



Memorandum on the Asset Management Industry

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WORKING PAPER

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PURPOSE

This memo aims to support the Volcker Alliance’s project on financial regulatory reform by providing a comprehensive account of the asset management industry in the United States: its structure, participants, and activities; how it is regulated; how it has evolved in recent years, particularly since the financial crisis; and potential risks to financial stability arising out of the industry.

I. BACKGROUND

Asset management refers to the practice of end investors delegating investment decisions to professional managers, either through individual (“separate”) accounts or collective investment funds. Asset management is made up of two principal *types* of legal entity: (i) the asset management *firm*, and (ii) the *fund* in which institutions or individuals invest.¹

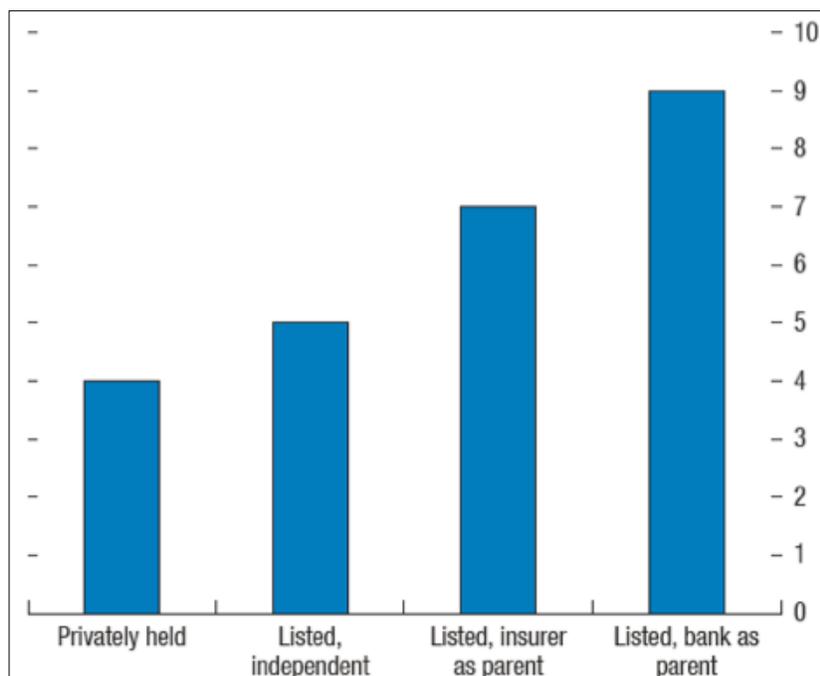
A. Asset Management Firms

Banks, insurance companies, brokerage firms, and dedicated asset management companies may offer asset management services² to funds and clients. Figures 1 and 2 provide a picture of the ownership structure of asset managers among the largest firms as well as throughout the industry. Figure 1 shows the distribution of firm types among the top 25 asset managers.

¹ The memo first describes asset management in the context of collective investment funds. Separate accounts are discussed *infra* Section I.H.

² *Asset Management and Financial Stability* at 27, Office of Financial Research (Sept. 2013), https://financialresearch.gov/reports/files/ofr_asset_management_and_financial_stability.pdf [hereinafter OFR Report] (“Dedicated asset management companies have two characteristics: (1) their main business is asset management, and (2) they are not integrated divisions of a bank or insurance company.”).

FIGURE 1: Ownership Structure of the 25 Largest Global Asset Management Companies³



Examples of asset managers whose parents are “banks” (more precisely, bank holding companies) include Goldman Sachs, J.P. Morgan Chase, and Bank of New York Mellon.⁴ Examples of asset managers whose parents are insurers include Prudential Financial and MetLife.⁵ While banks and insurers are well-represented at the top of the market-share rankings, the most common type of asset management firm is the dedicated asset manager, as illustrated in Figure 2. Examples of dedicated asset management firms include Black-Rock, Vanguard, and Fidelity.⁶ Although banks and insurance companies are regulated by their respective banking or insurance regulator, the largest bank holding companies tend to engage in asset management activities through subsidiaries that are registered with—and regulated by—the Securities and Exchange Commission (SEC) as investment

³ Source: *Global Financial Stability Report* at p. 114, fig. 3.14, International Monetary Fund, April 2015, available at <https://www.imf.org/External/Pubs/FT/GFSR/2015/01/index.htm> [hereinafter IMF Report]

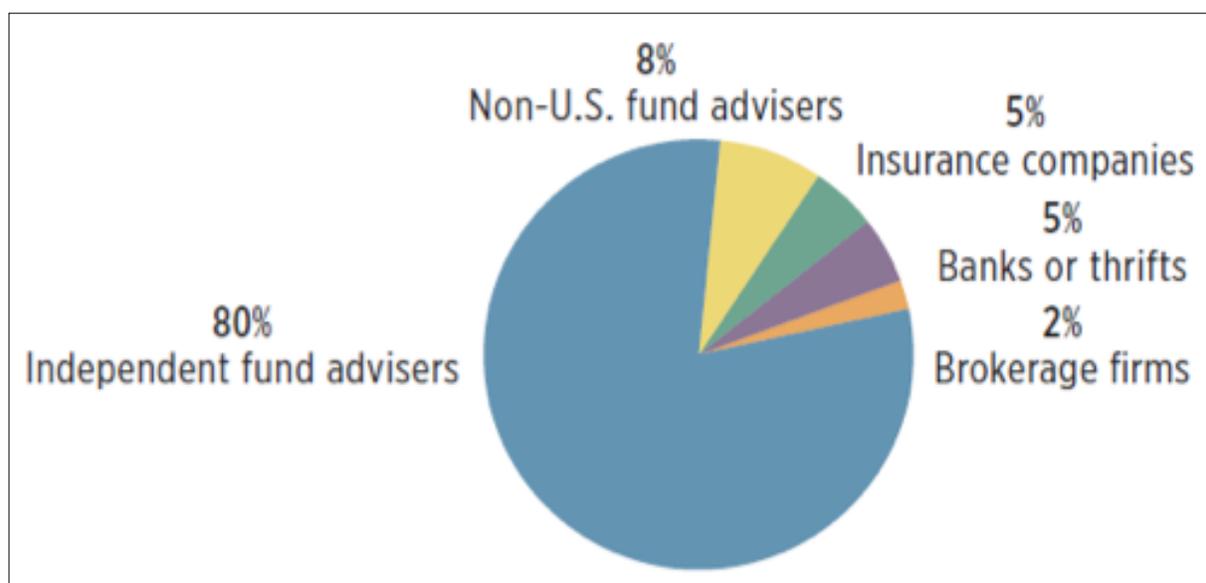
⁴ See *infra* Table 2 for a list of the top 25 asset management companies.

⁵ *Id.*

⁶ *Id.*

advisors. Further, if a bank or insurance company offers a mutual fund directly (rather than through a subsidiary registered as an investment advisor), the fund itself is regulated by the SEC.⁷ Banks can, however, offer other types of collective investment funds regulated by banking regulators, including common trust funds and collective investment funds.

FIGURE 2: Percentage of Fund Complexes by Type of Management Firm (as of 12/31/2014)⁸



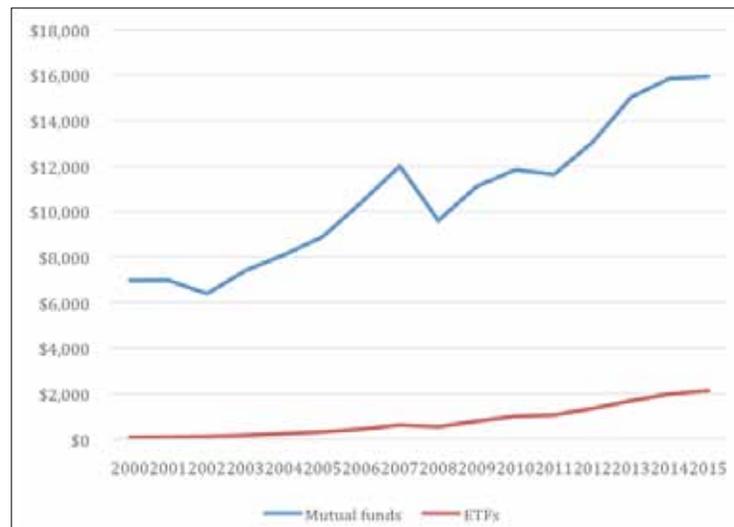
The asset management industry is highly concentrated, with the top ten companies managing more than half of all assets under management (AUM). As illustrated in Table 1, concentration has trended upward since 2000, though it appears to have plateaued in the past half-decade.

⁷ Note that banks can offer other types of collective investment funds regulated by banking regulators, including common trust funds and collective investment funds. See OFR Report, *supra* note 2, Appendix.
⁸ Source: 2015 *Investment Company Factbook: A Review of Trends and Activities in the U.S. Investment Company Industry* at p. 15 (Figure 1.7), Investment Company Institute, available at <https://www.ici.org/research/stats/factbook> [hereinafter ICI Factbook].

TABLE I: Market Share of Mutual Fund and ETF AUM at the Largest Investment Advisers⁹

	2000	2005	2010	2014
Largest 5 Advisers	32%	36%	42%	43%
Largest 10 Advisers	44%	47%	55%	55%
Largest 25 Advisers	69%	69%	74%	74%

Even as the market share of the largest advisers has been steady over the past several years, the absolute amount of AUM has risen. Figure 3 illustrates the growth (and temporary dips following the dot.com bust and the financial crisis) of AUM in mutual funds and exchange-traded funds (ETFs) since 2000.¹⁰

FIGURE 3: Growth of Mutual Funds¹¹ and ETFs, Dec. 2000–Nov. 2015 (Billions of US dollars)¹²


⁹ Source: ICI Factbook, supra n. 8 at p. 17 (figure 1.10).

¹⁰ As described in detail *infra* Section I.D, mutual funds, or “open-end” funds, and ETFs are the largest category of funds offered to the public. There are two other types—the closed-end fund and the unit investment trust (UIT). These latter two categories have orders of magnitude less AUM. (At year-end 2014, open-end funds had \$15.852 trillion in AUM; ETFs had \$2.123 trillion; closed-end funds had \$264 billion; and UITs had \$101 billion. ICI Factbook, supra n. 8, at p. 9, figure 1.1.)

¹¹ The figures here include both classic open-end funds and money market funds.

¹² Sources: For data from 2000–2014, ICI Factbook, supra note 8, at p. 9, figure 1.1. For totals from November 2015, ICI’s *Trends in Mutual Fund Investing: November 2015*, https://www.ici.org/research/stats/trends/trends_11_15. (N.B.: this link is functional as of mid-January, 2016. The URLs for ICI’s statistics tend to go stale as ICI comes out with new reports and statistics, however. The most recent ICI “Trend” report should be available at <https://www.ici.org/research/stats/trends>.)

Table 2 provides a list of the largest asset managers by AUM.¹³

TABLE 2: Top 25 Asset Managers by Assets Under Management (AUM) (As of 12/31/2014)¹⁴

Rank	Manager	Market	Assets (US\$million)
1	BlackRock	US	\$4,651,896
2	Vanguard Group	US	\$3,148,496
3	State Street Global	US	\$2,448,112
4	Allianz Group	Germany	\$2,189,296
5	Fidelity Investments	US	\$1,974,077
6	J.P. Morgan Chase	US	\$1,748,849
7	Bank of New York Mellon	US	\$1,710,282
8	AXA Group	France	\$1,491,394
9	Capital Group	US	\$1,396,777
10	Deutsche Bank	Germany	\$1,262,884
11	Goldman Sachs Group	US	\$1,178,000
12	Prudential Financial	US	\$1,175,947
13	UBS	Switzerland	\$1,158,763
14	BNP Paribas	France	\$1,114,595
15	Legal & General Group	UK	\$1,077,425
16	Amundi	France	\$1,052,587
17	HSBC Holdings	UK	\$954,000
18	Northern Trust Asset Mgmt.	US	\$934,100
19	Wellington Mgmt.	US	\$913,720
20	Natixis Global Asset Mgmt.	France	\$890,030
21	Franklin Templeton	US	\$880,146
22	TIAA-CREF	US	\$851,000
23	Invesco	US	\$792,382
24	MetLife	US	\$790,710
25	Prudential	UK	\$770,387

B. Funds.

Asset management companies set up *funds* as *separate* legal entities. A new fund contracts with the company to manage its portfolio, and investors are then solicited from outside parties.¹⁵ If fund shares are offered to the general public, they are governed by the Investment Company Act of 1940 [hereinafter '40 Act].¹⁶ Funds offered under the '40 Act are, somewhat confusingly, labeled “investment companies” – but they are not companies in any ordinary sense of the word. *All* the fund’s operational and administrative services are carried out by the *management* company (i.e., the investment adviser). Although funds have boards of directors,¹⁷ they have no employees¹⁸ or assets aside from

¹³ Note that the AUM figures include not only mutual funds and ETFs, but other private funds, closed-end funds, and separate accounts.

¹⁴ Source: *The 500 Largest Asset Managers: The P&I/Towers Watson Global 500 Research and Ranking*, November 2015, available at <https://www.towerswatson.com/en-US/Insights/IC-Types/Survey-Research-Results/2015/11/The-worlds-500-largest-asset-managers-year-end-2014>.

¹⁵ See John D. Morley, *The Separation of Funds and Managers: A Theory of Investment Fund Structure and Regulation*, 123 Yale L. J. 1228 (2014), <http://www.yalelawjournal.org/article/the-separation-of-funds-and-managers-a-theory-of-investment-fund-structure-and-regulation>.

¹⁶ A narrow exception to this involves bank common trusts and collective investment funds. See OFR Report, *supra* note 2, at 27.

¹⁷ See *infra* Section II.A.

¹⁸ See Morley, *The Separation of Funds and Managers*, *supra* n. 15, at 1239 (“Mutual funds and closed-end funds occasionally claim to have ‘officers,’ but these officers are not true employees of the fund in any functional sense. These officers receive all their direction and compensation from the management companies, and are protected from removal under the funds’ contracts with their management companies.”).

their portfolio assets, which are generally held by a third-party custodian.

Investment companies (i.e., publicly-offered funds)—as well as private funds—are therefore more usefully understood as *products* offered by *management* companies—just as the Coca-Cola Company offers Coke, Sprite, and so on, BlackRock offers a Strategic Opportunities Fund, a High-Yield Bond Fund, and so on.¹⁹ (Indeed, BlackRock’s website provides data on its funds—most of them “investment companies” under the ’40 Act—under a “products” tab.²⁰) The largest asset management companies may offer more than a thousand funds.²¹ A fund “complex” or “family” refers to the funds offered under the aegis of a single management company. The impressive dollar amounts shown as “assets under management” for the largest management firms are not the property of the firm itself—they belong to the funds, which are managed or advised (on an “agency” basis) by the firm, but owned by (generally unaffiliated) shareholders.²²

Not all funds are offered to the general public. The SEC defines a *private fund* (in contradistinction to a public fund) as “[a]ny issuer that would be an investment company as defined in Section 3 of the Investment Company Act of 1940 but for section 3(c)(1) or 3(c)(7) of that Act.”²³ Section 3(c)(1) provides an exemption from the various mandates of the ’40 Act for any funds with fewer than 100 beneficial owners;²⁴ and section 3(c)(7) exempts funds that are owned exclusively by “qualified purchasers.”²⁵ A “qualified purchaser” is defined under the ’40 Act primarily by beneficial ownership of a minimum dollar amount

¹⁹ *Id.* at 1233.

²⁰ <https://www.blackrock.com/investing/>.

²¹ As of January 7, 2016, BlackRock’s website lists 613 mutual funds, 328 ETFs, and 74 closed-end funds.

²² Thus, BlackRock, with \$4 trillion in AUM at year-end 2014, had assets of just \$240 billion on its own balance sheet. <http://financials.morningstar.com/balance-sheet/bs.html?t=BLK>. In contrast, J.P. Morgan balance sheet stood at \$2.573 trillion at year-end 2014—this represented assets J.P. Morgan itself directly owned (as well as the magnitude of the claims on J.P. Morgan), not assets the bank managed on behalf of others. <http://financials.morningstar.com/balance-sheet/bs.html?t=JPM>.

²³ Form PF Glossary, p. 7, <http://www.sec.gov/rules/final/2011/ia-3308-formpf.pdf>.

²⁴ 15 U.S.C. § 80a-3(c)(1).

²⁵ 15 U.S.C. § 80a-3(c)(7). So-called 3(c)(7) funds are limited to 1,999 investors (raised from 499 by the JOBS Act). See, e.g., Beverly Goodman, *Hedge Funds Arrive on Madison Avenue*, Barron’s, April 28, 2012, <http://online.barrons.com/articles/SB50001424053111903591504577361903353035884>.

in investments—currently \$5 million for natural persons.²⁶

C. Typography of Public Funds

There are several dimensions along which one can differentiate public funds (i.e., '40 Act funds): target investors (retail or institutional); legal form; and portfolio features and goals. This section provides (i) a description first of the different legal forms and then of the different rubrics typically assigned to different portfolio aims; and (ii) statistics and notable recent trends in the public fund space.

I. Open-End Funds

Open-end mutual funds—also called “open-end funds” or just “mutual funds”—issue “redeemable equity securities.” These securities do not trade on secondary markets, but the fund can continually issue *new* shares as investors buy in,²⁷ or redeem old shares as investors cash out. The price at which shares are bought and sold is determined by the fund’s per-share net asset value (NAV). NAV is equal to the value of the fund’s assets less any liabilities. Mutual funds must meet investor redemption requests within seven business days, though most do so more quickly.²⁸ Open end funds are the largest category of public fund by size, by a significant margin.²⁹

The functional relationship between an open-end fund and its adviser (i.e., management firm) is illustrated in Figure 4. The asset management company—for example, BlackRock—receives fees in exchange for its management services carried out in accor-

²⁶ 15 U.S.C. § 80a-2(a)(51).

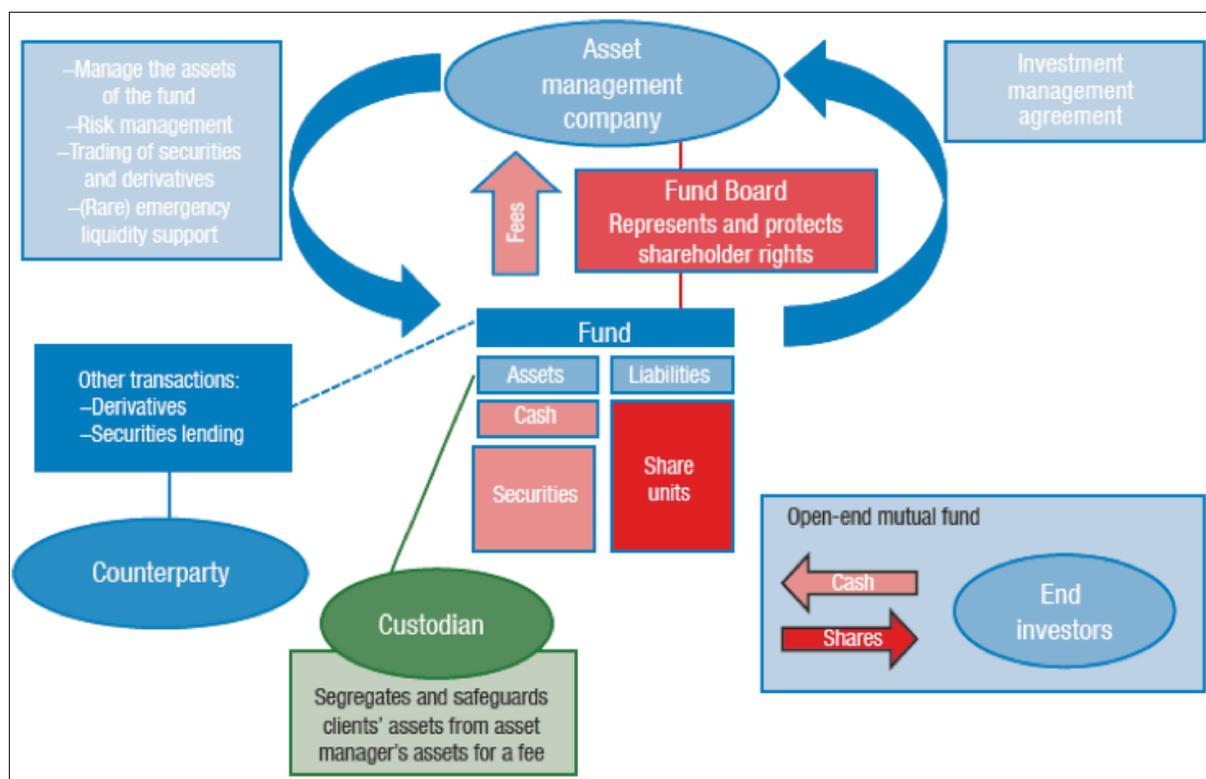
²⁷ This may be subject to a predetermined cap on the number of shares.

²⁸ See, e.g., Securities and Exchange Commission, Proposed Rule: Open-End Fund Liquidity Risk; Swing Pricing; Re-Opening of Comment Period for Investment Company Reporting Modernization Release at p. 13, <http://www.sec.gov/rules/proposed/2015/33-9922.pdf> [hereinafter SEC Proposed Liquidity Rules] (“A hallmark of open-end funds is that they must be able to convert some portion of their portfolio holdings into cash on a frequent basis because they issue redeemable securities,¹⁸ and are required by section 22(e) of the Investment Company Act to make payment to shareholders for securities tendered for redemption within seven days of their tender. As a practical matter, many investors expect to receive redemption proceeds in less than seven days as some mutual funds disclose in their prospectuses that they will generally pay redemption proceeds on a next-business day basis. Furthermore, open-end funds that are redeemed through broker-dealers must meet redemption requests within three business days because broker-dealers are subject to rule 15c6-1 under the Securities Exchange Act of 1934 (the ‘Exchange Act’), which establishes a three-day (T+3) settlement period for security trades effected by a broker or a dealer.”)

²⁹ See *infra* Section I.D.

dance with an investment management agreement. The fund will have a board of directors, which must meet certain requirements under the '40 Act.³⁰ The fund's balance sheet is fairly straightforward: on the asset side of the ledger are cash and securities, which are not directly held by the fund, but rather by a custodian, which is typically a large bank such as Bank of New York Mellon or J.P. Morgan. On the liability (right) side of the balance sheet are share units, or equity claims by end investors, and possibly bank debt.³¹ The fund may also enter derivatives contracts with counterparties,³² and engage in securities lending—though the latter is typically managed by a third-party agent lender.³³

FIGURE 4: Structure and Operation of an Open-end Mutual Fund³⁴



³⁰ See *infra* Section II.A.

³¹ Open end funds cannot issue debt securities, but can take out bank loans. See *infra*, Section III.A.

³² See *infra*, Section III.A.1.

³³ See *infra*, Section III.A.2.

³⁴ IMF Report, *supra* note 3, at 126.

2. Money Market Funds.

Money market funds (MMFs) are a type of open-end fund that invest in very short-term, high quality debt securities, and offer their own investors a combination of liquidity and share-price stability that makes MMF shares a close substitute for bank deposits from the shareholders' perspective. MMFs are subject to significant restrictions that other open-end funds are not: these restrictions—relating, for example, to portfolio composition and risk management—are laid out in Rule 2a-7 under the '40 Act.³⁵ One of the key traditional features of MMFs³⁶ is that they are able to maintain a stable NAV of \$1.00 per share; while MMFs do not have a legal obligation to return \$1.00 per share—in contrast to banks' legal obligation to return 100 cents on the dollar for deposits—deviations from the \$1.00 NAV (called “breaking the buck”) can be a panic-inducing event.³⁷ The stable NAV is achieved through a combination of three things. First, MMF portfolios consist of assets with extremely stable values—debt with (i) a high degree of creditworthiness, and thus extremely small risk of default, and (ii) short maturities, so that interest rate movements have little impact.³⁸ Second, MMFs (with the limited exception of institutional prime funds, as described below³⁹) can account for the assets in their portfolio using

³⁵ 17 C.F.R. 270.2a-7.

³⁶ Under a new rule, finalized in 2014 with a compliance date of August 2016, institutional prime funds will have to allow their NAVs to float. See *infra* Section III.B.5.

³⁷ Indeed, the moment many consider the most perilous during the entire financial crisis involved Reserve Primary's breaking the buck due to its exposure to Lehman Brothers commercial paper in September 2008. This triggered a run on institutional prime funds that was stanchied only when the Treasury Department, through the creative interpretation of a legal authority Congress later eliminated, guaranteed the entire multi-trillion-dollar industry. (The guarantees were made via the Exchange Stabilization Fund; the Emergency Economic Stabilization Act of 2008 eliminated the Treasury's ability to use the Fund to guarantee MMFs. It is worth noting that Treasury did not have to pay out a single cent as a result of the guarantee, and wound up collecting more than \$1 billion in premium payments.)

³⁸ See, e.g., 17 C.F.R. 270.2a-7(c)(2)(ii) (MMFs may not “[m]aintain a dollar-weighted average portfolio maturity that exceeds 60 calendar days”). On the importance of a short maturity for price stability, see John Crawford, *Capital Accounts: Bank Capital, Crises, and Determinants of An Optimal Regulatory Approach*, 66 *Hastings L. J.* 1161, 1178 n. 93 (“To illustrate why the price of a long-term bond with no risk of default can fluctuate, consider the following stylized example: a perpetual bond with a face value of \$100 pays its holder ... \$5 per year. The bond's yield is thus five percent, and as long as interest rates stay at five percent, the bond is worth \$100. But if interest rates jump to ten percent, then anyone could purchase the same future cash flow—\$5 per year—for just \$50 today. Therefore no one would pay more than \$50 for the original \$100 bond. At the other extreme, an overnight loan has almost no interest rate risk—recall that interest rates (unless otherwise noted) are expressed in annual terms, so the difference between five percent (per annum) and ten percent (per annum) is quite small when adjusted to a daily rate. The holder of a demand claim can withdraw and reinvest her money immediately at a higher interest rate if rates do, in fact, rise.”)

³⁹ See *infra* Section III.B.5.

amortized cost accounting.⁴⁰ Third, MMFs (again, excepting institutional prime funds) can use “penny rounding” in calculating their NAV.⁴¹

3. Closed-End Funds

Closed-end funds differ from open-end funds in that (i) shares are not created or redeemed on an on-going basis; and (ii) shares *do* trade on secondary markets. Thus, if a closed-end fund investor wishes to exit her position, she will sell it on an exchange rather than selling it back to the fund. Closed-end funds tend to trade at a discount to NAV.⁴² They are also much less popular than open-end funds.⁴³

4. Exchange-Traded Funds

Exchange-Traded Funds (ETFs) trade in secondary markets like closed-end funds, but unlike closed-end funds, allow redemptions directly from the fund. Unlike open-end funds, however, ETFs only accept redemption orders from “authorized participants” (typically broker-dealers⁴⁴) in large blocks of a pre-specified size (e.g., 50,000 shares). Furthermore, while open-end funds must meet redemption orders in the normal course in cash, ETFs typically meet such requests “in-kind” — by providing the redeeming authorized participant with a “basket” of portfolio securities in exchange for the shares. Likewise, the ETF will create new shares — again, in large blocks — if an authorized participant provides it with the same basket of securities (also called a “creation unit”). Figure 5 provides a schematic overview of how ETF shares are created, traded, and redeemed.

⁴⁰ The “*Amortized Cost Method* of valuation means the method of calculating an [MMF’s] net asset value whereby portfolio securities are valued at the fund’s [a]quisition cost as adjusted for amortization of premium or accretion of discount rather than at their value based on current market factors.” 17 C.F.R. 270.2a-7(a)(2).

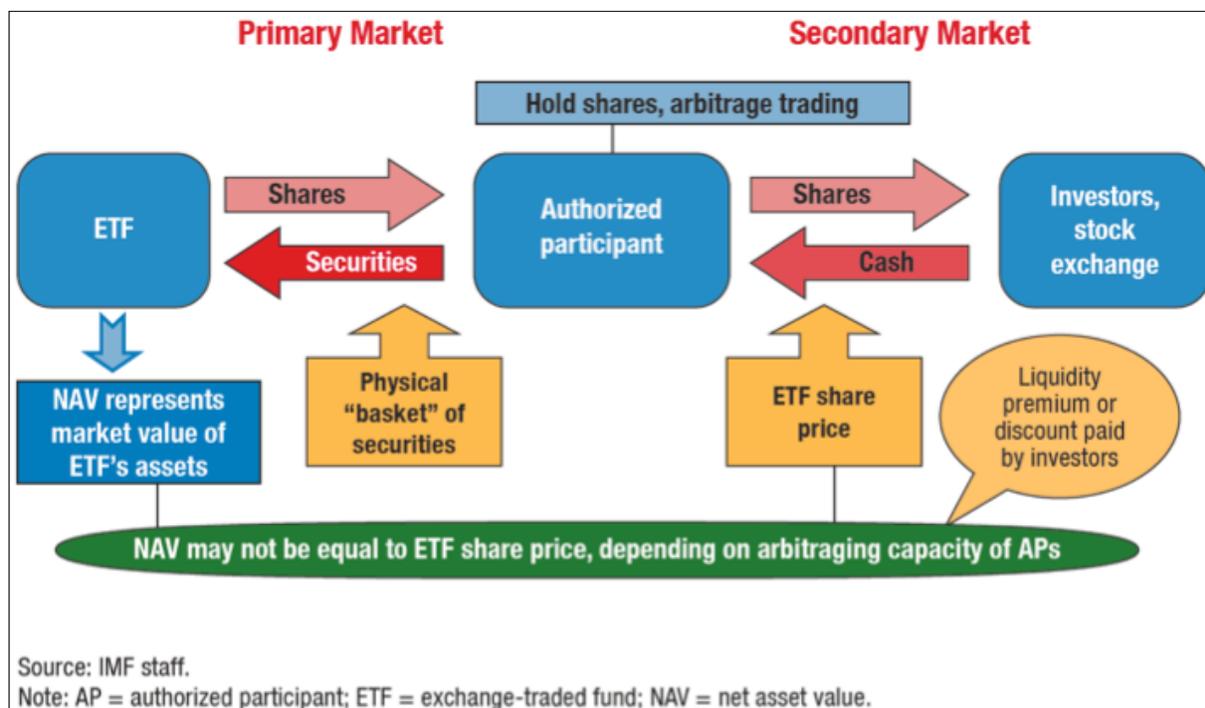
⁴¹ The “*Penny-Rounding Method* of pricing means the method of computing an [MMF’s] price per share for purposes of distribution, redemption and repurchase whereby the current net asset value per share is rounded to the nearest one percent.” 17 C.F.R. 270.2a-7(a)(20).

⁴² See Morley, *The Separation of Funds and Managers*, *supra* n. 15.

⁴³ See *infra* Section I.D.

⁴⁴ See generally *The Role and Activities of Authorized Participants of Exchange-Traded Funds*, Investment Company Institute (March 2015), https://www.ici.org/pdf/ppr_15_aps_etfs.pdf (finding that the average ETF has 32 authorized participants, and explaining that “[a]n [authorized participant] is typically a large financial institution that enters into a legal contract with an ETF distributor to create and redeem shares of the fund”).

FIGURE 5: The Structure of an ETF⁴⁵



In the primary market, the ETF issues a large block of shares to the authorized participant in exchange for the specified “basket” of securities, and the authorized participant in turn sells the shares (typically in smaller tranches) for cash on a stock exchange to end investors.

Like closed-end funds, ETF shares need not trade on exchanges at the NAV, but arbitrage activity by the authorized participants tends to keep the price of ETF shares very close to the per-share NAV.⁴⁶

5. Unit Investment Trusts

Investors in unit investment trusts (UITs) can trade their shares on the secondary market, or demand redemption from the trust itself. UITs, unlike other public funds, tend

⁴⁵ Source: IMF Report, *supra* note 3, at 102.

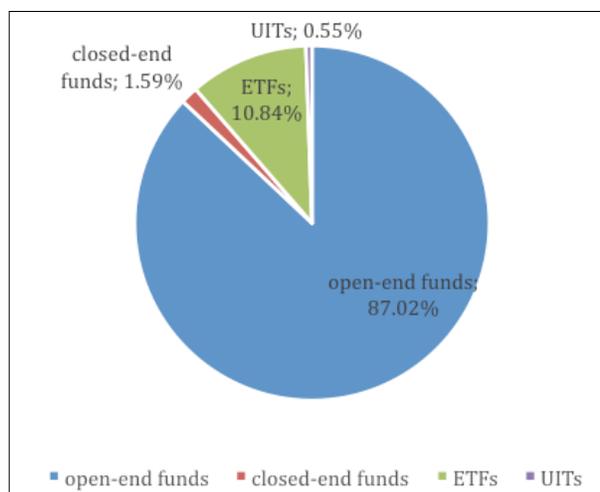
⁴⁶ If ETF shares are underpriced relative to NAV, the authorized participant will buy them up on the market and redeem them for the underlying securities—and will continue doing so until the prices align. Likewise, if ETF shares are overpriced relative to NAV, the authorized participant can buy up securities in the market, deliver them to the ETF for new shares, and sell the shares until the price comes into alignment with the NAV.

to have fixed durations and fixed portfolios of securities.⁴⁷ Unlike *most* ETFs,⁴⁸ the UIT issues shares only *once*—it does not continue to create shares over the life of the trust.⁴⁹ Finally, because the UIT portfolio is fixed, it does not require typical management services, and so usually does not employ an investment adviser.⁵⁰ The UIT is the least common type of '40 Act fund.⁵¹

D. Investment Company Statistics by Legal Form and Ownership Sources

Figure 6 provides a breakdown of investment companies by legal form.

FIGURE 6: Share of AUM by Type of Investment Company (as of 12/31/2014)⁵²



The category “open-end funds” in Figure 6 includes money market funds. The total dollar amount of AUM for open-end funds at year-end 2014 was \$15.852 trillion; for closed-end funds, \$289 billion; for ETFs, \$1.974 trillion; and for UITs, \$101 billion.⁵³

As of Nov. 30, 2015, total AUM for open-end funds had grown to \$15.945 trillion, and ETFs had grown to have aggregate AUM of \$2.123 trillion.⁵⁴ Closed-end funds had fallen

⁴⁷ *Unit Investment Trusts*, SEC website, <http://www.sec.gov/answers/uit.htm>.

⁴⁸ The overwhelming majority of ETFs are structured as open-end funds, but a few are actually UITs. *Id.*

⁴⁹ *Id.*

⁵⁰ *Id.*

⁵¹ See *infra* Section I.D.

⁵² Source: *ICI Factbook*, *supra* note 8, p. 9.

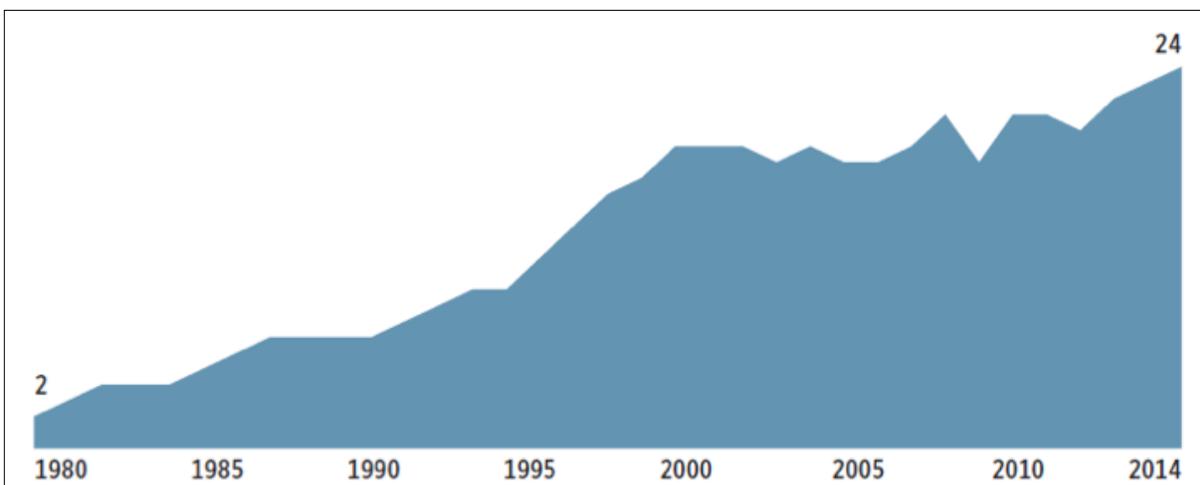
⁵³ *Id.*

⁵⁴ See ICI’s *Trends in Mutual Fund Investing*: November 2015, *supra* note 12.

to \$264 billion by Sept. 30, 2015.⁵⁵

The importance of public funds as a vehicle for investment in the economy has grown in the past few decades. Figure 7 illustrates the rise in the share of household financial assets held in investment companies (i.e., public funds) from 1980-2014.

FIGURE 7: Share of Household Financial Assets Held in Investment Companies in the U.S. (percentage of household financial assets)⁵⁶



After a dip following the financial crisis, American households now hold a greater percentage of their wealth in public funds than ever before. Open-end funds and, in recent years, ETFs have been the most important vehicles for these investments. Figure 3 in Section I.A above shows the evolution of AUM for these funds since 2000. ETFs have grown more than 30-fold, from \$66 billion in AUM in 2000 to over \$2 trillion today, and mutual funds have more than doubled to just under \$16 trillion in AUM from just under \$7 trillion in 2000.

The vast majority of mutual fund shares by aggregate value are held by individual

⁵⁵ See Closed-End Fund Assets, Third Quarter 2015, ICI, https://www.ici.org/research/stats/closedend/cef_q3_15. Note that ICI reports flow data UITs throughout the year, but does not report the aggregate AUM until year-end. See, e.g., https://www.ici.org/research/stats/uit/uits_11_15.

⁵⁶ Source: ICI Factbook, *supra* note 8, at p. 11.

households.⁵⁷ The majority of *these* shares, however, are held indirectly, through employee-sponsored retirement plans or other institutional intermediaries. Figure 8 illustrates the different sources of mutual fund ownership.

FIGURE 8: Sources of Mutual Fund Ownership (as of 6/30/2014)⁵⁸

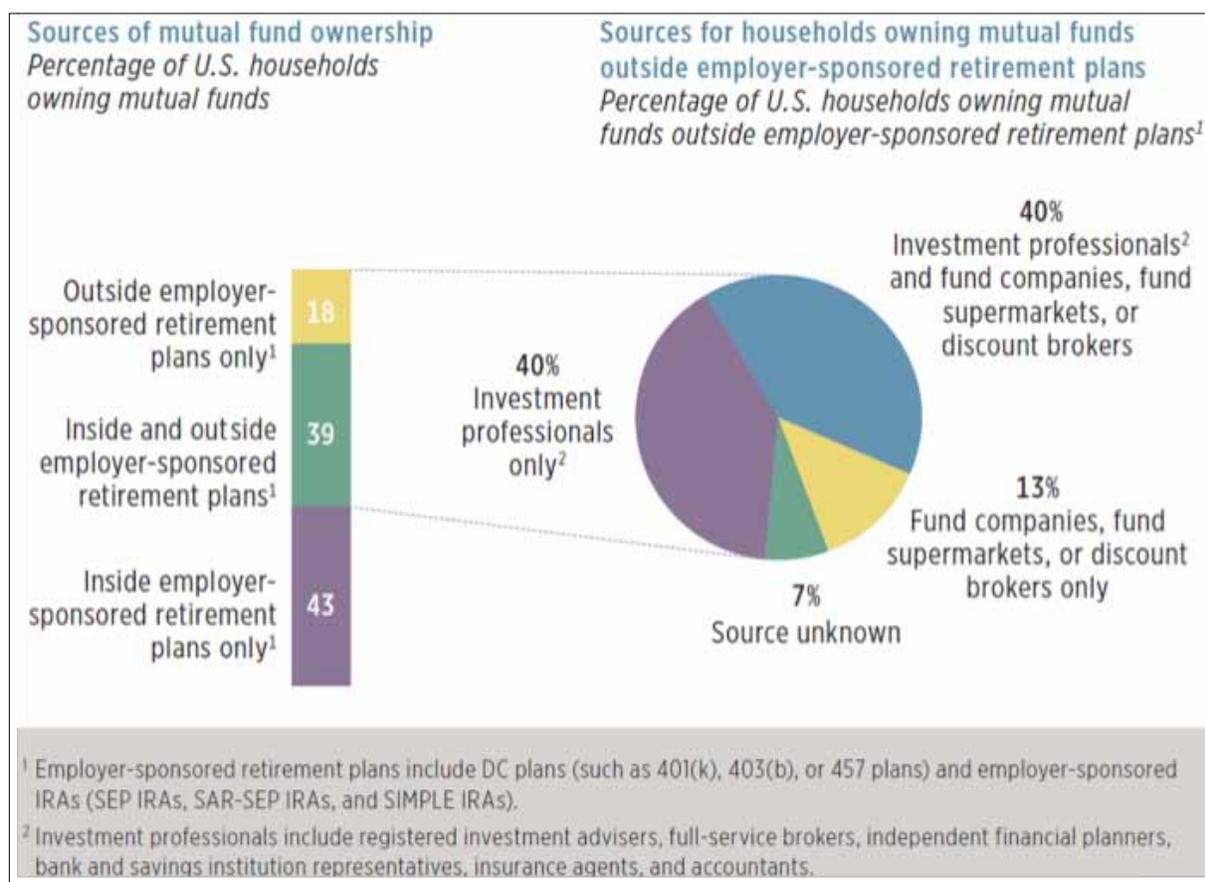


Figure 8 shows that 43 percent of households own mutual shares solely through employer-sponsored retirement plans; 18 percent own mutual funds solely *outside* em-

⁵⁷ ICI Factbook, *supra* note 8, at p. 114 (“In mid-2014, an estimated 90 million individual investors owned mutual funds—and at year-end, these investors held 89 percent of total mutual fund assets, directly or through retirement plans.”)

Note: MMFs constitute an important exception to this division of ownership: as of January 20, 2016, retail MMF shares stood at \$1.016 trillion, while institutional MMF shares stood at \$1.727 trillion. https://www.ici.org/research/stats/mmf/mm_01_21_16.

⁵⁸ Source: ICI Factbook, *supra* note 8, at p. 122.

ployer-sponsored retirement plans; and 39 percent hold shares both inside and outside employer-sponsored retirement plans. Of households owning shares outside employer-sponsored retirement plans,

80 percent ... owned funds purchased with the help of an investment professional, including registered investment advisers, full-service brokers, independent financial planners, bank and savings institution representatives, insurance agents, and accountants.... Forty percent of these households owned funds purchased solely with the help of an investment professional, while another 40 percent owned funds purchased from investment professionals and directly from fund companies, fund supermarkets, or discount brokers. Thirteen percent solely owned funds purchased directly from fund companies, fund supermarkets, or discount brokers.⁵⁹

E. Categorization of Funds by Investment Objectives

In terms of trading strategy, funds may be actively managed, trying to beat market averages for the risks undertaken, or passively track an index to mirror market returns—for example, an S&P 500 fund will invest in the securities that make up the S&P 500.

In terms of the investment focus, at the most general level, funds may invest in equity (“equity funds”), debt (“fixed income funds”), or a combination of the two (“hybrid funds”). The volatility and liquidity of portfolios *within* each of these categories may vary drastically. For example, “large cap” equities are highly liquid, while emerging market equities are generally less liquid. And while equities are generally more volatile than fixed-income securities, high-growth stocks (e.g., younger technology companies) will tend to be more volatile than, for example, a portfolio indexed to the S&P 500. Likewise,

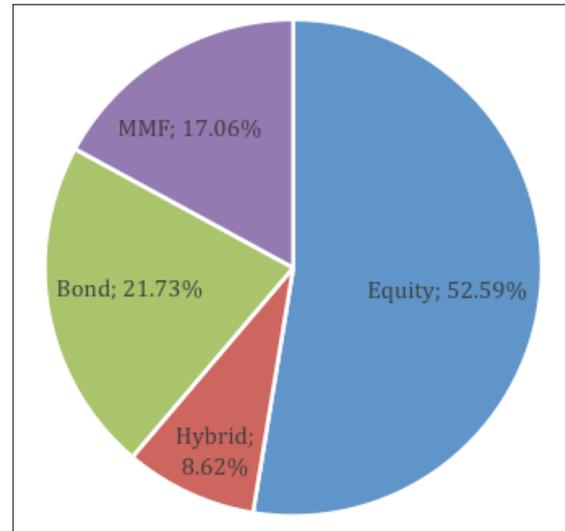
⁵⁹ *Id.*

within fixed-income, Treasury securities offer low volatility and a high level of liquidity, while junk bonds can be highly volatile *and* illiquid.⁶⁰

Figure 9 provides a breakdown of AUM among open-end funds by the broad categories of investment objective, dividing fund type into equity, fixed-income, hybrid, and MMF.

FIGURE 9: Share of Mutual Fund AUM by type of fund (as of 11/30/2015)⁶¹

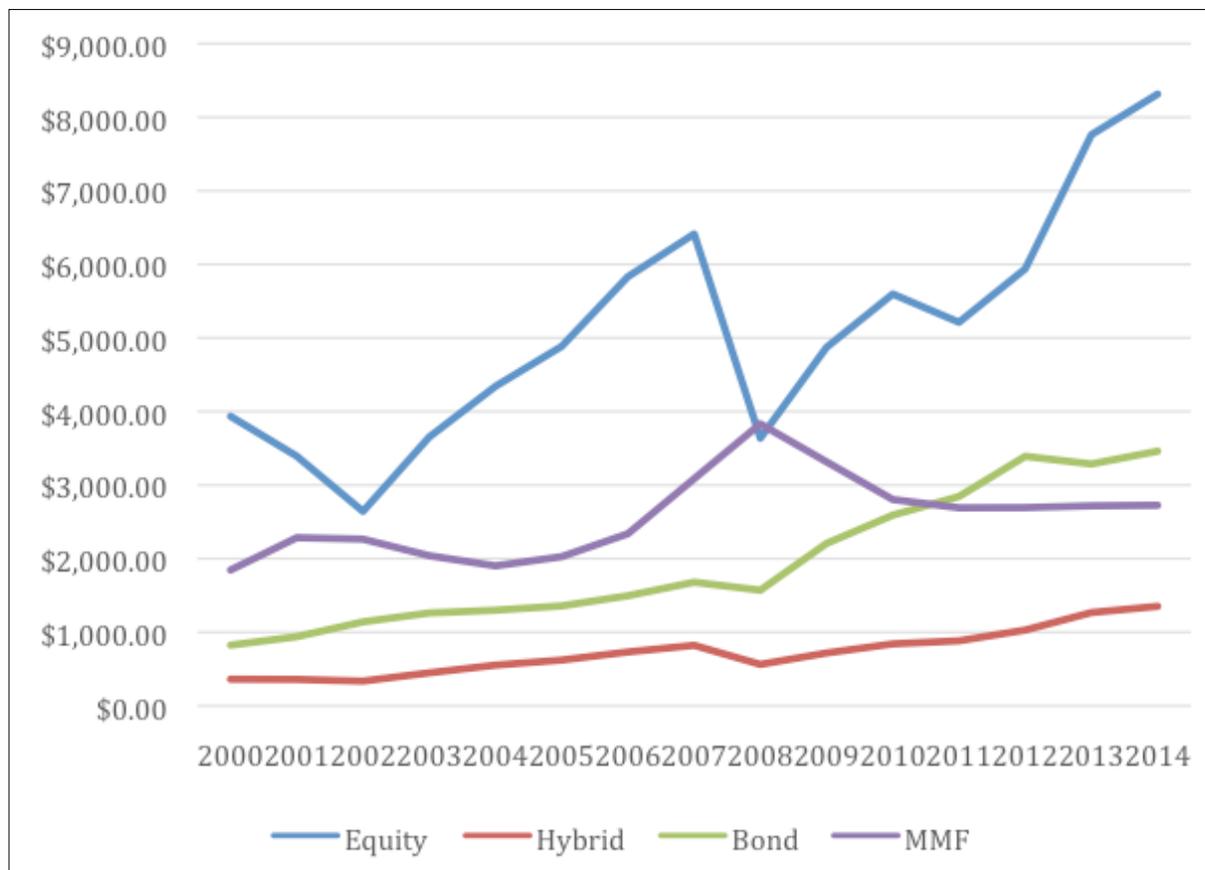
As will be discussed in more detail below,⁶² concerns about risks arising out of the asset management industry are grounded in a combination of the evolution of bond markets and the evolution of the types of portfolio strategies funds are adopting. Figure 10 shows the evolution of AUM for open-end funds since 2000.



⁶⁰ The classification of funds by investment objectives can be much more fine-grained than this, of course. For example, the Investment Company Institute uses “levels” of classification to indicate the degree of granularity in its description of goals and strategies. Level 1 is simply long-term funds vs. money market funds. Level 2—the level of division in Figure 9, above, categorizes funds as bond, equity, hybrid, or MMF. Level 3 divides funds into Domestic equity, world equity, hybrid, taxable bond, municipal bond, taxable money market funds, and tax-exempt money market funds; Level 4 divides funds by 13 different investment objectives; and Level 5 divides funds by 42 different investment objectives (e.g., growth, alternative strategies, and so on). See ICI, Mutual Fund Investment Objective Definitions, https://www.ici.org/research/stats/iob_update/iob_definitions. Morningstar’s classifications can be even more fine-grained. See, e.g., The Morningstar Category Classifications, <http://corporate.morningstar.com/CategoryClassifications/>.

⁶¹ Source: data from ICI’s Trends in Mutual Fund Investment: November 2015, *supra* note 12.

⁶² See *infra* Section III.

FIGURE 10: AUM of open-end funds by type of fund, 2000-2014 (billions of dollars)⁶³


Following a severe dip during the financial crisis, equity funds have skyrocketed so that they now have over \$8 trillion in AUM.⁶⁴ AUM for MMFs fell sharply during the crisis (particularly for prime funds) but have plateaued in recent years. Flows into bond funds rose sharply after the crisis, though this too seems to have stabilized over the past few years.⁶⁵ Hybrid funds saw a dip during the crisis, and have been rising steadily since.⁶⁶

Of particular concern from the perspective of systemic stability is the risk of illiquidity

⁶³ Source: data from ICI Factbook, *supra* n. 8, p. 176.

⁶⁴ At the end of November 2015, equity funds had \$8.386 trillion in AUM. ICI's Trends in Mutual Fund Investment: November 2015, *supra* n. 12.

⁶⁵ Bond funds had a total of \$3.465 trillion in AUM at the end of November 2015, ICI's Trends in Mutual Fund Investment: November 2015, *supra* n. 12, compared to \$3.46 trillion at year-end 2014, ICI Factbook, *supra* n. 8, p. 176.

⁶⁶ Hybrid funds, too, have largely plateaued: they had \$1.374 trillion in AUM at the end of November 2015, ICI's Trends in Mutual Fund Investment: November 2015, *supra* n. 12, compared to \$1.352 trillion at year-end 2014, ICI Factbook, *supra* n. 8, p. 176.

of open-end funds' asset portfolios.⁶⁷ Some types of funds pose a greater risk of illiquidity than others; as noted above, for example, bonds (which trade primarily through broker-dealers) are typically less liquid than stocks (which trade on exchanges). Of particular note in this respect are “alternative funds.” As the SEC explained in proposed liquidity rules for open-end funds,

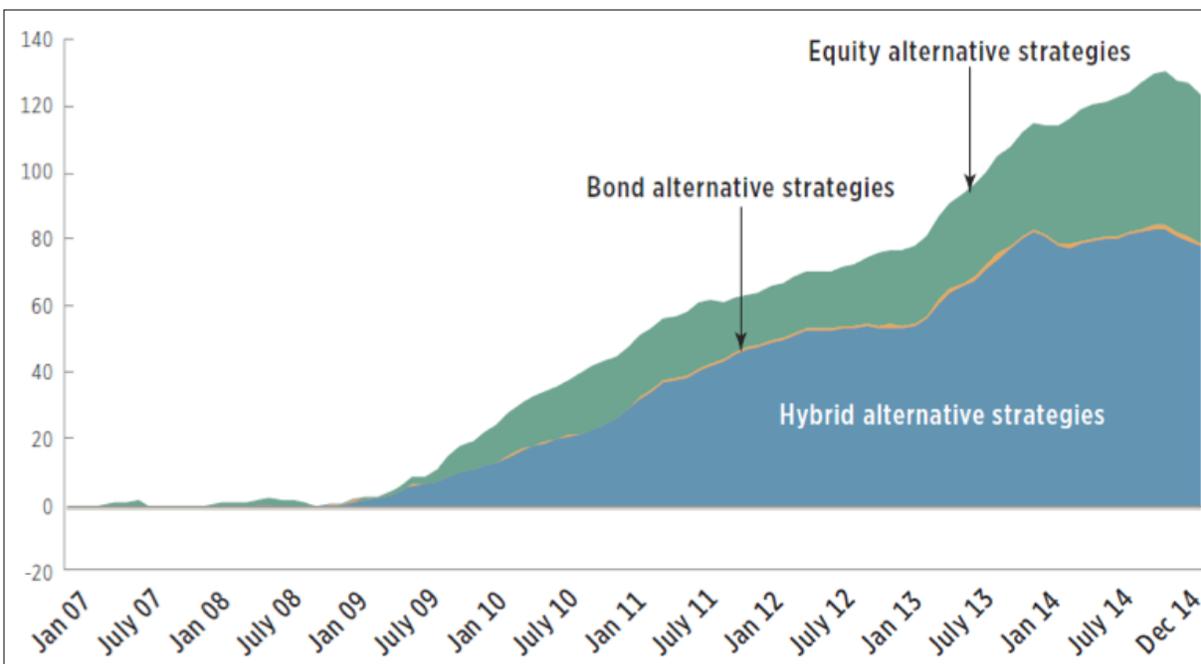
While there is no clear definition of “alternative” in the mutual fund space, an alternative mutual fund is generally understood to be a fund whose primary investment strategy falls into one or more of the three following buckets: (i) non-traditional asset classes (for example, currencies or managed futures fund), (ii) non-traditional strategies (such as long/short equity, event driven), and/or (iii) less liquid assets (such as private debt). Their investment strategies often seek to produce positive risk-adjusted returns that are not closely correlated to traditional investments or benchmarks, in contrast to traditional mutual funds that historically have pursued long-only strategies in traditional asset classes.⁶⁸

Assets under management at open-end funds employing alternative strategies have grown almost 1,000-fold in the past decade, from approximately \$365 million at the end of 2005 to \$334 billion at the end of 2014.⁶⁹ Figure 11 shows the growth of AUM in bond, equity, and hybrid funds pursuing alternative-strategies since the crisis.

⁶⁷ See *infra* Section III.B.

⁶⁸ See SEC Proposed Liquidity Rules, *supra* note 28, at p. 27, n. 64.

⁶⁹ *Id.* at 27.

FIGURE II: Cumulative Flows to Alternative Strategies Mutual Funds, 2007-2014 (billions of dollars)⁷⁰


While the growth of these funds has been remarkable and clearly demands regulatory vigilance (as alternative investment strategies typically involve greater liquidity risk), it is worth noting that they account for approximately 3 percent of total mutual fund AUM.⁷¹ In addition, net flows into alternative strategy funds slowed considerably in 2015.⁷²

F. Typography of Private Funds

As noted above, private funds are exempt from registration requirements under the '40 Act

⁷⁰ Source: ICI Factbook, *supra* note 8, p. 44.

⁷¹ SEC Proposed Liquidity Rules, *supra* note 28, at p. 27. This does not mean that these do not or will not grow to pose systemic risks, or course—as a point of comparison, the total value of all subprime mortgages in 2007 was approximately \$1 trillion. If growth in alternative strategy funds resumes the trajectory of the half-decade after the crisis, it could reach a similar magnitude fairly quickly.

⁷² See, e.g., Sarah Krouse, *The Year the Hedge Fund Model Stalled on Main Street*, Wall St. J., Dec. 31, 2015, <http://www.wsj.com/articles/the-year-the-hedge-fund-model-stalled-on-main-street-1451519965> (“Just \$85.1 million has flowed into liquid-alternative funds this year, down from \$37.7 billion in 2014”).

based on the number and/or wealth of their investors.⁷³ The labels unofficially assigned to different types of private funds—hedge funds, private equity funds, venture capital funds, and so on—have only recently been codified as a result of the SEC’s mandate under the Dodd-Frank Act to collect data on such funds.⁷⁴

A *hedge fund* is defined as a private fund that meets any *one* of three criteria: (i) the adviser of the fund receives a performance fee based on unrealized gains;⁷⁵ (ii) the fund is authorized, under the terms of its contract, to borrow more than half its net asset value or to take on gross notional derivatives exposure greater than twice its net asset value; or (iii) the fund takes short positions for purposes other than hedging.⁷⁶

A *liquidity fund* is a private fund that attempts to mirror certain features of MMFs: it invests in a “portfolio of short-term obligations in order to maintain a stable net asset value per unit or minimize principal volatility for investors.”⁷⁷

A *private equity fund* is defined in largely negative terms as any private fund that is *not* a hedge fund, liquidity fund, real estate fund, securitized asset fund, or venture capital fund, *and* that does not permit redemption of investments in the ordinary course.⁷⁸ The classic model is something like a buyout fund managed by a firm like Kohlberg Kravis Roberts (KKR), with a multi-year commitment from investors.

A *real estate fund* is a private fund that (i) is not a hedge fund; (ii) does not permit redemption of investments in the ordinary course; and (iii) has a portfolio consisting primarily of real estate assets.⁷⁹

A *securitized asset fund* has (i) a primary purpose of issuing asset-backed securities

⁷³ See *supra* notes 24-26 and accompanying text. Wealth, it should be noted, serves as a very imperfect proxy for sophistication in the securities laws—the idea being that sophisticated investors can rely on their own savvy and anti-fraud laws to protect themselves without the aid of securities regulators.

⁷⁴ Dodd-Frank Act § 404. This data is being collected on Form PF.

⁷⁵ Unrealized gains refer to appreciation in the value of an asset or set of assets prior to the disposal or maturation of the asset(s).

⁷⁶ Form PF Glossary, p. 4, <https://www.sec.gov/rules/final/2011/ia-3308-formpf.pdf>.

⁷⁷ *Id.* at p. 5.

⁷⁸ *Id.* at p. 7.

⁷⁹ *Id.* at p. 8.

and (ii) investors that are primarily debt-holders.⁸⁰

Finally, a private fund must meet several criteria to qualify as a *venture capital fund*, as defined by Rule 203(l)-1 of the Investment Advisers Act of 1940. It must, inter alia, represent to investors that it will pursue a venture capital strategy;⁸¹ refrain from incurring leverage in excess of 15 percent of the fund's aggregate capital contributions; and forbid investors from withdrawing or redeeming their investments in the ordinary course.⁸²

G. Data on Private Funds and Advisers.

As a result of required reporting on Form PF instituted by the Dodd-Frank Act,⁸³ the SEC has better data on private funds than it has had in the past. In October 2015, the Division of Investment Management published a report on private fund statistics in 2013 and 2014.⁸⁴ Table 3 provides a view of the total net assets under management for the various fund types over the two-year period.

⁸⁰ *Id.* at pp. 8-9.

⁸¹ Venture capital involves investment in early and mid-stage growth companies.

⁸² 17 C.F.R. 275.203(l)-1.

⁸³ See *infra* Section II.D

⁸⁴ Private Fund Statistics, Fourth Calendar Quarter 2014 (October 16, 2015) [hereinafter Private Fund Statistics], <https://www.sec.gov/divisions/investment/private-funds-statistics/private-funds-statistics-2014-q4.pdf>.

TABLE 3: Aggregate Private Fund Net Asset Value (NAV) (\$ Billions)⁸⁵

Fund Type	2013Q1	2013Q2	2013Q3	2013Q4	2014Q1	2014Q2	2014Q3	2014Q4
Hedge Fund	2,612	2,685	2,815	3,078	3,161	3,308	3,359	3,399
Qualifying Hedge Fund	2,051	2,084	2,194	2,397	2,470	2,627	2,606	2,672
Private Equity Fund	1,471	1,479	1,494	1,702	1,695	1,702	1,694	1,744
Section 4 Private Equity Fund	1,037	1,042	1,049	1,206	1,200	1,205	1,209	1,274
Other Private Fund	621	653	667	816	823	827	830	883
Securitized Asset Fund	114	114	116	117	122	126	126	114
Real Estate Fund	235	235	237	266	266	266	265	279
Liquidity Fund	256	255	247	246	249	273	283	272
Section 3 Liquidity Fund	253	247	239	239	246	261	279	271
Venture Capital Fund	21	21	22	28	28	28	28	37
Total	5,316	5,420	5,573	6,232	6,329	6,511	6,548	6,708

While the AUM of private funds in aggregate is a little more than one-third that of public funds—\$6.708 trillion⁸⁶ versus \$18.216 trillion⁸⁷ at year-end 2014—the AUM of the largest private fund managers is much smaller than the AUM of the largest public fund managers. (There is some overlap between the two groups—for example, the top overall asset manager, BlackRock, is in fifth place among hedge fund managers and second place among private equity managers. While BlackRock has more than \$4 trillion in AUM, the AUM of the top hedge fund manager is \$103 billion, and the AUM of the top private equity fund manager is \$149 billion.) Table 4 provides a list of the top 25 hedge fund managers in the United States by AUM, and Table 5 provides a list of the top 25 private equity fund managers in the United States by AUM.

⁸⁵ Source: *Id.* at p. 5. Note that a “Qualifying Hedge Fund” is a hedge fund that (i) has at least \$500 million in net asset value, and (ii) is managed by a firm with at least \$1.5 billion in hedge fund assets under management. *Id.* at 39-40. A “Section 4 Private Equity Fund” is private equity fund that is managed by an adviser with at least \$2 billion in private equity fund assets under management. *Id.* A “Section 3 Liquidity Fund” is a liquidity fund managed by an adviser with at least \$1 billion in combined liquidity fund and MMF assets under management. *Id.*

⁸⁶ See *supra* Table 3.

⁸⁷ See ICI Factbook, *supra* note 8, p. 9.

TABLE 4: Largest Hedge Fund Managers by AUM, millions of dollars (6/30/2015)⁸⁸

1	Bridgewater Associates	\$103,623
2	AQR Capital Mgmt.	\$45,600
3	Man Group	\$44,400
4	Och-Ziff Capital Mgmt.	\$37,929
5	BlackRock (BLK)	\$33,388
6	Millennium Mgmt.*	\$30,400
7	Winton Capital Mgmt.	\$29,784
8	J.P. Morgan Asset Mgmt.	\$28,442
9	Brevan Howard Asset Mgmt.	\$27,000
10	Renaissance Technologies	\$27,000
11	Elliott Management	\$26,800
12	D.E. Shaw Group	\$26,369
13	Davidson Kempner Capital Mgmt.	\$25,600
14	Citadel	\$24,900
15	Viking Global Investors	\$21,832
16	Two Sigma Investments	\$21,700
17	York Capital Management	\$21,700
18	King Street Capital Mgmt.	\$21,100
19	Farallon Capital Mgmt.	\$20,600
20	Marshall Wace	\$20,300
21	Appaloosa Mgmt.	\$20,000
22	Pershing Square Capital Mgmt.	\$18,531
23	Paulson & Co.	\$18,299
24	Third Point	\$17,800
25	Canyon Partners	\$17,400

⁸⁸ Source: Pensions & Investments, <http://www.pionline.com/article/20150921/INTERACTIVE/150929943/the-largest-managers-of-hedge-funds>.

TABLE 5: Largest Private Equity Fund Managers by AUM, millions of dollars (12/31/2014)⁸⁹

1	Apollo Group Management	\$149,494
2	Blackstone Group	\$146,000
3	Carlyle Group	\$123,800
4	Kohlberg Kravis Roberts	\$98,600
5	Ares Management	\$75,200
6	Oaktree Capital	\$70,374
7	Fortress	\$67,500
8	Bain Capital	\$65,000
9	TPG	\$62,169
10	Ardian (formerly AXA Private Equity)	\$45,000
11	Providence Equity Partners	\$40,000
12	Warburg Pincus	\$36,500
13	Advent International	\$32,900
14	Partners Group	\$32,500
15	Hamilton Lane	\$32,300
16	Pantheon Ventures	\$28,325
17	Permira	\$28,200
18	Adams Street	\$26,831
19	Cerberus Capital Management	\$25,000
20	J.P. Morgan Asset Management	\$24,100
21	Silver Lake Partners	\$23,000
22	Neuberger Berman	\$23,000
23	Oak Hill Advisers	\$21,000
24	Clayton, Dubilier & Rice	\$20,000
25	General Atlantic	\$20,000

H. Separate Accounts

While the public and private funds described above are *collective* investment vehicles, investment advisers also manage investments for individual institutional and wealthy clients in “separate accounts.” There is very limited data about the size and composition of separate accounts, though recent proposed rules by the SEC will go some way to filling this gap.⁹⁰ The OFR Report issued in September 2013 estimated that registered investment advisers

⁸⁹ Source: <http://www.pionline.com/article/20150406/PRINT/304069998/big-private-equity-managers-ruling-the-roost>.

⁹⁰ See *infra* Section II.E.

managed over \$10 trillion in separate accounts, in addition to \$10 trillion managed by banks and bank holding companies and \$6 trillion managed by insurance companies.⁹¹ Despite the considerable size of these holdings, the particular systemic risks that asset management *per se* may trigger or exacerbate in the context of collective investment vehicles⁹² likely do not apply in the context of separate accounts. This is because separate accounts are unlikely to face liquidity problems – and therefore unlikely to amplify vicious price dislocations arising from fire sales⁹³ – since there is no “first mover advantage” to withdrawing from an account with a single beneficial owner, and since redemptions can usually be accomplished in-kind.⁹⁴ Decisions to sell by beneficial owners are likely to be independent of whether the assets are held directly or separately managed by an asset manager.

Nevertheless, it is not impossible that separate accounts could have *some* amplifying impact on market dislocations through the decisions of the asset managers rather than end investors. As the OFR noted in its report,

collecting additional data on leverage practices and risk exposures in separate accounts could be useful for financial stability monitoring. [I]n some cases separate accounts are largely “clones” of existing strategies of funds managed by the asset manager, with small adjustments. Therefore, if the manager makes a shift in strategy to respond to a financial shock, these clone accounts can magnify the impact of the strategy shift beyond the impact from its managed funds. Thus, separate accounts can potentially magnify the impacts from herding behavior.⁹⁵

It is also worth observing that although separate accounts are not subject to the constraints of the '40 Act, they *are* subject to the investment constraints of the client – for

⁹¹ See OFR Report, *supra* note 2, at 4.

⁹² See *infra* Section III.

⁹³ See *infra* Section III.B.

⁹⁴ See, e.g., IMF Report, *supra* note 3, at p. 97, n. 8.

⁹⁵ OFR Report, *supra* note 2, at 25.

example, pension funds must comply with ERISA regulations, and insurance companies with state insurance regulations. This may help explain why the available information regarding separate accounts indicates that they tend to invest in simple securities and use little leverage.⁹⁶

I. Adviser Compensation

Investment advisers charge their funds fees for the services they provide. The fee structure tends to be very different for private funds and publicly offered funds.

I. Public Fund Fees

When a management company sells fund shares to the public, it must disclose the fees it will charge in a prospectus. These fees may include some combination of “sales loads,”⁹⁷ redemption fees,⁹⁸ exchange fees,⁹⁹ account fees,¹⁰⁰ purchase fees,¹⁰¹ distribution fees,¹⁰² and management fees.¹⁰³ It is worth noting that investment advisers virtually never charge “incentive” or “performance” fees that are tied to a *public* fund’s investment returns. This is likely due at least in part to the fact that any such fee must be “symmetric”—in other words, if an investment adviser charges a performance fee based on the capital gains of the public fund, it must *also* share in any losses the fund suffers.¹⁰⁴ *Private* fund advisers do not operate under this constraint, and (as described below) typically charge an asymmetric performance fee—taking a slice of upside gains but not participating in losses.

⁹⁶ See, e.g., IMF Report, *supra* note 3, at p. 97, n. 8.

⁹⁷ The “sales load” covers the expense of compensating brokers for executing the fund’s trades. “There are two general types of sales loads—a front-end sales load investors pay when they purchase fund shares and a back-end or deferred sales load investors pay when they redeem their shares.” <http://www.sec.gov/answers/mffees.htm>

⁹⁸ This is a fee some funds charge redeeming shareholders. The SEC has capped redemption fees at 2 percent. <http://www.sec.gov/answers/mffees.htm>.

⁹⁹ This is a fee charged to shareholders who transfer to another fund within the same family. SEC, Mutual Fund Fees and Expenses, <http://www.sec.gov/answers/mffees.htm>.

¹⁰⁰ This fee covers costs related to maintaining specific customer accounts. SEC, Mutual Fund Fees and Expenses, <http://www.sec.gov/answers/mffees.htm>.

¹⁰¹ This is a fee some funds charge when an investor purchases new shares. *Id.*

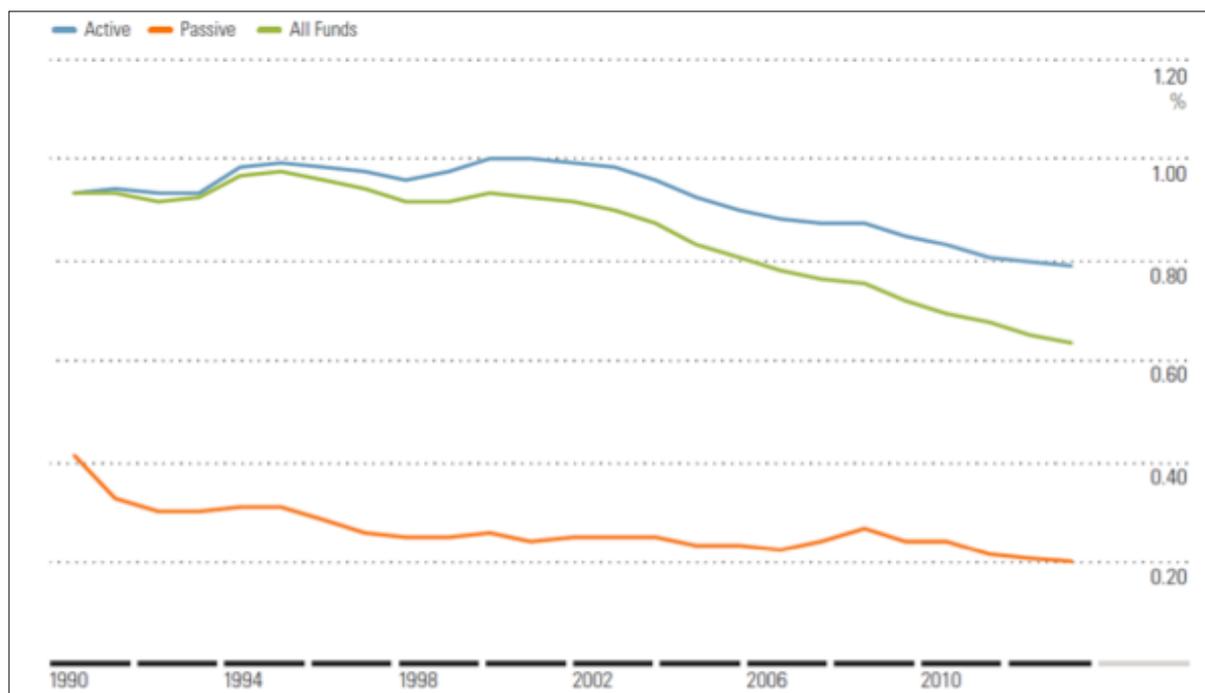
¹⁰² These are also known as “12b-1 fees,” and cover distribution expenses and sometimes shareholder service expenses. *Id.*

¹⁰³ This fee compensates the investment adviser for its management services. *Id.*

¹⁰⁴ 15 U.S.C. § 80b-5(a) & (b).

As a result of the prohibition on charging asymmetric performance fees, funds governed by the '40 Act overwhelmingly charge a fixed management fee. While the SEC does not limit the size of this fee, it is typically significantly lower than fees charged by private fund advisers: recurring fees charged to fund investors (sometimes termed “expense ratios”) are on average less than 1 percent at open-end funds, and, as illustrated in Figure 12, have been falling in recent years.

FIGURE I2: Annual Fee Expenses Incurred by Mutual Fund Investors, 1990-2014¹⁰⁵



The redemption fee that mutual funds may charge is worth pausing to consider in more detail. As noted above and discussed in greater depth below,¹⁰⁶ a major concern that has arisen about mutual funds in the post-crisis era is the risk of a liquidity squeeze

¹⁰⁵ Source: 2015 Fee Study: Investors Are Driving Expense Ratios Down, Morningstar, http://news.morningstar.com/pdfs/2015_fee_study.pdf.

¹⁰⁶ See *infra* Section III.B.

caused by mass redemptions. A redemption fee could potentially help address this risk. The problem, however, is that redemption fees under current SEC rules are triggered not by the volume of redemptions or the liquidity of assets at the fund, but rather by the length of time the redeeming shareholder has held the shares. The aim and effect of the rule is not to address runs but rather to discourage short-term trades—or at least to force short-term traders to internalize the cost of their strategies. The redemption fee rule, passed by the SEC in 2005, not only permits, but encourages¹⁰⁷ funds to institute redemption fees in order “to allow funds to recoup some of the direct and indirect costs incurred as a result of short-term trading strategies, such as market timing.”¹⁰⁸ If the fund board decides to impose a fee, it must determine its size (not to exceed 2 percent) and the maximum holding period that will trigger the fee. Typical time periods are 30, 180, or 365 days; redemption requests for shares held longer than the stated period do *not* incur the fee.¹⁰⁹

2. Private Fund Fees

Private funds generally *do* charge asymmetric performance fees—sharing in gains but not losses from the fund’s investments. The classic adviser compensation structure for hedge funds and private equity funds comprises two fees: a management fee of 2 percent of the total assets under management, and a performance fee of 20 percent of the fund’s profits.¹¹⁰ This is known as the “2-and-20” fee model. While this basic structure persists, the magnitude of the fees has been falling in recent years, so that (for example) the performance fee for hedge funds launched in 2015 (though August) was 14 percent.¹¹¹

¹⁰⁷ The initial proposed rule would have required funds to institute such fees; the final rule simply stated that the board of a fund had to make a determination of whether it was appropriate or not. SEC, Mutual Fund Redemption Fees, Final Rule, <https://www.sec.gov/rules/final/ic-26782.pdf>

¹⁰⁸ *Id.* at 1. Market timing “includes (a) frequent buying and selling of shares of the same fund or (b) buying or selling fund shares in order to exploit inefficiencies in fund pricing. Market timing, while not illegal per se, can harm other fund shareholders because (a) it can dilute the value of their shares, if the market timer is exploiting pricing inefficiencies, (b) it can disrupt the management of the fund’s investment portfolio, and (c) it can cause the targeted fund to incur costs borne by other shareholders to accommodate the market timer’s frequent buying and selling of shares.” *Id.* at 4. The final rule is codified at 17 C.F.R. 270.22c-2a(1)(i).

¹⁰⁹ Redemption Fee, Morningstar Investment Gallery, http://www.morningstar.com/invGLOSSARY/redemption_fee.aspx.

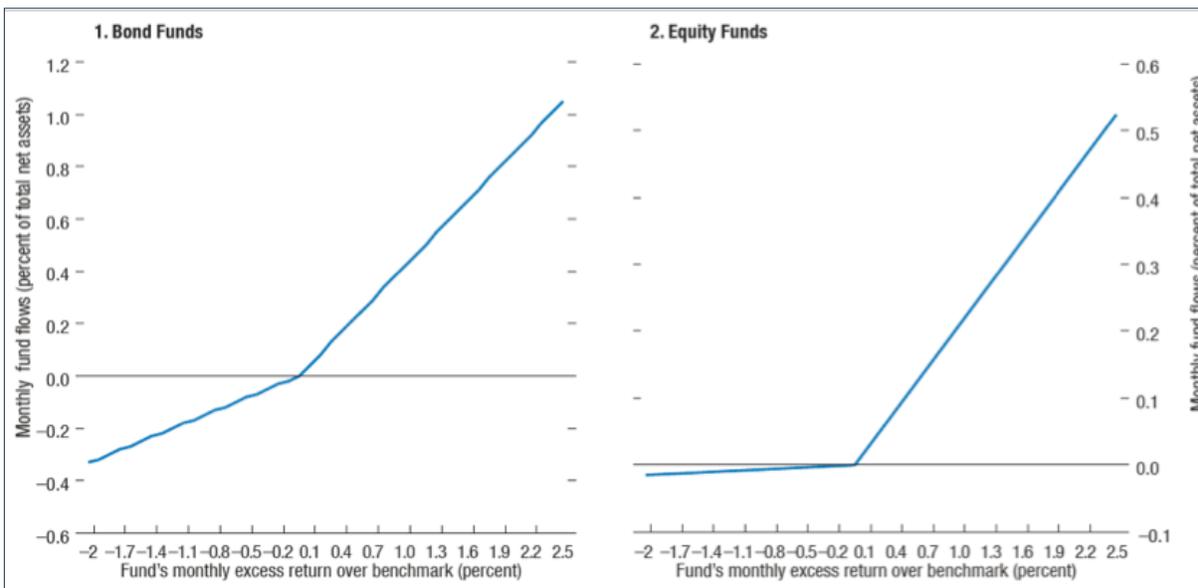
¹¹⁰ Many funds apply the performance fee only to profits achieved above some predetermined benchmark return, or “hurdle.”

¹¹¹ See Michael P. Regan, *The Incredible Shrinking Hedge Fund Fee*, Bloomberg, Oct. 27, 2015, <http://www.bloombergvew.com/articles/2015-10-27/hedge-fund-performance-fees-are-shrinking>.

3. Incentives

Asymmetric fees create a well-known incentive problem toward excessive risk.¹¹² Public funds’ practice of charging a fixed fee significantly mitigates this incentive problem, but may not completely eliminate it, due to two facts. First, fees are charged as a percentage of AUM—the larger the fund, the larger the aggregate fee income for the adviser. Second, there is some empirical evidence that top-performing funds over a given period tend to attract greater inflows than poor-performing funds suffer outflows.¹¹³ In Figure 13, for example, we can see that underperforming funds are punished with outflows, but to a lesser degree than funds outperforming the relevant benchmark are rewarded with inflows.

FIGURE 13: Relationship Between Fund Flows and Fund Performance, 1998-2014¹¹⁴



¹¹² Assume, for example, I am a fund manager choosing between two investment strategies, and that I keep 10 percent of any upside gains but do not share in losses. Strategy 1 pays \$100 with a probability of 1. Strategy 2 pays \$300 with a probability of 0.5, and loses \$300 with a probability of 0.5. The expected value of Strategy 1 (\$100) is greater than the expected value of Strategy 2 ($0.5 \times \$300 - 0.5 \times \$300 = \$0$). The payoff profile flips, however, when I consider only my expected return, since I am sensitive to gains but can ignore losses. My expected payoff from Strategy 2 ($0.1 \times 0.5 \times \$300 = \15) exceeds my expected payoff from Strategy 1 ($0.1 \times 1 \times \$100 = \10). I will therefore have an incentive to choose a strategy that is inferior from the perspective of the principal.

¹¹³ This is perhaps due to a combination of inertia among existing investors combined with trend-chasing by new investors.

¹¹⁴ Source: IMF Report, *supra* note 3, at 109.

Table 6, in turn, illustrates how these facts—the asymmetry of punishment and reward in investor flows based on fund performance combined with the linear relationship between fees and fund size—can, at least in theory, contribute to *some* excessive risk-taking by fund managers.¹¹⁵

TABLE 6: The Effect of Fund Flows on Advisers' Risk-Taking Incentives¹¹⁶

Options	Likelihood (percent)	Outcome: Change in Net Asset Value	Net Inflows to Fund (millions of U.S. dollars)	Additional Fee Income (1 percent of assets under management, in millions of U.S. dollars)
Benchmark Portfolio	100	Same as benchmark	0	0
Gamble	50	10% in excess of benchmark	100	1
	50	10% below benchmark	-20	-0.2
	Expected outcome		Same as benchmark	40

In this stylized illustration, “gambling”—by buying assets that diverge from the benchmark portfolio, for example—will increase volatility without increasing the expected payoff. But because of the asymmetry of fund flows based on fund performance, the riskier strategy results in a *higher expected* total AUM at the end of the period, which translates into higher fee income going forward.

If there is “excessive” risk-taking, it may be relevant to the degree that its correction leads to a “flight to safety” by fund investors, potentially triggering or exacerbating a “run” on the fund.¹¹⁷

II. REGULATION

The SEC regulates investment companies—i.e., public funds—under the Investment Com-

¹¹⁵ “Excessive risk-taking” can mean going beyond the risk-taking preferences of one’s principals; here, however, it simply means choosing a more volatile strategy without being compensated for it in overall expected returns.

¹¹⁶ Source, IMF Report, *supra* note 3, at 100.

¹¹⁷ See *infra* Section III.B.2.

pany Act of 1940 ('40 Act), and investment advisers—i.e., “asset managers” or management companies—under the Investment Advisers Act of 1940.

A. Investment Company Act of 1940 ('40 Act)

The SEC’s regulation of public funds has not evinced the same concern for preventing institutional failure or limiting the potential fallout from failure as bank regulators show for banks; *it has*, however, marked a departure in important ways from the SEC’s traditional disclosure-based approach, imposing a number of prescriptive rules that seek to protect investors from particular bad results, rather than simply ensuring they have enough information to decide whether they want to take a particular risk or not.¹¹⁸

Some of the key (far from exhaustive) requirements of the '40 Act respecting open-end funds provide that:

- Per share NAV must be priced on a daily basis, and redemption orders must generally be accepted daily and fulfilled within seven days.¹¹⁹
- Funds cannot issue debt securities, but can borrow up to 50 percent of their (pre-borrowing) net assets from a bank.¹²⁰
- Funds’ investments in illiquid securities are limited to 15 percent of their portfolio.¹²¹
- Funds must make a number of disclosures about diversification and concentration, and update these disclosures on an annual basis (or more frequently in the case of material changes).¹²²
- Funds face strict limits on investing in broker-dealers or registered investment

¹¹⁸ The SEC’s approach to non-'40 Act companies is significantly less prescriptive—companies can generally do what they wish with respect to their activities, the terms of their securities, and their capital structure, as long as they fully disclose the relevant information to investors.

¹¹⁹ 17 C.F.R. 270.22c-1 & e.

¹²⁰ See discussion *infra* Section III.A.

¹²¹ See discussion *infra* Section III.B.4.

¹²² See, e.g., '40 Act §§ 5(b) & 8(b).

advisers.¹²³

- A majority of the fund’s board of directors must independent (generally, unaffiliated with the investment adviser).¹²⁴
- Funds cannot transact in the securities of affiliate persons or entities.¹²⁵
- Funds’ assets generally must be held in custody by a U.S. bank.¹²⁶

B. Investment Advisers Act of 1940 (Advisers Act)

The Investment Advisers Act applies to the management companies rather than the funds they manage.¹²⁷ Its focus is principally on preventing fraud and conflicts of interest on the part of asset managers. “Particularly when compared with its companion statute, [the ’40 Act,] the Advisers Act places relatively few substantive burdens on entities that fall within its registration requirements.”¹²⁸ The Act imposes general fiduciary obligations on advisers,¹²⁹ as well as certain substantive requirements relating, for example, to custody of client assets, transacting in client securities, and advertising management services.¹³⁰ It does not concern itself at all with the safety or soundness of the adviser.

C. Approvals, Examinations, and Resource Constraints

One of the key functions of the SEC’s Division of Investment Management is to review

¹²³ See, e.g., 17 C.F.R. 270.12d3-1

¹²⁴ ’40 Act § 2(a)(19).

¹²⁵ ’40 Act § 17(a).

¹²⁶ ’40 Act § 17(f). There are some limited exceptions allowing the use of securities depositories or foreign sub-custodians.

¹²⁷ It actually applies to “firms or sole practitioners compensated for advising others about securities investments” who either (i) have at least \$100 million in AUM or (ii) advise a registered investment company (i.e., a ’40 Act fund). <https://www.sec.gov/about/laws.shtml#invadvact1940>.

¹²⁸ Barry P. Barbash & Jai Massari, *The Investment Advisers Act of 1940: Regulation by Accretion*, 39 Rutgers L.J. 627 (2008). The authors of this article go on to argue that the SEC, through various enforcement actions, has in fact established a number of prescriptive standards of conduct for asset managers.

¹²⁹ Investment Adviser Act § 206(2), as interpreted by courts. See, e.g., Stroock, Regulation of Investment Advisers by the U.S. Securities and Exchange Commission, December 2015, at p. 31, n. 177 (citing *Morris v. Wachovia Securities, Inc.*, 277 F. Supp. 2d 622 (E.D. Va. 2003) (“§206(2) is more than an anti-fraud provision because it establishes fiduciary duties for investment advisers”). Obligations that flow from the advisers’ fiduciary duties include: full disclosure of material facts; providing “suitable” advice; having a reasonable basis for recommendations; seeking “best execution” of trades for the client; and exercising proxy voting authority in the best interest of the client. *Id.* at 32-38.

¹³⁰ *Id.* at 38-80.

applications for new funds to issue shares to the public,¹³¹ and (more generally) applications for exemptions from various requirements of the '40 Act. The SEC will file notices of all such applications and orders granting or denying them on its website.¹³²

The SEC enforces compliance with the requirements of the '40 Act and the Advisers Act principally through its National Exam Program (NEP), implemented by the SEC's Office of Compliance, Investment, and Exams (OCIE). The SEC examines funds and advisers for compliance with the '40 Act and the Advisers Act, respectively, and for the existence of adequate policies and systems to ensure continued compliance. "Routine" exams may be conducted "according to a cycle that is based on a firm's perceived risk, and focus on industry areas that have been identified as posing the greatest compliance risks generally."¹³³ The SEC may also examine a firm for "cause," due to concerns about non-compliance arising from tips, complaints or referrals.¹³⁴

Examinations typically involve interviews with senior management and key personnel, on-site visits where applicable, and an intensive review of documentation requested by the examiners.¹³⁵ The SEC must, within 180 days of the examination (measured by the end of the on-site visit or the last request for documents), "provide the entity being examined or inspected with written notification indicating either that the examination or inspection has concluded, [that it] has concluded without findings, or that the staff requests the entity [to] undertake corrective action."¹³⁶ The entity (the manager on behalf of itself or the fund it manages) must respond within 30 days to any deficiencies cited by the SEC, explaining how it will redress them. The SEC can then either request further

¹³¹ See, e.g., Leslie Josephs, *BlackRock Seeks Approval for Nontransparent ETFs*, Wall St. J., Nov. 16, 2015, <http://www.wsj.com/articles/black-rock-seeks-approval-for-nontransparent-etfs-1447693425>.

¹³² A complete list can be found at <https://www.sec.gov/rules/icreleases-chrono.shtml>.

¹³³ Derek M. Meisner, *A Primer for Investment Advisers, Companies in Mass. And Beyond*, available at http://www.klgates.com/files/tbl_s48News/PDFUpload307/11620/Meisner%20article.pdf.

¹³⁴ *Examination Information for Entities Subject to Examination or Inspection by the Commission* [hereinafter Examination Information], available at http://www.sec.gov/about/offices/ocie/ocie_exambrochure.pdf.

¹³⁵ See Examination Information, *supra* n. 134.

¹³⁶ Section 4E(b)(1) of the Securities Exchange Act of 1934. This requirement was added by Dodd-Frank § 929U as an amendment to the '34 Act.

action or clarification or close the examination.¹³⁷ In some cases, there may be “corrective action reviews,” and where the examiners find a serious problem they may refer it to the Division of Enforcement.¹³⁸

Every year when the SEC submits its annual budget request to Congress, it cites the mismatch between the number of examination staff and the number of investment advisers and investment companies as the leading indicator of the deficiency of resources allocated to the Commission to carry out its mandate. The SEC has approximately 450 staff assigned to its Investment Adviser/Investment Company Examination Program,¹³⁹ but they are responsible for examining more than 10,500 mutual funds and ETFs and almost 12,000 investment advisers.¹⁴⁰ In its most recent budget justification, the SEC reported that 10 percent of all investment advisers and investment companies had been examined in 2014, and that similar percentages were likely for 2015.¹⁴¹ It is a common theme in the SEC’s request for more resources that “[n]o matter how talented or effective the SEC staff may be, if investment advisers are subjected to on-site exams once every 10 ... years, the program will not be credible.”¹⁴² On the other hand, because of the concentration in the industry,¹⁴³ SEC examinations manage to touch much more than 10 percent of aggregate AUM in the asset management industry.¹⁴⁴ In any event, concern over the inability to examine more investment advisers and investment companies on a regular basis has led to the SEC to consider developing a proposal to “establish a program of third-party

¹³⁷ See Examination Information, *supra* note 134.

¹³⁸ If the Division of Enforcement finds a violation of applicable securities laws, it may pursue a civil case against the violator in federal courts or in front of the SEC’s own administrative law judges; it may also refer the case to the Department of Justice for criminal prosecution when warranted.

¹³⁹ National Exam Program: Offices and Program Areas, SEC website, <https://www.sec.gov/ocie/Article/about.html>.

¹⁴⁰ Securities and Exchange Commission: FY 2016 Congressional Budget Justification, FY 2016 Annual Performance Plan, FY 2014 Annual Performance Report, <http://www.sec.gov/about/reports/secfy16congbudjust.pdf>.

¹⁴¹ *Id.* at 35, Performance Goal 2.2.1.

¹⁴² Jonathan G. Katz, *U.S. Securities and Exchange Commission: A Roadmap for Transformational Reform* at 110, Center for Capital Markets Competitiveness at 43, December 2011, available at https://www.uschamber.com/sites/default/files/legacy/reports/16967_SECReport_FullReport_final.pdf.

¹⁴³ See *supra* Table 1.

¹⁴⁴ Norm Champ, comment during Volcker Alliance Colloquium, November 2015.

compliance reviews for registered investment advisers.”¹⁴⁵

D. Private Funds

Private funds and firms that advise only private funds were generally exempt from SEC registration and regulation prior to the Dodd-Frank Act. The Dodd-Frank Act requires any private fund manager with more than \$100 million in AUM to register with the SEC and comply with the requirements of the Advisers Act. These managers are also now subject to examination by the SEC. Furthermore, the SEC is now able to collect fairly comprehensive information on private funds thanks to the Dodd-Frank-mandated Form PF that all private fund advisers, with some limited exemptions,¹⁴⁶ must complete and periodically file with the SEC. Reporting requirements are heightened for “large” managers of hedge, liquidity, and private equity funds.¹⁴⁷ Table 7 provides a breakdown of the frequency of required filings by different categories of fund manager.

TABLE 7: Form PF Reporting Requirements¹⁴⁸

	RAUM Threshold for “Large Adviser” Status	Reporting Frequency	Reporting Timeframe
Large Hedge Fund Advisers	\$1.5 billion	Quarterly	within 60 days of the end of each fiscal quarter
Large Liquidity Fund Advisers	\$1 billion	Quarterly	within 15 days of the end of each fiscal quarter
Large Private Equity Fund Advisers	\$2 billion	Annually	within 120 days of the end of each fiscal year
All Other Advisers	N/A	Annually	within 120 days of the end of each fiscal year

¹⁴⁵ See Testimony of David W. Grim, Director, Division of Investment Management, before the Subcommittee on Capital Markets and Government Sponsored Enterprises United States House of Representatives Committee on Financial Services, Oct. 23, 2015, <https://www.sec.gov/news/testimony/testimony-oversight-of-im-102315.html> [hereinafter Grim Testimony]. But see Norm Champ, *Investment Advisers Don’t Need Mystery Monitors*, Wall St. J., Nov. 22, 2015, <http://www.wsj.com/articles/investment-advisers-dont-need-mystery-monitors-1448231368> (criticizing the idea by comparing it to other cases where the SEC “turned its ‘gatekeeper’ powers over to private parties – with disastrous results”).

¹⁴⁶ The most prominent exemption is for venture capital funds.

¹⁴⁷ See Final SEC/CFTC Rule on Reporting by Investment Advisers to Private Funds and Certain Commodity Pool Operators and Commodity Trading Advisors on Form PF [hereinafter, Form PF Rule], <http://www.sec.gov/rules/final/2011/ia-3308.pdf>.

¹⁴⁸ Form PF: Final Rules Adopted by the SEC and CFTC, Skadden Arps Memorandum, April 27, 2012, http://www.skadden.com/newsletters/Form_PF_Final_Rules_Adopted_by_the_SEC_and_the_CFTC.pdf.

Required information includes “basic aggregate information about the private funds managed by the adviser, such as the portion of gross (*i.e.*, regulatory) and net assets under management attributable to certain types of private funds,” as well as information on size, leverage and performance disaggregated by fund.¹⁴⁹ The “large” private fund advisers have to provide more granular detail on their funds’ performance and risk characteristics.

E. SEC Initiative to Address Systemic Risk

A major concern with respect to SEC regulation of the asset management industry is that it is not geared to addressing risks to financial stability. This concern drove the Financial Stability Oversight Council to consider the possibility of designating certain large asset managers as “systemically important,” thereby subjecting the designated firms to prudential regulation by the Federal Reserve.¹⁵⁰ In line with the FSOC’s ultimate decision (discussed *infra* in part II.F) to focus on activities rather than firms as the key to addressing potential systemic risks arising out of the asset management industry, the SEC has proposed a series of rules to address such concern. SEC Chair Mary Jo White announced the set of initiatives in a speech in December 2014,¹⁵¹ and over the next year, the SEC proposed three sets of rules, with two more in the pipeline, in support of this objective. First, recognizing that significant data gaps exist that impair our ability to understand risks or assign probabilities to bad outcomes arising from those risks, the SEC in May 2015 proposed to improve data reporting by investment companies and investment advisers.¹⁵² Among other things, the rules would require monthly reporting (on new Form -PORT) for all registered funds other than MMFs of information on derivatives positions, repurchase

¹⁴⁹ Form PF Rule, *supra* note 147, at 64.

¹⁵⁰ See *infra* Section II.F.

¹⁵¹ Mary Jo White, Enhancing Risk Monitoring and Regulatory Safeguards for the Asset Management Industry, <https://www.sec.gov/News/Speech/Detail/Speech/1370543677722>.

¹⁵² Investment Company Reporting Modernization, Proposed Rule, <https://www.sec.gov/rules/proposed/2015/33-9776.pdf>.

agreement and securities lending activities, counterparty exposures, pricing of portfolio securities, and portfolio- and position-level risk measures.¹⁵³

The second and third sets of proposed rules relate to liquidity risk management¹⁵⁴ and the use of derivatives¹⁵⁵—both discussed in more detail below. Rules in the pipeline will impose requirements for fund stress testing and transition planning in the event of a major disruption to the fund or adviser.¹⁵⁶

F. Other Regulators (and Industry Response to Reform Proposals)

The Financial Stability Oversight Council has the power to designate financial institutions as “systemically important,” subjecting them to prudential oversight by the Federal Reserve.¹⁵⁷ FSOC considered using this designation authority on certain large asset managers, and commissioned a report by the Department of Treasury’s Office of Financial Research (OFR) to inform its decision-making process. The OFR’s report was issued in 2013, and highlighted (i) crucial data gaps and (ii) the potential risks arising from asset management *activities* as opposed to particular management companies.¹⁵⁸ It did not, however, come down firmly on one side or the other with respect to the question of designation and direct prudential regulation of large asset management firms; indeed, it suggested certain potential risk channels that might arise from risk at an asset manager.

The idea of FSOC-designation of large asset managers was extremely controversial, and invited a strong response from the industry and other parties. The SEC provided a public forum for interested parties to comment on the OFR’s report. Most of these comment

¹⁵³ See SEC Press Release, SEC Proposes Rules to Modernize and Enhance Information Reported by Investment Companies and Investment Advisers, May 20, 2015, <https://www.sec.gov/news/pressrelease/2015-95.html>.

¹⁵⁴ See *infra* Section III.A.1.

¹⁵⁵ See *infra* Section III.B.4.

¹⁵⁶ See, e.g., Grim Testimony, *supra* n. 145.

¹⁵⁷ Dodd Frank Act § 113.

¹⁵⁸ See OFR Report, *supra* note 2.

letters—including, for example, from potential targets of designation such as BlackRock and Fidelity; from industry groups such as the Investment Company Institute (ICI) and the Securities Industry and Financial Markets Association (SIFMA); and from one the SEC’s own commissioners, Daniel Gallagher¹⁵⁹—argue that designation of asset managers would be inappropriate. The argument is based primarily on that fact that asset managers are agents rather than principals,¹⁶⁰ and that fund liabilities are overwhelmingly “equity” claims—thus, there is no need for prudential regulation of, or a special resolution mechanism for, asset managers and funds. Furthermore, there is a long history of funds and advisers exiting the industry with no untoward consequences.¹⁶¹

In July 2014, the FSOC announced that it would eschew designating asset managers for the moment and support a regulatory focus on asset management activities instead.¹⁶² (This approach has not changed despite a subsequent public notice by FSOC requesting comment letters on various risks in the asset management industry.¹⁶³) The SEC’s approach under its current asset management initiative,¹⁶⁴ with a focus on activities and products throughout the industry, including derivatives, leverage, liquidity, and data gaps, is largely consistent with the FSOC’s activity-based approach. While the FSOC and Federal Reserve could take further steps if they believe the SEC’s initiative is insufficient to the potential risks arising out of the asset management industry, it appears that they are deferring to

¹⁵⁹ These comment letters (and many others) are available on the SEC’s website at <https://www.sec.gov/comments/am-1/am-1.shtml>.

¹⁶⁰ See *supra* note 22 and accompanying text.

¹⁶¹ See, e.g., ICI, Public Feedback on OFR Study on Asset Management Issues at pp. 2-3 (July 24, 2014), <https://www.sec.gov/comments/am-1/am1-55.pdf>.

¹⁶² See FSOC Meeting, Dep’t of the Treasury (July 31, 2014), <https://www.treasury.gov/initiatives/fsoc/council-meetings/Documents/July%2031%202014.pdf>. It would perhaps be naïve to assume that the intense industry lobbying had no effect on regulators, but this may be one instance where it was the force of their arguments that carried the day.

In December 2014, FSOC issued a public notice seeking information about whether asset management activities pose risks in the areas of leverage, liquidity and redemption, operations, and resolution [hereinafter FSOC Public Notice], <https://www.treasury.gov/initiatives/fsoc/rule-making/Documents/Notice%20Seeking%20Comment%20on%20Asset%20Management%20Products%20and%20Activities.pdf>.

¹⁶³ The comment letter can be found at <https://www.treasury.gov/initiatives/fsoc/rulemaking/Documents/Notice%20Seeking%20Comment%20on%20Asset%20Management%20Products%20and%20Activities.pdf>; the various comment letters in response to the notice can be found at <http://www.regulations.gov/#!docketBrowser;rpp=25;po=0;dt=PS;D=FSOC-2014-0001>

¹⁶⁴ See *supra* Section II.E.

the SEC at present.¹⁶⁵

*The Financial Stability Board (FSB) and International Organization of Securities Commissions (IOSCO).*¹⁶⁶ The FSB and IOSCO have both followed a path similar to FSOC's: in March 2015, they published a consultative document that recommended expanding using systemic designations for asset managers.¹⁶⁷ By summer 2015, however, both had shifted to an activities-based approach.¹⁶⁸

III. RISKS

One cannot assess the adequacy of the SEC's regulatory framework or current reform initiatives for the asset management industry—or recommend further reforms to address any shortcomings—without understanding what specific risks the asset management industry realistically poses. This memo focuses on potential risks to *financial stability*. Two points are worth making at the outset.

First, turmoil in the asset management industry is likely to be correlated with turmoil in financial markets more generally; but, as Douglas Elliott has observed, “it is important in considering systemic risk to separate out the impacts on risk arising from the structure of asset managers and their decision-making process from those that merely represent

¹⁶⁵ See, e.g., Ryan Tracy, *Fed's Tarullo Suggests U.S. Will Change Rules for Big Insurance Firms*, Wall St. J. (Sept. 28, 2015), <http://www.wsj.com/articles/feds-tarullo-suggests-u-s-will-change-rules-for-big-insurance-firms-1443431700> (“Mr. Tarullo also briefly discussed the asset management industry, which has been the subject of a separate review by U.S. regulators. He pointed out that the Securities and Exchange Commission has been working to bolster risk management at asset managers and said he doesn't think capital rules, which cap the amount financial firms can borrow, are well suited to address the risks posed by asset managers. That remark suggests the Fed may be inclined to defer to the SEC on overseeing asset managers, rather than pushing to expand its own oversight role as some in that industry had feared.”)

¹⁶⁶ The FSB and IOSCO are both international coordinating and standards-setting bodies—the FSB with a focus on bank regulation and financial stability generally, and IOSCO with a focus on securities regulation.

¹⁶⁷ FSB and IOSCO propose Assessment Methodologies for Identifying Non-Bank Non-Insurer Global Systemically Important Financial Institutions, March 4, 2015, <http://www.fsb.org/2015/03/fsb-and-iosco-propose-assessment-methodologies-for-identifying-non-bank-non-insurer-global-systemically-important-financial-institutions/>.

¹⁶⁸ See Barney Jopson et al., *Fund Managers to Escape “Systemic” Label*, Financial Times, July 14, 2015, (“After public interventions by US and British regulators, the Financial Stability Board, a group of watchdogs, has decided to refocus on market liquidity risks instead of singling out specific institutions, according to insiders.”); Caroline Binham, *Plans to Label Big Fund Managers “Systemic” in Jeopardy*, Financial Times, June 17, 2015, (“Leaders of Iosco, the global securities regulators meeting in London this week, said on Wednesday they think it is more important to focus on understanding the risks posed by the sector as a whole than to worry about specific large firms.”)

the pass-through of decisions by their customers.”¹⁶⁹ It is possible that regulating funds and advisers could dampen destabilizing effects created by the decisions of their customers—decisions which would have been made regardless of the adviser’s intermediation. However, situations in which the structure of the asset management industry *triggers* or *exacerbates* destabilizing risk dynamics should be of much greater concern to regulators considering reforms targeted specifically at asset managers and funds.

Second, telling plausible stories of financial catastrophe is relatively easy, but assigning likelihoods or conducting cost-benefit analyses of responsive regulation is very hard.¹⁷⁰ It can be difficult to strike an appropriate balance between the view that if something *can* happen, regulation must try to prevent it,¹⁷¹ and the view that if something *hasn’t* happened, we needn’t worry about it.¹⁷² This section concerns itself primarily with the easy part—telling the stories of catastrophe. The author’s view is that cautious vigilance is called for in considering further reform measures based on perceived probabilities of destabilizing dynamics in the asset management industry. As Andrew Haldane, chief economist at the Bank of England, observed in a speech in 2014, “We are in the intellectual foothills when understanding and scaling the transmission channels through which asset managers could

¹⁶⁹ Douglas J. Elliott, *Systemic Risk and the Asset Management Industry* (May 2014), http://www.brookings.edu/~media/research/files/papers/2014/05/systemic%20risk%20asset%20management%20elliott/systemic_risk_asset_management_elliott.pdf.

¹⁷⁰ Indeed, there are compelling reasons to cast a skeptical eye on “quantified” cost-benefit analysis in the area of financial regulation. See John C. Coates IV, *Cost-Benefit Analysis of Financial Regulation: Case Studies and Implications*, 124 *Yale L. J.* 882 (2015), <http://www.yalelawjournal.org/article/cost-benefit-analysis-of-financial-regulation> (“Detailed case studies of six rules—(1) disclosure rules under Sarbanes-Oxley section 404; (2) the SEC’s mutual fund governance reforms; (3) Basel III’s heightened capital requirements for banks; (4) the Volcker Rule; (5) the SEC’s cross-border swap proposals; and (6) the FSA’s mortgage reforms—show that precise, reliable, quantified [cost-benefit analysis {CBA}] remains unfeasible. Quantified CBA of such rules can be no more than “guesstimated,” as it entails (a) causal inferences that are unreliable under standard regulatory conditions; (b) the use of problematic data; and/or (c) the same contestable, assumption-sensitive macroeconomic and/or political modeling used to make monetary policy, which even CBA advocates would exempt from CBA laws.”).

¹⁷¹ One of the public comment letters in response to the OFR Report, *supra* note 2, makes this point piquantly (if rather unfairly with respect to the OFR’s work):

there is no attempt to assess the likelihood of these different things that could, can, or may go wrong, or to provide a careful quantitative analysis to guide policy. How big or risky does an asset manager have to be to warrant Fed regulation compliments of the FSOC? And does it matter what kind of assets are being managed? Indeed an asteroid could wipe out the planet and thus threaten the financial stability of the United States, but how likely is that? Does that imply that the Fed should regulate NASA to make sure it can find and deflect dangerous asteroids?

James J. Angel, Comment Letter, <https://www.sec.gov/comments/am-1/am1-27.pdf>.

¹⁷² The most salient (unfortunate) example of this attitude is, of course, the assumption by many leading up to the financial crisis in 2008 that since home prices had not fallen on a national basis since the Great Depression, we could be confident that they would not fall on a national basis going forward.

generate systemic risk.”¹⁷³ Continuing research as well as the SEC’s new and ongoing data collection efforts will hopefully lead us out of the foothills and up the mountain.

A. Leverage Risk

A high degree of leverage translates, *ceteris paribus*, into a higher risk of default for an institution.¹⁷⁴ (More debt supporting the same asset base means that the value of the assets does not have to fall as far before it is no longer adequate to cover the entity’s debt obligations.) An ordinary company’s default, however, does not typically destabilize the economy. One transmission mechanism through which default (made likelier due to high leverage) could have a loss-amplifying effect is sometimes referred to as the “domino” theory: default means losses are borne by counterparties who may themselves be fragile and “systemically important.” The balance sheets of asset management firms—the investment advisers—are usually a fraction of the value of the firm’s AUM.¹⁷⁵ Leverage also tends to be very low at asset management firms.¹⁷⁶

What about the funds themselves? Here, too, the risks seem relatively mild. Public funds have low levels of leverage compared to banks and large broker-dealers. Open-end funds are generally prohibited from issuing bonds, but they *may* borrow from a bank.¹⁷⁷ Under the ’40 Act, the fund’s assets immediately subsequent to receiving a bank loan must be at least 300 percent of the value of the loan.¹⁷⁸ Thus, a fund with \$100 in assets and no debt could borrow \$50 dollars from a bank: after the loan, the fund would have \$150 in

¹⁷³ Andrew Haldane, *The Age of Asset Management?* at 12, April 4, 2014, www.bankofengland.co.uk/publications/Documents/speeches/2014/speech723.pdf.

¹⁷⁴ Leverage typically involves debt; as explained below, some derivatives provide “economic leverage,” without debt but with a similar amplification of returns from the equity claimant’s perspective.

¹⁷⁵ See *supra* note 22.

¹⁷⁶ See, e.g., Elliott, *supra* n. 169 (“Unlike banks, asset managers receive little or no income from investments. Their primary revenue source is from fee for services, particularly the core fee for managing assets. This not only creates a relatively stable income stream, but also leads to smaller balance sheets at the management company level, with relatively little debt on them.”)

¹⁷⁷ ’40 Act § 18(f)(1).

¹⁷⁸ *Id.*

assets (the original \$100 of assets plus \$50 from the loan), and \$50 dollars in debt—the assets would thus be 3 times greater than (or 300 percent of the value of) the debt.¹⁷⁹ There are, however, other ways funds may incur leverage.

I. Derivatives

Bank loans are not the only way that mutual funds can become leveraged: they can also enter derivatives contracts. Derivatives can create two types of leverage for a fund. The first type—sometimes referred to as “economic leverage”¹⁸⁰—amplifies the potential gains and losses from a particular investment, but does *not* involve the incurrence of future liabilities (contingent or otherwise). An example is a call option on a stock. A call option involves no future financial commitment for its holder. It can, however, amplify gains and losses from a given investment strategy—often significantly.

To illustrate, imagine a fund has \$100 to invest and is considering two strategies. Strategy 1 involves buying a stock for \$100. Strategy 2 involves buying 9 options on the same stock with a “strike price” of \$90.¹⁸¹ Table 8 lays out the returns of each strategy on the day of the expiration of the stock options under two scenarios: (i) a rise in the stock price of 10 percent and (ii) a drop in the stock price of 10 percent.

¹⁷⁹ See, e.g., Response of the Office of Chief Counsel, Division of Investment Management, to The Brinson Funds et al. (1997), <https://www.sec.gov/divisions/investment/noaction/1997/brinsonfunds112597.pdf> (“[T]he staff [in an earlier case] interpreted Section 18(f) to permit a fund to borrow money from a bank in an amount up to 50% of its asset value before the borrowing. Although the staff ... did not state how it reached this conclusion, it seems clear that the staff considered the money borrowed from the bank to be an asset of the fund. Thus, a fund with \$100 million in assets could borrow \$50 million (or 50% of its asset value before the borrowing) without violating Section 18(f), because the fund would then have total assets of \$150 million, which provides 300% asset coverage for the \$50 million borrowing.”).

As a point of comparison, the leverage ratio for a well-capitalized bank is 5 percent. The leverage ratio is computed by dividing the bank’s capital by its total assets. The bank’s capital—in broad conceptual terms—is equal to its assets minus its liabilities. Thus, a bank with \$100 in assets and no debt could borrow up to \$1,900—so that afterwards its assets would be equal to \$2,000; its debt to \$1,900; and its capital to \$100—without running afoul of the leverage ratio. (Its capital would be equal to 5 percent of its total assets.) Of course, banks have to comply not only with leverage ratios but also with various risk-based capital requirements, which usually means they wind up having leverage ratios over 5 percent. The fact remains, however, that banks can—and do—incur more than an order of magnitude more debt relative to their assets than investment companies can. And, of course, bank leverage comes overwhelmingly in the form of runnable debt: the deposit. Though a mutual fund’s shares are demandable, it is unlikely that a loan it received from a bank would be demandable, making run risk much less of a concern.

¹⁸⁰ See OFR Report, *supra* note 2, at 17.

¹⁸¹ If the strike price is \$90, then the option holder should exercise the option (at expiration) if the stock’s price is above \$90; and should let the option expire if the stock’s price is below \$90. Stock option prices are determined by strike price, days to expiration, current price of the underlying stock, and the volatility of the stock. The example assumes that \$100 could buy 9 options, so that each option would be a bit above \$11. This is a plausible price for a stock option that is \$10 “in the money”—i.e., whose strike price is \$10 below the price of the underlying stock—and expiring extremely soon.

TABLE 8: Derivatives' Potential Amplification of Investment Returns (Economic Leverage)

	SCENARIO 1 (STOCK RISES TO \$110)	SCENARIO 2 (STOCK FALLS TO \$90)
STRATEGY 1 (STOCK)		
Value of investment	\$110	\$90
Return on investment	10%	-10%
STRATEGY 2 (OPTIONS)		
Value of investment	\$180*	\$0**
Return on investment	80%	-100%

* The stock options can be exercised at \$90, yielding a \$20 profit (\$110-90) on each of the 9 options. The value of the investment is therefore 9 x \$20 = \$180. ** The stock options are worthless now: if you exercise them for \$90 and sell the stock for \$90, you've made no profit.

The derivatives strategy has an amplifying effect: its upside is potentially (much) larger, but the size of any losses will also be (much) larger.

A second type of leverage—“indebtedness leverage”¹⁸²—*does* involve future payment obligations, contingent or fixed, by a fund *qua* derivatives counterparty. For example, a credit default swap (CDS) involves one party (the “protection buyer”) making quarterly premium payments to a second party (the “protection seller”) in exchange for the promise from the protection seller of a (potentially much larger) payout in the event that a pre-specified bond (the “reference bond”) defaults. It is similar to an insurance contract against losses on the reference bond, except that the protection buyer does not need to own the reference bond. CDS can therefore serve either a hedging, or quasi-insurance, purpose, or as a way to establish a speculative position with respect to a particular security or issuer.

CDS creates indebtedness leverage for both sides of the contract. The CDS protection *buyer* incurs future payment obligations in the form of the quarterly premium. The CDS protection seller incurs a future payment obligation that is *contingent* on the default of the reference bond.

The SEC has not, to date, imposed a derivatives-based leverage limit on mutual funds,

182 See OFR Report, *supra* note 2, at 17.

but in December 2015 the Commission proposed new rules that *will* impose such a limit. (See the discussion in the next subsection.) Instead, the SEC has imposed the functional equivalent of a “reserve requirement” on derivatives positions—a requirement also included in the proposed rules¹⁸³—for derivatives that create indebtedness leverage.¹⁸⁴ Funds with indebtedness leverage must segregate liquid assets in an amount

equal to the indebtedness exposure created by the transaction; this cover requirement would either be the full obligation due at the end of the contract or, with respect to certain cash-settled derivatives, the daily mark-to-market liability, if any, of the fund under the derivative. Alternatively, a fund may be permitted to cover by holding an offsetting position that effectively eliminates the fund’s exposure on the transaction. Cover is not required for instruments that create economic leverage but no indebtedness leverage.¹⁸⁵

Comprehensive data on investment companies’ derivatives holdings does not exist—another gap the SEC’s rules will attempt to fill¹⁸⁶—but the SEC recently published a white paper analyzing such data with respect to “a detailed, hand-collected random sample of 10% of funds...”¹⁸⁷ Based on this sample, the white paper reported that:¹⁸⁸

- 32 percent of funds held one or more derivatives.
 - 13 percent used currency forwards.
 - 12 percent used equity futures.
 - 11 percent used interest rate futures.
 - 10 percent used one or more financial commitment transactions.¹⁸⁹

¹⁸³ *Id.*

¹⁸⁴ OFR Report, *supra* note 2, at 17.

¹⁸⁵ *Id.*

¹⁸⁶ *See infra* Section III.A.1.

¹⁸⁷ Deli et al., *Use of Derivatives by Registered Investment Companies* (Dec. 2015), <https://www.sec.gov/dera/staff-papers/white-papers/derivatives12-2015.pdf> [hereinafter Derivatives White Paper]

¹⁸⁸ The following data is drawn from Derivatives White Paper, *id.*

¹⁸⁹ A financial commitment transaction refers “to reverse repurchase agreements, short sale borrowings, and firm or standby commitment agreements or similar agreements.” *Id.* at 2, n. 5.

- 5 percent used equity swaps and written equity options.
- 4 percent used over-the-counter (OTC) interest rate swaps, cleared or exchange-traded interest swaps, and OTC CDS.
- The derivatives exposure—defined as the gross notional amount of derivatives¹⁹⁰—averaged 20 percent of NAV for all funds sampled.
 - 68 percent of funds had zero exposure.
 - 89 percent of funds had less than 50 percent exposure.
- The average aggregate exposure—defined as “the sum of the aggregate notional amounts of the fund’s derivatives, the aggregate potential obligations of the fund under financial commitment transactions, and the aggregate indebtedness...with respect to any senior securities”¹⁹¹—averaged 23 percent of NAV for all funds sampled.
 - 96 percent of funds had aggregate exposure below 150 percent.
 - A few outliers—particularly “managed future funds”—have much higher aggregate exposure, with a few funds’ aggregate exposure ranging as high as 950 percent of NAV.

In short, most funds do not use derivatives at all, and, while there are some outliers, those that do tend to use them without incurring outsize exposure.

i. SEC’s New Proposed Derivatives Rules for Mutual Funds

Under rules proposed by the SEC in December 2015, public funds would face derivatives-based leverage constraints. Specifically, the rules will force funds to limit their aggregate exposure—including notional amount of derivatives contracts, financial com-

¹⁹⁰ The “notional amount” of the derivative is equal to the value of the underlying asset on which the derivative is based. For example, imagine an interest-rate swap requires Party A to pay Party B a fixed interest rate on a notional (or imaginary) amount of \$10 million, and Party B to pay Party A a floating rate (based, for example, on LIBOR) on the same notional \$10 million, the derivatives exposure—as defined by the SEC—would be \$10 million for each party, even though the amounts exchanged would be a small fraction of this notional amount. (If the fixed rate were 3 percent, for example, Party A would only have to pay \$300,000 per year.)

¹⁹¹ Derivatives White Paper, *supra* note 189, at 2.

mitments, and any borrowings, to 150 percent of the fund's net assets.¹⁹² As noted above, 96 percent of funds, based on the sample in the SEC's study, are already compliant with this test, called the *exposure-based portfolio limit*. An exception is made for funds that can establish that their use of derivatives has the net effect of *offsetting* market risk—in other words, if they use derivatives primarily to hedge fund positions rather than to establish independent speculative positions. These funds would be permitted to incur aggregate exposure of up to 300 percent of the fund's net assets.¹⁹³ This latter requirement is called the *risk-based portfolio limit*.

The rules would also require certain funds to establish derivatives risk management programs; require the segregation of liquid assets to meet future payment obligations under derivatives that create indebtedness leverage, consistent with prior SEC guidelines; and enhance derivatives reporting requirements by public funds.¹⁹⁴

2. Securities Lending.

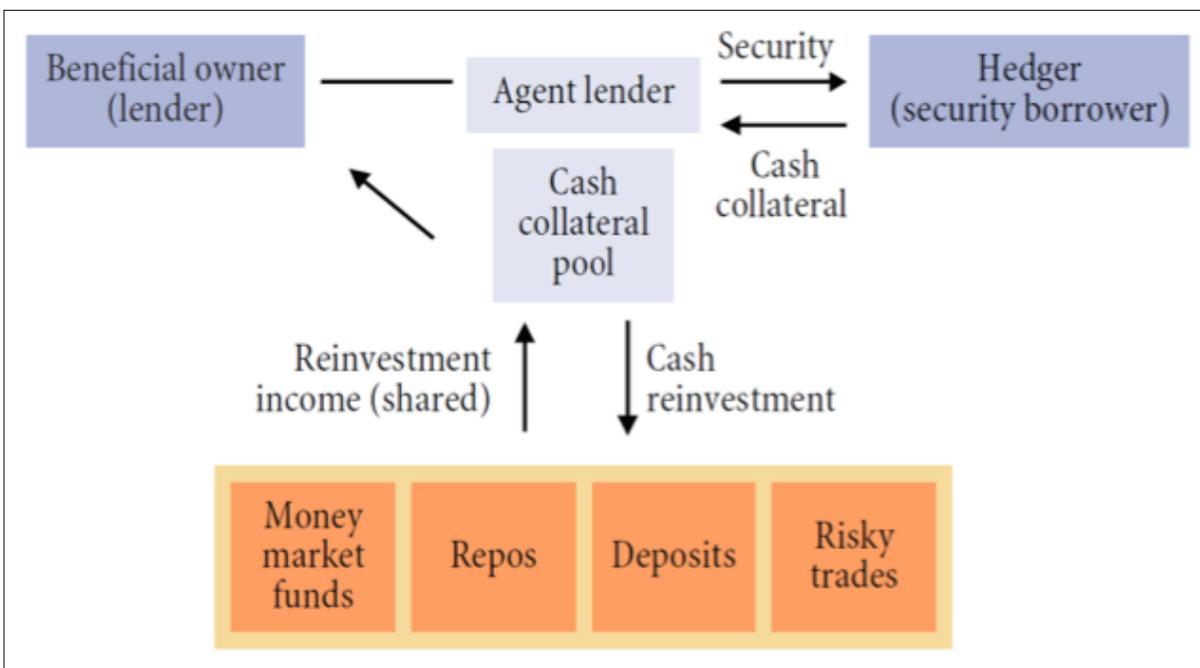
Many funds make their securities available to borrowers in the collateral market. The beneficial owner of the security in a securities lending transaction is typically a '40 Act fund, a pension fund, or an insurance company.¹⁹⁵ The beneficial owner usually does not lend directly, but rather through an agent lender—typically the fund's custodian bank, such as J.P. Morgan or Bank of New York Mellon. The agent lender handles all logistical details related to the loan of the security and the custody and reinvestment of any collateral. The borrowers in a securities lending transaction are typically dealers, hedge funds, and other proprietary traders seeking particular securities for short-selling, hedging, or other purposes. Figure 14 illustrates the structure of a securities lending transaction.

¹⁹² SEC Proposed Rule, Use of Derivatives by Registered Investment Companies and Business Development Companies, <https://www.sec.gov/rules/proposed/2015/ic-31933.pdf> [hereinafter Proposed Derivatives Rule].

¹⁹³ *Id.*

¹⁹⁴ *Id.*

¹⁹⁵ OFR Report, *supra* note 2.

FIGURE 14: Securities Lending Transaction¹⁹⁶


The large majority of securities lending transactions are “open,” meaning the term of the loan is indefinite, but either party may close it out any time—the borrower by returning the security, and the lender by demanding its return.¹⁹⁷ The borrower must post collateral; such collateral may take the form of other securities, but will most often be cash.¹⁹⁸ The cash will not sit in the agent lender’s vault, but will be reinvested—typically in demand-able or very short-term, highly creditworthy (but not riskless) instruments such as repo agreements, commercial paper, deposits, or MMF shares. Sometimes the cash is invested in slightly riskier securities.¹⁹⁹ The net income from the reinvestment of the cash collateral is split between the agent lender and the beneficial owner of the lent security.

¹⁹⁶ Source: Frank M. Keane, *Securities Loans Collateralized by Cash: Reinvestment Risk, Run Risk, and Incentive Issues*, 19 *Current Issues in Economics and Finance* 1 (2013), https://www.newyorkfed.org/medialibrary/media/research/current_issues/ci19-3.pdf [hereinafter, *Securities Loans Collateralized by Cash*].

¹⁹⁷ *Id.* at 2.

¹⁹⁸ *Id.* at 3 (“Available data indicate that securities loans collateralized by cash still account for more than 70 percent of overall activity.”).

¹⁹⁹ The most unhappy example of this is AIG’s securities lending program, which reinvested the cash collateral it received for lending out its insurance affiliates’ portfolio securities in mortgage-backed securities.

A key fact about this arrangement is that while agent lenders routinely indemnify the beneficial owner for losses arising from a failure by the borrower to timely return the security, the agent lender does *not* indemnify the beneficial owner against losses on the reinvestment of the cash collateral.²⁰⁰ This creates an opaque form of leverage for the funds making the loans. Indeed, while the motivations, institutional details, and degree of leverage are typically very different, the basic structure of securities lending—a temporary exchange of cash for securities—looks a lot like repo financing,²⁰¹ which of course proved highly run-prone and destabilizing during the crisis. In both repo and securities lending, the “loan” and the “collateral” may be and often are redeployed for the term of the transaction.²⁰² Of course, the beneficial owners in securities lending transactions—mutual funds, pension funds, and insurance companies—will typically not be anywhere near as leveraged as the broker-dealers using repo financing. Nonetheless, cash collateral is a type of “borrowed” money that, if reinvested, carries the risk of loss.

3. Private Funds

Private funds do not face regulatory limits on leverage or derivatives exposure. Considerable data gaps in this area are slowly being filled by Form PF.²⁰³ The SEC’s Division of Investment Management recently issued a report on Private Fund statistics that provides some of this data to the public.²⁰⁴ Not surprisingly, hedge funds tend to have much higher borrowings and derivatives exposures than public funds. Other funds vary in their borrowing and derivatives leverage. Focusing on the two largest private fund types in terms

200 See, e.g., Louise Story, *Banks Shared Clients’ Profits, but Not Losses*, N.Y. Times, Oct. 17, 2010, <http://www.nytimes.com/2010/10/18/business/18advantage.html?pagewanted=all> (describing how beneficial owners of securities for whom JP Morgan served as custodian and lending agent wound up owing that bank more than \$500 million to cover losses from the reinvestment of cash collateral during the financial crisis).

201 See, e.g., *Securities Loans Collateralized by Cash*, *supra* note 198, at 3.

202 In securities lending, the lent security will typically be sold or rehypothecated as collateral, and the cash collateral will be reinvested. In a repo loan, the cash will often serve to finance the security posted as collateral—in other words, the owner will buy the asset on credit and continue to roll over the credit in the form of repo—and the collateral security will often be rehypothecated.

203 Form PF is the financial reporting form for private funds established pursuant to the requirements of the Dodd-Frank Act.

204 Private Fund Statistics, *supra* note 84.

of aggregate AUM²⁰⁵: in the fourth quarter of 2014, aggregate borrowings as a percentage of gross aggregate value for hedge funds was 36.9 percent, and for private equity funds, 4.0 percent;²⁰⁶ and aggregate derivative exposure (again, based on notional amounts) as a percent of aggregate NAV was 429.3 percent for hedge funds and 3.8 percent for private equity funds.²⁰⁷

B. Liquidity and Redemption Risk

According to rules proposed by the SEC in September 2015, liquidity risk is the “risk that the fund could not meet requests to redeem shares issued by the fund that are expected under normal conditions, or are reasonably foreseeable under stressed conditions, without materially affecting the fund’s NAV.”²⁰⁸

The risk arises from a maturity mismatch and a potential *liquidity* mismatch between what a fund *owes* (to its shareholders) and what a fund *owns* (its portfolio assets). A fund’s liabilities are overwhelmingly—sometimes exclusively—made up of shares, which must be bought back, or “redeemed,” within seven business days of a shareholder redemption request. Very few of a fund’s assets, however, will mature in that time-frame—thus there is a maturity mismatch. If redemption requests outstrip a fund’s cash holdings, the fund will have to sell assets in order to meet them. This will be of no moment as long as the assets it sells are sufficiently liquid. A liquid asset can be sold quickly for “full value”—that is, a price that reflects economic fundamentals rather than the seller’s urgent need for cash. If the seller cannot get full price for an asset within an acceptable time frame, she must engage in a “fire sale”—selling the asset for less than its fundamental value. While

²⁰⁵ See *supra*, Table 3.

²⁰⁶ Private Fund Statistics, *supra* note 84, at Table 5.

²⁰⁷ *Id.* at Table 19. Securitized asset funds had aggregate borrowings of 48.0 percent of gross aggregate value, and aggregate derivatives exposure of 23.4 percent of NAV. No other fund type had significant borrowings or derivatives exposure.

²⁰⁸ SEC Proposed Liquidity Rules, *supra* note 28, at 62, n. 164.

this is bad for the fund, it seems at first glance to be a zero-sum transaction with no systemic implications—the fund loses, but the buyer gets a good deal. There are, however, significant pernicious externalities that may arise from such fire sales.

Anil Kashyap, Raghuram Rajan and Jeremy Stein identify one such externality in the context of bank fire sales. When Bank A engages in a fire sale,

it imposes costs on another bank B who holds the same assets: The mark-to-market price of B's assets will be pushed down, putting pressure on B's capital position and in turn forcing it to liquidate some of its positions. Thus, selling by one bank begets selling by others, and so on, creating a vicious cycle.²⁰⁹

Like banks, funds do have constraints on leverage, but unlike banks, extremely few funds come anywhere near the regulatory leverage limit. The capital-based bank-to-bank dynamic Kashyap and his co-authors describe is thus unlikely to translate into a fund-to-fund dynamic. Fund fire sales *could*, however, trigger or exacerbate the vicious cycle among banks highlighted in the quote above to the degree that banks and funds hold similar assets (for example, government securities or investment grade bonds), so that a fund's fire sale forces a bank to mark down its own assets. This cycle could weaken banks, tighten credit to the real economy, and, in extreme cases, create panic-like dynamics among banks.

The mark-to-market impact of a fire sale on similar securities can also have pernicious effects in collateral markets. For example, assume a broker-dealer is financing Bond X via a repurchase agreement, using the bond itself as collateral. If a fund (unaffiliated with the broker-dealer) engages a fire sale of Bond X, the mark-to-market value of the broker-dealer's collateral will decline, and it will likely face a margin call. This can place liquidity pressure on the broker-dealer, which, if sufficiently severe, can cause it to sell off some of

²⁰⁹ Anil Kashyap et al., Rethinking Capital Regulation, in *Maintaining Stability in a Changing Financial System*, Federal Reserve Bank of Kansas, 2008, available at <https://www.kansascityfed.org/publications/research/escp/symposiums/escp-2008>.

its own positions, perhaps in fire sales, potentially feeding the same vicious dynamic described above.²¹⁰ (It is worth emphasizing that broker-dealers remain an important part of the shadow-banking system,²¹¹ and that the largest broker-dealers are all now subsidiaries of bank holding companies, and thus subject to consolidated capital requirements.)

A final, more direct channel of damage to the real economy that may arise from widespread fire sales also depends on the fact that the price a security fetches in one sale can affect the price paid for similar securities. A fire sale can thus affect the terms on which *new* financing occurs. Morgan Ricks describes this dynamic and its pernicious effects as a “panic crunch”:

When financial assets are sold in a fire sale, their prices fall; equivalently stated, their yields rise. And here is the crucial point: these elevated yields then serve as the hurdle rate for *new* financing in the primary capital markets. Providers of financing will not originate new financing transactions whose risk-adjusted returns are below those available on comparable secondary market assets. So when the fire sale happens, firms and consumers find that financing rates have suddenly skyrocketed. This is the *financing crunch*: for a period of time, the supply of new financing contracts dramatically. Because overall economic activity relies heavily on external financing, the economy goes into free fall. ... [T]his mechanism [may be termed] the “panic-induced financing crunch” or just the “panic crunch.”²¹²

In sum, it is uncontroversial that widespread fire sales of financial assets can have a deeply damaging effect on the real economy. There is much less agreement, however, about the degree to which mutual funds are likely to *create* or *amplify* the risk of such sales.²¹³

²¹⁰ Kashyap et al., *supra* note 211.

²¹¹ See, e.g., Eric S. Rosengren, Remarks on Broker-Dealer Finance and Financial Stability, <https://www.bostonfed.org/news/speeches/rosengren/2014/081314/081314text.pdf>.

²¹² Morgan Ricks, *The Money Problem* (2016).

²¹³ See *supra* note 169 and accompanying text.

For funds to create or amplify the risks of such sales, two things need to coincide: first, illiquidity in the market for the underlying assets, and second, a greater incentive to redeem from the fund than would exist to sell the securities if the shareholder owned her pro rata share of the fund's portfolio directly.

I. Liquidity of Underlying Markets

Most of the concern over illiquidity focuses on bond markets. Bond funds have experienced significant inflows in the years since the crisis,²¹⁴ and bonds, which typically trade through market-making broker-dealers, are generally less liquid than equities, which trade directly on exchanges. One of the hottest and most contentious topics in finance over the past year has been an alleged lack of, or risk to, bond market liquidity. Bloomberg financial journalist Matt Levine has included a section in his regular *Money Stuff* column subtitled “People are worried about bond market liquidity” for many months. To the degree markets are less liquid, the threat of fire sales by mutual funds may be elevated.

A common argument among those worried about bond market liquidity is that new regulatory requirements imposed on traditional market makers has reduced their ability to intermediate, thereby reducing liquidity in a variety of markets. Steve Schwarzman, founder and CEO of the private equity giant Blackstone, predicted in the *Wall Street Journal* in June 2015 that the next financial crisis would arise out of bond market illiquidity, and pointed to post-crisis regulations as a chief source of the illiquidity:

The Volcker Rule, for example, bans proprietary trading by banks. The prohibition, when combined with enhanced capital and liquidity requirements, has led banks to avoid some market-making functions in certain key equity and debt markets. This has reduced liquidity in the trading markets, especially for debt.²¹⁵

²¹⁴ See *supra* Section I.E, Figure 10.

²¹⁵ Stephen A. Schwarzman, *How the Next Financial Crisis Will Happen*, Wall St. J., June 9, 2015, <http://www.wsj.com/articles/how-the-next-financial-crisis-will-happen-1433891718>

One response to this argument is that in a true crisis, dealers would be unlikely to provide liquidity anyway. Levine observes that “dealers are the buyers and sellers of first resort, not last resort, and their function is not to take huge contrarian risks on long-term fundamental positions. They are in the moving business, not the storage business...”²¹⁶ Writing in the *Financial Times*, Robin Wigglesworth concurs: “investment banks have never been altruists when markets turned, and were often the first to dump their inventory of bonds in times of severe turmoil. Liquidity has always had a nasty tendency of being abundant when it’s not needed, and to evaporate when it is.”²¹⁷ Indeed, some argue that less liquidity—less *immediacy*—in a stable market may be good, to the degree it trains investors not to *expect* high degrees of liquidity, so that they are less surprised and better prepared for its absence during market turmoil.

Paul Krugman attempts to sort out the argument by observing that there are two senses in which the word “liquidity” might be employed:

One is liquidity in the normal sense of ‘thick markets,’ in which someone who wants to sell assets quickly can find buyers without offering fire-sale prices. The other is closer to arbitrage—the presence of investors who will buy assets that are obviously underpriced, and in so doing prevent big deviations of prices from fundamental values. These two things could be related, but aren’t the same—a market in which an individual investor can sell \$10 billion in bonds without causing ripples might also be a market in which nobody will step in to buy bonds after a taper tantrum, and vice versa.²¹⁸

The second type of illiquidity is clearly of greater concern from a financial stability

²¹⁶ Matt Levine, *People Are Worried About Bond Market Liquidity*, June 3, 2015, <http://www.bloombergview.com/articles/2015-06-03/people-are-worried-about-bond-market-liquidity>

²¹⁷ Robin Wigglesworth, *Bond Market Liquidity Dominates the Conversation*, *Financial Times*, June 12, 2015, <http://www.ft.com/intl/cms/s/0/ae840228-10d8-11e5-9bf8-00144feabdco.html>

²¹⁸ Paul Krugman, *Regulation and Arbitrage (Implicitly Wonkish)*, NY Times blog, June 13, 2015, <http://krugman.blogs.nytimes.com/2015/06/13/regulation-and-arbitrage-implicitly-wonkish/>

perspective, and at least one source of this kind of illiquidity is the limits on arbitrage: if potential arbitrageurs are cash-constrained, they may not be able to eliminate the negative price spiral. Some believe these limits will not, in the end, prove severe: “if markets crash there are enough pension funds and insurers slaving for higher yields that will probably subdue the turmoil eventually.”²¹⁹ But even if this is correct, the word “eventually” should give one pause. (As Lord Keynes supposedly said, “In the long run we are all dead.”) The sale of these bonds to end investors must still typically be intermediated; the financial intermediaries who perform this function must either broker trades (serving in the role of an agent, without taking on any balance sheet risk themselves), or deal in the relevant securities (serving as principal, though in a market-making role).²²⁰

It is possible that brokering—the less immediate and more time-consuming of the two types of intermediation—is sufficient to link selling mutual funds and cash-rich pension funds, but a lot of damage could occur if the time lags are substantial. As for dealing—serving as a principal in intermediating trades between end investors—the financial intermediaries likeliest to serve this function may find themselves undercapitalized and unable to attract new funding when the opportunity arrives.²²¹ Here, *bank* regulation may return as a concern, as many potential arbitrageurs of the sort to provide liquidity in a nascent panic depend on banks for funding, and can become indirectly constrained by the same regulations that constrain banks. As Steve Strongin, the head of global investment research at Goldman Sachs, stated in a recent interview,

Client access to banks’ balance sheets is now more limited and expensive as banks charge clients more for use of this scarce resource. So hedge funds and independent broker-dealers don’t rent more balance sheet—i.e., obtain bank

²¹⁹ See Wigglesworth, *supra* note 219.

²²⁰ The Volcker Rule provides an exception to the short-term trading prohibition for banks and bank affiliates if they are engaged in market-making rather than (exclusively or predominantly) speculative trading.

²²¹ Krugman, *supra* note 220, citing Andrei Shleifer & Robert Vishny, *The Limits of Arbitrage*, 52 J. Fin 35 (1997).

financing or establish lines of credit – than they need to conduct their daily business. And they can no longer rent balance sheet from a bank on demand in order to be the bid in a dislocated market. ... [V]ery few market participants are able to hold cash outright to wait for a dislocation.²²²

i. Empirical on Evidence on Liquidity Levels and Liquidity Risk

Economists at the Federal Reserve Bank of New York recently carried out an analysis of liquidity in various asset markets. The picture they paint is generally positive, although they acknowledge that recent history does not necessarily predict future turbulence, and that “tail risk measures prior to financial crises commonly appear benign.”²²³

They distinguish between liquidity *levels* and liquidity *risk*.²²⁴ Liquidity levels are defined by measures such as bid-ask spreads,²²⁵ dealers’ corporate bond inventories, trading volume, average trade size, and the price impact a given trade has on market price.²²⁶ Liquidity *risk* is measured by the frequency of large spikes in price volatility and liquidity levels over a given period of time.²²⁷

Figures 15-17 illustrate their findings that by most measures, liquidity in the corporate bond market is reasonably good by recent historical standards.

²²² Interview with Steve Strongin, Goldman Sachs “Top of Mind: A Look at Liquidity,” <http://www.goldmansachs.com/our-thinking/pages/macroeconomic-insights-folder/liquidity-top-of-mind/pdf.pdf>

²²³ Tobias Adrian et al., *Has Liquidity Risk in the Corporate Bond Market Increased?*, Liberty Street Economics, Oct. 6, 2015, <http://libertystreet-economics.newyorkfed.org/2015/10/has-liquidity-risk-in-the-corporate-bond-market-increased.html#.VqVtiL3hVd>.

²²⁴ *Id.*

²²⁵ “The bid-ask spread is the difference between the price at which dealers are willing to buy (bid) and the price at which dealers are willing to sell (ask). The spread compensates dealers for the risk of holding a bond for some period of time, over which its price might fall.” Tobias Adrian et al., *Has U.S. Corporate Bond Market Liquidity Deteriorated?*, Liberty Street Economics, Oct. 5, 2015, <http://libertystreeteconomics.newyorkfed.org/2015/10/has-us-corporate-bond-market-liquidity-deteriorated.html#.VqVuML3hVd>. Lower bid-ask spreads imply higher liquidity levels.

²²⁶ *Id.*

²²⁷ Adrian et al., *Has Liquidity Risk in the Corporate Bond Market Increased?*, *supra* note 225.

FIGURE 15: Average Daily Trading Volume by Quarter for High Yield and Investment Grade Bonds²²⁸

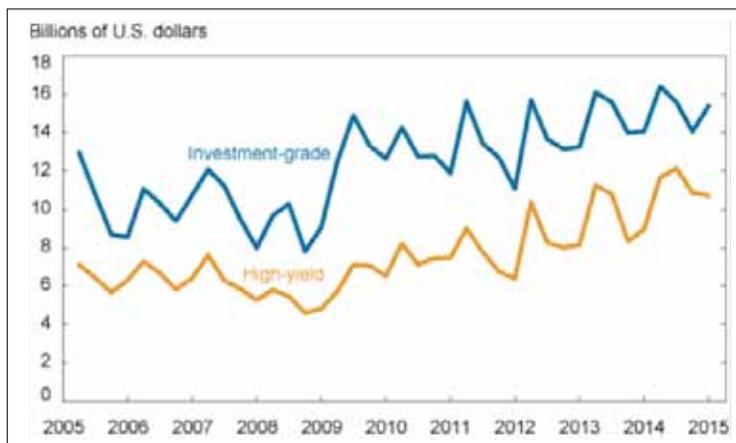


FIGURE 16: Bid-Ask Spreads for Corporate Bonds (five-day moving average)²²⁹

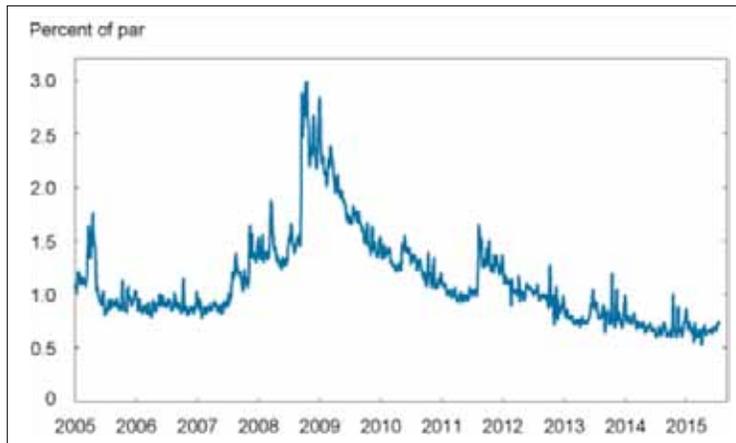
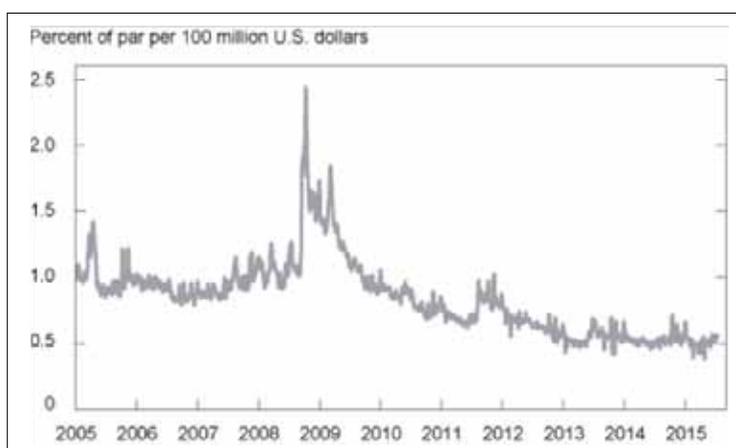


FIGURE 17: Price Impact of Trades in Corporate Bonds²³⁰



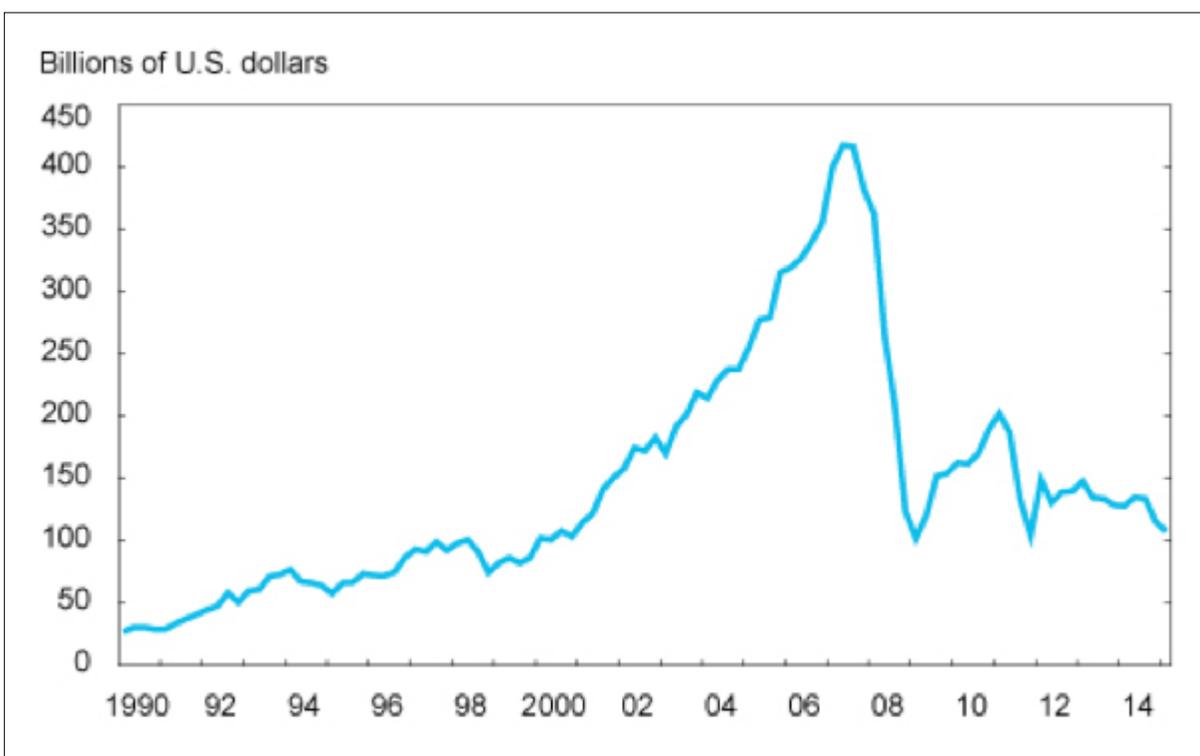
²²⁸ Source: Adrian et al., *Has U.S. Corporate Bond Market Liquidity Deteriorated?*, *supra* note 227.

²²⁹ Source: *id.*

²³⁰ Source: *id.* (“Price impact is calculated daily for each investment-grade bond as the absolute price return divided by dollar volume, and then averaged across securities.”)

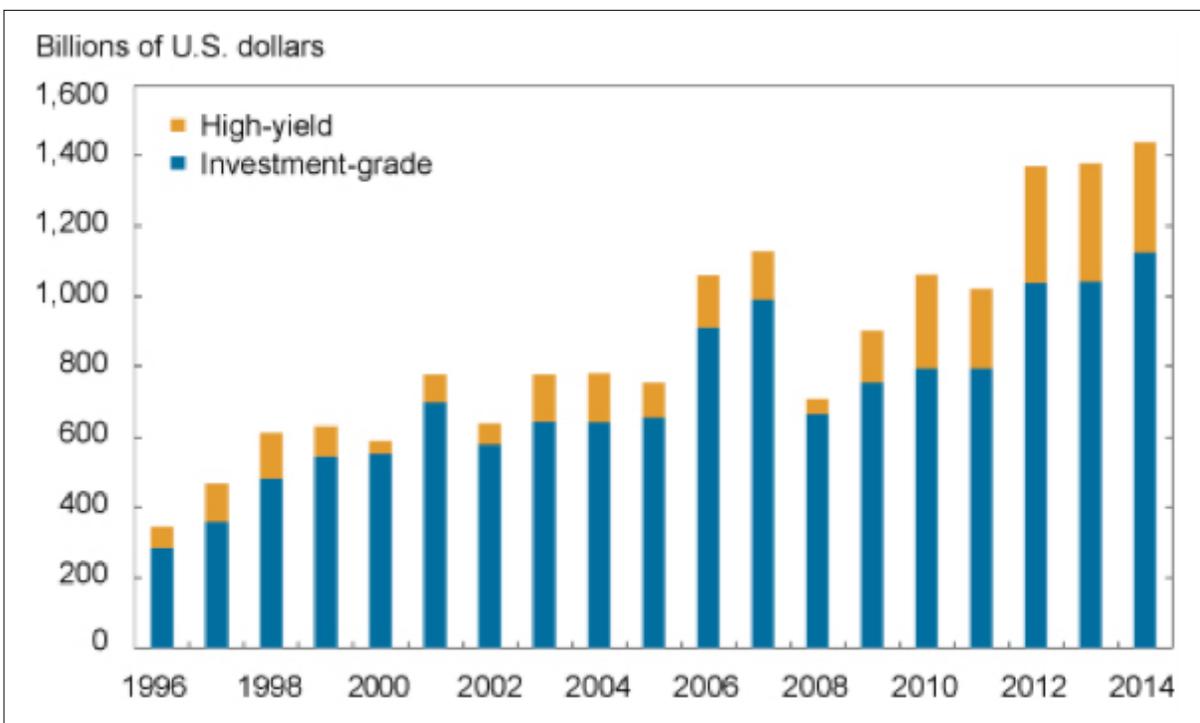
Dealer inventories, however, are down significantly—particularly in light of the record levels of corporate bond issuance in recent years. This dynamic is illustrated in Figures 18 and 19. While this should not matter to traders as long as the price-based measures remain healthy, it may be an indication of vulnerability to tail events, if it indicates dealers feel constrained in the market-making risk they are willing to assume and will not serve an “arbitrage-like” function to halt a downward spiral. On the other hand, for those who believe dealers exacerbate fire-sale dynamics in a crisis,²³¹ it may be reassuring, as dealers now have fewer securities to dump.

FIGURE 18: Dealers’ Corporate Bond Inventories²³²



²³¹ See Wigglesworth, *supra* note 219.

²³² Source: Adrian et al., *Has U.S. Corporate Bond Market Liquidity Deteriorated?*, *supra* note 227.

FIGURE I9: Annual Corporate Bond Issuance²³³


The Fed economists also found that liquidity risk—again, measured by recent temporary spikes in illiquidity (as measured by the liquidity-*level* metrics) and price volatility—has not increased in corporate bond markets.²³⁴

They performed similar analyses of Treasury and equity markets, and found that while liquidity levels remain healthy, liquidity risks *do* seem have risen recently.²³⁵ They argue that these results contradict the view that regulations have harmed market liquidity, and hypothesize that the different results for the different markets are due to evolving differences in market structure for the assets:

Market analysts frequently argue that regulatory changes since the crisis have led

²³³ Source: *id.*

²³⁴ Adrian et al., *Has Liquidity Risk in the Corporate Bond Market Increased?*, *supra* note 225.

²³⁵ Tobias Adrian et al., *Has Liquidity Risks in the Treasury and Equity Markets Increased?*, Liberty Street Economics, Oct. 6, 2015, <http://libertystreeteconomics.newyorkfed.org/2015/10/has-liquidity-risk-in-the-treasury-and-equity-markets-increased.html#.VqVwTFL3hVd>.

to a deterioration in market liquidity. Their argument is that the new regulations that forced dealers to be better capitalized and to manage risk more prudently have increased the cost of market making. Our findings, however, seem to contradict this potential driver of liquidity risk. If new regulations were to blame, then we would expect corporate bonds to show significantly increased liquidity risk, since corporate bond markets are heavily dealer-intermediated and are relatively more balance sheet intensive.

Instead, the seeming increase in liquidity risk for equities and Treasuries (but not corporate bonds) points toward changes in market structure. In particular, a distinguishing feature of trading in equities and on-the-run Treasuries versus trading in corporate bonds is that the former is largely electronic, with significant trading occurring at high frequencies. Furthermore, a growing share of liquidity provision in these markets is conducted by nondealer entities like principal trading firms and hedge funds.... While bid-ask spreads and other costs of trading in equities and Treasuries have come down markedly as a result of this increased competition, these changes may have come at the cost of heightened liquidity risk, or sudden withdrawals of liquidity provision. In contrast, significant amounts of trading in corporate bonds are through dealers and conducted over the phone or through request-for-quote systems. In the absence of competition from nondealer liquidity providers, this form of market making is more expensive in terms of higher bid-ask spreads and longer execution times. However, these costs may be offset by a more stable liquidity risk profile.

In sum, we conjecture a trade-off between liquidity levels and liquidity risk. While competitive entry in the liquidity provision business for equities and on-the-run Treasuries has resulted in dramatic improvements in the level of liquidity,

we document a simultaneous increase in estimated liquidity risk. In contrast, in the relatively less competitive corporate bond intermediation business, a stable liquidity risk profile may come at the cost of a market that, though extremely liquid by historical standards, is illiquid compared to the equities and on-the-run Treasury markets.²³⁶

It is worth reemphasizing, of course, that even where their measures of liquidity levels and liquidity risk do not appear to raise red flags, such flags often fail to appear clearly prior to a crisis.²³⁷

2. '40 Act Funds and Liquidity Risk: Potential Amplification Mechanisms

A massive sell-off that depresses prices of a particular asset class with damaging spillovers could result from the decisions of end investors. As noted above, a key question is whether the potential for fire sales by asset managers would merely reflect the decision of end investors, or if something about the asset management model could trigger or exacerbate a sell-off. There are two possible ways the structure of the asset management industry could exacerbate selling in a stressed market. The first is through managers' incentives; the second is through shareholders' incentives.

Manager Incentives. With respect to managers' incentives, a potential problem could arise from the fact that asset managers are usually judged primarily by their *relative* performance. This may give rise to a risk that is independent of redemption risk—indeed, Michael Feroli and his coauthors model the risk based on constant assets under management.²³⁸ Jeremy Stein describes the model:

The fund managers in the model care about their relative performance in that they are averse to posting lower returns than their peers, holding fixed absolute

²³⁶ *Id.*

²³⁷ *Supra* note 225 and accompanying text.

²³⁸ Michael Feroli et al., *Market Tantrums and Monetary Policy* (2014), <http://research.chicagobooth.edu/igm/usmpf/2014-file.aspx>.

performance. These relative-performance concerns induce a form of strategic complementarity of fund manager actions. Specifically, as short-term rates begin to rise and fund manager i contemplates whether she should bail out of long-term bonds and move into short-term bills, she is more apt to do so if she thinks that some other manager, j , is also going to bail—because she is worried that otherwise, she may wind up underperforming manager j and finishing last in the relative performance tournament.²³⁹

Of course, even if this dynamic poses a serious risk—and some may query its real-world significance—it is, as Stein admits, “hard[.]... to see an obvious regulatory response.”²⁴⁰

Shareholder Incentives. With respect to fund shareholders—at least in open-end funds—what concerns us is the possibility of the functional equivalent of a bank run. At first glance, the risk is completely different. A bank is contractually obligated to return 100 cents on the dollar to each depositor, and if depositors are afraid that a bank is insolvent and will not be able to meet its obligations to all depositors—or if depositors merely fear the bank may be forced to delay the repayment of deposits for some period—they will have an incentive to race to the deposit window to withdraw their funds before it is too late. The pernicious dynamics of a bank run are, of course, well-established: due to the combination of (i) opacity on the asset side of the bank balance sheet, (ii) a collective action problem among depositors, and (iii) the possibility that fear of a run could turn into a self-fulfilling prophecy,²⁴¹ a solvent bank could quickly be forced either to engage in fire sales that render it insolvent,²⁴² or to suspend redemptions of deposits—either potentially

²³⁹ Jeremy C. Stein, Comment on “Market Tantrums and Monetary Policy” at 4, 2014 U.S. Monetary Policy Forum, www.federalreserve.gov/newsevents/speech/Stein20140228a.pdf.

²⁴⁰ *Id.* at 6. He continues, “I am inclined to share the ... view that if there is, indeed, a significant financial stability problem, monetary policy [as distinct from financial regulation] would be left to take up some of the slack.” *Id.*

²⁴¹ Indeed, the article that coined the phrase “self-fulfilling prophecy” opens with the story of a bank run. Robert K. Merton, *The Self-Fulfilling Prophecy* (1948).

²⁴² To illustrate with a highly stylized example: if a bank has \$100 in assets and \$90 in deposits (and no other liabilities), it is solvent; if it then is forced to sell its entire portfolio for \$85 in a fire sale, it will be insolvent, unable to meet all its depositor obligations.

ruinous for both the bank and at least some of its depositors.

It is worth making two further observations about bank runs before turning our attention back to mutual funds. First, the heart of the crisis of 2008 involved the very dynamic described above playing out in the “shadow-banking system” – where investors ran on the functional *equivalent* of deposits, such as repo agreements and MMF shares.²⁴³ Second, even a bank (or shadow bank) that suspends redemptions but ultimately repays its depositors 100 cents on the dollar can be ruinous for depositors and give them a strong incentive to run. This is because deposits serve as part of the holder’s “transaction reserve” – what the individual or entity maintains to meet near-term transactional needs such as payroll for a business or rent for an individual.²⁴⁴ Thus, delay in returning deposits may, as much as any ultimate haircut imposed on the depositor, lead to “*consequential* losses to their holders – opportunity costs, operational disruption, reputational damage, or even default.”²⁴⁵

There are two respects in which mutual funds present a very different risk profile. First, investors are unlikely to hold fund shares as part of their “transaction reserve,” which should make them more tolerant of loss.²⁴⁶ Second, and more fundamentally, the fund does not owe its holders a fixed amount; rather, it is only obligated to pay the shareholder’s proportional claim on the underlying portfolio. If 100 depositors each have a dollar in a bank with \$90 in assets, the first to withdraw will get \$1, and the last in line will get nothing. If 100 individuals each own a share of a mutual fund that holds assets that were worth \$100 yesterday, but have fallen in value to \$90 today, the shareholders get no immediately obvious benefit from being the first to withdraw – the first as well as the last will each get 90 cents.

²⁴³ See generally Gary B. Gorton, *Slapped by the Invisible Hand* (2010).

²⁴⁴ See, e.g., Morgan Ricks, *Regulating Money Creation After the Crisis*, 1 Harv. Bus. L. Rev. 75.

²⁴⁵ *Id.* at 83.

²⁴⁶ Transaction reserves overwhelmingly tend to exhibit price stability, to ensure the holder can meet his/her/its obligations without tying up any unnecessary resources in the process.

Much of the current concern about the potential for a run on a mutual fund is, however, premised on the notion that shareholders *may* in fact perceive a “first-mover advantage” in certain scenarios. There are several plausible stories about how such perceptions might arise.

First – and perhaps most controversially – it is possible that investors do not understand some of the risks their funds are taking, and when some event makes the risks manifest (as losses), the investors “fly to safety.” Potential sources of “hidden” risks at funds include the use of derivatives²⁴⁷ and securities lending.²⁴⁸ Investors holding assets directly would be unlikely to engage in these activities, and would thus (the argument goes) be less likely to suffer the kind shock from losses that leads to panicked selling and a flight to safety.

Second, the “forward pricing” rule that the SEC has traditionally applied to mutual funds could create a price-based first mover advantage for redemptions in a period of deteriorating market conditions.²⁴⁹ Under the rule, the price paid to redeeming investors must be based on the “next computed” NAV per share, which will typically be the NAV calculated at the end of the same business day. (Note that even if the funds are not disbursed for several business days, the amount paid out is determined by the NAV on the day the redemption order was received – assuming that was the “next computed” NAV – that determines the amount to be paid to the redeeming shareholder.) The transactions required to liquidate part of the portfolio and/or rebalance it in the wake of the redemption, however, will often not be carried out until the following day or later. Thus, any “market impact” costs arising from fire sales, as well as any transaction costs that the fund must incur in meeting the redemption request, will typically not be reflected in the

²⁴⁷ See *supra* Section III.A.1.

²⁴⁸ See *supra* note 202.

²⁴⁹ Rule 22c-1 under the '40 Act.

“next-computed” NAV. Instead, these costs will be borne by the fund’s non-redeeming shareholders. If investors believe that a raft of redemptions will damage the fund’s value because of forced sales in illiquid markets, then they may see a first-mover advantage in getting out quickly to avoid these costs. Happily, the recent liquidity rules proposed by the SEC effectively address this problem by permitting funds to institute “swing pricing” in certain circumstances in order to force redeeming shareholders to bear the cost of their own redemptions.²⁵⁰

Third, if a fund invests in relatively illiquid assets, investors may believe that some portfolio asset prices are “stale,”²⁵¹ and that the prices will fall when updated. If investors can pull out before the fund’s NAV reflects updated prices, they may recover more than if they wait for such updating to occur. Similarly, investors may see an advantage to redeeming first if they believe that managers will meet early redemption requests with cash reserves or by the sale of their most liquid assets, but be forced to sell illiquid assets at fire-sale prices to meet later redemption requests.²⁵²

3. Securities Lending, Take 2

Securities lending not only can create hidden leverage for a fund,²⁵³ it can also create liquidity risk. This is because the cash collateral in a securities loan must be returned on demand, but the reinvestment of the cash collateral may involve instruments with longer (even if still short-term) maturities, and limited or non-existent secondary markets. This potential mismatch in maturity and liquidity may create a run risk, particularly if securities borrowers fear the lender will default. This is likely to occur only in the throes of a panic,

²⁵⁰ See *infra* Section III.B.4

²⁵¹ See Stein, *supra* note 241.

²⁵² *Id.* (“The key question in determining whether there is a strategic complementarity in the withdrawal decisions of fund investors is, When investor *i* exits on day *t*, does the net asset value (NAV) at the end of the day that defines investor *i*’s exit price fully reflect the ultimate price effect of the sales created by his exit? If not, those investors who stay behind are hurt, which is what creates run incentives. And, if the run incentives are strong enough, then a credit-oriented bond fund starts looking pretty bank-like. The fact that its liabilities are not technically debt claims is not all that helpful in this case -- they are still demandable, and hence investors can pull out very rapidly if the terms of exit create a penalty for being last out the door.”)

²⁵³ See *supra* Section III.A.2.

when fears of losses on collateral reinvestment combine with fears about the solvency of the agent lender and the beneficial owner. It is perhaps a more plausible risk where the agent lender and the beneficial owner of the securities are affiliates of one another, as occurred, for example, with AIG’s securities lending arm (which faced a crippling run for precisely such reasons during September 2008).²⁵⁴

In this area again, the benefits of securities lending are quite real, and the risks are as *yet* theoretical. One of the problems of assessing the risk is a gap in data. The SEC’s May Proposed Rule addresses this gap and may help inform future regulatory action.

4. New liquidity rules for open-end funds

The SEC proposed new rules focused on liquidity risk management in September 2015.²⁵⁵ The rules would require open-end funds to engage in fine-grained categorization of portfolio assets’ liquidity based on how long it anticipates it would take to sell the asset for stated value, and to maintain a minimum percentage in “three-day” liquid assets.²⁵⁶ It also would codify the longstanding SEC guidance that forbids open-end funds from investing more than 15 percent of their portfolio in assets that it anticipates would take longer than seven days to liquidate at stated value.²⁵⁷ Given the potential of “forward pricing” to create a perceived first-mover advantage in redeeming,²⁵⁸ the rules would also permit but not require open-end funds to impose “swing pricing” with pre-defined triggers. Swing pricing would temporarily adjust per-share NAV in order to pass the cost of liquidating on to redeeming shareholders.²⁵⁹ Finally, it would impose new disclosure and reporting requirements on funds relating to the liquidity of their portfolios, and would

²⁵⁴ See OFR Report, *supra* n. 2, at 15-16.

²⁵⁵ SEC Proposed Liquidity Rules, *supra* n. 28.

²⁵⁶ *Id.*

²⁵⁷ *Id.*

²⁵⁸ *Id.*

²⁵⁹ *Id.*

require them to implement liquidity risk management programs.²⁶⁰

5. MMFs

As described above,²⁶¹ MMFs—while formally like other open-end funds in redeeming shares at NAV—have been able to combine a restrictive investment strategy²⁶² with special accounting rules²⁶³ to offer shareholders a stable NAV of \$1.00 per share. Shareholders see MMFs as a very close substitute for bank deposits. They have great value as a money-like asset, serving as part of shareholders’ “transaction reserve,”²⁶⁴ but pose an obvious run risk. As noted above,²⁶⁵ the fact that mutual funds other than MMFs do *not* typically serve as part of shareholders’ transaction reserve, but as part of their investment portfolio, makes dips in NAV at those funds significantly less concerning and potentially damaging than “breaking the buck”—i.e., dropping below \$1.00 per share NAV—at a mutual fund. The first-mover advantage to beating others to redeem at an MMF is also much clearer, because amortized cost accounting can create a temporary discrepancy between reported NAV—which determines the amount paid out in redemption—and the true value of the MMF’s portfolio. Furthermore, MMFs that invest in private debt—so-called “prime” MMFs—often have highly illiquid portfolios.

While the SEC mandated in rules finalized in 2014 that prime MMFs offered solely to institutional investors allow their NAV to “float”—requiring a greater degree of mark-to-market accounting, as well as NAV reported to the fourth decimal place²⁶⁶—this is

²⁶⁰ *Id.*

²⁶¹ *Supra* Section I.C.2.

²⁶² Rule 2a-7. It is worth noting that these restrictions were tightened in 2010, when the SEC finalized rules that “increased MMFs’ diversification and liquidity requirements, imposed stress-test requirements, improved the credit-quality standards for MMF portfolio securities, increased reporting and disclosure requirements on portfolio holdings, and provided new redemption and liquidation procedures to minimize contagion from a fund breaking the buck.” Financial Stability Oversight Council, Proposed Recommendations Regarding Money Market Mutual Fund Reform, <http://www.treasury.gov/initiatives/fsoc/Documents/Proposed%20Recommendations%20Regarding%20Money%20Market%20Mutual%20Fund%20Reform%20-%20November%202013,%202012.pdf>.

²⁶³ *See supra* notes 40 and 41.

²⁶⁴ *See supra* note 248 and accompanying text.

²⁶⁵ *Id.*

²⁶⁶ The extra decimal places make an NAV of exactly \$1.00 likely to be much less frequent; the hope is that this will “train” shareholders to expect that the NAV will deviate from \$1.00

unlikely to do much to affect the perception of a first-mover advantage at such funds due to potential discrepancies between reported and “true” NAV, so the risk of a run will remain.²⁶⁷ As the “Squam Lake” group of economists argued in a comment letter on the proposed rule to the SEC,

While a floating NAV structure prevents runs for most types of mutual funds, the mere floating of net asset value would not be effective at preventing runs on money market mutual funds for two reasons. First, mutual funds have the option to account for assets at amortized cost if they have a maturity of 60 days or less.²⁶⁸ With that option, the “floating NAV” is not a true reflection of the fair market value of fund assets. Whenever investors can redeem at a NAV that is higher than the fair value of the assets, investors have incentives to run.

Second, and more fundamentally, prime MMFs invest substantially in assets without a liquid secondary market. This creates an incentive for fund investors to run during a period of financial stress, because even “fair market value” may exceed by a significant amount the value at which the fund can quickly sell assets to meet investor redemptions. Therefore, investors who ask for redemption first receive the NAV before the fund is forced to sell assets. Currently, the majority of the assets of prime MMFs consist of commercial paper (CP) and certificates of deposits (CDs). These assets have extremely limited secondary markets and an average maturity well in excess of the period over which a run would occur. Al-

267 This assumes that institutional prime MMFs will remain viable once full compliance is required (in October 2016). It is possible that the funds could lose their attractiveness as a money substitute—i.e., as a “transaction reserve” asset—and it is highly unlikely that the funds offer a high enough return to be attractive as a straight investment. See Ricks, *supra* note 246. It is possible, however, that the deviations from \$1.00 will be small enough that the funds will maintain a nontrivial presence.

268 This option to use amortized accounting for instruments maturing within 60 days was retained in the final rule. Money Market Reform; Amendments to Form PF, 79 Fed. Reg. 47736, 47812 (Aug. 14, 2014) (to be codified at 17 C.F.R. pts. 230, 239, 270, 274 and 279) [hereinafter 2014 MMF Rules] (“floating NAV money market funds ... may ... continue to use amortized cost to value debt securities with remaining maturities of 60 days or less if fund directors, in good faith, determine that the fair value of their debt securities is their amortized cost value, unless the particular circumstances warrant otherwise.”). Of course, the percentage of portfolio instruments maturing within 60 days will typically be significantly higher—often a (large) majority of the instruments—at a MMF than at other open-end funds.

though MMFs have recently increased their liquidity profiles above those required by regulation, this may be a temporary response to current market uncertainty.²⁶⁹ Of course, even if the floating NAV *did* solve the run problem for institutional prime MMFs, it doesn't apply to other MMFs (including all "government" MMFs,²⁷⁰ and all MMFs sold to retail investors), where the problem would remain.

The MMF reform passed by the SEC in 2014 also requires all prime MMFs (both institutional and retail)—but not government MMFs—to impose liquidity fees and withdrawal restrictions (or "gates") if the funds' "weekly liquid assets"—defined to include cash, Treasuries, and certain other liquid securities—drops below 30 percent of the funds' total assets.²⁷¹ Funds can impose fees of up to 2 percent and suspend redemptions for up to 10 days.²⁷² While this could halt the destructive liquidation of an MMF in a panic, many fear it simply pushes the incentive to run to an earlier point in time: now, instead of running to avoid the fund's crashing, shareholders may run in an attempt to avoid fees and gates. It is not clear *ex ante* whether the net effect will be more or less destabilizing.

In short, MMFs, despite the post-crisis reform efforts, continue pose the most plausible risk to financial stability of any fund type in the asset management industry.

6. Gates and Fees at Open-End Funds?

While the recent liquidity rules proposed by the SEC²⁷³ should mitigate the potential redemption risks open-end funds face, they are unlikely to eliminate them completely. One potential regulatory response that could *possibly* pass the cost-benefit test (by substantially improving the current set of run-mitigating tools available to open-end funds without materially reducing the benefits they provide) is to permit these funds to impose

²⁶⁹ SEC Comment Letter Re: Money Market Fund Reform, Squam Lake Group, <https://www.sec.gov/comments/s7-03-13/s70313-198.pdf>.

²⁷⁰ Government MMFs "invest[] 99.5 percent or more of [their] total assets in cash, government securities and repo agreements that are collateralized solely by government securities or cash." 2014 MMF Rules, *supra* note 270 <http://www.sec.gov/rules/final/2014/33-9616.pdf>.

²⁷¹ *Id.*

²⁷² *Id.*

²⁷³ See *supra* Section III.B.4

redemption fees or suspend redemptions upon some pre-specified liquidity-based triggers, just as the SEC did for prime MMFs in 2014.²⁷⁴

The SEC does permit open-end funds to impose redemption fees, but as noted above, these fees are triggered not by a liquidity squeeze at the fund, but by the holding period of the redeeming shareholder.²⁷⁵ For redemption fees to be effective in addressing runs, they must be tied to the liquidity problems of the fund itself.

This reform is likely not a “slam dunk,” however. In a 2014 speech, Jeremy Stein cited “exit” (redemption) fees as an obvious response to open-end fund risk, but stated, “To be clear, I am not advocating for exit fees of the sort I just described; I do not think we know enough about the empirical relevance of the AUM-run mechanism, to say nothing of its quantitative importance, to be making such recommendations at this point.”²⁷⁶ The IMF, in its April 2015 “Global Financial Stability Report,” stated that “Caution is needed in the use of gates and suspensions.... They should be part of the toolkit. Nonetheless, their imposition may also send negative signals to the market and lead to preemptive runs ahead of the instruments coming into force.”²⁷⁷

The latter comment echoes concerns about the effect of gates and fees at MMFs. There is, however, reason to think this *may* be less of a problem at open-end funds than at MMFs—namely, the fact that MMF accounts are part of the holder’s transaction reserve, while open-end fund holdings typically are not.²⁷⁸ Forcing MMF investors to accept either a haircut or a delay in accessing such funds can be incredibly disruptive for them. This means that MMF shareholders will have a strong incentive to run to avoid such disruption. Because open-end funds are typically not a money substitute in this respect, delaying

²⁷⁴ See *supra* Section III.B.5.

²⁷⁵ See *supra* Section I.I.1.

²⁷⁶ Stein, *supra* note 241.

²⁷⁷ IMF Report, *supra* note 3, at 120.

²⁷⁸ See *supra* note 248 and accompanying text.

withdrawals will not be nearly as disruptive for the them. This reduces the incentive to run to avoid even a slight risk of facing gates or fees.

In sum, gates and fees *might* be appropriate as a response to redemption risk for open-end funds. Given the ambiguity about their effects, however, the author would stop short of making a definite recommendation that they be instituted, and rather recommends that the SEC (continue to?) seriously study their feasibility and desirability.

C. Other Risks

Other risks that may arise include operational risk and resolution risk for asset managers and funds.²⁷⁹ FSOC has defined *operational* risk as “the risk arising from inadequate or failed processes or systems, human errors or misconduct, or adverse external events,” and in its Public Notice asked specifically about “(1) risks that may be associated with the transfer of significant levels of client accounts or assets from one asset manager to another; and (2) risks that may arise when multiple asset managers rely on one or a limited number of third parties to provide important services, including, for example, asset pricing and valuation or portfolio risk management.”²⁸⁰ Operational risks within a single adviser could give rise to unexpected losses, leading investors to redeem *en masse* either in a straightforward “flight to safety,” or due to lost confidence in the competence of the manager. If the losses were due to mistakes by a service provider for multiple asset managers, it could multiply the impact. Again, the story is easy to tell; the risk is hard to assess. To the degree this poses a serious problem, a well-crafted rule on stress-testing, with appropriate risk management follow-up, is likely the best way to address it. The SEC is working on a stress-testing rule that will hopefully meet this criterion.²⁸¹

²⁷⁹ See FSOC Public Notice, *supra* note 162.

²⁸⁰ *Id.*

²⁸¹ See *supra* note 145 and accompanying text.

With respect to *resolution* risk, FSOC expressed concern about “the extent to which the failure or closure of an entity could have an adverse impact on financial markets or the economy.”²⁸² As Glenn Hubbard, John Thornton, and Hal Scott observed in a comment letter, “The Notice’s focus on resolution is an apparent holdover from the Council’s previous entity-based approach.”²⁸³ Hubbard et al. embrace the industry’s view—which in this case seems extremely plausible—that

the failure of a large asset manager or its constituent funds would not pose systemic risk, because its bankruptcy would not set off a chain reaction of financial institution failures through contagious run-like behavior.... If one does not view asset managers as systemically important institutions, then there is no reason to focus on their resolution. Moreover, asset manager resolution is a swift, certain, and transparent process. Asset managers regularly go out of business with no larger systemic implications.²⁸⁴

Nonetheless, the SEC is working on a rule now relating to resolution of asset managers and funds that will hopefully address any lingering risks that do exist in this area.²⁸⁵

D. Other Funds

ETFs are sometimes cited as potential sources of risk, but any risks they pose that are *different* from the risks posed by open-end funds seem to relate to investor protection concerns rather than financial stability concerns. For example, retail ETF investors may believe they will always be able to trade the shares immediately on an exchange for a price close to NAV; it is possible, however, that illiquidity in the underlying assets could lead to

²⁸² *Id.*

²⁸³ Committee on Financial Regulation Comment Letter, http://capmktreg.org/app/uploads/2015/03/2015_03_16_FSOC_Notice_on_Asset_Management_Products_Activities.pdf.

²⁸⁴ *Id.*

²⁸⁵ See *supra* note 145 and accompanying text.

ETF share prices that deviate from “true” NAV.²⁸⁶ Some ETFs may also contain risks that one tends not to see in open-end funds, and that many retail investors do not understand.²⁸⁷

If liquidity and redemption risk are our chief concern from a stability standpoint, however, it is hard to see how ETFs – which allow (indeed, force) retail investors who want to get out of their position to sell on an exchange rather than redeem with the fund – would be worse than open-end funds. For ETFs to exacerbate sell-offs of the underlying fund’s portfolio, the ETF share price would like have to remain below the “true” NAV of the underlying assets for a considerable period, incentivizing authorized participants to buy up shares in the market, and redeem them with the fund.²⁸⁸ But there are two reasons to think this may not be a serious problem: (i) ETF redemptions are usually in-kind, so the ETF itself would not have to liquidate positions to meet redemption requests;²⁸⁹ and (ii) it would require that arbitrage be widely engaged in but largely ineffective to correct the price discrepancy – nice work if you can get it.

Because *closed-end funds* do not redeem shares, they will not create or exacerbate a

286 Something like this occurred during a market glitch on August 24, 2016: for a short period, a series of circuit breakers halted trading on certain shares held by ETFs, while trading in the ETF shares did not always halt at the same time. This led to a large discrepancy (for a very brief period) between the ETF share prices and the per-share NAV. See, e.g., Bradley Hope et al., *Stock-Market Tumult Exposes Flaws in Modern Markets*, Wall St. J., Aug. 25, 2015, <http://www.wsj.com/articles/stock-market-tumult-exposes-flaws-in-modern-markets-1440547138>. While this was bad for a certain number of (largely retail) investors, it did not trigger any panicked sell-off in the underlying assets.

287 See, e.g., *Leveraged and Inverse ETFs: Specialized Products with Extra Risks for Buy-and-Hold Investors*, SEC website, <http://www.sec.gov/investor/pubs/leveragedetfs-alert.htm>. An example is funds that offer 2x or 3x the returns of a specified index (using derivatives to goose their returns). These funds reset daily, so that a wide discrepancy may grow over a period of time between the index’s returns and the fund’s returns: How can this apparent breakdown between longer term index returns and ETF returns happen? Here’s a hypothetical example: let’s say that on Day 1, an index starts with a value of 100 and a leveraged ETF that seeks to double the return of the index starts at \$100. If the index drops by 10 points on Day 1, it has a 10 percent loss and a resulting value of 90. Assuming it achieved its stated objective, the leveraged ETF would therefore drop 20 percent on that day and have an ending value of \$80. On Day 2, if the index rises 10 percent, the index value increases to 99. For the ETF, its value for Day 2 would rise by 20 percent, which means the ETF would have a value of \$96. On both days, the leveraged ETF did exactly what it was supposed to do – it produced daily returns that were two times the daily index returns. But let’s look at the results over the 2 day period: the index lost 1 percent (it fell from 100 to 99) while the 2x leveraged ETF lost 4 percent (it fell from \$100 to \$96). That means that over the two day period, the ETF’s negative returns were 4 times as much as the two-day return of the index instead of 2 times the return.

Id.

288 See *supra* note 46 and accompanying text.

289 In its Proposed Liquidity Rules, the SEC states that

ETFs typically make in-kind redemptions of creation units, which can mitigate liquidity concerns for ETFs compared to mutual funds, if the in-kind redemptions are of a representative basket of the ETF’s portfolio assets that do not alter the ETF’s liquidity profile. However, transferring illiquid instruments to the redeeming authorized participants could result in a liquidity cost to the authorized participant or any of its clients, which would then be reflected in the bid-ask spread and ultimately impact investors.

SEC Proposed Liquidity Rules, *supra* note 28, at 14. It is hard, however, to understand why authorized participants would engage in this redemption arbitrage if they could not easily liquidate the bonds that constitute the “creation basket.” To be clear: it is easy to grasp how the arbitrage mechanism could break down, and to see how this could be bad for retail investors in ETFs, but it is hard to see how it would be worse for *systemic* stability than similar problems at an open-end fund.

sell-off due to shareholder decisions. As noted above, however, closed-end fund managers *could* face incentives that lead to fire sales, though it is not clear what an effective regulatory response to this dynamic would be.²⁹⁰

Finally, among private funds, *hedge funds* are the likeliest to be of concern to macroprudential regulators. (Private equity funds, in contrast, have essentially no leverage²⁹¹ and do not allow redemptions in the ordinary course.²⁹²) If a hedge fund were large enough and leveraged enough, its failure could be destabilizing. The demise of Long-Term Capital Management (LTCM) in 1998 concerned regulators enough that they persuaded a number of large investment banks—most LTCM counterparties—to bail the firm out.²⁹³ On the other hand, many thousands of hedge funds have liquidated since 1998 with few untoward consequences, including many hundreds during the crisis.²⁹⁴ Furthermore, hedge funds are much less likely to face a liquidity squeeze from their *equity* investors. As the SEC notes in its new liquidity rules,

Hedge funds often contain “lock-up” provisions (in which an investor only can redeem after a specified period of time has elapsed since its initial investment), typically impose limitations on the frequency of redemptions (e.g., allowing redemptions only once a quarter or once a year), and require advance notice periods for redemptions. They also are often able to impose gates, suspensions of redemptions, and side pockets to manage liquidity stress. As a result these funds can, and often do, restrict investor redemption rights as the liquidity of the funds’ portfolio assets declines. Data reported on Form PF show that at December

²⁹⁰ See *supra* notes 241 and 242 and accompanying text.

²⁹¹ See *supra* Section I.G.

²⁹² See *supra* Section I.F.

²⁹³ For a good account of this episode, see Roger Lowenstein, *When Genius Failed*.

²⁹⁴ See, e.g., Anita Raghavan, *New Record for Hedge Fund Failure*, *Forbes*, March 18, 2009, <http://www.forbes.com/2009/03/18/hedge-fund-failures-business-wall-street-funds.html> (“It’s official: 778 hedge funds liquidated in the fourth quarter [of 2008], more than doubling the previous record of 344, set only a quarter earlier.”)

31, 2014, only 16.5% of qualifying hedge funds allowed investors to withdraw any of their investment in seven days or less and for almost 60% of reporting qualifying hedge funds, the liquidity of the fund's portfolio was greater than the withdrawal rights provided to investors for all time frames reported on the form. As of that date, 88% of qualifying hedge funds may suspend investor withdrawals and 62% may impose gates on investor withdrawals.²⁹⁵

On the other hand, hedge funds' relationships with their prime brokers—primarily the big investment banks such as Lehman Brothers, Bear Stearns, and Morgan Stanley—in 2007-2009 may have exacerbated the financial crisis to a considerable degree. The big investment banks that were at the heart of the crisis served as prime brokers to hedge funds, extending short-term credit to them. As the value of collateral fell and investment banks faced their own liquidity squeezes, they called in loans and/or demanded more collateral from the hedge funds. The hedge funds, in meeting their brokers' redemption calls, had to liquidate assets, placing (further) downward pressure on asset values, and exacerbating the fire-sale death spiral. Economist Reint Gropp has argued that:

Hedge funds are opaque and highly leveraged. If highly leveraged hedge funds are forced to liquidate assets at fire-sale prices, these asset classes may sustain heavy losses. This can lead to further defaults or threaten systemically important institutions not only directly as counterparties or creditors, but also indirectly through asset price adjustments.... One channel for this risk is the so-called loss and margin spiral. In this scenario, a hedge fund is forced to liquidate assets to raise cash to meet margin calls. The sale of those assets increases the supply on the market, which drives prices lower, especially when market liquidity is low. This in turn leads to more margin calls on other financial institutions, creating

²⁹⁵ SEC Proposed Liquidity Rules, *supra* note 28, at 28.

a downward spiral. Another example is investment banks that hedge their corporate bond holdings using credit default swaps. If hedge funds take the other side of the swap and fund the investment by borrowing from the same bank, the spillover risk from the hedge fund to the bank increases.²⁹⁶

Thus, hedge funds—which tend to be much more highly leveraged, and which use derivatives to a much greater degree, than other funds²⁹⁷—could be forced to unwind various positions in a way that exacerbates market-wide sell-offs, feeding a cycle of negative fire-sale externalities.²⁹⁸

Some news reports claim that new bank capital and liquidity requirements are raising hedge fund borrowing costs in a way that may help rein in their excessive exposure to prime brokers,²⁹⁹ which could mitigate the degree to which unwinding this exposure will exacerbate fire sales in a crisis. Others worry, however, that

the new liquidity rules have a gaping exception: they treat “matched book” repo—short-term debt funding that securities firms provide to hedge funds—as “high-quality liquid assets.” Calling these loans in a panic will mean suddenly withdrawing financing from hedge funds on a large scale. Hedge funds will have to dump assets to meet these prime brokerage calls. The result will be a damaging financing crunch....³⁰⁰

In the end, the author is agnostic as to whether new capital and liquidity requirements will adequately rein in the fire-sale risk that arose out of broker-hedge fund linkages

296 Reint Gropp, *How Important are Hedge Funds in a Crisis?*, FRBSF Economic Letter, April 14, 2014, <http://www.frbsf.org/economic-research/publications/economic-letter/2014/april/hedge-fund-risk-measurement-spillover-economic-crisis/>

297 For data on leverage, see, e.g., the SEC report on private fund statistics for the fourth quarter of 2014, available at <https://www.sec.gov/divisions/investment/private-funds-statistics/private-funds-statistics-2014-q4.pdf>. For data on derivatives use, see, e.g., the OFR's financial stability report for 2015, available at https://financialresearch.gov/financial-stability-reports/files/OFR_2015-Financial-Stability-Report_12-15-2015.pdf.

298 See *supra* note 211 and accompanying text.

299 See, e.g., Laurence Fletcher, *Hedge Funds Expect Further Rises in Borrowing Costs*, Wall St. J., Jan. 20, 2016, <http://www.wsj.com/articles/hedge-funds-expect-further-rises-in-borrowing-costs-1453296639>.

300 Ricks, *The Money Problem* (2016), at 251-52.

during the crisis. If they are not adequate, then they should be further tightened or—a far more radical solution—prime brokers should be prohibited from operating as shadow banks—i.e., prohibited from *borrowing* vast quantities in short-term money markets.³⁰¹ Brokers that are not themselves facing a liquidity squeeze are less likely to put the squeeze on their hedge fund customers.

In any event, while hedge funds were not a major focus of Dodd-Frank and other post-crisis reform efforts, it is worth keeping a close eye on data collected by the SEC via Form PF filings, and seeing how the industry evolves.

E. Summary

The SEC's new rules regarding data reporting and derivatives appear balanced and equal to the problems they address. While the Commission's proposed liquidity rules are also quite sensible—and the swing-pricing rule particularly well-conceived—a further reform that may be worth close study if not immediate action is to require, or at least allow, open-end funds facing a run to impose exit fees, or to temporarily suspend redemptions. This could halt runs that would otherwise force the fund to engage in damaging fire sales, though it could also possibly move the incentive to run forward in time.

The area most ripe for further reform (in the author's view) is MMFs. They remain an ongoing source of systemic risk, even after recent reforms. Gates and fees may simply advance the point at which run-like behavior kicks in, and the floating NAV for institutional prime funds is unlikely to prevent runs. Setting aside questions of political feasibility, the best approach may be to suppress the industry entirely. A second best approach would be to combine capital requirements and MMF insurance, with appropriately-set premiums. (If only one of these were possible, insurance would be better from a stability standpoint,

³⁰¹ *Id. passim.*

capital from a “moral hazard” standpoint.)

Finally, an area that may warrant vigilance going forward is the risk posed by hedge fund leverage and derivatives exposure, as a hedge fund facing margin calls (for example) could be compelled to engage in fire sales in just the same way that an open-end fund facing a raft of investor redemptions would.



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