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Global Systemic Risk and International Regulatory Coordination: Squaring Sovereignty and Financial Stability

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GLOBAL SYSTEMIC RISK AND INTERNATIONAL REGULATORY COORDINATION: SQUARING SOVEREIGNTY AND FINANCIAL STABILITY

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I. INTRODUCTION

Instability is the hardy perennial of financial markets.[1] Charles Kindleberger, the eminent financial historian, remarked that financial intermediation has always been an essential but fragile business.[2] Unlike other businesses, however, the failure of a financial institution is a serious event that may trigger systemic consequences for the whole economy, well beyond the fate of the individual bank and its customers.[3] Economists refer to this as "*systemic risk*,"[4] a

1. *See Factsheet: How the IMF Promotes Global Economic Stability*, INT'L MONETARY FUND (Mar. 27, 2015), https://www.imf.org/external/np/exr/facts/globstab.htm (arguing that financial stability relies on avoiding financial crises and "swings in economic activity, high inflation, and excessive volatility in exchange rates and financial markets"); *see also* ROSA M. LASTRA, LEGAL FOUNDATIONS OF INTERNATIONAL MONETARY STABILITY 92 (2006) [hereinafter LASTRA, LEGAL FOUNDATIONS] (defining financial stability as the safety and soundness of the financial system and the stability of the international payment and settlement systems); GARRY J. SCHINASI, SAFEGUARDING FINANCIAL STABILITY: THEORY AND PRACTICE 82 (2006) (describing financial stability as a situation in which the financial system simultaneously performs three key functions, including the general allocation of resources, the assessment and management of prospective risks, and the maintenance of stability sufficient to withstand economic surprises and shocks); TOMMASO PADOA-SCHIOPPA, REGULATING FINANCE: BALANCING FREEDOM AND RISK 110 (2004) ("[Financial stability is] a condition in which the financial system is able to withstand shocks, without giving way to cumulative processes, that impair *the* allocation of savings to investment opportunities and the processing of payment in the economy."); Garry J. Schinasi, *Defining Financial Stability* 8 (Int'l Monetary Fund, Working Paper No. WP/04/187, 2004) (defining a financial system in a range of stability as one that facilitates the performance of an economy and that disposes of financial imbalances that arise from within and from unforeseen events).

2. *Cf.* CHARLES P. KINDLEBERGER & ROBERT Z. ALIBER, MANIAS, PANICS, AND CRASHES: A HISTORY OF FINANCIAL CRISES 16 (5th ed. 2005) (highlighting concepts developed by the scholar Hyman Minsky who argued that the financial system is "unstable, fragile, and prone to crisis"); *see also id.* at 35 (presenting a model of economic boom and bust focused on episodic manias and the resulting crises).

3. Viral V. Acharya & Tanju Yorulmazer, *Information Contagion and Inter-Bank Correlation in a Theory of Systemic Risk* 2-3 (Ctr. for Econ. Policy Research, Discussion Paper No. 3743, 2003) (explaining the risks of information contagion, where the failure of a bank's loans incurs losses leading to failed promises of returns to depositors, which in turn conveys a negative outlook in regard to the state of the economy to other banks that adjust their actions accordingly, yet fail as well).

4. *See id.* at 2 (claiming that an understanding of systemic risk is integral to handling financial crises and underlies the need for bank regulation).

problem that has always existed in financial systems.[5] However, it is undeniable that the complexity of modern financial markets,[6] the pivotal role of finance in modern economies, and the unprecedented level of integration between markets and institutions at all levels of economic development,[7] make systemic risk a particularly pernicious problem for regulators.[8] Financial regulators worldwide have thus devoted particular attention to reducing systemic risk by enacting appropriate legislation and by setting up new institutional mechanisms, such as the Financial Stability Oversight Council[9] in the United States and the European Systemic Risk Board[10] in the European Union ("E.U."). Behind the intuitive simplicity of the concept, the precise nature of systemic risk and its evolution has

5. FELIX MARTIN, MONEY: THE UNAUTHORIZED BIOGRAPHY 82-83 (2013) (reporting that even during the reign of Roman Emperor Tiberius in A.D. 33, a boom in private lending led Tiberius to impose one of the first known financial regulations, though Julius Caesar limited private lending by wealthy aristocrats decades prior to Tiberius' reign).

6. *See generally* Dan Awrey, *Complexity, Innovation, and the Regulation of Modern Financial Markets*, 2 HARV. BUS. L. REV. 235, 245 (2012) (noting that modern financial markets are compounded in their complexity by the nature and pace of innovation and highlighting six different drivers of complexity as well as the interplay between complexity and financial innovation).

7. *See* INT'L MONETARY FUND, GLOBAL FINANCIAL STABILITY REPORT: TRANSITION CHALLENGES TO STABILITY xi (2013) (remarking that stability challenges are now common in emerging markets, while noting that advanced economies are impacted by foreign investors who crowd local markets); *see also* RANJIT TEJA ET AL., INT'L MONETARY FUND, 2012 SPILLOVER REPORT 1 (2012) (summarizing the modern global market as involving high correlation, pervasive financial disruptions, and a heightened sensitivity to the actions of systemic economies).

8. *See* Hal S. Scott, *The Reduction of Systemic Risk in the United States Financial System*, 33 HARV. J.L. & PUB. POL'Y 671, 672-73 (2010) [hereinafter Scott, *Reduction of Systemic Risk*] (identifying systemic risk reduction as *the* central problem facing financial regulators).

9. *See* EDWARD V. MURPHY & MICHAEL B. BERNIER, CONG. RESEARCH SERV., R42083, FINANCIAL STABILITY OVERSIGHT COUNCIL: A FRAMEWORK TO MITIGATE SYSTEMIC RISK 4 (2011) (reporting to Congress on the Financial Stability Oversight Council, which was created by the Dodd-Frank Act to monitor systemic risk and coordinate with regulators).

10. *See* FINANCIAL REGULATION AND SUPERVISION: A POST-CRISIS ANALYSIS v-vi (Eddy Wymeersch et al. eds., 2012) (detailing how a 2008 E.U. report on the recent financial crisis led to the implementation of "repairs" aimed at strengthening all areas of financial business regulation as well as the establishment of the European Systemic Risk Board).

always been highly controversial.[11] At the outset of the 2008 financial crisis, most Group of Twenty ("G-20") countries did not even have a formal definition of systemic risk to guide their regulatory intervention.[12]

After the financial crisis, systemic risk reduction was at the top of the international regulatory agenda.[13] This is unsurprising given the high level of financial integration of the last twenty years.[14] The International Monetary Fund ("IMF"), the Basel Committee on Banking Supervision ("BCBS"), and the Financial Stability Board ("FSB") now monitor financial stability and are developing a coherent international financial regulatory framework.[15]

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11. *See* Acharya & Yorulmazer, *supra* note 3, at 2 (stating that although systemic risk is central to the existence of many bank regulations, the causes and effects are not entirely understood; highlighting recent contagion models amongst banks promulgated by other authors, but distinguishing those models as characterized by contagion and financial fragility arising from inter-bank liabilities as opposed to the authors' own models based on measures of risk arising from bank liabilities due to the borrowing costs of surviving banks following other bank failures).

12. *See* INT'L MONETARY FUND ET AL., GUIDANCE TO ASSESS THE SYSTEMIC IMPORTANCE OF FINANCIAL INSTITUTIONS, MARKETS, AND INSTRUMENTS: INITIAL CONSIDERATIONS—BACKGROUND PAPER 10 (2009) (reporting that when surveying member countries, no legal or formal guidance existed for how the members defined "systemic importance," with nuanced responses differing on the focus of the ultimate impact).

13. *See generally* Daron Acemoglu et al., *Systemic Risk and Stability in Financial Networks*, 105 AM. ECON. REV. 564, 564 (2015) (noting that following the 2008 financial crisis, the international community has accepted that the architecture of the international financial system plays a key role in the systemic risks associated with the system); *id.* (stating that since the 2008 financial crisis, the systemic risk model has risen to the status of conventional wisdom as new regulatory frameworks have been developed, although it is still not fully understood).

14. *See generally* STRATEGY, POLICY, AND REVIEW DEP'T, INT'L MONETARY FUND, UNDERSTANDING FINANCIAL INTERCONNECTEDNESS 11 (2010) [hereinafter IMF, UNDERSTANDING FINANCIAL INTERCONNECTEDNESS] (describing the interconnectedness of a global system which includes, among other hallmarks, common lenders and borrowers, increasingly global strategies that have been come particularly interlinked since the mid-1990s, and linkages between banks and nonbanks).

15. There is a vast literature on the international financial architecture. *See* EMILIOS AVGOULEAS, GOVERNANCE OF GLOBAL FINANCIAL MARKETS: THE LAW, THE ECONOMICS, THE POLITICS 7 (2012) [hereinafter AVGOULEAS, GOVERNANCE] (noting that because domestic regulatory systems cannot effectively deal with cross-border contagion and other global issues, organizations such as the IMF, the

Despite a large effort in this direction, confusion remains about the precise forms and patterns of *global* systemic risk.[16] The concept of systemic risk has long been developed mostly within economic theory.[17] Economists have developed various theoretical frameworks

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European Union, the G-20 countries, the Basel Committee, and other transnational networks have produced standards and regulations to secure the operation of international banks and global financial markets); CHRIS BRUMMER, SOFT LAW AND THE GLOBAL FINANCIAL SYSTEM: RULE MAKING IN THE 21ST CENTURY 68-69 (2012) [hereinafter BRUMMER, SOFT LAW] (providing an overview of the global regulatory architecture and discussing the actors involved).

16. *See* Acemoglu et al., *supra* note 13, at 585-86 (remarking that theories on the relationship between systemic risk and financial network structure tend to reach antipodal conclusions and positing a model of diversified network structure dependent on a critical number of system shocks).

17. *See* EUROPEAN CENTRAL BANK, FINANCIAL STABILITY REVIEW 134-35 (2009) (explaining the concept of systemic risk through differing theories and discussing the development of systemic risk theories over the decades); HANDBOOK ON SYSTEMIC RISK xx-xxi (Jean P. Fouque & Joseph A. Langsam eds., 2013) (noting the difficulty of defining systemic risk in order to address it, despite the vast amount of scholarship devoted to the topic); INT'L MONETARY FUND, GLOBAL FINANCIAL STABILITY REPORT: MEETING NEW CHALLENGES TO STABILITY AND BUILDING A SAFER SYSTEM 63 (2010) (explaining how the recent financial crisis has caused the overlying concept of systemic risk to be redeveloped); *see also* Acemoglu et al., *supra* note 13, at 567, 569 (highlighting a vast field of related literature and presenting an economic model for analysis of systemic risk); Viral V. Acharya, *A Theory of Systemic Risk and Design of Prudential Bank Regulation*, 5 J. FIN. STABILITY 224 (2009) (examining systemic risk, systemic risk-shifting, and the impacts of regulations); Douglas W. Diamond & Philip H. Dybvig, *Bank Runs, Deposit Insurance, and Liquidity*, 91 J. POL. ECON. 401 (1983) (examining the role of bank runs in financial crises, including bank runs as a symptom and as a risk of damage); Xavier Freixas et al., *Systemic Risk, Interbank Relations, and Liquidity Provision by the Central Bank*, 32 J. MONEY, CREDIT, & BANKING 611 (2000) [hereinafter Freixas et al., *Systemic Risk*] (modeling systemic risk while analyzing the ability of an interconnected system to withstand the effects of insolvency in a single bank); Jean-Charles Rochet & Jean Tirole, *Interbank Lending and Systemic Risk*, 28 J. MONEY, CREDIT, & BANKING 733, 733-34 (1996) (analyzing systemic risk as a byproduct of a decentralized banking system and analyzing "too big to fail" policies); Acharya & Yorulmazer, *supra* note 3 (modeling two aspects of systemic risk, the ex post aspect, where a bank failure results in the collapse of a surviving bank, and an ex ante aspect, in which banks hold portfolios that increase the possibility of joint failure); Franklin Allen & Douglas Gale, *Financial Contagion* 1-2 (C.V. Starr Center for Applied Econ., Research Report No. 98-33, 1998) (exploring models of contagion and interregional financial structures); Eugenio Cerutti et al., *Systemic Risks in Global Banking: What Available Data Can Tell Us and What More Data are Needed?* 3 (Int'l Monetary Fund, Working Paper No. WP/11/222, 2011) (highlighting challenges to systemic risk management and areas where additional data is

and models to explain the different patterns of international financial contagion and how they propagate in an interconnected global financial network.[18] In doing so, economists have largely focused on market failures—such as contagion, information failures, or common shocks—as the main underlying causes of systemic risk.[19]

This article analyzes one particular aspect within the broader theory of global systemic risk: the role of domestic policies. The need to analyze domestic policies arises because, while financial markets are global, the scope of regulatory intervention within the global financial system is still largely national.[20] We propose that within such a system, states' diverging policy preferences or government failures contribute to financial instability.

Based on this conclusion, the article then analyzes the role of international law in coordinating domestic policies and addressing global systemic risk. While regulation is necessary to address market inefficiencies in a closed national economy, regulatory coordination is difficult to achieve—and sometimes even undesirable—in an open global economy in which states hold diverging policy preferences.[21]

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needed).

18. The literature on global financial instability is vast. *See* ROGER W. FERGUSON JR. ET AL., INTERNATIONAL FINANCIAL STABILITY 5-6 (2007) (providing an analytical framework for assessing international financial stability); *see also* GLOBALIZATION AND SYSTEMIC RISK v (Douglas D. Evanoff et al. eds., 2009) (suggesting that increased globalization may either increase or decrease risk to national markets); INTERNATIONAL FINANCIAL INSTABILITY: GLOBAL BANKING AND NATIONAL REGULATIONS (Douglas D. Evanoff et al. eds., 2007) (discussing the globalization of banking but not of banking regulations); THE INTERNATIONAL FINANCIAL CRISIS: HOW THE RULES OF FINANCE CHANGED? (Asli Demirguc-Kunt et al. eds., 2011) (providing a collection of articles on the 2008 financial crisis, its causes, and how to move forward).

19. Among the most important are the Triffin dilemma (when short-term domestic interests conflict with long-term international interests), the Mundell-Fleming monetary trilemma (arguing that an economy cannot simultaneously have a fixed exchange rate, free capital movement, and an independent monetary policy), and Dirk Schoenmaker's financial trilemma (arguing that financial stability, financial integration, and national financial policies are incompatible).

20. *See* FERGUSON ET AL., *supra* note 18, at 137 (noting that international regulators have failed to reach agreement on future oversight, with hedge fund regulation as one example of a global community prone to various national regulations).

21. *See infra* Part VI.

Irrespective of its national or global form, systemic risk is a function of two interdependent variables.[22] The control exerted by public authorities on each variable directly influences the efficiency of a financial system and the amount of instability it might transmit.[23] The first variable is the trigger event—the underlying cause of instability.[24] Economic and legal theories have often analogized trigger events to various types of market inefficiencies.[25] The analysis, however, focuses on domestic policies as a trigger event. In particular, it examines regulatory and policy asymmetries and government failures, including the factors at their origin and the role

22. *Cf.* FERGUSON ET AL., *supra* note 18, at xxii (laying out an analytical framework of triggering events and transmission mechanisms, though splitting the triggering events into exogenous shocks and endogenous imbalances).

23. *See* Iman Anabtawi & Steven L. Schwarcz, *Regulating Systemic Risk: Towards an Analytical Framework*, 86 NOTRE DAME L. REV. 1351, 1351-52 (2011) (arguing that specific regulatory measures designed with the proper framework such as enhancing the resilience of asset markets during times of crisis can enhance stability and disrupt transmission of systemic risk); *see also* FERGUSON ET AL., *supra* note 18, at 17 (drawing attention to the issue of hedge funds, which enjoy high diversity through relatively little regulation while having a heightened potential for transmitting instability). *But cf.* FERGUSON ET AL., *supra* note 18, at 119 (stating that although regulators should continue promoting oversight and transparency, "hedge funds enhance market stability and are unlikely to be the source of systemic failure").

24. *See, e.g.*, FERGUSON ET AL., *supra* note 18, at xxii (pointing to exogenous shocks and endogenous imbalances as the underlying triggers of instability).

25. *See* Steven L. Schwarcz, *Controlling Financial Chaos: The Power and Limits of Law*, 2012 WIS. L. REV. 815, 816-17 (2012) [hereinafter Schwarcz, *Controlling Financial Chaos*] (analyzing triggers behind recent financial crises, including the collapse of Lehman Brothers, and suggesting regulations to address triggers before they arise); Manuel A. Utset, *Complex Financial Institutions and Systemic Risk*, 45 GA. L. REV. 779, 816 (2011) (examining the role of systemic risk and complex institutions in the 2007-2009 financial collapse and examining various triggers such as the proliferation of repos); John Crawford, *CDO Ratings and Systemic Instability: Causes and Cure*, 7 N.Y.U. J.L. & BUS. 1 (2010) (providing an analysis of events triggering the 2008 financial crisis); Scott, *Reduction of Systemic Risk*, *supra* note 8, at 673-76 (identifying four different systemic linkages—interbank deposits, net settlement payment systems, imitative runs, and counterparty risks on derivative transactions—which are susceptible to triggering chain-reactions); Steven L. Schwarcz, *Systemic Risk*, 97 GEO. L.J. 193, 196-97 (2008) [hereinafter Schwarcz, *Systemic Risk*] (noting definitional differences in trigger events depending on how one defines systemic risk, with the common denominator being a chain of bad economic outcomes).

of international law in addressing them.[26] The second variable is the transmission mechanism—the financial interconnectedness through which financial instability propagates.[27] Here, the role of the law is to balance the benefits of an extended network with the threat that a negative event might spread across the network.

This article is divided into six sections. Section II briefly introduces the mainstream theories of systemic risk and explains their limits in addressing *global* financial instability.[28] It also analyzes the peculiarities of global systemic risk in terms of transmission mechanisms and the diverging structures within the international financial system. Section III analyzes the evolution of the global financial system from a unit-based system to a network-based system and the role of global financial interconnectedness.[29] It explains why interconnectedness arises and argues that, although interconnected network structures increase efficiencies in the global financial system, if the network is not properly constructed, it can act as a transmission—namely contagion—mechanism.[30] Section IV addresses trigger events and proposes that global systemic risk is caused by two different mechanisms: (i) policy or regulatory asymmetries and (ii) government failures.[31] Section V explains the role of the law in reducing global systemic risk.[32] After introducing the financial trilemma as the overarching theory for the regulation of global systemic risk, Section VI analyzes the tradeoffs faced by regulators in addressing interconnectedness and trigger events.

Finally, this article concludes that while international law plays a crucial role in addressing global systemic risk, it cannot address all sources of global instability.[33] On one hand, international law levels the global playing field for financial regulation by mobilizing domestic political interests favoring regulatory convergence.[34]

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26. *See infra* Parts IV-V.

27. *See generally* Anabtawi & Schwarcz, *supra* note 23, at 1351-53 (positing that independent correlations can combine to transmit local shock systemically and applying the analysis to four historical financial crises).

28. *See infra* Part II.

29. *See infra* Part III.

30. *See infra* Part III.

31. *See infra* Part IV.

32. *See infra* Part V.

33. *See infra* Part VI.

34. Janet L. Yellen, Vice Chair, Bd. of Governors of the Fed. Reserve Sys.,

Similarly, international law can harmonize global regulation of financial interconnectedness, thereby preventing inefficient unilateral measures. On the other hand, reducing global contagion requires international cooperation that can be very difficult and sometimes unadvisable.

II. SYSTEMIC RISK THEORY AND ITS LIMITS

The study of financial crises has developed as an almost autonomous discipline in economics and finance. In this burgeoning literature, which now also informs law and political science, systemic risk occupies center stage.[35] However, the study of *global*

Remarks at the American Economic Association/American Finance Association Joint Luncheon 16 (Jan. 4, 2013) (stating that in April 2012, when international regulators promulgated newly strengthened standards for market entities, American regulators, including the Federal Reserve, participated and proposed for incorporation of the new standards into domestic regulations).

35. *See* Julie A.D. Manasfi, *Systemic Risk and Dodd-Frank's Volcker Rule*, 4 WM. & MARY BUS. L. REV. 181 (2013) (examining systemic risk and legislative policy consideration); Yellen, *supra* note 34, at 5 n.6 ("A search for either 'interconnectedness' or 'systemic risk' in article abstracts of academic research cataloged by EconLit results in 311 entries from 1988 to 2006. The same search conducted for the period from 2007 through the present yields 624 entries."); Julia Lees Allen, *Derivatives Clearinghouses and Systemic Risk: A Bankruptcy and Dodd-Frank Analysis*, 64 STAN. L. REV. 1079, 1081 (2012) (examining the effect of derivatives clearinghouses on systemic risk); John C. Coffee, Jr., *The Political Economy of Dodd-Frank: Why Financial Reform Tends to be Frustrated and Systemic Risk Perpetuated*, 97 CORNELL L. REV. 1019, 1056-57 (2012) (including discussion of systemic risk in political analysis of post-crisis reforms); John Crawford, *Predicting Failure*, 7 VA. L. & BUS. REV. 171, 172 (2012) (proposing broadened criteria for identifying systemically important financial institutions, institutions whose failure to survive pose a systemic risk); Kathryn Judge, *Fragmentation Nodes: A Study in Financial Innovation, Complexity, and Systemic Risk*, 64 STAN. L. REV. 657, 662 (2012) (providing the case study of securitized home loans' role in the 2007-2009 financial crisis as an example of how complexity and innovation can increase systemic risk); John C. Coffee, Jr., *Systemic Risk After Dodd-Frank: Contingent Capital and the Need for Regulatory Strategies Beyond Oversight*, 111 COLUM. L. REV. 795, 802 (2011) (examining political realities in light of the 2008 financial crisis, the resulting Dodd-Frank Act, and the problems of systemic risk); Jeffrey N. Gordon & Christopher Muller, *Confronting Financial Crisis: Dodd-Frank's Dangers and the Case for a Systemic Emergency Insurance Fund*, 28 YALE J. ON REG. 151, 153, 204 (2011) (utilizing theories on systemic risk to advocate for a firm financed insurance fund that would mutualize risk and obviate politically unpopular bailouts); Bernard S. Sharfman, *Using the Law to Reduce Systemic Risk*, 36 J. CORP. L. 607, 608 (2011) (arguing that the law and regulators have a significant role to play in addressing systemic

systemic risk has been relegated to the periphery. Most literature discusses systemic risk as the result of market inefficiencies, which spread contagion across an interconnected financial network.[36] This does not take into account the vital roles of states and their jurisdictional differences in triggering systemic risk. This section introduces the most important theories of systemic risk and demonstrates their limits when applied to the global financial system.

A. SYSTEMIC RISK AS THE RESULT OF MARKET FAILURES

Systemic risk theory has evolved over time, in line with technological advancements and the constantly changing underlying structure of financial markets.[37] In 1873, Walter Bagehot advocated for the role of a lender of last resort.[38] The late nineteenth and early twentieth centuries saw the creation of modern central banks and depositor guarantee schemes.[39] These are examples of financial

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risk reduction); Edward F. Greene et al., *A Closer Look at 'Too Big to Fail': National and International Approaches to Addressing the Risks of Large, Interconnected Financial Institutions*, 5 CAPITAL MARKETS L.J. 117, 119 (2010) (examining the impact of institutions considered "too big to fail" on systemic risk); Jeffrey B. Golden, *The Courts, the Financial Crisis and Systemic Risk*, 4 CAPITAL MARKETS L.J. 141, 143 (2009) (arguing that although much recent literature has been devoted to studying systemic risk, it has failed to consider how uninformed courts making decisions with financial impact might themselves create systemic risk); Schwarcz, *Systemic Risk*, *supra* note 25, at 196-97 (highlighting inconsistencies in defining systemic risk and suggesting a definition in light of disintermediation, as well as positing a role for the law in addressing systemic risk); *cf.* Adam J. Levitin, *In Defense of Bailouts*, 99 GEO. L.J. 435, 513-14 (2011) (arguing for the political legitimacy of bailouts as an ex post answer to systemic risk). *But see* Matthew Beville, Comment, *Financial Pollution: Systemic Risk and Market Stability*, 36 FLA. ST. U. L. REV. 245, 246 (2009) (noting that systemic risk has received significant attention from economic commentators but little attention from legal scholars).

36. *See, e.g.*, FERGUSON ET AL., *supra* note 18, at 5-6 (discussing contagion and aggregate shocks as two mutually reinforcing forms of systemic risk).

37. *See* Judge, *supra* note 35, at 684-86 (discussing the evolution of securitizations, the development of fragmentation nodes, and the impact of innovation on systemic risk).

38. WALTER BAGEHOT, LOMBARD STREET: A DESCRIPTION OF THE MONEY MARKET 298 (3d ed. 1873) (explaining that central banks must act as a lender for those in the most dangerous of financial situations because no other entity will do so).

39. By modern central banks, we mean central banks that have the monopoly on money creation, control the payment system, control the liquidity of the financial system, and provide emergency liquidity assistance to banks in distress.

authorities struggling to limit systemic risk.[40] Despite the simplicity of the concept, economists and regulators disagree over the precise causes of instability and its transmission mechanisms. Modern systemic risk theory can be traced back to three fundamental types of market failures: information failures, contagion, and common shocks.[41]

1. Information Failures

Prior to the development of the modern financial system as an interconnected network, panics were the main cause of financial instability.[42] Panics arise when investors cannot adequately process and evaluate market information,[43] causing misinformation and

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Although some central banks—like the Bank of England or the Swedish Riksbank—were established in the seventeenth century, they started to perform the abovementioned functions much later. *See generally* RICHARD A. BREALEY ET AL., FINANCIAL STABILITY AND CENTRAL BANKS: A GLOBAL PERSPECTIVE 20-35 (2001) (providing a historical background of the evolution of central banks as well as examining the roles central banks play in promoting stability); CHARLES GOODHART, THE EVOLUTION OF CENTRAL BANKS 5-11 (1988) (discussing the role of central banks analyzing the interrelationship of macro and micro functions of central banks).

40. GARY B. GORTON, MISUNDERSTANDING FINANCIAL CRISES: WHY WE DON'T SEE THEM COMING 25-28 (2012) [hereinafter GORTON, MISUNDERSTANDING] (discussing the history of Federal Deposit Insurance, a form of a depositor guarantee scheme, which provided effective regulation and ushered in the "Quiet Period," a temporary end to systemic crisis).

41. In a free market economy, markets are considered self-correcting, as they do not need government intervention to function efficiently. In economic theory, market failures generally indicate the negative consequences that sometimes arise from the inability of markets to correct themselves. Examples of market failures include time-inconsistencies, monopolies, externalities, public goods, principal-agent problems, adverse-selection, non-competitive markets, or informational asymmetries. In economic theory, market failures are used as a justification for regulatory intervention. *See* Francis M. Bator, *The Anatomy of Market Failure*, 72 Q. J. ECON. 351, 351 (1958) (defining market failure as an inability of a market to self-sustain "desirable" activities or prevent "undesirable" activities). Market failures occur in all aspects of economic life, from finance to public policy. *See* GORTON, MISUNDERSTANDING, *supra* note 40, at 29; John O. Ledyard, *Market Failure*, *in* THE NEW PALGRAVE DICTIONARY OF ECONOMICS 300, 300-03 (Steven N. Durlauf & Lawrence E. Blume eds., 2008) (providing detailed definitions of market failure terms with bibliographic citations).

42. *See* KINDLEBERGER & ALIBER, *supra* note 2, at 16-17 (applying a model developed by Hyman Minsky to analyze historical crises that culminated in panic and crash up through the 1990s).

43. *See* Acharya & Yorulmazer, *supra* note 3, at 3 (arguing that during a crisis,

irrationality.[44] The most basic forms of panic were bank runs[45] and fire sales.[46] Nowadays, bank runs are less frequent, although they recently occurred during the bankruptcy of Northern Rock Bank in the United Kingdom,[47] in Greece during the 2008 financial crisis, and in Cyprus in 2013.

International bank runs might occur when the news of a cross-border bank failure in one country causes panic in one of its foreign subsidiaries or branches.[48] It might also occur when one country experiences an economic downturn, triggering panic in another country with a similar economy. This occurred during the Argentine financial crisis, when bank depositors in Uruguay demanded the withdrawal of their money due to fears that the government in Uruguay would fail to maintain its peg to the dollar, as the Argentine peso failed to do.[49]

Investor panics are often a relevant factor in international financial crises. For example, in the years preceding the 1997 East Asian crisis, Thailand, South Korea, Malaysia, Indonesia, and the Philippines financed much of their economic growth through inflows

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banks exhibit a herding behavior, which increases the cost of borrowing for the rest of the financial system; further arguing an increased risk aversion by financial institutions following the collapse of Lehman Brothers caused the breakdown of the money market in 2008).

44. *See* KINDLEBERGER & ALIBER, *supra* note 2, at 41-42 (drawing distinctions in manifestations irrationality, hysteria, and mob psychology).

45. In a self-fulfilling prophecy, depositors rush to the bank to withdraw their deposits fearing that their bank will be insolvent, thereby forcing the closure of the bank. *See* GORTON, MISUNDERSTANDING, *supra* note 40, at 32 (reporting that since 1970, approximately sixty-two percent of financial crises around the world involved some variation of a bank run).

46. Where investors rushed to sell their assets, causing a sudden depreciation in their value.

47. *See* Rosa M. Lastra, *Northern Rock, UK Bank Insolvency and Cross-Border Bank Insolvency*, 9 J. BANKING REG. 165, 166 (2008) (stating that the announcement of emergency liquidity assistance in coordination with a poorly designed and publicized deposit insurance program ignited a bank run on Northern Rock branches from September 14 to September 17, 2007).

48. *Cf.* Mehdi Mili & Jean-Michel Sahut, *Bank Liquidity Shocks in Loan and Deposit in Emerging Markets* 4 (IPAG Bus. Sch., Working Paper No. 2014-210, 2014) (discussing how expansion of credit by foreign banks risks transmitting credit shocks to the host country).

49. Thomas Moser, *What Is International Financial Contagion?*, 6 INT'L FIN. 157, 165 (2003) (detailing the Argentine financial crisis).

of foreign capital.[50] This created an asset bubble, where an asset's price is over-inflated and not supported by the demand for the asset.[51] When investors began to doubt the stability of these economies, they also began to panic, triggering a massive reversal of capital outflows.[52] The capital outflows caused currencies in Thailand, South Korea, Malaysia, and Indonesia to rapidly depreciate, escalating the financial crisis into a full-blown currency disaster.[53]

2. Contagion

Prior to the global financial crisis of 2008, the concept of systemic risk was synonymous with financial contagion: a cascade of defaults starting with one financial institution that spreads to others by virtue of their interconnectedness.[54] The most common example is contagion that spreads through the market due to the credit interconnectedness between the financial institutions.[55]

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50. *See* Ross Buckley, *An Oft-Ignored Perspective on the Asian Economic Crisis: The Role of Creditors and Investors*, 15 BANKING & FIN. L. REV. 431, 431 (2000) (detailing the East Asian financial crisis).

51. *Id.* at 433.

52. *Id.*

53. There are various debates on the true reasons behind the crisis. However, there is a consensus that the underlying roots of the crisis lie in the premature opening of the financial sector, which was not supported by an adequate regulatory framework and which fuelled massive capital inflows; by diffuse corrupt practices in local banks, often plagued by crony capitalism, which exacerbated the macro-financial stability-instability loop; and weak monetary policies in which the local currency was informally pegged to the U.S. dollar, which eventually created massive current account deficits when the U.S. dollar strengthened in 1995. *See id.* at 439-41; *see also* AVGOULEAS, GOVERNANCE, *supra* note 15, at 73; DOUGLAS ARNER, FINANCIAL STABILITY, ECONOMIC GROWTH AND THE ROLE OF LAW 27-29 (2007).

54. *See* R. Kollmann & F. Malherbe, *Financial Contagion*, *in* HANDBOOK OF SAFEGUARDING GLOBAL FINANCIAL STABILITY: POLITICAL, SOCIAL, CULTURAL, AND ECONOMIC THEORIES AND MODELS 139 (Gerard Caprio Jr. ed., 2013) (noting simultaneous global collapse following a shock originating in the United States); Allen & Gale, *supra* note 17, at 34 (noting that while interregional crossholdings of deposits work during times of sufficient liquidity in the banking system, when a financial crisis emerges in one region, contagion may spread the crisis to other regions as a result of the crossholdings).

55. *See* Rochet & Tirole, *supra* note 17, at 733-34 (explaining that the interbank market consists as a financial network in which banks and other financial institutions, such as hedge funds or insurance companies, are connected through mutual interbank deposits and loans, and that banks with excessive liquidity usually provide loans on a short-term basis to banks with a shortage of liquidity,

The logic underlying contagion is that the more a financial network is interconnected, the more its financial institutions are exposed to risk. In such a network, a single negative event is likely to trigger a widespread chain reaction capable of impacting even those institutions that are only marginally involved in the network.[56] The destructive effects are magnified when a failing institution is "too big to fail."[57] This creates a morally hazardous problem for the institution, which may opt for the best solution for itself, ignoring the consequences of its actions on the greater financial system. In that case, the government would intervene by bailing out the systemically important institution.

One of the most effective regulatory tools to address contagion is the adoption of capital buffers for each financial institution participating in the market. Because banks tend to be highly leveraged having borrowed more than they own, they are highly exposed to the risk. Even a minimal loss, such as a nonperforming interbank loan, might trigger the bank's insolvency.[58] High capital buffers can minimize the impact of external shocks on individual banks by decreasing such leverage.[59] The Basel Accords,[60] which set a cohesive regulatory framework for capital adequacy regulation, are perhaps the most important feature among the vast array of financial regulation.[61] However, the recent crisis exposed the limits of the

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often even without the backing of collaterals).

56. *See* Moser, *supra* note 49, at 159, 162 (defining contagion and identifying the transmission mechanisms of contagion).

57. *See* Greene et al., *supra* note 35, at 119 (noting that globally interconnected "too big to fail" companies can have significant effects on national and global economies because of their complexity); Arthur E. Wilmarth Jr., *Reforming Financial Regulation to Address the Too-Big-To-Fail Problem*, 35 BROOK J. INT'L L. 707, 748-49 (2010) (remarking that despite their access to government subsidies, large financial conglomerates produce higher levels of systemic risk, are subject to greater risks from their activities, and operate on a dangerous business model).

58. *See* ANAT ADMATI & MARTIN HELLWIG, THE BANKERS' NEW CLOTHES: WHAT'S WRONG WITH BANKING AND WHAT TO DO ABOUT IT 17 (2013) (explaining how borrowing creates leverage, which allows for individuals and business to create opportunities, but the leverage magnifies risks).

59. *See id.* at 23 (illustrating the importance of buffers through a home loan example where equity can absorb losses on a home).

60. BASEL COMM. ON BANKING SUPERVISION, INTERNATIONAL CONVERGENCE OF CAPITAL MEASUREMENT AND CAPITAL STANDARDS (2004).

61. *See* Viral V. Acharya, *The Dodd-Frank Act and Basel III: Intentions,*

Basel Accords.[62] By assuming that the stability of individual financial institutions automatically guarantees the stability of the global financial system, the Basel Accords completely ignore the broader interplay between the institutions and the global market. This interplay can lead to common shocks.[63]

3. Common Shocks

The financial crisis of 2008 demonstrated that systemic risk occurs not only through interbank relationships, but also through common shocks.[64] Consequently, the regulatory focus shifted from governing the risk of individual institutional breakdowns to the risk of breakdowns within the entire system.[65]

To appreciate how common shocks develop, understanding how modern finance is structured is necessary. Banks and other financial institutions operate in financial markets not only by lending money, but also by owning and trading assets.[66] The use of derivatives for hedging and position-taking purposes, and the broader process of securitization, now represents the core businesses of banks.[67] The

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Unintended Consequences, Transition Risks, and Lessons for India 9-10 (Asian Dev. Bank Inst., Working Paper No. 392, 2012) [hereinafter Acharya, *The Dodd-Frank Act*] (giving a history of the creation and purpose of the Basel Accords as promulgated by the Basel Committee, which, although lacking statutory authority, has become the lead group for creating standards for banking supervision).

62. *See id.* at 10 (observing that systemic risk is surprisingly not a focus of Basel III, despite being promulgated after the recent crisis, and is disappointing for not identifying when a solvency risk or liquidity risk is likely to lead to a systemic risk).

63. *See id.* at 13 (deeming the Basel standards a flawed macroprudential tool because of their focus on individual risk rather than systemic risk).

64. *See id.* at 3 (stating common shocks are the "well-understood" backdrop for the Dodd-Frank Act because they hit the long-term assets of the financial sector, causing mass disruption and failure).

65. Rosa M. Lastra, *Systemic Risk, SIFIs, and Financial Stability*, 6 CAPITAL MARKETS L.J. 192, 199 (2011) [hereinafter Lastra, *Systemic Risk*] (stating that after the recent crisis, when the "too big to fail" designation was extended from banks to securities, insurance, and investment institutions, the focus on systemic risk required regulators to look at breakdowns within systems and not just individual institutions).

66. *See* Acharya, *The Dodd-Frank Act*, *supra* note 61, at 28 (noting that the financial sector was engaged in trading massive amounts of mortgage backed securities, which the Basel capital requirements failed to appreciate were at risk to a common shock).

67. *See* ROSS CRANSTON, PRINCIPLES OF BANKING LAW 72 (2d ed. 2002)

market-to-market accounting method used by the Basel Accords to value the price of the assets on a bank's balance sheet sets the value of the assets to its actual market value.[68] When the market value of those assets declines, the bank suffers a net loss on its balance sheet that can lead to the perilous situation of insolvency.[69]

Common shocks proved to be a destructive force in the 2008 financial crisis when the collapse in the market of collateralized debt obligations led to a freeze in the repo market and from there the system.[70] Common shocks can also occur on an international scale.[71] When banks invest in the same class of assets, a rapid decline in asset value not only reduces the bank's capital base but also affects its interbank exposures.[72] A similar situation can also arise with liquidity constraints.[73] Investors affected by a crisis in one country

(noting that banks and bank regulators view the benefits of derivatives trading as so high that regulation has largely been avoided); Judge, *supra* note 35, at 659 (discussing securitization as a profitable innovation which is likely to yield even more gains in the years ahead).

68. *See* Awrey, *supra* note 6, at 253-54 n.85 (noting that mark-to-market accounting is also known as "fair value" accounting, which seeks to base value on market price, market price of similar assets, or other "fair" values).

69. *See id.* at 254 n.86 (describing the spiral pattern that can result from linking balance sheets to market values).

70. *See* GORTON, MISUNDERSTANDING, *supra* note 40, at 132 (describing the repo system and referring to it as a "shadow banking system"); GARY GORTON, SLAPPED BY THE INVISIBLE HAND: THE PANIC OF 2007 29-37 (2010) (explaining the history of repo transactions as well as the panic run on them during the financial crisis); Gary Gorton & Andrew Metrick, *Regulating the Shadow Banking System*, BROOKINGS PAPERS ON ECON. ACTIVITY, Fall 2010, at 261, 263-64 (discussing the differences between "on balance banking" and "shadow banking").

71. *See* Acharya, *The Dodd-Frank Act*, *supra* note 61, at 4 (describing how the recent global financial crisis began with a common shock that cascaded to the failure of international financial institutions).

72. Karl Whelan, for instance, developed a basic model in which three banks, located in three different countries, invest in the same asset. When the market sentiment on the profitability of those assets declines, Bank *A* makes a loss in its loan books that reduces its capital base and forces it to sell some of its securities in a fire sale. This in turn reduces the value of the securities sold and of the remaining securities in the balance sheet, thereby further reducing the value of the bank assets. Bank *B* and Bank *C*, which also invested heavily in the same securities, now suffer a similar loss due to the depreciation in the value of the assets. In order to recoup the value of their balance sheet they decide not to roll over the loans to Bank *A*, which is now on the verge of default. *See* Karl Whelan, *Containing Systemic Risk* 5-6 (Univ. Coll. Dublin Ctr. for Econ. Research, Working Paper No. WP09/27, 2009).

73. Moser, *supra* note 49, at 167 ("[L]iquidity or capital constraints could

might "unwind their positions" in other markets to meet collateral demands or margin calls.[74] This occurred early in the 1998 Russian crisis when international investors took short positions in the relatively deep market for Brazilian debt to hedge long positions in Russian securities.[75] More recently, the U.S. subprime mortgage crisis of 2007 seriously affected some European banks that heavily invested in those products prior to the crisis.[76] In fact, the losses of Swiss bank UBS were so high that the Swiss government had to intervene with a $59 billion bailout to stabilize UBS.[77]

B. GLOBAL SYSTEMIC RISK BEYOND MARKET FAILURES

The literature above presents many of the problems regulators face in addressing systemic risk in a domestic financial system. However, it is inadequate in the global finance context. In a domestic system, the only factor responsible for creating and transmitting systemic risk is the behavior of private agents. Government action does not *directly* contribute to creating systemic risk; rather, such instability is the product of market inefficiencies.[78] In contrast, in a global financial system, the state plays a fundamental role in creating and

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impose greater than optimal asset reduction on international investors affected by a crisis in one market, forcing them to unwind positions in other markets to raise liquidity.").

74. *Id.*

75. *Id.*

76. IMF, UNDERSTANDING FINANCIAL INTERCONNECTEDNESS, *supra* note 14, at 26-27 (highlighting a liquidity squeeze that prompted European institutions to convert euros to dollars, prompting a global dollar shortage).

77. Warren Giles, *UBS Gets $59.2 Billion Bailout; Credit Suisse Raises Capital*, BLOOMBERG (Oct. 16, 2008), http://www.bloomberg.com/apps/news?pid=newsarchive&sid=ah0AFa2SEHhw (explaining the details of the UBS bailout).

78. This does not mean that government action or inaction does not affect systemic risk indirectly. Indeed, state intervention might increase the proclivity of markets to invest in certain asset classes, directly influence certain macroeconomic variables, or simply fail to address dangerous market inefficiencies. *See* Deborah Lucas, *Evaluating the Government as a Source of Systemic Risk*, J. FIN. PERSP. (forthcoming 2014) (manuscript at 11), *available at* http://cfp.scripts.mit.edu/home/wpcontent/uploads/2014/09/SystemicRiskFinal.pdf (remarking that the *type* of risk a government can cause is different from the risks caused by private-sector financial institutions because the government creates the rules, is motivated by political considerations, and is generally slow to react or make changes). *But see id.* at 12-17 (arguing the U.S. government is a source of systemic risk because of its size, interconnectedness through financial infrastructure, and lack of transparency and supervision).

transmitting instability.[79] Global systemic risk thus requires a different analysis.

1. Systemically Important Jurisdictions

The global financial system has two layers. While the operation of firms and markets is the layer most often considered by mainstream literature, the more fundamental layer concerns the interaction between firms and governments.[80] The control exerted by governments within their territory not only determines the rules by which firms operate but also influences important macroeconomic variables that directly influence the behavior of foreign firms.[81]

The role of states is augmented by the fact that most global trading takes place in a few core nodes: systemically important national financial systems that dominate trading in particular asset classes.[82] In its financial surveillance mandate,[83] the IMF developed the concept of "Jurisdictions with Systemically Important Financial

79. IMF, UNDERSTANDING FINANCIAL INTERCONNECTEDNESS, *supra* note 14, at 9-11 (identifying eight global common lenders (France, Germany, Japan, the Netherlands, Spain, Switzerland, the United Kingdom, and the United States) through which the majority of global finance and shock transmission flow).

80. *See infra* Part II.B.2.

81. Kollmann & Malherbe, *supra* note 54, at 139-43 (identifying the exchange rate, the level of external indebtedness, and the level of liquidity as examples of such variables).

82. *See* IMF, UNDERSTANDING FINANCIAL INTERCONNECTEDNESS, *supra* note 14, at 9 (noting that the majority of global lending comes from the eight global common lenders, in various sectors including advanced economies, developing economies, and offshore centers); *see also* DIMITRI G. DEMEKAS ET AL., INT'L MONETARY FUND, MANDATORY FINANCIAL STABILITY ASSESSMENTS UNDER THE FINANCIAL SECTOR ASSESSMENT PROGRAM: UPDATE 16 (2013) (utilizing a new methodology to identify a total of twenty-nine countries at the core of the global system); STRATEGY, POLICY, AND REVIEW DEP'T, INT'L MONETARY FUND, MAPPING CROSS-BORDER FINANCIAL LINKAGES: A SUPPORTING CASE FOR GLOBAL FINANCIAL SAFETY NETS 11 (2011) [hereinafter IMF, MAPPING CROSS-BORDER FINANCIAL LINKAGES] (stating that of the relatively few "core nodes" that dominate the global financial system across various asset classes, even fewer are emerging markets).

83. *See* DEMEKAS ET AL., *supra* note 82, at 16 (explaining that the IMF's surveillance mandate did not require stability assessments prior to September 2010).

Sectors" to highlight the systemic risk potential posed by instability in one of these nodes.[84]

The architecture of the global financial system around core nodes has two serious implications. First, global systemic risk is so highly concentrated that the failure of a core node would trigger disastrous global consequences.[85] Second, any changes to regulation or macroeconomic conditions in a systemically important jurisdiction would have an increased impact on the global market.[86] Accordingly, states representing core nodes in a particular asset class are positioned to monopolize global regulatory and macroeconomic power and also must assume the associated negative consequences.[87]

2. Sovereignty Problems

The second difference between domestic and global financial systems concerns the role of the state as a creator of systemic risk. In a global economy where markets and financial institutions operate across jurisdictions, the nation state plays a vital economic role in maintaining financial stability and, crucially, creating financial instability.[88]

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84. *See id.* at 15 (including jurisdictions that comprise the core of any one of four networks (bank, debt, price correlations, and equity networks) as being a jurisdiction with systemically important financial sectors).

85. *See id.* at 16 (noting that the large number of European countries acting as central nodes justifies the surveillance mandate due to their interconnected systems with one another and with other financial centers).

86. *See* IMF, MAPPING CROSS-BORDER FINANCIAL LINKAGES, *supra* note 82, at 39 (describing a "concentration risk" where shocks are transmitted more strongly than in a highly interconnected situation where the links are uniform).

87. *See* Beth A. Simmons, *The International Politics of Harmonization: The Case of Capital Market Regulation*, 55 INT'L ORG. 589, 595 (2001) (discussing hegemonic regulator theory in the context of the United States, for whom it is more costly to change its own policies versus changing those of other countries, and thus regulatory changes are motivated by internal regulatory needs and politics); *see also* Daniel W. Drezner, *Globalization, Harmonization, and Competition: The Different Pathways to Policy Convergence*, 12 J. EUR. PUB. POL'Y 841, 849 (2005) (concluding that there is a lack of incentive to coordinate regulatory standards in the absence of a hegemon where the benefit is low and the cost high).

88. *See* THE WORLD BANK, GLOBAL FINANCIAL DEVELOPMENT REPORT 2013: RETHINKING THE ROLE OF THE STATE IN FINANCE 81-83 (2012) (exploring the myriad of roles the nation state has in influencing and guiding the global economy).

While financial markets are global, financial regulation is largely national.[89] Therefore, global financial institutions are subjected to differing regulatory risks that would not be present if they were only operating at the domestic level. For example, a government might implement dangerous macroeconomic policies that leads to a default or a financial crisis, which can then spread to the wider global financial system.[90] Alternatively, a state might implement legitimate, welfare-enhancing economic policies that nevertheless have negative cross-border spillovers to partner countries.[91] A state might also refuse to enforce regulatory standards abroad to promote its own domestic policy interests or refuse to cooperate with foreign regulators.[92] Thus, regulatory and government risk is difficult to control because foreign players have little influence over a host country's domestic policies.[93]

III. GLOBAL FINANCIAL INTERCONNECTEDNESS

Until the 2008 financial crisis, few thought about whether the very structure of the financial system contributes to global financial instability.[94] The speed and force of global contagion at the outset of

89. *See* Charles Goodhart & Rosa M. Lastra, *Border Problems*, 13 J. INT'L. ECON. L. 705, 714-17 (2010) (analyzing "the second boundary problem," where cross-border banking continues to be constrained by national laws); *see also* Pierre-Hugues Verdier, *Transnational Regulatory Networks and Their Limits*, 34 YALE J. INT'L L. 113, 114 (2009) [hereinafter Verdier, *Transnational Regulatory Networks*] (noting that although regulation in many critical areas is left to individual states, the national regulators have formed informal transnational regulatory networks such as the Basel Committee and the International Competition Network in the absence of international treaties).

90. *See* Lorenzo B. Smaghi, *Sovereign Risk*, *in* STABILITY OF THE FINANCIAL SYSTEM: ILLUSION OR FEASIBLE CONCEPT? 237 (Andreas Dombret & Otto Lucius eds., 2013) (explaining that sovereign risk is the odds that a country will default on its loans and the international implication that it can have).

91. *Cf.* Goodhart & Lastra, *supra* note 89, at 715-16 (stating that when states discuss regulations calling for "a level playing field," cross-border backlash often results from nations with less restrictive regulations).

92. *See infra* Part IV.

93. Of course, they might be able to repatriate their assets, but this strategy applies only to portfolio investors, such as hedge funds, which have short-term positions. When we look at global systemic risk, sometimes the instability is produced by the exposure to long-term sovereign debt, currency, or foreign assets contracts, or by the presence of the financial institution in a foreign country.

94. *See* Yellen, *supra* note 34 (noting the dearth of literature during the eighteen-year period preceding the financial crisis as compared to the six years

the global and European sovereign debt crises suggest that the tight configuration of the modern financial systems plays a significant role in spreading global systemic risk.[95] One of the core problems of financial instability, both domestically and globally, is the presence of a network-like structure in which financial institutions, markets, and governments are linked with each other through bilateral financial agreements and transactions.[96] While an individual financial firm's participation in such a network enhances the firm's economic efficiency and growth, it nonetheless exposes the firm, and indirectly, its host country, to the externalities that may arise from the individual or collective behaviors of agents.[97]

Thus, international law must determine whether to structure the global financial system as a network or as a unitary system where the level of interdependence is lower. Both options entail fundamental tradeoffs in terms of economic efficiency, profitability, and crucially stability.[98]

A. FINANCIAL SYSTEMS FROM UNITARY TO NETWORK SYSTEMS

Modern finance works through a complex network of firms that share a common characteristic: they are *very highly* interconnected with each other.[99] This high level of interdependence is not an

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after 2007).

95. *See* IMF, UNDERSTANDING FINANCIAL INTERCONNECTEDNESS, *supra* note 14, at 4 (remarking that the speed with which losses in markets can translate onto the global stage is associated with the highly interconnected system).

96. *See* Anabtawi & Schwarcz, *supra* note 23, at 1354-55 (stating that the high degree of interconnectivity between financial institutions creates a network for which the transmission of risk is dispersed among the members).

97. *See id.* (observing that networks not only absorb shocks, the effects of which are then dispersed amongst members, but also amplify shocks).

98. *See* CHARLES W. CALOMIRIS & STEPHEN H. HABER, FRAGILE BY DESIGN: THE POLITICAL ORIGINS OF BANKING CRISES AND SCARCE CREDIT 183-84 (2014) (explaining unit-banking systems prevent diversifying risk with banks); Anabtawi & Schwarcz, *supra* note 23, at 1354-55 (detailing the network model of financial systems, where risk is spread throughout a system to absorb shocks, though this can lead to massive "systemic collapse").

99. *See* INT'L MONETARY FUND, GLOBAL FINANCIAL STABILITY REPORT: RESPONDING TO THE FINANCIAL CRISIS AND MEASURING SYSTEMIC RISKS 73 (2009) (articulating that while economic growth is spurred by the interconnected nature of the financial system, the links between global financial systems has increased the likelihood that market disruptions can spread quickly across borders); Steven L. Schwarcz, *Intermediary Risk in a Global Economy*, 50 DUKE L.J. 1541,

intrinsic characteristic of finance but the result of constant attempts by firms and governments to rely on each other to increase efficiency and maximize returns.[100]

Financial systems were originally structured as unit-based systems.[101] In national systems, financial intermediaries were historically independent from their national competitors and conducted business within limited territorial boundaries.[102] Until the mid-nineteenth century, no common currency or payment system existed.[103] Each bank had to issue its own banknotes, which were

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1545 (2001) (discussing that if an intermediary financial institute fails, such a failure can create chain reactions within other organizations that have resources invested in the intermediary, which can in turn threaten the global financial system); Kartik Anand et al., *A Network Model of Financial System Resilience* 2 (Econ. Risk Berlin, Discussion Paper No. 2011-051, 2011) (explaining the modern financial system consists of a web of financial institutions, which include, but are not limited to, households, firms, insurance companies, and hedge funds); Rodney J. Garratt et al., *Mapping Systemic Risk in the International Banking Network* 3 (Bank of England, Working Paper No. 413, 2011) (arguing that downgrades in U.S. subprime mortgages and the interconnectedness of the modern financial system led to the global financial crisis in 2008). *See generally* Sabine Dammasch, The System of Bretton Woods: A Lesson From History (2001) (unpublished essay, Otto-von-Guericke University Magdeburg), *available at* http://www.ww.uni-magdeburg.de/fwwdeka/student/arbeiten/006.pdf (indicating that Harry Dexter White and John Maynard Keynes played a large role in developing the modern finance system by creating the proposal for the negotiations at Bretton Woods).

100. *See* Garratt et al., *supra* note 99, at 5 (acknowledging that banks have become linked internationally through "direct claims on each other, ownership structures, . . . other risk transfers, . . . [and] participation in common markets").

101. *See* CALOMIRIS & HABER, *supra* note 98, at 183-84 (discussing the flaws of unit-based systems, including a "lack of diversification of risk," "pyramiding of the banking system's reserves," and the "difficulty of coordinating responses of banks to liquidity crises").

102. For a variety of reasons, mostly linked to the political economy of the eighteenth-century United States, each confederated state granted banking charters only to a handful of local financial institutions, which were allowed to operate only within the territorial limits of the federated state. To preserve the political rents granted to local elites by such an oligopolistic model, until the mid-nineteenth century, the U.S. federal and state courts consistently denied non-locally chartered financial institutions—mostly wealthy banks in New York or Baltimore—the right to establish a branch in another state, thus preventing the creation of a national financial system. The political foundations of unit banking were thus the result of a political alliance between local populist politicians and powerful farmers in which banks were serving mostly the interests of local elites. *See id.* at 180-83 (explaining the history, structure, and ultimate decline of the unit-banking system).

103. *See* National Bank Act of 1863, ch. 58, 12 Stat. 665 (1938) (establishing the Office of the Comptroller of the Currency, which oversees the "issue and

discounted differently from bank to bank, imposing a massive currency risk on traders.[104]

The creation of the global financial system followed a largely similar pattern. During World War II, forty-four Allied nations met in Bretton Woods, New Hampshire, to discuss how to improve the structure of the international financial and monetary system, ultimately designing the Bretton Woods monetary system.[105] John Maynard Keynes and Harry Dexter White, the architects of the Bretton Woods System, agreed that capital mobility should be left out of the perimeter of cooperation, "not merely as a feature of the transition, but as a permanent arrangement [of the international monetary system]."[106]

Thus, for more than thirty years, the international financial system operated as a constellation of individual national systems, independent from each other in terms of regulatory structure, macroeconomic dynamics, and market interconnectedness.[107] The Bretton Woods System was predicated on exchange rate stability and enshrined in law by article IV of the Articles of Agreement of the

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regulation of a national currency secured by U.S. bonds"); GORTON, MISUNDERSTANDING, *supra* note 40, at 11-18 (detailing the transition from the U.S. Free Banking Era of 1837-1863 to the passage of the National Bank Acts of 1863-1864, which enabled the federal government to produce money and replace private banknotes with national bank notes using a tax-incentive system); *see also* MARTIN, *supra* note 5, at 13 (explaining the commodity payment system, in which goods were accepted as payment rather than paper money).

104. For instance, the same banknote issued by a bank in New York for $10, might have been worth only $8.20 in Baltimore, depending on the level of trust that banks had toward each other. *See* GORTON, MISUNDERSTANDING, *supra* note 40, at 11.

105. BARRY EICHENGREEN, GLOBALIZING CAPITAL: A HISTORY OF THE INTERNATIONAL MONETARY SYSTEM 91-134 (2008) [hereinafter EICHENGREEN, GLOBALIZING CAPITAL] (providing a detailed account of the meeting).

106. RAWI ABDELAL, CAPITAL RULES: THE CONSTRUCTION OF GLOBAL FINANCE 7 (2007) (quoting John Maynard Keynes, Address to the House of Lords (May 23, 1944)).

107. *See* EICHENGREEN, GLOBALIZING CAPITAL, *supra* note 105, at 189-90 (detailing the state of the international financial system after the collapse of the Bretton Woods System); Andreas F. Lowenfeld, *The International Monetary System: A Look Back Over Seven Decades*, 13 J. INT'L ECON. L. 575, 576 (2010) (explaining that before the introduction of the IMF each nation imposed its own "subsidies, regulations, and controls" to encourage the development of their gold resources).

IMF ("IMF Articles").[108] However, a significant drawback of this approach was that, while states retained the freedom to control domestic macroeconomic policy, they enjoyed only limited international capital mobility.[109]

The unit-based financial system had two main features relevant to this article. First, systemic financial crises were less common than they are now. Crises did occur, and often, but primarily because of the inability of banks to spread the risk across the system, thereby increasing the possibility that a small shock could cause a bank to become insolvent.[110] At the global level, given the limited international capital mobility,[111] crises were often the result of domestic problems, such as balance of payment or market inefficiencies, which were usually resolved through exchange rate devaluations or intervention by the IMF.[112]

Second, financial sector fragmentation caused an inefficient and limited distribution of credit.[113] For example, in the United States, in the absence of a network, banks had to rely on independent funding structures where a handful of wealthy local shareholders who controlled the banks collected capital. At the global level, without an integrated network, banks did not have the opportunity to raise capital while costs were lowest and sell it when it provided the

108. On the original formulation of article IV of the IMF Articles, see Joseph Gold, *Strengthening the Soft International Law of Exchange Arrangements*, 77 AM. J. INT'L L. 443, 445-47 (1983) (citing the IMF Articles as the central governing agent of the Fund, because they govern the financial resources, scope, and operation of the fund); Harold van B. Cleveland, *Reflections on International Monetary Order*, 11 COLUM. J. TRANSNAT'L L. 403, 403 (1972) (expanding on the core principles of the Bretton Woods System: freedom to manage international investment and trade and steady exchange rates).

109. *See* EICHENGREEN, GLOBALIZING CAPITAL, *supra* note 105, at 91-134 (comparing the state of the global economy before and after the collapse of the Bretton Woods System).

110. *See* CALOMIRIS & HABER, *supra* note 98, at 183-84 (explaining unit-banking systems prevent diversifying risk within banks).

111. It is worth noting that international capital mobility survived even during the Bretton-Woods era, mainly in the form of sovereign debt financing.

112. *See* EICHENGREEN, GLOBALIZING CAPITAL, *supra* note 105, at 120-25 (discussing currency devaluation and IMF intervention in the context of the 1961 German and Dutch revaluations).

113. *See* CALOMIRIS & HABER, *supra* note 98, at 182-83 (commenting on the limitations of credit with unit-banking, where banks had to lend to local elites or risk not lending to anyone).

highest return.[114] As a result, this increased the cost of and reduced the availability of international credit.

Over time, the need to supply credit to the economy surpassed the diffidence towards banking conglomerates. In the late twentieth and early twenty-first centuries, national financial systems made the availability of credit a foremost policy objective.[115] Banks were permitted to operate according to the logic of economic efficiency.[116] They began to rely on each other to enhance credit supply, achieve economies of scale, and reduce business risk.[117] They did so by creating common infrastructures to support their businesses, offering financial services to each other, and creating new financial products.[118] This process drastically increased the interconnectedness between firms and markets and ultimately resulted in the financial network structure that we know today.[119]

In the 1970s, the iron curtain of capital controls that governed the international financial system began to be dismantled.[120] The rise of Eurodollar deposits and the Eurocurrency markets offering foreign currency dominated financial services and deprived monetary and

114. *See id.* at 183-84 (noting, with the advent of unit banking, bankers often had to lend to lower-risk lenders or risk not being able to lend to anyone).

115. This is the system that led finance to become "a special sector" in the economy and a major driver of economic growth in some jurisdictions. *See id.* at 180-81, 203-55 (explaining that the increased availability of credit for all sectors, from individuals to corporations was the result of precise political directives).

116. *See id.* at 202 (discussing increases in economic efficiency following the fall of the unit-banking system by pointing out the new system allowed "new access to credit for entrepreneurs, boosted investment and income, and improved competition in banking" which resulted in reductions in unemployment and income inequality).

117. *See id.* at 240.

118. In 1863, the U.S. federal government put an end to the free banking era by eliminating local bank currencies and by issuing paper money that traded at par and was backed by the government. In 1913, the Federal Reserve was created to oversee the monetary policy and the stability of the financial system, and in 1933, the U.S. Department of Treasury created the Federal Deposit Insurance Corporation to provide a basic safety net to depositors in the event of a crisis. Although the original distrust by American authorities toward big conglomerate banks remained until the 1980s, thus leading to the creation of the shadow banking system, the level of interconnectedness between financial institutions increased exponentially. *See* GORTON, MISUNDERSTANDING, *supra* note 40, at 11-18.

119. *Id.* at 10-11 (examining the evolution of the modern financial system).

120. Lowenfeld, *supra* note 107, at 575 (discussing the decline of the fixed exchange rates linked to gold).

financial authorities of the power to control parts of their own financial systems.[121] When article IV of the IMF Articles was revised in 1977 to allow exchange rate flexibility, the Bretton Woods System officially collapsed.[122] The ability to adopt a flexible exchange rate regime removed the constraints on capital mobility. This permitted nation states to open their financial systems to the services of foreign firms and to access a much wider pool of capital.

Furthermore, as the global financial market opened, regulatory barriers blocking the movement of capital were progressively dismantled.[123] By the 1990s, the deregulatory process led to the creation of the shadow banking system and more sophisticated financial instruments.[124]

B. THREE LEVELS OF GLOBAL FINANCIAL INTERCONNECTEDNESS

The process of financial liberalization not only increased credit supply and extended the scope of financial markets, it also created

121. *See* JOHN EATWELL & LANCE TAYLOR, GLOBAL FINANCE AT RISK: THE CASE FOR INTERNATIONAL REGULATION 36-39 (2000) (detailing the increased presence of the Eurodollar in the markets as a way for commercial banks to utilize "excess reserves" and discussing the undermining of regulation of commercial banks' off-shore lending practices); EICHENGREEN, GLOBALIZING CAPITAL, *supra* note 105, at 134-83 (commenting on the "lessons" learned from the fallout of the Bretton Woods System); BARRY EICHENGREEN, GLOBAL IMBALANCES AND THE LESSONS OF BRETTON WOODS 7 (2007) (comparing the British Pound Sterling and the European Euro as reserve currency); Cleveland, *supra* note 108, at 413 (analyzing the market trend in the 1960s to increase the "international mobility of liquid funds" due to the advent of multi-national firms and the expansion of "Eurocurrency markets").

122. On the changes in article IV of the IMF Articles, see Lowenfeld, *supra* note 107, at 578 and Gold, *supra* note 108, at 445.

123. *See* ABDELAL, *supra* note 106, at 32 (explaining loosening restrictions on capital flows increases states' access to foreign private capital and leads to economic growth); AVGOULEAS, GOVERNANCE, *supra* note 15, at 64-88; JEFFREY M. CHWIEROTH, CAPITAL IDEAS: THE IMF AND THE RISE OF FINANCIAL LIBERALIZATION 4 (2010) (discussing capital account liberalization across various markets, including the European Union, South Korea, Chile, Singapore, and China); EICHENGREEN, GLOBALIZING CAPITAL, *supra* note 105, at 134-85 (analyzing the rise of capital mobility in the years following the collapse of the Bretton Woods System).

124. AVGOULEAS, GOVERNANCE, *supra* note 15, 64-88; *see* Gorton & Metrick, *supra* note 70, at 261 (commenting on the development of the shadow banking system, which evolved after the financial crisis of 2007 and performs the "same functions as traditional banking" while reducing regulatory oversight).

new layers of interdependence between different national economies.[125] Like national financial systems, the global financial system quickly evolved as a network structure.[126] However, the types of exposures and linkages between economies and the dynamics that pushed toward financial integration in the global system were fundamentally different than those in a closed national economy. This global financial interconnectedness can be divided into three main types: (i) market-to-market, (ii) market-to-sovereigns, and (iii) common infrastructures.[127]

1. Market-to-Market Interconnectedness

When governments removed regulatory barriers and liberalized the cross-border movement of capital,[128] firms began to exploit the increased scope of the market by establishing foreign operations offering services on a cross-border basis or simply by investing in foreign assets.[129] While there is no conclusive evidence on the impact of financial globalization on economic growth, mainstream economic theory has provided the economic benefits of financial integration since the 1970s.[130] By reducing barriers to the movement of capital,

125. *See* Federico Lupo-Pasini, *The International Regulatory Regime on Capital Flows* 3 (Asian Dev. Bank Inst., Working Paper No. 338, 2011), *available at* http://www.adbi.org/files/2011.12.30.wp338.intl.regulatory.capital.flows.trade.services.pdf [hereinafter Lupo-Pasini, *International Regulatory Regime*] (explaining capital mobility increases as regulations decrease).

126. *See* Acemoglu et al., *supra* note 13, at 1 (commenting on the tendency of financial markets to "spread risk throughout the system" and the impact this philosophy has on regulations).

127. *See* IMF, UNDERSTANDING FINANCIAL INTERCONNECTEDNESS, *supra* note 14 at 4, 7 (describing the interconnectedness of the financial system as comprised of institutions, markets, instruments, and infrastructure).

128. On the regulatory framework for capital mobility, see Federico Lupo-Pasini, *Movement of Capital and Trade in Services: Distinguishing Myth from Reality Regarding the GATS and the Liberalization of the Capital Account*, 15 J. INT'L ECON. L. 581, 581-619 (2012) and Lupo-Pasini, *International Regulatory Regime*, *supra* note 125, at 3.

129. *See* Council for Trade in Services, *Background Note by the Secretariat: Financial Services*, S/C/W/72, at 5 (Dec. 2, 1998) (detailing cross border financial services statistics in regards to imports and exports from the European Union, United States, and Canada); *see also* Stijn Claessens, *Regulatory Reform and Trade Liberalization in Financial Services*, *in* DOMESTIC REGULATION AND SERVICES TRADE LIBERALIZATION 129, 129-31 (Aaditya Mattoo & Pierre Sauvé eds., 2003).

130. *See* MASAMICHI KONO ET AL., WORLD TRADE ORG., OPENING MARKETS IN

firms have been able to expand their activities across borders to achieve economies of scale, collect capital where it is cheaper, and invest it where it is more profitable.[131] Consumers have similarly enjoyed the benefits of increased competition, such as higher diversification of products, reduced cost of credit, and more financing opportunities.[132]

One type of global interconnectedness is through interbank claims.[133] According to the Bank for International Settlements and IMF studies, cross-border banking claims increased sharply between the 1990s and the 2008 financial crisis, reaching more than half of global gross domestic product ("GDP").[134] The process was reversed at the outset of the crisis, and current cross-border banking claims now represent around thirty-five percent of global GDP.[135] Up until the global crisis, low interest rates caused banks to rely less on standard sources of financing and more on money market mutual funds, short term commercial papers, and repos.[136] Another source of interconnectedness is the derivative market—which, in December

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FINANCIAL SERVICES AND THE ROLE OF THE GATS 10 (1997) (citing a study finding that in an attempt to capitalize on potential growth, during the 1990s, fifty percent of developing countries integrated their financial systems, which was remarkably higher than the 1980s).

131. *Id.* at 17.

132. For the economics of financial services liberalization, see *id.* and WENDY DOBSON & PIERRE JACQUET, FINANCIAL SERVICES LIBERALISATION IN THE WTO 1, 3 (1998).

133. *See* Rosa Maria Lastra, *Cross-Border Bank Insolvency: Legal Implications in the Case of Banks Operating in Different Jurisdictions in Latin America*, 5 J. INT'L BANKING REG. 201, 202-03 (2004) [hereinafter Lastra, *Cross-Border Bank Insolvency*] (explaining cross-border banking insolvency laws should seek to create "fair and predictable treatment of creditors and maximization [sic] of assets of the debtor in the interests of creditors," due to the nation-based structure of banking regulations).

134. *See* INT'L MONETARY FUND, GLOBAL FINANCIAL STABILITY REPORT: MOVING FROM LIQUIDITY- TO GROWTH-DRIVEN MARKETS 107 (2014) [hereinafter IMF, MOVING FROM LIQUIDITY] (commenting on the increases in cross-border banking claims "since the mid-1990s" which occurred due to "deregulation of banking activities, capital account liberalization, and financial innovation").

135. *See id.* (explaining the sharp increase in cross-border banking claims prior to 2007 due to liberalization and deregulation and the reversal of the trend as a result of the financial crisis of 2008 due to deleveraging and restructuring).

136. *See* GORTON, MISUNDERSTANDING, *supra* note 40, at 25-28; IMF, UNDERSTANDING FINANCIAL INTERCONNECTEDNESS, *supra* note 14, at 21-28 (noting that the preferred sources of financing prior to the crisis carried less regulatory burdens).

2013, reached an aggregate value of $710 trillion[137]—upon which systemically important financial institutions ("SIFIs") rely heavily to hedge against risk.[138]

The most prominent source of interconnectedness in the global financial system is represented by global systemically important financial institutions ("G-SIFIs").[139] These are multinational financial institutions operating across different countries through a centralized structure relying on a network of foreign affiliates.[140] According to the FSB, there were thirty G-SIFIs in the world as of November 2014, half of which are headquartered in Europe.[141] The rise of G-SIFIs is a result of the combination of financial liberalization and market dynamics.[142] Financial institutions have various incentives to increase in size and expand across borders. By opening branches or subsidiaries abroad, they can access a wider consumer base, while at the same time relying on an already established and tested organizational structure.[143] In addition, by relying on an integrated

137. *Derivatives Statistics*, BANK FOR INT'L SETTLEMENTS, http://www.bis.org/statistics/derstats.htm (last updated Apr. 30, 2015).

138. IMF, UNDERSTANDING FINANCIAL INTERCONNECTEDNESS, *supra* note 14, at 28.

139. In their policy reports, the Financial Stability Board and the Basel Committee on Banking Supervision use also the term Global-Systemically Important Banks. The two terms can be used interchangeably.

140. The FSB first developed the concept of SIFIs, of which G-SIFIs represent an evolution on a global scale to identify those financial institutions "whose disorderly failure, because of their size, complexity and systemic interconnectedness, would cause significant disruption to the wider financial system and economic activity." FIN. STABILITY BD., REDUCING THE MORAL HAZARD POSED BY SYSTEMICALLY IMPORTANT FINANCIAL INSTITUTIONS: FSB RECOMMENDATIONS AND TIME LINES 1 (2010) [hereinafter FSB, REDUCING MORAL HAZARD]; *see* Eugenio Cerutti et al., *How Banks Go Abroad: Branches or Subsidiaries?*, 31 J. BANKING & FIN. 1669, 1669-70 (2007) (discussing the importance of foreign bank operational structures in host countries).

141. *2014 Update of List of Global Systematically Important Banks*, FIN. STABILITY BD. (Nov. 6, 2014), http://www.financialstabilityboard.org/wp-content/uploads/r_141106b.pdf; *see also* DIRK SCHOENMAKER, GOVERNANCE OF INTERNATIONAL BANKING: THE FINANCIAL TRILEMMA 10-11 (2013) [hereinafter SCHOENMAKER, INTERNATIONAL BANKING] (discussing the role of SIFIs in the 2008 financial crisis because of the "too-big-to-fail doctrine").

142. SCHOENMAKER, INTERNATIONAL BANKING, *supra* note 141, at xvii, 1-2 (explaining G-SIFIs have evolved as a result of increases in "branches and subsidiaries abroad," which banks establish by acquiring local banks).

143. *See* IMF, MOVING FROM LIQUIDITY, *supra* note 134, at 110 (discussing the benefits of G-SIFIs by arguing such institutions can spur growth in local

network between the parent bank and its affiliates, they can collect credit while it is cheaper and offer it when it is more profitable.[144] They can also spread and diversify risk across an extended network and capture economies of scale by offering new services and new products.[145] Finally, and importantly, the increase in size represents an increase in the implicit subsidy granted by too-big-to-fail protection.[146]

G-SIFIs have two fundamental characteristics that make them particularly prone to transmitting instability across borders. The first is their peculiar structure, which acts as a bridge between different national financial systems.[147] Since G-SIFIs operate with an integrated structure, they can move capital relatively easily from one local operation to the other, distribute and channel funds across the system, and operate as the main intermediaries between core nodes and markets. The second characteristic is the breadth of their business operations, which typically span all sectors of financial activity, encompassing trades and investments in virtually every financial product.[148] As pointed out by the FSB, given G-SIFIs' complex structure and size, "their distress or failure would cause significant dislocation in the global financial system and adverse economic consequences across a range of countries."[149]

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economies).

144. *Id.*

145. *See* Jonathan Fiechter et al., *Subsidiaries or Branches: Does One Size Fit All?* 8 (Int'l Monetary Fund, Staff Discussion Note No. SDN/11/04, 2011) (commenting on the benefits of operating as a branch structure versus a subsidiary structure, because subsidiaries must have "higher capital and liquidity buffers" to accommodate the higher risk).

146. *See* CALOMIRIS & HABER, *supra* note 98, at 215-16 (laying out the perceived benefits of the megabank operating under the too-big-to-fail doctrine). On the problem of SIFIs, see Lastra, *Cross-Border Bank Insolvency*, *supra* note 133, at 204 (mentioning that bailout packages raise issues of risk behavior and fair competition within the banking industry as a whole).

147. FSB, REDUCING MORAL HAZARD, *supra* note 140, at 1 (charting the connections between G-SIFIs and other entities, including governments, banks, and individuals).

148. According to the IMF, "[G-SIFIs] dominate the markets for debt, equity securities, syndicated loans, securitization, structured financial products, and OTC derivatives. They are the main counterparties for large insurers and some of the biggest broker dealers." IMF, UNDERSTANDING FINANCIAL INTERCONNECTEDNESS, *supra* note 14, at 7 (discussing the diversified and interconnected portfolios and structures of these "systemic players").

149. FSB, REDUCING MORAL HAZARD, *supra* note 140, at 2.

2. Market-to-Sovereigns Interconnectedness

Sovereign debt also contributes to global interconnectedness. States have often resorted to financial markets to finance their expenditures[150] and, in spite of the power imbalance between the two, banks have usually found sovereign lending a profitable business.[151] Occasionally, however, the inability or unwillingness of sovereigns to service their debts has led to the insolvency of financial institutions. This occurs primarily because when lending to a sovereign, banks become directly exposed to foreign debt risk.[152] The debt that the Organization on Economic and Co-operation and Development ("OECD") issued to sovereigns is used by the lending bank as collateral for its financing operations; therefore, the declining value of sovereign bonds makes it difficult for banks to carry out their daily financing operations.[153]

150. Bankers and sovereigns have a long history of cooperation that dates back centuries. The constant financing needs of sovereigns to wage wars spurred the emergence of the banking business in Florence in the fifteenth to sixteenth centuries. *See* CHARLES TILLY, COERCION, CAPITAL, AND EUROPEAN STATES AD 990–1990 85-86 (1990).

151. NIAL FERGUSON, THE ASCENT OF MONEY: A FINANCIAL HISTORY OF THE WORLD 167-68 (2009).

152. Caruana and Avdjiev add three further factors. First, since the higher risk of sovereign bonds is reflected in the rating system, the downgrade of bonds automatically downgrades the rating of all companies in the state. Indeed, according to rating rules, the rating of a company cannot be higher than that of the sovereign where the company is listed. Second, the increased risk of sovereign debt risk make sovereign and private debt close substitutes in investor portfolios, thereby increasing the competition between the two forms of debt. Thus, without the easy availability of sovereign debt, banks will have more difficulties financing in the market. Finally, a loss of market confidence in sovereign debt may trigger fiscal consolidation. *See* Jaime Caruana & Stefan Avdjiev, *Sovereign Creditworthiness and Financial Stability: An International Perspective*, 16 FIN. STABILITY REV. 71, 74 (2012).

153. *Id.* ("There is evidence that in 2010 30% of the spread at launch on bank bonds reflected the conditions of the sovereign, and this figure was as high as 50% for countries for which sovereign strains were most pronounced.").

Sovereign risk is inherent to sovereign financing.[154] However, in recent years—and especially in the context of the European sovereign debt crisis—it has become increasingly clear that, under the right circumstances, sovereign defaults might trigger global systemic risk. Academic literature has focused on three main factors to explain this risk.

First, the Basel rules have encouraged financial institutions to hold OECD government debt in their portfolio. Sovereign debt has usually been considered a no-risk or low-risk financial instrument because of the assumed unlimited repayment capacity of states.[155] Basel I underscores this assumption,[156] which gave sovereign debt from OECD member countries a zero risk profile when calculating required capital.[157] Basel II and Basel III, while removing the explicit preference for OECD country debt, nonetheless achieved the same result, as they allow national supervisors to decide autonomously the risk profile of their national debt.[158] Governments are therefore

154. For instance, when in 1340 King Edward III of England defaulted on his debt, two of the major Florentine banks, the Peruzzi bank and the Bardi bank, went bankrupt. *See* CARMEN M. REINHART & KENNETH S. ROGOFF, THIS TIME IS DIFFERENT: EIGHT CENTURIES OF FINANCIAL FOLLY 69-70 (2009) (commenting on England's progression from experiencing "sovereign external default" to eventually the status of "nondefaulter").

155. Former Citibank Chairman Walter Wriston succinctly explained the proclivity of financial institutions to lend to sovereigns in the famous statement, "Countries don't go out of business .... The infrastructure doesn't go away, the productivity of the people doesn't go away, the natural resources don't go away. And so their assets always exceed their liabilities, which is the technical reason for bankruptcy. And that's very different from a company." *Money Matters: An IMF Exhibit—The Importance of Global Cooperation, Debt and Transition (1981-1989)*, INT'L MONETARY FUND (last visited Apr. 17, 2015), https://www.imf.org/external/np/exr/center/mm/eng/mm_dt_01.htm.

156. *See generally* BASEL COMM. ON BANKING SUPERVISION, INTERNATIONAL CONVERGENCE ON CAPITAL MEASUREMENT AND CAPITAL STANDARDS 2 (1988) (examining "the risk of counterparty failure," "interest rate risk," and "investment risk on securities" to determine overall capital adequacy).

157. *See* SIMON GLEESON, INTERNATIONAL REGULATION OF BANKING: CAPITAL AND RISK REQUIREMENTS 115 (2d ed. 2012) [hereinafter GLEESON, INTERNATIONAL REGULATION] (arguing the result will be the same as Basel I because sovereigns will be incentivized to give a zero risk profile to their national sovereign debt).

158. Danièle Nouy, *Is Sovereign Risk Properly Addressed by Financial Regulation?*, 16 FIN. STABILITY REV. 95, 98-99 (2012).

incentivized to give a very low-risk profile to their debt to encourage banks to buy it. By having a large portfolio of government bonds, banks can reduce the level of capital buffer required by the Basel rules.[159] Thus, while the return of sovereign bonds seldom matched that of other financial instruments, it guaranteed a cushion to banks against market fluctuations. Given the apparently low-risk status of sovereign bonds, banks have also used it as collateral for their own financing.[160]

Second, OECD countries are now among the most indebted countries, with an average external debt-to-GDP ratio of around 100%.[161] For a few countries, most of the sovereign debt is held by national banks.[162] The combination of those two factors doubles the global systemic risk potential of a sovereign default because a banking crisis might turn into a sovereign debt crisis and vice-versa.[163] Economists define this situation as the "vicious circle" between banks and sovereigns.[164] The recent Spanish and Irish crises demonstrated this when the bailout of the national financial systems by the national governments led the two countries to the verge of default.[165]

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159. *See id.* (indicating that banks must have more liquid assets to meet "liquidity needs" under Basel III).

160. For the interbank secured funding market, or repo operations with central banks.

161. For up-to-date data, see TRADING ECONOMICS, http://www.tradingeconomics.com (last visited Apr. 17, 2015).

162. *See* Silvia Merler & Jean Pisani-Ferry, *Hazardous Tango: Sovereign-Bank Interdependence and Financial Stability in the Euro Area*, 16 FIN. STABILITY REV. 201, 207-08 (2012) (explaining, between 2007 and 2011, the national holdings of debt have increased for Greece, Ireland, Portugal, Spain, and Italy as the risk associated with the debt increases).

163. *See id.* at 209 (discussing the policy implications of the interconnectedness between sovereign debt and national holdings and the stability of national debt).

164. On the vicious link between banks and sovereigns, and how it develops, see *id.* at 209 and Lucrezia Reichlin & Luis Garicano, *Squaring the Eurozone's Vicious Circle*, PROJECT SYNDICATE (Jan. 27, 2014), http://www.project-syndicate.org/commentary/lucrezia-reichlin-and-luis-garicano-offer-three-options-for-severing-the-link-between-sovereign-debt-risk-and-domestic-banking-stability.

165. *See* Federico Lupo-Pasini, *Economic Stability and Economic Governance in the Euro Area: What the European Crisis Can Teach on the Limits of Economic Integration*, 16 J. INT'L ECON. L. 211, 239 (2013) [Lupo-Pasini, *Economic Stability*] (discussing the crises in Europe and how the vicious circle exacerbated them).

Third, sovereign lending has become more sophisticated and complicated in form, increasing the systemic risk potential of sovereign default.[166] Over the last ten years, derivatives—especially credit default swaps—have entered the sovereign debt market.[167] These instruments, which are purchased by banks and institutional investors, serve the fundamental function of insuring the lender against sovereign debt risk. However, they also increase the systemic effect of a sovereign default because they spread the risks of default to the broader financial market.[168]

3. Common Infrastructures

The payment network is fundamental to the proper function of financial systems. At the domestic level, payment systems are divided into net payment systems, in which the various positions between banks are netted and settled at the end of the day, and real-time gross settlement systems, in which the settlements are immediate.[169] At the international level, however, the payment

166. Sovereign debt takes many forms. Until the 1960s, bonds were the main sources of finance for sovereigns. For a short period, from the 1960s until 1982, syndicated bank loans became the favored mechanism. Eventually, from the late 1980s onward, states shifted back to bonds. *See* James M. Hays, *The Sovereign Debt Dilemma*, 50 BROOK. L. REV. 905, 905-06, 913 (2010); Philip J. Power, *Sovereign Debt: The Rise of the Secondary Market and Its Implications For Future Restructurings*, 64 FORDHAM L. REV. 2701, 2764 (1996).

167. The most common form of derivatives is the so-called Credit Default Swaps. *See, e.g.*, Régis Brenton et al., *Banks, Moral Hazard, and Public Debts*, 16 FIN. STABILITY REV. 57, 58-59 (2012); René M. Stulz, *Credit Default Swaps and the Credit Crisis*, 24 J. ECON. PERSP. 73, 74 (2010); Udaibir S. Das et al., *Sovereign Debt Restructurings 1950-2010: Literature Survey, Data, and Stylized Facts* 57 (Int'l Monetary Fund, Working Paper No. WP/12/203, 2012).

168. *See* Steven L. Schwarcz, *Sovereign Debt Restructuring Options: An Analytical Comparison*, 2 HARV. BUS. L. REV. 95, 97 (2012) (analyzing the tendency for the increase in sovereign bonds to cause global financial collapse); *see also* Louise Story, *Derivatives Cloud the Possible Fallout From a Greek Default*, N.Y. TIMES (June 22, 2011), http://www.nytimes.com/2011/06/23/business/global/23swaps.html?_r=0 (looking at the consequences of derivatives in the context of the Grecian default); Elena Kalotychou et al., *What Makes Systemic Risk Systemic?: Contagion and Spillovers in the International Sovereign Debt Market* 1 (H.K. Inst. Monetary Research, Working Paper No. 07/2014, 2014), *available at* http://ssrn.com/abstract=2423184 (analyzing the spread of sovereign bonds and the impact on the collapse of the European market).

169. *See* Lastra, *Systemic Risk*, *supra* note 65, at 203-04 (examining the

system is more complicated because payment transactions need to be converted into foreign currency. Economists usually describe an international foreign exchange or securities transaction as relying on "two legs," as each transaction needs to be conducted in two different financial systems and at different times.[170]

During the global financial crisis, the international payment system worked well.[171] However, this was not always the case. Contagion in the international payment network can occur when one of the two legs in the payment transaction stops functioning.[172] This can happen for a variety of reasons, including currency mismatches, technical problems in the transmission of the payment, or regulatory interventions.[173] A key example is the failure of the German bank Herstatt in 1974, whose high impact led to the creation of the BCBS.[174] Herstatt was a bank dealing with foreign exchange transactions located in Cologne, Germany, but with substantial operations in the United States. When the German authorities decided to liquidate it, they did not consider the effects that a forced closure would have on Herstatt's counterparties in the United States. Ultimately, the U.S. counterparties were responsible for the Deutsche Mark deliveries made and the pending settlements, despite the German liquidation.[175]

C. GLOBAL INTERCONNECTEDNESS AND SYSTEMIC INSTABILITY

Over the years, interconnectedness has become a fundamental component of modern financial systems. According to the Chair of

payment and settlement systems in the context of the 2007-2009 financial crisis).

170. *See id.* (analyzing risk created by the national banking system, including "Herstatt risk," which arises because of time differences, and efforts to combat these payment issues by developing a "delivery versus payment" system, which simultaneously settles both "legs").

171. *See id.* (noting, despite the chaos of the 2007-2009 financial crisis, "money transmission mechanisms" for the payment system continued to function well at the operational, liquidity, credit, and legal risk levels).

172. *See id.* (commenting on the tendency of financial institutions to experience problems with payment systems, on either "leg," due operational, liquidity, credit, or legal failures).

173. *See id.* (discussing operational, legal, and liquidity risk with regard to payment and settlement systems).

174. *See* CHARLES GOODHART, THE BASEL COMMITTEE ON BANKING SUPERVISION: A HISTORY OF THE EARLY YEARS 1974–1997 25-47 (2011).

175. *See* LASTRA, LEGAL FOUNDATIONS, *supra* note 1, at 145.

the Federal Reserve Board, Janet Yellen, who is charged with overseeing U.S. monetary policy, "there is little doubt that some degree of interconnectedness is vital to the functioning of our financial system."[176] Many of the benefits of a network system have already been mentioned in this article.[177] However, during the financial crisis of 2008, it became clear that a network is a double-edged sword.[178]

While linkages might act as "shock absorbers" by spreading and diluting the risk across the whole system, they might nonetheless expose individual institutions to external shocks from the market or partner institutions. For instance, one institution might reduce its holding in certain assets, which in turn might reduce the asset's market price and thus the solvency of other institutions holding the same assets.[179]

Within a certain level of interdependence, financial interconnectedness serves to distribute risks and absorb shocks. However, beyond a certain level of interdependence and during widespread market contractions or severe shocks, interconnectedness will only increase the possibility of contagion. Paradoxically, as was confirmed empirically during the 2008 financial crisis, institutions that are less connected in the system are less likely to "receive" instability and are therefore better positioned to withstand severe financial shocks.[180]

IV. THE ROLE OF DOMESTIC POLICIES

Interconnectedness does not by itself create instability. Rather, instability occurs when an event within the network creates a shock

176. Yellen, *supra* note 34, at 3.

177. *See* discussion *supra* Part II.A (listing the benefits of a network).

178. *See* discussion *supra* Part II.A (listing the drawbacks of a network).

179. *See* Jeffrey Gordon & Colin Mayer, *The Micro, Macro and International Design of Financial Regulation* 1 (Columbia Law & Econ., Working Paper No. 422, 2012), *available at* http://ssrn.com/abstract=2047436 (elaborating on the interconnectedness of the global financial system, wherein the collapse of one financial institution can cause a country-wide economic crisis, which leads to a global economic crisis).

180. *But see* Acemoglu et al., *supra* note 13, at 564-65 (detailing the benefits of interconnectedness, which allows the losses of one bank to be spread across the financial system, which reduces the negative impact on other financial institutions within the system).

that is then transmitted to the larger financial system through various channels of contagion, as discussed in Part I.[181] Thus far, mainstream economic theory has focused on market failures as the underlying cause of instability.[182] However, the focus on market failures does not address the problems faced by international networks because it presumes a fundamental element that is not present in the global financial system: a centralized regulator.

As stated previously, the global financial system consists of integrated financial markets that are subject to divergent national regulations and policies.[183] These different state preferences are often the origin of financial instability.[184] This section analyzes the political and economic dynamics at the origin of market failures and classifies them into two major groups: (i) policy and regulatory asymmetries and (ii) government failures.

A. ASYMMETRIES

Regulatory or policy differences have traditionally been analyzed only in terms of barriers of entry for foreign firms, or in the context of debate on international regulatory competition.[185] However,

181. *See* discussion *supra* Part I; *see also* Anabtawi & Schwarcz, *supra* note 23, at 1372 (explaining the domino model of contagion, which proposes the collapse of one bank leads directly to negative impacts on other banks within the first bank's network and these impacts affect the market indirectly); Schwarcz, *Controlling Financial Chaos*, *supra* note 25, at 816 (detailing how the collapse of financial markets or firms impedes capital availability or increases its cost); Schwarcz, *Systemic Risk*, *supra* note 25, at 196-97 (comparing different definitions of systemic risk, which approach the system from positive, neutral, and negative angles).

182. *See* discussion *supra* Part II.A.

183. *See* discussion *supra* Part II.B.

184. *See* discussion *supra* Part II.B.

185. For instance, there is a vast literature on the benefits and costs of regulatory competition in enhancing economic efficiency and on the risk of a regulatory race to the bottom. For a substantive overview of the theories, see Stavros Gadinis, *The Politics of Competition in International Financial Regulation*, 49 Harv. Int'l L.J. 447, 449-50 (2008) [hereinafter Gadinis, *The Politics of Competition*]. A stream of political science literature argued that financial globalization, and especially the mobility of capital, would drive states to a permanent condition of regulatory competition in which each government would be pushed to lower its regulatory apparatus to attract foreign capital. *See* Philip G. Cerny, *The Dynamics of Financial Globalization: Technology, Market Structure, and Policy Response*, 27 Pol'y Sci. 319, 319-20 (1994). Other authors, however, argued that regulatory competition would lead to a race to the top in financial

regulatory and policy asymmetries can also increase the likelihood of global systemic risk.

Asymmetries affecting global financial stability are the result of two independent, albeit often intertwined, factors. The first arises from the inability of national regulators to take into account the externalities of their actions on other countries due to a principal-agent problem. The second arises from the natural macroeconomic asymmetries that prevent the adoption of Pareto optimal policies. Each factor is examined in turn.

1. Principal-Agent Problem in Global Finance[186]

In any national financial system, regulators perform a pivotal role in maintaining financial stability. Not only do they have the power to supervise and regulate financial institutions, they also have the power to intervene and stabilize markets when a crisis erupts. They do so

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services. *See* Mahmood Bagheri & Chizu Nakajima, *Optimal Level of Financial Regulation Under the GATS: A Regulatory Competition and Cooperation Framework for Capital Adequacy and Disclosure of Information*, 5 J. Int'l Econ. L. 507, 508 (2002); Stephen J. Choi & Andrew T. Guzman, *National Laws, International Money: Regulation in a Global Capital Market*, 65 Fordham L. Rev. 1855, 1857 (1997); *see also* David Andrew Singer, Regulating Capital: Setting Standards for the International Financial System 4-5 (2007); Howell E. Jackson, *Centralization, Competition, and Privatization in Financial Regulation*, 2 Theoretical Inquiries L. 649, 650 (2001); Joel P. Trachtman, *Recent Initiatives in International Financial Regulation and Goals of Competitiveness, Effectiveness, Consistency and Cooperation*, 12 NW. J. Int'l L. & Bus. 241, 246 (1994); Roberta Romano, *For Diversity in the International Regulation of Financial Institutions: Critiquing and Recalibrating the Basel Architecture* 3 (Yale Law & Econ., Working Paper No. 452, 2013), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2127749. The same theory ignited a long argument between U.S. scholars with regard to regulatory competition within the United States. *See* Roberta Romano, The Genius of American Corporate Law 1-13 (1993); William L. Cary, *Federalism and Corporate Law: Reflections upon Delaware*, 83 Yale L.J. 663, 705 (1974).

186. The principal-agent theory was originally developed by the institutional economics literature to analyze information problems in industrial organizations and it has been widely used by the economics literature to explain the information asymmetry problems that arise between bank management and bank depositors. For a general overview of the principal-agent model, see Michelle Egan, *Regulatory Strategies, Delegation and European Market Integration*, 5 J. EUR. PUB. POL'Y 485, 485 (1998). For a more extensive analysis, see TIMOTHY BESLEY, PRINCIPLED AGENTS? THE POLITICAL ECONOMY OF GOOD GOVERNMENT 485-87 (2006).

through different mechanisms, such as "lender of last resort,"[187] operations provided by central banks, fresh capital injections provided by treasuries, forced mergers, creation of good and bad banks, bail-ins, and through bankruptcy regimes.[188] In performing all those operations, national regulators usually enjoy a wide margin of discretion, albeit to different degrees.[189] In spite of their relative freedom, however, both monetary and financial authorities suffer one fundamental constraint: they need to ensure the stability of their own national financial system.[190] More specifically, virtually all statutes

187. For a quick overview on lenders of last resort, see Kern Alexander, *International Economic Law and the Lender of Last Resort*, INT'L MONETARY FUND 3 (Oct. 23-27, 2006), https://www.imf.org/External/NP/seminars/eng/2006/mfl/ka.pdf. *See also* Andrew Campbell & Rosa Lastra, *Revisiting the Lender of Last Resort*, 24 BANKING FIN. L. REV. 453 (2009); Xavier Freixas et al., *Lender of Last Resort: A Review of the Literature*, 2 FIN. STABILITY REV. 151 (1999); Freixas et al., *Systemic Risk*, *supra* note 17; Xavier Freixas et al., *The Lender of Last Resort: A 21st Century Approach*, 2 J. EURO. ECON. ASS'N 1085 (2004); Rosa Maria Lastra, *Lender of Last Resort: An International Perspective*, 48 INT'L & COMP. L.Q. 340 (1999); Guillermo Rosas, *Bagehot or Bailout? An Analysis of Government Responses to Banking Crises*, 50 AM. J. POL. SCI. 175 (2006); Anna J. Schwartz, *The Lender of Last Resort and the Federal Safety Net*, 1 J. FIN. SERVICES RES. 1 (1987).

188. For a comprehensive overview of the different mechanisms to contain financial instability, see FINANCIAL CRISIS CONTAINMENT AND GOVERNMENT GUARANTEES (John LaBrosse et al. eds., 2012), Steven M. Davidoff & David Zaring, *Regulation by Deal: The Government's Response to the Financial Crisis*, 61 ADMIN. L. REV. 463 (2009), and Anna Gelpern, *Financial Crisis Containment*, 41 CONN. L. REV. 1051 (2009).

189. *See* ROSA MARIA LASTRA, CENTRAL BANKING AND BANKING REGULATIONS 108-44 (2006) (arguing that, while monetary authorities are frequently independent, financial authorities and treasuries are regularly exposed to external political influences); Stavros Gadinis, *From Independence To Politics In Financial Regulation*, 101 CALIF. L. REV. 327, 327, 332-33 (2013) (elaborating that the United States uses its traditional separation of powers philosophy to deal with the issue of external political influences in relation to the independence of monetary authorities); Lorenzo Bini-Smaghi, *Central Bank Independence in the EU: From Theory to Practice*, 14 EUR. L.J. 446, 447 (2008) (noting that policy makers have delineated specific obligations for political authorities to deal with the issue of external political influences).

190. *See* Aneta Spendzharova, *Is More 'Brussels' the Solution? New European Union Member States' Preferences about the European Financial Architecture*, 50 J. COMMON MARKET STUD. 315, 316 (2012) (emphasizing that cooperation among central authorities is essential to the stability of the entire financial system); Marianne Ojo, *The Changing Role of Central Banks and the Role of Competition in Financial Regulation During (and in the Aftermath of) the Financial Crisis*, 17 EUR. L.J. 513 (2011) (discussing the need for stability throughout her article as

of central bank and financial authorities limit the policy objective of the agencies to what is considered optimal for the national economy, rather than for the global economy.[191] At the core of the authority's behavior lies a bond between the regulators—who act as agents—and their citizens—who act as principals.[192]

Promoting regulatory efficiency does not, in the majority of cases, create global systemic risk, even in an integrated financial network. However, in certain circumstances, the pursuit of national interests might lead to global instability that reverberates across the whole system.[193] The most relevant example arises in the context of a cross-border banking crisis.[194] G-SIFIs rely on an integrated network, which means that a solvency or liquidity problem in the parent bank or in one of its foreign operations is immediately felt across the entire consolidated structure.[195] The global systemic risk potential of G-SIFIs is compounded by the fact that their systemic importance may vary in each of the countries where they operate. For instance, while a cross-border bank headquartered in a large developed country might be of medium systemic importance for that economy, its operations in a developing country with an underdeveloped and highly connected financial sector might be of major systemic importance.[196] Consequently, home and host regulators likely hold

"paramount"); Louis W. Pauly, *The Old and the New Politics of International Financial Stability*, 47 J. COMMON MARKET STUD. 955, 960-61 (2009) (explaining that during the 2008 financial crisis, national governments were forced to support internal clearing banks and global intermediaries).

191. *See* Francois Gianviti, *The Objectives of Central Banks*, *in* INTERNATIONAL MONETARY AND FINANCIAL LAW: THE GLOBAL CRISIS 449, 449-83 (Mario Giovanoli & Diego Devos eds., 2010).

192. *Id.*

193. *See, e.g.*, Michael H. Moskow, *Cross-Border Banking Forces Driving Change and Resulting Regulatory Challenge*, *in* CROSS-BORDER BANKING: REGULATORY CHALLENGES 3-5 (Gerard Caprio Jr. et al. eds., 2006).

194. *See generally id.* (highlighting regulation in cross-boarder banking).

195. *See generally* SCHOENMAKER, INTERNATIONAL BANKING, *supra* note 141, at 34 (explaining that because the level of centralization varies according to the business model, banks that adopt a fully centralized model usually operate through branches and collect their capital and debt from the headquarters, while banks that rely on a decentralized model operate through subsidiaries; nevertheless, banks frequently adopt a hybrid model that combines both).

196. *See* STIJN CLAESSENS ET AL., A SAFER WORLD FINANCIAL SYSTEM: IMPROVING THE RESOLUTION OF SYSTEMIC INSTITUTIONS 29-32 (2010) (considering asymmetries in banks' national interests in home and host countries).

different incentives when deciding how the G-SIFIs' problems will be resolved.

The principal-agent relationship between national financial authorities and their citizens prevents national authorities from effectively intervening to maintain the stability of cross-border banks.[197] Because political leaders' main goal is to safeguard national interests—in terms of fiscal outlays or financial stability—they will intervene only to the extent necessary to achieve their national mandate.[198] The principal-agent problem affects financial stability during all stages of the resolution procedure.[199] If the G-SIFI must be bailed-out, the home state might not be inclined to provide taxpayer-funded financial assistance to the bank's foreign operations unless necessary to guarantee domestic stability.[200]

This creates a monstrous problem for the host country, which is left to deal with the systemic impact of the bank's failure alone. This is well illustrated by the dissolution of the Icelandic Landsbanki bank in 2008.[201] Landsbanki was headquartered in Iceland, but had foreign operations branches in the United Kingdom, Germany, and the Netherlands.[202] At the onset of the Icelandic banking crisis, the

197. *See* Katia D'Hulster, *Cross Border Banking Supervision: Incentive Conflicts in Supervisory Information Sharing between Home and Host Supervisors* 1-2 (World Bank, Policy Research Working Paper No. 5871, 2011), *available at* http://elibrary.worldbank.org/doi/pdf/10.1596/1813-9450-5871 (acknowledging that banking supervisors overlook "cross border externalities").

198. *See* SCHOENMAKER, INTERNATIONAL BANKING, *supra* note 141, at 34.

199. *See* D'Hulster, *supra* note 197, at 28.

200. *See* Xavier Freixas, *Crisis Management in Europe*, *in* FINANCIAL SUPERVISION IN EUROPE 102 (Jeroen Kremers et al. eds., 2003); Garry J. Schinasi & Pedro Gustavo Teixeira, *The Lender of Last Resort in the European Single Financial Market*, *in* CROSS-BORDER BANKING: REGULATORY CHALLENGES 349 (Gerard Caprio Jr. et al. eds., 2006); Vitor Gaspar & Garry Schinasi, *Financial Stability and Policy Cooperation* 1, 26 (Banco de Port., Occasional Papers No. 01/2010, 2010) (explaining that, while the issue of taxpayer-funded financial assistance has been analyzed constantly in economics literature, whenever the failure of the branch insolvency threatens the stability of the parent bank, taxpayer-funded assistance must be minimalized unless it is necessary to ensure domestic stability).

201. *See* Fridrik M. Baldursson & Richard Portes, *Capital Controls and the Resolution of Failed Cross-Border Banks: the Case of Iceland*, 9 CAPITAL MARKETS L.J. 40 (2014).

202. *See* RANNSÓKNARNEFND ALÞINGIS, *Causes of the Collapse of the Icelandic Banks: Responsibility, Mistakes, and Negligence*, *in* REPORT OF THE SPECIAL INVESTIGATION COMMISSION 1, 42 (2012).

Icelandic authorities failed to provide support to Landsbanki's foreign operations, as they believed that providing equity injections would strain their already limited fiscal capacity.[203] They also refused to compensate foreign depositors, contrary to E.U. law.[204] As a result, English and Dutch depositors were left completely alone, and only the last minute intervention of host regulators prevented the crisis from escalating.[205]

Different bank insolvency regimes might similarly create global instability.[206] Countries' bankruptcy laws often differ greatly with regard to various aspects of the bankruptcy procedure, from the very definition of "bankruptcy" to the level of seniority of different creditors.[207] In the absence of a harmonized bank insolvency framework, when a cross-border bank reaches the point of non-viability, each national resolution authority where the bank operates

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203. *See id.* at 144.

204. *See id.* at 96.

205. *See* M. Elvira Méndez-Pinedo, *The Icesave Saga: Iceland Wins Battle Before the EFTA Court*, 1 MICH. J. INT'L L. EMERGING SCHOLARSHIP PROJECT 101, 101 (2013); *see also* M. Elvira Mendez-Pinedo, *Iceland and the EU: Bitter Lessons after the Bank Collapse and the Icesave Dispute*, *in* CONTEMPORARY LEGAL AND ECON. ISSUES III 9, 12, 14 (Ivana Barković Bojanić & Mira Lulić eds., 2013) (noting that although Dutch and British regulators prevented the crisis, Iceland remained obligated to "provide the minimum compensation of EUR 20.000 per depositor").

206. *See* BASEL COMM. ON BANKING SUPERVISION, REPORT AND RECOMMENDATIONS OF THE CROSS-BORDER BANK RESOLUTION GROUP 1, 4 (2010) (discussing comparative burdens by national authorities during cross-border crises); LEGAL AND MONETARY DEP'T, INT'L MONETARY FUND, RESOLUTION OF CROSS-BORDER BANKS: A PROPOSED FRAMEWORK FOR ENHANCED COORDINATION 3 (2010) [hereinafter IMF, RESOLUTION OF CROSS-BORDER BANKS]; Michael Krimminger, *Banking in a Changing World: Issues and Questions in the Resolution of Cross-Border Banks*, *in* CROSS-BORDER BANKING: REGULATORY CHALLENGES, *supra* note 193, at 401, 403.

207. *See* EVA H.G. HUPKES, THE LEGAL ASPECTS OF BANK INSOLVENCY: A COMPARATIVE ANALYSIS OF WESTERN EUROPE, THE UNITED STATES, AND CANADA 3 (2000); Thomas C. Baxter, Jr. et al., *Two Cheers for Territoriality: An Essay on International Bank Insolvency Law*, 78 AM. BANKR. L.J. 57, 73-76 (2004); LASTRA, LEGAL FOUNDATIONS, *supra* note 1; Rosa Maria Lastra, *Cross-Border Bank Insolvency: Legal Implications in the Case of Banks Operating in Different Jurisdictions in Latin America*, 6 J. INT'L ECON. L. 79, 90 (2003) [hereinafter Lastra, *Legal Implications*] (emphasizing that bankruptcy proceedings are generally held to the plurality rule for which they are "only effective in the country in which they are initiated" and describing the controversial nature and unclear definition of bank insolvency).

has the right to initiate an independent bankruptcy procedure based on local law.[208]

Asymmetries in bankruptcy laws incentivize national authorities to protect their own interest, thereby leading to a disorderly resolution.[209] This is especially true with countries that adopt a territorial approach to bankruptcy, such as the United States. Under the territorial approach, the local court adjudicates only claims on local assets and on the part of the bank group located in its jurisdiction.[210] In practice, the court will not recognize other bankruptcy procedures and will focus only on protecting the local creditors by ring-fencing all the available assets of the local bank to the detriment of the creditors of the foreign entities.[211]

This approach has a few systemic implications. First, the split of the bank into national (rather than business) lines during the bankruptcy procedure reduces the franchise value of the bank group and therefore increases creditor losses.[212] Second, to control the resolution procedure, national regulators often delay communicating the real situation of the bank to other regulators and try to locate as many assets as possible in their jurisdiction before bankruptcy occurs, thereby leaving the foreign operations illiquid.[213] The dissolution of Lehman Brothers represents a textbook case in this regard.[214] Before communicating their decision to declare Lehman

208. *See* Lastra, *Legal Implications*, *supra* note 207, at 90-91 (describing the United States' procedure known as the "separate entity approach" applied when the U.S. branch of a foreign bank is faced with liquidation).

209. *See* IMF, RESOLUTION OF CROSS-BORDER BANKS, *supra* note 206, at 9 (positing that when bank insolvencies arise, national frameworks do not properly facilitate coordination, which is further hindered by a lack of harmonization).

210. *See id.*

211. *See id.* at 9-10 (emphasizing that such a "terminal approach" favors the bank's local jurisdiction such as depositors and creditors while jeopardizing foreign stakeholders).

212. *See id.* at 12.

213. *Id.* at 30 (recommending that there be more effective "cross-border cooperation and information sharing" by the different national authorities to allow for more effective insolvency and crisis management).

214. *See* Michael J. Fleming & Asani Sarkar, *The Failure Resolution of Lehman Brothers*, 20 FRBNY ECON. POL'Y REV. 175, 193-94 (2014) (discussing the inadequate planning of the Lehman bankruptcy process, despite the firm's complexity).

Brothers bankrupt, U.S. regulators managed to repatriate most of the Lehman Brothers' foreign assets from their European affiliate.[215] When Lehman Brothers declared bankruptcy, the United Kingdom and German operations were left completely illiquid, thereby triggering a systemic impact across the whole European financial system.[216]

2. Macro Asymmetries and Spillovers

While domestic policies may enhance economic efficiency domestically, they are nonetheless likely to produce negative spillovers across borders.[217] Spillovers take various forms. Sometimes, domestic economic policies in the home country can lead to a surge of capital inflows in partner countries.[218] Indeed, portfolio flows channeled mainly through cross-border banks and hedge funds are heavily procyclical, and expansionary monetary policies in the home country can increase the risk of asset bubbles and inflation during boom times in partner countries, as well as the risk of recession during bursts.[219] Katharina Pistor, Professor of Law

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215. *See id.* at 199.

216. SCHOENMAKER, INTERNATIONAL BANKING, *supra* note 141, at 74-75 (noting that Lehman Brother Holdings Inc. controlled access to cash resources and the subsidiaries located in Europe and Asia became illiquid and the firm was unable to operate properly because Lehman declared bankruptcy before dividing the cash allocations amongst its subsidiaries).

217. *See, e.g.*, INT'L MONETARY FUND, 2012 SPILLOVER REPORT 3 (2012) [hereinafter IMF, SPILLOVER REPORT]; *see also* INT'L MONETARY FUND, PILOT EXTERNAL SECTOR REPORT 1 (2012) [hereinafter IMF, PILOT REPORT].

218. *See* IMF, PILOT REPORT, *supra* note 217, at 1 (advocating for a more clearly delineated policy framework for the flow of capital from an "advanced country core"); IMF, SPILLOVER REPORT, *supra* note 217; MONETARY & CAPITAL MKTS. DEP'T, INT'L MONETARY FUND, THE MULTILATERAL ASPECTS OF POLICIES AFFECTING CAPITAL FLOWS 3 (2011) (reinforcing that financial crises can cause capital inflows into emerging markets and "safe haven" currencies); Atish R. Gosh et al., *Surges* 5, 23 (Int'l Monetary Fund, Working Paper No. WP/12/22, 2012) (noting that a surge in capital, whether brought upon by real U.S. interest rates or international instability, can be the result of the economic policies of other countries); Carmen M. Reinhart & Vincent R. Reinhart, *Capital Flow Bonanzas: An Encompassing View of the Past and Present* 2 (Nat'l Bureau of Econ. Research, Working Paper No. 14321, 2008) (discussing how the positive economic change can "lull[] policymakers and investors into treating the bonanza as a *permanent* phenomenon and not a *temporary* shock").

219. *See* INT'L MONETARY FUND, RECENT EXPERIENCES IN MANAGING CAPITAL INFLOWS: CROSS-CUTTING THEMES AND POSSIBLE POLICY FRAMEWORK

at Columbia Law School, argues that financial policies in Western Europe during the 1990s created asset bubbles in Eastern European countries, ultimately leading to financial crises in the Czech Republic, Poland, and Hungary.[220]

More recently, the unconventional monetary measures adopted by central banks in developed economies to boost growth are believed to have caused the same negative spillovers in emerging economies.[221] As the 2008 financial crisis unfolded, interest rates in advanced economies reached zero, thereby preventing monetary authorities from using interest rates to address monetary stability concerns.[222] As a consequence, monetary authorities had to revert to financial policies and shift the focus of their intervention.[223] In the United States, Japan, and England, central banks set up an unconventional program consisting of a prolonged purchase of public bonds and financial assets—so-called *quantitative easing*—that pumped vast liquidity into the system, thus reducing real interest rates.[224] While revitalizing sluggish domestic economic growth and

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4-5 (2011) (noting that in recent years, excessive capital outflows from advanced economies have often created problems in emerging economies; for instance, Brazil and other emerging markets have complained about the negative effects of excessive global liquidity on monetary stability); Jonathan D. Ostry et al., *Capital Inflows: The Role of Controls* 1, 6-10 (Int'l Monetary Fund, Staff Position Note No. SPN/10/04, 2010) [hereinafter Ostry et al., *Capital Inflows*] (acknowledging macroeconomic concerns regarding capital inflows, which include "excessive foreign borrowing," "foreign currency exposure," "credit booms," and "asset bubbles").

220. Katharina Pistor, *Host's Dilemma: Rethinking EU Banking Regulation in Light of the Global Crisis* 34 (Columbia Law Sch. & European Corporate Governance Inst., Finance Working Paper No. 286/2010, 2010), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1631940.

221. Marcel Fratzscher et al., *On the International Spillovers of US Quantitative Easing* 1, 10 (European Cent. Bank, Working Paper No. 1557, 2013).

222. *See* INT'L ORG. OF SUPREME AUDIT INSTS., THE CAUSES OF THE GLOBAL FINANCIAL CRISIS AND THEIR IMPLICATIONS FOR SUPREME AUDIT INSTITUTIONS 13 (2010) (describing that the years preceding the financial crisis were fiscally unsustainable due in part to low interest rates and a reluctance by investors to purchase government debt).

223. *See* IMF, SPILLOVER REPORT, *supra* note 217 (emphasizing that it is important to revert to financial policies to create further stability and to avoid fundamental global financial vulnerability).

224. *See* Brett W. Fawley & Christopher J. Neely, *Four Stories of Quantitative Easing*, 95 FED. RES. BANK OF ST. LOUIS R. 51, 52 (2013) (explaining that unconventional monetary policies such as quantitative easing arise in the form of asset purchases and loan programs, which can have the effect of easing credit

safeguarding financial stability in the developed countries, these measures nevertheless increased global liquidity and led to a dangerous surge of capital inflows in emerging economies.[225]

Sometimes spillovers are the result of different prudential policies.[226] The decline in asset value in one country might induce banks to cut back foreign loans or to shift into low-risk assets, such as government securities, in order to adjust their capital adequacy ratios.[227] Thomas Moser, previous Executive Director for the Kyrgyz Republic, defines this situation as "portfolio rebalancing due to capital constraint."[228] During the Japanese crisis in the early 1990s, the capital buffers Basel I imposed on Japanese banks led to a reduction of loans from Japanese banks in the United States.[229]

B. GOVERNMENT FAILURES

A very common source of global systemic risk is government failure.[230] Such failures arise from the inability of governments to

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strains).

225. *See* INT'L MONETARY FUND, MULTILATERAL POLICY ISSUES REPORT: 2013 SPILLOVER REPORT 1, 42-43 (2013) (highlighting the external impacts of quantitative easing); Fratzscher et al., *supra* note 221, at 9-10 (commenting that quantitative and credit easing policies via capital inflows affect global asset prices). *But see* Peter J. Morgan, *Impact of US Quantitative Easing Policy on Emerging Asia* 17 (Asian Dev. Bank Inst., Working Paper No. 321, 2011), *available at* http://www.adbi.org/working- paper/2011/11/18/4796.impact.us. quantitative.easing.policy.emerging.asia/ (arguing that the controversial affects of quantitative easing by the United States on some emerging markets are significantly exaggerated).

226. *See* Olivier Jeanne, Macroprudential Policies in a Global Perspective 1 (Oct. 2013) (unpublished manuscript) (on file with the Federal Reserve Bank of San Francisco) (highlighting domestic macroprudential policies and prudential capital controls as the primary generator of international spillover).

227. *See* Whelan, *supra* note 72, at 8 (explaining that a single financial institution's decline in the value of assets can lead to other institutions' failure to "roll over" loans which in affect results in systemic defensive actions and jeopardizes the entire interconnected financial system).

228. Moser, *supra* note 49, at 167-68 (providing an example of these defensive actions in the Japanese stock market decline in the early 1990s).

229. *See* Joe Peek & Eric Rosengren, *The International Transmission of Financial Shocks: The Case of Japan*, 87 AM. ECON. REV. 495, 501 (1997); *see also* Joe Peek & Eric Rosengren, *Collateral Damage: Effects of the Japanese Bank Crisis on Real Activity in the United States*, 90 AM. ECON. REV. 30, 30 (2000) (concentrating specifically on the effects of Japanese "loan supply shocks" on the U.S. economy).

230. *See* Ian Goldin & Tiffany Vogel, *Global Governance and Systemic Risk in*

address economic problems through appropriate regulation or timely policy intervention.[231] International finance is particularly prone to global systemic risks arising from government failures because, as discussed earlier, the global financial system relies on vertical integration between the public and financial sectors, and also on horizontal integration between national financial sectors.[232] Unsustainable monetary or fiscal policies are thus immediately transmitted to the local financial system and then spread across the entire global financial network.[233]

In the context of global systemic risk, government failures have historically been associated with sovereign debt or currency crises in developing countries.[234] However, recent events have shown that government failures are no longer the exclusive preserve of unstable political institutions, crony capitalism, or underdeveloped economies. To the contrary, most systemic risks caused by government policy now originate from developed and systemically important countries with diverse economic policies and with highly sophisticated institutional frameworks.[235] Government failures can take many shapes and have different impacts. However, in the context of global systemic risk, sovereign defaults and regulatory failures are particularly relevant. The next section addresses the peculiar political and economic factors that originated these failures.

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the 21st Century: Lessons from the Financial Crisis, 1 GLOBAL POL'Y 4, 7-8 (2010) (discussing deregulation and derivative regulations in the context of government failures to highlight the ease with which firm and individual financial actors circumvented regulations because of misaligned incentives).

231. *See* Barak Orbach, *What Is Government Failure?*, 30 YALE J. ON REG. 44, 45 (2013) (examining the role of government regulation in the free market and the origins and nature of "government failure").

232. *See* Scott, *Reduction of Systemic Risk*, *supra* note 8, at 728, 730, 733 (discussing the importance of both vertical and horizontal integration).

233. *See* Acharya & Yorulmazer, *supra* note 3, at 32 (talking about the ex-ante aspect of system risk).

234. *See* ROSS P. BUCKLEY & DOUGLAS W. ARNER, FROM CRISIS TO CRISIS: THE GLOBAL FINANCIAL SYSTEM AND REGULATORY FAILURES 1, 7-12, 14 (2011) (noting that the IMF has even implemented a system to address this issue whereby it can declare a country's currency a scarce currency, allowing countries to be more financially cautious with at-risk developing countries in an effort to mitigate global systemic risk).

235. *See id.* at 20-21 (discussing capital markets' evolution and innovation whereupon this new globalization has led to the interconnectedness of debt and equity of developed and developing countries).

1. The Time Consistency Problem in Sovereign Debt

Sovereign debt crises are, perhaps, the quintessential example of government failures.[236] The reasons sovereigns choose not to service their debt on time differ widely. In some cases, it is the result of macroeconomic mismanagement or broader political failures, while in others it is the result of prolonged slow growth or adverse economic circumstances.[237] These section focuses on two intertwined problems that the recent Eurozone crisis highlighted: time consistency and excessive indebtedness.[238]

Sovereign debt contracts are agreements in which the debtor performs over a long period of time, often times up to thirty years, after the contract is signed.[239] During the period of time that separates the borrowing decision from the actual servicing of the debt, circumstances in the debtor's country may change. As a consequence, a government previously committed to paying off a loan to satisfy short-term interests may no longer be willing to pay.[240] Because those who bear the costs of funding are not those who enjoy the benefits, sovereign contracts suffer from what economists call the "time consistency" problem.[241]

Sovereign borrowing is, in essence, a redistributive policy across generations. If those who bore the costs of sovereign financing also

236. *See* REINHART & ROGOFF, *supra* note 154 (discussing King Edward III of England defaulting on his debt).

237. *See generally* Mark L.J. Wright, *Theory of Sovereign Debt and Default*, *in* HANDBOOK OF SAFEGUARDING GLOBAL FINANCIAL STABILITY: POLITICAL, SOCIAL, CULTURAL, AND ECONOMIC THEORIES AND MODELS, *supra* note 54, at 187, 192 (analyzing the risks and benefits associated with sovereign debt servicing default and roll-overs).

238. *See* BARRY EICHENGREEN ET AL., PUBLIC DEBTS: NUTS, BOLTS AND WORRIES 16-17, 30 (2011) [hereinafter EICHENGREEN ET AL., PUBLIC DEBTS] (acknowledging the "common pool" problem facing government financing and discussing the "time consistency" problem, which stems from the competing benefits of long term fiscal discipline and short term stability).

239. *See* Stephen J. Choi et al., *Political Risk and Sovereign Debt Contracts* 2 (John M. Olin Law & Econ. Working Paper No. 583, 2011) (explaining the characteristics of sovereign debt, the structure of sovereign bonds, and the political risks those contracts pose).

240. *See id.*

241. *See* Mark Hallerberg & Jürgen von Hagen, *Electoral Institutions, Cabinet Negotiations, and Budget Deficits in the European Union* 209 (Nat'l Bureau of Econ. Research, Working Paper No. 6341, 1997).

enjoyed the benefits of the increased level of credit, they would probably choose a level of sovereign indebtedness that was equal to its social or political benefit. However, the two groups are separated by a generational gap, often up to thirty years; therefore, those who benefit from higher levels of spending tend to undervalue the costs of repayment because it is borne by future generations.[242] Thus, the real risk is that sovereigns might borrow "beyond the point at which the social cost of one additional unit of debt equals the social benefit of an additional unit of debt-financed government expenditure."[243] Surprisingly, it is often the developed and systemically important countries that have the higher levels of sovereign indebtedness.[244] For instance, Italy has a debt-GDP ratio of 132%, Greece of 174%, Belgium of 101%, and France of 92%; compared to 57% in Brazil, 37% in Mexico, and 32% in Colombia.[245]

The political problems of sovereign debt apply to both the borrowing and repaying of debt. At the time of borrowing, the government can be strongly motivated to over-borrow.[246] Aside from the difficulty of reliably calculating the long-term growth prospects of the country to inform the decision to borrow, democratic leaders seeking reelection are motivated by a need to please their electorates. They have a strong political incentive to adopt policies that favor short-term interests rather than long-term sustainability goals. In the end, borrowing is the easiest option.[247]

The same principle applies when repaying the debt. While democratic governments are in principle reliable in fulfilling their predecessor's obligations, they nonetheless have little incentive to assume the political costs attached to it.[248] Because the rescheduling

242. *See* EICHENGREEN ET AL., PUBLIC DEBTS, *supra* note 238, at 16.

243. LEE C. BUCHHEIT ET AL., REVISITING SOVEREIGN BANKRUPTCY 8-9 (2013) (determining that over-borrowing arises from incentives to borrow amounts exceeding social optimization, moral hazards linked to "pressure of an international lender of last resort," and the dilution of existing creditors' claims from lending to countries with higher risk ratings).

244. *See* TRADING ECONOMICS, *supra* note 161 (listing the debt levels of countries).

245. *Id.*

246. *See* Choi et al., *supra* note 239, at 16 (discussing some of the complications countries face when burdened with sovereign debt).

247. Unlike taxing, borrowing allows the government to finance social projects without angering the population.

248. *See* Mark J. Wright, *Sovereign Debt Restructuring: Problems and*

of sovereign debt is seen as a signal of distress by financial markets—which might reduce credit lines in the future or, more importantly, trigger a capital outflow—governments usually default only when the situation is at a point where it is no longer sustainable, thereby exacerbating further the systemic implications of the default.[249]

Sometimes, such behavior is due to the political stigma associated with the acceptance of IMF conditions or other forms of external support.[250] For instance, during the Eurozone crisis, Greece faced severe macroeconomic problems and the likelihood of default on its sovereign debt.[251] Even so, after the European Union and the IMF agreed on a massive €172 billion bailout conditioned on Greece's acceptance of certain austerity measures, due to the negative political stigma surrounding a bailout, Greek Prime Minister George Papandreou threatened to subject the decision of whether to default or repay the debt to a national referendum.[252]

2. Regulatory Failures

In their seminal book on financial crises, Carmen Reinhart and Kenneth Rogoff argue that one of the main causes of regulatory failure is the inability of regulators to understand and regulate the evolution of the financial sector and its macroeconomic dynamics.[253] In the period leading up to the recent crisis, the international

Prospects, 2 HARV. BUS. L. REV. 153, 175 (2012) (explaining the policy implications of national debt restructuring).

249. *See* Anne Krueger, *Should Countries Like Argentina Be Able to Declare Themselves Bankrupt?*, EL PAIS (Jan. 18, 2002), http://www.imf.org/external/np/vc/2002/011802.HTM ("Like a toothache sufferer delaying a visit to the dentist until the last possible moment, governments frequently try to put off the inevitable. The result is that the citizens of the defaulting country experience greater hardship than they need to, and the international community has a tougher job helping pick up the pieces."); *see also* BUCHHEIT ET AL., *supra* note 243, at 8-9 (arguing that default costs play a major role in the sustainability of sovereign debt, lending philosophy, and lending sustainability).

250. *See* BUCHHEIT ET AL., *supra* note 243, at 18-19 (detailing the debt restructuring problem involving holdouts and potential solutions).

251. *See* Peter Spiegel, *How the Euro Was Saved*, FIN. TIMES (May 11, 2014), http://www.ft.com/intl/cms/s/0/f6f4d6b4-ca2e-11e3-ac05-00144feabdc0.html#axzz33etPHDqs.

252. *See id.*

253. *See* REINHART & ROGOFF, *supra* note 154; *see also* Hallerberg & von Hagen, *supra* note 241.

financial system experienced innovations and technological developments that regulators did not understand.[254] The innovations brought increased complexities and the use of obscure, unregulated, and overly complex financial products that created a financial time bomb that ultimately exploded.[255] Perhaps due to a philosophy averse to state intervention or regulatory capture by powerful lobbyists, regulators failed to address the systemic risk implications of the new financial products.[256] They adopted financial models that did not take into account those changes and their impact on systemic stability; they failed to properly understand the process of securitization and its potential to create systemic risk, thereby leaving a large sector of the business of financial intermediation totally unregulated; and they failed to appreciate the linkages between individual financial institutions and the market.[257]

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254. Luiz Carlos Bresser-Pereira, *The Global Financial Crisis and a New Capitalism?* 9 (Levy Econ. Inst., Working Paper No. 592, 2010) (noting that these innovations included the packaging of securities combined with speculation, which led to wealth increases, "fictitious capital," and elevated leverage).

255. *See* Awrey, *supra* note 6, at 275 (commenting on financial innovations that presented risks in "dealer intermediated markets" combined with a lack of advisement by contracting parties and financial fraud as system risk enhancers); Emilios Avgouleas, *The Global Financial Crisis, Behavioural Finance and Financial Regulation: In Search of a New Orthodoxy*, 9 J. CORP. L. STUD. 23, 26 (2009) (noting the unprecedented risks banks took by removing assets from the balance sheets); David G. Tarr, *The Political, Regulatory and Market Failures That Caused the US Financial Crisis* 133-54 (World Bank, Policy Research Working Paper No. 5324, 2010) (highlighting the U.S. financial crisis and the subprime lending that was introduced to encourage wider home ownership as an overly complex financial product, which was an inevitable and disastrous regulatory failure).

256. *See* Bresser-Pereira, *supra* note 254, at 9, 18 (discussing the technological financial product innovations and the causes of systemic risk arising from deregulation of the 1980s "regulatory reform").

257. *See also* FIN. CRISIS INQUIRY COMM'N, THE FINANCIAL CRISIS INQUIRY REPORT 3, 439 (2011) (explaining that bad information is likely the primary culprit of the worst financial crisis since the Great Depression); Tarr, *supra* note 255, at 2-4 (arguing a combination of regulatory failure, market failure, and political failure are to blame for the worst financial crisis since the Great Depression, while emphasizing that the political failures likely bare the most blame). *See generally* FIN. SERVS. AUTH., THE TURNER REVIEW: A REGULATORY RESPONSE TO THE GLOBAL BANKING CRISIS 5, 22 (2009) (providing an example of regulatory failure in the adoption of the overly complicated risk management assessment technique known as "value-at-risk," which provided false assurances to regulators and financial professionals).

Regulatory failures can also arise from the unwillingness or inability of regulators to maintain an adequate level of supervision.[258] This problem is perhaps more acute in developing countries where financial authorities are even more constrained in terms of human and financial resources than they are in developed countries.[259] However, the problem also arises in developed economies.[260] Governments might choose to adopt lax regulations or supervisory policies in the hope that they will attract foreign firms to their markets, or simply to enhance the competitiveness of local firms against foreign ones.[261] In both cases, however, there is a high risk that a national financial crisis triggered by lax or weak financial regulation would transcend national boundaries and spread to other countries.

V. POLICY IMPLICATIONS

Policymakers are continuously confronted with the difficult choice of balancing financial regulation with competing national interests. In a domestic setting the regulatory process is the result of political bargains between different coalitions of depositors, financial institutions, and regulators.[262] Regulating global financial stability,

258. *See* Pierre-Hugues Verdier, *The Political Economy of International Financial Regulation*, 88 IND. L.J. 1405, 1445 (2013) (noting that in some countries, implementing regulatory reform can be challenging as various parties benefit from the financial environment in place).

259. *See id.*

260. *See* SINGER, *supra* note 185, at 60 (describing the pressure applied by foreign regulators to avoid the Japanese government's resistance from adopting global risk weighted capital standards imposed following the Anglo-American Agreement of 1987).

261. *See id.* (providing that when the first Basel Accord was negotiated in the early eighties, Japanese authorities were opposed to adopting more stringent capital requirements, as they understood that the lower capital levels were giving a decisive advantage to their banks against their American and English competitors).

262. *See* Edward J. Malesky, *Interest Group Politics*, *in* HANDBOOK OF SAFEGUARDING GLOBAL FINANCIAL STABILITY: POLITICAL, SOCIAL, CULTURAL, AND ECONOMIC THEORIES AND MODELS, *supra* note 54 at 1, 59-68 (elaborating on the political economy of financial regulation); Gadinis, *The Politics of Competition*, *supra* note 185, at 450 (discussing domestic interest group influences in the regulatory process); *see also* CALOMIRIS & HABER, *supra* note 98, (arguing that the problems plaguing the financial industry are not solely the result of the industry alone, as society and political institutions play a significant role in the instability).

however, is more complicated. First, the tradeoff at the core of the *international* regulatory process not only involves competing private interests, but also a difficult compromise between competing sovereign rights.[263] Second, in the absence of a centralized regulator—and enforcer—cooperation must rely on international regulatory regimes that promote win-win situations and ensure a Pareto-efficient equilibrium, rather than protecting individual Nash-efficient gains.[264] Pareto efficiency, however, is not easy to achieve in global financial markets.[265] This section analyzes and evaluates the policies and legal implications in the regulation of global systemic risk in light of our previous findings.

A. GLOBAL SYSTEMIC RISK AND THE FINANCIAL TRILEMMA

To understand the regulatory tradeoffs involved in the regulation of global systemic risk, it is useful to rely on a broad conceptual framework recently developed by the economist Dirk Schoenmaker: the so-called "financial trilemma."[266]

The financial trilemma posits that it is impossible for states to *simultaneously* achieve three policy objectives: financial integration, national financial sovereignty, and financial stability.[267] First, financial integration refers to the benefits that firms enjoy from

263. Gadinis, *The Politics of Competition*, *supra* note 185, at 450 (providing an in depth analysis of competing domestic constituencies).

264. *See* ERIC A. POSNER & ALAN O. SYKES, ECONOMIC FOUNDATIONS OF INTERNATIONAL LAW 504-05 (2012) (describing Pareto efficient policies as those that enhance the welfare of all states involved compared to policies that exclude the interests of various states); JOEL P. TRACHTMAN, THE ECONOMIC STRUCTURE OF INTERNATIONAL LAW 47 (2008); Jeffrey L. Dunoff & Joel P. Trachtman, *Economic Analysis of International Law*, 24 YALE J. INT'L L. 1, 47 (1999) (noting that economists believe markets are Pareto-efficient based on consumer sovereignty, but when extrapolated to a larger scale, this is not the case); Eric A. Posner, *International Law: A Welfarist Approach*, 73 U. CHI. L. REV. 487, 518–22 (2006) (explaining that the Pareto criterion is a system "where world politics, reflected in international law, will exist only when they make all states better-off").

265. Michael Keen & David Wildasin, *Pareto-Efficient International Taxation*, 94 AM. ECON. REV. 259, 259 (2004).

266. Dirk Schoenmaker, *The Financial Trilemma*, 111 ECON. LETTERS 57, 57 (2011) (developing the trilemma to address the conflicting objectives facing national supervisory authorities in the context of a cross-border banking crisis; it was used as the theoretical basis for the creation of the Banking Union in the European Union at the outset of the recent crisis).

267. *Id.*

participating in a global financial network and the benefits that consumers and sovereigns enjoy from increased availability of credit and competition.[268] Second, when states design and implement domestic policies, they are free to choose their national financial sovereignty interest, irrespective of its impact on global economic growth.[269] A state's desire to protect its financial sovereignty is intuitive. The third objective is the protection of financial stability, particularly the reduction of systemic risk.[270]

Maintaining the status quo only achieves two objectives: financial integration and national sovereignty.[271] However, as discussed in this article, this choice sacrifices global financial stability, as states are exposed to increased risk from their partners' financial systems.[272] If global financial stability becomes a mandatory priority in future global financial systems, states must decide whether to reduce financial integration or national sovereignty.

This choice should not be considered an absolute tradeoff—rather, a broader approach to global finance. In practice, states could choose a global financial system organized as a network where capital is mobile, as it is now, but where nation states have less discretion in regulating their economy. During the policymaking process, states would be required to consider the external impact of their financial policies. Alternatively, states could choose to reduce the level of integration and break some of the interconnectedness that transmits

268. *See* FERGUSON JR. ET AL., *supra* note 18, at 46.

269. *See* Eric A. Posner & Alan O. Sykes, *Efficient Breach of International Law: Optimal Remedies, "Legalized Noncompliance," and Related Issues*, 110 MICH. L. REV. 243, 250 (2011) [hereinafter Posner & Sykes, *Efficient Breach*] (arguing that international law should help in mobilizing domestic political interests favoring Pareto optimal international economic policies).

270. DEP'T OF TREASURY, FINANCIAL REGULATORY REFORM: A NEW FOUNDATION 8 (2009) (noting that regulation is performed in the national context, and without consistent supervision and regulation, financial stress can spread quickly across national boundaries). *See generally* PROGRAM ON INT'L FIN. SYS., SYMPOSIUM REPORT 14 (2009) (discussing issues in defining and combatting systemic risk in the wake of the financial crisis).

271. *See* Dirk Schoenmaker, *The Financial Crisis: Financial Trilemma in Europe*, VOX CEPR'S POLICY PORTAL (Dec. 19, 2009), http://www.voxeu.org/article/financial-crisis-and-europe-s-financial-trilemma (discussing the trilemma and the inability to obtain all three).

272. *See* discussion *infra* Part IV.

systemic risk.[273] This option does not require a complete return to a Bretton Woods System without any capital mobility[274] but simply a reduced level of network interconnectedness through less "host-country control" and ring-fencing, less freedom in fiscal policymaking, or increased regulatory barriers to finance.[275]

The trilemma is not a perfectly modeled and ready-to-use financial theory, as it lacks solid mathematical foundations—especially when measuring financial stability. Nevertheless, it illustrates the underlying tensions between protecting national objectives and maintaining financial stability in global finance. The trilemma provides a fairly stylized picture of the broad conflicts regulators must solve when regulating global systemic risk.

With the trilemma in mind, the next step is to consider whether it is possible or practical to regulate the different sources of systemic risk or prevent its transmission across borders. In doing so, we analyze the role of international law in regulating interconnectedness and trigger events.

B. REGULATING INTERCONNECTEDNESS

One of the key lessons from the global financial crisis is that financial institutions have not fully assessed the risks associated with their interconnectedness with other financial or sovereign entities.[276] Participation in a financial network benefits financial firms, but they often ignore the costs corresponding with such interconnectedness.[277] Thus, they might rely excessively on short-term funding from the repo or money markets to reduce liquidity problems, or hold too much sovereign debt to reduce the amount of first tier capital that

273. *See* PROGRAM ON INT'L FIN. SYS., *supra* note 270, at 14 (describing systemic risk as hard to define, but it is the amount of risk necessary to prevent excessive risk-taking while some amount of risk to encourage an acceptable amount of risk-taking).

274. *See* DANI RODRIK, THE GLOBALIZATION PARADOX: WHY GLOBAL MARKETS, STATES, AND DEMOCRACY CAN'T COEXIST (2012) (implying that some influential authors recommend abolishing capital mobility).

275. *See* Krimminger, *supra* note 206, at 409.

276. BASEL COMM. ON BANKING SUPERVISION, CONSULTATIVE DOCUMENT: SUPERVISORY FRAMEWORK FOR MEASURING AND CONTROLLING LARGE EXPOSURES 2 (2013) [hereinafter BASEL COMM., CONSULTATIVE DOCUMENT].

277. *Id.* (examining contagion as a cost not always taken into account).

must be set aside under the Basel framework.[278] Or, they may simply be overexposed to one single counterparty or a group of interconnected counterparties.[279] In the event of a counterparty default or a systemic shock, network interconnectedness becomes a transmitter that spreads instability across the financial system. Given the systemic risk implications of financial linkages, regulating interconnectedness is a priority.[280]

1. Recent Domestic Regulatory Reforms

Regulation of financial interconnectedness is in its infancy compared to other avenues of reform, such as capital adequacy or supervision.[281] At the outset of the crisis, when the risks of excessive interconnectedness became clear, commentators proposed various solutions. The initial regulatory focus was on taxes,[282] levies,[283] or

278. *See* EUROPEAN BANKING AUTH., EU-WIDE TRANSPARENCY EXERCISE 2013: SUMMARY REPORT 12-14 (2013) (conveying that Basel III, like its predecessors, assigns a zero-risk weight to OECD countries' bond in calculating capital requirements; according to European Central Bank reports, Eurozone banks hold an average of fourteen percent exposure in sovereign bonds, while in certain countries the exposure towards domestic sovereign bonds account for ten percent of the overall portfolio); discussion *supra* Part III.2.B.

279. *See* Nicolas Arregui et al., *Addressing Interconnectedness: Concepts and Prudential Tools* 13 (Int'l Monetary Fund, Working Paper No. WP/13/199, 2013).

280. *See* Anabtawi & Schwarcz, *supra* note 23 at 1355 (discussing the problem of not taking interconnectivity into account when making business decisions); Schwarcz, *Controlling Financial Chaos*, *supra* note 25, at 828 (arguing for regulation to spread the word about potential problems); Scott, *Reduction of Systemic Risk*, *supra* note 8, at 677 (noting reasons the Volcker Rules should reduce systemic risk); Hal S. Scott, *The Next Step in Global Financial Regulation: Global Regulation of Interconnectedness*, 1 GLOBAL POL'Y 332, 332 (2010) [hereinafter Scott, *The Next Step*] (arguing for caps to net exposures).

281. It is important, however, to note that the danger of excessive exposures existed long before the crisis. Indeed, the Basel Committee on Banking Supervision first issued supervisory guidance on large exposures in 1991 in the framework of Basel I. *See* BASEL COMM. ON BANKING SUPERVISION, MEASURING AND CONTROLLING LARGE CREDIT EXPOSURES 1 (1991); *see also* BASEL COMM. ON BANKING SUPERVISION, CORE PRINCIPLES FOR EFFECTIVE BANKING SUPERVISION 12 (2012) (remarking that Core Principle 19 of the Core Principles for Effective Banking Supervision recommends that "national supervisor determine that banks have adequate policies and processes to identify, measure, evaluate, monitor, report and control or mitigate concentrations of risk on a timely basis," and that national supervisors set "prudential limits to restrict bank exposures to single counterparties or group of connected counterparties").

282. *See* Sheri M. Markose, *Systemic Risk from Global Financial Derivatives:*

surcharges[284] as the main mechanisms to discourage banks from becoming too interconnected to fail. Like other similar proposals—such as Financial Transaction Taxes or Financial Activity Taxes[285]—none of them were adopted. Regulators intervened with two other strategies instead: reduce interconnectedness or break interconnectedness.

The first strategy was to *reduce* interconnectedness by setting mandatory exposure limits on financial intermediaries.[286] The BCBS has done this since 1991, but since the crisis, it has substantially revised its framework. The new "Supervisory Framework for Measuring and Controlling Large Exposures"[287] requires international banks to communicate to their national regulators any exposure towards counterparties equal to or greater than ten percent of the bank's eligible capital.[288] Moreover, the value of a firm's exposure towards counterparties must not exceed twenty-five percent of the Tier 1 capital base at any time.[289] The value is reduced to

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A Network Analysis of Contagion and Its Mitigation with Super-Spreader Tax 8 (Int'l Monetary Fund, Working Paper No. WP/12/282, 2012) (proposing a "super-spreader" tax based on centrality analysis to raise a fund that would mitigate potential "socialized losses from the failure of highly connected banks").

283. *See* Jorge A. Chan-Lau, *Regulatory Capital Charges for Too-Connected-to-Fail Institutions: A Practical Proposal* 3-5 (Int'l Monetary Fund, Working Paper No. WP/10/98, 2010) (recommending the imposition of a bank levy proportionate to the direct exposure between financial institutions).

284. *See* Marco A. Espinosa-Vega & Juan Solé, *Cross-Border Financial Surveillance: A Network Perspective* 21 (Int'l Monetary Fund, Working Paper No. WP/10/105, 2010) (recommending the imposition of capital surcharges that tackle exposures).

285. *See* Kern Alexander, *International Regulatory Reform and Financial Taxes*, 13 J. OF INT'L ECON. L. 893, 893, 897-900 (2010) (examining the effectiveness of Financial Transaction Taxes); Ross P. Buckley & Gill North, *A Financial Transactions Tax: Inefficient or Needed Systemic Reform?*, 43 GEO. J. INT'L L. 745, 746 (2012) (explaining that the United Kingdom, France, and Germany have already imposed levies on their financial sector to recoup bailout funds).

286. *See* Scott, *The Next Step*, *supra* note 280, at 332 (suggesting that regulating global interconnectedness by imposing "position limits on net exposures (including all lending and derivatives) of financial institutions to each other").

287. *See* BASEL COMM. ON BANKING SUPERVISION, STANDARDS: SUPERVISORY FRAMEWORK FOR MEASURING AND CONTROLLING LARGE EXPOSURES 1 (2014) [hereinafter BASEL COMM., STANDARDS].

288. *See id.*

289. The level of exposure was subject to some debate. In its 2013 Consultative Document, the Basel Committee proposed an exposure limit lower than the current

fifteen percent if the counterparty is a Global Systemically Important Bank.[290]

Under this framework, whenever a group of counterparties are so interconnected with each other that the failure of one would cause the failure of all the others, the exposure limits must be calculated with reference to the group instead of each individual institution.[291] This standard is complemented by the newly issued "Capital Requirement for Bank Exposures to Central Counterparties,"[292] which sets various rules regarding the bilateral exposures between a bank and central counterparties or their members.

Limiting large exposures reduces the loss a bank could potentially face in the event of a sudden failure of a counterparty.[293] The limits also prevent the creation of a financial system in which firms are dangerously exposed to only a few core nodes.[294] One of the drawbacks of this strategy, however, is that it cannot tackle common shocks. In the event of a market-wide crisis, a sudden reduction in prices across different segments would necessarily imply a proportional reduction in the value of the balance sheet.[295]

The second strategy is to *break* the interconnectedness between two institutions by creating an intermediary that clears their bilateral exposures and absorbs potential shocks in the event of a counterparty

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25% of Tier 1 capital base, although it didn't specify the actual level. However, the limit remained at 25% in the final document. According to the 2013 Consultative Document, actual practices range from 10% to 50%, with the majority of jurisdictions applying a 25% limit. *See* BASEL COMM., CONSULTATIVE DOCUMENT, *supra* note 276, at 7.

290. *See id.* at 27.

291. *See* BASEL COMM., STANDARDS, *supra* note 287, at 4 (explaining that if banks *A*, *B*, and *C* are considered connected counterparties, the exposure limit that Bank *H* must not exceed towards them will not be 75% of the bank capital (25% for each), but only 25% in total).

292. *See* BASEL COMM. ON BANKING SUPERVISION, CAPITAL REQUIREMENTS FOR BANK EXPOSURES TO CENTRAL COUNTERPARTIES 16 (2012) [hereinafter BASEL COMM., REQUIREMENTS] (discussing clearing member exposure to CCPs).

293. *See* BASEL COMM., STANDARDS, *supra* note 287, at 4.

294. *See* Press Release, Bank for Int'l Settlements, Final Standard for Measuring and Controlling Large Exposures Published by the Basel Committee, Bank for International Settlements (Apr. 15, 2014), *available at* http://www.bis.org/press/p140415.htm (making a system where the maximum possible loss for a bank is small enough that it would not endanger other banks).

295. *See* BASEL COMM., REQUIREMENTS, *supra* note 287, at 3.

default.[296] This approach has been used recently in the context of securities and derivatives trading with the creation of Central Counterparty Clearinghouses ("CCPs").[297] In derivatives trading, counterparty defaults are particularly troublesome because it is difficult for each firm to monitor and value their counterparty's exposure toward other market participants. Until the financial crisis, most derivatives were traded bilaterally over the counter without any institutional trading platform.[298] In the absence of a centralized clearing entity, a firm could not control the risk it was taking when entering into a bilateral transaction. Consequently, in the event of a counterparty's default, the firm was immediately exposed to the contagion effect that would eventually reverberate across the whole system.

Not surprisingly, the creation of CCPs was among the first measures adopted globally to address systemic risk.[299] CCPs operate by stepping between two members and assuming the legal role of a counterparty for each of them in their bilateral transaction, thereby assuring that in the event of one's default, the other would not be impacted.[300] The philosophy of a CCP is not to limit an individual firm's exposure toward other counterparties, but rather to concentrate the risk in one institution only and thus break the domino effect in the event of contagion.[301]

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296. *See id.*

297. Allen, *supra* note 35, at 1086 (explaining the benefits of CCPs); *see also* Judge, *supra* note 35, at 683 (summarizing the reason behind the popularity of synthetic collaterized debt obligations); Scott, *Reduction of Systemic Risk*, *supra* note 8, at 687.

298. *See* Steven L. Schwarcz, *Regulating Complexity in Financial Markets*, 87 WASH. U. L. REV. 211, 235-36 (2009) (stating that the interconnectedness in complex modern financial markets aggravates failures).

299. *See* LEADERS' STATEMENT: THE PITTSBURGH SUMMIT 23 (2009) (recounting that the G-20 requested the creation of the CCPs at Pittsburgh in 2009); Edward F. Greene & Joshua L. Boehm, *The Limits of "Name-and-Shame" in International Financial Regulations*, 97 CORNELL L. REV. 1083, 1129 (2012) (noting that immediately afterwards, the United States and European Union started to work on creating CCPs and trade repositories).

300. The non-defaulting counterparty receives the payment directly from the CCP to minimize its risk, the CCP requires collateral deposit or margins by its members.

301. *See supra* note 181 and accompanying text (discussing the domino model).

Regulators were initially skeptical of CCPs. Some commentators pointed out that by concentrating counterparty risk in one single institution, CCPs would create a monstrous systemic risk problem in the event of that institution's insolvency.[302] Indeed, rather than containing the negative spillovers of a counterparty's default, CCPs would themselves become too big to fail and would necessitate government intervention to contain systemic risk.[303] However, by concentrating the systemic risk of a counterparty's default in the CCP alone, regulators would be able to focus their intervention on only one institution that could be firewalled and more easily isolated, rather than having to intervene with multiple defaulting institutions. Furthermore, because the CCP acts as a central node to multiple firms, it can monitor and evaluate the exposure and credit worthiness of its members at all times.[304] By doing so, it also reduces the information asymmetry problems that are at the origin of systemic risk.[305]

2. Problems in Regulating International Interconnectedness

The strategies above strike a delicate balance between maximizing the benefits of a network system and minimizing the risks that tight interdependencies pose to financial stability. However, the global regulatory framework for international interconnectedness presents some clear limits.

First, the BCBS standards on large exposures do not deal with sovereign debt exposures, which were one of the fundamental causes of the financial crisis in Europe.[306] Similarly, Basel III reforms leave completely untouched the risk-weighting methodology for

302. Allen, *supra* note 35. The Bank of England also pointed out the systemic risks of CCPs. However, it argued these could be reduced by proper monitoring and surveillance. *See* Amandeep Rehlon & Dan Dixon, *Central Counterparties: What Are They, Why Do They Matter and How Does the Bank Supervise Them?*, 53 BANK OF ENGLAND Q. BULL. 99, 147, 152-53 (2013) (discussing the framework for supervision in the United Kingdom).

303. Alexandre Lazarow, *Lessons from International Central Counterparties: Benchmarking and Analysis* 13 (Bank of Can., Discussion Paper No. 2011-4, 2011) (noting that over the last forty years, three CCPs have gone bankrupt: Paris in 1973, Kuala Lumpur in 1983, and Hong Kong in 1987).

304. *See* Rehlon & Dixon, *supra* note 302, at 153 (raising concerns of micromanagement as well as for the financial system as a whole).

305. *See* Allen, *supra* note 35.

306. *See* BASEL COMM., STANDARDS, *supra* note 287.

calculating capital ratios with regard to sovereign debt.[307] Consequently, the global financial system is still largely exposed to the global systemic risk from sovereign default as well as from the sovereign-bank vicious link.[308]

Second, presently there is no global framework for derivatives transactions. Because the derivatives market is global, it would require support by common clearing or supervisory infrastructures. Director of the Committee on Capital Markets Regulation, Hal Scott, has suggested the creation of an international body to oversee the process of: (1) "collecting, storing and monitoring information about positions on a timely basis; (2) setting parameters for valuing positions and collateral (not easy in the case of disrupted markets); and (3) devising methods for determining net exposures in light of hedges."[309] Similarly, the G-20 at Pittsburgh recommended that "standardized OTC derivative contracts should be traded on exchanges or electronic trading platforms, where appropriate, and cleared through central counterparties, . . . [that] OTC derivative contracts should be reported to trade repositories . . . [and that] non-centrally cleared contracts should be subject to higher capital requirements."[310]

Establishing those global infrastructures, however, requires a great deal of regulatory coordination and deep political trust to share confidential data—neither of which currently exists.[311] While the BCBS standard on large exposures mostly harmonized national regulatory frameworks, it did not create a centralized institution that performs all the coordinating and supervisory functions required in a global financial market.[312]

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307. *See* Bank for Int'l Settlements, *Low Rates Spur Credit Markets as Banks Lose Ground*, BIS Q. REV., Dec. 2013, at 1, 10 (remarking that the Basel III reforms simply incorporated the Basel II framework on exposures to sovereigns); *see also* GLEESON, INTERNATIONAL REGULATION, *supra* note 157 (providing an overview of the rules under Basel II).

308. *See* DEMEKAS ET AL., *supra* note 82, at 25 (examining the vicious link between banks and sovereigns).

309. Scott, *Reduction of Systemic Risk*, *supra* note 8, at 332-33.

310. LEADERS' STATEMENT: THE PITTSBURGH SUMMIT, *supra* note 299, at 9.

311. *See* WORLD BANK GRP., GLOBAL INFRASTRUCTURE FACILITY: UPDATE FOR G20 3 (2014) (noting the need for partnerships with governments, nonprofits, international organizations, and businesses to establish the necessary infrastructure).

312. *See* Duncan E. Alford, *Core Principles for Effective Banking Supervision:*

Furthermore, while the creation of proper infrastructure for derivatives trading is progressing rapidly at the national level,[313] the same is not occurring with *global* CCPs and *global* trade repositories. There are dangerous discrepancies between the E.U. and the U.S. regimes in terms of what constitutes a derivative transaction, reporting requirements, margin requirements, and the supervisory framework.[314] There is also currently only one global trade repository for derivatives transactions.[315] Creating a truly common monitoring framework for derivatives is of fundamental importance to the containment of global systemic risk.[316] Given the global scope of the derivatives market, national central banks and financial authorities cannot rely only on domestic data to control the exposure of their financial institutions.[317] A strong degree of cooperation is therefore necessary between national authorities, who need to share data on a daily basis.[318] However, as recently pointed out by Federal Reserve

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An Enforceable International Financial Standard, 28 B.C. INT'L & COMP. L. REV. 237, 240-41 (2005) (discussing the Basel Committee's attempt to solve this problem by issuing the "Core Principles" which sought to meet the regulatory needs of the global market).

313. *See* Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 723, 124 Stat. 1376 (2010) (stating that Title VII of the Dodd-Frank Act requires financial institutions to report date on swap and securities transactions to trade repositories regulated by the Commodity Futures Trading or Securities and Exchange Commission, respectively); *see also* Council Regulation 648/2012, 2012 O.J. (L 201) 1 (describing the European Securities and Market Authority, which is in charge of securities in the European Union, which issued a regulatory framework for derivatives and securities trading in 2013).

314. *See* Greene & Boehm, *supra* note 299, at 1127-29 (analyzing the issues that arise due to differing domestic policies for international markets).

315. *See Global Trade Repository (GTR)*, DEPOSITORY TRUST & CLEARING CORP., http://www.dtcc.com/data-and-repository-services/global-trade-repository/ (last visited Apr. 18, 2015) (observing that the Depository Trust & Clearing Corporation Global Trade Repository is the only active global trade repository).

316. *See* William C. Dudley, Remarks at the Swiss National Bank-International Monetary Fund Conference: What Does Interconnectedness Imply for Macroeconomic and Financial Cooperation? 3 (May 8, 2012) (asserting that global standards for financial market infrastructure are necessary for a stable system of CCPs).

317. *See* TIMOTHY EDMONDS, THE INDEPENDENT COMMISSION ON BANKING: THE VICKERS REPORT 3 (2013) (discussing the United Kingdom's difficulties relying solely on domestic data).

318. *See* Dudley, *supra* note 316, at 1 (conveying a strong public interest in ensuring that global economic integration is supported by coordinated national macroeconomic policies); *see also* Ulrich Körner, *Enhancing Financial Stability –*

Chair Janet Yellen, "[unfortunately] there is still no guarantee, due to confidentiality concerns and legal barriers to data sharing, that the data reported into these trade repositories will ultimately be accessible to all of the regulators who require the data to obtain a holistic view of the derivatives market."[319]

Finally, none of the regulatory reforms take into consideration the systemic risk potential of "systemically important jurisdictions."[320] Because a few jurisdictions dominate trading in particular areas, a concentration of exposures towards one of these jurisdictions would make any macroeconomic problem or regulatory failure occurring there a source of global systemic risk.

3. The Need for a Pareto-efficient Regulatory Framework

As there is no common regulatory framework for global interconnectedness, states are left alone to cope with the dangers of global systemic risk. Historically, states have resorted to three main strategies to insulate themselves against external instability.[321] First, they might impose controls on the inflow of capital.[322] These are essentially regulatory barriers aimed at discouraging or impeding foreign financial assets from entering the country.[323] Capital inflow controls can take many forms and be used for different purposes.[324]

A Global Bank's Perspective, *in* STABILITY OF THE FINANCIAL SYSTEM, *supra* note 90, at 407, 416-18.

319. Yellen, *supra* note 34, at 20.

320. *See* DEMEKAS ET AL., *supra* note 82, at 17 (referring to a list of jurisdictions with systemically important financial sectors).

321. *See* Ostry et al., *Capital Inflows*, *supra* note 219, at 5 (describing the three main strategies: imposing controls on capital inflow, adopting ring-fencing, and subsidiarization).

322. *See id.* (contending that is difficult to ascertain whether capital controls work in practice); *see also* Nicolas E. Magud et al., *Capital Inflows, Exchange Rate Flexibility, and Credit Blooms* 3 (Int'l Monetary Fund, Working Paper No. WP/12/41, 2012) (contending that during periods of extensive capital inflow, domestic credit grows more rapidly); Jonathan D. Ostry et al., *Managing Capital Inflows: What Tools to Use?* 6 (Int'l Monetary Fund, Staff Discussion Paper No. SDN/11/06, 2011) (discussing how capital inflow surges require appropriate domestic policy responses in order to avoid economic overheating).

323. *See The Case for Capital Controls*, ROBERT NIELSEN (March 16, 2014), https://robertnielsen21.wordpress.com/2014/03/16/thecaseforcapitalcontrols/ (arguing that there has been a shift in economist perception of capital controls).

324. *See* Christopher J. Neely, *An Introduction to Capital Controls*, 81 FED. RES. BANK ST. LOUIS 13, 15-17 (1999) (explaining that capital controls can take

In the context of systemic risk reduction, states have used capital inflow controls to prevent the creation of asset bubbles, control inflation, maintain monetary stability, or as macroprudential policy tools.[325]

The second strategy has been to adopt "ring-fencing" techniques to prevent foreign firms from moving their capital out of the country.[326] Ring-fencing, or capital outflow controls, is most commonly used in the context of cross-border banking issues.[327] It legally separates the cross-border bank into two completely independent entities, each under the control of the local authority.[328]

The third strategy is "subsidiarization."[329] This involves host authorities only allowing foreign firms to establish operations in their

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the form of taxes, price or quantity controls, or prohibitions on international trade in assets).

325. *See* Ostry et al., *Capital Inflows*, *supra* note 219, at 4 (analyzing various responses to the dangers of capital inflows to developing and emerging market countries); *see also* Ross P. Buckley, *The Role of Capital Controls*, 11 BOND L. REV. 231, 231 (1999) (examining Chile's response to dangers of capital inflows in the 1990s).

326. *See generally* EDMONDS, *supra* note 317, at 4 (referring to the Vickers Commission's responses on the use of the "fence").

327. *See id.* (looking at ring-fencing in the context of cross-border financial crises); Alison Lui, *Retail Ring-Fencing of Banks and Its Implications*, 13 J. BANKING REG. 336 (2012); Eugenio Cerutti et al., *Bankers Without Borders? Implications of Ring-Fencing for European Cross-Border Banks* 6 (Int'l Monetary Fund, Working Paper No. WP/10/247, 2010) [hereinafter Cerutti et al., *Bankers Without Borders*] (discussing three different types of ring fencing: partial ring-fencing where only the excess profits of subsidiaries, but not their excess capital buffers can be re-allocated within a group; near-complete ring-fencing where only transfers from the parent to a subsidiary are allowed; and full ring-fencing where no intra-group transfers are allowed); *see also* Ross P. Buckley & Sarala M. Fitzgerald, *An Assessment of Malaysia's Response to the IMF During the Asian Economic Crisis*, 2004 SING. J. LEGAL STUD. 96, 97 (claiming that one of the major lessons from the most recent financial crisis is that adequate domestic prudential regulation must precede financial liberation).

328. COMM. ON BANKING REG. & SUPERVISORY PRACTICES, REPORT TO THE GOVERNORS ON THE SUPERVISION OF BANKS' FOREIGN ESTABLISHMENTS 1-5 (1975) (describing the separation in supervision but the need for cooperation between host and home countries).

329. *See* MARKUS BRUNNERMEIER ET AL., BANKS AND CROSS-BORDER POLICY CHALLENGES 13 (2012); D'Hulster, *supra* note 197, at 24-26 ("Under the subsidiarization scheme, international banks are required to convert their foreign branches and business lines into autonomous, stand-alone subsidiaries subject to the regulation and supervision of each host country.").

jurisdiction through subsidiaries, which are subject to local rules and supervision.[330] Unlike ring-fencing, this technique applies before a crisis occurs as a precautionary strategy.[331] By preventing cross-border financial institutions from operating local branches, it allows host regulators to monitor and regulate foreign banks and it prevents intrabank capital mobility of the kind discussed previously.

All three strategies are extremely effective at insulating domestic financial systems from global systemic risk. However, they are extremely inefficient from a global or Pareto standpoint.[332] By focusing on the stability of individual countries rather than global stability, they promote a Nash-efficient equilibrium in which national gains equate to the losses of another state or investor.[333] Indeed, what capital control, ring-fencing, and subsidiarization achieve is a Balkanization of the global financial system into different national financial systems—a situation that drastically reduces the economic benefits of financial integration.[334] From the perspective of a foreign investor, capitol controls reduce free capital mobility and the freedom of investment, which in various instances is protected under international law by international investment or trade agreements.[335]

330. *See id.* at 37.

331. *Id.* at 3.

332. *See* ALISTAIR MILNE, THE CONTROL AND MANAGEMENT OF INTERNATIONAL CAPITAL FLOWS: A REVIEW OF THE LITERATURE 11 (2014) (detailing the difficulties that can arise, including the potential for trade wars between countries); Benjamin Hermalin et al., *Risk to Lenders and Borrowers in International Capital Markets*, *in* INTERNATIONAL CAPITAL FLOWS 360, 364 (Martin Feldstein ed., 1999) (describing a framework for understanding the risk to borrowers and lenders in international capital flows); Scott, *Reduction of Systemic Risk*, *supra* note 8, at 679 (discussing the role of capital requirements as the chief measure to reduce risk).

333. *See* CHWIEROTH, *supra* note 123, at 62 (discussing early views on the relationship between capital flows and interest rate differentials).

334. *But see* Avinash Persaud, *The Locus of Financial Regulation: Home Versus Host*, 86 INT'L AFF. 637, 646 (2010) (discussing the benefits of more liberal capitol flows); Pistor, *supra* note 220, at 16 (arguing for more host country control).

335. *See* Persaud, *supra* note 334, at 640 (examining the issues in the home versus host country regulation debate).

C. THE LIMITED ROLE OF INTERNATIONAL LAW IN REGULATING DOMESTIC POLICIES

The second possible strategy to contain global instability is to address the underlying mechanisms at the origin of global systemic risk—the trigger events that spread contagion across the system.[336] Because global systemic risk is the result of domestic policies, reducing instability necessitates reducing domestic policy space.[337] This can only be achieved if states voluntarily cooperate to address the internal political economic factors that drive their behaviors.[338] However, this will not always be possible or advisable.[339] This section examines the potential for coordination on domestic policies.

1. Government Failures

Of the two issues examined in Part IV, government failures are potentially the easiest to address through international cooperation. BCBS regulation and other international financial standard setters can be seen as attempts to prevent such failures. The very first instruments issued by the BCBS on supervisory coordination attempted to create a minimum standard of supervision that would reduce dangerous policy discrepancies between national authorities in the supervision of cross-border banks.[340] The Basel Accords were also intended to level the playing field for capital regulation and therefore reduce the systemic risk implications of a bank collapse.[341]

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336. *See* Moser, *supra* note 49, at 158 (conveying the danger of failing to apply appropriate policy measures against contagion mechanisms).

337. *See id.* at 177 (describing, as an example, Russia's financial crisis in 1998).

338. *See id.* at 168 (discussing the behavior exhibited during Argentina's financial crisis which led to a contraction in Uruguay).

339. *See, e.g.*, Persaud, *supra* note 334, at 644 (analyzing the difficulties that can arise with international coordination of regulation, particularly when only a few nations adopt data standards that are widely applicable and other nations using self-beneficial methods).

340. *See* COMM. ON BANKING REG. & SUPERVISORY PRACTICES, *supra* note 328, at 1 (recounting the Basel Concordat of 1975 and its subsequent amendments).

341. *See* Sandra Rutova & Tim Volkheimer, *Revisiting the Basel Accords: Lessons Learned from the Credit Crisis*, 19 U. MIAMI BUS. L. REV. 83, 85 (2011) (recounting that the primary aim of Basel I was to stabilize the international banking system by removing competitive advantages); Ethan B. Kapstein, *Resolving the Regulator's Dilemma: International Coordination of Banking*

When it comes to sovereign debt, the time consistency problem can be addressed by various means. Domestic legislation can place limits on the amount of external indebtedness.[342] Because ruling governments often over-borrow, imposing such limits through a constitution or a special statute is advisable.[343] For example, E.U.'s Stability and Growth Pact[344] and its subsequent amendments under the Euro Plus Pact[345] in 2011 set a three percent limit in the government budget deficit-GDP ratio of each E.U. member, beyond which the members are subject to discipline.[346] Another potential mechanism is to transfer external borrowing policy decision-making to an independent authority in order to protect borrowing decisions from political interference.[347]

Regulation, 43 INT'L ORG. 323, 339 (1989) (setting forth the Basel Accord's four notable effects upon financial regulations of the time period: "a common definition of capital, . . . adoption of a risk-asset system[,] the inclusion of all off-balance-sheet commitments, . . . and the calculation of specific capital/asset ratios").

342. *See generally* DEP'T OF THE TREASURY, DEBT LIMIT: MYTH V. FACT (2011) (describing the U.S. Department of the Treasury as a domestic institution capable of placing limits on the amount of external indebtedness); *Client Alert: New Bank Indonesia Regulation Imposes Significant Limitations on Foreign Borrowings by Indonesian Companies*, LATHAM & WATKINS 1 (Nov. 11, 2014), *available at* http://www.lw.com/thoughtLeadership/LW-new-bank-indonesia-regulations-imposes-limitations-on-foreign-borrowings (observing the Indonesian efforts to place limits on the amount of external indebtedness).

343. *See* EICHENGREEN ET AL., PUBLIC DEBTS, *supra* note 238, at 21 (describing different constitutional limits which capable of addressing government over-borrowing).

344. *See* Waltraud Schelkle, *EU Fiscal Governance: Hard Law in the Shadow of Soft Law?*, 13 COLUM. J. EUR. L. 705, 706 (2007) (referring to critics that argue that the revisions to the Growth Pact in March 2005 weakened its fiscal surveillance); *see also* Jean-Victor Louis, *The Review of the Stability and Growth Pact*, 43 COMMON MKT. L. REV. 85, 100 (2006) (discussing the purpose and history of the European Union's Growth and Stability Pact).

345. *See* Augustin Fuerea, *The European Mechanism for Financial Stability and the Euro-Plus Pact*, 19 LEX ET SCIENTIA INT'L J. 32, 34 (2012) (discussing the measure as an effort by European leaders to overcome the 2008 financial crisis).

346. *See id.* at 38. However, the E.U. legislation does not tackle external indebtedness as such. *See* Jacques Delors, *JCMS 50th Anniversary Lecture Economic Governance in the European Union: Past, Present and Future*, 51 J. COMMON MARKET STUD. 169 (2013); Fabian Amtenbrink & Jakob de Haan, *Economic Governance in the European Union: Fiscal Policy Discipline Versus Flexibility*, 40 COMMON MKT. L. REV. 1075 (2003).

347. *See* Luis Jácome & Tommaso Mancini-Griffoli, *A Broader Mandate*, 51 FIN. & DEV. 47, 47-48 (2014) (looking at the importance of separating financial decisions from self-interested political intervention and the success that central

The real question when it comes to the global financial system, however, is how to promote Pareto-efficient coordination. The answer lies in the political economy dynamics of government policies.[348] Starting from Putnam's two-level game,[349] political science, legal, and economic literature has analyzed the mechanisms that lead to adherence and compliance with international norms. The same analyses could be applied to government failures in the international context. From a political economy viewpoint, government failures arise from the imbalance of power between lobby groups, some of which oppose long-term reforms that they consider detrimental to their interests.[350] The stronger group in capital adequacy regulation is primarily made of banks, which want to retain their competitiveness, while the stronger group in sovereign debt matters are current government officials who want to please their electorate.[351]

In a closed economy in which external influences are absent, regulators are subject to regulatory capture from these groups and are unable to promote reforms that will guarantee the long-term interests of their country.[352] Domestic interest groups that support structural

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bank independence has had in preserving low inflation).

348. Lawrence G. Sager, *Pareto Superiority, Consent, and Justice*, 8 HOFSTRA L. REV. 913, 914 (1980) (explaining that a Pareto efficient outcome exists when at least one government is better off and no government is worse off).

349. Robert D. Putnam, *Diplomacy and Domestic Politics: The Logic of Two-Level Games*, 42 INT'L ORG. 427, 433-34 (1988) (summarizing the "two-level game" as involving a national and international level, both of which are designed to satisfy domestic pressures, an important concept in the current political structure of sovereign states).

350. *See* Jan Fidrmuc & Abdul G. Noury, Interest Groups, Stakeholders, and the Distribution of Benefits and Costs of Reform 5 (Aug. 2003) (unpublished manuscript) (on file with G.D.N. Global Research Project) (describing the two motivations inherent to organized interest groups).

351. *See* Ricardo Correa & Horacio Sapriza, *Sovereign Debt Crises* 6 (Bd. of Governors of the Fed. Reserve, International Finance Discussion Paper No. 1104, 2014), *available at* http://www.federalreserve.gov/pubs/ifdp/2014/1104/ifdp1104.pdf (discussing the recent European crisis as important determinants of sovereign debt events); *Capital Guidelines and Adequacy*, FED. RESERVE BANK, *available at* http://www.federalreserve.gov/bankinforeg/topics/capital.htm (last updated Apr. 8, 2015) ("Capital regulation is particularly important because deposit insurance and other elements of the federal safety net provide banks with an incentive to increase their leverage beyond what the market—in the absence of depositor protection—would permit.").

352. *See* Michael A. Livermore & Richard L. Revesz, *Regulatory Review,*

regulatory reforms—such as younger generations or depositors and taxpayers—are less visible or more dispersed and therefore less well-represented in the process of regulatory design.[353] In an open economy, however, domestic groups favoring long-term and globally-efficient reforms are supported by foreign interest groups—mainly states and investors or even international organizations—that similarly have an interest in their partner countries having a stable economy.[354] Foreign interest groups, however, cannot exert their influence in the domestic political process.[355] In this situation, international law plays an important role in pairing domestic and foreign interest groups to create a more powerful lobby group favoring globally Pareto-efficient reform.[356]

The power of global coalitions is already very visible, especially when it comes to financial standards. To offset local interests opposing prudential standards, foreign interest groups act through two main channels.[357] First, financial markets exert pressure on local governments through reduced ratings or by threatening to move their capital elsewhere.[358] Second, international financial organizations

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Capture, and Agency Inaction, 101 GEO. L.J. 1337, 1340 (2013) (linking the threat of capture with the perceived need to increase presidential authority).

353. *See, e.g.*, Christopher Matthews, *Are Banks Bluffing About the Danger of Banking Regulation?*, TIME (Mar. 14, 2013), http://business.time.com/2013/03/14/bookwallstreetsbiggestandmostdangerousuntruth/print/ (noting that Wall Street has effectively convinced politicians in Washington, D.C. to not raise equity requirements from the seven percent agreed to by 2019 in Basel III to twenty percent to thirty percent).

354. *See* DEP'T OF COMMERCE, FOREIGN DIRECT INVESTMENT IN THE UNITED STATES 1 (2013) (noting that the United States has been successful in attracting foreign investors because of its stable economy).

355. *See* D'Hulster, *supra* note 197, at 15-16 (discussing the difficulties that non-host country nations and organizations can have trying to affect policies within the host country due to a lack of incentive for the host country to respond).

356. *See* Posner & Sykes, *Efficient Breach*, *supra* note 269, at 247 (referring to the positive role of international law in mobilizing domestic interest); Joel P. Trachtman, *International Law and Domestic Political Coalitions: The Grand Theory of Compliance with International Law*, 11 CHI. J. INT'L L. 127, 134 (2010) (explaining how political coalitions are formed in the international arena with the support of international law).

357. Arthur MacEwan, *The IMF and Argentina's Spiraling Crisis*, FOREIGN POLICY IN FOCUS (Sept. 1, 2001), http://fpif.org/the_imf_and_argentinas_spiraling_crisis/.

358. *See* William A. Niskanen, *Capital Mobility, Inflation, and Harmonization*, 17 CATO J. 323, 324 (1998) (contending that the increased mobility of capital

exert institutional pressure through some of the various mechanisms of supervision[359] or through lending conditionality.[360]

A similar result could also be achieved with sovereign debt. International agreements on sovereign debt[361] could contain provisions that mandate a certain domestic regulatory framework, such as the ones we have described. Before allowing investors to buy sovereign bonds from a foreign country, the investors' parent authorities could ensure the host country had such a framework.[362] The IMF could also require the adoption of such legislative reforms under its conditionality package.[363] Finally, rating agencies could factor in those mechanisms when evaluating sovereign credit

limits the ability of governments to impose costs on the owners of capital); *id.* (describing, as an example, the United States' influence over the IMF's monetary policies, specifically, its negative impact on Argentina).

359. *See* INTERNATIONAL MONETARY AND FINANCIAL LAW: THE GLOBAL CRISIS 5 (Mario Giovanoli & Diego Devos eds., 2010) (observing that the IMF-World Bank Financial Sector Assessment Programme is the most prominent example of this practice).

360. *See* Chris Brummer, *How International Financial Law Works (And How It Doesn't)*, 99 GEO L.J. 257, 310 (2011) [hereinafter Brummer, *International Financial Law*] (describing the conditional requirements imposed by IMF and World Bank loans); *see also* BRUMMER, SOFT LAW, *supra* note 15, at 67-69 (discussing monitoring as a condition to lending); Chris Brummer, *Why Soft Law Dominates International Finance—And Not Trade*, 13 J. INT'L ECON. L. 623, 640 (2010) (discussing institutional sanctions such as not lending again if a borrower fails to pay back the initial loan or making extensions contingent on complying with set standards).

361. For example, most International Investment Agreements covering portfolio investment.

362. At the outset, it is important to remember that host countries are already subject to a rather stringent regulatory framework through the adoption of bilateral investment treaties. However, these instruments are, in our view, unsuited to regulate financial matters. First of all, they apply a regulatory framework that has been designed to protect the interests of FDI investors rather than those of portfolio investors. Indeed, the regulatory platform for international investment grew out of the customary international law on the treatment of aliens and it still relies on vague standards of treatments and an ambiguous jurisprudence that, while rightly addressing the long-term problems of Greenfield Investment, is certainly not suited to the complexity of international finance.

363. Irving S. Friedman, *Private Bank Conditionality: Comparison with the IMF and the World Bank*, *in* IMF: CONDITIONALITY 109, 113 (John Williamson ed., 1983) (describing the power of the IMF over member states through the IMF Articles).

worthiness by refusing AAA status to sovereign bonds from a state that did not have in place such a mechanism of control.[364]

2. Asymmetries

Asymmetries in regulations and policies have been a source of global systemic risk since the Herstatt Bank collapse.[365] However, they are not impossible to resolve. The history of finance shows that, under the right conditions, asymmetries can be resolved by focusing on common incentives and, eventually, by exerting enough pressure on non-complying states.[366] The clearest example is Basel I, which was imposed on a reluctant Japan by threatening to exclude Japanese firms from the U.S. and European markets.[367]

In the context of cross-border bank resolution, various proposals have been put in place to prevent diverging incentives from derailing an optimal intervention on the failing bank.[368] The most drastic was to centralize banking supervision and resolution among Eurozone countries by giving power to one centralized authority to address all aspects of crisis resolution in the event of an emergency. The logic was to transfer the jurisdiction of the cross-border bank to one authority that would oversee the whole market, thereby bypassing the principal–agent problem that affects national supervisors.[369] The

364. Angela Monaghan, *The AAA-Rated Club: Which Countries Still Make the Grade?*, GUARDIAN (Oct. 15, 2014), http://www.theguardian.com/business/economics-blog/2014/oct/15/the-aaa-rated-club-which-countries-still-make-the-grade (stating that a downgrade from AAA is a "wake-up call" and is "humiliating").

365. *See* Rolf H. Weber, *Mapping and Structuring International Financial Regulation: A Theoretical Approach*, 20 EUR. BUS. L. REV. 651, 651 (2009); discussion, *supra* Part III.B.3 (detailing the events of the Herstatt Bank collapse).

366. *Cf.* Brummer, *International Financial Law*, *supra* note 360, at 310 (suggesting that the practices of the IMF and World Bank are ineffective at forcing compliance from non-member states).

367. *See* SINGER, *supra* note 185, at 60 (recounting the conflict between Japan and the capital standards based on the Anglo-American formula); *see also* Verdier, *Transnational Regulatory Networks*, *supra* note 89 (examining coordination failures).

368. *See* IMF, RESOLUTION OF CROSS-BORDER BANKS, *supra* note 206, at 19 (listing several proposals to harmonize coordination standards).

369. *See* SCHOENMAKER, INTERNATIONAL BANKING, *supra* note 141, at 144 (observing that centralization was first proposed by Dirk Schoenmaker as the solution for the financial trilemma); discussion, *supra* Part IV.A.1 (discussing the principal–agent problem).

centralization of supervisory and crisis resolution policies into one authority was seen as the only way to correct the regulatory and economic problems affecting the European monetary union and is currently ongoing among Eurozone countries.[370] The European Central Bank supervises most Eurozone banks, while the Single Resolution Board—a specialized agency under the European Commission—manages their resolution.[371]

Centralization is not, however, a feasible option outside E.U. Because centralization deprives states of a large portion of their sovereignty, it probably would meet strong opposition.[372] In September 2014, the FSB issued a new set of proposals to coordinate resolution actions of national authorities during a cross-border banking crisis that do not require the transfer of supervisory and resolution power to a supranational authority.[373] The FSB proposals largely draw on a new approach to banking resolution, which envisages private sector recapitalization of failing banks, the so-called "bail-in," rather than public sector interventions.[374] The

370. *See* SCHOENMAKER, INTERNATIONAL BANKING, *supra* note 141, at 144.

371. At the time of writing, the architecture of the Banking Union is still a work in progress. At present, the Banking Union is organized under two main pillars. The first pillar is the Single Supervisory Mechanism ("SSM")—entered into force in November 2014—which deals with the supervision of banks. According to the SSM Regulation, the European Central Bank has the function of supervising all the Eurozone banks with assets of more than €30 billion or constituting at least twenty percent of their home country's GDP. The second pillar is the Single Resolution Mechanism ("SRM")—entered into force on January 1, 2015—which deals with the resolution of banks. The SRM is governed by a newly created European body, the Single Resolution Board, which is made of representatives of the European Commission, the European Council, the ECB, national resolution authorities, and by permanent members. In carrying out its tasks, the SRM will apply the E.U. rules on crisis resolution as set out by the forthcoming Bank Recovery and Resolution Directive (entering into force on January 1, 2016). For an overview of the regulatory developments, see Memorandum from the European Commission, A Comprehensive EU Response to the Financial Crisis: Substantial Progress Towards a Strong Financial Framework for Europe and a Banking Union for the Eurozone, Memo/14/244, 7 (Mar. 28, 2014).

372. *See* Lupo-Pasini, *Economic Stability*, *supra* note 165, at 235.

373. FIN. STABILITY BD., CROSS-BORDER RECOGNITION OF RESOLUTION ACTION: CONSULTATIVE DOCUMENT 1 (2014) [hereinafter FSB, CROSS-BORDER RECOGNITION].

374. *See id.*; *see also* Simon Gleeson, *Legal Aspects of Bank Bail-Ins* 1 (London Sch. Econ., Fin. Mkts. Grp., Special Paper No. 205, 2012) [hereinafter Gleeson, *Bank Bail-Ins*] (describing the bail-ins as particularly useful for large, complex, and international institutions or groups of businesses); Charles Goodhart & Emilios

coordination mechanisms rely on a mix of harmonization of resolution laws, mutual recognition of resolution actions, and private contractual approaches.[375]

More specifically, under the 2011 and 2014 FSB Key Attributes of Resolution Regimes, national resolution authorities are expected to implement national resolution laws that contain minimum key regulatory and policy tools, thereby guaranteeing a high degree of regulatory convergence.[376] Among the key elements are the adoption of statutory power in the hand of resolution authorities to enable the bail-in of bank's creditors, enhanced mechanisms to share information, and the statutory recognition of foreign authorities' resolution actions. In the event of a cross-border banking crisis, the competent resolution authority (say, the home authority) will have the right to initiate the resolution procedure and implement it across the entire banking group, including the foreign affiliates. The home authority will be able to request the host authority recognize the action taken by the home authority and to request direct support implementing the resolution of the foreign branches and subsidiaries in the host jurisdiction.[377] To enhance further cooperation and reduce regulatory arbitrage, cross-border banks will be required to accept the power of resolution authorities with regard to debt restructuring by inserting in the debt contract provision that waive standard creditors' rights.[378]

Avgouleas, *A Critical Evaluation of Bail-Ins as Bank Recapitalisation Mechanisms* 1 (Ctr. for Econ. Policy Research, Discussion Paper No. 10065, 2014); Jeffrey N. Gordon & Wolf-Georg Ringe, *Bank Resolution in the European Banking Union: A Transatlantic Perspective on What it Would Take* 4 (Univ. of Oxford, Legal Research Paper No. 18/2014, 2014) (arguing for a wider adoption of bail-in's based on U.S. experience).

375. *See* FSB, CROSS-BORDER RECOGNITION, *supra* note 373, at 13 (proposing the adoption of contractual recognition of bail-in); *see also* Gleeson, *Bank Bail-Ins*, *supra* note 374, at 15 (examining the classic bank resolution mechanism).

376. *See* FIN. STABILITY BD., KEY ATTRIBUTES OF EFFECTIVE RESOLUTION REGIMES FOR FINANCIAL INSTITUTIONS 1 (2014).

377. *See* Guillermo Ortiz, *Cross-Border Banking and the Challenges Faced by Host Country Authorities*, *in* CROSS-BORDER BANKING: REGULATORY CHALLENGES, *supra* note 193, at 11, 14 (discussing the differences in regulation between home and host countries).

378. *See* Creighton R. Meland, Jr., *Considerations in Cross-Border Debt Restructuring*, 1 PRATT'S J. BANKR. L. 179, 183 (2005) (describing the negotiation process when international development banks offer to guarantee an extension of credit).

3. Spillovers

When it comes to realigning macroeconomic differences and reducing cross-border spillovers, the potential for coordination is extremely limited. The history of monetary cooperation post-Bretton Woods shows various failed attempts to coordinate macroeconomic policies.[379] Following China's alleged manipulation of the exchange rate, some countries—especially the United States—promoted the establishment of a common policy framework to tackle exchange rate misalignments.[380] Not surprisingly, this did not occur. As Keynes warned, in an interconnected global economy, the mobility of capital makes it extremely difficult to find a Pareto-efficient equilibrium in which national policies maximize both domestic and global efficiency.[381] Confronted with a choice between the two, regulators will clearly favor the former to the detriment of global stability.[382]

From a purely economic viewpoint, macroeconomic policy serves to achieve multiple economic goals. Because each macroeconomic policy tool affects multiple economic variables, cooperation cannot be tailored to achieve only one objective.[383] To be effective, political bargains must extend to the whole set of economic objectives that the specific macroeconomic tool addresses.[384]

379. *See* Laurence H. Meyer et al., *International Coordination of Macroeconomics Policies: Still Alive in the New Millennium?* 1 (Bd. of Governors of the Fed. Reserve Bank, Discussion Paper No. 723, 2002) (summarizing the proliferation of attempts to coordinate macroeconomic policies among European nations).

380. *See* Bradley Schield, Comment, *China's Exchange Rate Manipulation: What Should the United States Do?*, 34 HOUS. J. INT'L L. 415, 448 (2012) (stating the lack of a central voice is a weakness of U.S. policy).

381. *See* CHWIEROTH, *supra* note 123, at 63 (relaying early neoclassical economists views on interest rates as the essential determinants of capital flows).

382. *See id.* at 65.

383. *See* Eric A. Posner & Alan O. Sykes, *International Law and the Limits of Macroeconomic Cooperation*, 86 S. CAL. L. REV. 1025 (2013) [hereinafter Posner & Sykes, *International Law*] (arguing that the theoretical benefits of macroeconomic cooperation are real but difficult to sustain).

384. *See also* CALOMIRIS & HABER, *supra* note 98, (observing that banks are an institutional embodiment of the political system).

Achieving this kind of coordination is, however, extremely difficult.[385] With only the possible exception of economic unions, economic structures always differ between countries due to a variety of factors, such as population, resources, capital, and even culture.[386] To promote economic efficiency, macroeconomic policy must be tailored to the specific needs of each country.[387] Indeed, the role of monetary authorities is to promote domestic stability and efficiency and they must do so without taking the external impact of their policies into account. If monetary policy were to be coordinated between different countries, each national authority would find it impossible to address the underlying economic imbalances that affect their local economy.

VI. CONCLUSIONS

This article analyzes how domestic policies contribute to creating global systemic risk. At the core of this problem lies a disconnect between the global scope of financial markets and the national scope of regulatory intervention. In a global financial system in which nation states still control most financial and macroeconomic policies, divergent policy preferences and government failures add additional dimensions to global financial instability that go beyond pure market inefficiencies. The role of international law in addressing global systemic risk is, therefore, more complex and challenging than in national financial systems.

In a closed economy, regulation can easily target and influence the behavior of private institutions and address market failures.[388] In a global economy, however, in which states are separated by economic asymmetries and diverging policy preferences, regulatory

385. *See* Posner & Sykes, *International Law*, *supra* note 383, at 1075 (concluding that the macroeconomic policies are often uncertain and time-variant).

386. Raj Aggarwal & NyoNyo Aung Kyaw, *Transparency and Capital Structure in Europe: Evidence of Firm, Industry, and National Institutional Influences*, *in* CORPORATE AND INSTITUTIONAL TRANSPARENCY FOR ECONOMIC GROWTH IN EUROPE 335-36 (Lars Oxelheim ed., 2006) (noting that each country has its own mores which causes the most effective policies to differ from other countries).

387. VED P. GANDHI, THE IMF AND THE ENVIRONMENT 9 (1998) (explaining that the IMF does not have the requisite expertise for such decisions and regularly seeks the advice of other institutions).

388. *See* Choi & Guzman, *supra* note 185, at 1866.

coordination is more difficult to achieve and sometimes even undesirable. First of all, the tradeoff at the core of the international regulatory process is not simply one between competing private interests; it also entails a difficult compromise between competing sovereign rights. Second, in the absence of a centralized regulator, cooperation needs to rely on international regulatory regimes that promote win-win situations and ensure a Pareto-efficient equilibrium, rather than protecting individual Nash-efficient gains.

This article conceptualizes global systemic risk as an underlying government failure, which transmits instability to the wider global financial system through financial interconnectedness. To achieve global financial stability, international law must operate on either one of two elements. The first option is to correct government failures by reducing the domestic policy space on financial policies.[389] International law can play a powerful role in this regard by mobilizing domestic political interests favoring regulatory convergence. However, when it comes to global macroeconomic spillovers, cooperation is extremely difficult and also unadvisable.

The other possibility is to reduce the financial interconnectedness through which financial instability propagates. The role of the law in this situation is to frame a correct tradeoff between the benefits of an extended network and the need to protect against external threats. As the legal framework to reduce the risks of global interconnectedness remains largely underdeveloped, states are left on their own. To protect against external threats, they resort to capital controls, ring-fencing, and subsidiarization.[390] These techniques, while extremely effective in insulating the country employing them, are extremely inefficient from a global or Pareto standpoint. Indeed, by focusing only on individual countries' stability, they promote a Nash-efficient equilibrium in which national gains equate to the losses of another state or investor. Furthermore, they lead to a Balkanization of the global financial system in which the economic benefits of financial integration are sacrificed.

389. IMF, RESOLUTION OF CROSS-BORDER BANKS, *supra* note 206, at 9.

390. *See* discussion, *supra* Part V.B.3. *See generally* Eugenio Cerutti et al., *Bankers Without Borders*, *supra* note 327, at 6-7; D'Hulster, *supra* note 197, at 24.

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