Securities Lending
An Examination of the Risks and Rewards

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Contents

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Executive Summary

As investment-management fees for many index mutual funds and exchange-traded funds converge at near-zero levels, securities-lending programs' contribution to performance and potential to differentiate increasingly commoditized funds have come into sharper focus. This additional income can offset fund costs, to the benefit of fund shareholders.

Securities lending carries risk, but the risk entailed today is less than in the past. Increased regulation has reduced the risk of losses from securities lending to index mutual fund and ETF investors. We believe the benefits of securities lending to fundholders outweigh the risks. That said, fund fees and index/portfolio construction will typically have a far greater influence on investment performance than securities-lending income.

Key Takeaways

- Securities-lending fee splits vary widely among fund sponsors. We found the portion of gross securities-lending revenue retained by fund sponsors' lending agents to be as low as 0% for Fidelity Taxable Bond funds and as high as 30%-plus for BlackRock U.S. Equity funds.
- U.S. small-cap funds in this study passed along an average of 11 basis points of securities-lending income per year from 2007 through the first half of 2018.
- Securities-lending income can offset a meaningful portion of a fund's expense ratio. Of the fund sponsors in this study, TIAA offset the largest proportion—over 50% on average—of its funds' fees with revenue generated via securities loans from 2007 through 2017.
- Rebate usage and average portfolio on-loan balances can be used to gauge how aggressively fund sponsors pursue securities-lending income. Firms that make regular use of rebates tend to emphasize loan volumes over value—as measured by potential securities-lending yield. First Trust, Schwab, and Vanguard use rebates less frequently, while BlackRock and Fidelity are heavier rebate users compared with fund sponsors in this study.
- TIAA and State Street lent out an average of 9.0% and 8.6%, respectively, of their portfolios each year. Conversely, Vanguard lent out an average of 0.4% of its funds' value from 2007 through the first half of 2018.

Introduction

Many index portfolios, including mutual funds and ETFs, lend portfolio securities to third parties to generate additional income. The income generated through this activity can help to improve these index portfolios' tracking performance. As investment-management fees for many index portfolios continue to converge near zero, the degree to which securities-lending programs can contribute to performance and serve as a point of differentiation for both fundholders and fund sponsors has increased. Fundholders stand to benefit from additional income that can offset fund costs. Fund sponsors can use securities lending to improve performance versus peers. Those asset managers that employ affiliated entities as their lending agent can use it to drive revenue.

Securities lending carries risk. The global financial crisis brought these risks to the fore. During this period, a handful of funds incurred losses from their securities-lending programs.[1] However, securities lending is less risky today than in the past. All told, we believe the benefits of securities lending to fundholders outweigh the risks. That said, fees and index/portfolio construction will typically have a far greater influence on performance than securities-lending income.

This paper aims to help investors make more informed fund selection decisions by:

1. Providing an overview of the mechanics of the securities-lending market.
2. Shedding light on the securities-lending programs of the largest sponsors of index mutual funds and ETFs.
3. Quantifying the risks and benefits of securities lending to fundholders.

Lay of the Land

EquiLend, a securities-lending data provider owned by a consortium of large banks that engage in securities lending,[2] reckons that securities-lending revenue topped $9.2 billion globally in 2017. Across the Americas region, securities lending generated nearly $5.0 billion in revenue. Within the market for securities loans, the average daily on-loan balance was $1.54 trillion, and the average lendable balance was $10.42 trillion.[3] Using a simplified banking metaphor, think of the average lendable balance as the deposits that a bank (the asset manager and its agent in the case of securities lending) takes in that are eligible for lending. The daily on-loan balance equates to the aggregate principal of loans outstanding. And the securities-lending revenue can be thought of as interest income.

Large banks serve as agents to match borrowers and lenders of securities. Borrowers include broker-dealers and hedge funds, which usually borrow securities to short, avoid settlement failure, or profit from arbitrage opportunities. Lenders are typically institutional investors with long investment horizons such as retirement and pension funds, registered investment funds, government bodies, and insurance companies. Agents take a cut of the lending revenue in exchange for matching lenders and borrowers.

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1 Lambert, E. 2009. "Securities Lending Meltdown." Forbes. June 4, 2009. https://www.forbes.com/forbes/2009/0622/mutual-funds-pension-securities-lending-meltdown.html#2d193fab24b9.

2 http://www.equilend.com/about/

3 Benedict, C. 2018. "Region Focus: Americas." *The Purple*. April 2018. https://issuu.com/equilend/docs/purple_issue_4?e=25574162/60088548

This is a lucrative and fairly exclusive line of business, and securities-lending agents want to keep it that way.[4, 5]

Lenders generate revenue by charging borrowers a fee. Supply and demand dictate fee levels. In the United States, small-cap and international stocks usually command a higher fee than large-cap U.S. stocks because they are more difficult to locate and borrow in the market. On the demand side, popular shorts command higher borrowing fees and are usually referred to as "on-special" or "hard-to-borrow" securities. In 2018, examples of on special securities included Tesla TSLA and Sirius XM Holdings SIRI.

To mitigate the risk of borrower default, lenders require borrowers to post collateral of greater value than the lent security. Lenders mark collateral to market daily. Collateral can come in the form of securities (U.S. Treasuries and agency debt for 1940 Act funds) or cash. When a borrower posts noncash collateral, the securities-lending transaction is straightforward. The borrower pays a lending fee based on supply and demand in the market for the desired security.

When the borrower posts cash collateral, the lender can earn income by reinvesting the cash. Using cash as collateral instead of acceptable noncash securities introduces cash reinvestment risk. To offset the borrower's opportunity cost of investing the cash collateral, the lender may pay a rebate to the borrower. It's helpful to think of the rebate rate as a pricing mechanism. It is usually quoted against an overnight funding rate such as the Overnight Bank Fund Rate. The rebate rate is a function of the funding rate of cash and lending rate of the borrowed security.

If the securities-lending rate is lower than the cash-funding rate, then the lender pays the borrower a rebate to compensate the borrower on forgone income from investing their cash collateral. If the lending fee is higher than the funding rate, then the borrower earns the lending fee and the cash reinvestment fee. For example, if the overnight funding rate for cash is 2.25% and the lending rate of the borrowed security is 1.25%, the lender would pay the difference of 1.00% annualized as a rebate to the borrower.

Stylized example of rebate rate calculation:

$$Rebate\ Rate = Funding\ Rate - Lending\ Rate$$

$$1.00\% = 2.25\% - 1.25\%$$

When a fund lends a stock, it gives up some perks of holding the stock. If the stock pays a dividend, the borrower pays the lender a dividend replacement payment. This dividend replacement payment is taxed as ordinary income instead of at more-favorable dividend tax rates, which detracts from aftertax performance. Also, funds cannot vote proxies for securities that are on loan. U.S. managers tend to recall

4 Burne, K. 2017. "Pension Fund Sues Six Banks, Claiming Stock-Lending Abuses". Wall Street Journal. Aug. 17, 2017. https://www.wsj.com/articles/pension-funds-sue-six-banks-claiming-stock-lending-abuses-1502989670?mod=article_inline.

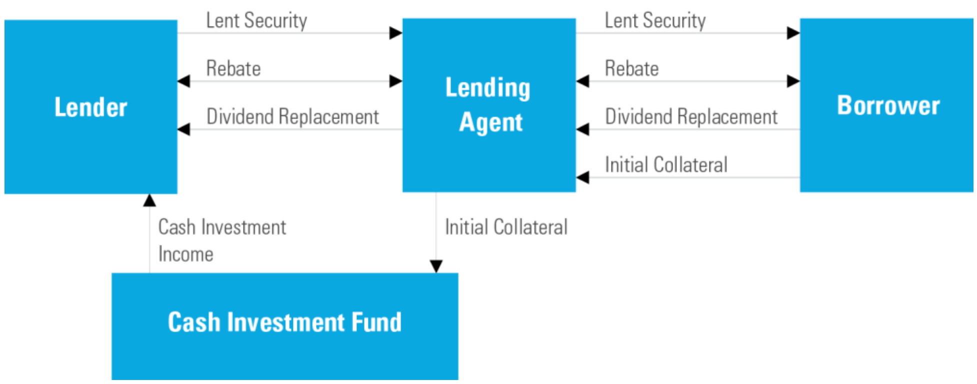
5 Morgenson, G. 2018. "Big Banks Accused of Stifling Competition in Stock Lending". Wall Street Journal. Feb. 1, 2018. https://www.wsj.com/articles/big-banks-accused-of-stifling-competition-in-stock-lending-1517486401.

shares on loan only in rare cases where the impact of the vote can be material and the benefit of voting shares outweighs the forgone lending income.[6]

Show Me the Money

Exhibit 1 shows exchanges between the lender, lending agent, and borrower in a securities-lending transaction collateralized with cash.

Exhibit 1 Overview of Securities-Lending Transaction Collateralized With Cash



Source: Morningstar Analysts.

A typical lending transaction plays out like this:

1. The lending agent matches a securities lender and borrower.
2. The lender delivers the desired security to the borrower.
3. The lender collects or pays the rebate rate depending on the difference between the lending rate and funding rate.
4. The lending agent reinvests the cash collateral in a money market fund to generate additional income for the fund.

6 Bioy, H., Bryan, A., Choy, J., Garcia-Zarate, J., Johnson, B. 2017. Passive Fund Providers Take an Active Approach to Investment Stewardship. https://direct.morningstar.com/research/doc/Dec%2006%202017_Passive_Fund_Providers_Take_an_Active_Approach_to_Investment_Stewardship_-_Full_839413

Not-So-Risky Business

Securities lending carries risk, but the risk entailed today is less than in the past. Increased regulation has reduced the risk of losses from securities lending to fund investors. The risk from securities lending stems from two sources:

1. Borrower default risk (counterparty risk)
2. Cash collateral reinvestment risk (investment risk)

Borrower default risk is the risk that the counterparty fails to return the borrowed security back to the lender. This may seem counterintuitive, but borrower default risk is the smaller of the two sources of risk involved in securities lending. Default risk is mitigated by:

1. Collateral management—Loans are generally overcollateralized to the tune of 102% for U.S. securities and 105% for international securities. Collateral for securities on loan is marked-to-market daily with the counterparty to ensure collateral levels are sufficient.
2. Callable loans—In the case of callable loans, lenders can call back securities on loan at any time.
3. Lending limits—The SEC restricts the percentage of securities on loan to one third of fund assets.

Some lending agents offer indemnification from losses resulting from a counterparty default. Counterparty defaults are very rare and their impact is negligible. For example, BlackRock's securities-lending program has experienced only three borrower defaults since its inception in 1981. Clients didn't suffer losses from these defaults because BlackRock was able to repurchase the unreturned securities with the posted collateral.

The manner in which cash collateral is reinvested is a more pronounced source of risk. A lending agent may try to squeeze out more investment income by taking excessive risk when reinvesting cash collateral. In the event that such risk-taking results in losses and the value of the reinvested collateral cannot cover the value of the lent security, the fund may suffer losses. This exact scenario is what resulted in securities-lending related losses among some funds during the financial crisis.[7] Parties that participated in securities lending (mostly endowment and pension funds) were stuck with the losses from reinvesting cash collateral after their lending agents had reaped their cut of the revenue for years.[8] This also affected several 1940 Act funds. For example, Calamos Growth Fund incurred an $8.6 million loss from cash collateral reinvestment losses from its securities-lending program.[9] The fund reinvested a portion of its cash collateral into the Bank of New York Institutional Cash Reserve fund, which held Lehman Brothers debt when it filed for bankruptcy.

7 Keane, F. 2013. "Securities Loans Collateralized by Cash: Reinvestment Risk, Run Risk, and Incentive Issues." Current Issues in Economics and Finance. Nov. 3, 2013. https://www.newyorkfed.org/medialibrary/media/research/current_issues/ci19-3.pdf

8 Story, L. 2010. "Banks Shared Clients' Profits, but Not Losses." *New York Times*. Oct. 17, 2010. https://www.nytimes.com/2010/10/18/business/18advantage.html

9 Zweig, J. 2009. "Is Your Fund Pawning Shares at Your Expense?" Wall Street Journal. May 30, 2009. https://www.wsj.com/articles/SB124363555788367705.

In response to these losses, the SEC mandated tighter credit quality, duration, and liquidity requirements for the securities to be eligible for investment by money market funds in 2010.[10] Today, nearly the entire cash collateral portfolio must be invested in U.S. Treasuries or short-term commercial paper rated AA or higher. These more-conservative rules have largely reined in the cash collateral reinvestment risk faced by mutual funds and ETFs.

How Do U.S. Fund Sponsors Approach Securities Lending?

In a 2015 survey, IHS Markit estimated that mutual funds and ETFs accounted for about 25% of securities-lending activity in the U.S.[11] Index mutual funds and ETFs are natural lenders. They usually track broadly diversified indexes that have lower turnover than actively managed funds. This means index mutual funds and ETFs can offer a broad and stable inventory of securities. Borrowers find these characteristics attractive. Index mutual funds and ETFs offer a wide selection of inventory and they're less likely to call a security back. The increase of investment dollars flowing into index mutual funds and ETFs has deepened the pool for prospective borrowers.

Understanding the key characteristics of fund sponsors' securities-lending programs is the first step toward evaluating their potential benefits and risks. These characteristics include the fund sponsors' lending agent, if that agent is affiliated with the fund sponsor, and the agent's cut of securities-lending revenue. Most fund sponsors state that 100% of net securities-lending revenue is passed back to the fund. "Net" is the operative word here. Securities-lending agents deduct fees and sometimes costs associated from the securities-lending program from the gross securities-lending revenue figure.

Finding securities-lending fee splits has gotten easier. The SEC mandated new securities-lending disclosure requirements in funds' statements of additional information, or SAI, for annual reports dated after August 2017. To quantify these fee splits, we compiled the gross and net securities-lending revenue figures from a sample of index mutual funds and ETFs. This sample includes 250 funds and spans offerings from the 10 largest U.S. index fund and ETF sponsors.

Exhibit 2 lists the fund sponsors' securities-lending agent(s), whether the agent is an affiliate of the asset manager, and the average percentage of gross securities-lending revenue passed to fundholders.

10 https://www.sec.gov/rules/final/2010/ic-29132.pdf

11 Baklanova, V., Copeland, A., & McCaughrin, R. 2015. "Reference Guide to U.S. Repo and Securities Lending Market." Federal Reserve Bank of New York Staff Reports, Staff Report No. 740. https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr740.pdf

Exhibit 2 Average Percentage of Gross Securities-Lending Revenue Passed to Fundholders

			Percentage of Gross Securities Lending Revenue Passed to Fundholders		
Fund Sponsor	Lending Agent	Affiliated?	U.S. Equity	Int'l Equity	Taxable Bond
BlackRock	BlackRock Trust Company	Yes	69.2	77.9	77.2
Fidelity	Goldman Sachs Bank USA; Fidelity	Yes	89.7	89.9	100.0
First Trust	Brown Brothers Harriman	No	80.0	81.0	—
Invesco	Brown Brothers Harriman; Citibank	No	90.0	90.0	90.0
Schwab	Goldman Sachs Bank USA	No	88.2	87.7	—
SSGA	State Street Bank and Trust Company	Yes	84.5	84.0	83.0
TIAA	State Street Bank and Trust Company	No	90.0	90.5	—
VanEck	Bank of New York Mellon	No	87.3	87.8	87.7
Vanguard	Vanguard	Yes	98.2	93.4	—
WisdomTree	State Street Bank and Trust Company	No	75.0	74.1	75.2

%
^
100.0
90.0
88.2
84.5
77.9
v

Source: Regulatory Filings from August 2017 through October 2018.

The range of the percentages of securities-lending revenue passed along to fundholders varies from 69.2% for the BlackRock U.S. equity funds in the sample to 100% for the Fidelity taxable-bond funds. Most securities-lending agents apply a consistent revenue split across asset classes. For example, Invesco's securities-lending agents levy a 10% cut of the gross lending revenue. Fidelity and BlackRock take a different tack.

Fidelity uses an unaffiliated securities-lending agent, Goldman Sachs, for its equity funds. Fidelity equity fundholders keep about 90% of the gross securities-lending revenue. For its bond funds, Fidelity administers the securities-lending program itself and passes along 100% of gross securities-lending revenue to bond fundholders.

On the other hand, BlackRock uses a tiered pricing system based on asset class and the amount of securities-lending revenue generated. Per the sample above, BlackRock passed along just under 70% of securities-lending revenue to U.S. equity fundholders and nearly 80% to international stock and bond fundholders.

All else equal, sharing a greater portion of the gross revenue generated from securities lending is a better shake for investors. But it is difficult to make apples-with-apples comparisons across fund sponsors using this metric in isolation. Some firms with less-generous splits consistently generate more total lending revenue by lending more aggressively.

How Aggressively Do Fund Sponsors Pursue Securities-Lending Income?

To measure how aggressively fund sponsors pursue securities-lending income over a longer period, we collected a sample of fund-level securities-lending data from annual reports. This sample covered the same 10 fund sponsors from 2007 through the first half of 2018. It included nearly 3,000 observations from 440 unique index mutual funds and ETFs across 13 Morningstar Categories. This data included securities-lending income, value of portfolio on loan, and net assets of the fund. Exhibit 3 shows the Morningstar Categories included in the sample.

Exhibit 3 Morningstar Categories Included in Sample

Morningstar Category	Category Group	Category Group Subset
Large Blend	U.S. Equity	U.S. Large-Cap
Large Growth	U.S. Equity	U.S. Large-Cap
Large Value	U.S. Equity	U.S. Large-Cap
Mid-Cap Blend	U.S. Equity	U.S. Mid-Cap
Mid-Cap Growth	U.S. Equity	U.S. Mid-Cap
Mid-Cap Value	U.S. Equity	U.S. Mid-Cap
Small Blend	U.S. Equity	U.S. Small-Cap
Small Growth	U.S. Equity	U.S. Small-Cap
Small Value	U.S. Equity	U.S. Small-Cap
Foreign Large Blend	International Equity	International Equity
Diversified Emerging Markets	International Equity	International Equity
Intermediate-Term Bond	Taxable Bond	Taxable Bond
High Yield Bond	Taxable Bond	Taxable Bond

Source: Morningstar, Inc.

Securities-lending yield is a useful metric to quantify the benefit of securities lending. Net securities-lending yield measures the securities-lending income passed to fundholders over the past year as a percentage of fund assets, as of funds' annual report date. Some asset classes tend to have higher yields than others. For example, asset classes like small-cap and international stocks have the potential to generate higher lending income. This is because small-cap and international stocks are more difficult to locate and borrow in the market and thus can command higher fees. Securities that are easier find in the market and are not popular shorts, like most large-cap stocks, command lower fees on average than small-cap names.

Exhibit 4 shows the average net securities-lending income yield across subsets of Morningstar Category groups.

Exhibit 4 Average Net Securities-Lending Yield in Basis Points (bps)

Category Group Subset	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	1H 2018
U.S. Small-Cap	5.9	19.5	15.0	7.1	6.1	10.6	9.5	9.7	11.6	15.1	11.1	15.8
U.S. Mid-Cap	1.9	7.6	9.2	2.9	2.1	3.0	3.2	2.5	3.3	3.3	2.4	2.8
International Equity	1.3	4.8	3.2	1.7	2.6	4.7	3.0	3.1	4.5	4.5	2.5	3.0
Taxable Bond	1.4	5.3	4.9	1.3	0.9	0.7	0.8	1.8	2.3	2.6	2.4	4.0
U.S. Large-Cap	0.7	3.0	3.6	1.6	1.0	1.5	1.2	0.9	1.5	1.4	0.9	0.7

bps: 19.5 / 6.3 / 3.3 / 2.5 / 1.4

Source: Fund annual reports, analyst calculations.

The data confirms that securities-lending yield is, on average, highest among U.S. small-cap funds. In fact, net securities-lending yield for the average U.S. small-cap fund in this sample was a multiple of funds in other category groups. After small-cap funds, U.S. mid-cap and international equity offer consistently higher securities-lending yield compared with funds in the taxable-bond and U.S. large-cap cohorts. Securities-lending yield peaked across all categories in 2008 and 2009, during the global financial crisis. This was driven by a surge in demand from short-sellers during this period. Not surprisingly, as the market subsequently rebounded, demand from short-sellers decreased and lending yield declined across the board.

Securities-lending yields also vary across fund sponsors. Exhibit 5 displays this yield data by fund sponsor instead of asset class.

Exhibit 5 Average Net Securities-Lending Yield by Fund Sponsor in Basis Points (bps)

Fund Sponsor	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	1H 2018
BlackRock	2.3	6.1	10.1	3.7	2.7	4.2	4.4	3.6	4.8	5.5	3.7	4.4
Fidelity	3.9	7.2	10.2	5.4	4.6	4.3	4.4	3.9	4.8	4.5	1.9	3.2
First Trust	0.0	0.0	0.0	0.0	0.0	0.9	1.1	1.2	2.3	2.8	5.6	0.0
Invesco	0.0	0.0	0.0	0.0	0.1	1.8	1.0	2.5	3.0	3.7	2.5	9.8
Schwab	3.4	14.3	1.7	3.4	3.8	4.9	2.7	2.5	3.3	3.7	2.3	2.4
SSGA	0.0	6.7	14.2	5.0	4.0	5.7	3.9	3.8	4.3	3.8	2.0	2.6
TIAA	6.1	24.2	5.9	1.7	2.7	8.5	5.9	7.0	8.0	7.8	1.8	0.0
VanEck	—	—	—	—	—	0.0	1.5	3.8	2.5	4.3	5.0	6.8
Vanguard	2.7	7.4	4.4	2.3	2.0	2.2	1.6	2.2	2.8	3.4	2.4	0.2
WisdomTree	1.0	8.5	6.6	1.9	3.0	3.7	6.1	3.1	6.4	5.9	4.0	3.9
Sample Average	**2.0**	**7.0**	**6.5**	**2.7**	**2.3**	**3.5**	**3.1**	**3.1**	**4.1**	**4.5**	**3.0**	**4.4**

bps: ^ 19.5 / 6.3 / 3.3 / 2.5 / 1.4 v

Source: Fund annual reports, analyst calculations.

At 24.2 basis points in 2008, TIAA had the highest average securities-lending yield among the sponsors in our sample. TIAA's above-average 2008 securities-lending yield was partially a function of its fund mix. Nine of the firm's 14 index funds included in the 2008 sample hailed from the small-cap, mid-cap, or international equity groups—those that tend to offer higher lending potential. The median net securities-lending yield of these same TIAA funds measured 19.5 basis points in 2008. So TIAA's securities-lending program generated consistently high securities-lending yields across these funds in 2008.

The same story holds for State Street's 14.2-basis-point average lending yield in 2009. It posted a median lending yield of 13.0 basis points that year. Of its 19 funds in the 2009 sample, 11 landed in the small-cap, mid-cap, or international equity categories. On the other hand, Schwab's lending yield of 14.3 basis points in 2008 was driven primarily by Schwab Small Cap Index SWSSX, which posted a lending yield of 65.3 basis points. In fact, Schwab's median lending yield of 7.0 basis points in 2008 lines up with that of other fund providers.

Product mix can clearly affect fund sponsors' average lending yield, but fund sponsors generally take relatively aggressive or conservative approaches to their securities-lending programs across fund categories. Appendix A shows the average net securities-lending yield sorted by category group and fund sponsor.

Making a Dent

Securities-lending income can offset a meaningful portion of a fund's expense ratio. For example, the average securities-lending income yield for iShares Russell 2000 ETF IWM was 0.19% from March 2007 through March 2018. This almost completely offset the fund's expense ratio, which held steady at 0.20% during this span. Investors that held IWM over this time frame effectively paid 0.01% annually to track the Russell 2000 Index.

To offer a somewhat more apples-with-apples comparison of the benefits of net securities-lending income, we calculated the percentage of funds' expense ratios offset by their securities-lending income. So, for example, if the securities-lending income yield for a fund is 0.19% and the fund's fee is 0.20%, then securities-lending income offsets 95% of the fund's fee.

Example of fee offset calculation:

$$95\%\ fee\ offset = \frac{0.19\%\ securities\ lending\ yield}{0.20\%\ fund\ expense\ ratio}$$

Exhibit 6 shows the asset-weighted average fee offset within the sample of funds that used securities lending.

Exhibit 6 Asset-Weighted Fee Offset by Fund Sponsor and Year (%)

	Asset-Weighted Average by Year (%)										
Fund Sponsor	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
BlackRock	7.1	17.2	34.9	18.0	11.5	17.7	22.7	16.9	23.2	24.6	22.7
Fidelity	12.2	21.3	79.2	42.9	22.8	26.2	33.7	24.9	32.9	41.4	28.7
First Trust	0.0	0.0	0.0	0.0	0.0	6.2	5.3	6.2	10.0	7.1	5.2
Invesco	0.0	0.0	0.0	0.0	0.8	13.8	13.4	8.3	9.7	14.3	9.7
SSGA	0.0	25.7	44.0	11.5	7.4	10.9	12.6	6.2	10.7	11.9	11.3
Schwab	6.6	39.3	7.3	15.8	17.0	23.9	18.1	17.1	26.3	30.0	22.3
TIAA	22.8	128.4	10.0	5.0	9.9	74.6	61.5	59.2	74.3	84.1	47.1
VanEck	—	—	—	—	—	0.0	3.9	16.4	4.0	5.4	9.5
Vanguard	15.4	57.7	47.3	14.8	18.0	19.3	13.5	16.6	21.7	22.9	17.6
WisdomTree	5.1	19.9	14.6	3.6	4.8	6.3	11.8	9.3	19.4	18.4	11.8

% ^ 128.4 27.3 18.4 13.4 8.0 v

Source: Fund annual reports, analyst calculations.

In this sample, TIAA, Schwab, Fidelity, and BlackRock stand out as doing a good job of offsetting their funds' expenses with revenue from securities lending. TIAA offset nearly 50% or more of its funds' expense ratios in this sample from 2012-17. This is partially due to its low expense ratios. It is easier to offset more of a smaller charge. As an investor, paying a low management fee with the potential to have that levy offset is not a bad proposition.

That said, firms could also use securities-lending revenue to maintain higher fees. For example, the three micro-cap stock funds in this sample—iShares Micro-Cap ETF IWC (0.60% fee), First Trust Dow Jones Select MicroCap ETF FDM (0.60% fee), and Invesco Zacks Micro Cap ETF PZI (0.70% fee)—each offset a substantial portion of their fees via securities-lending revenue. These fund sponsors can point out that the actual cost of owning the fund was much lower than the sticker price. But securities-lending revenue is less consistent than expense ratios. All else equal, it is better to choose a fund with a lower fee rather than the fund that offsets more of its fee with securities-lending income.

How Did They Get There?

Securities-lending yield cleanly measures the benefits of securities lending to fundholders. But yield doesn't paint the whole picture. Some fund sponsors opportunistically wait to lend on-special securities and earn a high lending fee. Others lend out a greater portion of the portfolio regardless of lending fee. More-aggressive securities lending isn't necessarily riskier given the conservative requirements of eligible cash reinvestment options.

There are a couple of indirect metrics to gauge how aggressively a fund sponsor pursues securities-lending income. One of these metrics uses the proportion of rebate payments per securities-lending revenue. As discussed above, lenders pay rebates to borrowers when the securities-lending fee is lower than the cash-funding fee. Lower rebate ratios are a sign of less aggressive lending programs, those that emphasize value—as measured by lending yield—over volume. More-aggressive lending programs will tend to make greater use of rebates in order to drive higher loan volumes.

Exhibit 7 shows the average rebates paid as a percentage of gross securities-lending revenue among the funds in the sample from August 2017 through October 2018.

Exhibit 7 Rebates as Percentage of Securities-Lending Revenue

	Average Rebates Paid as Percentage of Securities-Lending Revenue		
Fund Sponsor	U.S. Equity	Int'l Equity	Taxable Bond
BlackRock	48.1	23.9	41.3
Fidelity	62.8	44.1	18.6
First Trust	3.4	3.5	—
Invesco	15.2	9.3	0.0
Schwab	0.0	0.9	0.0
SSGA	19.2	11.0	35.9
TIAA	14.2	12.6	—
VanEck	23.7	19.4	29.2
Vanguard	7.6	4.0	—
WisdomTree	10.8	6.1	14.6

%: ^ 62.8 28.2 17.3 10.8 3.6 v

Source: Regulatory filings from August 2017 through October 2018.

Over this sample of funds, First Trust, Schwab, and Vanguard stand out as using rebates less frequently compared with other fund sponsors. First Trust tends to use noncash securities as collateral and Vanguard highlights that it focuses on lending securities that command higher lending fees. BlackRock and Fidelity have been the biggest users of rebates as a means of lending more securities to generate securities-lending revenue from the reinvestment of cash collateral. Although rebate usage is a useful measure of how aggressively a fund sponsor is willing to pursue securities-lending revenue, historical data is limited.

The percentage of a fund's portfolio on loan is another indicator of how aggressively fund sponsors use securities lending. This data has a longer history than rebate usage. More-aggressive fund sponsors likely lend out a larger proportion of funds' securities. Similar to securities-lending yields, asset classes influence the average portfolio percentage on loan. Generally, funds that hold small-cap stocks stand to earn more from lending them out because these stocks are harder to borrow in the market than large-cap names. Exhibit 8 shows the average portfolio on loan by category group.

Exhibit 8 Average Percentage of Portfolio on Loan by Category Group Subset (%)

Category Group Subset	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	1H 2018
U.S. Small-Cap	8.6	11.3	6.8	7.0	7.0	7.1	5.6	7.3	8.6	7.6	6.2	8.8
U.S. Mid-Cap	3.5	8.8	6.3	6.4	5.4	4.5	4.0	3.5	4.5	3.6	3.0	3.5
International Equity	1.5	3.6	2.4	2.3	2.6	3.6	1.9	1.7	2.3	1.5	1.7	2.9
Taxable Bond	10.9	14.8	10.0	7.0	7.0	4.1	5.3	6.6	8.2	6.4	4.4	6.1
U.S. Large-Cap	1.5	3.1	2.2	2.1	2.0	1.8	1.7	1.9	3.2	1.7	0.9	1.0

Legend (%): ^ 14.8, 7.1, 5.5, 3.5, 2.0 v

Source: Fund annual reports, analyst calculations.

U.S. small-cap stock funds tend to have the highest percentage of portfolio on loan. Surprisingly, the taxable-bond group nearly matched the percentage of portfolio on loan of the U.S. small-cap stock group and topped it from 2007-09. Although the taxable-bond group lent at nearly the same rate as the U.S. small-cap group, it did not keep pace with U.S. small-cap funds on the securities-lending yield front. This is likely because bonds command lower lending fees than small-cap stocks.

BlackRock was responsible for most of the lending among funds in the taxable-bond group. These included a mix of high-yield bond funds like iShares iBoxx High Yield Corp Bond ETF HYG and intermediate bond funds such as iShares Core US Aggregate Bond ETF AGG. More-aggressive fund sponsors tend to lend out a larger proportion of a fund's securities.

Exhibit 9 shows the average percentage of portfolio on loan as of the fund's annual report date, grouped by fund sponsor and year.

Exhibit 9 Average Percentage of Portfolio on Loan by Sponsor (%)

Fund Sponsor	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	1H 2018
BlackRock	4.8	6.7	6.8	4.5	4.6	5.2	4.5	4.8	5.7	4.9	3.8	4.2
Fidelity	4.9	5.6	5.9	7.9	3.7	5.6	4.3	6.5	4.9	4.8	3.1	4.3
First Trust	0.0	0.0	0.0	0.0	0.0	0.3	0.7	0.6	0.9	0.8	2.1	0.0
Invesco	0.0	0.0	0.0	0.0	0.1	0.4	0.5	0.9	0.7	1.3	1.2	2.3
Schwab	7.5	2.7	0.0	0.6	0.5	1.0	0.8	0.7	0.9	0.6	0.6	0.8
SSGA	0.0	15.6	15.0	12.7	11.8	9.5	7.1	8.8	8.1	6.3	3.9	4.4
TIAA	18.2	27.9	5.9	5.8	12.0	8.3	7.8	8.6	10.1	2.8	0.8	0.0
VanEck	—	—	—	—	—	0.0	0.7	4.6	2.2	7.1	5.3	8.1
Vanguard	0.9	0.9	0.4	0.4	0.2	0.2	0.3	0.3	0.5	0.5	0.4	0.0
WisdomTree	2.1	5.4	2.2	8.0	11.8	3.5	4.9	0.0	16.0	3.3	1.9	3.4
Sample Average	**3.7**	**6.5**	**4.3**	**3.9**	**3.8**	**3.6**	**3.1**	**3.3**	**4.5**	**3.2**	**2.5**	**3.6**

%
^
27.9
6.6
4.5
2.6
0.6
v

Source: Fund annual reports, analyst calculations.

The average percentage of portfolio on loan for the funds in this sample peaked at 6.5% in 2008 and measured only 2.5% in 2017. TIAA and State Street were among the most aggressive lenders before the financial crisis in 2009, with 27.9% and 15.6% of their portfolios on loan, respectively. Keep in mind that the SEC caps securities loans at one third of total fund assets. Vanguard, First Trust, Invesco, and Schwab (aside from 2007) have consistently lent out a smaller portion of funds' portfolios, on average.

Part of the variation of the percentage of portfolio on loan could be due to the mix of funds offered by these fund sponsors. Generally, funds that hold small-cap stocks stand to earn more from lending them out because these stocks are harder to borrow in the market than large-cap names. Appendix B shows the average portfolio on loan sorted by category group and fund sponsor.

Conclusion

The benefits of securities lending to fundholders outweigh the risks primarily because the biggest risk, losses associated with cash collateral reinvestment, is lower than it has been in the past. In the U.S., greater transparency from increased regulatory disclosure allows fundholders to find information about their funds' securities-lending practices. Differences among securities-lending programs tend to move the needle less than differences among fees and portfolio construction. But if securities-lending considerations play the role of tie-breaker between two nearly identical funds, keep these three things in mind:

1. How favorable is the fee split?
   All else equal, fundholders stand to benefit more from securities-lending agents that pass along a greater proportion of securities-lending revenue to the fund.

2. How much securities-lending revenue has the fund generated in the past?
   Although securities-lending revenue is inconsistent, historical data is the best gauge of how aggressive or conservative the fund's securities-lending program may be. Remember that securities-lending revenue is inconsistent, so don't bank on a fund sponsor's ability to reliably offset a meaningful portion of fund fees with this revenue.

3. How aggressively does the fund sponsor pursue securities-lending income?
   The preferred approach depends on the investor's risk-tolerance. Some fund sponsors lend only opportunistically, putting on loan only securities that command high lending fees. Others lend out a greater portion of the portfolio regardless of lending fee level. More aggressively pursuing securities-lending revenue isn't necessarily riskier given increased regulation.

Appendix A

Exhibit 10 Average Net Securities-Lending Yield in Basis Points (bps)

Asset Class / Fund Sponsor

U.S. Small-Cap	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	1H 2018
BlackRock	6.8	16.5	23.5	9.0	9.1	17.2	20.2	15.0	13.7	20.8	12.8	15.3
Fidelity	—	—	—	—	—	0.1	7.3	12.3	22.5	26.2	7.5	8.8
First Trust	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.7	4.7	5.8	27.3	0.0
Invesco	0.0	0.0	0.0	0.0	0.0	9.7	4.8	11.8	15.0	17.0	9.9	34.7
SSGA	0.0	12.9	30.1	10.8	7.0	6.8	6.0	6.3	6.4	7.7	4.4	7.0
Schwab	8.6	32.7	0.0	11.3	15.0	21.0	11.3	9.6	12.9	14.6	9.5	6.9
TIAA	14.0	44.2	12.9	6.5	10.6	28.4	20.1	25.5	29.2	28.5	9.8	—
Vanguard	12.1	33.3	12.3	9.4	3.9	4.3	3.5	4.9	6.5	8.4	6.3	—
WisdomTree	2.1	30.1	19.2	6.5	10.3	9.8	10.4	7.5	14.6	23.9	12.0	13.3
Sample Average	**5.9**	**19.5**	**15.0**	**7.1**	**6.1**	**10.6**	**9.5**	**9.7**	**11.6**	**15.1**	**11.1**	**15.8**

bps: ∧ 44.2 16.9 11.5 7.9 4.7 ∨

Taxable Bond	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	1H 2018
BlackRock	1.8	7.3	11.5	3.2	2.6	1.4	1.7	2.9	3.5	4.1	4.0	3.7
Fidelity	3.7	7.4	1.6	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	—
Invesco	—	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
SSGA	0.0	2.0	1.2	1.0	0.6	0.2	0.2	0.9	2.3	2.8	2.5	6.8
Schwab	2.6	21.1	7.5	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	—
TIAA	—	—	—	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VanEck	—	—	—	—	—	0.0	0.9	4.8	5.7	5.8	5.7	6.8
Vanguard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WisdomTree	—	—	—	—	—	—	—	—	0.0	0.0	0.1	0.1
Sample Average	**1.4**	**5.3**	**4.9**	**1.3**	**0.9**	**0.7**	**0.8**	**1.8**	**2.3**	**2.6**	**2.4**	**4.0**

bps: ∧ 21.1 2.9 0.9 ∨

Source: Fund annual reports, analyst calculations.

Exhibit 10 Average Net Securities-Lending Yield in Basis Points (bps) Continued

Asset Class / Fund Sponsor

U.S. Mid-Cap	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	1H 2018
BlackRock	1.5	5.0	13.1	3.4	2.2	4.1	5.1	3.0	3.7	3.9	2.5	2.5
Fidelity	12.8	18.4	44.3	13.5	10.9	7.2	10.1	7.3	10.2	11.1	5.5	5.4
First Trust	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.5	0.8	1.5	1.2	0.0
Invesco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.9	1.4	2.3	3.3
SSGA	—	10.2	24.9	8.1	5.6	6.7	4.3	5.7	6.8	3.7	1.2	1.6
Schwab	—	—	—	—	1.2	3.7	2.8	3.1	4.2	4.9	1.8	—
TIAA	4.2	22.6	12.7	3.6	3.3	8.2	4.6	7.1	6.7	6.2	0.0	—
VanEck	—	—	—	—	—	—	—	—	0.0	5.5	13.4	—
Vanguard	5.7	14.6	4.8	3.6	2.1	2.4	1.6	2.3	3.0	2.2	1.7	—
WisdomTree	1.0	13.1	10.7	3.2	4.4	6.3	12.0	5.2	12.1	7.5	5.1	4.4
Sample Average	**1.9**	**7.6**	**9.2**	**2.9**	**2.1**	**3.0**	**3.2**	**2.5**	**3.3**	**3.3**	**2.4**	**2.8**

bps: ^ 44.3, 7.7, 4.8, 2.9, 0.9 v

Int'l Equity	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	1H 2018
BlackRock	2.1	2.9	3.0	1.2	2.0	2.5	2.3	2.5	4.7	5.1	3.4	2.5
Fidelity	1.6	2.6	4.3	1.3	1.1	1.9	2.2	2.6	2.1	0.9	0.7	1.3
First Trust	—	—	—	0.0	0.0	0.5	1.7	3.4	5.9	2.6	1.2	0.0
Invesco	0.0	0.0	0.0	0.0	0.8	0.3	0.4	1.2	1.6	3.6	0.7	—
SSGA	0.0	4.5	6.6	3.3	5.3	10.4	7.5	5.2	6.2	5.7	2.7	—
Schwab	6.5	13.7	0.0	2.8	3.4	3.7	1.9	1.7	2.1	1.6	0.9	0.1
TIAA	5.1	23.5	0.8	0.0	0.6	8.3	6.3	5.4	7.0	5.4	1.4	—
VanEck	—	—	—	—	—	—	—	0.5	1.7	3.6	2.0	—
Vanguard	0.2	4.6	4.5	3.2	5.6	6.2	4.7	6.0	7.9	8.3	5.1	—
WisdomTree	—	0.1	0.8	0.3	1.2	1.7	3.1	3.8	4.9	6.8	4.6	4.9
Sample Average	**1.3**	**4.8**	**3.2**	**1.7**	**2.6**	**4.7**	**3.0**	**3.1**	**4.5**	**4.5**	**2.5**	**3.0**

bps: ^ 23.5, 5.2, 3.3, 1.9, 0.8 v

U.S. Large-Cap	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	1H 2018
BlackRock	0.6	1.8	3.2	2.5	0.7	1.3	0.9	0.7	2.4	1.0	0.9	0.6
Fidelity	2.8	6.0	7.9	6.5	7.0	6.7	4.1	3.0	3.4	3.7	1.4	0.6
First Trust	0.0	0.0	0.0	0.0	0.0	2.1	1.2	0.5	0.6	2.6	1.6	0.0
Invesco	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.3	0.2	1.1
SSGA	—	5.2	11.7	3.1	1.4	1.7	1.3	1.6	1.4	1.3	0.5	0.4
Schwab	0.9	5.8	1.9	1.1	1.1	1.3	0.9	0.6	0.9	1.3	0.8	1.3
TIAA	1.6	9.5	2.7	0.4	0.8	2.4	1.6	1.5	1.8	2.5	0.6	—
VanEck	—	—	—	—	—	0.0	2.8	8.5	0.7	1.1	1.7	—
Vanguard	0.9	2.4	3.8	0.7	0.6	0.7	0.3	0.4	0.4	1.1	0.5	0.2
WisdomTree	0.7	4.0	4.2	0.9	1.2	2.1	4.0	0.7	3.7	1.3	2.0	0.9
Sample Average	**0.7**	**3.0**	**3.6**	**1.6**	**1.0**	**1.5**	**1.2**	**0.9**	**1.5**	**1.4**	**0.9**	**0.7**

bps: ^ 11.7, 2.7, 1.4, 0.9, 0.4 v

Source: Fund annual reports, analyst calculations.

Appendix B

Exhibit 11 Average Percentage of Portfolio on Loan (%)

Asset Class / Fund Sponsor

U.S. Small-Cap	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	1H 2018
BlackRock	8.3	10.3	8.4	6.2	8.2	14.9	12.2	12.9	11.1	12.9	10.5	10.7
Fidelity	—	—	—	—	—	0.3	3.1	23.0	21.8	18.7	9.0	9.4
First Trust	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.3	1.5	1.5	9.2	0.0
Invesco	0.0	0.0	0.0	0.0	0.0	1.9	2.0	3.4	2.4	4.5	3.8	6.1
SSGA	0.0	27.8	27.2	22.8	23.7	16.8	6.1	18.8	15.6	13.8	8.7	9.1
Schwab	17.5	0.0	0.0	2.2	2.1	4.0	3.0	2.8	3.3	2.2	2.3	2.4
TIAA	31.9	31.9	9.1	13.7	28.1	20.7	17.0	19.8	22.3	8.8	3.9	—
Vanguard	4.4	2.5	1.4	1.3	0.4	0.4	0.4	0.5	0.8	1.2	0.8	—
WisdomTree	4.0	14.6	4.4	21.3	25.2	8.3	11.9	0.0	28.5	12.0	5.8	10.3
Sample Average	**8.6**	**11.3**	**6.8**	**7.0**	**7.0**	**7.1**	**5.6**	**7.3**	**8.6**	**7.6**	**6.2**	**8.8**

%
∧
31.9
14.3
8.6
3.9
0.8
∨

Taxable Bond	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	1H 2018
BlackRock	19.1	25.2	24.5	18.7	19.6	8.9	11.2	10.9	14.8	11.3	7.5	6.4
Fidelity	23.3	23.1	3.1	0.0	0.0	0.0	0.0	0.2	0.1	0.7	0.0	—
Invesco	—	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	—
SSGA	0.0	8.0	7.4	2.4	3.7	1.7	2.4	5.6	3.9	5.7	6.5	9.2
Schwab	9.4	27.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	—
TIAA	—	—	—	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VanEck	—	—	—	—	—	0.0	1.0	10.5	7.2	7.7	5.9	8.1
Vanguard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WisdomTree	—	—	—	—	—	—	—	—	0.0	0.2	0.1	1.9
Sample Average	**10.9**	**14.8**	**10.0**	**7.0**	**7.0**	**4.1**	**5.3**	**6.6**	**8.2**	**6.4**	**4.4**	**6.1**

%
∧
27.2
8.1
3.9
∨

Source: Fund annual reports, analyst calculations.

Exhibit 11 Average Percentage of Portfolio on Loan (%) Continued

Asset Class /Fund Sponsor

U.S. Mid-Cap	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	1H 2018
BlackRock	2.4	6.1	7.5	4.6	3.8	6.1	5.5	5.7	5.1	5.1	4.9	4.0
Fidelity	8.8	14.9	19.6	24.6	20.2	11.0	8.0	11.8	13.6	13.5	10.0	7.8
First Trust	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.4	0.3	0.6	0.9	0.0
Invesco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.4	1.7	1.2	1.6
SSGA	0.0	27.8	28.0	27.0	21.4	17.8	11.5	9.2	12.4	6.7	4.9	3.4
Schwab	—	—	—	—	0.3	1.2	2.2	1.1	1.4	1.0	1.1	—
TIAA	20.7	33.7	17.8	21.9	30.7	23.1	27.6	24.0	27.7	5.5	0.0	—
VanEck	—	—	—	—	—	—	—	—	0.0	9.6	8.7	—
Vanguard	1.6	1.1	0.5	0.4	0.2	0.3	0.2	0.3	0.5	0.3	0.5	—
WisdomTree	1.7	8.4	5.0	18.0	24.7	7.3	10.7	0.0	22.4	4.6	2.7	3.3
Sample Average	**3.5**	**8.8**	**6.3**	**6.4**	**5.4**	**4.5**	**4.0**	**3.5**	**4.5**	**3.6**	**3.0**	**3.5**

% ∧ 33.7 14.1 5.6 1.5 0.3 ∨

Int'l Equity	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	1H 2018
BlackRock	3.3	3.2	2.0	1.8	2.0	2.1	1.1	1.8	2.2	1.8	1.9	2.6
Fidelity	2.1	1.5	1.5	1.1	0.4	1.0	0.8	0.9	0.6	1.1	1.7	1.3
First Trust	—	—	—	0.0	0.0	0.8	1.5	0.8	1.0	0.5	0.4	0.0
Invesco	0.0	0.0	0.0	0.0	0.9	0.4	0.5	0.3	0.9	0.3	0.4	—
SSGA	0.0	7.0	8.3	8.8	9.0	7.7	6.8	4.8	4.5	2.0	3.4	—
Schwab	7.6	0.0	0.0	0.3	0.3	0.4	0.4	0.3	0.3	0.1	0.2	0.1
TIAA	3.5	21.0	0.0	0.0	6.7	4.8	3.8	3.8	4.4	1.4	0.6	—
VanEck	—	—	—	—	—	—	—	0.3	0.0	1.3	2.9	—
Vanguard	0.1	2.3	1.1	1.0	1.0	1.1	1.2	1.2	1.6	1.3	1.0	—
WisdomTree	—	1.2	0.2	2.2	1.6	1.8	4.1	0.0	4.9	3.8	3.0	4.8
Sample Average	**1.5**	**3.6**	**2.4**	**2.3**	**2.6**	**3.6**	**1.9**	**1.7**	**2.3**	**1.5**	**1.7**	**2.9**

% ∧ 21.0 3.4 1.5 0.9 0.3 ∨

U.S. Large-Cap	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	1H 2018
BlackRock	1.7	1.6	2.6	1.9	1.7	1.9	1.5	1.5	1.9	1.5	1.1	0.9
Fidelity	1.7	1.9	5.6	8.9	3.8	9.4	6.8	6.8	3.7	4.1	2.0	1.4
First Trust	0.0	0.0	0.0	0.0	0.0	0.4	0.6	0.4	1.1	0.7	0.8	0.0
Invesco	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.4	0.4	0.7
SSGA	—	13.1	10.6	7.3	6.5	7.6	7.9	9.4	8.5	6.1	1.3	2.0
Schwab	3.1	0.0	0.1	0.3	0.2	0.4	0.4	0.2	0.3	0.3	0.2	0.3
TIAA	8.2	21.4	3.4	2.9	6.3	3.5	3.4	4.6	6.0	0.9	0.4	—
VanEck	—	—	—	—	—	0.0	0.0	1.4	0.6	9.1	4.1	—
Vanguard	0.3	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.2	0.1	0.0
WisdomTree	1.7	3.5	1.5	3.6	7.7	1.7	1.5	0.0	18.6	0.9	0.4	0.6
Sample Average	**1.5**	**3.1**	**2.2**	**2.1**	**2.0**	**1.8**	**1.7**	**1.9**	**3.2**	**1.7**	**0.9**	**1.0**

% ∧ 21.4 4.1 1.6 0.4 0.1 ∨

Source: Fund annual reports, analyst calculations.

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