

# Non-Passive Securities Lending by Passive Investors\*

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## Abstract

We study passive funds' conflicts of interest by examining their securities lending decisions. We show that passive funds' lending varies with the costs of lending for their families. Passive funds are less likely to lend a security if (i) active funds in their families have a sizable stake in the security or (ii) their families have business relationships with the security's issuer. The effect of these costs is especially strong among funds with in-house lending agents that retain a high fraction of lending fees. The findings indicate that passive funds trade off maximizing investor returns with maximizing fund family value.

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## **Conflict of Interest Disclosure Statement**

Apoorv Gogar:  
I have nothing to disclose.

David Haushalter:  
I have nothing to disclose.

Kevin Pisciotta:  
I have nothing to disclose.

# 1. Introduction

There is little question about the importance of passively managed funds as an investment vehicle. They now account for more than half of the assets managed by U.S. equity funds.<sup>1</sup> What is less clear are the effects of conflicts of interest for passively managed funds that arise when actions that maximize the values of funds’ families differ from actions that maximize returns for the funds’ investors.<sup>2</sup>

A challenge in understanding these conflicts is that they likely have little effect on the most obvious decisions of passive fund managers. Given the inherent nature of passive funds’ investment strategies, any potential conflicts of interest have little, if any, effect on the funds’ investment decisions. Similarly, as described by [Bebchuk et al. \(2017\)](#) and [Heath, Macciocchi, Michaely, and Ringgenberg \(2022\)](#), passive funds generally have limited incentives to monitor the companies they own.<sup>3</sup> Therefore, conflicts of interest also likely have little, if any, effect on passive funds’ monitoring activities.

To understand these conflicts, we turn to a less obvious, but important, decision for

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<sup>1</sup>See Figure 2.9 of [https://www.ici.org/system/files/2022-05/2022\\_factbook.pdf](https://www.ici.org/system/files/2022-05/2022_factbook.pdf). Following [Bebchuk, Cohen, and Hirst \(2017\)](#), and others, we use the terms *passive funds*, *passively managed funds*, and *index funds* interchangeably. In some of our analyses, we focus on passive funds tracking the most common indexes to ensure our conclusions are robust to the strictest definition of *index funds*.

<sup>2</sup>Another potential conflict for passive funds exists between the funds and the shareholders of the companies that the funds own. Because the ownership stakes of passive funds can span across entire sectors, a practice referred to as “common ownership,” the funds might encourage the managers of companies they own to make anti-competitive or other strategic decisions that maximize the values of the funds’ portfolios but not necessarily the values of the companies’ shares. We do not examine this conflict. It is, however, examined by [Azar, Schmalz, and Tecu \(2018\)](#), [Koch, Panayides, and Thomas \(2021\)](#) [Lewellen and Lowry \(2021\)](#), [Azar, Qiu, and Sojourner \(2022\)](#), and others.

<sup>3</sup>Consistent with these limited incentives, [Lewellen and Lowry \(2021\)](#) and [Heath et al. \(2022\)](#) provide empirical evidence that passively managed funds generally take a passive approach in monitoring their investments and that passive funds invest little in active monitoring. [Appel, Gormley, and Keim \(2016\)](#) do, however, find that an increase in ownership by passive funds on the aggregate level can result in changes in director independence and shareholder rights.

passive fund managers: securities lending. The income from securities lending directly increases the returns to funds' investors and can potentially improve the funds' performance relative to their peers. For example, we show that among funds that lend securities, lending income is, on average, 27% of funds' annual expenses. Securities lending, however, can also be "costly" for the funds' families. The costs can arise if an active fund within a fund's family views the lending of a security in which it has a long position as detrimental to the security's performance. We label these types of costs as *internal costs of lending*. The costs can also arise if a fund's family has a business relationship with one of the fund's portfolio companies and the company views the lending of its shares as enabling short sellers to exert negative price pressure (Chang, Cheng, and Yu, 2007), manipulate prices (Henry and Koski, 2010), or increase the cost of capital for the company (Brunnermeier and Oehmke, 2014; Grullon, Michenaud, and Weston, 2015). We label these types of costs as *external costs of lending*. Because these internal and external costs may exceed the marginal benefits to a passive fund from lending certain securities, a passive fund's securities lending decisions can be influenced by conflicts of interest in a way that its investment decisions cannot.

To investigate the effect of these conflicts on passive funds' securities lending decisions, we use newly available disclosures in fund N-PORT filings. Beginning in April 2019, the Securities and Exchange Commission (SEC) requires registered investment companies to file quarterly portfolio holdings information using Form N-PORT.<sup>4</sup> These security-level holdings

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<sup>4</sup>April 2019 is when the filings of funds with at least \$1 billion in assets under management (AUM) — which comprise approximately 95% of the assets managed by index funds — become publicly available. The filings of funds managing less than \$1 billion do not become available until April, 2020.

data are provided on the fund-series level and include whether the fund lends any portion of its investment in a given security as of the report date, and the value of that loan.

Using these data, we examine whether the internal and external costs of lending certain securities affect the passive funds' decisions to lend those securities. We examine funds' lending decisions on both the extensive margin (whether to lend a security) and the intensive margin (how many shares to lend conditional on lending). To control for differences in lending and investing styles across funds at each point in time, we include fund-report date fixed effects, and to control for differences in borrowing demand across securities, we include security-report date fixed effects. Thus, we identify the effect of funds' costs of lending through differences in lending behavior between funds that own the same securities at the same time but face different internal or external costs of lending for those securities.

Consistent with internal costs of lending affecting passive funds' lending decisions, we find that the investment decisions of a fund family's active funds strongly predict the lending decisions of passive funds in the same family. Specifically, a one standard deviation increase in the size of an active fund's long position in a security decreases the probability that a passive fund in the same family lends the security by 4.4%. This effect exists on the intensive margin as well: conditional on lending a security, passive funds lend less of their allocations than other passive funds holding the same security but facing lower internal costs of lending.

We also provide evidence that external costs of lending affect passive funds' lending decisions. Passive funds are 17% less likely to lend a company's security when the funds' families service the company's pension plan. Additionally, when focusing on *changes* in

funds' business relationships with their portfolio companies, we find that once a fund family stops providing pension services for a company, both the probability that the fund lends the company's security and the amount that they lend increase. Because this analysis isolates variation in lending within a fund-stock pair around the termination of a business relationship, these results support the notion that funds' business relationships, rather than certain fund or stock characteristics, drive the documented variation in funds' lending decisions.

In additional analyses, we confirm that our results on the effects of internal and external costs of lending are not driven by the COVID-19 pandemic or the lending practices of any one of the "Big Three" index fund families (i.e., BlackRock, State Street, and Vanguard). An additional concern is that funds with higher costs of lending for certain securities may also have smaller allocations in those securities, and thus, the allocation sizes and not the costs may drive funds' lending decisions. To mitigate this concern, we re-run our main analyses after limiting the sample to passive funds tracking the eight most widely-tracked indexes, such as the S&P 500, where investment allocations are nearly identical across peer funds. We find even stronger results in these analyses, which provides reassurance regarding our results using the full sample.

To further understand the importance of these costs for passive funds' lending decisions, we expand our analysis to include funds' relationships with their lending agents. As [Johnson and Weitzner \(2022\)](#) show, fund families' marginal benefits of lending are higher when they use in-house lending agents, and those agents retain larger fractions of the lending revenue.<sup>5</sup>

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<sup>5</sup>Examples of in-house and unaffiliated lending agents are the following: for the quarter ended October

We use this heterogeneity in fund families' marginal benefits of lending to examine the extent to which the internal and external costs of lending bind when the incentives to lend are higher. We find that the negative effects of these costs of lending are more pronounced when funds use in-house lending agents and those in-house agents retain a larger fraction of the lending income. These results suggest that fund-family conflicts of interest are particularly distortionary when the opportunity costs of bypassing lending opportunities are high.

Given the importance of passive funds in the securities lending market, our findings raise questions about whether the effects of these conflicts impact overall lending market outcomes. To explore these questions, we focus on companies that are held by a passive fund and that employ the fund's family to manage their pension plans. We show that the aggregate number of such companies' shares lent decreases during the days leading up to when funds with business ties publicly disclose the shares they have on loan. These findings not only indicate that these conflicts affect the securities lending market, but also suggest that the trade-offs these funds face between maximizing investor returns and other fund family interests are time-varying, as funds strategically alter their lending behaviors around mandated disclosure dates.

Our findings contribute to the literature on the conflicts of interest between a mutual fund and its family. [Gaspar, Massa, and Matos \(2006\)](#) and [Del Guercio, Genc, and Tran \(2018\)](#) provide evidence that fund families strategically enhance the performance of "high value"

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31, 2018, Goldman Sachs serves as a lending agent for both Goldman Sachs U.S. Equity Insights Fund (in-house/affiliated) and Fidelity Disciplined Equity Fund (unaffiliated).

funds at the cost of “low value” funds, a practice known as cross-fund subsidization. Such favoritism stems from the divergence of interests between an individual fund’s shareholders and the managers of the fund family.<sup>6</sup> [Evans, Ferreira, and Prado \(2017\)](#) document that active funds that engage in securities lending perform worse than similar funds that do not engage in securities lending, which they argue is driven by fund family profit maximization constraining fund managers’ investment decisions. We add to this literature by providing evidence that conflicts within fund families not only affect investment decisions of active funds but also the decisions of passive funds.

We also contribute to the literature on securities lending. Most importantly, while prior papers that examine fund lending decisions rely on assumptions to predict which stocks funds lend and how much they lend, we exploit novel data on funds’ actual security-specific lending decisions on the extensive and intensive margins. We also build on prior papers examining aggregate stock-level lending activity. For example, prior research examines the effect of lending supply on borrowing fees ([Kaplan, Moskowitz, and Sensoy, 2013](#); [Muravyev, Pearson, and Pollet, 2022](#)), price efficiency ([Duong, Huszár, Tan, and Zhang, 2017](#); [Palia and Sokolinski, 2021](#); [Honkanen, 2021](#)), and stock liquidity ([Kaplan et al., 2013](#); [Dixon, Fox, and Kelley, 2021](#)). Our results suggest that conflicts of interest for passive funds are important determinants of the supply of securities in the lending market, and thus, these conflicts affect not only fund investors but also participants in the securities lending markets.

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<sup>6</sup>Related to this literature on within-family conflicts, [Nanda, Wang, and Zheng \(2004\)](#) show that mutual funds sometimes chase star managers to benefit the family at the expense of individual funds. [Davis and Kim \(2007\)](#) and [Cvijanović, Dasgupta, and Zachariadis \(2016\)](#) find mixed evidence on whether fund family business relationships with portfolio companies increase pro-management voting by the family’s funds.



Finally, our paper is also related to [Johnson and Weitzner \(2022\)](#), who examine how the fraction of lending fees that an active fund’s family retains affects the fund’s investment decisions. We add new insights to this literature by focusing on the lending decisions of passive funds and on how the *costs* of lending affect these lending decisions. We also show that the effects of these costs are exacerbated when passive funds employ in-house agents and share a large fraction of lending fees with those agents, suggesting that the costs are more distortionary when the opportunity costs of not lending are high.

## 2. Background on securities lending and mutual fund conflicts of interest

### *2.1. The securities lending market*

The securities lending market is an over-the-counter market in which investors borrow securities from investors who own the securities.<sup>7</sup> Investors who borrow securities most often do so to sell the securities short (see, e.g., [Campello, Matta, and Saffi, 2020](#)). Less commonly, they borrow securities to execute tax arbitrage strategies or vote in shareholder meetings. To borrow securities, investors put up collateral with a lending agent worth slightly more than the value of the loan and sometimes also pay additional interest to the lender if the stock is in short supply and hard to borrow. Lenders of the securities keep a portion of the returns

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<sup>7</sup>Initial borrowers, typically broker-dealers or banks, do not retain the borrowed securities, rather, they re-lend them to the ultimate borrowers, which are often hedge funds, derivative traders, and market makers. Typical lenders include large institutional investors such as mutual funds, insurance companies, pension plans, and endowments. These lenders generally use a lending agent (affiliated/in-house or unaffiliated) to facilitate these loans and administer their overall lending programs.

from investing the collateral and pass any extra investing income above the “lending fee” back to the borrower when supply is ample and keep the returns and the additional interest when supply is low. The primary risk in lending securities for the lenders is a trading loss on the investment of the collateral. Although this risk is generally very low, it varies with how aggressively the lending agents invest the collateral.<sup>8</sup>

For passively managed funds, securities lending is particularly attractive for several reasons. First, because passive funds generally own their securities for as long as the securities remain a part of the funds’ benchmark index and the index weights remain relatively stable, passive funds have a fairly predictable inventory of securities they can lend out. Second, because index funds compete more aggressively with their peers on minimizing fund fees than active funds and peer index funds hold the same basket of stocks, the income an index fund earns from lending has a higher marginal benefit in attracting flows than it does for active funds. Importantly, the reduction in fund expenses from this income can be substantial. [McCullough \(2018\)](#) reports that the income TIAA generated from securities lending offset more than half of their funds’ expenses from 2007 to 2017. Last, unlike the free riding problem created by passive funds’ monitoring and other efforts, where an increase in the value of the funds’ holdings also directly benefits the funds’ competitors who hold the same securities ([Bebchuk et al., 2017](#)), the income from lending can increase performance relative to peer funds if the peer funds are less active in the lending market.

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<sup>8</sup>For a further discussion of this risk see: <https://www.morningstar.com/articles/904334/a-close-examination-of-the-risks-and-rewards-of-securities-lending>.

In Figure 1, we plot the average percentage of funds' holdings and assets under management that passive and active funds lend. The figure shows that lending is substantially more common and extensive for passive funds than active funds. On average, passive funds lend two-to-three times as many securities and roughly twice as much of their assets. Thus, the marginal lender in the securities lending market is usually a passive index fund.

[Insert Figure 1]

## 2.2. *Conflicts of interest*

### 2.2.1. *Internal costs of lending*

Although securities lending can (a) offset a fund's expenses, (b) increase returns for fund investors, and (c) improve a fund's relative performance, if fund managers are motivated to maximize the profits of their fund family, then any costs of lending for the fund's family can affect the fund's lending decisions.

One way a passive fund's securities lending can be costly for its fund family is if the lending is detrimental for other funds in its family. Underlying this argument is the notion that increasing the supply of shares of a security in the lending market negatively affects the price of the security (see, e.g., [Grullon et al., 2015](#)). Although the actual extent of these effects is arguably ambiguous, these effects can nonetheless be a concern for fund managers. An example of this concern is found in [Kaplan et al. \(2013\)](#), who study securities lending by a large money manager and note the following:

*“Historically, the Manager had not lent out the stocks it owned out of concern that doing so might lower the prices of the stocks and increase their volatility”*

(page 1898).

Because the performance of passive funds is measured relative to funds with nearly identical holdings, the effects of lending on the security's prices and volatility are likely of little concern. For an active fund like that studied by [Kaplan et al. \(2013\)](#), however, these effects — or concerns about these effects — can be of greater importance. If such concerns are shared at the fund family level, then a passive fund's securities lending can be curtailed by the holdings of the active funds in the passive fund's family. We label a passive fund's concerns about the detrimental effects of its lending decisions on the active funds in its family as an *internal cost of lending*.

The above discussion motivates our first hypothesis:

H1: The likelihood and extent that a passive fund lends a security is negatively related to the holdings of that security by the active funds in the passive fund's family.

### 2.2.2. *External costs of lending*

Another way a passive fund's securities lending can be costly for its fund family is if the lending strains the business relationships of the fund family. Corporate executives often take extensive steps to battle investors shorting their stock. As documented in [Lamont \(2012\)](#), these steps include threatening to sue short sellers, requesting regulatory investigations into short sellers, and campaigning shareholders not to lend shares to short sellers. More recently, Elon Musk, CEO of Tesla, has expressed publicly his distaste for short selling, referring to it

on Twitter as “... a scam legal only for vestigial reasons.” By participating in the securities lending market, passive funds risk being perceived as enabling short selling and viewed in a similar negative light as short sellers.

When this antagonistic stance towards short sellers and their enablers is shared by a company with which a passive fund’s family has a business relationship, lending the company’s security can put the family’s revenue from this relationship at risk. Such revenue streams can be substantial. [Cvijanović et al. \(2016\)](#) report that pension-related business with corporations account for an average of 14% of fund families’ total revenue. We label a passive fund’s concerns that its lending decisions might jeopardize these revenue streams for its family as an *external cost of lending*.

These arguments motivate our second hypothesis:

H2: The likelihood and extent that a passive fund lends a security is negatively related to the existence and significance of a business relationship between the passive fund’s family and the security’s issuer.

The null hypothesis to H1 and H2 is that fund managers focus only on maximizing returns for their funds’ investors. In this case, we expect no association between a fund’s securities lending and the costs of lending for its family.

## 3. Data

### 3.1. Data sources

We collect securities lending data from quarterly NPORT-P filings available on the SEC’s EDGAR system. Registered investment companies are required to publicly file this form beginning in the third calendar quarter of 2019.<sup>9</sup> The part of this form that is of greatest interest for our analysis is Part C: Schedule of Portfolio Investments. This schedule lists each of a fund’s investments as of the last business day of the reporting period and provides detailed information about each investment, including its CUSIP, the number of shares held, the dollar value of the position, the asset type, the issuer type, and — importantly — the value of any portion of the fund’s investment that is on loan by the fund (Item C.12.C).<sup>10</sup>

We next link the funds from the NPORT-P filings to the CRSP Mutual Fund Database using fund identifying information from the SEC’s Series and Class Report.<sup>11</sup> Using CRSP objective codes, we limit our sample to U.S. domestic equity funds, which results in a sample of 4,860,427 fund-security-report date observations between September 2019 and November 2021. Using CRSP’s index fund flag, we limit our sample to index funds (*index\_fund\_flag* = “D” or “B”), which reduces the sample to 2,517,363 fund-security-report date observations.

We also collect the following information from funds’ annual N-CEN filings: (1) whether the fund is authorized to lend securities, (2) the identity and affiliation of the fund’s se-

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<sup>9</sup>Form N-PORT replaced Form N-Q, which was filed semi-annually and did not include securities lending information. For fund families with less than \$1 billion in assets under management, the requirement to file Form N-PORT begins April 2020. Funds must file this form with the SEC monthly; however, only the forms from funds’ fiscal quarter-ends are made publicly available (Form N-PORT (Public), i.e., “NPORT-P”).

<sup>10</sup>We provide an example of a Form NPORT-P in Figure A1 in Appendix A.

<sup>11</sup>[https://www.sec.gov/open/datasets-investment\\_company](https://www.sec.gov/open/datasets-investment_company)

curities lending agent, (3) the fund’s total annual lending income, and (4) the total value of shares loaned during the year.<sup>12</sup> We remove observations associated with funds that are not authorized to lend securities. The resulting sample of passively managed U.S. domestic equity funds authorized to lend consists of 2,271,336 fund-security-report date observations.

Finally, we collect itemized data on each fund’s lending income from the Statements of Additional Information (SAI) in Forms N-1A and N-3. As part of the SEC’s recent overhaul of investment company reporting, funds are required to provide in their SAI a detailed breakdown of funds’ revenue from securities lending during the most recent fiscal year. This breakdown includes both the dollar amounts of revenue from securities lending and the compensation paid to service providers (e.g., lending agents, collateral managers) for facilitating the lending.<sup>13</sup> Crucially, this disclosure includes the total fees paid to a securities lending agent from a lending revenue split. Using the gross income and revenue split information, we compute the proportion of fees retained by the securities lending agent (“agent fee retention”). After merging this information with our sample, we are left with a final sample of 1,659,142 fund-security-report date observations that have non-missing lending fee retention data.

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<sup>12</sup>Form N-CEN is used by registered investment companies to file their annual reports containing census-type information with the SEC. Forms N-CEN and N-PORT, which replaced Forms N-SAR and N-Q, respectively, are newly adopted forms as part of the SEC’s Investment Company Reporting Modernization (ICRM) rule: <https://www.sec.gov/rules/final/2016/33-10231.pdf>.

<sup>13</sup>For the suggested tabular format of this disclosure, please see Table 1 in section II.F.2 of the final rule here: <https://www.sec.gov/rules/final/2016/33-10231.pdf>. We describe in detail how we collect this information from the SAI disclosures in Appendix B.

### 3.2. *Summary statistics – Funds and lending activity*

We present summary statistics for our sample of funds, their holdings, and their average lending behavior in Table 1. From Panel A, our main sample consists of 587 index funds and 49 fund families. In a typical reporting period, 86% of the funds lend at least one security, and 96% of the funds lend at least one security during the sample period.<sup>14</sup>

From Panel B, the average fund in our sample has \$6.78 billion assets under management (AUM) and holds approximately 370 securities. The average security is owned by approximately 15 funds. The unconditional likelihood of lending a security is 10%. Conditional on lending out a security, funds lend 56.2% of the shares they own of the security, and when they lend, they lend on average 10.4% of the securities they own.

[Insert Table 1]

To ensure that the conclusions we draw from our analysis are not driven by variation in portfolio weights across funds with differing investment objectives as opposed to variation in internal and external costs of lending, we also conduct our analysis using a subsample of funds that meet a stricter definition of index funds with well-defined portfolio weights. Specifically, we focus our analysis on funds that track one of the following eight indexes: S&P 400, S&P 500, S&P 600, S&P 1500, Russell 1000, Russell 2000, Russell 3000, and the total U.S. stock market. We exclude bearish and levered versions. We report summary statistics for this stricter set of index funds in Panels A and C of Table 1. This subsample consists of

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<sup>14</sup>Although we require all funds in our sample to be authorized to lend securities, we do not require that funds actually lend securities during our sample period.



59 funds and 13 families. The average fund in this sample has \$48.4 billion in assets under management. Compared with the full sample of funds, these funds are more likely to lend one of their securities (13% vs. 10%), but conditional on lending a security, their lending percentage is lower (45.8% vs. 56.2%).

The primary benefit to a fund’s investors from the fund lending its securities is the income that the lending generates. This income offsets fund expenses and therefore increases fund net returns. From Panel B, our full sample of passive funds generate, on average, \$0.96 million per year from securities lending. From Panel C, this average is \$5.99 million among index funds tracking major indexes. These annual averages increase to \$1.58 million and \$6.89 million, respectively, among funds that lend at least one security at each report date during the year (untabulated). Based on funds’ annual dollar value of expenses (computed as funds’ annual expense ratios times their average quarterly AUM), a back-of-the-envelope estimate suggests that lending income represents roughly 27.0% of annual expenses for the full sample of funds and 39.4% of annual expenses for the funds tracking the major indexes.

The income a fund generates from lending a security varies with the security’s lending fee. This fee varies dramatically depending on the supply and demand for the security in the securities lending market. In Panel D of Table 1, we sort our sample of securities into deciles based on their lending fees at the time of the fund filings.<sup>15</sup> The average lending fee for each of the first seven deciles is below 35 basis points per year. There are, however, also many

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<sup>15</sup>Our estimate of lending fees for a security is the *indicative fee* reported in basis points per year on a daily basis by IHS Markit. IHS Markit defines this fee as “[t]he expected cost in fee or rebate terms for a hedge fund on a given day.” For more about these data, see <https://cdn.ihs.com/www/pdf/Securities-Finance-average-rates-buy-side-factsheet.pdf> and Muravyev et al. (2022).

securities that have considerably higher lending fees. The average lending fees for securities in the top two deciles are 1.73% and 19.17%, respectively.

Panel D also reports the lending likelihoods and the average percentage of holdings lent for each lending fee decile. Unsurprisingly, the likelihood that funds lend a security is increasing in the security's lending fee. For securities in the first seven deciles, the probability that a fund owning the security lends it is less than 8%. In the top three deciles, the likelihood that a fund lends the securities increases substantially, ranging from 18% to 58%. From Column (4) of Panel D of Table 1, the average fraction of a fund's holding that it lends is under 4% for the first seven deciles, but between 11 and 44% in the top three deciles. Thus, not only are funds more likely to lend securities with high lending fees, but when lending, they lend a greater fraction of the shares they own of these securities. Figure 2 illustrates the dramatic rise in lending likelihood above the seventh decile.

[Insert Figure 2]

Although many of the funds that own securities in the high fee deciles lend them out, many also do not. For example, even though lending fees in the top decile average more than 19%, about 42% of the fund-security-report date observations in these deciles have zero shares on loan.<sup>16</sup> This pattern raises the question of whether funds bypass lending opportunities because they have concerns beyond maximizing investor returns, and, in particular, whether funds' conflicts of interest affect these decisions.

<sup>16</sup>In untabulated analysis, we find that among these fund-security-report date observations in the top decile with zero shares on loan, the 75<sup>th</sup> percentile number of shares held is 38,303. The conditional median number of shares lent in our sample is 15,046, so many of these funds likely possess the capacity to lend.

### 3.3. Summary statistics – Proxies for the costs of lending

To examine the importance of these conflicts, we construct five measures of fund families' costs of lending at the fund-security level. Three of these measures are proxies for the *internal costs of lending*. First, because we can infer a family's lending mandate for a security by observing whether active funds in the family lend a security, we create an indicator variable that is equal to one when the security is lent by an active fund in the passive fund's family. Second, because the ownership of a security by active funds in a passive fund's family can lead to internal costs of lending for the passive fund, we create an indicator variable that is equal to one when the security is owned by an active fund in the passive fund's family. Third, because these internal costs are expected to increase with the extent of the active funds' ownership, we also measure internal costs using the maximum portfolio weight assigned to the security across all of the active funds in the passive fund's family.

We use two proxies for funds' *external costs of lending*. To construct these proxies, we identify fund families' business relationships using data from Form 5500 (Annual Report of Employee Benefit Plan) filed with the Department of Labor to register company pension plans. Form 5500 is filed by either the pension plan sponsor (typically the employer) or the plan provider (typically fund families such as Vanguard and Fidelity) to report information on the “qualification of the plan, its financial condition, investments, and the operations of the plan.”<sup>17</sup> With these filings, we observe the relationships between fund families and the companies their funds invest in by virtue of the fund families serving as a pension plan

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<sup>17</sup>See <https://www.irs.gov/retirement-plans/form-5500-corner>.

investment manager, investment advisor, trustee, or record keeper. As discussed in [Davis and Kim \(2007\)](#) and [Cvijanović et al. \(2016\)](#), providing these services can be lucrative for fund families and account for, on average, more than 10% of fund family revenue. Our first proxy of the *external costs of lending* is an indicator variable equal to one when the passive fund's family provides pension services to the company owned by the passive fund as of the NPORT-P report date. Our second proxy is based on the idea that the importance of a business relationship for the fund's family varies with the extent of the pension services that it provides to a company. We thus compute the total annual compensation the fund family receives from the company for providing these pension services.<sup>18</sup>

Table 2 reports summary statistics for our measures of the internal and external costs of lending. All variables are defined in Appendix C. Panel A presents these statistics for the full sample at the fund-security-report date level. About 4% of our passive fund securities are lent out by an active fund in the same family and approximately 58% of these securities are also owned by an active fund in the same family. Finally, the unconditional average of the maximum active fund portfolio weight for a security held by a passive fund across all active funds in the passive fund's family is approximately 1%. For the external costs of lending, about 6% of the securities that passive funds hold are issued by companies for which the fund's family currently provides pension services. The unconditional average annual compensation from such relationships is \$35,270 and the annual compensation conditional

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<sup>18</sup>Schedule C of Form 5000 reports direct and indirect compensation received by each plan provider of a sponsored plan. We use the natural log of one plus the direct compensation, but our results are similar when we use the natural log of one plus the sum of the direct and indirect compensation.

on a pension relationship is approximately \$600,000.

[Insert Table 2]

Panel B presents summary statistics on the internal and external costs of lending, split by whether the passive funds lend the security (i.e., *Lend* equals 0 or 1). The lending of securities by active funds is more common among the securities that the passive funds in the family also lend. Among the securities that the passive funds do not lend, only 2% are lent by active funds in the same family. In contrast, among the securities that the passives do lend out, 18% are also lent by active funds in the same family. This similarity in lending behavior across funds in the same family suggests, at least in part, the existence of family-level policies regarding lending certain securities and/or family-level responses to differences in borrowing demand across securities. Among the securities that passive funds lend, 46% are owned by active funds in the same family. This estimate rises to 60% among the securities that passive funds do not lend. We also find that the pension compensation accruing to the fund family is, on average, lower for securities that passive funds in the family lend, suggesting potential trade-offs between the two revenue sources of providing pension services and securities lending. All other measures of costs are similar across the two subsamples of funds.

## 4. Analysis

### 4.1. Conflicts of interest and fund lending

To test our hypotheses that conflicts of interest affect passive funds' securities lending decisions, we estimate regressions predicting the likelihood that a passive fund lends a security it holds and the fraction of the holding they lend. We estimate the regressions at the fund-security-report date level and they take the following form:

$$Y_{ist} = \alpha_{ist} + \beta \text{Costs of Lending}_{ist} + \delta_{it} + \gamma_{st} + \epsilon_{sjt}. \quad (1)$$

$Y_{ijt}$  is either an indicator variable equal to one when fund  $i$  lends out security  $s$  as of report date  $t$  (i.e., *Lend*), or a continuous variable equal to the percentage of fund  $i$ 's holding in security  $s$  that the fund lends out as of report date  $t$  (i.e., *Lend Percent*). *Costs of Lending* takes on the value of one of our five internal and external costs of lending measures. Regressions with *Lend* estimate the extensive margin effect of these costs. Regressions with *Lend Percent* estimate the intensive margin effect of these costs and are limited to funds lending the security at time  $t$ .

The fixed effects we include in these regressions are critical for identifying the effect of the internal and external costs of lending. Our fund-report date fixed effects,  $\delta_{it}$ , hold constant a given fund's size, investment objective, managerial style, and other characteristics that could affect the general degree to which a fund lends out its securities at time  $t$ . Our security-report date fixed effects,  $\gamma_{st}$ , hold constant a given security's borrowing demand, borrowing costs, lending supply, and other characteristics that could affect a fund's preferences for

lending the security at time  $t$ . To further localize our identification of the costs of lending, we also estimate regressions that include security–CRSP fund objective–report date fixed effects. This specification forces our comparisons of lending in security  $s$  to be among funds with similar risk profiles and similar portfolio weights invested in this security.

#### 4.1.1. *Internal costs of lending*

In Columns (1)–(3) of Table 3, we estimate Equation 1 using each of our three proxies for the internal costs of lending. Column (1) of Panel A shows that passive funds are 17.3 percentage points more likely to lend a security if the security is also lent by an active fund in its family. Relative to the unconditional average probability of lending a security of 10%, this effect represents a 173% increase. This finding suggests that there is consistency in lending decisions across funds in a family. In Column (2), we find evidence that passive funds are more likely to lend securities owned by active funds in their families, which is inconsistent with our *internal costs of lending* hypothesis. However, when we consider the extent of the active funds’ ownership in Column (3), the evidence indicates that internal costs negatively affect passive funds’ lending decisions; funds are significantly less likely to lend a security when an active fund in their family has a high stake in the same security. From Column (3), a one standard deviation increase in our measure of internal costs (0.03) decreases the probability that an index fund lends out a security by 44 basis points, or 4.4% relative to the unconditional mean probability. In Columns (4)–(6), we add security–fund objective–report date fixed effects. The results using these more restrictive fixed effects are nearly identical

to those in Columns (1)–(3). The similarity in results across these specifications indicates that our estimates are unlikely to be driven by differences in fund investment objectives or portfolio weights, but instead due to differences in fund family conflicts across the different funds holding a common security at the same time.

The importance of the internal costs of lending is also apparent in Panel B of Table 3. Here, we examine the intensive margin effect by focusing on the amount of a security that passive funds lend conditional on lending. Similar to Panel A, Column (1) shows that passive funds lend a greater fraction of their holdings for securities that active funds in their family lend. In Column (2), the coefficient is negative but insignificant. Consistent with the *internal costs of lending* hypothesis, Column (3) shows that the extent of ownership by active funds in a passive fund’s family reduces the passive fund’s lending on the intensive margin. Conditional on lending, a one standard deviation increase in our internal costs measure (0.01) reduces the amount funds lend by 0.75 percentage points, or 1.33% relative to the conditional mean lending percentage of 56.21%.<sup>19</sup> Thus, passive funds condition their decision of not only which securities to lend on the preferences of other funds in their family, but also how many shares of the securities to lend. The results in Columns (4)–(6) are similar to results in Columns (1)–(3), providing additional evidence that our estimates are unlikely due to differences in fund investment objectives or portfolio weights, but instead due to differences in fund family incentives.

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<sup>19</sup>From Panel B of Table 2, the standard deviation of *Highest Active Weight* is 0.01 among the sample of observations with nonzero lending.



[Insert Table 3]

#### 4.1.2. *External costs of lending*

In Table 4, we estimate the same regression as in Table 3, except we use our proxies for the external costs of lending. As in Table 3, the dependent variables are whether a fund lends a security (Panel A) and the percent of a fund's holding that the fund lends, conditional on the fund lending the security (Panel B).

Consistent with our *external costs of lending* hypothesis, the results in Columns (1) and (3) of Panel A indicate that the business relationships of a passive's funds family affect the passive fund's lending decisions. When a fund's family provides pension services for a company that the passive fund owns, the probability that the fund lends the security declines by 1.7 percentage points, or approximately 17% relative to the unconditional lending probability. The results in Columns (2) and (4) of Panel A indicate that a fund is less likely to lend a security the greater the compensation the fund's family receives for providing pension services to company. A 100% increase in compensation reduces the probability of lending the security by 14 basis points, or 1.4% relative to the mean probability of lending a security.<sup>20</sup> These results complement those of Cvijanović et al. (2016), who find that fund family business relationships bias active funds' voting behavior; our results indicate that these relationships also bias the lending decisions of the families' passive funds and sacrifice potential income for the funds' investors.

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<sup>20</sup>In Table D1 in Appendix D, we continue to find a negative effect of pension services compensation when restricting the sample to funds with a business relationship, which provides additional evidence that compensation itself, not just the existence of a business relationship, negatively affects lending propensities.

In Panel B, we find that the intensive margin effects of external lending costs are weaker compared with the intensive margin effects of internal lending costs. The results suggest that the business relationships that are important for a fund’s decision of whether to lend a security have less bearing on the fraction of its holdings that the fund lends once it decides to lend. In other words, external costs appear to be of greatest concern when going from zero to non-zero lending.

[Insert Table 4]

#### 4.1.3. *Changes in External Lending Costs*

Given the absence of exogenous variation in funds’ business relationships with portfolio companies, it remains possible that some unobserved factor jointly determines funds’ business relationships and lending preferences. To mitigate this concern and better understand whether the relation between funds’ business relationships and their lending preferences is causal, we exploit *changes* in these relationships. Specifically, we construct a sample of passive funds in which the funds’ families provide pension services for company  $s$  and then stop performing these services for that company for the remaining portion of our sample period. We exclude cases where a fund family changes from not performing pension services for a company to providing pension services because fund families have incentives to cater to companies during the period before forming a business relationship. Using this sample, we then estimate regressions of the following form:

$$Y_{ist} = \alpha_{ist} + \beta_1 \text{External Costs of Lending}_{ist} + \theta_{is} + \delta_{it} + \epsilon_{sjt}, \quad (2)$$

where  $Y_{ijt}$  is either our lending indicator variable, *Lend*, or our continuous lending variable, *Lend Percent*. *External Costs of Lending* is our *Pension Provider* indicator variable from Table 4. The regression sample is restricted to the full time-series for all passive fund-security pairs where *Pension Provider* is equal to one at some point during the fund-security time series and then switches to zero. When combined with fund-security fixed effects,  $\theta_{is}$ , this sample restriction limits our identification of the effect of external lending costs to the differences in lending outcomes for a fund between when the fund has a business relationship with the issuer of security  $s$  and when the fund no longer has that business relationship. We also include fund-report date fixed effects,  $\delta_{it}$ , to control for differences in funds' lending preferences over time. Finally, because of the small number of business relationship changes, we are unable to include security-report date fixed effects. Instead, we include the security's lending fee as of time  $t$  to control for variation in investors' demand for borrowing the security over time. Our results are similar when excluding this control. We present the results from this regression in Table 5.

Similar to the results in Table 4, the coefficients on the external lending costs variables in Table 5 are negative and significant. Column (1) shows that index funds are 1.3 percentage points (or 13%) less likely to lend a company's security when they have a business relationship with the company compared with when they no longer have this relationship. Column (2) shows that we continue to observe a significant negative effect of pension service compensation. The results are similar in Columns (3) and (4) when we examine the percentage of

the funds' holdings that the funds lend out. These results in Table 5 are consistent with the hypothesis that a fund family's business relationships with the fund's portfolio companies causally affect the fund's lending decisions.

[Insert Table 5]

#### 4.2. *Additional analysis of internal and external lending costs*

To examine the robustness of the results to this point, we perform several additional tests. First, if passive funds' portfolio weights are correlated with both the costs of lending and funds' lending decisions, it is plausible that portfolio weights rather than the costs of lending drive our results. To address this concern, we restrict our analysis to funds tracking the most widely tracked indexes: S&P 400, S&P 500, S&P 600, S&P 1500, Russell 1000, Russell 2000, Russell 3000, and the total U.S. stock market.<sup>21</sup> The funds tracking these eight indexes essentially compete only on cost and marketing. We then re-estimate Equation 1 for both internal and external costs of lending using this subsample and report the results in Panels A (internal costs) and B (external costs) of Table 6, respectively.

The results in Table 6 show that our estimated effects of fund family conflicts are similar when focusing on this subset of funds where peer funds hold almost identical investment positions. From Columns (3) and (6) of Panel A, a one standard deviation increase in internal lending costs decreases the probability that an index fund lends a security by 59 basis points, or 4.5% relative to the mean lending probability of 13% among this subset of

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<sup>21</sup>An alternative way to address this concern is by adding a control for funds' portfolio weights to Equation 1. Accordingly, we also estimate regressions that include a fund's investment in the security scaled by the fund's aggregate investments in all securities and our results are nearly identical (unreported).

funds. In unreported results, we continue to find evidence of an intensive margin effect, and we also find nearly identical results when including security–*index*–report date fixed effects, which limit our comparisons to the lending behavior of two or more funds holding the same security at the same time and tracking the same major index. In Panel B, we find that the negative effect of providing pension services on the probability of lending the company’s security is roughly three times as large for this subset of funds. Managing a company’s pension plan reduces the likelihood that an index fund in the family lends the company’s securities by 37%, and a 100% increase in pension services compensation reduces the lending likelihood by approximately 2.7%. These results help alleviate concerns that our baseline results are an artifact of which indexes the funds track, and in particular, that the results are driven by differences in portfolio weights across funds tracking different indexes.

[Insert Table 6]

A second concern is that because most of our sample period overlaps with the COVID-19 pandemic — when credit, equity, and security lending markets experienced extreme volatility — it is possible that the pandemic period volatility contributes to our results. Although the fact that we analyze cross-sectional differences in lending outcomes across funds holding the same securities at the same time mitigates this concern, we further address this concern by excluding the post-COVID 19 period (i.e., March 2020 to November 2021) from our analysis. We show in Panel A of Table D2 in Appendix D that our internal costs of lending results are similar when focusing on the period before the onset of the COVID-19 pandemic

in the U.S. Panel B shows that our external costs of lending results are also similar when focusing on this pre-pandemic period.

Finally, because the indexing market is dominated by three fund families — BlackRock, State Street, and Vanguard — it is possible that our results are an artifact of the particular lending practices of one of these fund families, rather than a systematic relation between fund family conflicts and lending decisions. To address this concern, we explore whether any individual member of the “Big Three” explains our findings. In Panel A of Table D3 in Appendix D, we re-estimate Column (3) of Panel A of Table 3 after separately excluding each of the Big Three index fund families. We find that the estimated effects of within-family active fund allocations on passive funds’ likelihoods of lending a security are similar, if not larger, regardless of which Big Three fund family we exclude. For example, when excluding Vanguard, a one standard deviation increase in internal lending costs is associated with a 13% reduction in a fund’s probability of lending the security. Panel B of Table D3 shows that our estimated effects of funds’ external costs of lending are also similar when we exclude each of the Big Three fund families. For example, when excluding Vanguard, the probability that a passive fund lends shares of company declines by 44% when the fund’s family provides pension services to the company. The results in Table D3 confirm that our baseline findings are not a byproduct of any individual large fund family’s lending practices.

### 4.3. Cross-sectional heterogeneity: the marginal benefit of lending

To better understand the importance of the internal and external costs of lending, we next examine how the effects of these costs vary with fund families' marginal benefits of lending. As [Johnson and Weitzner \(2022\)](#) discuss, having an in-house lending agent and sharing a high fraction of lending revenue with that agent increases the marginal benefit of lending for fund families.<sup>22</sup> Fund families without in-house agents have relatively weak incentive to lend, regardless of their lending costs. The more interesting case is fund families with in-house agents, who have relatively strong incentive to lend. Lending decisions for these funds will only vary with the funds' internal and external costs of lending if these costs are binding.

To investigate how fund families' lending agent affiliations and revenue splits with their lending agents affect the relation between lending costs and lending decisions, we first estimate regressions in which we interact our main conflicts of interest measures with an indicator equal to one when the fund employs an in-house lending agent. These regressions take the following form:

$$\begin{aligned} Lend_{ist} = & \alpha_{ist} + \beta_1 \text{Costs of Lending}_{ist} \\ & + \beta_2 \text{Costs of Lending}_{ist} * \text{In-house Agent}_{it} + \delta_{it} + \gamma_{st} + \epsilon_{ist}, \end{aligned} \tag{3}$$

where *Costs of Lending* is one of our internal lending costs measures — *Active Owns* or *Highest Active Weight* — or one of our external lending costs measures — *Pension Provider*

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<sup>22</sup>We find in untabulated results that funds employing in-house lending agents are 2.2x more likely to lend their securities, and this figure rises to 4.4x more likely among funds tracking widely-tracked indexes.

or *Pension Compensation*. The coefficient on the interaction term,  $\beta_2$ , estimates the relative effect of lending costs when funds employ an in-house agent compared with the effect when funds employ a third-party agent. We do not estimate the main effect of *In-house Agent* because of the fund-report date fixed effects ( $\delta_{it}$ ). We estimate these regressions using our full sample of funds, but our results are similar when we focus on the funds tracking the most widely tracked indexes (untabulated).

The results from these regressions are reported in Panels A and B of Table 7. In Panel A, which includes proxies for the internal costs of lending, the coefficients on the interaction between lending costs and the in-house lending agent indicator are all negative, although only significant in Columns (3) and (4). The results in Columns (3) and (4) indicate that the relative reluctance by funds with internal conflicts to lend their securities is exacerbated when they use an in-house agent. Using an in-house agent amplifies the negative effect of a one standard deviation increase in active fund allocation by 66–82 basis points, or 6.6–8.2% relative to the unconditional probability of lending. This result suggests that in instances when the opportunity costs of not lending are higher, the wedge in lending behavior between funds with and without internal conflicts widens.

In Panel B of Table 7, we focus on the external costs of lending. We again find that the coefficients on the interactions between our measures of lending costs and the in-house lending agent indicator are negative and significant. For example, Column (2) shows that employing an in-house lending agent amplifies the negative effect of having a business relationship with a portfolio company by 3.7 percentage points, or 41%. Like the results on the internal costs



of lending, these results suggest that when the marginal benefits of lending are relatively high, the negative impact of external costs of lending is amplified.

[Insert Table 7]

We next examine the effect of fund families' fee split arrangement with their lending agents. As mentioned above, the greater the fraction of the lending fee that an agent retains, the higher the marginal benefit of lending for fund families with in-house lending agents. We use the information we collect on funds' annual gross lending revenue described in Section 3 to construct a measure of the lending agents' fee retention, which we compute as the amount of revenue earned by the lending agent scaled by the fund's gross lending revenue. We then create an indicator variable equal to one when the lending agent retains an above-median fraction of the gross lending revenue (i.e., greater than 0.065), *High Agent Fee Retention*. Last, we estimate regressions similar to Equation 3, but further interact the  $Costs\ of\ Lending_{ist} * In-house\ Agent_{it}$  term with our *High Agent Fee Retention* measure. This triple interaction term estimates the incremental effect of retaining a high fraction of the lending revenue, among funds with conflicts that also employ an in-house lending agent. We report the results from this regression in Table 8.

The results in Table 8 are similar to those in Table 7. The coefficients on the interaction between lending costs and the marginal benefits of lending when using our *Active Owns* measure are insignificant in Columns (1) and (2) of Panel A and significantly negative when using our *Highest Active Weight* measure in Columns (3) and (4). The results in Columns

(3) and (4) show that the negative effects of internal lending costs are amplified when an in-house lending agent retains a larger fraction of the lending revenue. From Column (3), the negative effect of internal lending costs on lending propensity is 96 basis points (9.6%) more negative when the fund employs an in-house agent and splits an above-median share of the lending revenue with that agent. In Panel B, we examine the influence of funds' fee retention on the effect of external lending costs. Across the four columns, we find that funds' business relationships have a relatively more negative effect on funds' lending propensities when the funds share a greater fraction of their lending revenue with an in-house agent. The results in Panels A and B suggest that among the set of funds with strong incentives to lend — i.e., funds employing an in-house lending agent and sharing a large fraction of their lending revenue with that agent — funds with internal and external conflicts of interest exhibit a pronounced reluctance to lend.<sup>23</sup>

[Insert Table 8]

## 5. Aggregate securities lending market effects

Given the scale and importance of passive funds in equity markets (see, e.g., [Appel et al., 2016](#); [Crane, Michenaud, and Weston, 2016](#); [Cao, Gustafson, and Velthuis, 2019](#); [Azar, Duro, Kadach, and Ormazabal, 2021](#)), one natural question is whether the conflicts of interest these funds face have aggregate effects on the supply of securities on loan in the securities lending market.

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<sup>23</sup>In untabulated analyses, we also examine the cross-sectional effect of the securities lending fee on the impact of internal and external lending costs. We find inconclusive evidence on its effect.

We study these effects using data from IHS Markit on the daily number of shares on loan for a security and we exploit the fact that funds are only required to publicly disclose the shares they have on loan at the end of each fiscal quarter in the NPORT-P filings. For funds managing internal costs of lending, this disclosure is of little concern because a fund’s lending is likely already known within its family. This disclosure can, however, be costly for fund families managing external conflicts of interest; disclosing their funds’ lending may damage a family’s business relationships with the companies whose shares they lend. Fund families can manage these costs by calling back the shares of concern from the lending market before end of the fiscal quarter.

To examine the aggregate lending market effects of funds’ external costs of lending, we estimate security-day level regressions, where the dependent variable is the aggregate number of shares of the security on loan.<sup>24</sup> The independent variable of interest in these regressions is an indicator variable that is equal to one when it is the last five trading days of a fiscal quarter and a passive fund that reports that quarter has an ongoing business relationship with the portfolio company. We include security-by-year-by-month fixed effects, which limit our comparisons of the lending market outcomes of security  $s$  during the last five trading days to the lending market outcomes of the same security during an earlier period in the same calendar month. We report the results from these regressions in Table 9. In Columns (1) and (2), we use the full sample of trading days in each month. To address potential

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<sup>24</sup>Specifically, we use IHS’s *QuantityOnLoan* variable, rather than the *LendableQuantity* variable, because *QuantityOnLoan* reflects the number of shares that a fund is required to report in its NPORT-P filing. Importantly, IHS allows us to observe the shares on loan during the days before the NPORT-P filing.

concerns that lending may generally decline towards the end of each month, in Columns (3) and (4), we limit the sample to the last ten trading days of the month.

The results in Table 9 are consistent with external costs of lending constraining the aggregate number of shares on loan. The negative coefficients in each column indicate that for the companies with which a passive fund has a business relationship, the number of their shares on loan declines during the days leading up to when the fund must disclose its lending. From Column (3), the upcoming disclosure of a fund's lending of a company with which it has a business relationship reduces aggregate lending of the company's shares by 3.9% during the last five days of the month relative to the preceding five days.

[Insert Table 9]

These aggregate lending market results raise three important points. First, the results suggest that disclosure requirements create a dynamic component to the effect of fund families' conflicts. Second, the results suggest that firms can indirectly influence the supply of their stock that is available to short. Last, although we focus on the effects of conflicts on the securities lending market at quarter end, the total market effects of these conflicts are likely larger because of an ongoing reduction in lending by passive funds due to internal costs, the effects of which are more difficult to observe.

## 6. Conclusion

By examining passive funds' securities lending, we show that fund family interests conflict with fund shareholders' interests in ways that have important effects on passive funds'

decisions. Despite the income that securities lending generates for passive funds' shareholders, we find that passive funds are less likely to lend a security if doing so is costly for other funds in their families or for the families' business relationships. We further show that the negative impact that these costs have on lending is exacerbated when funds employ in-house lending agents and share a large fraction of the lending revenue with those agents, suggesting that the family lending restrictions are binding.

We use several approaches to help ensure that these results are not due to correlated omitted variables. First, we include fund-report date and security-report date fixed effects in our regression specifications, which limit the influence of general fund lending styles and differences in borrowing demand across securities, both as of each report date. Second, we show that funds increase their lending of a company's security immediately after their families stop providing pension services to the company. Third, we show that our results are similar when we (i) hold fixed investment allocations across funds by restricting our focus on funds tracking the most popular indexes, (ii) exclude the COVID-19 pandemic period, or (iii) separately exclude each of the "Big Three" fund families. Our evidence is most consistent with funds curtailing their lending activities in response to the pressure from their families to avoid the negative ramifications of facilitating short sales.

Although our focus is on the effect of fund family conflicts on passive funds' lending decisions, these conflicts likely also affect passive funds' other — less easily observable — decisions. As the popularity of passive funds continues to increase, so will the importance of passive funds' conflicts of interest for financial markets.

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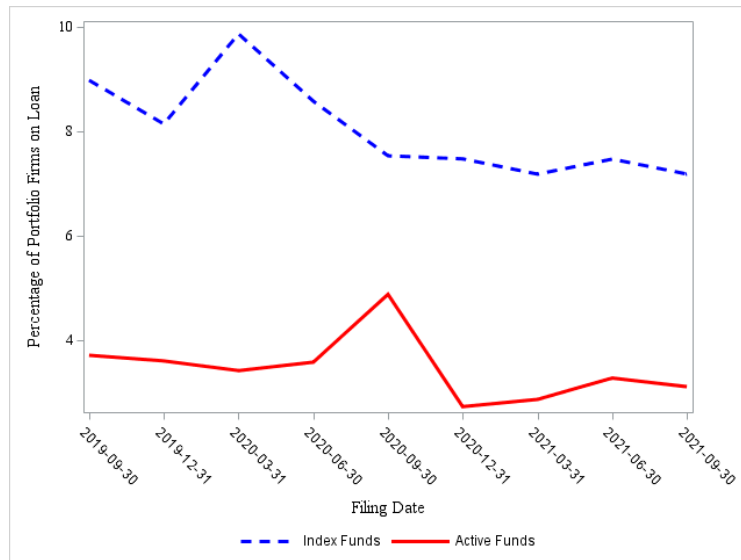
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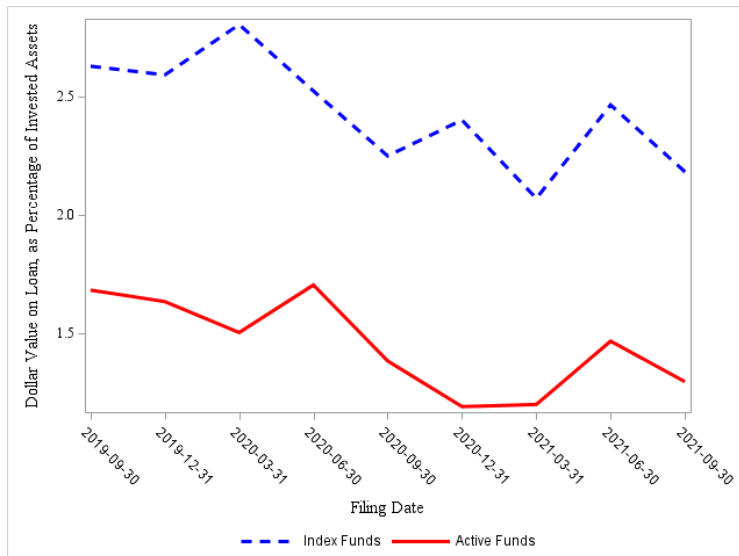
### Figure 1: Securities Lending Activity for Passive and Active Mutual Funds

The figure plots the relative share lending behavior for passively managed and actively managed mutual funds from late 2019 through late 2021. Panel A plots the average fraction of a fund's equity holdings that it lends out as of report date  $t$  (as marked on the  $x$ -axis). The dashed blue line plots the average for index funds; the solid red line plots the average for actively managed funds. Index funds are identified in CRSP as those with non-missing `index_fund_flag` equal to "B" or "D." All other funds are classified as actively managed funds. Panel B plots the average dollar value of shares that each fund lends out as of report date  $t$ , as a percentage of the fund's total invested assets as of the same period.

Panel A: Percentage of Securities on Loan



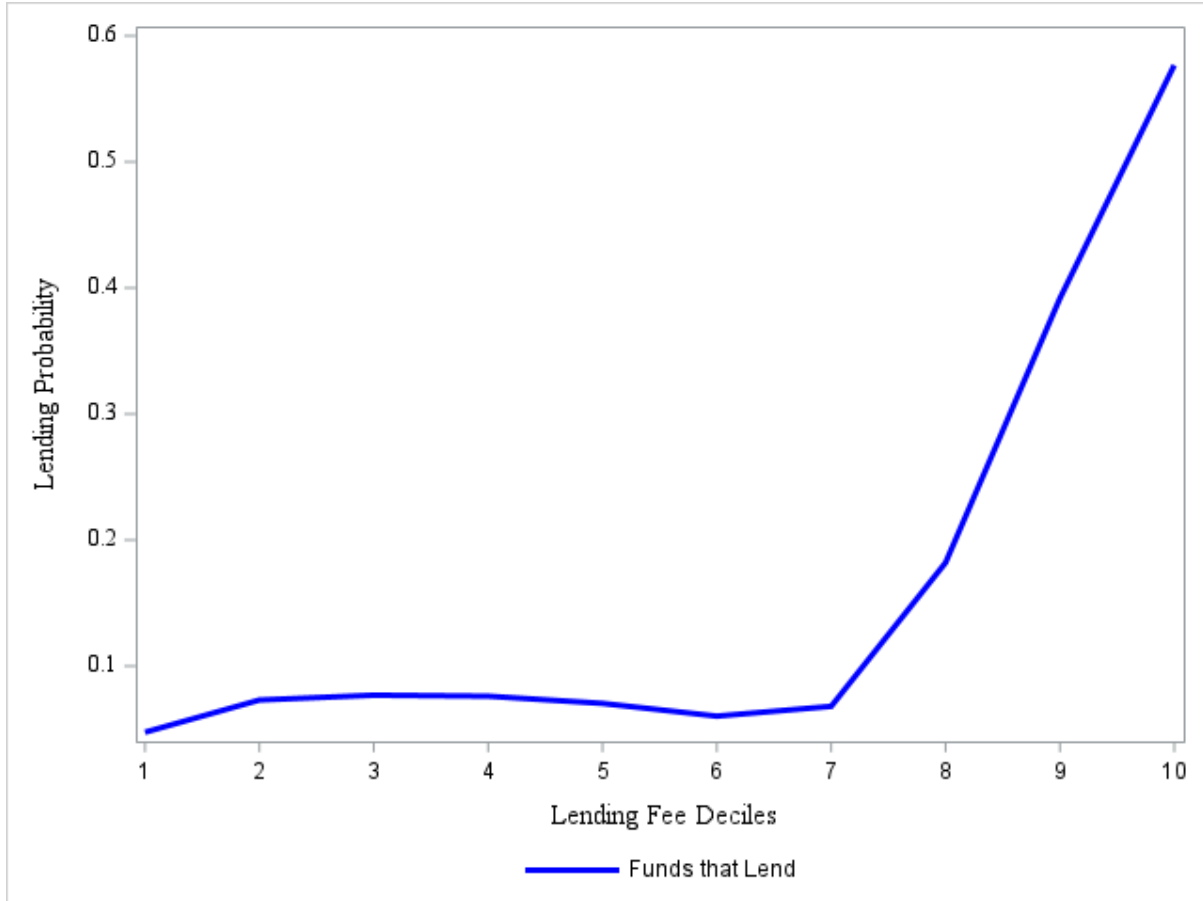
Panel B: Percentage Dollar Value on Loan





**Figure 2: Lending Probability as a Function of Lending Fees**

This figure plots the relation between a security's market-determined lending fee and the likelihood of the security being lent. Each point on the curve represents the average probability that an index fund lends out an equity security in its portfolio as of report date  $t$ , as a function of the decile rank of the security's lending fee (marked on the  $x$ -axis).



**Table 1: Summary Statistics on Funds and their Lending Activities**

This table reports summary statistics for our sample of passive funds, their holdings, securities lending fees, and lending outcomes. Panel A summarizes the size and lending propensities of our full sample of funds and funds tracking widely tracked indexes. Panels B and C describe characteristics of our full sample of funds and funds tracking widely tracked indexes, respectively. *Fund AUM* and *Fund Number of Securities* are presented on the fund-report date level. *Number of Funds Holding a Security* is presented on the security-report date level. *Lend*, *Lend Percent*, and *Market Value of Holding* are presented on the fund-security-report date level. *Conditional Lend Percent* and *Conditional Loan Value* are presented on the fund-security-report date level, conditional on the security being lent by the fund as of that report date. *Conditional Securities Lent* is presented on the fund-report date level, conditional on the fund lending at least one security as of that report date. *Fund Expenses*, *Average Amount on Loan*, *Average Proportion of AUM on Loan*, *Net Income from Lending*, *In-house Agent*, and *Agent Fee Retention* are presented on the fund-year level. Panel D presents summary statistics for each decile of fund-security-report date observations, ranked by securities' lending fees as of report date  $t$ . Variables are defined in Table C1 in Appendix C.

Panel A: Sample Size Summary Statistics

Variable	Full Sample	Widely Tracked Indexes
Number of Funds	587	59
Number of Fund Families	49	13
Fraction Lending $\geq 1$ Security as of Report Date $t$ (%)	86	95
Fraction Lending at Least Once (%)	96	100

Panel B: Descriptive Statistics — Full Sample

Variable	Mean	25 <sup>th</sup>	Median	75 <sup>th</sup>	SD	N
Fund AUM (\$B)	6.78	0.14	0.62	2.70	23.33	4,490
Fund Number of Securities	369.52	53.00	148.00	474.75	557.08	4,490
Number of Funds Holding a Security	14.92	4.00	11.00	22.00	13.09	111,223
Lend	0.10	0.00	0.00	0.00	0.30	1,659,142
Lend Percent (%)	5.70	0.00	0.00	0.00	20.87	1,659,142
Market Value of Holding (\$M)	14.43	0.20	1.02	5.44	48.72	1,659,142
Conditional Lend Percent	56.21	14.60	65.00	94.84	38.41	168,630
Conditional Loan Value (\$M)	2.12	0.07	0.31	1.39	5.33	168,630
Conditional Securities Lent (%)	10.43	2.09	5.13	13.33	13.24	3,855
Fund Expenses (\$M)	5.86	0.39	1.50	4.96	13.60	1,555
Average Amount on Loan (\$M)	85.48	1.27	6.87	28.64	286.65	1,572
Average Proportion of AUM on Loan	0.03	0.00	0.01	0.04	0.05	1,572
Net Income from Lending (\$M)	0.96	0.01	0.06	0.30	3.36	1,581
In-house Agent	0.40	0.00	0.00	1.00	0.49	1,581
Agent Fee Retention (%)	8.13	2.30	6.24	10.14	8.82	1,581

Panel C: Descriptive Statistics — Widely Tracked Indexes

Variable	Mean	25 <sup>th</sup>	Median	75 <sup>th</sup>	SD	N
Fund AUM (\$B)	48.39	0.81	3.86	18.77	152.47	456
Fund Number of Securities	952.25	405.75	477.00	1136.00	950.61	456
Number of Funds Holding a Security	5.12	1.00	4.00	8.00	3.87	84,731
Lend	0.13	0.00	0.00	0.00	0.34	434,228
Lend Percent (%)	6.01	0.00	0.00	0.00	20.75	434,228
Market Value of Holding (\$M)	29.72	0.25	1.55	9.13	113.65	434,228
Conditional Lend Percent (%)	45.82	7.19	37.52	90.00	38.27	57,064
Conditional Loan Value (\$M)	2.60	0.08	0.42	2.00	6.03	57,064
Conditional Securities Lent (%)	11.17	1.03	3.80	15.93	14.79	431
Fund Expenses (\$M)	17.50	0.69	2.21	15.97	32.73	160
Average Amount on Loan (\$M)	377.19	2.79	15.19	366.12	914.41	163
Average Pct AUM on Loan	0.02	0.00	0.01	0.03	0.03	163
Net Income from Lending (\$M)	5.99	0.05	0.35	2.80	22.16	163
In-house Agent	0.60	0.00	1.00	1.00	0.49	163
Agent Fee Retention	7.07	0.00	5.08	9.58	9.26	163

Panel D: Variation in Lending Percent by Lending Fees

Lending Fee Decile	Lending Fees	Lending Probability	Lending Fraction
1	0.26	0.047	0.017
2	0.28	0.073	0.030
3	0.29	0.077	0.034
4	0.29	0.076	0.035
5	0.30	0.070	0.033
6	0.31	0.060	0.028
7	0.33	0.068	0.036
8	0.48	0.182	0.114
9	1.73	0.392	0.273
10	19.17	0.578	0.437

**Table 2: Descriptive Statistics for key Explanatory Variables**

This table reports descriptive statistics for our main explanatory variables. Panel A describes our explanatory variables over the full sample. Panel B describes our explanatory variables for two subsamples: (1) conditional on the fund lending security  $s$  as of report date  $t$  and (2) conditional on the fund not lending security  $s$  as of report date  $t$ . Variables are defined in Table C1 in Appendix C.

## Panel A: Explanatory Variables, Full Sample

Variable	Mean	25 <sup>th</sup>	Median	75 <sup>th</sup>	SD	N
Active Lends	0.04	0.00	0.00	0.00	0.19	1,659,142
Active Owns	0.58	0.00	1.00	1.00	0.49	1,659,142
Highest Active Weight	0.01	0.00	0.00	0.00	0.03	1,659,142
Pension Provider	0.06	0.00	0.00	0.00	0.23	1,659,142
Pension Compensation (\$1000s)	35.27	0.00	0.00	0.00	495.82	1,659,142
Conditional Compensation (\$M)	0.60	0.01	0.08	0.41	1.96	97,250

## Panel B: Explanatory Variables, Split by Lending

Variable	Lend = 0						Lend = 1					
	Mean	25 <sup>th</sup>	Med	75 <sup>th</sup>	SD	N	Mean	25 <sup>th</sup>	Med	75 <sup>th</sup>	SD	N
Active Lends	0.02	0.00	0.00	0.00	0.15	1,490,512	0.18	0.00	0.00	0.00	0.38	168,630
Active Owns	0.60	0.00	1.00	1.00	0.49	1,490,512	0.46	0.00	0.00	1.00	0.50	168,630
Highest Active Weight	0.01	0.00	0.00	0.00	0.03	1,490,512	0.00	0.00	0.00	0.00	0.01	168,630
Pension Provider	0.06	0.00	0.00	0.00	0.24	1,490,512	0.04	0.00	0.00	0.00	0.20	168,630
Pension Compensation (\$1000s)	33.84	0.00	0.00	0.00	483.99	2,059,065	7.62	0.00	0.00	0.00	235.82	212,271
Conditional Compensation (\$M)	0.64	0.01	0.09	0.44	2.03	89,839	0.14	0.00	0.02	0.11	0.44	7,411

**Table 3: Internal Costs and Index Fund Lending**

This table reports results from OLS regressions examining the relation between the investment decisions of active funds in an index fund's fund family and the share lending decisions of the index fund. The dependent variable in Panel A, *Lend*, is an indicator variable equal to one when fund *i* lends out security *s* as of report date *t*. *Active Lends* is an indicator variable equal to one when an actively-managed fund in index fund *i*'s family lends security *s* as of report date *t*. *Active Owns* is an indicator variable equal to one when an actively-managed fund in index fund *i*'s family owns security *s* as of report date *t*. *Highest Active Weight* is the maximum portfolio weight invested in security *s* by an active fund in index fund *i*'s fund family, as of report date *t*. The dependent variable in Panel B, *Lend Percent*, is the percentage of index fund *i*'s holding in stock *s* that the fund has on loan as of report date *t*. The regressions in Panel B are restricted to fund-security-report date observations where fund *i* lends some non-zero amount of security *s*. Variables are defined in Table C1 in Appendix C. *t*-statistics are reported in parentheses and standard errors are clustered at the fund and security levels. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Loan Probability

	(1)	(2)	(3)	(4)	(5)	(6)
	Lend	Lend	Lend	Lend	Lend	Lend
Active Lends	0.173*** (12.16)			0.180*** (11.94)		
Active Owns		0.008** (2.27)			0.008*** (3.14)	
Highest Active Weight			-0.145*** (-5.19)			-0.150*** (-5.52)
Fund-Report Date FE	Yes	Yes	Yes	Yes	Yes	Yes
Security-Report Date FE	Yes	Yes	Yes	No	No	No
Security-Fund Obj.- Report Date FE	No	No	No	Yes	Yes	Yes
Adj. R-squared	0.433	0.424	0.424	0.446	0.436	0.436
Observations	1,659,142	1,659,142	1,659,142	1,590,082	1,590,082	1,590,082

Panel B: Loan Value

	(1)	(2)	(3)	(4)	(5)	(6)
	Lend Percent	Lend Percent	Lend Percent	Lend Percent	Lend Percent	Lend Percent
Active Lends	4.734*** (5.44)			4.642*** (7.27)		
Active Owns		-0.686 (-1.39)			-0.462 (-1.04)	
Highest Active Weight			-74.687*** (-4.39)			-69.926*** (-3.95)
Fund-Report Date FE	Yes	Yes	Yes	Yes	Yes	Yes
Security-Report Date FE	Yes	Yes	Yes	No	No	No
Security-Fund Obj.- Report Date FE	No	No	No	Yes	Yes	Yes
Adj. R-squared	0.491	0.490	0.490	0.507	0.506	0.506
Observations	161,305	161,305	161,305	122,729	122,729	122,729

**Table 4: External Costs and Index Fund Lending**

This table reports results from OLS regressions examining the relation between a fund family’s business relationship with a company and the fund family’s index funds’ share lending decisions with respect to that company. The dependent variable in Panel A, *Lend*, is an indicator variable equal to one when fund *i* lends out security *s* as of report date *t*. *Pension Provider* is an indicator variable equal to one when fund *i*’s family is a pension provider for a pension plan sponsored by the issuing company of security *s* held by the fund as of report date *t*. *Pension Compensation* is the natural log of one plus the annual compensation received by fund *i*’s family during year *t-1* for providing pension provision services to the issuing company of security *s* held by fund *i* as of report date *t*. The dependent variable in Panel B, *Lend Percent*, is the percentage of index fund *i*’s holding in stock *s* that the fund has on loan as of report date *t*. The regressions in Panel B are restricted to fund-security-report date observations where fund *i* lends some non-zero amount of security *s*. Variables are defined in Table C1 in Appendix C. *t*-statistics are reported in parentheses and standard errors are clustered at the fund and security levels. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

## Panel A: Loan Probability

	(1) Lend	(2) Lend	(3) Lend	(4) Lend
Pension Provider	-0.017*** (-4.53)		-0.017*** (-4.26)	
Pension Compensation		-0.002*** (-5.64)		-0.002*** (-5.41)
Fund-Report Date FE	Yes	Yes	Yes	Yes
Security-Report Date FE	Yes	Yes	No	No
Security-Fund Obj.- Report Date FE	No	No	Yes	Yes
Adj. R-squared	0.424	0.424	0.436	0.436
Observations	1,659,142	1,659,142	1,590,082	1,590,082

## Panel B: Loan Value

	(1) Lend Percent	(2) Lend Percent	(3) Lend Percent	(4) Lend Percent
Pension Provider	-1.330* (-1.78)		-0.542 (-0.50)	
Pension Compensation		-0.162** (-2.11)		-0.049 (-0.44)
Fund-Report Date FE	Yes	Yes	Yes	Yes
Security-Report Date FE	Yes	Yes	No	No
Security-Fund Obj.- Report Date FE	No	No	Yes	Yes
Adj. R-squared	0.490	0.490	0.506	0.506
Observations	161,305	161,305	122,729	122,729

**Table 5: External Costs of Lending — Business Relationship Changes**

This table reports results from OLS regressions examining the relation between changes in an index fund's external costs of lending and the fund's securities lending decisions. The regression sample is limited to fund-security pairs where the fund's family provides pension services to the issuer of the security and stops performing pension services for that company at some point during the sample period. The dependent variable in Columns 1–2, *Lend*, is an indicator variable equal to one when fund *i* lends out security *s* as of report date *t*. The dependent variable in Columns 3–4, *Lend Percent*, is the percentage of index fund *i*'s holding in stock *s* that the fund has on loan as of report date *t*. *Pension Provider* is an indicator variable equal to one when fund *i*'s family is a pension provider on a pension plan sponsored by the issuing company of security *s* held by the fund at report date *t*. *Pension Compensation* is the natural log of one plus the annual compensation received by fund *i*'s family during year *t-1* for providing pension provision services to the issuing company of security *s* held by fund *i* as of report date *t*. Variables are defined in Table C1 in Appendix C. *t*-statistics are reported in parentheses and standard errors are clustered at the fund and security levels. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	Lend	Lend	Lend Percent	Lend Percent
Pension Provider	-0.013*** (-2.79)		-1.044*** (-3.26)	
Pension Compensation		-0.001*** (-3.03)		-0.107*** (-3.68)
Lending Fee	0.014* (1.70)	0.014* (1.69)	1.824** (2.07)	1.811** (2.06)
Fund-Security FE	Yes	Yes	Yes	Yes
Fund-Report Date FE	Yes	Yes	Yes	Yes
Adj. R-squared	0.465	0.465	0.353	0.353
Observations	14,598	14,598	14,598	14,598

**Table 6: Costs of Lending and Index Fund Lending — Widely Tracked Indexes**

This table reports results from OLS regressions examining the relations between the internal (Panel A) and external (Panel B) costs of lending and the securities lending decisions of index funds. The dependent variable in Panels A and B, *Lend*, is an indicator variable equal to one when fund *i* lends out security *s* as of report date *t*. In Panel A, *Active Lends* is an indicator variable equal to one when an actively-managed fund in index fund *i*'s family lends security *s* as of report date *t*. *Active Owns* is an indicator variable equal to one when an actively-managed fund in index fund *i*'s family owns security *s* as report date *t*. *Highest Active Weight* is the maximum portfolio weight invested in security *s* by an active fund in index fund *i*'s fund family, as of report date *t*. In Panel B, *Pension Provider* is an indicator variable equal to one when fund *i*'s family is a pension provider on a pension plan sponsored by the issuing company of security *s* held by the fund as of report date *t*. *Pension Compensation* is the natural log of one plus the annual compensation received by fund *i*'s family during year *t-1* for providing pension provision services to the issuing company of security *s* held by fund *i* as of report date *t*. The sample of index funds is limited to those that track one of the following eight major indexes: Russell 1000, Russell 2000, Russell 3000, S&P 400, S&P 500, S&P 600, S&P 1500, and the total U.S. stock market. Variables are defined in Table C1 in Appendix C. *t*-statistics are reported in parentheses and standard errors are clustered at the fund and security levels. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

## Panel A: Internal Costs of Lending

	(1)	(2)	(3)	(4)	(5)	(6)
	Lend	Lend	Lend	Lend	Lend	Lend
Active Lends	0.266*** (37.97)			0.278*** (37.75)		
Active Owns		0.010*** (2.60)			0.012*** (2.94)	
Highest Active Weight			-0.196*** (-6.57)			-0.195*** (-6.06)
Fund-Report Date FE	Yes	Yes	Yes	Yes	Yes	Yes
Security-Report Date FE	Yes	Yes	Yes	No	No	No
Security-Fund Obj.- Report Date FE	No	No	No	Yes	Yes	Yes
Adj. R-squared	0.469	0.453	0.454	0.499	0.483	0.483
Observations	434,228	434,228	434,228	425,385	425,385	425,385

## Panel B: External Costs of Lending

	(1)	(2)	(3)	(4)
	Lend	Lend	Lend	Lend
Pension Provider	-0.048*** (-8.46)		-0.044*** (-7.49)	
Pension Compensation		-0.005*** (-10.82)		-0.005*** (-9.71)
Fund-Report Date FE	Yes	Yes	Yes	Yes
Security-Report Date FE	Yes	Yes	No	No
Security-Fund Obj.- Report Date FE	No	No	Yes	Yes
Adj. R-squared	0.454	0.454	0.483	0.484
Observations	434,228	434,228	425,385	425,385



**Table 7: Costs of Lending — Cross-sectional effect of In-house Lending Agents**

This table reports results from OLS regressions examining the relations between an index fund's internal and external costs of lending and the fund's securities lending decisions, moderated by whether the fund employs an in-house lending agent. The dependent variable, *Lend*, is an indicator variable equal to one when fund *i* lends out security *s* as of report date *t*. *Active Owns* is an indicator variable equal to one when an actively-managed fund in index fund *i*'s family owns security *s* as of report date *t*. *Highest Active Weight* is the maximum portfolio weight invested in security *s* by an active fund in index fund *i*'s fund family, as of report date *t*. *In-house Agent* is an indicator variable equal to one when fund *i* uses an affiliated securities lending agent, as disclosed in the fund's annual N-CEN filing. *Pension Provider* is an indicator variable equal to one when fund *i*'s family is a pension provider for a pension plan sponsored by the issuing company of security *s* held by the fund as of report date *t*. *Pension Compensation* is the natural log of one plus the annual compensation received by fund *i*'s family during year *t-1* for providing pension services to the issuing company of security *s* held by fund *i* as of report date *t*. Variables are defined in Table C1 in Appendix C. *t*-statistics are reported in parentheses and standard errors are clustered at the fund and security levels. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

## Panel A: Internal Costs of Lending

	(1) Lend	(2) Lend	(3) Lend	(4) Lend
Active Owns x In-house Agent	-0.006 (-0.83)	-0.007 (-0.94)		
Highest Active Weight x In-house Agent			-0.221*** (-2.69)	-0.274*** (-3.62)
Active Owns	0.010** (2.40)	0.011*** (3.09)		
Highest Active Weight			0.054 (0.78)	0.098 (1.47)
Fund-Report Date FE	Yes	Yes	Yes	Yes
Security-Report Date FE	Yes	No	Yes	No
Security-Fund Obj.-Report Date FE	No	Yes	No	Yes
Adj. R-squared	0.424	0.436	0.424	0.436
Observations	1,659,142	1,590,082	1,659,142	1,590,082

## Panel B: External Costs of Lending

	(1) Lend	(2) Lend	(3) Lend	(4) Lend
Pension Provider x In-house Agent	-0.032*** (-4.08)	-0.037*** (-5.69)		
Pension Compensation x In-house Pension Affiliation	0.006 (1.01)	0.010** (2.49)	-0.003*** (-3.39)	-0.003*** (-6.11)
Pension Compensation			0.000 (0.19)	0.001** (2.22)
Fund-Report Date FE	Yes	Yes	Yes	Yes
Security-Report Date FE	Yes	Yes	Yes	Yes
Security-Fund Obj.-Report Date FE	No	Yes	No	Yes
Adj. R-squared	0.424	0.436	0.424	0.436
Observations	1,659,142	1,590,082	1,659,142	1,590,082

**Table 8: Costs of Lending — Cross-sectional Effect of Lending Revenue Splits**

This table reports results from OLS regressions examining the relations between an index fund’s internal and external costs of lending and the fund’s securities lending decisions, moderated by whether the fund employs an in-house lending agent and how much of its lending revenue the fund shares with that agent. The dependent variable, *Lend*, is an indicator variable equal to one when fund *i* lends out security *s* as of report date *t*. *Active Owns* is an indicator variable equal to one when an actively-managed fund in index fund *i*’s family owns security *s* as of report date *t*. *Highest Active Weight* is the maximum portfolio weight invested in security *s* by an active fund in index fund *i*’s fund family, as of report date *t*. *In-house Agent* is an indicator variable equal to one when fund *i* uses an affiliated securities lending agent, as disclosed in the fund’s annual N-CEN filing. *High Agent Fee Retention* is an indicator variable equal to one when the fraction of fund *i*’s annual gross lending revenue retained by fund *i*’s lending agent is above the sample median. Lending revenue information is collected from funds’ Statement of Additional Information filings. *Pension Provider* is an indicator variable equal to one when fund *i*’s family is a pension provider for a pension plan sponsored by the issuing company of security *s* held by the fund as of report date *t*. *Pension Compensation* is the natural log of one plus the annual compensation received by fund *i*’s family during year *t-1* for providing pension services to the issuing company of security *s* held by fund *i* as of report date *t*. Variables are defined in Table C1 in Appendix C. *t*-statistics are reported in parentheses and standard errors are clustered at the fund and security levels. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Internal Costs of Lending

	(1) Lend	(2) Lend	(3) Lend	(4) Lend
Active Owns x	0.011	-0.002		
In-house Agent x High Agent Fee Retention	(0.67)	(-0.10)		
Highest Active Weight x In-house Agent x High Agent Fee Retention			-0.318*** (-2.98)	-0.308*** (-2.62)
Active Owns x	-0.009	-0.005		
In-house Agent	(-0.91)	(-0.50)		
Highest Active Weight x In-house Agent			0.009 (0.17)	-0.041 (-0.80)
Other Interactions	Yes	Yes	Yes	Yes
Fund-Report Date FE	Yes	Yes	Yes	Yes
Security-Report Date FE	Yes	No	Yes	No
Security-Fund Obj.-Report Date FE	No	Yes	No	Yes
Adj. R-squared	0.424	0.436	0.424	0.436
Observations	1,659,142	1,590,082	1,659,142	1,590,082

Panel B: External Costs of Lending

	(1) Lend	(2) Lend	(3) Lend	(4) Lend
Pension Provider x	-0.049***	-0.054***		
In-house Agent x High Agent Fee Retention	(-4.30)	(-4.73)		
Pension Compensation x In-house Agent x High Agent Fee Retention			-0.004*** (-4.18)	-0.004*** (-4.44)
Pension Provider x	-0.014*	-0.020***		
In-house Agent	(-1.90)	(-3.79)		
Pension Compensation x In-house Agent			-0.001 (-1.63)	-0.002*** (-4.33)
Other Interactions	Yes	Yes	Yes	Yes
Fund-Report Date FE	Yes	Yes	Yes	Yes
Security-Report Date FE	Yes	Yes	Yes	Yes
Security-Fund Obj.-Report Date FE	No	Yes	No	Yes
Adj. R-squared	0.424	0.437	0.424	0.437
Observations	1,659,142	1,590,082	1,659,142	1,590,082

**Table 9:**

**Securities Lending Market Consequences of Passive Fund Conflicts of Interest**

This table reports results from OLS regressions examining the relation between fund families' business relationships with portfolio companies and aggregate daily lending supply for those companies' securities. The dependent variable in Columns (1) and (3) is the natural log of one plus the raw number of shares on loan for security  $s$  on trading day  $t$ . The dependent variable in Columns (2) and (4) is the raw number of shares on loan for security  $s$  on trading day  $t$ . *Pension Provider* is an indicator variable equal to one during the last five trading days of a month for security  $s$  if security  $s$  is held by an index fund whose family provides pension services to the issuer of security  $s$ . The regression sample in Columns (1) and (2) includes the full sample of daily stock-day lending information from IHS Markit from September 2019 through November 2021. The regression sample in Columns (3) and (4) is limited to daily stock-day lending information for the last ten trading days of each calendar month. Variables are defined in Table C1 in Appendix C.  $t$ -statistics are reported in parentheses and standard errors are clustered at the security and year-month levels. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

	Full Sample		Last 10 days of Month	
	(1) Ln(Quantity on Loan)	(2) Quantity on Loan	(3) Ln(Quantity on Loan)	(4) Quantity on Loan
Pension Provider	-0.022** (-2.64)	-70391.710** (-2.46)	-0.039*** (-5.06)	-98737.371** (-2.37)
Security-Year Month FE	Yes	Yes	Yes	Yes
Adj. R-squared	0.966	0.987	0.977	0.993
Observations	2,826,056	2,826,056	1,306,876	1,306,876

## A. NPORT-P Exhibits

Figure A1: Example NPORT-P Filing, Fidelity Contrafund's holding of Visa Inc (03/31/2021)

<b>NPORT-P: Part A: General Information</b>	
<b>Item A.1. Information about the Registrant.</b>	
a. Name of Registrant	Fidelity Contrafund
b. Investment Company Act file number for Registrant: (e.g., 811-_____)	811-01400
c. CIK number of Registrant	0000024238
d. LEI of Registrant	S5Y3O6VQ0TG5C3WLJP73
<b>e. Address and telephone number of Registrant.</b>	
Street Address 1	245 Summer Street
Street Address 2	
City	Boston
State, if applicable	MASSACHUSETTS
Foreign country, if applicable	UNITED STATES OF AMERICA
Zip / Postal Code	02210
Telephone number	1-800-FIDELITY
<b>Item A.2. Information about the Series.</b>	
a. Name of Series.	Fidelity Contrafund
b. EDGAR series identifier (if any).	S000006037
c. LEI of Series.	J1376UEGMQ5TDKUOM103
<b>Item A.3. Reporting period.</b>	
a. Date of fiscal year-end.	2021-12-31
b. Date as of which information is reported.	2021-03-31
<b>Item A.4. Final filing</b>	
Does the Fund anticipate that this will be its final filing on Form N PORT?	<input type="radio"/> Yes <input checked="" type="radio"/> No

## NPORT-P: Part C: Schedule of Portfolio Investments

For each investment held by the Fund and its consolidated subsidiaries, disclose the information requested in Part C. A Fund may re securities in Part C, provided that the securities so listed are not restricted, have been held for not more than one year prior to the e in any registration statement, application, or report to shareholders or otherwise made available to the public.

### Item C.1. Identification of investment.

a. Name of issuer (if any).	VISA INC
b. LEI (if any) of issuer. In the case of a holding in a fund that is a series of a series trust, report the LEI of the series.	549300JZ4OKEHW3DPJ59
c. Title of the issue or description of the investment.	VISA INC CLA
d. CUSIP (if any).	92826C839

At least one of the following other identifiers:

Identifier.	ISIN
ISIN	US92826C8394

### Item C.2. Amount of each investment.

Balance. Indicate whether amount is expressed in number of shares, principal amount, or other units. For derivatives contracts, as e

Balance	13497141.00000000
Units	Number of shares
Description of other units.	
Currency. Indicate the currency in which the investment is denominated.	United States Dollar
Value. Report values in U.S. dollars. If currency of investment is not denominated in U.S. dollars, provide the exchange rate used to calculate value.	2857749663.93000000
Exchange rate.	
Percentage value compared to net assets of the Fund.	2.167917848011

### Item C.3. Indicate payoff profile among the following categories (long, short, N/A). For derivatives, respond N/A to this Item

Payoff profile.	<input checked="" type="radio"/> Long <input type="radio"/> Short <input type="radio"/> N/A
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**Item C.10. For repurchase and reverse repurchase agreements, also provide:**

a. Select the category that reflects the transaction (repurchase, reverse repurchase). Select "repurchase agreement" if the Fund is the cash lender and receives collateral. Select "reverse repurchase agreement" if the Fund is the cash borrower and posts collateral.

Repurchase  Reverse repurchase

b. Counterparty.

i. Cleared by central counterparty? [Y/N] If Y, provide the name of the central counterparty.

Yes  No

ii. If N, provide the name and LEI (if any) of counterparty.

c. Tri-party?

Yes  No

d. Repurchase rate.

e. Maturity date.

f. Provide the following information concerning the securities subject to the repurchase agreement.

**Item C.11. For derivatives, also provide:**

**Item C.12. Securities lending.**

a. Does any amount of this investment represent reinvestment of cash collateral received for loaned securities?

Yes  No

b. Does any portion of this investment represent that is treated as a Fund asset and received for loaned securities?

Yes  No

c. Is any portion of this investment on loan by the Fund?

Yes  No

If Yes, provide the value of the securities on loan.

189307793.00000000

## B. Collection of Fee Retention Information

We begin our programmatic collection of funds’ gross lending revenue and fee retention information by downloading all filings on SEC EDGAR (e.g., Forms N-1A, N-3, and N-CSR) that mention the phrase “gross income from securities lending activities.” About 53% of these filings use Form 485 BPOS or Form 485 APOS, 45% use Form 497 - Definitive Materials, and 2% use other forms, including Form N-CSR.<sup>25</sup> Next, we extract, from each filing, the table(s) containing the securities lending income data and the fiscal period to which they belong. We exclude filings where these data are not presented in a tabular format or where the tables do not have quantitative lending income data. A manual check of several of these filings suggests that the filings do not contain securities lending data.<sup>26</sup>

Given the multiple forms and filings, there is considerable heterogeneity in how funds report their securities lending income information. For instance, some funds report the lending income data for each of their series in separate tables scattered throughout the filings (see an [example](#)). Other funds report the lending income data for multiple series in a single table, but the table is transposed (see an [example](#)). There is also considerable variation in the number of rows and columns and their spans and widths, the presence of fund identifying information (series names, series class tickers, or none), the location of the reporting period (table-header, footer, or a separate row/column), the field labels used to identify securities lending line items (e.g., “*Fees paid to securities lending agent from a revenue split*” versus “*Securities lending income paid to BIM for services as securities lending agent*”), among other variations. We iteratively adapt our program to extract the necessary information from these diverse filing formats and convert it into a standardized format where each row represents a unique fund-report date observation, and the columns represent the fields “gross lending income” and “lending agent’s fee.” We then compute *Agent Fee Retention*, our variable of interest, as the ratio of “lending agent’s fee” and “gross lending income,” expressed in percentage terms.

Finally, we merge these cleaned data with our NPORT-P data using the *series.id* identifiers obtained from the metadata available on the index pages of the filings and the SEC’s Series and Class Report files. As noted in the paper, we are left with a final sample of 1,659,142 fund-security-report date observations that have non-missing lending fee retention data. Through manual verification of these data, we verify that our programmatic approach has an estimated accuracy of over 90%. That is, in at least 90% of the cases where a filing contains tabulated securities lending income data, we correctly identify, extract, and clean the gross lending and lending fee retention information.

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<sup>25</sup>Forms N-1A and N-3 are offering registration statements filed by investment companies. Forms 485 BPOS and APOS are used to file amendments to registration statements pursuant to paragraphs (b) and (a), respectively, of Rule 485 under the Securities Act of 1933 (<https://www.sec.gov/rules/final/33-7448.txt>). Form 497 is the prospectus for investment companies that file form N-1A. Form N-CSR is used by investment companies to file their annual report. See <https://help.edgar-online.com/edgar/formtypes.asp> and [https://www.intelligize.com/wp-content/uploads/2017/09/intelligize\\_sec\\_forms\\_guide.pdf](https://www.intelligize.com/wp-content/uploads/2017/09/intelligize_sec_forms_guide.pdf) for more details.

<sup>26</sup>See an example [here](#).

## C. Variable Definitions

Table C1: Variable Definitions

Variable Name	Variable Definition
Active Owns	An indicator variable equal to one when at least one actively managed fund in index fund $i$ 's family owns security $s$ as of report date $t$ .
Active Lends	An indicator variable equal to one when at least one actively managed fund in index fund $i$ 's family lends security $s$ as of report date $t$ .
Average Amount on Loan (\$M)	Average daily value of shares on loan throughout the most recent fiscal year ending prior to report date $t$ , collected from annual N-CEN filings.
Average Proportion of AUM on Loan	Average daily value of shares loaned by fund $i$ throughout the most recent fiscal year ending prior to report date $t$ , scaled by the fund's total assets under management as of report date $t$ .
Conditional Lend Percent (%)	The ratio of the value of shares lent by fund $i$ of security $s$ , and the total value of fund $i$ 's investment in security $s$ as of report date $t$ , conditional on fund $i$ lending a non-zero amount of that security at time $t$ .
Conditional Loan Value (\$M)	The value of shares lent by fund $i$ of security $s$ as of report date $t$ , conditional on the fund lending a non-zero amount of that security at time $t$ .
Conditional Securities Lent (%)	The ratio of the number of securities fund $i$ lends out and the number of securities fund $i$ invests in as of report date $t$ , conditional on the fund lending out at least one security during the reporting period ending on date $t$ .
Fraction Lending at Least Once (%)	The percentage of funds in our sample that lend at least one equity security in their portfolio throughout our sample period.
Fraction Lending $\geq 1$ Security as of Report Date $t$ (%)	The percentage of funds in our sample that lend at least one equity security as of report date $t$ .
Fund AUM (\$B)	A fund's total assets under management reported as of report date $t$ in quarterly NPORT-P filings.
Fund Expenses (\$M)	An estimate of the dollar value of a fund's annual expenses, computed as its expense ratio (from CRSP) times the dollar value of assets under management as of report date $t$ .
Fund Number of Securities	The number of equity securities held by the fund as of report date $t$ , as collected from quarterly NPORT-P filings.
High Agent Fee Retention	An indicator variable equal to one when the fraction of a fund's annual gross lending revenue retained by the fund's lending agent is greater than the sample median (0.065). We collect a fund's gross lending revenue and the amount of lending revenue retained by the lending agent from annual Statement of Additional Information filings.
Highest Active Weight	The maximum portfolio weight invested in security $s$ by an active fund in index fund $i$ 's family, as of report date $t$ .

Continued on next page



**Table C1 – continued from previous page**

<b>Variable Name</b>	<b>Variable Definition</b>
In-house Agent	An indicator variable equal to one when fund $i$ uses at least one lending agent that is affiliated with the management company of the fund as of report date $t$ . We collect lending agent affiliation information from annual N-CEN filings.
Lend	An indicator variable equal to one when the index fund lends nonzero shares of portfolio security $s$ as of report date $t$ .
Lending Fee	Security $s$ 's daily lending fee, as of report date $t$ , collected from IHS Markit.
Lending Fee Decile	The decile rank of security $s$ based on its daily lending fee as of report date $t$ . The deciles are re-formed at each report date.
Lend Percent (%)	The ratio of the value of shares lent by fund $i$ of security $s$ as of report date $t$ , and the total value of fund $i$ 's investment in security $s$ as of report date $t$ .
Loan Value (\$M)	The value of shares lent by fund $i$ of security $s$ as of report date $t$ .
Market Value of Holding (\$M)	Price times the quantity of shares held by fund $i$ in security $s$ as of report date $t$ .
Net Income from Lending (\$M)	The total dollar value of income earned by a fund from lending securities (in millions) throughout the most recent fiscal year ending prior to an NPORT-P filing. Net income values are collected from annual N-CEN filings.
Number of Funds Holding a Security	The number of unique funds holding security $s$ as of report date $t$ .
Pension Provider	An indicator variable equal to one when fund $i$ 's family is a pension provider for a pension plan sponsored by the issuing company of security $s$ held by the fund as of report date $t$ .
Pension Compensation	The natural log of one plus the annual compensation received by fund $i$ 's family during year $t-1$ for providing pension services to the issuing company of security $s$ held by fund $i$ as of report date $t$ .
Quantity on Loan	The <i>QuantityonLoan</i> variable from IHS Markit, which IHS defines as the total quantity of stock on loan, net of double counting.

## D. Additional Results

**Table D1: External Costs of Lending — Pension Provider Sub-sample**

This table reports results from OLS regressions examining the relation between a fund family’s business relationship with a company and the decision by the index funds in that family to lend the securities of that company. The dependent variable, *Lend*, is an indicator variable equal to one when fund *i* lends out security *s* as of report date *t*. *Pension Compensation* is the natural log of one plus the sum of annual compensation received by fund *i*’s family during year *t-1* for providing pension provision services to the issuing company of security *s* held by fund *i* as of report date *t*. The regressions are restricted to fund-security-report date observations where fund *i* provides pension services to the issuer of security *s* (i.e., *Pension Provider* = 1). Variables are defined in Table C1 in Appendix C. *t*-statistics are reported in parentheses and standard errors are clustered at the fund and security levels. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

	(1) Lend	(2) Lend
Pension Compensation	−0.002* (−1.69)	−0.002** (−2.01)
Fund-Report Date FE	Yes	Yes
Security-Report Date FE	Yes	Yes
Security-Fund Obj.- Report Date FE	No	Yes
Adj. R-squared	0.503	0.493
Observations	95,883	80,412

**Table D2: Costs of Lending — Pre-COVID period sub-sample**

This table reports results from OLS regressions examining the relation between an index fund's internal/external costs of lending and the fund's share lending decisions. The dependent variable in Panels A and B, *Lend*, is an indicator variable equal to one when fund *i* lends out security *s* as of report date *t*. In Panel A, *Active Lends* is an indicator variable equal to one when an actively-managed fund in index fund *i*'s family lends security *s* as of report date *t*. *Active Owns* is an indicator variable equal to one when an actively-managed fund in index fund *i*'s family owns security *s* as report date *t*. *Highest Active Weight* is the maximum portfolio weight invested in security *s* by an active fund in index fund *i*'s fund family, as of report date *t*. In Panel B, *Pension Provider* is an indicator variable equal to one when fund *i*'s family is a pension provider on a pension plan sponsored by the issuing company of security *s* held by the fund as of report date *t*. *Pension Compensation* is the natural log of one plus the annual compensation received by fund *i*'s family during year *t-1* for providing pension provision services to the issuing company of security *s* held by fund *i* as of report date *t*. The regression sample in Panels A and B is limited to the pre-COVID period, ending February 28, 2020. Variables are defined in Table C1 in Appendix C. *t*-statistics are reported in parentheses and standard errors are clustered at the fund and security levels. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

## Panel A: Internal Costs

	(1) Lend	(2) Lend	(3) Lend
Active Lends	0.284*** (22.06)		
Active Owns		0.024*** (3.80)	
Highest Active Weight			-0.375*** (-3.44)
Fund-Report Date FE	Yes	Yes	Yes
Security-Report Date FE	Yes	Yes	Yes
Adj. R-squared	0.514	0.500	0.500
Observations	77,589	77,589	77,589

## Panel B: External Costs

	(1) Lend	(2) Lend
Pension Provider	-0.064*** (-7.10)	
Pension Compensation		-0.006*** (-8.53)
Fund-Report Date FE	Yes	Yes
Security-Report Date FE	Yes	Yes
Adj. R-squared	0.501	0.501
Observations	77,589	77,589

**Table D3: Costs of Lending — Driven by the “Big Three?”**

This table reports results from OLS regressions examining the relation between an index fund’s internal/external costs of lending and the fund’s share lending decisions. The dependent variable in Panels A and B, *Lend*, is an indicator variable equal to one when fund *i* lends out security *s* as of report date *t*. In Panel A, *Highest Active Weight* is the maximum portfolio weight invested in security *s* by an active fund in index fund *i*’s fund family, as of report date *t*. The sample in Column 1 of Panels A and B excludes the Vanguard Group, the sample in Column 2 excludes BlackRock, and the sample in Column 3 excludes State Street. In Panel B, *Pension Provider* is an indicator variable equal to one when fund *i*’s family is a pension provider on a pension plan sponsored by the issuing company of security *s* held by the fund as of report date *t*. Variables are defined in Table C1 in Appendix C. *t*-statistics are reported in parentheses and standard errors are clustered at the fund and security levels. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively.

## Panel A: Internal Costs

	Ex-Vanguard	Ex-BlackRock	Ex-State Street
	(1)	(2)	(3)
	Lend	Lend	Lend
Highest Active Weight	−0.432*** (−7.57)	−0.204*** (−10.66)	−0.196*** (−6.57)
Fund-Report Date FE	Yes	Yes	Yes
Security-Report Date FE	Yes	Yes	Yes
Adj. R-squared	0.500	0.466	0.454
Observations	279,942	303,473	434,228

## Panel B: External Costs

	Ex-Vanguard	Ex-BlackRock	Ex-State Street
	(1)	(2)	(3)
	Lend	Lend	Lend
Pension Provider	−0.044*** (−7.73)	−0.013*** (−2.72)	−0.048*** (−8.46)
Fund-Report Date FE	Yes	Yes	Yes
Security-Report Date FE	Yes	Yes	Yes
Adj. R-squared	0.501	0.465	0.454
Observations	279,942	303,473	434,228