

# ARE ETFs MAKING SOME ASSET MANAGERS TOO INTERCONNECTED TO FAIL?

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## ABSTRACT

Exchange Traded Funds (ETF) are likely the most successful financial products since the 2008 global financial crisis (GFC). Despite numerous benefits, ETF's success could be making some asset managers "too interconnected to fail." Interconnection is a core element of systemic risk, and it played a material role in the transmission of economic shocks in the GFC. This article is the first, in a growing body of literature on ETFs, to provide a comprehensive inquiry into their systemic importance through the lens of interconnectivity. The article provides three unique contributions. First, it shows how ETFs are creating deep and complex interconnections between numerous market participants and service providers, extending to retail and institutional investors, and corporate behaviors and decisions. Second, it illustrates how ETF interconnection creates direct and indirect systemic risk transmission pathways, with unique factors not present in other managed asset products, like the reliance on key market-incentivized intermediaries in a crisis, crowd behaviors from correlated investment exposures, information cascades, runs, fire sales, and non-linear impacts. Finally, it shows how the effective monitoring of ETF systemic risk requires a cross-market analysis to assess the collective behaviors of numerous participants in a complex and interconnected operating ecosystem, and how both activity and entity-level oversight is prudent in this market. While ETF firms are distinct from banks and insurance companies, there's merit in safeguarding large firm's economic resilience given their centrality in a highly interconnected ecosystem. As such, ETFs illustrate the importance of considering financial markets as a "system" when designing supervisory

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## I. INTRODUCTION

The *Exchange Traded Fund* (ETF) is perhaps the most successful financial product since the 2008 global financial crisis (GFC).<sup>1</sup> They have many benefits and strong demand factors, including liquidity, cost and tax advantages over mutual funds, easy access to diversified exposures in opaque asset classes, and cash substitutability for institutions in their liquidity management activities.<sup>2</sup> Evidence also supports passive investing providing superior long-run returns.<sup>3</sup> There are concerns, however, that certain ETF issuers may be growing too large.<sup>4</sup> Recent reports suggest that three ETF firms (*BlackRock* (40 percent), *Vanguard* (25 percent) and *State Street* (18 percent)) make up around 83 percent of the ETF market share in the U.S.<sup>5</sup> Another recent study noted that since the GFC, over 80 percent of all “assets flowing into investment funds” have been captured by these three firms.<sup>6</sup> ETF critics argue that they “shut investors out of the high-growth companies that offer higher returns.”<sup>7</sup> John Bogle (founder of Vanguard) worried however, shortly before his death that “[i]f everybody indexed, the

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1. See Rachel Evans & Carolina Wilson, *How ETFs Became the Market*, BLOOMBERG (Sept. 13, 2018), <https://www.bloomberg.com/graphics/2018-growing-etf-market/?srnd=etfs> [<https://perma.cc/544K-5PKC>].

2. See *infra* Section III(iii).

3. See Eugene F. Fama & Kenneth R. French, *Luck Versus Skill in the Cross-Section of Mutual Fund Returns*, 65(5) JOURNAL OF FINANCE 1915 (2010); Ben Johnson, *Active vs. Passively Managed Funds: Takeaways from Our Midyear Report*, MORNINGSTAR BIG PICTURE (Aug. 23, 2018), <https://www.morningstar.com/blog/2018/08/23/actively-managed.html> [<https://perma.cc/W3GC-XET3>].

4. See Elisabeth Dellinger, *Too Big to Fail: Money Management Edition*, FISHER INVESTMENTS MARKET ANALYSIS (Apr. 11, 2014), <https://www.fisherinvestments.com/en-us/marketminder/too-big-to-fail-money-management-edition> [<https://perma.cc/CP8Y-N2FP>].

5. See Eva Su, *Exchange Traded Funds (ETFs): Issues for Congress*, CONGRESSIONAL RESEARCH SERVICE, CRS REPORT (7-5700), 16 (Sept. 24, 2018), available at <https://fas.org/sgp/crs/misc/R45318.pdf> [<https://perma.cc/Z68P-LCFY>].

6. See Lucian A. Bebchuck & Scott Hirst, *The Specter of the Giant Three*, 99 B.U. L. REV. 721, 723 (2019).

7. Keris Lahiff, *Why Zero-fee ETFs are Not Risk Free*, CNBC (Mar. 9, 2019), <https://www.cnbc.com/2019/03/09/why-zero-fee-etfs-are-not-risk-free.html> [<https://perma.cc/c35MS-TLGG>].

only word you could use is chaos, catastrophe . . . [t]he markets would fail.”<sup>8</sup>

This article is the first, in a growing body of literature on ETFs, to provide a comprehensive inquiry into their systemic importance through the lens of interconnectivity – a material factor in the GFC.<sup>9</sup> Since 2008, highly interconnected ETF mega firms have increased their influence and voting power over nearly every publicly traded corporation in America.<sup>10</sup> These firms are fostering deep and complex interconnections between market participants and service providers that trace down to retail investors, main street, and corporate behaviors and decision making.<sup>11</sup> ETFs are also giving rise to a new subset of systemic risks that have both direct and indirect transmission channels, and which don’t exist in other managed asset classes (like those associated with the ETF arbitrage function and onset from short-term directional and noise traders attracted to the intraday liquidity of ETFs).<sup>12</sup>

Optimal financial market interconnectivity is difficult to assess since interconnections can both absorb and amplify shocks.<sup>13</sup> The ETF operating structure integrates into a “tangled web” of a “genuine” global interconnected financial system, and asset managers like ETF mega firms may require a heightened macro-prudential focus in the future.<sup>14</sup> ETF systemic risk derives from the potential collective actions of numerous interconnected market participants, experienced through phenomena like the discretionary withdrawals of key market-incentivized intermediaries from the ETF operating substructure in a crisis, and crowd behaviors from correlated exposures creating information cascades, runs, fire sales, and non-linear impacts.<sup>15</sup>

The *Financial Stability Oversight Council’s* (FSOC) activities, and entity-based, regulatory frameworks for non-bank systemically important financial institutions (non-bank SIFIs), when applied separately to ETF firms, both have limitations. As other scholars have recently advocated,

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8. David Thomas, *A Warning from the Late John Bogle*, FORBES (Feb. 12, 2019), <https://www.forbes.com/sites/greatspeculations/2019/02/12/a-warning-from-the-late-john-bogle/#6c00a7d62b99> [<https://perma.cc/J34P-SS45>].

9. See *infra* Section II(iii).

10. See *infra* Section III(iv)(b).

11. See *infra* Section III(iv).

12. See *infra* Section IV.

13. See Andrew G. Haldane, *Managing Global Finance as a System*, MAXWELL FRY ANNUAL GLOBAL FINANCE LECTURE, BIRMINGHAM UNIVERSITY (Oct. 29, 2014) at 3, 9, available at <https://www.bis.org/review/r141030f.pdf> [<https://perma.cc/GS3K-EPXB>] (discussing the evolution of the financial market into a complex and interwoven system that is both “robust” and “fragile”).

14. See *id.* at 3–9.

15. See *infra* Section IV.

activity and entity oversight should not be considered mutually exclusive,<sup>16</sup> and this article will show how a “complementary approach”<sup>17</sup> is also prudent for the ETF market. The ETF ecosystem highlights the increasing importance of regulating financial markets as a system.<sup>18</sup> While ETF firms are clearly distinct from banks and insurance companies, there’s merit in ensuring they are economically resilient and have adequate safeguards given their centrality in a highly interconnected system.<sup>19</sup>

The asset managers profiled in this article could be growing “too interconnected to fail” and the most effective regulatory frameworks going forward will need to ensure firm stability and look across the market to assess and monitor the collective behavior of all participants. This study raises post-GFC systemic concerns. It also complements other post-GFC scholarship, which identifies a small number of highly interconnected mega-banks sitting in the center of the leading central clearinghouses for derivatives and dominating the derivatives dealer markets.<sup>20</sup>

This article proceeds by first establishing interconnectivity as a core measure of financial market systemic risk on par (if not more important) than size, and how disruptions at widely interconnected firms facilitated the GFC. It then establishes several indicators of high interconnectivity and applies them to the ETF market in Section III. This Section, after identifying demand factors for ETFs, shows how these products facilitate complex economic interconnections. Section IV illustrates how ETF interconnectivity could contribute to systemic risk. Section V then canvasses the challenge of regulating highly interconnected asset managers (like the ETF mega issuers), including the limitations of both activities and entity-based non-bank SIFI rules, and relevant alternative regulatory considerations. The article concludes by considering the true costs of

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16. See Jeremy C. Kress, Patricia-Ann McCoy & Daniel B. Schwarcz, *Regulating Entities and Activities: Complementary Approaches to Nonbank Systemic Risk*, 92 S. CAL. L. REV. 1455 (2019).

17. *Id.*

18. See Haldane, *supra* note 13, at 3–5.

19. See Mark Gilbert, *Banks Get Stress Tested. So Should Asset Managers*, BLOOMBERG OPINION (July 4, 2018), <https://www.bloomberg.com/opinion/articles/2018-07-04/banks-get-stress-tested-so-should-asset-managers> [<https://perma.cc/TEL9-LRTN>], see *infra* Section III.

20. See Dan Awrey, *The Limits of Private Ordering Within Modern Financial Markets*, 34(1) REVIEW OF BANKING & FINANCIAL LAW 183, 234 (2014); Felix B. Chang, *Second-Generation Monopolization: Parallel Exclusion in Derivatives Markets*, 3 COLUM. BUS. L. REV. 657, 695-708 (2016); Nahomy Alvarez & John McPartland, *The Concentration of Cleared Derivatives: Can Access to Direct CCP Clearing for End-users Address the Challenge?* FEDERAL RESERVE BANK OF CHICAGO WORKING PAPER 2019-06, (Aug. 20, 2019), available at <https://www.chicagofed.org/publications/working-papers/2019/2019-06> [<https://perma.cc/EG22-GCWV>].

liquidity transformation in ETFs.

## II. DOES INTERCONNECTION INCREASE FINANCIAL MARKET SYSTEMIC RISK?

### *i. Moving Beyond Size: When Firms Become “Too Interconnected to Fail”*

A “hallmark” of the modern financial system is its “complex links” and deeply interconnected firms, whose operations transcend national borders and encompass a wide range of activities, functions and transactions.<sup>21</sup> Size is not a complete measure of a financial institution’s importance in the larger system.<sup>22</sup> Highly interconnected financial institutions played a material role in the fallout from the GFC, and the continued existence (and as this article will suggest, the growing prevalence in the ETF sector) of complex and highly interconnected firms creates ongoing concerns for financial stability.<sup>23</sup> The importance of high-interconnected financial firms to economic stability has given rise to the concept of “too connected to fail” as a factor potentially as germane as size when analyzing systemic risk.<sup>24</sup>

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21. See Janet L. Yellen, *Interconnectedness and Systemic Risk: Lessons from the Financial Crisis and Policy Implications*, REMARKS AT AMERICAN ECONOMIC ASSOCIATION / AMERICAN FINANCE ASSOCIATION JOINT LUNCHEON, SAN DIEGO, CALIFORNIA (January 4, 2013), available at <https://www.federalreserve.gov/newsevents/speech/files/Yellen20130104.a.pdf> [<https://perma.cc/L8RV-JCED>].

22. See Jonathan R. Macey & James P. Holdcroft, Jr., *Failure Is an Option: An Ersatz-Antitrust Approach to Financial Regulation*, 120 *Yale L.J.* 1368, 1386–91 (2011).

23. See SYSTEMIC RISK COUNCIL, LETTER TO FINANCIAL STABILITY OVERSIGHT COUNCIL, RE: AUTHORITY TO REQUIRE SUPERVISION AND REGULATION OF CERTAIN NONBANK FINANCIAL COMPANIES, RIN 4030-AA00, (May 21, 2019) available at <https://www.regulations.gov/document?D=FSOC-2019-0001-0029> [<https://perma.cc/7FH5-BRR7>]; BETTER MARKETS, LETTER TO FINANCIAL STABILITY OVERSIGHT COUNCIL, RE: AUTHORITY TO REQUIRE SUPERVISION AND REGULATION OF CERTAIN NONBANK FINANCIAL COMPANIES, RIN 4030-AA00, 84 *Fed. Reg.* 9028 (May 24, 2019), available at <https://www.regulations.gov/document?D=FSOC-2019-0001-0030> [<https://perma.cc/K2WQ-AYCB>]; CENTER FOR AMERICAN PROGRESS, LETTER TO FINANCIAL STABILITY OVERSIGHT COUNCIL, RE: FSOC INTERPRETIVE GUIDANCE ON NONBANK FINANCIAL COMPANY DETERMINATIONS (May 13, 2019) available at <https://www.regulations.gov/document?D=FSOC-2019-0001-0017> [<https://perma.cc/C6DY-8WSY>]; Patricia McCoy, Jeremy C. Kress, & Daniel Schwarcz, COMMENT OF LEGAL SCHOLARS ON AUTHORITY TO REQUIRE SUPERVISION AND REGULATION OF CERTAIN NONBANK FINANCIAL COMPANIES, RIN 4030-AA40 (May 13, 2019), available at <https://www.regulations.gov/document?D=FSOC-2019-0001-0012> [<https://perma.cc/33ZE-TG6L>] (hereinafter “Letter from Legal Scholars”).

24. See Paul Maidment, *Too Connected to Fail*, *FORBES* (Apr. 19, 2010), <https://www.forbes.com/2010/04/19/banks-regulation-risk-business-wall-street-notes-on-the-news-connected.html#2c4946285fe7> [<https://perma.cc/K2B5-F7NF>].



A firm's size is a "relevant" but "nondeterminative" factor when assessing its systemic importance.<sup>25</sup> Post-crisis analysis by the *European Central Bank* (ECB) has noted that "the network of the financial system" can become very "vulnerable" and subject to shocks when a "highly connected" network participant experiences material failure, and its interconnectedness can amplify shocks across the entire network rather than absorbing them.<sup>26</sup> Professor Steven Schwarcz has documented how a firm's "interconnectedness, size, and lack of substitutability" can magnify systemic risk.<sup>27</sup> Professors Schwarcz and Iman Anabtawi also note that inherent in all systems are interconnected elements,<sup>28</sup> and that the financial system (which is a "law-related system") has elements (like certain market participants and service providers), which exhibit high levels of interconnectivity.<sup>29</sup>

ii. *The Relationship Between Interconnection and Financial Instability*

Some argue that the history of financial crises is also a history of highly interconnected firms, where system-wide risk, and market failure, is a "by-product" of such interconnectedness.<sup>30</sup> Others suggest that interconnectedness is a key to the complexity (and potential fragility) of today's financial system.<sup>31</sup> Douglas Elliot has argued that "[t]he more connections a firm has with others, the more channels there are to transmit problems."<sup>32</sup> Several studies have documented how connectivity was present in prior crises.<sup>33</sup> Janet Yellen suggests that interconnectedness was a

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25. Kress, McCoy & Schwarcz, *supra* note 16, at 1469.

26. EUROPEAN CENTRAL BANK, *Recent Advances in Modelling Systemic Risk Using Network Analysis*, 6 (January 2010), available at <https://www.ecb.europa.eu/pub/pdf/other/modellingsystemicrisk012010en.pdf> [<https://perma.cc/Q43P-NKCV>].

27. Steven L. Schwarcz, *Systematic Regulation of Systemic Risk*, 2019 WIS. L. REV. 1, 14 (2019).

28. Iman Anabtawi & Steven L. Schwarcz, *Regulating Ex Post: How Law Can Address the Inevitability of Financial Failure*, 92 TEX. L. REV. 75, 78–80 (2013).

29. *Id.* at 84.

30. Alexander Goodenough, *Dodd-Frank: Regulating Systemic Risk in the Offshore Shadow Banking Industry*, 3 GEO. MASON J. INT'L COM. L. 137, 144 (2011).

31. See Cheng-Yun Tsang, *The Seven Deadly Sins of the Contemporary Financial System*, 37 REV. BANKING & FIN. L. 359, 368 (2017); Kathryn Judge, *Interbank Discipline*, 60 UCLA L. REV. 1262, 1306–07 (2013).

32. Douglas Elliot, *Systemic Risk and the Asset Management Industry*, ECONOMIC STUDIES AT BROOKINGS (May 2014), 4, available at [https://www.brookings.edu/wp-content/uploads/2016/06/systemic\\_risk\\_asset\\_management\\_elliott.pdf](https://www.brookings.edu/wp-content/uploads/2016/06/systemic_risk_asset_management_elliott.pdf) [<https://perma.cc/L4H5-T7YA>].

33. See Alexander Mehra, *Legal Authority in Unusual and Exigent Circumstances: The Federal Reserve and the Financial Crisis*, 13 U. PA. J. BUS. L. 221, 262 (2010) (identifying

material factor in the banking panic of 1907, when what first appeared to be a “contained” crisis (limited to a few firms), quickly spread to traditional banks, and the larger economy as a result of “extensive interconnections.”<sup>34</sup> Researchers from the *International Monetary Fund* (IMF) have also described the role of interconnectedness in the *Herstatt Bank* crisis in 1974, and the failure of *Long Term Capital Management* in 1998.<sup>35</sup>

There are several economic benefits to interconnectedness, including liquidity, risk diffusion, maturity transformation, and efficient capital intermediation from savers to borrowers;<sup>36</sup> yet the operations of highly interconnected firms in a crisis can also contribute to panicked selling, and contagion to other asset classes.<sup>37</sup> Yellen notes that complex interconnections can “serve to amplify existing market frictions, information asymmetries, or other externalities.”<sup>38</sup> In support of this proposition, empirical research has shown that a high degree of interconnectedness can increase market fragility as instabilities, or panicked sell-offs, in one sector quickly spread to others in a contagion.<sup>39</sup>

### iii. *Interconnectedness as a Material Factor in the 2008 Global Financial Crisis*

The GFC proved that instabilities at widely “interconnected” financial institutions could rapidly transmit shocks throughout the entire economy<sup>40</sup> and impact the entire “financial system.”<sup>41</sup> When *Lehman Brothers* failed, a “shock was transmitted through money market mutual funds to the short-term funding and interbank markets.”<sup>42</sup> It also froze the derivatives markets as Lehman was thought to be counterparty to \$5 trillion in credit default swap (CDS) contracts, causing “gridlock” in money market and fixed income

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the “chain reaction problem” inherent in systemic risk); see also Daniel J. Hunt, *Just Grin and Bear It: Why Consistent Use of Individual Bailouts Under Section 13(3) of the Federal Reserve Act Is a Necessary Evil to Combat Economic ‘Mass Destruction’*, 6 GEO. MASON J. INT’L COM. L. 59, 60 (2014).

34. See Yellen, *supra* note 21.

35. Jorge A. Chan-Lau, *Regulatory Capital Charges for Too-Connected to Fail Institutions* 3 (IMF, Working Paper WP/10/98), <https://www.imf.org/external/pubs/ft/wp/2010/wp1098.pdf> [<https://perma.cc/6KGR-BHBW>].

36. See Franklin Allen & Douglas Gale, *Financial Contagion*, 108(1) J. OF POL’Y ECON. 1,4 (2000).

37. Yellen, *supra* note 21.

38. *Id.*

39. See Allen & Gale, *supra* note 36, at 4.

40. EUROPEAN CENTRAL BANK, *supra* note 26, at 6.

41. See Schwarcz, *supra* note 27, at 35.

42. Yellen, *supra* note 21.

trading as banks “hoarded liquidity.”<sup>43</sup> Similarly, the asset-backed commercial paper market (ABCP) experienced interconnected material distress when “investors reali[z]ed that money market mutual funds had invested in paper backed by sub-prime assets.”<sup>44</sup> When ABCP failed, investors soon became “distrustful of all forms of private credit,” leading to a near instantaneous withdrawal of liquidity in wholesale funding markets because of complex network linkages of financial institutions.<sup>45</sup> Similarly, in money market funds, when the *Reserve Primary Fund* “broke the buck” a wave of redemptions “fueled instability in the credit markets.”<sup>46</sup>

The GFC also showed the speed at which healthy but highly interconnected institutions can fail.<sup>47</sup> During the crisis, “interconnected nonbank institutions” took many risks under lowered regulatory parameters.<sup>48</sup> *Bear Sterns* was deemed too great of a systemic risk because of its interconnectedness to let fail (leading to a bail-out).<sup>49</sup> Yet Bear was smaller than *Lehman Brothers* (which was allowed to fail).<sup>50</sup> Alan Blinder has suggested that “[t]he primary reason [the Fed saved Bear] was fear that Bear was too interconnected to fail.”<sup>51</sup> The potential shock transmission from the failure of a highly interconnected AIG made its bail-out a necessity.<sup>52</sup>

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43. See Andrew G. Haldane, *Rethinking the Financial Network*, Speech at Financial Student Association, Amsterdam (April 28, 2009), available at <https://www.bis.org/review/r090505e.pdf> [<https://perma.cc/SKJ3-8WD3>].

44. EUROPEAN CENTRAL BANK, *supra* note 26, at 5.

45. *Id.*

46. *Id.*; see Daniel Schwarcz & David Zaring, *Regulation By Threat: Dodd Frank and The Nonbank Problem*, 84 UNL. OF CHICAGO L. REV. 1813, 1828 (2017).

47. See CENTER FOR AMERICAN PROGRESS, *supra* note 23.

48. See Letter from Timothy Geithner, Former Sec’y of the Treasury, Jacob Lew, Former Sec’y of the Treasury, Ben Bernanke Former Chair of the Bd. of Governors of the Fed. Reserve Sys. & Janet Yellen, Former Chair of the Bd. of Governors of the Fed. Reserve Sys., to Steven T. Mnuchin, Sec’y of the Treasury, & Jerome H. Powell, Chair of the Bd. of Governors of the Fed. Reserve Sys. (May 13, 2019), (on file at <https://int.nyt.com/data/documenthelper/887-bernanke-geithner-lew-yellen-letter/a22621b202dfcb0fe06e/optimized/full.pdf> [<https://perma.cc/DP6R-FYJZ>]).

49. See HENRY M. PAULSON JR. ON THE BRINK: INSIDE THE RACE TO STOP THE COLLAPSE OF THE GLOBAL FINANCIAL SYSTEM, at 117 (2010); see also Hunt, *supra* note 33, at 72–73.

50. Macey & Holdcroft, *supra* note 22, at 138.

51. ALAN S. BLINDER, AFTER THE MUSIC STOPPED: THE FINANCIAL CRISIS, THE RESPONSE, AND THE WORK AHEAD, at 112–13 (2013).

52. EUROPEAN CENTRAL BANK, *supra* note 26, at 7.

iv. *Establishing Indicators of High Interconnectivity*

a. Network Analysis and Interlinked Exposures

One way to measure the interconnectedness of a financial institution is through “network analysis.”<sup>53</sup> Using “network representations” has been noted by the *Depository Trust & Clearing Corporation* (DTCC),<sup>54</sup> as “particularly suitable” to assess the interconnection of financial institutions.<sup>55</sup> The ECB describes this as a process that models “the interlinking exposures either between financial institutions, among the sectors of the economy or across entire financial systems.”<sup>56</sup> The ECB adds that in determining the complexity of a network, one must look at both “nodes” (participants on the network) and “links” (connections and relationships).<sup>57</sup> In network analysis the concept of “centrality” is critical to determine which nodes on a given network are “of systemic importance.”<sup>58</sup>

A key finding of the DTCC in relation to interconnection-based risk transmission is that financial networks “tend to be robust yet fragile” meaning that they absorb shocks to a “tipping point,” where they then spread risks rather than “contain them.”<sup>59</sup> Andrew Haldane has noted that this tension is also exhibited in other complex ecosystems, like tropical rainforests,<sup>60</sup> and that after the tipping point, the “systemic dislocation” can often be much larger than the “initial shock.”<sup>61</sup> Interlinked exposures are also evident in the *Office of Financial Research’s* (OFR) financial connectivity index for globally systemically important banks, which measures the liabilities of banks held by other financial institutions.<sup>62</sup>

53. EUROPEAN CENTRAL BANK, *supra* note 26, at 4.

54. The DTCC is the U.S.’s largest post-trade services (clearing and settlement) provider, *see About DTCC*, DEPOSITORY TRUST & CLEARING CORPORATION, (Dec. 26, 2019), <http://www.dtcc.com/about> [<https://perma.cc/2M3K-2WKT>].

55. *See* DEPOSITORY TRUST & CLEARING CORPORATION, UNDERSTANDING INTERCONNECTED RISKS TO BUILD A MORE RESILIENT FINANCIAL SYSTEM, 8 (2015), <http://www.dtcc.com/~media/Files/Downloads/WhitePapers/InterconnectednessWP-101815.pdf> [<https://perma.cc/69Y8-85QR>] (hereinafter “DTCC Whitepaper”).

56. EUROPEAN CENTRAL BANK, *supra* note 26, at 4.

57. EUROPEAN CENTRAL BANK, *supra* note 26, at 9.

58. EUROPEAN CENTRAL BANK, *supra* note 26, at 10.

59. DTCC Whitepaper, *supra* note 55 at 2; for an application of this principle outside of financial markets, in other complex systems, D.J. Watts, S.H. Strogatz, *Collective dynamics of ‘small-world’ networks*, 393(6684) NATURE 440–42 (1998); R. Kinney, P. Crucitti, R. Albert & V. Latora, *Modeling Cascading Failures in the North American Power Grid*, B 46 THE EUR. PHYSICS J. 101 (2005).

60. *See* Haldane, *supra* note 43, at 2.

61. Haldane, *supra* note 43, at 5.

62. *See* P. Glasserman & B. Loudis, *A Comparison of U.S. and International Globally*

### b. Inter-Firm Credit Exposures and High Leverage

Another characteristic of a highly interconnected firm is that it engages in credit extension or leverage transactions with other firms.<sup>63</sup> When firms engage in interlinked credit exposures (like borrowing from and lending to each other) they deepen the interconnection.<sup>64</sup> Credit exposures can also generate interconnectedness when firms hold debt securities that are “issued by other institutions.”<sup>65</sup> Further, some studies indicate that the potential for contagion is enhanced for firms with interlinked credit and leverage exposures.<sup>66</sup> This point is relevant to the analysis of the institutional uptake of fixed income ETFs as cash substitutes below.<sup>67</sup> Relatedly, a high level of leverage can increase the instability of an interconnected firm.<sup>68</sup> ETF issuers (even the mega-players), however, use much lower levels of leverage than traditional banks (a factor often cited against the proposition of heightened prudential oversight).<sup>69</sup>

### c. Complexity of Operations and Transformation Activities

A firm with a complex operating structure will also be highly interconnected.<sup>70</sup> This can lead to “coordination problems” amongst firms,<sup>71</sup> given an increase in “opacity” of the operations of highly interconnected and complex institutions.<sup>72</sup> As Janet Yellen has noted, as the number of intermediaries involved in a financial process rises, “it becomes increasingly difficult to understand how one member of the network fits into the overall system.”<sup>73</sup> Also, the more complex a firm’s operations, the more difficult it is to resolve.<sup>74</sup> Large and complex firms often operate with thousands of separate legal entities, each interconnected to other firms.<sup>75</sup> Research has

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*Systemically Important Banks*, OFF. OF FIN. RES. BRIEF SERIES 15-07 (2015).

63. See Xavier Freixas, Bruno M. Parigi & Jean-Charles Rochet, *Systemic Risk, Interbank Relations and Liquidity Provision by the Central Bank*, 32 J. OF MONEY, CREDIT AND BANKING 611 (2000).

64. DTCC Whitepaper, *supra* note 55, at 4.

65. DTCC Whitepaper, *supra* note 55, at 5.

66. DTCC Whitepaper, *supra* note 55, at 28.

67. See *infra* Section III(iv)(e).

68. DTCC Whitepaper, *supra* note 55, at 27.

69. See *infra* Section V(iii).

70. See Yellen, *supra* note 21.

71. See Freixas, Parigi & Rochet, *supra* note 63, at 620–21.

72. Yellen, *supra* note 21.

73. Yellen, *supra* note 21.

74. DTCC Whitepaper, *supra* note 55, at 16.

75. DTCC Whitepaper, *supra* note 55, at 16.

revealed that the informational opacity in complex financial operations can exacerbate systemic risks like asset “fire sales,”<sup>76</sup> and contagion is more likely when there is a high level of connectivity.<sup>77</sup> Complexity of operations is also linked to the maturity and liquidity transformation process, which in turn links counterparties, creates expectations for market participants (which may be illusory) and can serve to “amplify” systemic risk.<sup>78</sup>

**d. Contractual Relationships, Direct and Indirect Exposures**

A firm’s legal and contractual obligations can create interconnectedness, and foster direct and indirect systemic risk exposures.<sup>79</sup> Direct interconnectedness stems from the fact that a contractual default can have a material adverse effect on a counterparty.<sup>80</sup> Direct interconnectedness can arise from contractual relationships (like service or “infrastructure” agreements), credit exposures or trading links.<sup>81</sup> Indirect interconnectedness can originate through contractual relationships due to factors like “information spillovers,”<sup>82</sup> common asset exposure, fire sales and shadow banking<sup>83</sup> - all of which will be assessed for ETFs in subsections below. Also, because of “interconnecting contracts” firms and the larger economy can be disrupted when a party defaults on its obligations, and the default results in the contractual counterparty defaulting on collateral obligations in a “domino-effect.”<sup>84</sup>

**e. Institutional, Sectoral and Systemic Interdependencies**

Another descriptor of a “too interconnected to fail” institution is that it

76. See Richard J Caballero & Alp Simsek, *Fire Sales in a Model of Complexity*, (Mass. Inst. of Tech. Dep’t of Econ., Working Paper No. 09-28, 2011).

77. See Prasanna Gai, Andrew Haldane & Sujit Kapadia, *Complexity, Concentration and Contagion*, 58 J. OF MONETARY ECON. 453 (2010).

78. See FINANCIAL STABILITY BOARD, POLICY RECOMMENDATIONS TO ADDRESS STRUCTURAL VULNERABILITIES FROM ASSET MANAGEMENT ACTIVITIES, 12 (2017), <https://www.fsb.org/2017/01/policy-recommendations-to-address-structural-vulnerabilities-from-asset-management-activities/> [<https://perma.cc/3A92-29YK>] (hereinafter “FSB Structural Vulnerabilities”).

79. See DTCC Whitepaper, *supra* note 55, at 12.

80. DTCC Whitepaper, *supra* note 55, at 5.

81. DTCC Whitepaper, *supra* note 55, at 4–5.

82. DTCC Whitepaper, *supra* note 55, at 6 (“The distress or failure of one entity may be interpreted by the market as a negative signal about other entities.”).

83. DTCC Whitepaper, *supra* note 55, at 6.

84. Anabtawi & Schwarcz, *supra* note 28, at 88.

generates “interdependencies” amongst “institutions, sectors and systems.”<sup>85</sup> The notion of financial market interdependencies as a source of interconnection-based systemic risk has been documented in research by the DTCC.<sup>86</sup> The “complex web of direct and indirect links” in the U.S. financial system was also a material factor in the GFC that linked numerous market participants.<sup>87</sup> The spread of contagion in a market panic is dependent on a variety of links and interdependencies.<sup>88</sup> As subsequent sections in this article will highlight, numerous direct and indirect links are being fostered by large ETF sponsors.<sup>89</sup> A centrally connected financial institution will act as a “hub” with a large number of “links” (generally contractual) with counterparties comprising a large number of “interdependencies.”<sup>90</sup>

### III. HOW DO ETFs FACILITATE COMPLEX ECONOMIC INTERCONNECTIONS?

#### *i. Post-Crisis Passive Investing and the Rise of ETF “Mega” Firms*

The popularity of ETFs have surged post-GFC.<sup>91</sup> They are now an increasingly important component of the modern investment ecosystem.<sup>92</sup> The ETF market has “swelled” in excess of \$4 trillion since the late nineties, and in the process, led to ETF issuer consolidation and the emergence of a few ETF “mega” firms.<sup>93</sup> Smaller sponsors have been “squeezed out” as the large players compete for valuable *assets under management* (AUM),<sup>94</sup> which are an independent source of revenue from securities lending.<sup>95</sup> Recent Morningstar data reveals that *BlackRock* (who issues *iShares* ETFs) is the largest U.S. and global market issuer, followed closely by *Vanguard*

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85. EUROPEAN CENTRAL BANK, *supra* note 26, at 16.

86. *See* DTCC Whitepaper, *supra* note 55, at 14.

87. DTCC Whitepaper, *supra* note 55, at 3.

88. *See* Allen & Gale, *supra* note 36.

89. *See infra* Section III(iv).

90. EUROPEAN CENTRAL BANK, *supra* note 26, at 16, 18.

91. *See* Bryan Borzykowski, *The Trillion-Dollar ETF Boom Triggered by the Financial Crisis Just Keeps Getting Bigger*, CNBC (Sept. 14, 2018), <https://www.cnbc.com/2018/09/14/the-trillion-dollar-etf-boom-triggered-by-the-financial-crisis.html> [<https://perma.cc/78NG-Z7Z5>].

92. *See* Su, *supra* note 5.

93. Michael Wursthorn, *The \$4 Trillion ETF Industry is Creating More ‘Roadkill’* THE WALL STREET JOURNAL (Oct. 28, 2019), <https://www.wsj.com/articles/the-4-trillion-etf-industry-is-creating-more-roadkill-11572255004> [<https://perma.cc/8NW9-ENS3>].

94. *Id.*

95. *See infra* Section III(iii)(g).

(one of the pioneers of the industry).<sup>96</sup> *State Street* is next in line, followed by *Invesco*, *Schwab* and *First Trust*.<sup>97</sup> The lion's share of the ETF market (studies suggest over 83%) is managed, however, by the top three: BlackRock, Vanguard and State Street.<sup>98</sup> These ETF firms are a continuing focal point for systemic risk "watchdogs."<sup>99</sup> Prominent market participants have also started to question the seemingly "endless creation" of ETF products.<sup>100</sup>

*ii. Estimated Growth Projections of the Most Dominant ETF Firms*

The size of BlackRock is particularly striking, with AUM nearing \$7 trillion and a footprint in over 100 countries.<sup>101</sup> It's effectively become the "biggest investment management company across the globe."<sup>102</sup> As the ETF market grows, the ETF sponsor space is becoming increasingly concentrated, with new money disproportionately flowing into the largest fund structures.<sup>103</sup> A recent study by Professors Lucian Bebchuck and Scott Hirst projects that within two decades, the three asset management firms with the largest ETF market share (BlackRock, Vanguard, and State Street Global Advisors) could collectively double market power, and in turn exert control over 40 percent of the voting shares of all the companies in the S&P 500.<sup>104</sup> Bebchuk and Hirst add that the voting power of these firms is "even greater than would be suggested by the proportion of shares that they manage because many other shareholders do not vote."<sup>105</sup> Given current trends, they suggest that these firms will "dominate" voting of public companies in the

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96. See Wursthorn, *supra* note 93.

97. Wursthorn, *supra* note 93.

98. See Su, *supra* note 5, at 16.

99. See Siobhan Riding, *Watchdogs Probe Systemic Risks of Passive Fund Growth*, FINANCIAL TIMES (Mar. 31, 2019), <https://www.ft.com/content/a1deabc2-3eab-11e9-9499-290979c9807a> [<https://perma.cc/VFE2-S44U>].

100. See Jim Cramer, *We Need to Bring Back Individual Investors*, REAL MONEY (Apr. 23, 2019), <https://realmoney.thestreet.com/investing/stocks/jim-cramer-we-need-to-bring-back-individual-investors-14933853> [<https://perma.cc/A584-H3NZ>].

101. Trevis Team, *BlackRock's Revenue Growth Will Slow Down Considerably Over Coming Years*, FORBES (Sept. 18, 2019), <https://www.forbes.com/sites/greatspeculations/2019/09/18/blackrocks-revenue-growth-will-slow-down-considerably-over-coming-years/#2303728d7d79> [<https://perma.cc/SNN6-D6FH>].

102. Greg McFarlane, *How BlackRock Makes Money*, INVESTOPEDIA (Sept. 24, 2019), <https://www.investopedia.com/articles/markets/012616/how-blackrock-makes-money.asp> [<https://perma.cc/48Z2-72V6>].

103. See Wursthorn, *supra* note 93.

104. See Bebchuck & Hirst, *supra* note 6, at 741.

105. See Bebchuck & Hirst, *supra* note 6, at 738.



U.S. over time.<sup>106</sup> This is a staggering proposition, which one reporter recently called “one of the most consequential economic developments of the past 30 years.”<sup>107</sup>

*iii. What’s Fueling the Growth of These ETF Mega Firms?*

This section will review the most important structural factors fueling the growth of ETF mega-firms. No one factor is determinative, and all have contributed to both the rise of the product class and the corresponding concentration in fund sponsors. The growth of ETFs as a post-crisis phenomenon has, however, been criticized by high profile “active” investors and academics including Jeffrey Gundlach,<sup>108</sup> Michael Burry, Carl Icahn, Howard Marks and Robert Shiller who suggest passive investing makes markets less efficient and exhibits characteristics of a “bubble.”<sup>109</sup>

**a. Passive Net Outperformance and Active Management Disillusion**

Perhaps the most compelling factor influencing the rise of ETFs as an asset class is that net of fees, passive fund structures (which include the vast majority of ETFs), have outperformed their active counterparts.<sup>110</sup> This is empirically justified by the “efficient market theory” that holds that all available information is incorporated into the price of securities and thereby “excess future returns are not predictable.”<sup>111</sup> Also, many investors still feel stung from the failure of most active managers to foresee the GFC, and have redirected actively managed assets into index funds.<sup>112</sup> In addition, recent

106. Bebhuck & Hirst, *supra* note 6, at 723, 741.

107. See Andrea Riquier, *Three Fund Managers May Soon Control Nearly Half of All Corporate Voting Power, Researchers Warn*, MARKETWATCH (Sept. 20, 2019), <https://www.marketwatch.com/story/three-fund-managers-may-one-day-control-nearly-half-of-all-company-voting-shares-researchers-warn-2019-07-17> [<https://perma.cc/7NX7-25QZ>].

108. See Michael Sheetz, *Jeffrey Gundlach Says Passive Investing Has Reached a “Mania” – Investors Should Avoid Index Funds*, CNBC (Dec. 17, 2018), <https://www.cnbc.com/2018/12/17/gundlach-says-passive-investing-has-reached-mania-status.html> [<https://perma.cc/P6WM-4FZL>].

109. Carmen Reinicke, *‘Big Short’ Investor Michael Burry Is Calling Passive Investment a “Bubble.” He’s Not the Only Finance Luminary Sounding the Alarm*, MARKETS INSIDER (Aug. 29, 2019), <https://markets.businessinsider.com/news/stocks/investors-that-have-spoken-out-against-passive-investing-2019-8-1028485512> [<https://perma.cc/XX4D-JXQ9>].

110. See Vladyslav Sushko & Grant Turner, *The Implications of Passive Investing for Securities Markets*, BIS QUARTERLY REVIEW, at 116-17 (Mar. 2018), [https://www.bis.org/publ/qtrpdf/r\\_qt1803j.pdf](https://www.bis.org/publ/qtrpdf/r_qt1803j.pdf) [<https://perma.cc/Y64S-LCFF>].

111. *Id.* at 116–17; see J. Busse, A. Goyal & S. Wahal, *Investing in a Global World*, 18(2) REVIEW OF FINANCE 561 (2014); Fama & French, *supra* note 3.

112. See Judith Evans & Jonathan Eley, *Democratizing Finance: How Passive Funds*

scandals like the redemption freeze at U.K. based *Woodford Equity Income Fund*, support investor demand for ETFs<sup>113</sup> over actively managed, open-ended, redeemable funds because of their secondary market liquidity.<sup>114</sup>

## b. ETF Liquidity, Cost and Tax Advantages Over Mutual Funds

Passive outperformance isn't the only reason ETFs are popular, as many mutual funds also use passive indexing strategies.<sup>115</sup> Another strong argument in support of ETF's popularity is that they cost less than analogous index mutual or closed end fund structures.<sup>116</sup> They also have tax advantages over mutual funds.<sup>117</sup> Additionally (and perhaps most importantly), ETFs are easy to buy in the secondary market.<sup>118</sup> Although ETFs have features similar to both closed-end funds and open-ended structures (like mutual funds),<sup>119</sup> ETF investors don't have the same redemption procedures as mutual fund investors. ETFs can be purchased like stocks through a

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*Changed Investing*, FINANCIAL TIMES (Jan. 30, 2015), <https://www.ft.com/content/b3c0c960-a56c-11e4-bf11-00144feab7de> [<https://perma.cc/B3RW-BLK8>].

113. See Athanasios Psarofagis & Eric Balchunas, *Passive Investing Could Emerge as the Winner in the Woodford Troubles*, BLOOMBERG INTELLIGENCE (June 25, 2019), <https://www.bloomberg.com/professional/blog/passive-investing-emerge-winner-woodford-troubles/> [<https://perma.cc/Y2ZG-WLKW>].

114. See David Tuckwell, *Woodford Saga Shows Why ETF Liquidity Is Worth Paying For*, ETF STREAM (June 11, 2019), [https://www.etfstream.com/feature/8073\\_woodford-shows-why-etf-liquidity-is-worth-paying-for/](https://www.etfstream.com/feature/8073_woodford-shows-why-etf-liquidity-is-worth-paying-for/) [<https://perma.cc/3WQF-B2EV>]; Matthew Vincent, *Woodford: The Self-confessed Failings of Hargreaves and the FCA*, FINANCIAL TIMES (Oct. 16, 2019), <https://www.ft.com/content/921894b8-f013-11e9-ad1e-4367d8281195> [<https://perma.cc/337R-HTJ8>].

115. See Sarah O'Brien, *Why This Strategy Has Been a Boon to Investors Over the Last Decade*, CNBC (Dec. 24, 2019), <https://www.cnbc.com/2019/12/24/why-this-strategy-has-been-a-boon-to-investors-over-the-last-decade.html> [<https://perma.cc/B4JZ-77MY>].

116. See Stoyan Bojinov, *Why Are ETFs So Much Cheaper Than Mutual Funds*, ETFDB.COM, <https://etfdb.com/etf-education/etfs-vs-mutual-funds-why-etfs-are-cheaper/> [<https://perma.cc/G52P-7MZN>] (last accessed Feb. 1, 2020).

117. See Mark Kennedy, *ETF Tax Advantages Over Mutual Funds*, THE BALANCE (July 15, 2019), <https://www.thebalance.com/etf-tax-advantages-over-mutual-funds-1215121> [<https://perma.cc/N6WA-93T7>]; see O'Brien, *supra* note 115.

118. See VANGUARD ASSET MANAGEMENT, *Understanding ETF Liquidity and Trading* (2015), available at <https://www.vanguard.nl/documents/understanding-etf-liquidity.pdf> [<https://perma.cc/U687-7EBS>].

119. See U.S SECURITIES AND EXCHANGE COMMISSION, SUBCOMMITTEE ON ETs AND BOND FUNDS, *Report on the Design of Exchange Trade Funds and Bond Funds – Implications for Fund Investors and Underlying Security Markets Under Stressful Conditions*, 4 (Apr. 10, 2019), available at <https://www.sec.gov/spotlight/fix-income-advisory-committee/etfs-and-bond-funds-subcommittee-report-041519.pdf> [<https://perma.cc/3HG5-ED6H>] (hereinafter "SEC Subcommittee Report").

brokerage account.<sup>120</sup> This secondary market ETF “liquidity” advantage is a tremendous selling point for investors who are nervous of a mutual fund “redemption freeze.”<sup>121</sup>

**c. Regulatory Accommodations to Ease the Launch of New ETFs**

Another factor contributing to the rise of ETFs (and the growth of mega issuers) are recent regulatory accommodations easing the path to launch for new funds.<sup>122</sup> In September 2019 the Securities and Exchange Commission (SEC) approved a new rule (*Rule 6c-11*) designed to “streamline the process for offering” ETFs.<sup>123</sup> With Rule 6c-11,<sup>124</sup> certain ETF issuers will no longer have to obtain exemptive relief from the SEC to launch prescribed funds.<sup>125</sup> The rule also provides “flexibility” for “newer ETF issuers and their middlemen to swap stocks or bonds that aren’t an exact, proportional match for the fund’s holdings.”<sup>126</sup>

**d. Access to Opaque Fixed-Income Markets and Institutional Use as Cash Substitutes**

Many corporate and emerging market bonds trade over-the-counter in difficult to access and opaque dealer markets, and fixed income ETFs allow retail investors an access point to these markets.<sup>127</sup> Research suggests that fixed-income and other ETF structures with illiquid underlying assets attract investors who would not otherwise invest in these sectors.<sup>128</sup> Institutional

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120. See Kennedy, *supra* note 117.

121. See James Seyffart & Eric Balchunas, *Active Mutual Funds More Liquidity Risk in Crisis Than ETFs*, BLOOMBERG INTELLIGENCE (Aug. 12, 2019), <https://www.bloomberg.com/professional/blog/active-mutual-funds-liquidity-risk-crisis-etfs/> [<https://perma.cc/8Q5Y-X6TY>].

122. See Dave Michaels, *Washington Gives Exchange Traded Funds Fast Lane to Market*, THE WALL STREET JOURNAL (Sept. 26, 2019), [https://www.wsj.com/articles/washington-gives-exchange-traded-funds-fast-lane-to-market-11569531983?mod=article\\_inline](https://www.wsj.com/articles/washington-gives-exchange-traded-funds-fast-lane-to-market-11569531983?mod=article_inline) [<https://perma.cc/P5R5-YUE4>].

123. *Id.*

124. U.S. SECURITIES & EXCHANGE COMMISSION, *Press Release, SEC Adopts New Rule to Modernize Regulation of Exchange-Traded Funds* (Sept. 26, 2019), <https://www.sec.gov/news/press-release/2019-190> [<https://perma.cc/7NM6-6BHK>].

125. See *id.* Rule 6c-11 does not apply, however, to all ETF structures (“ETFs organized as unit investment trusts (UITs), leveraged or inverse ETFs, ETFs structured as a share class of a multi-class fund, and non-transparent ETFs will not be able to rely on the rule.”).

126. See Michaels, *supra* note 122.

127. See SEC Subcommittee Report, *supra* note 119, at 7–8.

128. See M. Broman, *Relative Liquidity, Style Investing, and Excess Comovement of Exchange Traded Fund Returns*, 30 JOURNAL OF FINANCIAL MARKETS 27 (2016).

investors have flocked to ETFs as a new “tool of choice” in the construction of their portfolios,<sup>129</sup> and institutional investors are increasingly using fixed-income ETFs as “near substitutes for cash” because of their high liquidity.<sup>130</sup> Other benefits of ETFs to institutional investors include “ease of use.”<sup>131</sup> As a result, recent reports note that institutional ETF assets have “grown at an average annual rate of 17% since 2014 to reach more than \$1 trillion, easily outpacing the growth rates of most other investment vehicles” with fixed income ETFs representing the fastest growing segment.<sup>132</sup> Large ETF firms can also offer institutional investors “liquidity advantages” like more competitive bid-ask spreads.<sup>133</sup>

**e. Ability to Duplicate Novel Index Structures**

The variety of underlying asset class exposure seems nearly limitless with ETFs.<sup>134</sup> To avoid competing head to head with mega firms, new fund issuers will often devise novel indexes and benchmarks.<sup>135</sup> This is a tenuous strategy, however, because the large firms can simply copy innovative structures and use their market power to capture the flow of funds into novel structures.<sup>136</sup> Paradoxically, the fourth largest U.S. ETF issuer *Invesco* (with over \$1.2 trillion total AUM and \$206 billion in ETFs) recently sought SEC protection to keep ETF portfolio holdings confidential.<sup>137</sup> As will be discussed below,<sup>138</sup> the SEC’s recent approval of “non-transparent” ETFs

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129. See Andrew McCollum, *ETFs: U.S. Institutions’ New Tool of Choice for Portfolio Construction*, GREENWICH INSIGHTS (Feb. 27, 2019), <https://www.greenwich.com/asset-management/etfs-us-institutions-new-tool-choice-portfolio-construction> [<https://perma.cc/DQE6-CNY2>].

130. See Marco Pagano, Antonio Sanchez Serrano & Josef Zechner, *Can ETFs Contribute to Systemic Risk?* REPORTS OF THE ADVISORY SCIENTIFIC COMMITTEE NO.9, EUROPEAN SYSTEMIC RISK BOARD (June 2019), 28–29, [https://www.esrb.europa.eu/pub/pdf/asc/esrb.asc.190617\\_9\\_canetfscontributesystemicrisk~983ea11870.en.pdf](https://www.esrb.europa.eu/pub/pdf/asc/esrb.asc.190617_9_canetfscontributesystemicrisk~983ea11870.en.pdf) [<https://perma.cc/9ZJQ-SNNQ>] (hereinafter “ESRB Report”).

131. BROADRIDGE, *Institutional Usage of North America ETFs*, Asset Management Report, 2 (Nov. 2018), available at [https://www.broadridge.com/\\_assets/pdf/broadridge-institutional-usage-of-north-america-etfs.pdf](https://www.broadridge.com/_assets/pdf/broadridge-institutional-usage-of-north-america-etfs.pdf) [<https://perma.cc/99ZJ-D5EG>].

132. *Id.* at 2.

133. See Bebchuck & Hirst, *supra* note 6, at 729.

134. See Evans & Eley, *supra* note 112.

135. See Wursthorn, *supra* note 93.

136. See Bebchuck & Hirst, *supra* note 6, at 731.

137. Rachel Evans, *Invesco Seeks SEC Nod for ETF Designed to Thwart Copycats*, BLOOMBERG (Sept. 25, 2019), <https://www.bloomberg.com/news/articles/2019-09-25/invesco-seeks-sec-nod-for-new-etf-designed-to-thwart-copycats> [<https://perma.cc/DRS9-XM59>].

138. See *infra* Section V(vi)(f).

helps to alleviate index strategy duplication concerns.<sup>139</sup>

**f. Robo-Advisors and the “Democratization” of Wealth Management**

Another factor fueling ETF growth is the popularity of “fintech” algorithmic wealth management platforms (or “robo-advisors”) which use low-fee ETFs in model portfolios.<sup>140</sup> Investor interest in robo-advisers transcend “the millennial set”, and now include much of the retail public.<sup>141</sup> Some fear that robo-advisors create ETF herding risk,<sup>142</sup> nevertheless, they represent a paradigm shifting “democratization” of wealth management - allowing the masses access to “diversified, affordable investment products” with essentially no account minimums.<sup>143</sup> This trend is widely facilitated by demographic changes, technological advancements, and “a shift in investor preferences” to passively managed structures like ETFs.<sup>144</sup> Alongside the emergence of low cost fintech wealth-management,<sup>145</sup> has been the brokerage commission and ETF fee war, both moving quickly to a zero fee environment.<sup>146</sup> The emergence of robo-advisors may also be increasing ETF issuer concentration, since they often promote widely held ETFs (like

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139. See U.S. SECURITIES AND EXCHANGE COMMISSION, *Public Statement, Statement of Commissioners Jackson and Lee on Non-Transparent Exchange Traded Funds* (Nov. 15, 2019), <https://www.sec.gov/news/public-statement/statement-jackson-lee-2019-11-15> [<https://perma.cc/873L-4FB4>] (hereinafter “Jackson and Lee”).

140. See Saule T. Omarova, *New Tech v. New Deal: Fintech as a Systemic Phenomenon*, 36 YALE J. ON REG. 735, 788 (2019); Bret E. Strzelczyk, *Rise of the Machines: The Legal Implications for Investor Protection with the Rise of Robo-Advisors*, 16 DEPAUL BUS. & COM. L.J. 55 (2017).

141. See Bryan Yurcan, *U.S. Bank Marketing Robo Adviser Beyond the Millennial Set*, AMERICAN BANKER (June 19, 2018), <https://www.americanbanker.com/news/us-bank-marketing-robo-adviser-beyond-the-millennial-set> [<https://perma.cc/F22C-YCHV>].

142. See Sheetz, *supra* note 108.

143. See Evans & Eley, *supra* note 112.

144. FINEXTRA, *The Democratization of Wealth Management* (June 6, 2016), <https://www.finextra.com/blogposting/12698/the-democratization-of-wealth-management> [<https://perma.cc/BKZ7-Y2HX>].

145. Low cost fintech access to professional wealth management arguable started with Robinhood; see John Divine, *How Robinhood Changed an Industry*, U.S. NEWS & WORLD REPORT (Oct. 17, 2019), <https://money.usnews.com/investing/investing-101/articles/how-robinhood-changed-an-industry> [<https://perma.cc/77LX-QNB6>].

146. See Jim Wang, *Free Stock Trades Are Not Always a Good Thing*, FORBES (Oct. 3, 2019), <https://www.forbes.com/sites/jimwang/2019/10/03/free-stock-trades-are-not-always-a-good-thing/#76a987a2687b> [<https://perma.cc/3VHZ-LE5U>]; see also Kirsten Chang, *Battle for Client Assets Heats Up as Brokers Cut Fees to Zero*, CNBC (Oct. 13, 2019), <https://www.cnbc.com/2019/10/13/battle-for-client-assets-heats-up-as-brokers-cut-fees-to-zero.html> [<https://perma.cc/C3VX-KWSH>].

Vanguard).<sup>147</sup>

**g.** AUM as Revenue: Securities Lending and Shadow Banking

ETF issuers have strong growth incentives since “collective investment vehicles” (which includes ETFs) can be used for “shadow banking” activities.<sup>148</sup> The term “shadow banking” (or non-bank lending) is widely associated with the GFC.<sup>149</sup> Securities lending, along with CDS written on *collateralized debt obligations* (CDO), were two key elements of *American International Group’s* (AIG) failure in the GFC.<sup>150</sup> Since the GFC, it’s been estimated that global “shadow banks” (including ETF issuers) have increased their assets by over 75 percent to \$52 trillion.<sup>151</sup> Securities lending has been called a “hidden source of return” for ETF fund sponsors,<sup>152</sup> even the “best-kept secret in the ETF business.”<sup>153</sup> Securities lending is not unique to ETFs – it’s been done for decades by other asset managers, like mutual funds and pensions.<sup>154</sup> The fee generating value of significant AUM from securities lending is so appealing that ETF issuers are willing to forgo fees (with “zero expense ratio” funds),<sup>155</sup> or even pay investors (the so-called “negative fee” funds).<sup>156</sup> Securities lending tends to be conducted by more

147. Eric Jansen, *When a Robo-advisor Is, or Isn’t, the Right Choice*, CNBC (June 5, 2018), <https://www.cnbc.com/2018/06/04/when-a-robo-advisor-is-or-isnt-the-right-choice.html> [<https://perma.cc/7DSL-Y2A7>].

148. Jeff Cox, *Shadow Banking Is Now a \$52 Trillion Industry, Posing a Big Risk to the Financial System*, CNBC (Apr. 11, 2019, 5:01 PM), <https://www.cnbc.com/2019/04/11/shadow-banking-is-now-a-52-trillion-industry-and-posing-risks.html> [<https://perma.cc/74MU-YFS7>].

149. *Id.*

150. See Robert McDonald & Anna Paulson (2015). *AIG in Hindsight*, 29(2) J. OF ECON. PERSPECTIVES 81, 81–95 (2015).

151. See Cox, *supra* note 148.

152. Lewis Braham, *ETFs’ Hidden Source of Return – Securities Lending*, BARRON’S (Apr. 7, 2018), <https://www.barrons.com/articles/etfs-hidden-source-of-returnsecurities-lending-1523054918> [<https://perma.cc/C8WD-UQSD>].

153. Lara Crigger, *Is Securities Lending Good for ETF Investors?* ETF.COM (Feb. 26, 2018), <https://www.etf.com/sections/features-and-news/securities-lending-good-etf-investor-s?nopaging=1> [<https://perma.cc/BSE5-6LNE>].

154. *Id.*

155. Eric Rosenbaum, *Millennial Online Lender SoFi to Offer Zero-fee ETFs, an Unexpected Rival for Index Fund Giants Vanguard, iShares*, CNBC (Feb. 25, 2019, 1:44 PM), <https://www.cnbc.com/2019/02/25/zero-fee-etfs-coming-but-not-from-vanguard-or-ishares-sofi.html> [<https://perma.cc/2MHV-L7UX>].

156. See Robert C. Lawton, *Investment Funds that Pay You to Invest Are Coming*, FORBES (May 19, 2019, 6:55 AM), <https://www.forbes.com/sites/robertlawton/2019/05/19/investment-funds-that-pay-you-to-invest-are-coming/#67eal1c555c1d> [<https://perma.cc/LUF5-KZZW>] (describing the likelihood of ETFs with “negative expense ratios”); see also Jeff Sommer, *A*

profitable ETFs with underlying stocks which are in higher demand by short sellers.<sup>157</sup>

#### **h.** The Economies of Scale of ETF Mega Issuers

Another “structural factor” that Professors Bebchuck and Hirst cite in their recent critique of the growth of the “giant three” (BlackRock, Vanguard and State Street) is that “economies of scale” allow ETF issuers to seize market share at the expense of smaller firms.<sup>158</sup> This is effectively an operational cost advantage – or as they note, “[a]n ETF with assets of \$10 billion would have one hundred times the assets under management of an ETF with assets of \$100 million tracking the same index, but the costs of operating the former would likely be much less than one hundred times the cost of operating the latter.”<sup>159</sup> Given this cost saving advantage, these firms can reduce the operational costs of individual funds.<sup>160</sup> Recent empirical evidence cited by these authors supports the argument of economies of scale in index funds, since certain fixed costs in running a fund (like administration, management, and commissions) can be spread over the entire fund issuer fund family.<sup>161</sup>

#### *iv. How Do ETFs Facilitate Complex Economic Interconnections?*

ETF firms facilitate complex interconnections with other financial institutions, banks, market participants, service companies, and retail and institutional investors.<sup>162</sup> Their operational structure also connects these entities with each other and with retail and institutional investors. The scope

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*Price War Has Driven Fund Fees to Zero. They May Be Set to Drop Further*, THE NEW YORK TIMES (Apr. 5, 2019), <https://www.nytimes.com/2019/04/05/business/price-war-fund-fees-zero-negative.html> [<https://perma.cc/57L4-MPAF>] (reporting that the fees associated with ETFs are “on the verge of falling below zero”).

157. Crigger, *supra* note 153.

158. Bebchuck & Hirst, *supra* note 6, at 729.

159. Bebchuck & Hirst, *supra* note 6, at 729.

160. Bebchuck & Hirst, *supra* note 6, at 729.

161. JOHN ADAMS, DARREN HAYUNGA & SATTAR MANSI, *Returns to Scale in Active and Passive Management* 27 (Dec. 4, 2018) (unpublished manuscript), 26–27, <https://ssrn.com/abstract=3295799> [<https://perma.cc/6XDS-YY33>].

162. See CENTRAL BANK OF IRELAND, *Exchange Traded Funds, Discussion Paper* (2017), <https://www.centralbank.ie/docs/default-source/publications/discussion-papers/discussion-paper-6/discussion-paper-6---exchange-traded-funds.pdf?sfvrsn=6> [<https://perma.cc/R5GW-JELR>] (hereinafter “CBI Discussion Paper,” illustrating the operational complexity of an exchange traded fund in both its primary and secondary market structures, and identifying the various participants in the ETF’s operational ecosystem).

of ETF-generated interconnectedness, and the risks originating from these heightened connections, enhances their systemic importance.<sup>163</sup> Because indexing is appealing for retail investors,<sup>164</sup> and ETF liquidity attracts institutional investors,<sup>165</sup> it's likely that the market will grow.<sup>166</sup> As a result, three firms (*BlackRock*, *Vanguard* and *State Street*) will continue to increase in size and influence.<sup>167</sup> This section will detail how ETFs, and the firms dominating their issuance, have created complex economic interconnections.

**a. ETFs Connect Market Participants Through a Complex Operating Ecosystem**

ETFs rely on the interaction of numerous external market participants, many of whom act with discretionary, non-binding, market incentives.<sup>168</sup> A simple “physical replication” ETF is created when an “authorized participant” (AP) – which is normally a large broker dealer<sup>169</sup> - transfers in

163. For a broad overview of the relationship between financial institution interconnectedness and systemic risk, see DTCC White Paper, *supra* note 55.

164. Kevin Kelleher, *Here's Why Small Investors Aren't Buying the 'Index Funds Bubble' Argument*, FORTUNE (Sept. 28, 2019, 6:00 AM), <https://fortune.com/2019/09/28/etf-index-fund-bubble-investors-favor-passive-stock-funds/> [<https://perma.cc/YT6G-BSFR>].

165. Andrew McCollum, *ETFs: U.S. Institutions' New Tool of Choice for Portfolio Construction*, GREENWICH ANALYTICS (Feb. 27, 2019), <https://www.greenwich.com/asset-management/etfs-usinstitutions-new-tool-choice-portfolio-construction> [<https://perma.cc/DQ E6-CNY2>].

166. Lizzy Gurdus, *The \$1 Trillion in Fixed-income ETFs will Double in the Next 5 Years, Says iShares America Chief*, CNBC (Sept. 23, 2019, 4:26 PM), <https://www.cnbc.com/2019/09/23/ishares-sees-1-trillion-in-fixed-income-etfs-doubling-in-5-years.html> [<https://perma.cc/ZEN9-SKA6>].

167. Bebhuck & Hirst, *supra* note 6, at 737–41.

168. HENRY T.C. HU & JOHN MORLEY, *The SEC and Regulation of Exchange-Traded Funds: A Commendable Start and a Welcome Invitation*, 92 S. CAL. L. REV. 1155, 1995–96 (2019); Henry T.C. Hu & John Morley, *A Regulatory Framework for Exchange Traded Funds*, 91 S. CAL. L. REV. 839, 845 (2018).

169. See ROCHELLE ANTONIEWICZ & JANE HEINRICHS, *The Role and Activities of Authorized Participants of Exchange Traded Funds*, INVESTMENT COMPANY INSTITUTE REPORT, 1 n.1 (Mar. 2015), [https://www.ici.org/pdf/ppr\\_15\\_aps\\_etfs.pdf](https://www.ici.org/pdf/ppr_15_aps_etfs.pdf) [<https://perma.cc/6 T4V-CFZD>] (“In addition, APs are U.S. registered self-clearing broker-dealers that can process all required trade submission, clearance, and settlement transactions on their own account, as well as full participating members of the National Securities Clearing Corporation and Depository Trust Company.”); see also BLACKROCK, *A Primer on ETF Primary Trading and the Role of Authorized Participants* (Mar. 2017), 3, <https://www.blackrock.com/corporate/literature/whitepaper/viewpoint-etf-primary-trading-role-of-authorized-participants-march-2017.pdf> [<https://perma.cc/BSC2-9F2Y>] (BlackRock lists the following examples of “Common U.S. APs” as “Bank of America Merrill Lynch, Citigroup, Credit Suisse, Deutsche Bank, Goldman Sachs & Co., Jeffries, JP Morgan, KCG, Morgan Stanley, UBS Securities, Virtu.”).



kind a basket of securities (corresponding to the index structure published by the ETF issuer) to an ETF issuer in exchange for new ETF shares (and in a reverse process for the redemption of ETF shares).<sup>170</sup> This is the ETF “primary market,” and retail investors can’t transact here.<sup>171</sup> In the primary market the number of ETF shares are flexible (similar to a mutual fund) and are continually adjusted based on supply and demand.<sup>172</sup> The ETF ecosystem also connects other voluntary market participants since APs will sell shares into the secondary market, where the bulk of trading activity takes place,<sup>173</sup> and which is accessible by market makers, high frequency traders (HFT), and retail and institutional investors. APs have an incentive to perform an “arbitrage mechanism” to keep the net asset value (NAV) of the underlying assets in alignment with the ETF secondary market price.<sup>174</sup> The ETF ecosystem connects other participants, such as derivatives dealers, for “synthetic” or other more complex structures (such as inverse or leveraged ETFs).<sup>175</sup>

**b. Connecting Corporations to Wall Street Through Proxy Voting Concentration**

ETF issuers sit intermediated between companies and investors, with the largest firms (*BlackRock*, *Vanguard*, and *State Street*) steadily increasing their proxy voting power over global businesses.<sup>176</sup> There’s emerging evidence that ETF issuers rarely use this power, but frequently side with management, even on controversial issues like executive pay increases.<sup>177</sup> A recent investigation noted that for the 300 worst performing companies in the *Russell 3000 Index*, BlackRock sided with management in 93 percent of its proxy votes, while Vanguard and State Street voted, respectively with management 91 and 84 percent of the time.<sup>178</sup> This is problematic when you consider potential conflicts faced by these firms who “count on corporations

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170. Su, *supra* note 5, at 3–5.

171. Su, *supra* note 5, at 4–5.

172. SEC Subcommittee Report, *supra* note 119, at 4.

173. BLACKROCK, A PRIMER, *supra* note 169, at 7.

174. Hu & Morley, *A Regulatory Framework*, *supra* note 168, at 851–54.

175. DEUTSCHE BUNDESBANK, THE GROWING IMPORTANCE OF EXCHANGE TRADED FUNDS IN THE FINANCIAL MARKETS, MONTHLY REPORT, 79, 83 (Oct. 2018), <https://www.bundesbank.de/resource/blob/766600/2fd3ae4f0593fb2ce465c092ce40888b/mL/2018-10-exchange-traded-funds-data.pdf> [<https://perma.cc/KFH5-RVZA>] (hereinafter “DB Report”).

176. Tim McLaughlin & Ross Kerber, *Special Report: Index Funds Invest Trillions but Rarely Challenge Management*, REUTERS (Oct. 8, 2019, 6:14 AM), <https://ca.reuters.com/article/idCAKBN1WN107-OCABS> [<https://perma.cc/AT7Y-NA2X>].

177. *Id.*

178. *Id.*

to offer their funds to employees in retirement plans.”<sup>179</sup> Therefore, a by-product of the indexing phenomenon is a concentration of voting power over U.S. public companies.<sup>180</sup> As John Bogle – shortly before his death – wrote: “[i]f historical trends continue, a handful of giant institutional investors will one day hold voting control of virtually every large U.S. corporation. Public policy cannot ignore this growing dominance, and [must] consider its impact on the financial markets, corporate governance, and regulation. These will be major issues in the coming era.”<sup>181</sup>

**c. ETF Firms Connect Main Street to Bank Risk Taking and Potential Failure**

Professor Yesha Yadav has identified that several of the world’s largest ETF issuers (*BlackRock, Vanguard, State Street, Fidelity* and *T. Rowe Price*) also happen to be the largest “block holders” of U.S. bank holding company shares.<sup>182</sup> Post-crisis banking reform requiring heightened capital facilitated greater asset manager equity exposure to banks.<sup>183</sup> Thus retail investors, holding these asset manager’s products, “have assumed the residual default risk of large parts of the U.S. banking system.”<sup>184</sup> Therefore, the need for ETF issuers to mitigate against excessive bank risk-taking is critical.<sup>185</sup> Also, as the AUM of ETF firms grows, some question bank’s “raison d’être” altogether, and suggest that “buy side” firms like ETF issuers are “poised to replace banks as the major source of funding for deals and underwriting.”<sup>186</sup> Further, asset managers hold large positions in competing banks, and a failure contagion across the banking industry would multiply loss exposure for retail investors.<sup>187</sup>

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179. *Id.*

180. John C. Bogle, *Bogle Sounds a Warning on Index Funds*, THE WALL STREET JOURNAL (Nov. 29, 2018, 10:15 AM), <https://www.wsj.com/articles/bogle-sounds-a-warning-on-index-funds-1543504551> [<https://perma.cc/YW2H-JBWT>].

181. *Id.*

182. YESHA YADAV, *Too-Big-To-Fail Shareholders*, 103 MINN. L. REV. 587, 592–93, 633–36 (2018).

183. *Id.* at 636.

184. *Id.* at 621.

185. *Id.* at 636.

186. CLAUDE LOPEZ, DONALD MARKWARDT & KEITH SAVARD, *The Asset Management Industry and Systemic Risk: Is There a Connection?*, MILKEN INSTITUTE (Sept. 2016), 27, <https://www.milkeninstitute.org/sites/default/files/reports-pdf/MI-Asset-Management-Industry-Systemic-Risk-WEB.pdf> [<https://perma.cc/GE6B-Q4KC>].

187. See YADAV, *supra* note 182, at 636–37 (noting that “[b]ecause they legally represent their funds at numerous large banks at once, the financial system is systemically impacted by the incentives, skills, and shortcomings of asset managers in exercising this governance

ETF firms have immense influence through proxy voting and written advocacy to management, but can't sell the underlying shares unless an ETF index is adjusted.<sup>188</sup> Yadav posits that asset managers “possess unique advantages, bringing a less risk-seeking model of equity investment to bank governance.”<sup>189</sup> Unfortunately, it seems they infrequently “use that clout” to “discipline” corporate managers.<sup>190</sup> Numerous scholars suggest that large asset managers are “afflicted by agency problems” and have “substantial incentives to be excessively deferential to the corporate managers of their portfolio companies.”<sup>191</sup> Also, since there is “no mission to outperform market indices” they may lack incentives to ensure that companies comprising an index are “well-run.”<sup>192</sup> It's also not clear how ETF issuers will exercise voting power when the interests of competing companies (that sit side-by-side in an index) are opposed, or when the interests of one company are unaligned with that of the larger economy.<sup>193</sup> Professor John Coates suggests that indexing firms can wield major influence while achieving “scale” through the formation of “policies” that apply across companies, which are often discretionarily devised through consultations with interested stakeholders.<sup>194</sup>

#### d. Connecting Financial Firms to Each Other Through Shadow Banking and Securities Lending

ETF issuers connect financial institutions to each other through shadow

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power”).

188. Carol J. Loomis, *BlackRock: The \$4.3 Trillion Force*, FORTUNE (July 7, 2014), <https://fortune.com/2014/07/07/blackrock-larry-fink/> [<https://perma.cc/EME7-7HGB>].

189. YADAV, *supra* note 182, at 637.

190. McLaughlin & Kerber, *supra* note 176.

191. Bebhuk & Hirst, *supra* note 6, at 19; *see also* LUCIAN A. BEBCHUK, ALMA COHEN & SCOTT HIRST, *The Agency Problems of Institutional Investors*, 31 J. ECON. PERSP. 89, 95 (2017) (describing some sources of an investment management company's “internal agency problems”); LUCIAN BEBCHUK & SCOTT HIRST, *Index Funds and the Future of Corporate Governance: Theory, Evidence, and Policy*, COLUM. L. REV. (forthcoming 2019) (manuscript at 1), [http://ssrn.com/abstract\\_id=3282794](http://ssrn.com/abstract_id=3282794) [<https://perma.cc/YLK5-V7TJ>] (arguing that index fund managers have strong incentives to “defer excessively to the preferences and positions of corporate managers”).

192. McLaughlin & Kerber, *supra* note 176.

193. Brett Christophers, *How Financial Giants Might Come to Rule Us All*, JACOBIN (June 18, 2019), <https://jacobinmag.com/2019/06/blackrock-fairburn-finance-wall-street-vanguard> [<https://perma.cc/4STA-4FHR>].

194. JOHN C. COATES, *The Future of Corporate Governance Part I: The Problem of Twelve*, HARVARD JOHN M. OLIN DISCUSSION PAPER NO. 1011 (Apr. 2019), 16, [http://law.harvard.edu/programs/olin\\_center/papers/pdf/Coates\\_1001.pdf](http://law.harvard.edu/programs/olin_center/papers/pdf/Coates_1001.pdf) [<https://perma.cc/65YK-6U8F>].

banking and securities lending.<sup>195</sup> The *Financial Stability Board* (FSB)<sup>196</sup> has identified ten “non-bank financial entities involved in shadow banking” post GFC in the Americas, including ETF firms.<sup>197</sup> Nonbank lending played a key role in the GFC,<sup>198</sup> particularly by AIG,<sup>199</sup> and the FSOC’s non-bank SIFI declaratory power (which will be discussed in detail below) safeguards against this risk.<sup>200</sup> Recent research shows that securities lending by ETF issuers in the U.S. has increased to levels unprecedented since the GFC.<sup>201</sup>

Many ETF issuers engage in securities lending.<sup>202</sup> An ETF sponsor can profit by lending a fund’s underlying securities to market participants like short-sellers.<sup>203</sup> Elon Musk, among others, has been vocal against ETF issuers by stating that they stimulate short selling through securities lending, and that ETF investors don’t realize the extent of these practices.<sup>204</sup>

195. See THE ECONOMIST, *How Shadow Banking Works* (Feb. 1, 2016), <https://www.economist.com/the-economist-explains/2016/02/01/how-shadow-banking-works> [<https://perma.cc/X6UB-HGVT>] (describing the definition of the term “shadow banking” and how asset managers are engaged in this industry. “[T]he term is used more loosely to cover all financial intermediaries that perform bank-like activity but are not regulated as one. These include mobile payment systems, pawnshops, peer-to-peer lending websites, hedge funds and bond-trading platforms set up by technology firms. Among the biggest are asset management companies. In 2013 investment funds that make such loans raised a whopping \$97 billion worldwide.”).

196. The Financial Stability Board (FSB) is an “international body that monitors and makes recommendations about the global financial system” established after the G20 London 2009 summit. FINANCIAL STABILITY BOARD, *About the FSB*, <https://www.fsb.org/about/> [<https://perma.cc/QTK7-AGDZ>] (last visited Nov. 4, 2019).

197. FINANCIAL STABILITY BOARD REGIONAL CONSULTATIVE GROUP FOR THE AMERICAS, *Report on Shadow Banking in the Americas*, 5 (Aug. 22, 2014), [https://www.fsb.org/wp-content/uploads/r\\_140822b.pdf](https://www.fsb.org/wp-content/uploads/r_140822b.pdf) [<https://perma.cc/W4R8-DZM4>].

198. Cox, *supra* note 148.

199. Schwarcz & Zaring, *supra* note 46, at 1827; McDonald & Paulson, *supra* note 150, at 82–95.

200. CENTER FOR AMERICAN PROGRESS, *supra* note 23.

201. Tim McLaughlin & Ross Kerber, *Securities Lending Boom Sparks Concerns on Returns and Voting*, REUTERS (Nov. 7, 2018, 1:06 AM), <https://www.reuters.com/article/us-funds-lending-analysis/securities-lending-boom-sparks-concerns-on-returns-and-voting-idUSKCN1ND0JA> [<https://perma.cc/E9AK-H29P>]; Jessica Tasman-Jones, *SJP Securities Lending More Than Doubles at Blackrock*, PORTFOLIO ADVISER (Aug. 14, 2019), <https://portfolio-adviser.com/sjp-securities-lending-more-than-doubles-at-blackrock/> [<https://perma.cc/RVE9-VR5V>].

202. Braham, *supra* note 152.

203. Braham, *supra* note 152.

204. Katerina Petroff & Annie Massa, *Musk Says BlackRock Makes ‘Excessive Profit’ from Short Lending*, BLOOMBERG (Oct. 5, 2018), <https://www.bloomberg.com/news/articles/2018-10-05/musk-says-blackrock-makes-excessive-profit-from-short-lending> [<https://perma.cc/YMF8-PZH2>].

BlackRock has defended against such allegations,<sup>205</sup> suggesting securities lending benefits investors (since income is passed on in the form of lower fees), only generates a small amount of revenue, and doesn't expose investors to extra risk.<sup>206</sup> Short selling can also enhance liquidity and price discovery.<sup>207</sup> The amount of lending profit returned to investors is contentious, and varies between issuers. A recent report noted Vanguard distributes almost all lending profits to investors, while others (like BlackRock) keep a higher proportion.<sup>208</sup> Securities lending can also create new layers of complexity, which may not be "offset" by the generated revenue.<sup>209</sup>

**e. ETFs as Cash and Money Market Substitutes: Connecting Debtors and Institutional Investors**

ETFs connect institutional investors (like mutual and hedge funds, pensions and other institutional investors) with debtors, since fixed-income ETFs are being used as cash substitutes (due to high liquidity).<sup>210</sup> In the case of a mutual fund holding a fixed income ETF, it creates uncertainty if "funds can be sold off to pay fleeing clients in times of stress as seamlessly as the stewards of the \$4 trillion market would like" – leading to frozen client withdrawals in a crisis.<sup>211</sup> Other institutions look to short duration bond ETFs as "handy alternatives" to cash or money market mutual funds

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205. BLACKROCK, *BlackRock Securities Lending, Unlocking the Potential of Portfolios* (2019), <https://www.blackrock.com/us/individual/literature/brochure/us-retail-securities-lending-brochure.pdf> [<https://perma.cc/6XBX-VLUV>].

206. See Ross Kerber, *Under Fire from Musk, Top Fund Firms Defend Securities Lending*, REUTERS (Oct. 5, 2018), <https://www.reuters.com/article/us-tesla-funds/under-fire-from-musk-top-fund-firms-defend-securities-lending-idUSKCN1MF2JQ> [<https://perma.cc/PHT7-KGMJ>] (detailing how short selling is a net benefit to investors).

207. See FEDERAL RESERVE BANK OF NEW YORK, *Market Declines: Is Banning Short Selling the Solution?* STAFF REPORT NO. 518, (Sept. 2011) (discussing the market benefits of short selling).

208. Siobhan Riding, *Fund Groups Challenged Over Securities Lending Practices*, FINANCIAL TIMES (May 11, 2019), <https://www.ft.com/content/62946b2e-1a36-3bd9-9515-f48dfda43b2a> [<https://perma.cc/Y8B5-6W8M>].

209. Crigger, *supra* note 153; Attracta Mooney, *Stock Lending by ETF Operators Worries Investors*, FINANCIAL TIMES (Feb. 4, 2018), <https://www.ft.com/content/d4706b0e-e40a-11e7-a685-5634466a6915> [<https://perma.cc/JZE9-LW2P>].

210. ESRB Report, *supra* note 130, at 28; Rachel Evans & Emily Barrett, *Fund Blowups Rekindle Doubts About ETF Liquidity in Crisis Times*, BLOOMBERG (July 12, 2019), <https://www.bloomberg.com/news/articles/2019-07-12/panic-sales-rekindle-debate-over-etf-liquidity-in-next-crisis> [<https://perma.cc/94T2-TSWL>].

211. Evans & Barrett, *supra* note 210.

(MMMFs), which have more significant regulation post-GFC.<sup>212</sup>

Prior to the GFC, MMMFs were viewed as cash substitutes that paid higher rates than bank deposits;<sup>213</sup> however, prime MMMFs created systemic risk by investing heavily in commercial paper (CP) backed by subprime mortgage loans and other illiquid and largely opaque asset classes.<sup>214</sup> On September 16, 2008 the *Reserve Primary Fund* (RPF) (the oldest MMMF in the U.S.) announced that it was “breaking the buck” and reducing its net asset value to below \$1 per share because of exposure to \$785 million of Lehman Brother’s CP, a move that precipitated a run on both the RPF and other MMMFs.<sup>215</sup> The resulting market panic led to an immediate \$85 billion loan to AIG (to prevent another major institution from failing),<sup>216</sup> and the Fed providing nonrecourse discount window bank loans to purchase the toxic-asset backed CP from the MMMFs (a program that peaked at \$150 billion exposure).<sup>217</sup> In October 2008 the Fed and the Treasury provided additional support mechanisms for MMMFs, the CP market at large, and the “shadow banking” system.<sup>218</sup>

ETF mega firms issue cash and MMMF substitutes, like BlackRock’s *iShares Short Term Treasury Bond ETF*.<sup>219</sup> Also, the ETF market has

212. See Chris Dieterich, *ETFs as a Solution for Cash*, BARRON’S (Mar. 6, 2015), <https://www.barrons.com/articles/etfs-as-a-solution-to-cash-1425697664> [<https://perma.cc/274H-YJFR>] (explaining the apparent liquidity of ETFs that makes them attractive substitutes for cash and other short-term funds).

213. See TIMOTHY F. GEITHNER, *STRESS TEST: REFLECTIONS ON FINANCIAL CRISES*, (New York: Broadway Books, 2014); 195–96, (stating that “[m]oney market funds were widely viewed as virtually indistinguishable from bank deposits as similarly safe vehicles for storing cash with slightly better interest rates”).

214. *Id.* at 127–28; Martin Kacperczyk & Philipp Schnabl, *When Safe Proved Risky: Commercial Paper during the Financial Crisis of 2007-2009*, 24(1) J. OF ECON. PERSPECTIVES 29, 34–37 (2010).

215. Phillip Swagel, *Legal, Political, and Institutional Constraints on the Financial Crisis Policy Response*, 29(2) J. OF ECON. PERSPECTIVES 107, 112–13 (2015); See also Phillip Swagel, *The Financial Crisis: An Inside View*, BROOKINGS PAPERS ON ECONOMIC ACTIVITY (Spring 2009), 40–41; PAULSON, *supra* note 49, at 233–34 (New York: Business Plus, 2010)

216. PAULSON, *supra* note 49, at 233–41; Geithner, *supra* note 213, at 194–97; McDonald & Paulson, *supra* note 150, at 89.

217. BLINDER, *supra* note 51, at 147–48 (New York: Penguin Group (USA), LLC, 2013); Lorie Logan, William Nelson & Patrick Parkinson, *Novel Lender of Last Resort Programs* (Sept. 2018), 9–11, <https://www.brookings.edu/wp-content/uploads/2018/08/02-Novol-LOLR-Prelim-Disc-Draft-2018.09.11.pdf> [<https://perma.cc/EJ9N-339D>].

218. Zoltan Pozsar, Tobias Adrian, Adam Ashcraft, and Hayley Boesky, *Shadow Banking*, FEDERAL RESERVE BANK OF NEW YORK STAFF REPORT NO. 458 (July 2010) at 61–64, <http://ssrn.com/abstract=1645337> [<https://perma.cc/8AB9-35K5>]; MORGAN RICKS, *THE MONEY PROBLEM: RETHINKING FINANCIAL REGULATION* (CHICAGO: UNIVERSITY OF CHICAGO PRESS, 2016), 96–101.

219. ISHARES, *iShares Short Term Treasury Bond ETF*, <https://www.ishares.com/us/prod>

evolved to list “actively managed, ultra-short duration bond ETFs” seeking market share from the MMMF segment.<sup>220</sup> Like MMMFs holding toxic-asset backed CP, these ETFs as cash substitutes could add to systemic risks depending on the composition of their fixed income baskets. The *European Systemic Risk Board* (ESRB) has noted that “[l]arge swings in ETF prices may create systemic risk insofar as financial institutions hold large ETF positions on their balance sheets or rely heavily on ETF shares in their liquidity management operations.”<sup>221</sup>

The coronavirus-driven market crash of March 2020 provides further evidence of ETFs being used as “cash-like” instruments.<sup>222</sup> Flows from ETFs to MMMFs accelerated after the Federal Reserve launched its program to support MMMFs and commercial paper in the crisis,<sup>223</sup> supporting the notion that investors were using ETFs as short-term, and higher yielding, alternatives to MMMFs.

#### **f.** Moral Hazard, Conflicts and “Originate to Distribute” Models

ETFs are also connecting investors and firms with a new form of “moral hazard.”<sup>224</sup> Passive investing has been associated with moral hazard by promoting “laziness” and a “lack of sophistication” rather than a desire to outperform the market or “seeking alpha.”<sup>225</sup> Some feel that holding the entire market indefinitely is an inferior investment strategy to those who

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ucts/239466/ishares-short-treasury-bond-etf [https://perma.cc/P7EY-FL72] (last visited Nov. 4, 2019).

220. Max Chen, *Wary Investors Can Turn to Cash Alternative, Ultra-Short-Duration Bond ETFs*, ETF TRENDS (Feb. 12, 2019), [https://www.etftrends.com/fixed-income-channel/wary-investors-can-turn-to-cash-alternative-ultra-short-duration-bond-etfs/?utm\\_source=Yahoo&utm\\_medium=referral&utm\\_campaign=ReadMore](https://www.etftrends.com/fixed-income-channel/wary-investors-can-turn-to-cash-alternative-ultra-short-duration-bond-etfs/?utm_source=Yahoo&utm_medium=referral&utm_campaign=ReadMore) [https://perma.cc/ZN78-SENM].

221. See ESRB Report, *supra* note 130, at 28 (noting that “[i]n such circumstances, this excess volatility of ETFs relative to their constituent securities will translate into a more volatile net worth of financial intermediaries, which may trigger additional selling pressure in the ETF positions, thereby exacerbating ETF price drops”).

222. See Katherine Greifeld, *Cash-Like ETFs See \$3 Billion Exit After Fed Steps into Market*, BLOOMBERG (Mar. 30, 2020), <https://www.bloomberg.com/news/articles/2020-03-30/fading-funding-squeeze-spurs-3-billion-exit-from-cash-like-etfs> [https://perma.cc/RD5C-HETJ].

223. See Sirio Aramonte & Fernando Avalos, *The Recent Distress in Corporate Bond Markets: Cues from ETFs*, BIS Bulletin No. 6 (Apr. 14, 2020), <https://www.bis.org/publ/bisbull06.pdf> [https://perma.cc/55S5-ZLR7].

224. ESRB Report, *supra* note 130, at 4 n.2.

225. Ivan Illan, *Passive Portfolios Are a Moral Hazard*, FORBES (Nov. 15, 2018), <https://www.forbes.com/sites/forbesfinancecouncil/2018/11/15/passive-portfolios-are-a-moral-hazard/#6dc717db4d74> [https://perma.cc/9ATE-NW9D].

actively “rebalance,” adjust allocations, and seek outperformance.<sup>226</sup> Yet another (more subtle, but potentially destructive) form of ETF moral hazard may exist in the relationship between debt underwriters and ETF issuers. For example, the ESRB Report notes:

[t]he passive nature of ETFs in that they constitute investments in fixed-income products may in principle create a moral hazard problem in the issuance of such products: anticipating that they will be bought by ETFs, bond underwriters may forgo due diligence on such instruments, as was the case in the originate-to-distribute business model before the global financial crisis.<sup>227</sup>

The firms that “devise” the underlying index can also have conflicts<sup>228</sup> including threats from China to include their companies in basket compositions.<sup>229</sup> The indexes themselves are susceptible to manipulation, which could hurt investors.<sup>230</sup> ETFs can also incentivize risky behavior in other financial institutions. Some ETFs invest in leveraged loans,<sup>231</sup> and numerous ETF companies have recently signalled their intention to enter this market as well.<sup>232</sup> Knowing that there is a market for leveraged loans, driven

226. *Id.*

227. ESRB Report, *supra* note 130, at 4 n.2; See also A. Purnanandam, *Originate-to-Distribute Model and the Subprime Mortgage Crisis*, 24(6) REVIEW OF FINANCIAL STUDIES 1881-1915 (2011) (discussing the originate to distribute model in the global financial crisis and the resulting moral hazard).

228. See Robert J. Jackson & Steven Davidoff Solomon, *What's Really in Your Index Fund?* N.Y. TIMES (Feb. 18, 2019), <https://www.nytimes.com/2019/02/18/opinion/index-fund.html> [<https://perma.cc/W6ZH-ZQQ8>].

229. See Mike Bird, *How China Pressured MSCI to Add Its Market to Major Benchmark*, THE WALL STREET JOURNAL (Feb. 3, 2019), <https://www.wsj.com/articles/how-china-pressured-msci-to-add-its-market-to-major-benchmark-11549195201> [<https://perma.cc/368N-ZH9S>] (detailing the interaction between index funds, the Chinese government, and the market in China).

230. See Mark DeCambre, *How Trillion-dollar Stock-market Index Funds Are Vulnerable to Manipulation that ‘Could Harm American Investors.’* MARKETWATCH (Feb. 20, 2019), <https://www.marketwatch.com/story/how-trillion-dollar-stock-market-index-funds-are-vulnerable-to-manipulation-that-could-harm-american-investors-2019-02-19> [<https://perma.cc/PGA4-MXYC>] (pointing out that the methods used to create index funds are not necessarily aligned with fund value maximization).

231. See Mayra Rodriguez Valladares, *Big Banks Are Very Exposed to Leveraged Lending and CLO Markets*, FORBES (Apr. 15, 2019), <https://www.forbes.com/sites/mayrarodriguezvalladares/2019/04/15/big-banks-are-very-exposed-to-leveraged-lending-and-clo-markets/#38dd21987309> [<https://perma.cc/DG3J-LKY7>] (demonstrating the growth of leveraged lending and pondering the implications for systemic risk).

232. See Mayra Rodriguez Valladares, *The SEC Tells Senator Elizabeth Warren That It Is Monitoring CLO Markets*, FORBES (May 6, 2019), <https://www.forbes.com/sites/mayrarodriguezvalladares/2019/05/06/the-sec-tells-senator-elizabeth-warren-that-it-is-monitoring-clo-markets/#7a52a2be2124> [<https://perma.cc/TGF9-C33C>] (identifying the growth in the



by ETF investor demand, financial institutions are incentivized to originate such products, and transfer the risk to ETF investors.<sup>233</sup> There is a clear liquidity “mismatch” between the underlying leveraged loans (which are “traded infrequently” with long settlements) and the ETFs that hold them (which are considered highly liquid), further exacerbating the risk of a liquidity crunch in a crisis.<sup>234</sup>

Another way that ETF issuers are connecting financial institutions to each other is in their fund structures. The ESRB Report reports that “[s]ynthetic ETFs are exposed to the risk that the swap counterparty is unable to fulfill its obligation to deliver the index return, while physical ETFs are exposed to counterparty risk through securities lending transactions, with the potential, in both cases, to generate fire sales in times of financial stress.”<sup>235</sup> Some funds invest in other funds, thereby deepening the interconnection complexity and making the unwinding of the overall structure even more unpredictable in a crisis.<sup>236</sup>

**g. Connecting Investors and Influencing Herds Due Through Correlated Exposures**

ETFs connect retail and institutional investors to each other. The ESRB notes that “ETFs can contribute to systemic risk by inducing investors to take correlated exposures that may trigger a chain reaction with systemic risk implications.”<sup>237</sup> A 2013 report by the OFR (a division of the U.S. treasury)<sup>238</sup> also assessed ETFs’ impact on financial stability<sup>239</sup> and potential

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leveraged loan market along with the concerns that CLO market growth presents for regulation).

233. See Colby Smith *Who’s Buying Leveraged Loans Anyways?* FINANCIAL TIMES (Nov. 20, 2018), <https://ftalphaville.ft.com/2018/11/20/1542706123000/Who-s-buying-leveraged-loans-anyways/> [<https://perma.cc/5KU8-ZZ3J>] (displaying that the increased demand for leveraged loans is concomitant with a growing liquidity mismatch, exposing investors to increased risk).

234. *Id.*

235. ESRB Report, *supra* note 130, at 3.

236. ESRB Report, *supra* note 130, at 3.

237. ESRB Report, *supra* note 130, at 3.

238. See OFFICE OF FINANCIAL RESEARCH, *About the OFR*, <https://www.financialresearch.gov/about/> [<https://perma.cc/K8WJ-BGQ7>] (last visited Oct. 10, 2019). The Office of Financial Research was instituted pursuant to post crisis reform (the *Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010*) to “promote financial stability by looking across the financial system to measure and analyze risks, perform essential research and collect and standardize financial data.”

239. OFFICE OF FINANCIAL RESEARCH, *Asset Management and Financial Stability* (Sept. 2013), [https://www.financialresearch.gov/reports/files/ofr\\_asset\\_management\\_and\\_financial\\_stability.pdf](https://www.financialresearch.gov/reports/files/ofr_asset_management_and_financial_stability.pdf) [<https://perma.cc/Z4B7-7PST>] (hereinafter “OFR Report”).

contagion selling in underlying assets, especially for ETFs with illiquid assets (like bonds).<sup>240</sup> There is also a “herding” potential that gets exacerbated through ETF duplication as firms look to copy other’s index structures.<sup>241</sup> The quick creation of new products could generate buying pressures by consumers not well suited to hold such risk exposure (like ETFs that replicate complex trading strategies used by hedge funds).<sup>242</sup> In a crisis, once risks materialize, investors could quickly sell their ETFs.<sup>243</sup> Another potential scenario is a “run” on a big asset manager (like BlackRock) where all secondary market fund holders simultaneously liquidate their holdings.<sup>244</sup> There is also an emerging, and unsettled, debate on the price distortive and volatility enhancing impact of ETFs on underlying securities.<sup>245</sup>

Mutual funds holders can interact directly with a mutual fund issuer and redeem their fund units at NAV<sup>246</sup> because of *Investment Company Act* provisions governing open-end management investment companies.<sup>247</sup> Likewise, MMMFs are generally redeemable at a “stable” NAV (\$1.00 per share); however, post-crisis rules designed to mitigate MMMF runs have adjusted these rules somewhat by introducing a “floating NAV” provision to account for underlying securities daily prices (rather than a \$1.00 “stable share price”) on MMMFs that invest in corporate debt.<sup>248</sup>

ETF investors can’t transact directly with the fund sponsor to redeem their shares at the underlying NAV.<sup>249</sup> They must sell them into the

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240. *Id.* at 10–11.

241. *Id.* at 9.

242. Jeff Reeves, *7 ETFs That Act Like a Hedge Fund*, U.S. NEWS & WORLD REPORT (July 18, 2018), <https://money.usnews.com/investing/funds/slideshows/7-etfs-that-act-like-a-hedge-fund> [<https://perma.cc/JN87-4JV4>].

243. OFR Report, *supra* note 239, at 11–12.

244. Dellinger, *supra* note 4.

245. *Compare* ESRB Report, *supra* note 130 with Kenechukwu Anadu, Mathias S. Kruttli, Patrick E. McCabe, Emilio Osambela, & Chaehee Shin, *The Shift From Active to Passive Investing: Potential Risks to Financial Stability?* (Sept. 17, 2019), (unpublished manuscript) <https://ssrn.com/abstract=3244467> [<https://perma.cc/Y9NZ-GLYV>].

246. John Morley, *The Separation of Funds and Managers: A Theory of Investment Fund Structure and Regulation*, 123 YALE L.J. 1228 (2013).

247. 15 U.S.C. §§ 80a-2(a)(32), 5(a)(1) (2012); INVESTMENT COMPANY INSTITUTE, *Frequently Asked Questions About Mutual Fund Share Pricing*, [https://www.ici.org/faqs/faq/mfs/faqs\\_navs](https://www.ici.org/faqs/faq/mfs/faqs_navs) [<https://perma.cc/EL8G-PBGJ>].

248. *See* Kuhu Parasrampurua, *SEC’s New Money Market Rules*, 36 REV. BANKING & FIN. L. 2, 2–3 (2016) (noting that in addition to the “floating NAV” the reforms “also impose fees and redemption gates, which temporarily prohibit investors from withdrawing their investments in MMFs”).

249. *See* FIDELITY, *Understanding How Mutual Funds, ETFs and Stocks Trade*, FIDELITY LEARNING CENTER, <https://www.fidelity.com/learning-center/trading-investing/trading/trading-differences-mutual-funds-stocks-etfs> [<https://perma.cc/NL56-2VLH>] (last visited Nov. 4, 2019) (explaining the structure of funds trading).

secondary market (and find a willing counterparty), so in a panic they could be “trampled by the herd.”<sup>250</sup> The ETF redemption process is only available to a small number of “designated” authorized participants or “APs,” who redeem ETF shares in “large blocks” and are incentivized through an arbitrage mechanism to eliminate price differences in the ETF secondary market and the underlying NAV.<sup>251</sup> Even though only APs can redeem ETFs, there are still concerns that in a crisis or run on an ETF issuer, it won’t be able to satisfy AP redemption requests.<sup>252</sup>

Individual firms within the ETF operating ecosystem may be an independent source of risk since high levels of concentration in the industry can induce both operational and fire sale risk.<sup>253</sup> The failure of a large ETF firm, or AP, could “amplify or transmit risks to other parts of the financial system.”<sup>254</sup> In a “stressed market,” an ETF sponsor could face many redemption requests from APs,<sup>255</sup> or an AP withdraw, if the value of the secondary market ETFs deviated significantly from the value of the underlying fund assets.<sup>256</sup> AP redemption *en mass* could also spread selling pressure to the underlying assets themselves,<sup>257</sup> and then back to the ETF secondary market in what’s been described as a fire sale “feedback loop.”<sup>258</sup>

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250. See Paul Amery, *Will Investors Be Trampled by the Herd?* FINANCIAL TIMES (Sept. 11, 2016), <https://www.ft.com/content/be19405a-652c-11e6-8310-ecf0bddad227> [<https://perma.cc/JPF9-DB76>] (outlining the risks associated with herd behaviour when trading ETF funds).

251. See Hu & Morley, *A Regulatory Framework*, *supra* note 168, at 873 (explaining the regulation around structured arbitrage in ETF trading).

252. Amery, *supra* note 250.

253. See OFR Report, *supra* note 239, at 3.

254. OFR Report, *supra* note 239, at 18.

255. OFR Report, *supra* note 239, at 12.

256. See Natasha Doff, *Hedge Fund Manager Stakes Own Cash on a Bet Against Credit ETFs*, BLOOMBERG (Nov. 5, 2018), <https://www.bloomberg.com/news/articles/2018-11-05/hedge-fund-manager-stakes-own-cash-betting-credit-etfs-crumble> [<https://perma.cc/3YL B-WVAQ>].

257. See Ian Foucher & Kyle Gray, *Exchange-Traded Funds: Evolution of Benefits, Vulnerabilities and Risks*, BANK OF CANADA FINANCIAL SYSTEM REVIEW (Dec. 2014) at 42 (“APs can also transmit liquidity shocks from the ETF to the underlying assets (and vice versa). As ETFs and the underlying market become more interconnected, a small liquidity shock originating in either the ETF or the underlying securities could be amplified through a feedback loop (via APs). This could result in a large liquidity shock and a reduction in price informativeness for both the ETF and the underlying market.”).

258. *Id.*

## h. Interconnecting Market Service Providers Through the ETF Ecosystem

Asset managers have business relationships with a host of financial intermediaries and market participants, including (among others) banks, insurance companies, broker-dealers and financial service providers through their securities lending arrangements.<sup>259</sup> They use third party services like pricing services, benchmark providers, security data providers, custodians, transfer agents, and technology platforms.<sup>260</sup> Many of these service providers have common clients adding another layer of connectivity.<sup>261</sup> Service providers in the ETF ecosystem facilitate regulatory compliant back office and settlement operations.<sup>262</sup> Some ETFs also contract “distributors”<sup>263</sup> to take orders from the APs and, often, to act as the liaison between the ETFs transfer agent and the APs.<sup>264</sup> In addition to APs, other firms are involved in the operation of an ETF, including depositories, custodians, record keepers, transfer agents, index providers, exchanges, auditors, legal counsel, and administrators, who provide technology, financial, regulatory or operational support.<sup>265</sup> The interconnected relationships with other financial market service companies could have the effect of “expos[ing] asset managers to risks that arise in other market sectors.”<sup>266</sup> External risk exposure from service company interconnection

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259. See OFR Report, *supra* note 239, at 15.

260. See BLACKROCK, LETTER TO FINANCIAL STABILITY OVERSIGHT COUNCIL, RE: COMMENTS ON PROPOSED INTERPRETIVE GUIDANCE, AUTHORITY TO REQUIRE SUPERVISION AND REGULATION OF CERTAIN NONBANK FINANCIAL COMPANIES, RIN 4030-AA00 (May 13, 2019), at 47, available at <https://www.blackrock.com/corporate/literature/publication/fsoc-interpretive-guidance-supervision-regulation-certain-nonbank-financial-companies-051319.pdf> [<https://perma.cc/GT9A-YAWK>] (hereinafter “BlackRock Letter to FSOC”).

261. See OFR Report, *supra* note 239, at 21.

262. See ETF.COM, *So You Want to Launch an ETF?* (July 1, 2006), <https://www.etf.com/publications/journalofindexes/joi-articles/2305.html?nopaging=1> [<https://perma.cc/9UP2-X2F5>].

263. See KPMG, *ETF Playbook Glossary – Ecosystem of ETF Industry Roles*, 2–3 (2016), <https://home.kpmg/content/dam/kpmg/us/pdf/etf-playbook-glossary.pdf> [<https://perma.cc/N7S-258H>] (“Distributors have the role of conducting sales support for an ETF. For example, the distributor will reach out to brokerage firms, registered investment advisors (RIAs), retirement plan owners to: [i]ntroduce the ETF to them [and] [s]upport inclusion of the ETF into sell-side firm’s ETF inventories. In some cases, the ETF sponsor will act as the distributor, especially if it has existing fund wholesaler resources. Smaller ETFs, however, are more likely to utilize the services of a distributor since they typically lack a dedicated sales force.”).

264. See ETF.COM, *supra* note 262.

265. See KPMG, *supra* note 263.

266. Elliot, *supra* note 32, at 4.

can also arise from an ETF mega issuer who offers “ancillary services.”<sup>267</sup>

**i. The Interconnective Influence of BlackRock’s “Aladdin” Modelling Program**

Another way that BlackRock in particular is connecting the financial system is through its *Aladdin* computer system.<sup>268</sup> A recent *European Banking Institute* study calls Aladdin a “financial operating system,” and among “the most consequential and unexamined developments in global finance.”<sup>269</sup> Aladdin literally fills “warehouses” with hardware and is used not just by BlackRock’s extensive employee army, but also by thousands of clients who pay for access.<sup>270</sup> There are emerging concerns that the widespread use of Aladdin by other market participants is creating systemic risks through correlated investment exposures.<sup>271</sup> The reach and influence of Aladdin’s financial modeling is extensive, with an “effect on the management of ten percent of the world’s financial assets, or around \$20 trillion.”<sup>272</sup> This vast influence has led some to be concerned about the “unprecedented” influence of a single firm, which could also generate investor herding since many of the world’s largest sovereign wealth funds rely on Aladdin’s modeling.<sup>273</sup> The Federal Reserve also procured the services of BlackRock to manage its *Secondary Market Corporate Credit Facility* in response to the coronavirus, and BlackRock will utilize Aladdin in this capacity, further evidencing its influence.<sup>274</sup>

267. Elliot, *supra* note 32, at 5.

268. See BLACKROCK, *An End-to-end Portfolio Management Platform*, <https://www.blackrock.com/aladdin/offerings/aladdin-overview> [<https://perma.cc/B5JG-H8AJ>].

269. Dirk Andreas Zetzsche, William A Birdthistle, Douglas W Arner, & Ross P. Buckley, *Financial Operating Systems*, European Banking Institute (EBI) Working Paper Series No. 58/2020 ((Mar. 1, 2020), available at <https://ssrn.com/abstract=3532975> [<https://perma.cc/GLV6-RUU4>].

270. Will Dunn, *Meet Aladdin, the Computer “More Powerful Than Traditional Politics”* NEWSTATESMAN AMERICA (Apr. 6, 2018), <https://www.newstatesman.com/spotlight/2018/04/meet-aladdin-computer-more-powerful-traditional-politics> [<https://perma.cc/8TSY-CKQS>].

271. See Lawrence White, *HSBC Signs Deal to Use BlackRock’s ‘Aladdin’ Software Worldwide*, REUTERS (Mar. 21, 2019), <https://www.reuters.com/article/us-hsbc-blackrock/h-sbc-signs-deal-to-use-blackrocks-aladdin-software-worldwide-idUSKCN1R21NO> [<https://perma.cc/XD5M-9P8E>].

272. See Dunn, *supra* note 270.

273. Dunn, *supra* note 270.

274. Dawn Lim, *Federal Reserve Taps BlackRock to Purchase Bonds for the Government*, THE WALL STREET JOURNAL (Mar. 24, 2020), <https://www.wsj.com/articles/federal-reserve-taps-blackrock-to-purchase-bonds-for-the-government-11585085843> [<https://perma.cc/H652-U82Z>].

## j. ETF Firms Connecting Global Economies

Mega ETF firms are interconnecting investors, companies, countries and even employees throughout the globe. BlackRock has seventy offices in more than thirty countries and manages assets for clients in North and South America, Europe, Asia, the Middle East, Africa and Australia.<sup>275</sup> Vanguard has reported, as of August 31, 2019, having 220 funds in markets outside of the U.S. with more than thirty million investors in 170 countries.<sup>276</sup> Industry trends point towards “outsourced solutions” for operational and “back office” functions like “fund administration, accounting and transfer agency.”<sup>277</sup> This connects ETF firms to other service providers, many of whom also have global operations. BlackRock’s *Aladdin Implementation* has been specifically referenced in focusing on a “global operating model.”<sup>278</sup>

## IV. COULD ETF INTERCONNECTIVITY CONTRIBUTE TO SYSTEMIC RISK?

This section will explore how ETF driven interconnectivity could contribute to systemic risk and influence financial crises. A variety of taxonomies characterize the transmission of systemic risk in financial crises. For example, Professors Jeremy Kress, Patricia McCoy and Daniel Schwarcz identify two transmission mechanisms: “counterparty” transmission and “asset liquidation.”<sup>279</sup> For the purposes of simplicity this article will use a simple “direct” and “indirect” description, with numerous sub-components for each element of transmission.

### i. Direct Transmission of Systemic Shocks

#### a. ETF Fire Sales and Underlying Asset Liquidation Contagion

Liquidity shortages in ETFs could magnify a crisis fallout.<sup>280</sup>

275. See BLACKROCK, *Global Impact*, <https://www.blackrock.com/corporate/about-us/global-impact> [<https://perma.cc/97N5-S6HD>] (last visited Nov. 4, 2019).

276. See VANGUARD, *Fast Facts About Vanguard*, <https://about.vanguard.com/who-we-are/fast-facts/> [<https://perma.cc/95DS-WYGJ>] (last visited Nov. 4, 2019).

277. See Joy Davey, *Outsourcing: The Trend Towards Outsourced Solutions*, LEXOLOGY (Dec. 4, 2019), <https://www.lexology.com/library/detail.aspx?g=4acde1c9-0690-4882-afbd-b7c5a64fce5b> [<https://perma.cc/H9JP-9EXA>].

278. *Id.*

279. Kress, McCoy & Schwarcz, *supra* note 16, at 14.

280. See Satyajit Das, *Scarce Liquidity is a Growing Risk*, BLOOMBERG (June 12, 2018),

Asset managers, even as financial agents, can “create or amplify systemic risk” if they generate a “procyclical” impact on the financial cycle and induce contagion across other financial sectors.<sup>281</sup> The IMF, in its April 2019 *Global Financial Stability Report*, noted that ETFs may be driving liquidity “mismatch” and increasing the “likelihood of herding,” both impacting liquidity demand.<sup>282</sup> They also may be attracting short term volatility traders. For example, in 2013 when the Federal Reserve proposed ending its quantitative easing program, short term traders aggressively sold fixed income ETFs, impacting the yield spreads of the underlying bonds.<sup>283</sup> Also, in the “flash crash” of 2010, ETF prices diverged significantly from their NAV.<sup>284</sup>

Professors Henry Hu and John Morley describe the starting point for ETF generated systemic risk as an impairment of the “expectations of easy exit.”<sup>285</sup> Since many participants, who are relied on to support the ETF trading ecosystem (such as APs and market making firms), are driven by their own independent profit-seeking motives, it is uncertain whether they can be relied on to provide a “backstop” against panicked selling in a crisis.<sup>286</sup> APs may halt the process of redeeming or creating ETFs, leading the ETFs themselves to trade as closed-end funds, and their secondary market price deviating from the NAV, with HFT and other market makers either widening their bid-ask spreads or leaving the market.<sup>287</sup> Investors could also look to

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<https://www.bloomberg.com/opinion/articles/2018-06-12/scarce-liquidity-is-a-growing-risk> [<https://perma.cc/H79Q-6JKJ>].

281. Claude Lopez, *The Asset Management Industry, Systemic Risk, and Macroprudential Policy*, THE CAPCO INSTITUTE JOURNAL OF FINANCIAL TRANSFORMATION 121 (2018), available at <https://milkeninstitute.org/sites/default/files/reports-pdf/SSRN-id2953076.pdf> [<https://perma.cc/NQ4C-MUVL>].

282. See International Monetary Fund, *Global Financial Stability Report: Vulnerabilities in a Maturing Credit Cycle* (Apr. 2019), at 50, <https://www.imf.org/en/Publications/GFSR/Issues/2019/03/27/Global-Financial-Stability-Report-April-2019> [<https://perma.cc/5HAW-P97G>]; see also Steve Johnson, *IMF Warns on Risk of Rapid Exits from Emerging Market Assets*, FINANCIAL TIMES (Apr. 10, 2019), <https://www.ft.com/content/12303ac0-5ad7-11e9-939a-341f5ada9d40> [<https://perma.cc/9BPD-R2CT>].

283. See SEC Subcommittee Report, *supra* note 119 at 23–24; C. Dannhauser, & S. Hoseinzade, *The Transformation of Corporate Bondinvestors and Fragility: Evidence on Mutual Funds and ETFs*, WORKING PAPER, VILLANOVA UNIVERSITY (2018), available at <https://www.mtsu.edu/econfin/CaitlinDUpdated.pdf> [<https://perma.cc/PV2U-W6K3>].

284. See SEC Subcommittee Report, *supra* note 119, at 24–25.

285. See Hu & Morley, *A Regulatory Framework*, *supra* note 168, at 843.

286. See Allen Elstein, *Too Big to Curtail? Index Funds and ETFs Pose Hidden Risks for Unwary Investors*, CONTINGENCIES, AMERICAN ACADEMY OF ACTUARIES (May / June 2018), <http://contingencies.org/too-big-to-curtail-index-funds-and-etfs-pose-hidden-risks-for-unwary-investors/> [<https://perma.cc/HNZ2-3W2Y>].

287. See Mike Bird, *Could ETFs Fall into A Liquidity Jam?* THE WALL STREET JOURNAL (Mar. 21, 2018), <https://www.wsj.com/articles/return-of-volatility-raises-liquidity-question-f>

pre-empt AP departure by shorting ETFs.<sup>288</sup>

ETFs are an attractive mechanism for “pessimistic” short sellers to “speculate or hedge.”<sup>289</sup> ETF short sellers can add to pro-cyclical selling in a crisis,<sup>290</sup> and empirical evidence suggests that “difficult to mimic underlying indexes” are more commonly the target of shorts with physical and synthetic ETFs having “equal changes to be sold short.”<sup>291</sup> Also, ETFs allow for the construction of “synthetic short[s]” of illiquid individual index component securities (for example by shorting an ETF and then buying long only some parts of the index),<sup>292</sup> and this could also exacerbate fire-sell pressures on certain stocks in a crisis. Disappearing intermediaries can also affect liquidity in underlying asset classes, which can exacerbate sell-offs and lead to contagion.<sup>293</sup> Some worry that liquidity shortages in ETFs could generate sell-offs in other asset classes, including peer firm ETFs, as investors who can’t sell their ETF shares (or can only sell them at steep discounts) will move quickly to liquidate other investments.<sup>294</sup> This could also create a “feedback loop” as coordinated selling drives prices downward in both the ETF secondary and underlying asset markets.<sup>295</sup> This is particularly relevant for the growing segment of institutional investors that

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or-etfs-1521627574?mod=ITP\_businessandfinance\_0&tesla=y [https://perma.cc/YZE3-KFZB]; see FINANCIAL STABILITY OVERSIGHT COUNCIL, *Update on Review of Asset Management Products and Activities* (Nov. 16, 2016) available at, https://www.treasury.gov/initiatives/fsoc/news/Documents/FSOC%20Update%20on%20Review%20of%20Asset%20Management%20Products%20and%20Activities.pdf [https://perma.cc/6GKB-52VT].

288. Joanna Ossinger, *JPMorgan Says ETFs Won't Be the Biggest Victims if Credit Blows Up*, BLOOMBERG (Nov. 9, 2018, 10:40 AM), https://www.bloomberg.com/news/articles/2018-11-09/jpmorgan-says-etfs-won-t-be-biggest-victims-if-credit-blows-up [https://perma.cc/Q98E-RD93].

289. See Oleg Deev & Dagmar Linnertova, *The Determinants of ETFs Short Selling Activity*, 109 *PROCEDIA – SOCIAL AND BEHAVIORAL SCIENCES* 669, 669 (2014), https://www.sciencedirect.com/science/article/pii/S1877042813051653 [https://perma.cc/97H9-UHKK].

290. See Božena Chovancová, Michaela Dorocáková & Dagmar Linnertová, *Two Investment Options for Bearish ETF Investors: Inverse ETF and Shorting ETF*, 7(31) *INT. J. FINANCIAL STUD.* 2019 at 13.

291. See Deev & Linnertova, *supra* note 289, at 673.

292. See Crystal Kim, *Synthetic Shorting With ETFs*, BARRON'S (Febr. 27, 2017), https://www.barrons.com/articles/synthetic-shorting-with-etfs-1488206009 [https://perma.cc/F6UJ-52ZS].

293. Elstein, *supra* note 286.

294. Elstein, *supra* note 286.

295. See Foucher & Gray, *supra* note 257, at 42 (“APs can also transmit liquidity shocks from the ETF to the underlying assets (and vice versa). As ETFs and the underlying market become more interconnected, a small liquidity shock originating in either the ETF or the underlying securities could be amplified through a feedback loop (via APs). This could result in a large liquidity shock and a reduction in price informativeness for both the ETF and the underlying market.”).



look to ETFs as cash substitutes.<sup>296</sup> Relatedly, recent empirical research shows that ETF sell-offs have a greater effect on underlying bond prices than mutual fund sales.<sup>297</sup>

### b. Discretionary Incentives and ETF Arbitrage Malfunction

APs have a market-based profit incentive to perform arbitrage, which acts to simultaneously align the ETF share price and its underlying NAV.<sup>298</sup> APs have no legal obligation to perform this arbitrage.<sup>299</sup> APs are driven by discretionary and market-based incentives, and it's uncertain how they are going to react in a crisis, including whether they will withdraw from performing the ETF "arbitrage mechanism."<sup>300</sup> Discretionary liquidity has proven elusive in prior crises (in both the portfolio insurance market in 1987 and in the auction rate securities market in the GFC).<sup>301</sup> The Central Bank of Ireland has also noted that a "stress event" at a large AP could impact ETF liquidity.<sup>302</sup> If MM or AP firms consolidate,<sup>303</sup> it would reduce the number

296. See ESRB Report, *supra* note 130, at 3.

297. See C. Dannhauser & S. Hoseinzade, *supra* note 283.

298. See BLACKROCK, A PRIMER, *supra* note 169, at 2–3.

299. See Antoniewicz & Heinrichs, *supra* note 169, at 1–2.

300. The importance of discretionary actors (like APs and market makers) to the continued stability of the ETF ecosystem, and the potential for their withdrawal in a crisis has been noted by several researchers, see Ryan Clements, *New Funds, Familiar Fears: Do Exchange Traded Funds Make Markets Less Stable? Part I, Liquidity Illusions*, 20 HOU. BUS. & TAX L. J. 15 (2020); Hu & Morley, *A Regulatory Framework*, *supra* note 168; Hu & Morley, *The SEC and Regulation of Exchange-Traded Funds*, *supra* note 168; CBI Discussion Paper, *supra* note 162; DTCC Whitepaper, *supra* note 55; Srichander Ramaswamy, *Market Structures and Systemic Risks of Exchange Traded Funds*, BANK FOR INTERNATIONAL SETTLEMENTS WORKING PAPER NO. 343 (Apr. 2011), available at <https://www.bis.org/publ/work343.pdf> [<https://perma.cc/DAB8-55FP>].

301. See Clements, *supra* note 300, at 48–55; Mark Carlson, Fed. Res. Bd., 2007–13, A BRIEF HISTORY OF THE 1987 STOCK MARKET CRASH WITH A DISCUSSION OF THE FEDERAL RESERVE RESPONSE IN FINANCE AND ECON DISCUSSION SERIES, DIV. OF RES. STAT. & MONETARY AFFAIRS (Nov. 2006), at 11–2 (relating to arbitrageurs failing to support the portfolio insurance market in the 1987 market crash); see also Howard Marks, *Memo to Oaktree Clients Re: Liquidity* (Mar. 25, 2015), available at <https://www.oaktreecapital.com/docs/default-source/memos/2015-03-25-liquidity.pdf?sfvrsn=2> [<https://perma.cc/W3YJ-DX B2>] (highlighting the failure of discretionary liquidity providers to support the auction rate securities market and the parallels to ETFs).

302. See CENTRAL BANK OF IRELAND, *Feedback Statement on DP6 – Exchange Traded Funds* (2018), at 11, available at <https://www.centralbank.ie/docs/default-source/publications/discussion-papers/discussion-paper-6/feedback-statement-on-exchange-traded-funds---discussion-paper-6.pdf?sfvrsn=2> [<https://perma.cc/36GQ-HHBF>] (hereinafter "CBI Feedback Statement").

303. There is some evidence that the market for AP ETF arbitrage is, however, growing more robust with additional competition; see Siobhan Riding, *Watchdogs Probe Systemic*

of APs who could remedy liquidity shortages, since liquidity is often “fragile” during a crisis.<sup>304</sup> Further, HFT and other liquidity providers may “pause” in a stress event and withdraw from the market if the arbitrage mechanism leads to a decoupling of the ETF price and its NAV.<sup>305</sup>

In a report released before the coronavirus market crash, the UK’s *Financial Conduct Authority* (FCA) modestly rebutted contentions of fixed-income ETFs as a “threat to financial stability” due to liquidity mismatches,<sup>306</sup> citing the “resilience” of discretionary liquidity providers during periods of post-crisis market stress.<sup>307</sup> They acknowledge, however, emerging risks in the sector, including “highly concentrated” markets for liquidity providers<sup>308</sup> and authorized participants.<sup>309</sup> Further, the FCA qualifies its support for discretionary liquidity providers as “preliminary” with “tentative evidence” during times of stress and acknowledges the need for more research.<sup>310</sup> Others have countered that a true crisis, or market selloff, hasn’t happened since 2008, and ETFs as a nascent but quickly growing asset class haven’t been truly tested.<sup>311</sup> Additionally, the IMF in its April 2019 *Global Financial Stability Report*, highlights the growing risks

*Risks of Passive Fund Growth*, FINANCIAL TIMES (Mar. 31, 2019), <https://www.ft.com/content/a1deabc2-3eab-11e9-9499-290979c9807a> [<https://perma.cc/2SED-RPZN>].

304. For an analogous application from the GFC that shows how liquidity is “fragile” during a crisis, see Song Han & Dan Li, *The Fragility of Discretionary Liquidity Provision: Lessons From the Collapse of the Auction Rate Securities Market*, FINANCE AND ECONOMICS DISCUSSION SERIES DIVISIONS OF RESEARCH & STATISTICS AND MONETARY AFFAIRS, FEDERAL RESERVE BOARD (May 2010), available at <https://www.federalreserve.gov/pubs/feds/2010/201050/201050pap.pdf> [<https://perma.cc/99XK-77PY>].

305. See Su, *supra* note 5, at 17 (illustrating how market makers “paused” their activity in ETFs during the May 2010 flash crash).

306. See Huw Jones, *ETFs Pose No Threat to Financial Stability – UK Markets Watchdog*, REUTERS (Aug. 8, 2019), <https://www.reuters.com/article/us-britain-regulator-etf/etfs-pose-no-threat-to-financial-stability-uk-markets-watchdog-idUSKCN1UY190> [<https://perma.cc/AC2L-SK6V>].

307. Matteo Aquilina, Karen Croxson, Gian Giacomo Valentini & Lachlan Vass, *Fixed Income ETFs: Primary Market Participation and Resilience of Liquidity During Periods of Stress*, FINANCIAL CONDUCT AUTHORITY, RESEARCH Note (Aug. 2019), available at <https://www.fca.org.uk/publication/research/fixed-income-etfs-primary-market-participation-resilience-liquidity-during-periods-stress.pdf> [<https://perma.cc/D45Q-V7T7>].

308. *Id.* at 4 (“There is a high level of concentration among APs. The 5 most active APs are responsible for about 75% of overall reported primary market volumes (across all asset classes). Concentration is particularly pronounced in the fixed income market, with the top 5 APs there accounting for around 91% of overall volumes and the top AP itself accounting for 51%”).

309. *Id.* at 4.

310. *Id.* at 13.

311. See DB Report, *supra* note 175, at 79.

of liquidity mismatches.<sup>312</sup>

In March 2020, coronavirus-related fears caused a significant market sell-off, with ETFs quickly becoming a crisis trading “tool of choice” (with some investors even using them as “substitutes for futures”).<sup>313</sup> Before the Federal Reserve announced its sweeping stimulus measures in response to the crisis, many ETFs (particularly corporate bond funds) traded at “steep discounts” from their net asset value, and a lack of dealer support in the underlying bond market was cited by researchers from *Bank for International Settlements* among the contributing factors leading to an impairment of ETF arbitrage and creating price distortions.<sup>314</sup> Bond ETF price dislocations during the coronavirus crisis show just how precarious ETF arbitrage can be, especially since a credit ETF can be traded much faster than its underlying bonds.<sup>315</sup>

### c. Securities Lending Fallout and Counter-Party Default Risk

Securities lending can transmit systemic shocks in several ways.<sup>316</sup> Loan collateral could be “mismatched” with lent securities (like equities held against bonds).<sup>317</sup> In a crisis, the lent securities could deviate in value from the collateral and expose ETF fund holders to loss.<sup>318</sup> It’s been reported that

312. International Monetary Fund, *supra* note 282, at 12; *see also* International Monetary Fund, *supra* note 282, at 50 (“ETFs offer investors a liquid instrument with exposure to a portfolio of securities with varying liquidity and risk characteristics. The increasing participation of mutual funds and ETFs in less liquid markets may have increased their liquidity mismatches.”).

313. Dawn Lim & Mischa Frankl-Duval, *In Market Rout, ETFs Are Where the Action Is*, THE WALL STREET JOURNAL (Mar. 15, 2020), <https://www.wsj.com/articles/in-market-rout-etfs-are-where-the-action-is-11584270000> [<https://perma.cc/T3A7-LZ2H>].

314. *See* Aramonte & Avalos, *supra* note 223.

315. *See* Marc Gerstein, *Why Your Supposedly Stable Fixed-Income ETF Fell Off a Cliff*, FORBES (Mar. 23, 2020), <https://www.forbes.com/sites/marcgerstein/2020/03/23/why-your-supposedly-stable-fixed-income-etf-fell-off-a-cliff/#7a1c08bf7ba5> [<https://perma.cc/MCV3-KM5Y>].

316. For discussion of how securities lending has transmitted systemic risk in prior financial crises *see* George Tepe, *Broker Dealer Use of “Idle” Customer Assets: Customer Protection With Sweep Programs and Securities Lending*, 2016 COLUM. BUS. L. REV. 823, 863 (2016); Gary Gorton & Andrew Metrick, *Securitized Banking and the Run on Repo*, 104 J. FIN. ECON. 425 (2012); Tobias Adrian et al, FEDERAL RESERVE BANK OF NEW YORK STAFF REPORTS, REPO AND SECURITIES LENDING (2013), [https://www.newyorkfed.org/medialibrary/media/research/staff\\_reports/sr529.pdf](https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr529.pdf) [<https://perma.cc/7ATU-CWDN>].

317. *See* BLACKROCK, *Securities Lending*, *supra* note 205, at 3.

318. *See id.*; In the 2008 global financial crisis AIG experienced a mismatch in its security lending transactions since they often provided corporate bonds as collateral against loans that were invested in riskier, and in some cases, illiquid securities such as CDOs and other mortgage-backed securities, *see* McDonald & Paulson, *supra* note 150 at 84–87.

BlackRock's *iShares Core UK Gilts*, an ETF tracking Sterling denominated UK government bonds,<sup>319</sup> "has about two-thirds of the fund on loan at any one time and accepts equities and other ETFs as collateral."<sup>320</sup> Post GFC rules in the U.S. require loans to be "overcollateralized" (102 percent for U.S. securities and 105 percent for international) and also limit the amount of a fund's underlying assets that can be lent out to one-third of the fund assets.<sup>321</sup>

An ETF firm will also invest cash collateral.<sup>322</sup> U.S. rules curtail the level of risk that an ETF firm can take on with their cash collateral investments,<sup>323</sup> yet a debtor could quickly return the borrowed securities and demand their cash collateral, forcing the lender to liquidate their investments at a loss.<sup>324</sup> This problem gets "exacerbated" if the invested securities have decreased in value themselves, or are experiencing liquidity shortages.<sup>325</sup> ETF securities lenders also expose their investors to counter-party risk (with greater exposure for synthetic ETFs).<sup>326</sup> Borrowers in a securities lending transaction with an ETF firm could fail in a crisis, and the borrowed securities could be difficult to recover.<sup>327</sup> ETF firms also contract with independent "lending agents" to facilitate securities lending transactions, and they could be materially affected if one of these lending agents experiences significant distress in a crisis.<sup>328</sup>

Correspondingly, if a large ETF firm experienced material financial distress or failure and defaulted on its contractual obligations, negative pressure would be put on contractual counterparties, which could trigger a "chain-reaction" of negative events.<sup>329</sup> This impairs financial stability if

319. See *iShares Core UK Gilts UCITS ETF*, <https://www.ishares.com/uk/individual/en/products/251806/ishares-uk-gilts-ucits-etf?switchLocale=y&siteEntryPassthrough=true> [<https://perma.cc/7BN8-V5Q9>] (last visited Nov. 9, 2019).

320. Mooney, *supra* note 209.

321. See Adam McCullough, *Examining the Risks and Rewards of Securities Lending*, MORNINGSTAR (Dec. 12, 2018), <https://www.morningstar.com/articles/904334/examining-the-risks-and-rewards-of-securities-lending> [<https://perma.cc/77SM-L6T6>].

322. Mooney, *supra* note 209.

323. See McCullough, *supra* note 321.

324. See Tepe, *supra* note 316, at 863.

325. Tepe, *supra* note 316, at 863–64.

326. See Christophe Hurlin, Grégoire Iseli, Christophe Perignon, & Stanley Yeung, *The Counterparty Risk Exposure of ETF Investors*, HEC PARIS RESEARCH PAPER NO. FIN-2014-1050 (Mar. 12, 2019), <https://ssrn.com/abstract=2462747> [<https://perma.cc/LKP2-3NQH>].

327. See Zoe Van Schyndel, *The Risky Business of Securities Lending*, THE MOTLEY FOOL (Apr. 5, 2017), <https://www.fool.com/investing/general/2008/10/16/the-risky-business-of-securities-lending.aspx> [<https://perma.cc/J6EN-5245>].

328. See McCullough, *supra* note 321.

329. See Charles K. Whitehead, *Regulating for the Next Financial Crisis*, 24 PAC. MCGEORGE GLOBAL BUS. & DEV. L. J. 3, 8 (2011) (discussing the transmission of systemic

counterparties (and the financial system) are under stress and experiencing concurrent losses.<sup>330</sup> It would cause disruption to ETF investors as well because even though client assets are “excluded” from the estate of a bankrupt asset manager,<sup>331</sup> the resolution of an ETF firm could create delays and litigation for clients to recover assets.

#### d. Operational Disruption and Informational Opacity

ETF firm “operational risks” could create disruption and informational opacity.<sup>332</sup> As noted by the ESRB, investor behavior can be affected if an ETF issuer experiences “frictions in their operations” like an arbitrage malfunction.<sup>333</sup> The ESRB posits that, although operational risk does not normally generate systemic considerations, “in a highly concentrated segment like that of ETFs,” an operational event at one firm can create “mistrust among investors towards the whole segment and thus widespread sales.”<sup>334</sup> The domino effect from an adverse operational event at one of the mega-asset managers with significant ETF market share is, in many ways, analogous to the growing post-GFC fragilities in the central clearing of derivatives, where a small number of global banks now hold the reserves of the world’s largest clearing facilities, and the failure of one of these derivatives dealers could jeopardize the solvency of major clearinghouses.<sup>335</sup> Large institutions (financial or otherwise) could be also disrupted if ETFs are held on their balance sheets as “cash substitutes.”<sup>336</sup> Finally, an ETF investor who finds themselves holding the funds of a failed issuer could receive a cash distribution (provided there are sufficient assets to meet creditor demands), but only after the underlying assets are liquidated in what could be a lengthy, litigation filled, and uncertain process.<sup>337</sup>

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risk in a “chain reaction” across firms that are interconnected in a financial crisis).

330. Kress, McCoy & Schwarcz, *supra* note 16, at 1470–71 (discussing the transmission of systemic risk in a financial crisis through the “counterparty channel” when one firm’s distress, default or failure affects other interconnected firms who may be experiencing similar distress).

331. See BlackRock Letter to FSOC, *supra* note 260, at 5 (describing the agency nature of ETF issuers).

332. ESRB Report, *supra* note 130, at 3, 31.

333. ESRB Report, *supra* note 130, at 8.

334. ESRB Report, *supra* note 130, at 31.

335. See Alvarez & McPartland, *supra* note 20, at 11–19; Umar Faruqi, Wenqian Huang & Elöd Takàts, *Clearing risks in OTC derivatives markets: the CCP-bank nexus*, BIS QUARTERLY REVIEW (Dec. 2018) 73–90.

336. ESRB Report, *supra* note 130, at 28.

337. See ETF.COM, *Managing and Avoiding ETF Closures*, <https://www.etf.com/etf-education-center/21032-managing-and-avoiding-etf-closures.html> [<https://perma.cc/4QKE-J>]

ii. *Indirect Transmission of Systemic Shocks*

a. Contagion Selloffs in Other ETF Fund Sponsor Products

If a single ETF mega firm experienced material distress, investors who own funds of competitor firms may panic – and distrust in the “whole segment” of the market could lead to fire sales.<sup>338</sup> Such an event can induce a form of “prisoners dilemma,”<sup>339</sup> where investors rush to sell their funds (of any issuer) because they are unaware of the financial status of a particular ETF issuer.<sup>340</sup> This is analogous to a bank run when depositors of one bank may witness the material distress of a peer bank (where they don’t have deposits) but choose to withdraw from their own bank because they are nervous that their bank may also be in jeopardy.<sup>341</sup> This is also an example of what Andrew Haldane describes as fragility onset through “homogeneity” in financial product holdings.<sup>342</sup> As more and more investors hold passive index products, a counterintuitive phenomenon emerges: an individual’s attempt at “diversification” (though an index fund), when enacted collectively, creates homogenization of the market as a whole.<sup>343</sup> As Haldane notes, homogenized financial systems can be unpredictable in a crisis, since diversity strengthens the “durability” of the whole system.<sup>344</sup>

b. The Formation of Investor Herds and Flight to Quality

ETFs could contribute to the formation of investor herds in a crisis. An ETF is a “momentum strategy,” and underlying assets are purchased when investor money “flows in” and underlying assets are sold when investor money “flows out.”<sup>345</sup> With ETFs, speculators can trade across multiple markets “unhinged” from the intrinsic value of the constituent securities.<sup>346</sup> Herd formation is influenced by the “co-movement” of asset prices since

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7LL] (last visited Nov. 4, 2019).

338. See ESRB Report, *supra* note 130, at 31.

339. See Andrew Postlewaite & Xavier Vives, *Bank Runs as an Equilibrium Phenomenon*, 95(3) J. OF POL. ECON. 485, 485–86 (1987) (discussing a bank run that illustrates a prisoner’s dilemma).

340. See ESRB Report, *supra* note 130, at 31.

341. See Postlewaite & Vives, *supra* note 339, at 485–86.

342. See Haldane, *supra* note 43, at 3–4, 9–10.

343. Haldane, *supra* note 43, at 3–4, 9–10.

344. Haldane, *supra* note 43, at 9–10.

345. Thomas, *supra* note 8.

346. See Ayan Bhattacharya and Maureen O’Hara, *Can ETFs Increase Market Fragility? Effect of Information Linkages in ETF Markets* (Apr. 17, 2018), Working Paper, <https://ssrn.com/abstract=2740699> [<https://perma.cc/4J2G-2LNF>].

investors face simultaneous loss (as they have invested in the “systemic” rather than idiosyncratic components of risk).<sup>347</sup> Further, ETFs attract “directional traders” like HFT to take positions on entire asset classes, which both increases the volatility of constituent securities<sup>348</sup> and can drive investor “directional” behavior.<sup>349</sup>

Herds can form in many ways in ETFs. Investors who hold exotic ETFs, or fixed income ETFs could also look to liquidate their holdings in a herd-coordinated “flight to quality.”<sup>350</sup> ETFs that use leverage or “rule-based trading strategies” have procyclical potential.<sup>351</sup> A bear market sell-off in ETFs could also generate a collective fire-sale in the underlying assets.<sup>352</sup> A “stress event” affecting a large AP or market maker could also trigger an ETF investor herd.<sup>353</sup> Similarly the failure of the arbitrage mechanism could drive a coordinated fire-sale and other debilitating “chain reactions.”<sup>354</sup> Additionally, an ETF firm experiencing financial or operational disruption (or in the grips of a fraud or other scandal) can also find itself subject to a run,<sup>355</sup> similar to a bank run,<sup>356</sup> as investors liquidate firm sponsored ETFs.

### c. Impact on Pensions, Institutional and Retail Investors

A low-interest environment, post-GFC, has caused institutional investors to “search for yield” through products like ETFs, and in a crisis, a simultaneous sell-off could “amplify shocks.”<sup>357</sup> The IMF recently noted in

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347. ESRB Report, *supra* note 130, at 19; see L. R. Glosten, S. Nallareddy & Y. Zou, *ETF Trading and Information Efficiency of Underlying Securities*, COLUMBIA BUSINESS SCHOOL RESEARCH PAPER, No 16–71 (2016).

348. See I. Ben-David, F. Franzoni, F. & R. Moussawi, *Do ETFs Increase Volatility?* 73(6) J. OF FIN., 2471 (2018).

349. ESRB Report, *supra* note 130, at 20–21.

350. See OFR Report, *supra* note 239, at 10; Alessandro Beber, Michael W. Brandt & Kenneth A. Kavajecz, *Flight-to-Quality or Flight-to-Liquidity? Evidence from the Euro-Area Bond Market*, 22 REV. FIN. STUD. 925, 926 (2009).

351. See ESRB Report, *supra* note 130, at 22–23.

352. See Hu & Morley, *A Regulatory Framework*, *supra* note 168, at 851–56; Hu & Morley, *A Welcome Invitation*, *supra* note 168, at 1157–62

353. See CBI Feedback Statement, *supra* note 302, at 11.

354. See ESRB Report, *supra* note 130, at 2, 22–23, 28.

355. ESRB Report, *supra* note 130, at 31.

356. For an exploration of the behaviors of depositors in a bank run see Douglas W. Diamond & Philip H. Dybvig, *Bank Runs, Deposit Insurance, and Liquidity*, 91 J. OF POL. ECON. 401 (1983).

357. Carlo Svaluto Moreolo, *Systemic Risk Debate Intensifies*, INTELLIGENCE ON EUROPEAN PENSIONS AND INSTITUTIONAL INVESTMENTS (Nov. 2019), <https://www.ipe.com/analysis/systemic-risk-debate-intensifies/www.ipe.com/analysis/systemic-risk-debate-intensifies/10034171.fullarticle> [<https://perma.cc/S6TP-E2S8>].

an October 2019 *Global Financial Stability Report* the “increasing holdings of riskier and more illiquid assets by institutional investors” in the face of declining interest rates.<sup>358</sup> The report posits that as institutional investors seek out profit opportunities, correlated investment fund portfolios could “amplify market sell-offs” – and that this dynamic is contrary to the “traditional role they play in stabilizing markets during periods of stress.”<sup>359</sup> ETFs have also become increasingly exotic in variety.<sup>360</sup> In the midst of a market panic, investors may look to sell some of the exotic funds and crowd into safer asset classes, triggering an investor herd and contagion in both the exotic funds and their underlying assets.<sup>361</sup>

**d. Redemption Runs on Mutual and Open-Ended Funds Issued by ETF Firms**

Large ETF issuers also offer mutual funds.<sup>362</sup> Investors in a crisis-driven information cascade could look to early redemptions thinking it will provide an “economic advantage” since late redemptions could be exposed to a “less liquid” underlying portfolio.<sup>363</sup> However, a number of risks emerge if a bottleneck of redemptions occurs for mutual funds offered by ETF issuers. First, investors could be “gated” and unable to redeem mutual fund units, similar to the recently controversial *Woodford* funds in the U.K.<sup>364</sup> Fixed income funds have also been shown in one study to act similarly due to being evaluated based on “relative performance.”<sup>365</sup> Thus similar performing funds could facilitate coordinated redemption requests across

358. *Global Financial Stability Report: Lower for Longer*, INTERNATIONAL MONETARY FUND (Oct. 2019), <https://www.imf.org/en/Publications/GFSR/Issues/2019/10/01/global-financial-stability-report-october-2019> [<https://perma.cc/T347-EXU3>].

359. *Id.* at 3–4.

360. See William Baldwin, *Exotic ETFs: 11 Funds for When Tracking the S&P 500 Isn't Good Enough*, FORBES (Dec. 4, 2018), <https://www.forbes.com/sites/baldwin/2018/12/04/exotic-etfs-11-funds-for-when-tracking-the-sp-500-isnt-good-enough/#37e15cce6f83> [<https://perma.cc/CPM2-4AYT>] (describing Faber’s eleven choices for exchange-traded funds and their risky, exotic nature).

361. ESRB Report, *supra* note 130, at 20.

362. See BLACKROCK. *What are Mutual Funds?* <https://www.blackrock.com/us/individual/education/mutual-funds> [<https://perma.cc/X6ZQ-6MYA>] (last visited Nov. 21, 2019) (listing a few large ETF issuers and the mutual fund options they offer).

363. OFR Report, *supra* note 239, at 12–16.

364. See Owen Walker & Peter Smith, *Neil Woodford Slams the Gate in Investors' Faces*, FINANCIAL TIMES (June 3, 2019), <https://www.ft.com/content/ee03cb4a-8627-11e9-97ea-05ac2431f453> [<https://perma.cc/KJ89-J56K>] (describing the Woodford funds controversy in the UK in which investors were unable to redeem mutual fund units).

365. Michael Feroli, Anil K. Kashyap, Kermit Schoenholtz, & Hyun Song Shin, *Market Tantrums and Monetary Policy*, (U. of Chi. Booth Sch. of Bus., Working Paper No. 101, 2014



fund companies.<sup>366</sup>

**e. Material Risk Transmission to Real Economy and Impacts on Corporate Behavior**

The impact of ETF (and underlying asset) fire sales and investor collective actions can transmit shocks to the real economy and influence corporate behavior. Empirical evidence suggests that when equity fund-originated fire-sales of firm shares cause an underpricing of the firms, they tend to respond with a correspondingly lower level of investment and employment than their industry competitors.<sup>367</sup> Similarly, there is evidence of a “noisy” information effect causing firms to reduce their own capital investment when their product-market peers experience a stock price depreciation due to “non-fundamental” information (for instance based on a fire sale).<sup>368</sup> This is because corporate managers struggle to filter the signal from the noise in their peer’s stock price, and the resulting loss of investment can be significant, even for firms that are not otherwise under financial constraints.<sup>369</sup> Also, trading flows in corporate bonds can impact new corporate debt issuance decisions.<sup>370</sup>

**V. THE CHALLENGE OF REGULATING HIGHLY INTERCONNECTED ETF FIRMS**

As previously noted, the operations of large ETF firms foster deep and complex interconnections and could facilitate both indirect and direct financial shocks during a crisis. Hence, there has been a post-GFC heightened focus on their potential systemic importance.<sup>371</sup> This section will

366. See Antonio Falato, Ali Hortacsu, Dan Li & Chaehee Shin, *Fire-Sale Spillovers in Debt Markets* 108 JOURNAL OF FINANCIAL ECONOMICS 392 (2016), <https://ssrn.com/abstract=2887822> [<https://perma.cc/U5BL-YBAS>] (noting how flows of funds in mutual funds tend to mirror peers).

367. See Harald Hau & Sandy Lai, *Real Effects of Stock Underpricing*, 108 JOURNAL OF FINANCIAL ECONOMICS 392 (2013).

368. Olivier Dessaint & Thierry Foucault & Laurent Frésard & Adrien Matray, *Noisy Stock Prices and Corporate Investment*, SWISS FINANCE INSTITUTE 18-73 (2018), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2707999](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2707999) [<https://perma.cc/JZ9H-XCU3>].

369. *Id.*

370. See Qifei Zhu, *Capital Supply and Corporate Bond Issuances: Evidence from Mutual Fund Flows* (May 2018), (unpublished PhD thesis, University of Texas at Austin), <https://repositories.lib.utexas.edu/bitstream/handle/2152/65970/ZHU-DISSERTATION-2018.pdf?sequence=1> [<https://perma.cc/F86D-T5D3>].

371. See generally ESRB Report, *supra* note 130; OFR Report, *supra* note 239; FSB Structural Vulnerabilities, *supra* note 78.

canvass the complexity of that question by assessing the challenge in applying bank-like prudential oversight to ETF firms, the limitations in applying the FSOC's proposed "activities-based" rules for non-bank SIFIs<sup>372</sup> to ETF issuers, and a variety of other alternative regulatory considerations and important developments to monitor.

*i. Post-Crisis Non-Bank Systemically Important Financial Institution Designation*

FSOC<sup>373</sup> was created by The *Dodd Frank Wall Street Reform and Consumer Protection Act* (DFA)<sup>374</sup> for several aims, including to "identify risks to the financial stability of the United States that could arise from the material financial distress or failure, or ongoing activities, of large, interconnected bank holding companies or nonbank financial companies."<sup>375</sup> The DFA gives FSOC authority to determine whether a "nonbank financial company's material financial distress – or the nature, scope, size, scale, concentration, interconnectedness, or mix of its activities – could pose a threat to U.S. financial stability."<sup>376</sup> Pursuant to Section 113 of the DFA, the FSOC can make a "determination" that a nonbank financial company be subject to Federal Reserve supervision and prudential controls.<sup>377</sup> If designated as a non-bank SIFI, a firm will be "subject to consolidated supervision and regulation by the Federal Reserve, including risk-based capital, leverage, liquidity, and risk management requirements."<sup>378</sup> These standards are more onerous than a standard non-bank's "baseline regulatory regime."<sup>379</sup> A variety of "macroprudential tools" are also available to the

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372. Financial Stability Oversight Council 12 CFR Part 1310, Vol. 84 No. 49, 9028 (2019) <https://home.treasury.gov/system/files/261/Notice-of-Proposed-Interpretive-Guidance.pdf> [<https://perma.cc/89D8-MQAB>] (hereinafter "FSOC Proposed Rules").

373. See FINANCIAL STABILITY OVERSIGHT COUNSEL, *About FSOC*, <https://www.treasury.gov/initiatives/fsoc/about/Pages/default.aspx> [<https://perma.cc/Z8UN-79X4>] (last visited Jan. 1, 2020) (describing the duties and purpose of FSOC).

374. Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 113, 124 Stat. 1376, 1398 (2010) (codified at 12 U.S.C. § 5323(a) (2017)).

375. 12 U.S.C. § 5321 (2012).

376. U.S. DEPARTMENT OF THE TREASURY, FINANCIAL STABILITY OVERSIGHT COUNCIL, *Designations*, <https://www.treasury.gov/initiatives/fsoc/designations/Pages/default.aspx> [<https://perma.cc/86R8-AXSR>] (last visited Oct. 5, 2019) (hereinafter "FSOC Designations").

377. 12 U.S.C. § 5323 (2012).

378. Jeremy C. Kress, *The Last SIFI: The Unwise and Illegal Deregulation of Prudential Financial*, 71 STAN. L. REV. ONLINE 171, 172 (2018), <https://review.law.stanford.edu/wp-content/uploads/sites/3/2018/12/71-Stan.-L.-Rev.-Online-Kress.pdf> [<https://perma.cc/NYD3-LN SF>]; see also 12 U.S.C. § 5365(b)(1) (2012).

379. *Id.* at 173.

Federal Reserve to ensure that the declared non-bank SIFI doesn't transmit systemic risk "through the broader economy."<sup>380</sup>

In 2013, *American International Group, Inc.* (AIG), *General Electric Capital Corporation, Inc.* (GE), and *Prudential Financial, Inc.* (Prudential) were designated non-bank SIFIs,<sup>381</sup> and a similar declaration for *Metlife, Inc.* (Metlife) followed in 2014.<sup>382</sup> In 2016, FSOC de-designated GE after the firm altered its risk profile and sold off certain assets.<sup>383</sup> This was followed by AIG being de-designated in 2017 after undertaking similar activities.<sup>384</sup> Metlife had initially sued FSOC over its status<sup>385</sup> and won in district court by shrinking its insurance business.<sup>386</sup> In early 2018, FSOC withdrew its appeal against Metlife.<sup>387</sup> The final institution to shed the label of a non-bank SIFI was Prudential, which was de-designated in 2018.<sup>388</sup>

*ii. Applying FSOC's "Activities-Based" Guidance to ETF Firms*

Under the revised guidelines, FSOC will only pursue an entity specific determination under Section 113 of the DFA if "a potential risk or threat cannot be addressed through an activities based approach."<sup>389</sup> Before proceeding with a designation, FSOC will also perform a cost-benefit analysis (CBA) and only proceed if the benefits outweigh the possible costs.<sup>390</sup> It's highly unlikely the FSOC's revised framework will capture

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380. Kress, McCoy & Schwarcz, *supra* note 16, at 1474.

381. See FSOC Designations, *supra* note 376.

382. FSOC Designations, *supra* note 376.

383. FINANCIAL STABILITY OVERSIGHT COUNCIL, BASIS FOR THE FINANCIAL STABILITY OVERSIGHT COUNCIL'S RESCISSION OF ITS DETERMINATION REGARDING GE CAPITAL GLOBAL HOLDINGS, LLC (2016).

384. FINANCIAL STABILITY OVERSIGHT COUNCIL, NOTICE AND EXPLANATION OF THE BASIS FOR THE FINANCIAL STABILITY OVERSIGHT COUNCIL'S RESCISSION OF ITS DETERMINATION REGARDING AMERICAN INTERNATIONAL GROUP, INC. (2017).

385. Ryan Tracy, *U.S. Judge Questions MetLife 'Systemically Important' Designation*, THE WALL STREET JOURNAL (Feb. 17, 2016), <https://www.wsj.com/articles/u-s-judge-questions-metlife-systemically-important-designation-1455747900> [<https://perma.cc/6KB7-BCKU>].

386. Pete Schroeder, *MetLife, U.S. Regulators Agree to Set Aside Legal Fight*, REUTERS (Jan. 18, 2018), <https://www.reuters.com/article/us-usa-metlife-fsoc/metlife-u-s-regulators-agree-to-set-aside-legal-fight-idUSKBN1F8064> [<https://perma.cc/R8C5-GB5M>].

387. Kress, *supra* note 370 at 174; see also Alistair Gray, *Trump Administration Drops Appeal in MetLife 'Too Big to Fail' Case*, FINANCIAL TIMES (Jan. 19, 2018), <https://www.ft.com/content/cfc31764-ff65-351d-95f2-78e7b413af4f> [<https://perma.cc/2JPU-ELXH>].

388. FINANCIAL STABILITY OVERSIGHT COUNCIL, NOTICE AND EXPLANATION OF THE BASIS FOR THE FINANCIAL STABILITY OVERSIGHT COUNCIL'S RESCISSION OF ITS DETERMINATION REGARDING PRUDENTIAL FINANCIAL, INC. 2 (2018).

389. FSOC Proposed Rules, *supra* note 372, at 9028.

390. FSOC Proposed Rules, *supra* note 372, at 9029.

asset managers like ETF firms.<sup>391</sup> Therefore, despite their size, growth, and complex interconnectedness, none of the “giant three,”<sup>392</sup> even the largest of all – BlackRock<sup>393</sup> – will likely be legally “too big to fail” in the U.S. any time soon. This is welcomed by BlackRock, who lobbied heavily against enhanced supervision,<sup>394</sup> and Vanguard, who lauded the FSOC’s changes.<sup>395</sup> Both firms have battled the “too big to fail” label for most of the decade.<sup>396</sup> They strongly rejected previous suggestions by the OFR<sup>397</sup> in a 2013 report that they posed a “too big to fail” systemic risk.<sup>398</sup> Also, both firms signal that the costs of enhanced regulatory scrutiny, due to a non-bank SIFI designation, would likely flow through to investors in the form of higher fees.<sup>399</sup>

### *iii. Counter Arguments Against Heightened ETF Issuer Regulatory Scrutiny*

BlackRock and Vanguard strongly opposed previous attempts by the

391. See Richard Berner, Kermit Schoenholtz & Lawrence J. White, *Lowering The Bar on Financial Regulation is Fraught With Risk*, AMERICAN BANKER (June 27, 2019), <https://www.americanbanker.com/opinion/lowering-the-bar-on-financial-regulation-is-fraught-with-risk> [<https://perma.cc/LCN5-FNL7>].

392. Bebhuck & Hirst, *supra* note 6.

393. See Loomis, *supra* note 188.

394. CAMPAIGN FOR ACCOUNTABILITY, *New Report Details How BlackRock Fought Off Government Regulation by Spending Big in Washington* (Sept. 5, 2019), <https://blackrocktransparencyproject.org/2019/09/05/new-report-details-how-blackrock-fought-off-government-regulation-by-spending-big-in-washington/> [<https://perma.cc/FKD3-NLPK>].

395. See BlackRock Letter to FSOC, *supra* note 260; VANGUARD, LETTER TO FINANCIAL STABILITY OVERSIGHT COUNCIL, RE: AUTHORITY TO REQUIRE SUPERVISION AND REGULATION OF CERTAIN NONBANK FINANCIAL COMPANIES; RIN 4030-AA00 (May 13, 2019), <https://www.regulations.gov/document?D=FSOC-2019-0001-0013> [<https://perma.cc/6ED5-EHWK>] (hereinafter “Vanguard Letter to FSOC”).

396. See Sheila Bair, *Is BlackRock Too Big to Fail?* FORTUNE (Dec. 4, 2013), <https://fortune.com/2013/12/04/is-blackrock-too-big-to-fail/> [<https://perma.cc/5K9L-PX89>]; Douglas Holtz-Eakin & Satya Thallam, *What Happens If Investment Funds Are Labeled ‘Too Big to Fail’?* FORBES (June 19, 2014), <https://www.forbes.com/sites/realspin/2014/06/19/what-happens-if-investment-funds-are-labeled-too-big-to-fail/#6bc5acede5bb> [<https://perma.cc/569Y-82X9>].

397. U.S. DEPARTMENT OF TREASURY, OFFICE OF FINANCIAL RESEARCH, <https://www.financialresearch.gov/> [<https://perma.cc/Y73U-HCDE>] (last visited Oct. 5, 2019).

398. See also Chris Flood, *BlackRock Fights ‘Too Big to Fail’ Fears*, FINANCIAL TIMES (Nov. 4, 2013), <https://www.ft.com/content/e79d2280-4553-11e3-b98b-00144feabdc0> [<https://perma.cc/4KYY-68FZ>].

399. Douglas Holtz-Eakin & Satya Thallam, *What Happens If Investment Funds Are Labeled ‘Too Big to Fail’?* FORBES (June 19, 2014), <https://www.forbes.com/sites/realspin/2014/06/19/what-happens-if-investment-funds-are-labeled-too-big-to-fail/#6bc5acede5bb> [<https://perma.cc/QM7M-75F4>].

*Financial Stability Board* (FSB) to suggest the application of bank-like regulatory parameters to asset managers,<sup>400</sup> advocating (and lobbying) strenuously that their operational structure was distinguishable from banks or insurance companies and that heightened Federal Reserve oversight, and non-bank SIFI controls, were inapplicable and an unnecessary regulatory burden.<sup>401</sup> BlackRock in particular has ushered extensive support for a “products and activities” approach to addressing risks in asset management.<sup>402</sup> This section will review the key arguments that are levied against prudential supervision for ETF issuers.

**a. Agency Function and Balance Sheet Distinctions from Banks and Insurance Companies**

The primary counter-argument against an asset manager being a non-bank SIFI is that it’s “fundamentally different” than a bank or an insurance company because it acts as an “agent” or “advisor” on behalf of its investors.<sup>403</sup> BlackRock submits that its role is a “provider of services” for a fee.<sup>404</sup> Relatedly, asset managers have significantly smaller balance sheets than banks and insurance companies, and other than securities, lending operations don’t act as primary lenders.<sup>405</sup> An ETF firm’s assets are not acquired through leverage (unlike bank deposits),<sup>406</sup> and an asset manager doesn’t have access to “central bank liquidity.”<sup>407</sup> The largest ETF issuers use significantly less leverage than deposit taking banks.<sup>408</sup> Also, if an ETF issuer failed, an ETF’s underlying assets could be transferred to a new

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400. BlackRock, *Comments on Consultative Document for Proposed Policy Recommendations to Address Structural Vulnerabilities for Asset Management Activities*, Sept. 21, 2016, <https://www.blackrock.com/corporate/literature/publication/fsb-structural-vulnerabilities-asset-management-activities-092116.pdf> [https://perma.cc/3J5J-D53F] (hereinafter “BlackRock FSB Letter”).

401. Ryan Tracy and Sarah Krouse, *One Firm Getting What It Wants in Washington: BlackRock*, THE WALL STREET JOURNAL (Apr. 20, 2016), <https://www.wsj.com/articles/one-firm-getting-what-it-wants-in-washington-blackrock-1461162812> [https://perma.cc/NYJ7-P83S].

402. Barbara Novick, *Agnostic on Non-banks?* OeNB Macroprudential Policy Conference, 13 (2019), <https://www.blackrock.com/corporate/literature/publication/barbaranovick-remarks-oenb-macroprudential-policy-conference-050919.pdf> [https://perma.cc/RLY9-VJHE].

403. *Id.* at 5-6; see also BlackRock Letter to FSOC, *supra* note 260, at 5 (describing critical differences between a bank and an asset manager).

404. BlackRock Letter to FSOC, *supra* note 260, at 5.

405. BlackRock Letter to FSOC, *supra* note 260, at 5.

406. BlackRock Letter to FSOC, *supra* note 260, at 3.

407. Novick, *supra* note 402, at 6.

408. Lopez, *supra* note 281, at 125.

custodian.<sup>409</sup> As such, BlackRock describes its role in the ETF business as a “highly constrained fiduciary on behalf of the asset owner,” and if it fails to return monies to a client, it doesn’t require a “disentangling from the asset manager’s own assets.”<sup>410</sup> This argument, however, is weakened for asset managers that “invest on behalf of clients as well as themselves.”<sup>411</sup>

**b. ETF Substitutability and Non-Critical Functionality**

Substitutability is a factor in FSOC non-bank SIFI determinations, and asset managers, even the ETF mega-firms, argue that other firms can provide similar products and services, and that this mitigates against the need for heightened prudential oversight.<sup>412</sup> Substitutability generally refers to whether there are “readily available alternatives” to a financial product or service, or how hard is it to find a replacement to what the firm is providing in the marketplace.<sup>413</sup> As the argument follows, an index based ETF is highly substitutable, and thus applying “bank centric” parameters to an asset manager is a “misapplication” of regulation.<sup>414</sup>

**c. Bank Access to Central Bank Liquidity and Government Insured Deposits**

Another argument in favor of asset managers – even ETF mega issuers – not being subject to bank regulation is that they can’t access “central bank liquidity” or obtain customer deposits that are government insured.<sup>415</sup> Both elements have been historically present when applying prudential controls.<sup>416</sup> BlackRock argued in its submission to FSOC that “the absence of reliance on government guarantees or support” was a “critical difference” between themselves and a bank.<sup>417</sup> As a result, a lack of access to central bank liquidity distinguishes them from commercial and investment banks and government sponsored entities.<sup>418</sup> Further, unlike a deposit at a bank, ETF

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409. Joshua S. Wan, *Systemically Important Asset Managers: Perspectives on Dodd-Frank’s Systemic Designation Mechanism*, 116 COLUM. L. REV. 805, 826 (2016).

410. BlackRock FSB Letter, *supra* note 400, at 3.

411. Moreolo, *supra* note 357.

412. Lopez, *supra* note 281, at 126.

413. DTCC Whitepaper, *supra* note 55, at 12.

414. BlackRock Letter to FSOC, *supra* note 260, at 31.

415. BlackRock FSB Letter, *supra* note 400, at 3.

416. BlackRock FSB Letter, *supra* note 400, at 3.

417. BlackRock Letter to FSOC, *supra* note 260, at 5.

418. BlackRock Letter to FSOC, *supra* note 260, at 32.

investors don't have a "guarantee" on their investment principal.<sup>419</sup> This line of argument is somewhat weakened if the analogy to MMMFs holds true for fixed income ETFs used as cash substitutes by institutions.<sup>420</sup> Given the Fed and Treasury's previous bailouts of the MMMF industry,<sup>421</sup> fixed income ETFs acting as "shadow" deposits could prompt government action and support in a crisis.<sup>422</sup>

**d. Is Bank-Style Prudential Oversight Even Effective for ETF Issuers?**

It's questionable whether enhanced prudential oversights for asset managers (like ETF issuers) using "bank regulatory principles to address systemic risk" will be efficient or effective.<sup>423</sup> ETFs issuers have not been traditionally subject to prudential controls.<sup>424</sup> Also, one could question if the Federal Reserve is best suited to regulate an ETF issuer, or whether the task should be fulfilled by securities regulators (with greater expertise).<sup>425</sup> Capital controls may also have reduced "utility" for asset managers since ETF risks largely emanate from the interconnective impact of their product (ETFs) rather than their own risk taking behaviors.<sup>426</sup> Also, the use of leverage by ETF issuers is generally at the "fund level" rather than firm operations.<sup>427</sup> Critics argue that enhanced controls won't decrease systemic risk but will rather increase the cost of funds.<sup>428</sup> BlackRock also argues that unlike other segments of the "shadow banking" world, its securities lending operations isn't characterized by significant leverage.<sup>429</sup> Further, post-GFC reform in the DFA mandates stress-tests on asset managers who cross certain asset thresholds, so there is already a measure of prudential oversight for this sector.<sup>430</sup>

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419. BlackRock Letter to FSOC, *supra* note 260, at 64.

420. ESRB Report, *supra* note 130, at 28.

421. BLINDER, *supra* note 51, at 147–48; Logan, Nelson & Parkinson, *supra* note 217, at 9–11; PAULSON, *supra* note 49, at 233–42; Geithner *supra* note 213, at 194–97.

422. See Pozsar, Adrian, Ashcraft & Boesky *supra* note 218, at 61–64 (discussing the "shadow" banking system and the government's intervention in this market during the GFC).

423. Wan, *supra* note 409.

424. Schwarcz & Zaring, *supra* note 46, at 1852.

425. BlackRock Letter to FSOC, *supra* note 260, at 5.

426. See Wan, *supra* note 409, at 830.

427. Wan, *supra* note 409, at 831.

428. Wan, *supra* note 409, at 827.

429. Novick, *supra* note 402, at 3–4.

430. Lopez, *supra* note 281, at 126.

iv. *Identifying Potential Value in ETF Mega Sponsor Concentration*

There are also several reasons to suggest that market concentration in asset management benefits consumers. First, because of “economies of scale,” large ETF issuers can pass on operational efficiencies to investors (particularly institutional) in the form of lower costs.<sup>431</sup> Second, ETFs can act as “vehicles of price discovery” for underlying assets,<sup>432</sup> particularly for illiquid assets like fixed income and high-yield bond ETFs.<sup>433</sup> Others suggest that ETFs perform a “stabilizing” or economic shock absorbing function in a crisis or during periods of extreme volatility by “providing direct exposure to a physical basket of stocks in place of levered derivatives” – evidence of this phenomenon occurred in the Greek financial crisis of 2015.<sup>434</sup> BlackRock in its May 2019 submission to FSOC on the revised activities based framework for non-bank SIFIs has argued as much, citing how in both 2015 and 2018, ETFs for “high yield” bonds acted as a “shock absorber” during bouts of heightened volatility.<sup>435</sup>

v. *The Limits of Activities-Based Regulation for Interconnected ETF Firms*

There are concerns that FSOC’s activities-based framework could decrease financial system stability.<sup>436</sup> Given the revised guidance, it seems unlikely that an asset manager will be legally labeled a non-bank SIFI.<sup>437</sup> Former Treasury Secretaries Timothy Geithner and Jacob Lew, along with former Federal Reserve Chairs Ben Bernanke and Janet Yellen have stated, in written comments to FSOC, that the proposed changes effectively “neuter the designation authority.”<sup>438</sup> Numerous commentators and academics view “activity” and “entity” oversight as “complementary” rather than

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431. Bebhuck & Hirst, *supra* note 6, at 729.

432. Novick, *supra* note 402, at 15.

433. SEC Subcommittee Report, *supra* note 119; BlackRock, *Viewpoint Bond ETFs, Benefits, Challenges, Opportunities* (July 2015), <https://www.blackrock.com/corporate/literature/whitepaper/viewpoint-bond-etfs-benefits-challenges-opportunities-july-2015.pdf> [<https://perma.cc/U5TD-LH93>].

434. Seyffart & Balchunas, *supra* note 121.

435. BlackRock Letter to FSOC, *supra* note 260, at 27.

436. BETTER MARKETS, *supra* note 23.

437. Nellie Liang, *A Risky Mix: Looser Financial Regulations When Monetary Policy Is Easing*, BROOKINGS INSTITUTE (Oct. 5, 2019), <https://www.brookings.edu/blog/up-front/2019/10/15/a-risky-mix-looser-financial-regulations-when-monetary-policy-is-easing/> [<https://perma.cc/NKE3-J69N>].

438. Geithner et al., *supra* note 48.



“substitutive.”<sup>439</sup> Others suggest a “tailored” approach to regulating systemically important non-banks.<sup>440</sup> This section will outline how an activities framework may not effectively mitigate the interconnection-based risks in ETFs.

**a. The Challenge of Anticipating Risky Activities or Estimating Financial Distress**

The FSOC’s revised guidance requires a quantified assessment of the “likelihood” of a firm experiencing financial distress.<sup>441</sup> Interconnection risks are very hard to quantify, and the final subsection will highlight regulatory measures that could create more transparency and effective monitoring for ETFs.<sup>442</sup> *Better Markets*, in its FSOC submission, notes that for highly connected and complex firms with opaque and global operations and fee generating activities, predicting financial distress is extremely challenging (and it didn’t happen prior to the GFC).<sup>443</sup> The failure of regulators to anticipate the systemic risk of CDS and mortgage-backed securities (MBS) used by complex and interconnected firms makes one skeptical that regulators will be able to successfully predict the activities underlying the next major crisis.<sup>444</sup> Professors Kress, McCoy and Schwarcz have persuasively argued that it is easier to identify “ex ante” large and highly interconnected firms than systemically risky activities.<sup>445</sup> They also note (citing economist Frank H. Knight’s “unknowables” concept) that systemic risk predictions require “quantitative projections” that are impossible.<sup>446</sup>

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439. AMERICANS FOR FINANCIAL REFORM EDUCATION FUND, LETTER TO FINANCIAL STABILITY OVERSIGHT COUNCIL, RE: RIN 4030-AA00, “AUTHORITY TO REQUIRE SUPERVISION AND REGULATION OF CERTAIN NON-BANK FINANCIAL COMPANIES” (May 13, 2019), <https://www.regulations.gov/document?D=FSOC-2019-0001-0027> [<https://perma.cc/MP2T-BCPF>]; Letter from Legal Scholars, *supra* note 23; Kress, McCoy, & Daniel B. Schwarcz, *supra* note 16.

440. Richard Berner, Kermit Schoenholtz, Lawrence J. White, *Lowering the Bar on Financial Regulation is Fraught With Risk*, AMERICAN BANKER (June 27, 2019), <https://www.americanbanker.com/opinion/lowering-the-bar-on-financial-regulation-is-fraught-with-risk> [<https://perma.cc/A9R3-PEFG>].

441. FSOC Proposed Rules, *supra* note 372, at 9035.

442. *See infra* Section V(vi).

443. BETTER MARKETS, *supra* note 23.

444. Jeremy Kress, *The Case Against Activity-Based Financial Regulation*, COLUMBIA LAW SCHOOL BLUE SKY BLOG (Nov. 16, 2017), <http://clsbluesky.law.columbia.edu/2017/11/16/the-case-against-activity-based-financial-regulation/> [<https://perma.cc/B8CD-68HF>].

445. *Id.*; Kress, McCoy & Schwarcz, *supra* note 16, at 1463.

446. *See* Kress, McCoy & Schwarcz, *supra* note 16, at 1483; FRANK K. KNIGHT, RISK, UNCERTAINTY AND PROFIT 6, 214–15, 224–25 (Dover Publ’ns Inc. 2006) (1921).

Geithner, Bernanke, Yellen and Lew in their FSOC submission suggest that the risk profile of a non-bank can (and did in the lead up to the GFC) “change rapidly,” and also the “path” of a crisis is dependent on economic factors that are impossible to predict.<sup>447</sup> As noted by Professors Kress, McCoy and Schwarcz, the number of rapidly changing “potential explanatory variables” and the interplay of “behavioral elements” in the context of a crisis make a “statistical inference” of firm distress and systemic risk transmission unknowable.<sup>448</sup> This is why the FSOC designation power was designed in the first place – to give a “pre-emptive” tool that can only work *ex ante*.<sup>449</sup>

**b. The Speed of Interconnection Generated Contagion and Distress Transmission**

The activities-based framework requires CBA prior to making an entity designation.<sup>450</sup> *Better Markets* in its submission to FSOC states that this requirement makes a designation “almost impossible as a practical matter.”<sup>451</sup> If a non-bank (like an ETF issuer) became systemically important during a crisis, the “burdensome,” time consuming, and “imprecise” administrative process in making a declaration could render the enhanced measures ineffective.<sup>452</sup> Interconnectedness can serve as a “conduit for contagion.”<sup>453</sup> Relatedly, there are “serious analytical challenges” in even attempting such a calculus, as prudential regulatory measures are difficult to accurately assess, and may create litigation risk.<sup>454</sup> Further, the use of CBA in financial regulation has been highly criticized by scholars such as Professor John Coates, who describes it as “unfeasible” particularly for unquantifiable costs like potential systemic risks.<sup>455</sup> Professor Jeffrey Gordon has also described CBA as “empty” since finance is “based on a series of trade offs of values that are normatively derived” and based on

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447. Geithner et al. *supra* note 48.

448. Kress, McCoy & Schwarcz, *supra* note 16, at 1483.

449. Geithner et al. *supra* note 48 (likening the failure of a large interconnected non-bank to a nuclear power plant where safety guidelines can be imposed in the midst of a “meltdown”).

450. FSOC Proposed Rules, *supra* note 372, at 9034.

451. BETTER MARKETS, *supra* note 23.

452. BETTER MARKETS, *supra* note 23.

453. DTCC Whitepaper, *supra* note 55, at 4.

454. Kress, McCoy & Schwarcz, *supra* note 16, at 1486.

455. John C. Coates IV, *Cost Benefit Analysis of Financial Regulation: Case Studies and Implications*, 124 *YALE L. J.* 882, 1010–11 (2015).

“pragmatic” design.<sup>456</sup>

Geithner et al. suggest that “following the steps outlined in the guidance,” the revised process could take up to six years (even more) to declare a non-bank SIFI, and the activities review alone would take “at least” two years.<sup>457</sup> They suggest this timeline is “unworkable” given the speed that the GFC materialized.<sup>458</sup> They note, “Even in the months leading up to the crisis, it was not clear which financial firms were most at risk of failing nor was it clear how the risks from the failure of those firms would impact other financial institutions, financial markets, or the economy as a whole.”<sup>459</sup> An operational disruption or stress event at a large ETF issuer could precipitate a run on the firm or a cascade to peer funds or underlying assets.<sup>460</sup> This warrants strong risk mitigation efforts at an ETF issuer firm level. Fear driven overreaction from informational uncertainty is common in a crisis, even if the ultimate damage turns out to be “rather modest.”<sup>461</sup> This is because market crises take place in a “complex, adaptive network,” which is characterized by financial and non-financial “interconnections.”<sup>462</sup> This is relevant to ETFs given the numerous market participants in a complex operating ecosystem.

### c. Regulatory Coordination Costs and International Challenges

The risks stemming from ETFs transcend singular parties and are largely driven by interconnective complexity, individual incentives, collective actions, and the potential for non-linear responses.<sup>463</sup> Thus, regulatory measures need to consider all impacted market segments. The

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456. Jeffrey N. Gordon, *The Empty Call For Benefit-Cost Analysis in Financial Regulation*, 43 J. LEGAL STUD. S351, S353, S366-S368 (2014).

457. Geithner et al. *supra* note 48.

458. Geithner et al. *supra* note 48.

459. Geithner et al. *supra* note 48.

460. *See supra* Section IV(i)(d).

461. Bank of England Chief Economist Andrew Haldane has noted this phenomenon in both financial markets and in medical crises, comparing the over-reaction from the outbreak of *Severe Acute Respiratory Syndrome (SARS)* to the way banks and financial market participants reacted when Lehman Brothers failed, in both cases the actual damage was “relatively modest” despite significant economic costs from the initial reaction. *See* Haldane, *supra* note 43, at 1 (“These similarities are striking. An external event strikes. Fear grips the system which, in consequence, seizes. The resulting collateral damage is wide and deep. Yet the triggering event is, with hindsight, found to have been rather modest. The flap of a butterfly’s wing in New York or Guangdong generates a hurricane for the world economy. The dynamics appear chaotic, mathematically and metaphorically.”).

462. Haldane, *supra* note 43, at 1.

463. *See supra* Section IV.

activities-based framework relies on a firm's primary regulator to mitigate systemically risky activities,<sup>464</sup> and in the case of an ETF issuer, this would be the SEC.<sup>465</sup> Under the revised guidance, the FSOC will use "informal measures" to influence other regulators; however, these measures are non-binding,<sup>466</sup> and the process of seeking harmony creates logistical complexity, coordination costs and litigation risks.<sup>467</sup> The FSOC's powers, under an activities-based framework, have thus been criticized as akin to those of "a glorified think tank."<sup>468</sup> Some academics suggest that an activities-based systemic risk regulator can only be effective if deployed through a consolidated federal regulator, and the current level of "jurisdictional fragmentation" in the U.S. "undermine[s]" the ability to successfully implement this approach.<sup>469</sup> Also, given the global nature of mega ETF firm operations, an effective activity-based regulatory framework would require coordinated international regulatory harmony, and this could be nearly impossible to obtain.

**d. Cumulative Impact of Interconnectedness Transcends Singular Activity**

As noted by Geithner et al., in the GFC there was "no one activity that propagated risk through the system."<sup>470</sup> Further, Professors Kress, McCoy and Schwarcz posit that the "systemic riskiness" of a firm is "cumulative" and "inherently a product of the interrelations among its various activities and risk-management activities."<sup>471</sup> They point to examples from the GFC, including the relationship between AIG's derivatives and securities lending practices and the "interactions" of activities undertaken by *Lehman* and *Bear Stearns*, from repo agreements and commercial paper to MBS.<sup>472</sup> The "known and unknown activities" that facilitate instability during a crisis like contagion sell-offs, runs on non-bank firms, and the impact of "systemic interconnections" makes an activities-based framework inadequate to

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464. Kress, *supra* note 378.

465. See Wan, *supra* note 409, at 810 (noting the Commission's role as a primary regulator in the ETF context).

466. See 12 U.S.C. § 5330(c)(2) (noting such a distinction).

467. Geithner et al. *supra* note 48.

468. Kress, McCoy & Schwarcz, *supra* note 16, at 1463.

469. Kress, McCoy & Schwarcz, *supra* note 16, at 1505–06.

470. Geithner et al. *supra* note 48.

471. See Kress, McCoy & Schwarcz, *supra* note 16, at 1462 (noting the inherent blind spots present in an activities-based approach).

472. Kress, McCoy & Schwarcz, *supra* note 16, at 1462.

prevent systemic risk transmission from non-bank financial companies.<sup>473</sup>

An activities-based framework is unlikely to address the “combination of activities” undertaken by one entity.<sup>474</sup> An entity-based declaration that uses prudential measures can at least limit the “cumulative impact” of large, interconnected firms in a crisis and give the regulator extensive insight into the risk profile of the entity and its interconnected parts.<sup>475</sup> The failure of a large ETF firm could have significant consequences for the economy, yet under the revised FSOC guidelines, by the time a non-bank SIFI experiences material distress it could be “too late.”<sup>476</sup> Additionally (and perhaps most importantly), as noted by the DTCC, one of the most effective ways to “address interconnectedness risks” is to increase the “resilience of the most interconnected,”<sup>477</sup> and the growth of the mega ETF firms (combined with the complex interconnectedness factors cited above)<sup>478</sup> makes a strong argument for heightened oversight. As noted by Andrew Haldane, “[i]t is only when the hub – a large or connected financial institution – is subject to stress that network dynamics will be properly unearthed.”<sup>479</sup>

*vi. Continuing ETF Risk Monitoring and Alternative Regulatory Considerations*

The FSOC declaratory power for non-bank SIFIs is not a perfect administrative tool, and it may have several deficiencies from the perspective of administrative law.<sup>480</sup> It does, however, serve as a safeguard for systemic risks of highly interconnected non-banks. Given the speed at which a crisis (like the GFC) can crystalize, measures that can help both detect and mitigate interconnected shock transmission are only “effective” if instituted in advance of a panic.<sup>481</sup> This final subsection will assess other alternative

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473. See Kress, McCoy & Schwarcz, *supra* note 16, at 1489–92 (further discussing the limitations of an activities-based framework).

474. Geithner et al. *supra* note 48.

475. Kress, McCoy & Schwarcz, *supra* note 16, at 1463.

476. See Gregg Gelzinis, *Don't Put SIFI Designations on the Bank Burner*, AMERICAN BANKER (Jan. 29, 2018), <https://www.americanbanker.com/opinion/dont-put-sifi-designation-s-on-the-back-burner> [<https://perma.cc/VXP5-AK4E>] (emphasizing the need for the FSOC's promptness when assessing potential SIFIs).

477. DTCC Whitepaper, *supra* note 55, at 2.

478. See *supra* Section III(iv).

479. Haldane, *supra* note 43, at 6 (noting that this “small world property” has also been shown to exist in physical networks such as the internet and forest fires).

480. See Robert F. Weber, *The FSOC's Designation Program as a Case Study of the New Administrative Law of Financial Supervision*, 36 YALE J. ON REG. 359 (2019) (discussing such deficiencies).

481. *Id.*

regulatory considerations or measures, and the most important areas for future assessment in ETFs. It highlights the challenges that lay ahead, as systemic risk transmission from ETFs is most likely to come from collective actions, and non-linear responses, which are very difficult to test or prevent.

**a. Understanding and Monitoring AP Discretionary Incentives**

As noted above,<sup>482</sup> the ETF ecosystem is continually reliant on the voluntary participation of intermediaries (APs) who act, not under legal obligation, but rather with discretionary market-based incentives, and their departure from this ecosystem could trigger numerous externalities.<sup>483</sup> Given the importance of AP arbitrage to the integrity of ETFs, regulatory measures that provide greater transparency around this function, such as those recently proposed by Professors Hu and Morley,<sup>484</sup> are worthwhile to consider. Further, it is worthwhile to study AP's behavioral and market incentives to better understand the specific scenarios which would influence their departure from performing arbitrage.<sup>485</sup> Relatedly, it is important to study the incentives of other market makers, including high frequency traders, to understand when they will depart from providing liquidity support.<sup>486</sup>

**b. Schwarcz and Zaring's "Regulation by Threat" Applied to ETF Firms**

Despite the challenges identified above in designating an asset manager a non-bank SIFI, Professors Schwarcz and Zaring posit that FSOC's "threat" of levying such a designation could both curb the risk taking behaviors of

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482. See *supra* Section IV(i)(b).

483. The importance of discretionary actors to the continued stability of the ETF ecosystem has been noted by several researchers, see Clements, *supra* note 300; Hu & Morley, *A Regulatory Framework*, *supra* note 168; Hu & Morley, *The SEC and Regulation of Exchange-Traded Funds*, *supra* note 168; CBI Discussion Paper, *supra* note 162; Ramaswamy, *supra* note 300 (all noting the significance of such discretionary actors).

484. See Hu and Morley, *A Regulatory Framework*, *supra* note 168, at 849; see also Hu & Morley, *The SEC and Regulation of Exchange-Traded Funds*, *supra* note 168, at 1159–61 (advocating for a single regulatory framework for ETFs, organized around the "arbitrage mechanism" that requires enhanced "qualitative" and "quantitative" assessments for this crucial function. The authors suggest disclosures analogous to a "management discussion & analysis" (MD&A) for a specific fund's "arbitrage mechanism").

485. See Hu & Morley, *The SEC and Regulation of Exchange-Traded Funds*, *supra* note 168, at 1194–95 (discussing such scenarios and their overall effect on successful arbitrage).

486. See Stanislav Dolgoplov, *A Two-Sided Loyalty? Exploring the Boundaries of Fiduciary Duties of Market Makers*, 12 U.C. DAVIS BUS. L.J. 31, 32 (2011) (discussing such incentives).

the non-banks and hold their primary regulators to a higher standard of accountability.<sup>487</sup> Despite being seen by some as undermining the “notice-and-comment” process,<sup>488</sup> the authors suggest threat based regulation is particularly useful when “risks are hard to identify” and “perils of mistake are great.”<sup>489</sup> The ability for a regulator to “buy an option” has been previously noted by Professor Sunstein as useful when regulators are operating with informational opacity.<sup>490</sup> The risks emanating from operation of an ETF are complex, and largely derived from unknowns about how collective actors will pursue discretionary incentives or act with behavioral biases like forming herds.<sup>491</sup> Perhaps, for these reasons, we should hesitate to depart from the FSOC entity-based declaratory powers.

**c. What Are the Key Systemic Risks in ETFs to Monitor Going Forward?**

There are several key areas to monitor in ETFs going forward. First, numerous “structural vulnerabilities associated with asset management activities” identified in 2017 by the FSB are still relevant, including liquidity mismatch between ETFs and underlying securities, the use of leverage and derivatives in funds, securities lending activities, and the possibility of firm level operational disruption.<sup>492</sup> Relatedly, the *European Systemic Risk Board* (ESRB) has identified other factors such as: the impact of ETFs on the co-movement of indices and underlying securities,<sup>493</sup> the volatility<sup>494</sup> and co-movement of underlying asset prices between themselves<sup>495</sup> (leading to “simultaneous” investor loss), the various scenarios giving rise to an ETF arbitrage breakdown where APs or other market makers step away from performing this function, and the extent (and contributing factors) that ETFs create investor “correlated exposures” and contagion.<sup>496</sup> Interestingly, AP withdraw and ETF investor panic respectively mirrors the “hide” or “flight”

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487. See Schwarcz & Zaring, *supra* note 46, at 1817.

488. Schwarcz & Zaring, *supra* note 46, at 1819.

489. Schwarcz & Zaring, *supra* note 46, at 1819.

490. See Cass. R. Sunstein, *Irreversible and Catastrophic*, 91 CORNELL L. REV. 841, 845–46 (2006).

491. See *supra* Section IV(ii)(b).

492. FSB Structural Vulnerabilities, *supra* note 78, at 9–10.

493. See ESRB Report, *supra* note 130, at 19–22 (presenting such factors depicting this impact).

494. See Ben-David et al., *supra* note 348.

495. See Z. Da & S. Shive, *ETFs and asset return correlations*, 24(1) EUROPEAN FINANCIAL MANAGEMENT 136 (2018).

496. ESRB Report, *supra* note 130, at 2–3.

phenomenon in epidemiology in relation to behavioral responses to disease.<sup>497</sup>

The ESRB also identifies the potential for counterparty risk through synthetic ETFs and securities lending and the “materialisation of operational risk” for key ETF ecosystem participants such as ETF sponsors, APs and market makers given industry concentration.<sup>498</sup> There are also strong reasons, such as institutional adoption as cash and MMMF substitutes, and industry moral hazard and originate to distribute, to consider fixed income and loan ETFs a key segment of the industry to monitor going forward.<sup>499</sup> This is a market that has experienced significant U.S. and international post-GFC growth.<sup>500</sup> Risky sub-classes of the fixed income ETF market, like emerging market debt and high yield are also growing.<sup>501</sup>

#### d. Can There Be Too Much Asset Manager Proxy Voting Control?

ETF capital flows are contributing to a passive-investment generated proxy voting bottleneck, with power materially concentrating in the hands of very few firms.<sup>502</sup> The ominous near-reality of intermediated capital markets overseers – essentially “ruling on capital’s behalf” – is the path ETFs investors find themselves on.<sup>503</sup> It’s possible that ETF mega issuers have the capacity and expertise to make better governance judgments than ordinary investors. Yet, recent reports suggest “hidden dangers” in their power, like deleterious effects on competition, corporate investment, innovation and consumer welfare.<sup>504</sup> Also, indexing creates a gatekeeping function making

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497. Haldane, *supra* note 43, at 7.

498. ESRB Report, *supra* note 130, at 2–3, 32.

499. See SEC Subcommittee Report, *supra* note 119, (discussing such rationale).

500. See SEC Subcommittee Report, *supra* note 119, at 6 (“Assets in fixed income open-end mutual funds and ETFs have seen rapid growth in recent years. Overall, fixed income mutual funds and ETFs account for 11% of the U.S. bond market (US government bonds, corporate bonds, and tax-exempt bonds) as of December 2018, up from 7% a decade earlier.”).

501. See SEC Subcommittee Report, *supra* note 119 (“Fixed income ETFs have experienced growth in a variety of sub-asset classes of the bond market in recent years. Initially, these were typically portfolios of investment grade and government bonds, but have been extended to other categories including high-yield bonds, emerging market bonds, and even bank loans.”).

502. ETFs, and other index investments, are polarizing, and some market participants have even gone as far as to associate them with a form of “Marxist economy” or central planning. See Teresa Rivas, ‘Passive Investing Is Worse Than Marxism’: Bernstein, BARRON’S (Aug. 23, 2016), <https://www.barrons.com/articles/advisors-cash-is-king-amid-uncertainty-51546881439> [<https://perma.cc/NH3F-ZKF7>].

503. See Christophers, *supra* note 193.

504. See David McLaughlin & Annie Massa, *The Hidden Dangers of the Great Index Fund Takeover*, BLOOMBERG BUSINESSWEEK (Jan. 9, 2020), <https://www.bloomberg.com/ne>



asset managers stewards of the economy as a whole.<sup>505</sup> Professor John Coates calls this the “greatest concentration of economic control in our lifetimes.”<sup>506</sup> BlackRock has signaled intentions to use their influence to enact climate change initiatives.<sup>507</sup> Asset manager proxy voting control has systemic implications and will require policy attention.<sup>508</sup> It also forces regulators and systemic risk monitors to ask whether certain firms could ever have too much voting power, even if it’s market forces that are generating it.

**e. Mitigating Non-Linear Financial Market Interactive Effects, Herds and Crowd Behavior**

Individual ETFs don’t evoke the most concern in this market (although certain ETFs like inverse, leveraged and “non-transparent” varieties are problematic). Rather, instability comes from collective actions, interconnection, discretionary behaviors, non-linear impacts and crowd behaviors (like information cascades, runs and fire sales). One of (many) challenges in this area is that some interconnectedness is desirable (since “financial networks tend to be robust yet fragile”), yet the “optimal” level of interconnectedness is difficult to ascertain and precise policy measures challenging to create.<sup>509</sup> As a result, regulation should at least enhance the “resilience” of financial firms that are most centrally interconnected.<sup>510</sup> Unfortunately, the U.S. doesn’t have an effective regulatory framework to deal with the complexities and interconnections inherent in the modern financial “ecosystem.”<sup>511</sup>

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ws/features/2020-01-09/the-hidden-dangers-of-the-great-index-fund-takeover [https://perma.cc/RQ3L-4LBD] (discussing the various dangers attributed to prominent ETF issuers).

505. See *id.* (noting that “[f]und companies have multiple tools to influence corporate behavior, such as developing preferred policies on executive compensation, carbon footprints, gender diversity, and other governance matters. They often do this in coordination with other industry leaders . . .”).

506. See Coates, *supra* note 194.

507. See Steven Mufson & Rachel Siegal, *BlackRock Makes Climate Change Central to Its Investment Strategy*, THE WASHINGTON POST (Jan. 14, 2020), <https://www.washingtonpost.com/business/2020/01/14/blackrock-letter-climate-change/> [https://perma.cc/XKT2-4VB B].

508. See Coates, *supra* note 194, at 20–23 (providing a broad discussion of the policy options that are possible in response to the concentration of corporate shareholders because of the growth of index funds including self-regulatory codes or regulations regarding stewardship, voting dilution, ownership “caps” or other “structural limits” imposed on ETF firms.).

509. DTCC Whitepaper, *supra* note 55, at 10.

510. DTCC Whitepaper, *supra* note 55, at 11.

511. Dan Awrey & Kathryn Judge, *Why Financial Regulation Keeps Falling Short*, CORNELL LAW SCHOOL LEGAL STUDIES RESEARCH PAPER NO. 20-03; EUROPEAN

Some have recently called for more U.S. asset managers to get “stress tested” like banks, and regulators in Europe appear to be ahead of the curve of the Americans at this point.<sup>512</sup> Stress tests would need to stretch across individual firms and capture collective actions in the ETF ecosystem to be truly effective. As such, ETFs are an area where the use of technology (or “regtech”) for enhanced supervision may have important utility in the future.<sup>513</sup> However, on the use of technology, Professor Erik Gerding cautions that systemic and other forms of complexity in financial markets may be better confronted by adjustments to “old-fashioned disclosure” rather than “hi-tech disclosure solutions.”<sup>514</sup> A potentially more useful technological framework to envision is Andy Haldane’s dream of a “Star Trek chair and a bank of monitors” that tracks the global flow of ETFs in “close to real time” similar to weather systems and internet traffic.<sup>515</sup> Access to data and global regulatory coordination costs stand as obvious frictions to this vision. Professor Gerding adds further caution that regulators need to be careful about delegating or outsourcing risk modeling to private industry (a phenomenon that was widespread in the lead up to the GFC).<sup>516</sup>

#### **f.** The New Challenge of Non-Transparent ETFs

As noted, the SEC recently approved four applications for “non-transparent” ETFs.<sup>517</sup> This is a significant development and one worthy of continued investigation. The SEC will require approved non-transparent ETFs to only invest in securities that trade on exchanges and also to provide APs with a daily “‘proxy’ portfolio” (identifying assets but not portfolio weights).<sup>518</sup> It’s believed that APs can perform the arbitrage function through

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CORPORATE GOVERNANCE INSTITUTE (ECGI) LAW WORKING PAPER NO. 494/202; COLUMBIA LAW & ECONOMICS WORKING PAPER NO. 617 (2020) available at: [https://scholarship.law.columbia.edu/faculty\\_scholarship/2604](https://scholarship.law.columbia.edu/faculty_scholarship/2604) [<https://perma.cc/G9AB-U532>].

512. See Mark Gilbert, *Banks Get Stress Tested. So Should Asset Managers*, BLOOMBERG OPINION (July 4, 2018), <https://www.bloomberg.com/opinion/articles/2018-07-04/banks-get-stress-tested-so-should-asset-managers> [<https://perma.cc/TEL9-LRTN>].

513. See Douglas W. Arner, János Barberis & Ross P. Buckley, *FinTech, RegTech, and the Reconceptualization of Financial Regulation*, 37 NW. J. INT’L L. & BUS. 371 (2017).

514. See Erik F. Gerding, *Disclosure 2.0: Can Technology Solve Overload, Complexity, and Other Information Failures?* 90 TUL. L. REV. 1143, 1149 (2016).

515. See Haldane, *supra* note 13, at 7.

516. See Erik F. Gerding, *Code, Crash, and Open Source: The Outsourcing of Financial Regulation to Risk Models and the Global Financial Crisis*, 84 WASH. L. REV. 127 (2009).

517. See Jackson and Lee, *supra* note 139.

518. Jackson and Lee, *supra* note 139.

the proxy portfolio,<sup>519</sup> and those in support of this development suggest that it will promote more active management, which will improve market efficiency.<sup>520</sup> Further, advocates say that concealing fund compositions allows for more competition in the market and mitigates the poaching of novel index strategies.<sup>521</sup> Yet there are numerous uncertainties about how these structures will affect market stability. True arbitrage is risk-free, or guaranteed.<sup>522</sup> If an AP doesn't know an index's exact composition, it can't ensure true arbitrage.<sup>523</sup> If transparent plain-vanilla ETF structures risk arbitrage breakdown, surely non-transparent structures are even more precarious.

### g. The Opaque Corner of Index Provider Regulation

Another area of ETF systemic risk consideration worthy of ongoing investigation is the regulation of index providers. SEC Commissioner Robert J. Jackson Jr. and Professor Steven Davidoff Solomon have identified that indexes may not be as transparent as otherwise believed and are vulnerable to bias and manipulation.<sup>524</sup> Index creation is subject to very little regulatory oversight.<sup>525</sup> Index providers face conflicts of interest; for example, it's been reported that MSCI (the world's largest index provider) was pressured (and threatened) by the Chinese government to include more Chinese companies in their indices to facilitate foreign investment capital flows into China.<sup>526</sup> Professor Adriana Robertson recently documented how the “overwhelming majority” of indexes in a surveyed sample were used as a benchmark for a single fund, and a “substantial fraction” of ETFs track indices created by the ETF issuer or an affiliate.<sup>527</sup>

519. Jackson and Lee, *supra* note 139.

520. See Bailey McCann, *What to Know About 'Nontransparent' ETFs*, THE WALL STREET JOURNAL (May 5, 2019), <https://www.wsj.com/articles/what-to-know-about-nontransparent-etfs-11557108061> [<https://perma.cc/FF99-EP6U>].

521. See Andrea Riquier, *What is a 'Non-transparent' ETF, and Why Would Anyone Want to Own One?* MARKETWATCH (Dec. 11, 2019), <https://www.marketwatch.com/story/get-read-y-for-a-new-flavor-of-etf-non-transparent-2019-11-15> [<https://perma.cc/3WH5-2WFN>].

522. See Philip H. Dybvig, and Stephen A. Ross, *Arbitrage*, in THE NEW PALGRAVE DICTIONARY OF ECONOMICS: VOLUME 1–8, 188–97 (2d ed. 2008).

523. See Jackson and Lee, *supra* note 139, at footnote 6.

524. See Jackson & Solomon, *supra* note 228.

525. See DeCambre, *supra* note 230.

526. See Bird, *supra* note 229.

527. See Adriana Robertson, *Passive in Name Only: Delegated Management and 'Index Investing'*, 36 YALE J. ON REG. 795 (2019).

## VI. CONCLUSION: WHAT ARE THE COSTS OF LIQUIDITY TRANSFORMATION?

It's easy to wonder whether the true costs of ETF liquidity transformation are under-estimated. ETFs that hold bonds and bespoke loans create instant liquidity for retail investors to markets that are opaque and otherwise difficult to access.<sup>528</sup> History lends caution when illiquid underlying assets are synthesized into instantly liquid financial products.<sup>529</sup> The idea of transforming something that's fundamentally "illiquid" (like a loan) into something "liquid" (an ETF that represents a loan basket) evokes a liquidity "mismatch" and "illusion" concern (reminiscent of MBS in the GFC).<sup>530</sup> Deposit insurance, and central banks acting as "lenders of last resort," curb bank run and systemic risks.<sup>531</sup> This "extraordinary" government support has not been "normally" available to other firms<sup>532</sup> and represents a social "cost" of the intermediation, liquidity and maturity transformation services that a bank provides.<sup>533</sup>

The MMMF crisis showed, however, that the government was willing to support "shadow deposits" in the GFC.<sup>534</sup> As a result, the MMMF market now benefits from an "implicit" guarantee of emergency government support.<sup>535</sup> Like MMMFs, ETFs also offer liquidity transformation by turning less liquid (often bespoke) loans into cash substitutes.<sup>536</sup> In an

528. See Chris Flood, 'Big Ticket' Trades Made Possible by Bond ETF Liquidity, FINANCIAL TIMES (June 17, 2018), <https://www.ft.com/content/b5e0bb88-5865-11e8-806a-808d194ffb75> [<https://perma.cc/C3HM-MMWX>].

529. See Daniel Zwirn, Jim Kyung Soo Liew & Ajakh Ahmad, *This Time Is Different, but It Will End the Same Way: Unrecognized Secular Changes in the Bond Market Since the 2008 Crisis That May Precipitate the Next Crisis* (Apr. 29, 2019) (unpublished manuscript), available at SSRN: <https://ssrn.com/abstract=3379979> [<https://perma.cc/6U8Q-QN8X>].

530. *Id.* See also Stephen Gandel, *There's a Time Bomb Bigger Than the VIX in the Market*, BLOOMBERG OPINION (Feb. 7, 2018), <https://www.bloomberg.com/news/articles/2018-02-07/there-s-a-time-bomb-bigger-than-the-vix-in-the-market> [<https://perma.cc/ZK9Y-57M4>] ("ETFs, like stocks, can be bought and sold in milliseconds. But bank loans cannot. Loans trade in over-the-counter markets with much less volume and settlement times that can stretch out a month.").

531. See Steven L. Schwarcz, *Systemic Risk*, 97 GEO. L.J. 193, 210, 225 (2008).

532. Morgan Ricks, *Regulating Money Creation After the Crisis*, 1 HARV. BUS. REV. 75, 78 (2011).

533. See *id.* at 119–20.

534. See Pozsar, Adrian, Ashcraft & Boesky *supra* note 218, at 61–64 (discussing the "shadow" banking system and the government's intervention to support it during the GFC); BLINDER, *supra* note 51, at 147–48; Logan, Nelson & Parkinson, *supra* note 217, at 9–11.

535. See William A. Birdthistle, *Breaking Bucks in Money Market Funds*, 2010 WIS. L. REV. 1155, 1163, 1190.

536. See *supra* Section III(iv)(e).

unprecedented move to mitigate the economic fallout from the coronavirus,<sup>537</sup> on March 23, 2020, the Federal Reserve established the *Secondary Market Corporate Credit Facility* with authorization to purchase investment grade corporate ETFs.<sup>538</sup> Now that the government is supporting the ETF market, perhaps firms providing such liquidity transformation services should have heightened safeguards.

While ETFs have many benefits, and strong demand factors,<sup>539</sup> their popularity has also spawned complex interconnected ETF mega firms with growing influence over the decisions of nearly every publicly traded corporation in America.<sup>540</sup> In many ways, ETFs are a “tragedy of the commons” problem, where what’s good for the individual is sub-optimal for the group.<sup>541</sup> Empirically, there’s a “real prospect” that these ETF firms will one day have voting control over all large publicly traded companies in America.<sup>542</sup> These mega ETF sponsors are growing to an unprecedented size,<sup>543</sup> while fostering deep and complex interconnections.<sup>544</sup> The popularity of ETFs gives rise to systemic risks not otherwise present in other managed asset classes like those associated with the arbitrage function and derived from directional and noise traders attracted to the liquidity of ETFs; yet it has also reinforced common concerns like securities lending.<sup>545</sup> Post-GFC reforms have not curbed the growth and concentration of the largest asset managers, just as they haven’t prevented a few mega-banks from becoming the most important players in nearly all of the world derivatives clearinghouses.<sup>546</sup> These same mega banks also happen to be some of the largest APs in the ETF ecosystem.<sup>547</sup>

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537. See Andrea Riquier, *The Fed Is Going to Buy ETFs. What Does It Mean?* MARKETWATCH (Mar. 30, 2020), <https://www.marketwatch.com/story/the-fed-is-going-to-buy-etfs-what-does-it-mean-2020-03-23> [<https://perma.cc/S5Y8-5VZQ>].

538. Board of Governors of the Federal Reserve System, *Policy Tools, Secondary Market Corporate Credit Facility*, <https://www.federalreserve.gov/monetarypolicy/smccf.htm> [<https://perma.cc/T6DH-YCJL>].

539. See *supra* Section III(iii).

540. See *supra* Section III(iv)(b).

541. See Conrad de Aenlle, *Opinion: John Bogle has a Warning for Index Fund Investors*, MARKETWATCH (June 1, 2017), <https://www.marketwatch.com/story/john-bogle-has-a-warning-for-index-fund-investors-2017-06-01> [<https://perma.cc/49EU-WLS5>].

542. See Bebchuk & Hirst, *supra* note 6, at 737–41.

543. See Dawn Lim, *BlackRock’s Assets Blow Past \$7 Trillion in Milestone for Investment Giant*, THE WALL STREET JOURNAL (Jan. 15, 2020), <https://www.wsj.com/articles/blackrocks-assets-blow-past-7-trillion-in-milestone-for-investment-giant-11579089828> [<https://perma.cc/PDB4-ZKLP>].

544. See *supra* Section III (iv).

545. *Id.*

546. See Alvarez & McPartland, *supra* note 20, at 11–19;

547. See BLACKROCK, *A Primer*, *supra* note 169, at 3 (BlackRock lists the following

Interconnectivity in financial markets can both absorb and amplify shocks, making them at once “robust” and “fragile.”<sup>548</sup> It’s increasingly prudent to consider financial markets together as a “system” and design regulatory structures in this light.<sup>549</sup> Systemic risk in this sector is most likely to be a by-product of the collective actions of a myriad of interconnected counterparts and manifest through phenomena such as discretionary withdrawals of key market-incentivized intermediaries, and crowd behaviors from correlated exposures giving rise to information cascades, runs, fire sales, and non-linear impacts.<sup>550</sup> The FSOC’s activity and entity-based frameworks, when evaluated individually for ETFs, have limitations. As advocated by previous scholars,<sup>551</sup> it would be prudent to not consider these approaches as mutually exclusive but look at them as complimentary, and this is particularly true for the ETF mega-players. These giant asset managers may be growing “too connected to fail,” and the most effective regulatory framework will require a cross-market “system-wide” toolkit to monitor and assess the collective behavior of all participants.<sup>552</sup>

ETFs as a financial market case study highlight externalities associated with complex systems including what Andrew Haldane identifies as tensions in robustness and fragility onset through complexity and “homogeneity,” “feedback effects” in periods of heightened stress, unknown risks (the so called “Knightian uncertainties”), and network “dimensionality” due to financial innovation.<sup>553</sup> Haldane suggests that given these dynamics, policy prescriptions should increasingly include access to data to map the global financial network, improved communication across the network, regulations to “vaccinate the ‘super-spreaders’ to avert financial contagion,” and the implementation of safeguards against the “network’s dimensionality and complexity.”<sup>554</sup> As a result, there is merit in ensuring that the most centrally connected entity in this ETF ecosystem – the issuer itself – is economically resilient and has adequate safeguards and controls in place, while also assessing activities across the network and the behavior of its numerous interconnected participants.<sup>555</sup>

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examples of “Common U.S. APs” as “Bank of America Merrill Lynch, Citigroup, Credit Suisse, Deutsche Bank, Goldman Sachs & Co., Jeffries, JP Morgan, KCG, Morgan Stanley, UBS Securities, Virtu.”).

548. See Haldane, *supra* note 13, at 3–5.

549. Haldane, *supra* note 13, at 3–5.

550. See *supra* Section IV.

551. Kress, McCoy & Schwarcz, *supra* note 16.

552. See Haldane, *supra* note 43, at 13.

553. Haldane, *supra* note 43, at 2.

554. Haldane, *supra* note 43, at 2.

555. See Gilbert, *supra* note 19.