rush to sell, or press the state to pay out on implicit guarantees.

Misalignment also follows necessarily from the stickiness of safety labels. Once the state or a large number of market participants attach the term “safe” to an asset, it is hard to remove—as we observed in Part I.A, labels that change often are useless in safe assets. If the label is successful, the asset comes to be used widely; more people have a stake in its safety. Taking the label away would bring on a general, abrupt repricing of risk, as savers rearrange their portfolios, traders demand new collateral, and complex structures unravel because the assets at their core no

¹⁸⁰ See Gerding, *supra* note 19 (arguing against the regulated-unregulated dichotomy, which dominates scholarly and policy treatments of shadow banking).

¹⁸¹ This extends the insight in Gourinchas and Jeanne, *supra* note 52 that the state is responsible for credibly committing to define and make good on the safe asset frontier. When the guarantee does not live up to the label (as in the example of Icelandic bank debt, *supra* note 149), the gap must be made up by making the asset safer.

longer qualify as safe. Fear of such market disruption can turn into a justification for keeping labels in place or expanding them, a one-way ratchet that leads to more misalignment.¹⁸²

Risk reduction (making safe) and guarantees are complements. If private ordering and regulation cannot ensure full and timely payoff, guarantees may have to fill the gap to avoid or limit destruction from a financial crisis. On the other hand, labels such as “zero risk” convey highly ambiguous messages. Investors can interpret them either as descriptions or as warranties by the labeling authorities to maintain the safety of labeled assets.¹⁸³ For example, the zero-risk label for all Euro area government debt was apparently understood by some market participants as a collective promise by euro area authorities to avoid default at all costs—despite the fact that no government on its own could decide to print the euros to pay its debt. The label also worked as a commitment device, since it encouraged financial integration, including German and French financial institutions buying Greek government debt.¹⁸⁴ When European leaders suggested that debt restructuring was a possibility, markets panicked even though member states simultaneously promised to make their debt safer with fiscal reforms.¹⁸⁵ If the safe asset status of Greek, Irish, Italian, and Spanish debt hinged on Europe’s political commitment to it, then Europe’s dilution of this commitment ended the status; fiscal reforms were not enough to make up the difference.¹⁸⁶

¹⁸² See, e.g., Omarova, *Quiet supra* note 125 (tracing regulatory expansion of permitted derivatives activities for banks); cf. Saule T. Omarova, *That Which We Call a Bank: Revisiting the History of Bank Holding Company Regulation in the United States*, 31 REV. OF BANKING AND FIN. L. 113, 126-27 (2011) (loosening constraints on banking conglomerate regulation).

¹⁸³ For example, investors may have read “Greek debt is zero-risk” as “Germany stands behind Greece,” rather than “Greece is creditworthy”—notwithstanding European treaty provisions barring debt mutualization. See David Oakley, *Sovereign Debt on Red Alert*, FIN. TIMES (Dec. 11, 2009), <http://www.ft.com/intl/cms/s/0/3760aa96-e683-11de-98b1-00144feab49a.html#axzz3jANp5600>. Cf. Gourinchas and Jeanne on government credibility in defining the universe of safe assets, *supra* note 52.

¹⁸⁴ See Paul Blustein, *Laid Low: The IMF, the Euro Zone, and the First Rescue of Greece* 11 (CIGI Papers No. 61-April 2015), https://www.cigionline.org/sites/default/files/cigi_paper_no.61web.pdf (discussing French and German bank holdings of Greek debt). Because of its ability to direct investment, the label might have been a more effective commitment device than the prohibition on bailouts in the European treaties, which was not similarly embedded in markets and institutions.

¹⁸⁵ See Franco-German Declaration, Statement for the French-German-Russian Summit Deauville (Oct. 18, 2010), http://www.feelingeurope.eu/Pages/Franco-german_declaration%20Deauville%2018-10-2010.pdf; Lorenzo Bini Smaghi, Member, Executive Board of the ECB, Speech at the Reinventing Bretton Woods Conference (June 6, 2011), <https://www.ecb.europa.eu/press/key/date/2011/html/sp110606.en.html>; Anna Gelpern & G. Mitu Gulati, *The Wonder-Clause*, 41 J. OF COMP. ECON. 367, 380 (2013); Peter Spiegel, *Eurocats Scratch Heads Over ‘Haircuts’*, FIN. TIMES (Sept. 8, 2011), <http://www.ft.com/intl/cms/s/0/fbfaed14-da31-11e0-90b2-00144feabdc0.html#axzz3ZQdxloy8>; Athanasios Orphanides, *The Euro Area Crisis: Politics over Economics* (MIT Sloan School Working Paper 5091-14, 2014), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2448197.

¹⁸⁶ For ECB President Jean-Claude Trichet, the crisis ended a unique “privilege,” where “the signature of the advanced economies . . . was untouchable—in that sense, there is no more risk-free asset. The investors and savers the world over are looking at every signature on the basis of its fundamentals.” The implication seems to be that euro area policy makers had a duty to make the debt risk-free despite any “fundamentals.” UBS Center, *supra* note 2. By extension, lower risk weights for non-government debt convey a smaller implicit guarantee, another political commitment. Whether such commitments are credible is a separate question, which goes to the guarantor’s economic and institutional capacity.

C. Distribution: The Politics of Safe Assets

Public intervention in safe assets distributes resources and power. Market participants compete to benefit from intervention to attract capital, to lower costs, and to gain access to subsidies. Labeling contracts and institutions safe is a simple way to route capital in their direction. Government guarantees, particularly those that are not priced in advance, transfer public resources to some combination of safe asset users and issuers. Making contracts and institutions safe can function as a regulatory tax, forcing users and issuers to internalize risks associated with their activities instead of fobbing them off on the public. On the other hand, it can also redistribute costs among market actors—as in the case of priorities and bankruptcy safe harbors. The scale of distribution is immense. Multi-trillion dollar markets depend on the risk-free treatment of certain assets for vital funding. However, the language of safety obscures the stakes and normative commitments in safe assets. If the public believes safe assets to be “default-free” as a matter of fact rather than policy, public intervention involves no judgment, and may not call for political accountability.

Governments constructing safe assets might be responding to diplomatic imperatives, industrial policy, interest group pressure, or a simple need to raise money for the state treasury. Some measures to make contracts safer, such as bank capital regulation, distribute between market participants and the public, forcing private market actors to internalize the costs of their risk-taking. Others distribute among private stakeholders. For example, bankruptcy safe harbors for repos instantly made them more attractive than functionally similar contracts, such as short-term secured loans, and helped fuel dramatic growth in the repo market.¹⁸⁷ Safe harbors also changed the norms of bankruptcy distribution, effectively shifting assets out of the bankruptcy estate for the benefit of the debtor’s repo counterparties.¹⁸⁸

Safety labels help public officials channel popular savings for policy priorities.¹⁸⁹ Low risk weights for housing and small business debt in bank capital adequacy regulation provide a simple

¹⁸⁷ When the U.S. Congress enacted bankruptcy exemptions for repos in 1984, it responded to market participants’ widespread use of this instrument as if the market had lowered counterparty risk. After Congress exempted repos from key provisions of the bankruptcy code, repo markets enjoyed significant growth. Acharya & Öncü, *supra* note 18, at 308; *see also* Adrian et al., *supra* note 80, at 12-13; Morrison et al., *supra* note 16, at 10. The experience with repos highlights potential complexities of distribution in safe assets. On the one hand, bankruptcy safe harbors reduce both credit and liquidity risks associated with repo contracts. On the other hand, protecting repos when the debtor is insolvent comes at the expense of other creditors of the bankruptcy estate and the debtor’s rehabilitation prospects, in tension with bankruptcy policy. It can also come at the expense of the public: making repos more liquid led to runs when the financial system came under stress in 2008 and created a contingent liability for the public. Morrison et al., *supra* note 16, at 1026.

¹⁸⁸ *Id.*

¹⁸⁹ *See* RONALD I. MACKINNON, MONEY AND CAPITAL IN ECONOMIC DEVELOPMENT 69-73 (1973); EDWARD SHAW, FINANCIAL DEEPENING IN ECONOMIC DEVELOPMENT (1973) (defining “financial repression” as state-driven capital allocation in Asia, Africa, and Latin America). These works launched a decades-long debate about financial repression, focusing primarily on developing countries. A recent revival led by Reinhart and co-authors recasts this debate in the context of heavily indebted high income economies. *See, e.g.*, Carmen M. Reinhart & M. Belen Sbrancia,

illustration.¹⁹⁰ When the regulatory cost of a home mortgage or housing agency debt is a fraction of the regulatory cost of corporate debt, more popular savings should flow to fund housing. Governments can be quite transparent about the political character of labels. For example, when the Basel capital accords were first negotiated in 1988, Europe insisted on uniform treatment for the debt of all its member states. Partly as a result, the accords assigned zero-risk weight to all government and central bank debt issued by members of the Organization for Economic Cooperation and Development (OECD), a diverse group that includes Iceland, Mexico, South Korea, Turkey, and the United States.¹⁹¹ To attach the same regulatory price tag to the debts of such different countries invites arbitrage and introduces distortions.

We noted earlier that safe assets develop constituencies with abiding interest in their continued safety. In the United States, industry lobbying has resulted in favorable treatment for repos, derivatives, and other safe-harbored contracts. National and local government officials won privileges for their bonds in proprietary trading and bank liquidity regulations.¹⁹² Issuers benefit when governments create a market in their securities with labels, and sustain it with safe harbors.¹⁹³ Buyers similarly benefit from secondary market liquidity, which brings the asset closer to cash. Enhanced liquidity also has upstream benefits: more liquid asset-backed securities can expand access to credit and lower the cost of borrowing for firms and consumers.¹⁹⁴

In all these cases, distribution is not the primary problem. The problem is with the safety rhetoric, which wraps distribution choices in technocratic packaging, so that they are unacknowledged and shielded from substantive political debate. The quest for completely, genuinely safe assets is an extreme example of the problem, which can persist even when the standard is “safe enough.” For instance, a series of incremental regulatory interpretations turned

The Liquidation of Government Debt (Nat'l Bureau of Econ. Research, Working Paper No. 16893, 2011), <http://www.nber.org/papers/w16893> (describing how governments can induce domestic financial firms to buy their debt—a domestic safe asset—and inflate it away). Political economy factors account for the sprawling list of investments that national banks are allowed to make, channeling capital into particular sectors and activities. 12 U.S.C. § 24 (2012).

¹⁹⁰ For an example of how capital weights give preference to small businesses and housing, see Office of the Comptroller of the Currency, Office of Thrift Supervision Handbook, Section 120 Appendix B – Risk-Weighted Assets (Sept. 2010) available at <https://www.occ.gov/static/news-issuances/ots/exam-handbook/ots-exam-handbook-120ab.pdf>.

¹⁹¹ “[M]ost importantly, the member states of the European Community are firmly committed to the principle that all claims on banks, central governments and the official sector within European Community countries should be treated in the same way.” BASEL COMM. ON BANKING REGS. & SUPERVISORY PRACTICES, *International Convergence of Capital Measurement and Capital Standards* 34 (Apr. 1998), <http://www.bis.org/publ/bcbasc111.pdf> (allowing banks to assign a zero percent risk weight to exposures to OECD member countries). For a list of OECD member countries, see *List of OECD Member Countries* OECD, <http://www.oecd.org/about/membersandpartners/list-oecd-member-countries.htm> (last visited Feb, 21, 2016); see also Talley, *supra* note 125 (describing the Volker Rule’s trading exemption for foreign government debt following other countries’ lobbying efforts).

¹⁹² See *supra* notes **Error! Bookmark not defined.**-132-134 and accompanying text.

¹⁹³ See Dan Awrey, *Toward a Supply-Side Theory of Financial Innovation*, 41 J. OF COMP. ECON. 401 (2013); David A. Skeel, Jr. & Frank Partnoy, *The Promise and Perils of Credit Derivatives*, 75 U. CIN. L. REV. 1019 (2007).

¹⁹⁴ Cf., *supra* note 176.

highly leveraged derivatives contracts into permitted investments for banks, on par with plain vanilla corporate loans—and masked a build-up of systemic risk.¹⁹⁵ Separately, it was political subterfuge.

Governments and private actors perpetuate misalignments to secure their preferred distributional outcomes. Market participants arbitrage the gap between regulatory labels and the underlying risk attributes of an asset to boost their returns; they count on government guarantees if the gamble fails.¹⁹⁶ Public authorities use safety labels to allocate capital while avoiding politically unpopular regulation and express guarantees, which visibly add to the public debt stock. Deferring awkward questions about subsidies, distribution, and distortions until crisis time offers all potential beneficiaries the hope that they would be lost in the emergency noise.¹⁹⁷ The political constituency for aligning making, labeling, and guarantees up front is small to begin with; it becomes vanishingly small when safety rhetoric obscures the possibility of misalignment.

IV. Preliminary Prescriptions

Intervention in safe assets should reduce financial instability, align public and private actors' incentives, and inform an open policy debate about embedded trade-offs and distribution. Our framework for analyzing safe assets highlights cyclical misalignment among making, labeling, and guaranteeing as a critical challenge for financial stability policy, with important political consequences. The same framework points to preliminary prescriptions and familiar tools with which to pursue them.

In this Part, we develop a general approach to mitigate misalignment. We argue that potential safe assets should be monitored throughout the credit cycle. Tools that make, label, and guarantee them should be realigned dynamically, consistent with that policy goal. To promote alignment, the use of public safety labels should be minimized; where it persists—perhaps because they are too deeply embedded in existing prudential regulation—the labeling authorities should treat labels presumptively as express guarantees that give rise to contingent liability for the public.

A. Dynamic Alignment

¹⁹⁵ Omarova, *Quiet*, *supra* note 125.

¹⁹⁶ See, e.g., Bernanke et al., *supra* note 46, at 13-15.

¹⁹⁷ On the other hand, keeping guarantees uncertain ex ante can dissuade risk-taking. It is especially appealing when charging for guarantees is politically unacceptable. The academic debates about the tradeoffs between implicit and explicit, ex ante and ex post guarantees is beyond the scope of this Article. Here, we simply note its relevance to safe assets. See also Shefali Anand & Jennifer Levitz, *Auction-Rate Bailouts Bypass Some Investors*, WALL ST. J. (Sept. 4, 2008), <http://www.wsj.com/articles/SB122048821448297341> (allowing no government bailout of auction rate securities and the eventual, limited bank buyback of the securities); Gretchen Morgenson, *If You Can't Sell, Good Luck*, N.Y. TIMES (Mar. 30, 2008), <http://nytimes.com/2008/03/30/business/30gret.html>.

A policy response to misalignment must begin by identifying contracts used as if they were risk-free for monitoring throughout the cycle. Financial flow data does not yield a comprehensive picture; isolating contract uses and assumptions behind them—getting “inside safe assets”—requires a nuanced understanding of transaction patterns, institutional design, and regulatory incentives, where legal knowledge is indispensable.¹⁹⁸ Beyond cataloguing potential safe assets, it is important to establish who is using them and for what purpose, especially when a single contract serves multiple purposes. A collateral mapping exercise of the sort undertaken in May of 2016 by research staff at the U.S. Office of Financial Research should, when repeated over time, reveal usage patterns and links among assets and institutions, as well as risks of misuse and contagion.¹⁹⁹

The initial assessment should reveal any public interventions that might support the risk-free treatment of identified contracts, and classify them as making, labeling, or guaranteeing. Doing so may expose mixed messages (such as incidental labeling) and misalignment at the outset, and over time. A diagnosis of misalignment implies a risk of abrupt repricing, and a contingent liability for the state. It would normally call for additional intervention to contain assumptions about safety (limit labels), make contracts safer (equity and collateral requirements and activities restrictions), and charge premia for guarantees.²⁰⁰ However, charging for guarantees up front must be weighed against the cost of making them explicit and the associated moral hazard.

Monitoring safe assets from the baseline established in the initial assessment should also reveal sharp changes in supply or demand, as well as the emergence of novel transaction patterns and asset uses. Monitoring should presumptively focus on assets that enjoy regulatory privileges, including but not limited to express labels. Changes in the volume or use of such assets could serve as early warning signals of misalignment, regulatory arbitrage, and growing systemic significance of particular asset markets.

¹⁹⁸ Reforms in the U.S. repo market have led to the gathering and publication of more detailed data on securities used as collateral for tri-party repos. *Tri-Party Repo Infrastructure Reform*, FED. RES. BANK OF NEW YORK, http://www.newyorkfed.org/banking/tpr_infr_reform.html (last visited Feb. 21, 2016). Rationalizing public intervention in safe assets requires more detailed and dynamic data gathering for a broader range of transactions built on assets assumed to be risk-free. Cf. Adrian et al., *supra* note 80, at 12-16 (advocating more granular data gathering on contract terms, collateral, and counterparties in the repo market). On legal knowledge in financial markets and regulation, see generally, RILES, *supra* note 12.

¹⁹⁹ Andrea Aguiar, Richard Bookstaber, Dror Y. Kenett and Thomas Wipf, *Map of Collateral Uses and Flows*, Office of Financial Research Working Paper 16-06 (May 26, 2016), https://financialresearch.gov/working-papers/files/OFRwp-2016-06_Map-of-Collateral-Uses.pdf. Repeated assessments using a consistent framework such as this should develop a higher level of granularity. Cf. Adrian et al. *supra* note 80, at 16-17.

²⁰⁰ Stress tests for firms and markets focusing on deterioration of certain key assets should help identify the extent of public exposure. The review may also conclude that the liability cannot be reduced or if reducing it is undesirable. This too is a valuable exercise. See Adrian Blundell-Wignall & Patrick Slovik, *The EU Stress Test and Sovereign Debt Exposures* 9-11 (OECD Working Papers on Fin., Ins. and Private Pensions, No. 4, 2010), <http://www.oecd.org/finance/financial-markets/45820698.pdf>.

Even absent dramatic changes, we would support a version of periodic stress tests focused on asset markets, as distinct from systemically important institutions. For example, if monitoring revealed that a financial contract performed two or more safe asset functions of the sort we illustrate in Table 1, and reached a pre-specified volume threshold in one or more markets, national financial stability regulators might be required to model the consequences of a five, ten, and fifteen per cent drop in the value of such contracts. In contrast to the existing institutional stress tests, the modeling exercise would not be used in the first instance as a supervisory tool, nor would it attempt to simulate realistic stress scenarios. To the contrary, the exercise would be premised on widespread consensus that the asset in question is extremely unlikely to suffer any loss in value, and is risk-free for all practical purposes. The primary objective would be to identify the consequences of the consensus being wrong. Such asset stress tests could help identify multiple financial institutions and other financial markets that might be affected by the loss of a safe asset; they would also indicate potential for, and perhaps even the extent of, contingent liabilities for the state. Armed with an initial diagnosis of likely transmission channels and damage potential, regulators could factor the findings into supervisory stress tests, and use them as a basis for interventions such as margin requirements and concentration limits. Institutions such as the Financial Stability Board and the IMF, charged with safeguarding global financial stability, could play an important role both in developing consistent methodologies, and helping spread best practices in this area.²⁰¹

²⁰¹ Stress testing asset markets would be more complex than the stress tests now conducted on individual financial institutions because it would entail modeling the behavior and interactions of many investors. However, policymakers and scholars are already considering tools that might be adapted for this purpose as they analyze the experience with institutional stress tests so far. *See e.g.*, Kieran Dent, Ben Westwood & Miguel Segoviano, *Stress Testing of Banks: An Introduction*, BANK OF ENGLAND QUARTERLY BULLETIN 2016 Q3 130 (Sep. 5, 2016), <http://www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2016/q3/q3.pdf> (highlighting the narrow institutional focus of the prevailing supervisory stress tests, and arguing for the need to expand their scope beyond banks, and to incorporate amplification and feedback mechanisms in future stress tests); MORRIS GOLDSTEIN, *BANKING'S FINAL EXAM: LESSONS FROM U.S. AND E.U.-WIDE BANK STRESS TESTS*, Chapter 4 (forthcoming 2016, manuscript on file with authors) (reviewing academic and policy critiques of bank stress tests as inadequate to identify potential contagion dynamics).

Asset stress tests of the sort we propose would not be confined to a limited set of institutions—they would reach firms, special purpose vehicles, and contractual arrangements that might not be considered systemic, or that would be in the realm of “shadow banking”—however, authorities would still need to delimit the universe of assets to be tested. At the outset, it may make sense to focus on private safe assets, which are more vulnerable to shocks. *See supra* note 54 and accompanying text (discussing the properties of public and private safe assets). Beyond matters of scope, open questions include modeling methodology, disclosure of test results, regulatory and supervisory consequences, if any, of asset stress tests. We leave these for another article.

For examples of law scholarship on bank stress testing, *see e.g.*, Robert F. Weber, *A Theory for Deliberation-Oriented Stress Testing Regulation*, 98 MINN. L. REV. 2236 (2014), Mehrsa Baradaran, *Regulation by Hypothetical*, 67 VAND. L. REV. 1247 (2014) (discussing “war games” as a means to improve prudential regulation of financial institutions); John Crawford, *Wargaming Financial Crises: the Problem of (In)experience and Regulator Expertise*, 34 REV. BANKING & FIN. L. 111 (2014-15) (proposing war games as a means to improve policymaker preparedness for financial crises).

A spike in the use of certain contracts as if they were risk-free, rapid growth in substitution and complex combinations, or a diagnosis of institutional or market vulnerability in periodic stress tests, should prompt a review and realignment of the underlying intervention tools. Raising capital charges for surging assets, imposing quantitative restrictions, extending and charging for guarantees are among the options. Such measures need not apply to all uses and users across the board. In some cases, it may be enough to keep particularly vulnerable regulated firms away from the riskiest forms of safe asset substitution and combination (or the most complex derivative forms of safe assets).

Intervention to correct misalignment would, of course, face the same political challenges as any other countercyclical measures. When the world looks risk-free, the constituency for public risk-management is vanishingly small. Our approach does not solve the fundamental political problem. Instead, it identifies a menu of established legal tools to manage it and makes the tradeoffs among them more transparent.

At the most basic level, our project implies a shift in regulatory rhetoric. We argue against evaluating contracts as safe or risky. Instead, we favor an oversight regime that focuses on matching the risk attributes of a contract to the way in which it is being used.²⁰² Gaps between asset uses and attributes can harbor systemic risk. Here too, alignment, not safety, is the goal.²⁰³

A safe asset crisis exposes the failure of prior intervention. Old goals and tools give way to new ones. The immediate objective in crisis is to contain damage from an abrupt loss of safety. “Making safe” works incrementally *ex ante*; prudential regulations are ill-equipped to stop a generalized panic. Regulatory forbearance, or directing firms to act as if the assets were still safe (a form of labeling) can buy time for market participants to rebuild their balance sheets and absorb losses without resorting to public support. However, forbearance can also delay resolution, prolong the crisis, and raise its total costs for the economy and for the government. As the crisis wears on, the state may have little choice but to pay out on express and implied guarantees. Public debt and money would, appropriately, replace private safe assets.²⁰⁴

Payouts on guarantees lift the veil on the distribution consequences of safe asset policies and set the stage for distribution battles in resolution and recovery. Fears of moral hazard loom large. Paradoxically, belated revelations about guarantees and public debates about risk can

²⁰² Compare WARWICK COMM’N, *supra* note 177, at 4-5; Persaud, *supra* note 177, at 4-5; and Fisher, *supra* note 32, at 65-66; with Nouy, *supra* note 12. A boom in any given asset may make it both more fragile and more entrenched—either gradually, or past a tipping point of systemic importance.

²⁰³ Separately, the implicit safe asset functions of public intervention tools should be monitored for compatibility with their stated policy functions. For example, bankruptcy safe harbors support debtor rehabilitation and minimize risks associated with certain financial contracts. When tensions surface between bankruptcy and safe asset functions, both may be compromised. The tool may need to be adjusted, supplemented, or replaced. Morrison et al., *supra* note 16.

²⁰⁴ *Supra* note 175 and the accompanying text.

backfire. Public authorities facing a crisis of credibility are tempted to promise safety in general and forswear bailouts. Neither promise is fully credible. Both contribute to misalignment. For instance, it is hard to renounce guarantees and charge for them up front at the same time.

There are few alternatives to “making safe” after a crisis. Nevertheless, some of the safe asset literature surveyed in Part I gives voice to a counter-argument: making individual contracts safer would reduce the stock of safe assets, depress financial activity and slow economic recovery. Empirical evidence so far does not support this view, particularly when tighter regulation of particular contracts and institutions takes place against the background of accommodative monetary policy.²⁰⁵ A related concern that regulating the production of some safe assets more stringently after a crisis would cause market participants to shift to riskier ones, and push out the safety frontier also needs more support to justify a major policy shift.

B. Fixing Labels

Labels are the most troublesome category of tools supporting safe assets. They can be innocuous enough when aligned with the risk attributes of a contract, or with appropriately priced guarantees. However, in practice, they encourage governments and market participants to take hidden risks and to shift the consequences onto others. As we noted in Part III, regulators’ understandable affinity for simple, discontinuous labels to promote coordination also promotes misalignment. Public labels come with the additional cost of muting price signals and preempting market-based information discovery. Since they not only describe low risk, but also enable and encourage market participants to buy, sell, repackage and adapt labeled assets for different uses, public labels can introduce distortions and discontinuities on the ground, and with them, the potential for instability.

Public labels can be justified if market mechanisms fail, but not if the state does no better. The state may have an information advantage with respect to some assets, such as its own debt denominated in a currency it can print. For claims denominated in foreign currencies, claims on other governments, and claims on regulated institutions, the information advantage is progressively attenuated.²⁰⁶ On the other hand, real or suspected conflicts of interest can easily offset the information advantage. The state might be expected to use regulatory labels to direct funds into its own coffers or to politically favored firms and projects—effectively offsetting any information value its labels might have had.

²⁰⁵ See, e.g., Valentina Bruno, Ilhyock Shim, & Hyun Song Shin, *Comparative Assessment of Macroprudential Policies* 15-16 (Bank for Int’l Settlements, Working Paper No. 502, 2015), <http://www.bis.org/publ/work502.pdf>.

²⁰⁶ From this perspective, zero-risk weight for local-currency government debt is more intuitive than \$1 NAV for money market mutual fund shares, which in turn makes more sense than a 50% risk weight for mortgage loans.

Labels do have an important advantage in the political economy of regulation. Their bluntness makes them more intelligible and therefore more politically accountable.²⁰⁷ Label-as-license, applied to assets, stands out in this respect. “Permitted” and “forbidden” investments, activities, and affiliations do not purport to represent safety attributes, even if they might imply a degree of safety (safe enough). Market prices might continue to convey valuable information about such assets.

On the other hand, label-as-price has minimal information value of its own, even as it tries to block market price signals. It is also rife with mixed messages, conflicts, and distortions. Risk-free labels in particular are liable to be interpreted as veiled warranties—commitments by the state to make good on their content, either by making the asset safe or, more likely, by guaranteeing it.

For these reasons, we argue for minimizing the use of label-as-price to support safe assets. However, we doubt they would disappear any time soon: labels are sticky, and have powerful constituents that depend on them for vital funding.²⁰⁸

As long as such labels persist, they should be treated as express guarantees of their content—such as “zero risk”—by the labeling government.²⁰⁹ Accounting for labels as if they were express guarantees would create incentives against using them willy-nilly, as cheap stand-ins for making assets safe. It could also force implicit guarantees of the safety label out into the open and might lead the state to charge for them. The change we propose would be counter-cyclical, since it would work against the tendency to describe an asset as absolutely safe in good times, only to see it collapse in a downturn.

Paradoxically, our approach would leave the already-controversial zero-risk designation for the labeling governments’ own debt largely intact for now. Private and foreign public debt labeled as risk-free would be treated the same way as the government’s own debt. Our reasons for collapsing the distinction are analytical and pragmatic. There should be a high bar for labeling any contract as risk-free. This is especially true of contracts that do not already carry government backing, because the label can easily create expectations of guarantees. This is where the contingent liability to the public is highest, as is the value of information. On the other hand, the scope of liability and the content of zero-risk labels for governments’ own debt are much more readily apparent. They reflect a government’s assessment of its own ability and willingness to pay (where it has an information advantage). The assessment is open to challenge—and should be

²⁰⁷ Andrew G. Haldane, Exec. Dir., Fin. Stability, Bank of England, Speech at the Federal Reserve Bank of Kansas City’s 366th Economic Policy Symposium: The Dog and the Frisbee (Aug. 31, 2012), <http://www.bis.org/review/r120905a.pdf>.

²⁰⁸ See *supra* Part III.A, B.

²⁰⁹ For purposes of this Article, we do not take a stand on further budget accounting issues, such as how guarantees expressed as labels should be treated compared to more overt guarantees. See INT’L MONETARY FUND, *Fiscal Transparency, Accountability, and Risk* (2012), <http://www.imf.org/external/np/pp/eng/2012/080712.pdf>.

subject to stress testing without exception, as we suggested in the preceding section. Nonetheless, risk-free labels for government debt are already debated as political commitment and financial repression, not an arm's length description.²¹⁰ As a practical matter, forcing governments to reveal or withdraw guarantees implicit in their labels of private contracts, and the debts and currencies issued by other sovereigns, is a bigger priority. All that said, risk-free labels for own-government debt add little value. As with the other labels, there are few reasons to keep them.

Conclusions

“A fiction becomes wholly safe only when it is used with a complete consciousness of its falsity.”²¹¹ Fuller's note of caution for legal fictions in 1930 aptly frames our legal intervention in the safe asset debate circa 2016. Safe assets are never “wholly safe,” but they might be safe enough if those who make them and use them know the nature and purpose of the enterprise and are vigilant about managing the inherent risks.

In this Article, we present a framework for understanding how the law constructs safe assets. It stands in contrast to the economic literature, which describes them as products of natural supply and demand, meeting the organic transactional needs in financial markets. Our account reinjects agency into safe assets: they are not simply produced. Governments and market participants produce them together, in an iterative political process.

Our framework also suggests how the legal architecture of safe assets might set the stage for safe asset crises. When assets are labeled safe and used as if they were safe, but are not made safe enough, they could fail and cause severe damage, invoking ex post government guarantees. If guarantees turn out to be inadequate, damage could grow and metastasize. Such misalignments are products of policy choices, political pressure, and regulatory arbitrage. Governments and market participants stand to gain from stretching and adapting safety fictions for their purposes. One finance official explained the psychological, intellectual and political appeal of safe asset fictions in this way:

Let me start with a simple question. Does anyone among us really believe that risk-free assets exist? Deep in our hearts, we all know that such assets never existed and will never exist in the market economy. Otherwise, we would live in a different world, in the world where private initiative and individual decisions are punished, not rewarded as it happens when risks are taken. Nonetheless, for years market participants have been doing their business on the assumption that there are risk-free assets. I believe that this concept is a natural human reaction to the complexity of the world surrounding us. The risk-free

²¹⁰ See, e.g., *supra* note 189.

²¹¹ FULLER, *supra* note 12 at 10.

theory was welcomed because it made decision making much easier. And we are always looking for simple decisions! Plus, the risk-free methodology turned out to become the cornerstone in different mathematic models for the calculation of the value of any financial asset. From the very beginning a number of sovereign bonds were treated as risk-free financial instruments. Credit rating agencies helped a lot in this understanding with their “AAA” versus “BBB” or “CCC” references.²¹²

In response to the risks of misuse, misalignment, crisis, and contagion, we argue for a safe asset monitoring regime, including stress tests focused on asset markets rather than institutions, and for dynamically aligning and re-aligning the three intervention tools—making, labeling, and guarantees—over the course of the credit cycle. We also advocate eliminating labels that purport to convey specific information about asset risk, but are likely to be received as implicit warranties, liabilities of the labeling government, discouraging market-based risk assessment. Our interim recommendation is to treat labels such as “zero-risk” as express guarantees and contingent liabilities by the labeling government. Paradoxically, this leaves us relatively cool to the controversy over risk-free labels for government debt,²¹³ since treating such labels as guarantees would merely reiterate the existing government obligation. We are more concerned about the implicit extension of government backing to private debts used as if they were risk-free. The latter features in the dominant accounts of the shadow banking problem, which, in our framing, may encompass so much of the financial system that it loses its analytical utility—including, for example, under-regulated and poorly regulated, implicitly guaranteed assets and institutions. In contrast, to label government debt as risk-free may mix tautology and financial repression, but it has the virtue of transparency.

More broadly, a legal analysis of safe assets suggests that macroprudential machinery for constructing them comprises very familiar tools for regulating banks and securities markets. In other words, macroprudential regulation need not await the development of new space-age tools. The old toolkit can be deployed to manage the risks in safe assets for the sake of financial stability. However, the downside is familiar as well. Policymakers will face political backlash when they try to act counter-cyclically. Our framework makes the politics and the tradeoffs more readily apparent.

²¹² Storchak, *supra* note 32. Portfolio and asset pricing models that key off hypothetical risk-free contracts or rates are further institutionalized, or literally programmed into market participants’ trading strategies, information reporting, firm policies, and government regulations. Market participants seeking real-life stand-ins for theory’s risk-free assets then construct the world in theory’s image. See, e.g., MACKENZIE, *supra* note 33, and Donald MacKenzie & Yuval Mello, *Constructing a Market, Performing Theory: The Historical Sociology of a Financial Derivatives Exchange*, 109 AM. J. OF SOCIOLOGY 107 (July 2003) (arguing that options prices on the Chicago Board of Options Exchange evolved to reflect the Black-Scholes options pricing model, institutionally embedded in the structure of the exchange—contrary to the prevailing view that the Black-Scholes model discerned pre-existing market price patterns).

²¹³ See, e.g., ESRB, SOVEREIGN REPORT, *supra* note 13.

Detailed policy design requires further research. We need to know more about the effects of different kinds of labels on the behavior of market participants, about interaction and feedback effects among different tools, and the relationship between the safe asset toolkit and monetary and fiscal policies. Monitoring and stress testing safe assets should help regulators chart more robust contagion scenarios, give them a better sense of contingent liability for the public, and adjust their interventions accordingly.

For better or worse, the safe asset meme would not be squelched.²¹⁴ Financial market participants will continue to treat multi-trillion-dollar markets as if they were risk-free—until some don't, to disastrous effect—and the cycle starts again. To recognize and map legal intervention in safe assets is an essential first step to make them less destructive, and their makers more accountable.

²¹⁴ Portes, *supra* note 24, at [43]; Gorton et al., *supra* note 6, at 105.