Do Political Anti-ESG Sanctions Have Any Economic Substance?
The Case of Texas Law Mandating Divestment from ESG Asset Management Companies

Shivaram Rajgopal
Roy Bernard Kester and T.W. Byrnes Professor of Accounting and Auditing
Columbia Business School, Columbia University
sr3269@columbia.edu

Anup Srivastava
Canada Research Chair
Haskayne School of Business, University of Calgary
anup.srivastava@ucalgary.ca

Rong Zhao
Associate Professor
Haskayne School of Business, University of Calgary
rozhao@ucalgary.ca

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Abstract

We use the setting of a new Texas law to investigate the economic substance behind the current, heightened political debate around environmental, social, and governance (ESG) issues. In September 2021, the Texas legislature directed its state agencies to divest from investment companies that allegedly promote ESG causes and "boycott" energy stocks. On August 24, 2022, the Texas comptroller announced the specific list of banned funds. Among them, we examine those that invest in U.S. equities and compare their characteristics against a control sample of size-matched mutual funds that also invest in U.S. equites. We find that banned funds carry titles suggesting an ESG focus. However, (i) banned funds are largely indexers with a tilt slightly away from energy stocks, even though their energy exposure is nonzero and economically significant; (ii) the three Texas public pension plans, for which we can find data, do not walk the politicians' talk, in that they do not invest higher amounts in the energy sector than do the banned funds; and (iii) the impact of the Texan ban on the fortunes of BlackRock, the only American fund manager in the sanctioned list, is neither statistically nor economically significant. We conclude that the Texan law is unlikely to make a meaningful difference to state pension funds' energy exposure and risk-return characteristics or to ESG funds' fortunes and investing strategy. Thus, the legislation appears to be political posturing and may serve no other purpose.

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1. Introduction

In this paper, we investigate three research questions (RQs): (i) Do environmental, social, and governance (ESG) funds, banned by Texas politicians for being hostile to fossil fuels, "boycott" the energy sector? (ii) Do Texas retirement funds themselves invest mainly in the energy sector? (iii) Did the ban hurt the stock price of BlackRock, the only American asset manager prohibited from doing further business by the Texan legislation?

Issues related to ESG have generated heated debate in the United States. A stark contrast exists between the stated preferences of politicians in the so-called blue states (Democrats) and those in red states (Republicans) on ESG matters. Democrats support new regulations requiring additional ESG disclosures and curbing firms' polluting activities, whereas Republicans oppose such regulation. Whether this important debate between the two political parties is simply empty rhetoric or whether it reflects substantive economic differences remains unclear. We shed light on the issue by examining the recent backlash against ESG investing by the red states.

Red states, led by West Virginia and Texas, either have passed laws or are considering bills to ban their state agencies from conducting business with financial firms that prioritize ESG investing. West Virginia has barred five major financial institutions from its state banking contracts because they advocate boycotting fossil fuel companies. Texas requires its state pension funds to divest any actively or passively managed investment fund that boycotts energy companies. Similarly, Florida approved a resolution to bar the state's pension fund from considering ESG factors when making investment decisions. That resolution proposes to divest $2 billion in investment under management by BlackRock due to its putative use of ESG standards.[1] A common claim made by red state politicians, represented by a Kansas state attorney general statement, is that by engaging in ESG investing, financial institutions such as BlackRock "use the hard-earned money of our states' citizens to circumvent the best possible return on investment."[2]

A question arises as to whether red states' push against ESG investing is a carefully thought-out economic decision, meant to serve the financial interests of those states' investment beneficiaries, or is simply political posturing. For example, professional investment advisers warned the Kansas Public Employees Retirement System's board of trustees that banning financial institutions such as BlackRock or Mellon could diminish the state pension system's bottom line.[3] A recent study, Garrett and Ivanov (2022), that uses the setting of another 2021 Texas prohibition, which bars municipalities from contracting with banks that restrict funding to oil and gas or firearms companies, shows that the prohibition led to the exit of five of the largest municipal bond underwriters from Texas. The reduction in the choice of underwriters imposed adverse consequences for Texas municipalities in terms of higher borrowing costs and could hurt the taxpayers in the state.[4] No study, however, examines our question on whether the Texan ban on ESG funds increases the state's energy exposure while hurting the banned funds so much that they would change their ESG investing strategy.

Prior studies find mixed results on the social and economic implications of political actions. Teoh, Welch, and Wazzan (1999) investigate the financial effects of a South African boycott by

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[1] See https://www.reuters.com/business/finance/florida-pulls-2-bln-blackrock-largest-anti-esg-divestment-2022-12-01/.
[2] See https://www.texasattorneygeneral.gov/sites/default/files/images/executive-management/BlackRock%20Letter.pdf and https://kansasreflector.com/2022/11/22/kansas-pension-investment-advisers-caution-against-aggressive-legislative-rebuttal-to-esg-activists/.
[3] See https://kansasreflector.com/2022/11/22/kansas-pension-investment-advisers-caution-against-aggressive-legislative-rebuttal-to-esg-activists/.
[4] These five banks are Bank of America, Citigroup, Fidelity Capital Markets, Goldman Sachs, and JP Morgan Chase.

anti-apartheid shareholders in the 1980s. In that setting, U.S. pension funds applied economic pressure by divesting investments of firms that operated in South Africa. Teoh et al. (1999) show that this U.S. shareholder pressure had no discernible effect on the valuation of banks and corporations with South African operations. Berk and van Binsbergen (2021) demonstrate that the impact on the cost of capital, because of investors' divestitures of firms, targeted for their social or environmental costs, is too small to meaningfully affect real investment decisions. Eccles, Rajgopal, and Xie (2022) do not find any evidence suggesting that the so-called sin stocks suffer from a higher cost of capital, after controlling for fundamental variables known to affect cash flows.

Other studies, meanwhile, show real effects of ESG-based investing (Barber 2007; Dyck et al. 2019; Gantchev, Giannetti, and Li 2022). Friede, Busch, and Bassen (2015) conduct a meta-analysis of more than 2,000 studies and conclude that a majority of them find a positive association between ESG objectives and corporate performance. Barber (2007) documents an increase in shareholder wealth resulting from the high-profile activism of California Public Employees' Retirement System (CalPERS) in the 1980s and 1990s.[5] The author cautions that when institutions engage in activism, they must consider the preferences and values of underlying investors and not just their own, a factor that also ostensibly underlies the recent red states' sanctions against ESG-based investing.

While record amounts of investors' money have been flowing into funds committed to ESG causes, studies have questioned whether these funds' public commitments translate into portfolio allocation that tilts toward stakeholder-friendly firms. For example, Gibson et al. (2022), Kim and Yoon (2021) and Liang, Sun, and Teo (2022) examine funds that made public commitments to the

[5] During that time, CalPERS had published an annual "Focus List" of companies to put pressure on them to improve their corporate governance practices and financial performance.

United Nations Principles for Responsible Investment (PRI). These studies find that those PRI-acclaimed funds attract greater investor flows and can harvest higher fund management fee revenues but, at least in the U.S. context, do not follow through on their commitments to make investments in companies with an ESG focus. Similarly, Raghunandan and Rajgopal (2022) document that portfolio firms of self-labeled ESG mutual funds do not outperform non-ESG funds' portfolio firms along the social (labor or consumer protection) and environmental dimensions, suggesting that asset managers of ESG funds do not necessarily walk the talk. Collectively, these studies suggest "greenwashing," by at least some asset managers who rebrand investment funds as ESG for opportunistic reasons. Our study of Texas' anti-ESG sanctions complements prior studies focused on the funds' side of the narrative, by analyzing the investors' side of the question. We examine whether investors or politicians who claim to change their investments in an anti-ESG manner, really walk their talk.

We identify the list of investment funds that are subject to the divestment provisions announced by the Texas comptroller's office on August 24, 2022.[6] Texas is the only state that provides a detailed list of banned investment funds. The other states that have implemented, or plan to implement, sanctions do not provide such lists. We make three assumptions in our analysis: (i) Texas is a representative of, and arguably a bellwether for, red states initiating anti-ESG actions; (ii) the Texan ban is a representative setting to document the economic substance of the sanctions; and (iii) ESG funds banned by the Texan legislation constitute a representative sample of funds that are likely to be sanctioned by other states as well.

From the 348 ESG funds banned by Texas, we shortlist 79 funds that invest in domestic (U.S.) equities and have data on their equity holdings in the Center for Research in Security Prices

[6] Available at https://comptroller.texas.gov/about/media-center/news/20220824-texas-comptroller-glenn-hegar-announces-list-of-financial-companies-that-boycott-energy-companies-1661267815099.

(CRSP) Survivor-Bias-Free Mutual Fund Database.[7] This filter is required to trace firms that are included in portfolios of the banned funds in the Compustat database so that we can determine investee firms' industries and other characteristics. We match each banned fund to ten size-matched funds that were not banned and invest in domestic equities. We label such matched funds as the control sample.

We examine three research questions related to our thesis. Our first question is: Do banned funds boycott the energy sector, as claimed in the Texan legislation? Not surprisingly, the banned funds' names contain words that suggest an ESG focus, such as "sustainable" or "sustainability" (22.8%), "ESG" (27.8%), "climate," "biodiversity," "fossil," "social," and "carbon." Our analysis shows that, at least on the surface, the banned list is consistent with the intention of the September 2021 Texas proclamation to stop doing business with funds promoting ESG causes.

We analyze the top holdings of the banned funds and compare them against the holdings of the control sample. We first look at the holdings of the control sample to determine what the investments of a normal, non-ESG-focused fund look like. Their rank-ordered, top 20 holdings are Microsoft, Apple, Alphabet (Google), Amazon, Tesla, UnitedHealth, Nvidia, Visa, Johnson & Johnson, JPMorgan Chase, Lilly Eli, Mastercard, Facebook (now Meta), Berkshire Hathaway, ExxonMobil, Danaher, Bank of America, Thermo Fisher Scientific, Adobe Systems, and Broadcom. Notably, except the fossil fuel giant ExxonMobil at the 15th spot, there is no energy stock. Thus, even if a control fund, which does not proclaim any ESG leaning, were to become a banned ESG fund, it would not change any of its top holdings, except perhaps selling just one

[7] We require the CRSP level 1 investment objective to be labeled as "equity" and the level 2 investment objective to be labeled as "domestic." See https://www.crsp.org/products/documentation/crsp-style-code-0 for an explanation of the mutual fund investment objectives in CRSP. In all, 67% of banned funds that are matched to the CRSP Survivor-Bias-Free Mutual Fund Database have the level 1 objective label of "equity." Among the "equity" funds, 56% have the level 2 objective label of "domestic."

stock. Consistent with this observation, the correlation between the weighted-average percentage holdings of the banned and control funds is remarkably high at 84%.

We then examine whether sectoral allocations differ between banned and control funds. We find that banned funds invest less in energy, financials, and utilities sectors relative to control funds. Underweighting in energy allocations is offset by larger investments in the information technology sector. It is noteworthy that banned funds allocate 3.51% (not 0%) of their assets to the energy sector. In fact, 61.4% of energy sector securities held by control funds are also held by the banned funds. These results do not support the claims in the Texan ban alleging that ESG funds boycott energy funds or are "working to directly undermine our state's economic health." Supplementary analysis using the Cremers and Petajisto (2009) methodology shows that the banned funds, labeled as ESG funds, are largely indexers. Two-thirds of banned funds for which we could obtain data, and are quasi-indexers, most closely track indices such as S&P 500 Growth, S&P SmallCap 600, S&P 500 Value, Russell 3000, S&P 500, Russell Top 200 Growth, and Russell 2000 Value.

Our second research question is: Do Texas retirement funds invest mainly in the energy sector? The answer would shed light on whether politicians' actions reflect their words, consistent with the putative interest of Texas beneficiaries. We could obtain pre-ban data on holdings of three large Texas public pension plans: Texas Permanent School Fund, Employees Retirement System of Texas, and Teacher Retirement System of Texas. We find that they invest even less in the energy sector (between 1.88% and 3.05% of total portfolio value) than do the banned funds. Interpreted another way, the three retirements funds' exposure to energy would go up, not down, if they increase their investments in the banned funds. Notably, ExxonMobil, an iconic oil and gas company, headquartered in Texas, does not appear in the top 50 holdings of those three Texas pension funds. Moreover, the largest investment from these funds is in the information technology sector. Such a large allocation does not demonstrate that investment in this sector is contrary to Texas's interest. In addition, these three public pension funds invested just 2.13% of their total portfolio in the sanctioned investment companies and their associated funds, implying that shedding banned funds, and shifting to control funds, is unlikely to change in any economically meaningful manner their overall energy exposure.

Our third question is: Does the boycott make any difference to the fortunes of banned fund management companies? The answer would indicate whether banned investment managers would be hurt enough to alter their ESG focus, to prevent further retaliation. We first evaluate whether the ban changed the risk and return characteristics of the banned funds, which we examine relative to the changes for the control funds over the same period. Figure 1 shows that the risk and return characteristics of the two types of funds are indistinguishable from each other, both before and after the ban (27 trading days before and 27 trading days after the announcement date of the banned list on August 24, 2022). Regression analysis shows that alphas from a Carhart (1997) four-factor model are not significantly different between banned and control funds in the before period. Changes in alpha from the pre- to post-period, using a difference-in-difference test, are also not significant. This, combined with the findings of the first research question, raises doubt about whether Texas beneficiaries would gain anything by shifting from banned funds to control funds, either in terms of risk-return trade-off or energy exposure.

The Texan ban may serve as a warning for other ESG funds if it imposes significant damage to the prospects of BlackRock, such as resulting in mass withdrawals from its funds, at an extreme. Investors in BlackRock would consider such a possibility, and the informational value of the Texan ban should become apparent in the stock returns on the ban announcement date. We calculate

BlackRock's average daily stock market return in the three-day window surrounding the Texas ban announcement. It is not significantly different from the average returns of the financials sector.[8] BlackRock's assets under management (AUM) declined during fiscal year 2022, but that could be related to a general decline in stock market indices during the year. Contrary to the idea of massive fund withdrawals, BlackRock reported a net inflow of funds during 2022. It remained the world's largest fund manager by AUM at the end of the year.

In sum, our results indicate that the Texas ban on ESG funds, and replacing the amounts invested in banned funds by control funds, would not increase in any economically meaningful manner the sectoral allocation of Texas retirement funds toward the energy sector. No evidence exists that the fortunes of banned funds themselves were materially affected by the Texan legislation. Our results suggest that the Texan act is potentially nothing more than political rhetoric, arguably to generate press headlines and excite the Republican voter base. Our results also demonstrate that, at least in this case, political posture has little impact on ESG causes. Such politicizing may mislead those who could mistakenly believe that such a political posture has significant economic impact. Our study complements prior studies, which examine the funds' side of the story (e.g., Rajgopal and Raghunandan 2022), by examining the validity and substance of the self-proclaimed anti-ESG investors.

2. 2022 Texas Sanction Background

The Texas legislature added Chapter 809, entitled "Prohibition on Investment in Companies That Boycott Certain Energy Companies," to the Government Code. The new chapter requires a Texan "state governmental entity" (Employees Retirement System of Texas and the

[8] The stock returns for BlackRock on August 23, 24, and 25, 2022 were 0.28%, 0.49%, and 1.45%, respectively. Returns for a benchmark index, XLF, an exchange-traded fund [Financials Select Sector SPDR (Standard & Poor's depositary receipt)], for the same three days were -0.41%, 0.53%, and 1.55%, respectively. Returns of S&P 500 financials from Yahoo! Finance were -0.38%, 0.52%, 1.52% for the same three days.

Retirement Systems administered by Teacher Retirement System of Texas, the Texas Municipal Retirement System, the Texas County and District Retirement System, the Texas Emergency Services Retirement System, and the Permanent School Fund) to divest any actively or passively managed investment fund that "boycotts" energy companies. The term "boycott," as defined in the law, means "refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations with a company because a) the company invests in or assists in the exploration, production, utilization, transportation, sale, or manufacturing of fossil fuel-based energy; and b) does business with a company as described in the first criterion." The act was passed on June 14, 2021 and became effective on September 2, 2021.

On August 24, 2022, Texas comptroller Glenn Hegar announced a "list of financial companies that boycott energy companies."[9] The list, it was claimed, was assembled following an exhaustive period of research and process development. Hegar said that "the environmental, social and corporate governance (ESG) movement has produced an opaque and perverse system in which some financial companies no longer make decisions in the best interest of their shareholders or their clients, but instead use their financial clout to push a social and political agenda shrouded in secrecy." He said that "our review focused on the boycott of energy companies, rather than a review of the entire ESG movement," and that "this list represents our initial effort to shine a light on entities that are engaging in these practices and create some clarity for Texans whose tax dollars may be working to directly undermine our state's economic health."

As a result, ten asset management companies were banned for obtaining investments from Texas government retirement funds (BlackRock, BNP Paribas SA, Credit Suisse Group AG,

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[9] See https://comptroller.texas.gov/about/media-center/news/20220824-texas-comptroller-glenn-hegar-announces-list-of-financial-companies-that-boycott-energy-companies-1661267815099.

Danske Bank A/S, Jupiter Fund Management, Nordea Bank, Schroders PLC, Svenska Handelsbanken, Swedbank AB, and the UBS Group AG). BlackRock is the only U.S.-based asset manager on the list. The others are European.

The focus on BlackRock arguably stems from Chief Executive Officer Larry Fink's attempt to portray BlackRock as an advocate of ESG goals.[10] Responding to the Texas act, BlackRock Inc. reiterated its commitment to investing in the energy industry, rebutting allegations that BlackRock boycotts fossil fuel companies. In its defense, BlackRock argued that it oversees $310 billion of investments in energy firms worldwide, including more than $115 billion in Texan companies.[11] Despite these representations, BlackRock was retained in the banned list. In addition, following the Texas act, Republican governors in Arkansas, Louisiana, South Carolina, and Utah proposed or enacted similar provisions to boycott BlackRock.

Nevertheless, an empirical question remains as to whether the banned funds engage in the "boycott of energy companies," as claimed in the Texas act, and whether the sanction creates "clarity for Texans whose tax dollars may be working to directly undermine our state's economic health." We formulate three research questions to examine the claims made in the Texan proclamation, which is arguably important because it was adopted in similar spirit by many other Red states. The answers would shed light on whether a shift toward non-ESG-focused funds would increase Texas' investments in the energy sector, whether banned funds would reduce their ESG focus to prevent further retaliation, and whether politicians internally implement policies that support their public stance on ESG matters.

[10] See https://www.blackrock.com/corporate/investor-relations/larry-fink-ceo-letter.
[11] See https://www.bnnbloomberg.ca/blackrock-tells-texas-it-supports-investments-in-oil-and-gas-1.1768144.

3. Sample Selection

We begin by identifying the list of mutual funds that are subject to the divestment provisions outlined in Texas Government Code Chapter 809, as announced by the Texas comptroller's office on August 24, 2022.[12] The comptroller's office started with 19 financial companies that are ranked higher than their peer group with respect to MSCI ESG Ratings, made public pledges to Climate Action 100, and are a part of the Net Zero Banking Alliance or the Net Zero Asset Managers Initiative. The comptroller then sent inquiries to these financial companies asking for their stance on climate risk and boycotting energy companies. The comptroller also acquired information on whether these companies deal with U.S.-based funds [e.g., mutual funds, exchange-traded funds (ETFs), other investment company or public security funds] that prohibit or negatively screen oil and gas investments. Financial companies that offered fewer than ten such negative-screen funds to U.S. investors were ignored. The remaining ten companies were chosen to be in the Annex I list. More important, the comptroller's office reviewed information (including publicly available information such as funds' prospectus and holdings as well as direct communications from fund managers about funds' investment policies) to identify 348 U.S.-based funds that appeared to adopt a negative screen for investing in energy companies, which were called the Annex II list. These funds constitute the starting point of our sample selection.

Table 1 presents our sample selection procedure. We obtain data on mutual funds from the CRSP Survivor-Bias-Free Mutual Fund Database. Out of the 348 funds in the Texas Annex II list, we identified two funds (BNY Mellon Sustainable U.S. Equity Fund and BNY Mellon Sustainable U.S. Equity Portfolio, Inc.) that share the same tickers and two funds that are duplicates (BlackRock US Impact Fund and BlackRock U.S. Impact Fund). We combine these under one

[12] Available at https://comptroller.texas.gov/about/media-center/news/20220824-texas-comptroller-glenn-hegar-announces-list-of-financial-companies-that-boycott-energy-companies-1661267815099.

common name. We then match, by ticker, 340 funds included in the CRSP fund summary data (for 725 unique CRSP fund numbers). We remove two funds (Domini Sustainable Solutions Fund and Green Century MSCI International Index Fund) for which the latest effective date for fund summary data is before 2022 (that is, 2005 and 2018, respectively), implying absence of recent data. This data cleaning step results in 338 funds (for 719 unique CRSP fund numbers). Panel A of Table 1 describes how we obtain funds' investment objectives and further restrict the sample to 127 of these funds (for 237 unique CRSP fund numbers) with investment objectives labeled as "domestic equity" funds in CRSP. We impose this filter to be able to obtain data on investee companies from Compustat, which has more detailed information on domestic companies than on foreign companies.

Most funds have multiple classes of shares (each share class has a unique ticker and CRSP fund number) that typically differ in the fee structure and target clientele but not in portfolio holdings (Doshi, Elkamhi, and Simutin, 2015). For example, BlackRock U.S. Impact Fund has three share classes (institutional class shares with ticker BIBFX, class K shares with ticker BUKMX, and Investor A class shares with ticker BUAMX), all of which are associated with the same CRSP portfolio identifier. Therefore, for analyses on portfolio holdings, we identify 127 domestic equity funds with the 127 unique CRSP portfolio numbers (Panel B of table 1). We obtain the latest available portfolio holdings data (as of June 30, 2022) for these funds and retain 79 funds that have CRSP permanent stock issue identifier (PERMNO) for securities holdings. PERMNOs are required to merge information with major machine-readable databases (such as Compustat and CRSP) to obtain data on a firm's industry classification based on the Global Industry Classification Standard (GICS) and market value of equity. We focus our analyses on these 79 domestic equity funds, which are listed in Table 2 along with the names of management companies associated with these funds.

Next, we match these banned funds with other CRSP funds to construct a control sample. We require that control funds are not included on the Texas Annex II list and have a self-labeled investment objective of buying domestic (U.S.) equities. For data purposes, we require them to have (i) the latest effective date for fund summary data in 2022; (ii) have PERMNOs for the latest securities holdings that can be matched to Compustat firm data and (iii) have the latest month-end total net assets data in 2022. Each banned fund is matched (without replacement) to the ten closest CRSP funds, by total net assets. For funds with multiple share classes, we aggregate the total net assets before matching.

Table 3 presents the characteristics of banned funds and CRSP control funds. Panel A shows that, on average, the mean (median) total net asset value of banned funds on June 30, 2022 is $1,137 million ($119 million) compared with the mean (median) value of $1,136 million ($119 million) for control funds. This reflects near perfect matching on fund size. Untabulated results show that the top three banned funds with the highest total net assets (aggregated across multiple share classes) on June 30, 2022 are Parnassus Core Equity Fund ($25.1 billion), Vanguard FTSE Social Index Fund ($7.2 billion), and Parnassus Mid Cap Fund ($6.6 billion). On average, banned funds hold 268 securities and control funds hold 257 securities. Further inspection shows that two banned funds (BlackRock Sustainable U.S. Growth Equity Fund and BlackRock Sustainable U.S. Value Equity Fund) report total net assets of $0.1 million and the minimum total net assets in the CRSP potential match sample is $0.2 million. After excluding these two small funds, the mean percentage difference in total net assets between banned and control funds is about 4%.

Panel B of Table 3 shows that, among banned funds, 58.2% contain ESG-related keywords ("ESG," "sustainab," "social," "climate," "fossil," "biodiversity," and "carbon") in their names, where "ESG" and "sustainable" or "sustainability" account for most of these cases with 27.8% for "ESG" and 22.8% for "sustainab."[13] In contrast, only 3.8% of control funds contain any of these keywords in their names. This provides preliminary evidence that the Texas act correctly targeted funds whose ostensible purpose is ESG investing.

4. Empirical Results

We present results of empirical tests to examine our three research questions.

4.1 Fund Holdings

We compare the banned funds with the CRSP control funds to examine our first research question: Do banned funds boycott the energy sector?

We identify the set of equity securities held by two types of funds (banned and control) based on the funds' most recent portfolio holdings (with period-of-report after 2021 but before or on the cutoff date of June 30, 2022). We retrieve the percentage of a fund's total net assets invested in each security (*PERCENT_TNA*). If a security has multiple PERMNOs (multiple classes of stocks), the percentage holding is aggregated across the PERMNOs. We then calculate each security's weighted-average percentage of total net assets for the two types of funds, labeled *%TNA_VW_TX* and *%TNA_VW_CRSP*, respectively.[14] For this purpose, each fund's size is measured as the month-end total net assets aggregated across share classes for each fund.

Table 4 presents the top 50 holdings of banned funds (Panel A) and control funds (Panel B). The lists show that the top, ranked holdings of both types of funds are household names such

[13] We ignore character case during the text search.

[14] For funds that do not hold that security in their portfolios, *PERCENT_TNA* to set to zero.

as Microsoft, Apple, Alphabet, Amazon, Tesla, and Mastercard. For example, the top security in both cases is Microsoft. Banned funds invest 5.75% of their total net assets in Microsoft, on average, and control funds invest 3.21%. More important, a substantial overlap exists between individual equity securities held by banned funds and control funds. Correlation analysis (Panel C) shows that the Pearson (Spearman) correlation between *%TNA_VW_TX* and *%TNA_VW_CRSP* is 82.3% (83.6%), which is statistically significant at the 1% level. Both *%TNA_VW_TX* and *%TNA_VW_CRSP* are also highly correlated with the security's market value of equity (on June 30, 2022) with Pearson correlations of 80.0% and 95.6%, respectively.

We assess whether banned funds are simply passive indexers or whether they actively veer the holdings toward ESG causes. We do so by calculating the proportion of a banned fund's holdings that differs from a passive index. We test this idea following Cremers and Petajisto (2009), who define a fund's "active share" as the fraction of the portfolio that is different from a benchmark index. In their method, positive deviations (having greater weight in a stock than an index) and negative deviations (having lesser weight in a stock than an index) are treated equally. There are numerous benchmark indices, such as S&P 500 and Russell 2000, just to name a couple. So, this method identifies the closest index for a given fund, among all indices, which gives the lowest active share, and calls it that fund's benchmark index. By construction, such a benchmark index's holdings have the greatest overlap with the given fund's holdings (Cremers and Petajisto 2009; Cremers, Fulkerson, and Riley 2022). Active share is calculated with respect to that benchmark index.

We obtain the active share data as of December 2021 for 33 of the 79 banned funds for which we could find the data.[15] Table 4, Panel D, tabulates the distribution of these 33 funds across

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[15] We search for the active share data provided by Professor Martijn Cremers at https://activeshare.info/#/ (accessed in February 2023) and find data for 33 funds.

the identified indices along with their average of active shares of the matched banned funds. Those 33 finds have an average active share of 58% across 16 indexes.[16] Fifteen of these 33 would be considered "closet indexers" with an active share below 60% [the cutoff proposed by Cremers and Petajisto (2009)].[17] Of those 15, five have overlaps with indices that would indicate ESG focus: two with FTSE4Good U.S. Benchmark Index and three with MSCI KLD 400 Social Index. The other ten closely track commonly identified indices such as S&P 500 Growth, S&P SmallCap 600, S&P 500 Value, Russell 3000, S&P 500, Russell Top 200 Growth, and Russell 2000 Value. Thus, at least based on the available data, almost half of banned funds seem to be indexers and, surprisingly, two-thirds of those are most similar to indices that have nothing to do with ESG focus.

We compare sectoral allocations of banned funds versus control funds. For each fund, we aggregate its percentage of total net assets invested in equity securities by two-digit GICS. We assign investee companies to one of the 11 industry sectors: communication services, consumer discretionary, consumer staples, energy, financials, health care, industrials, information technology, materials, real estate, and utilities.

Table 5, Panel A, compares the mean and median values of funds' asset allocation by sector for the two types of funds. Mean (median) comparisons show that banned funds invest a lower percentage of net assets in the energy, financials, materials, and utilities (energy and utilities) sectors compared with the control funds. For example, banned funds invest 3.51% of their total net assets in the energy sector, significantly lower than 7.14% for the control funds. In stark contrast, banned funds invest significantly more in the information technology sector. The median

[16] If a fund has an active share of 58%, then 42% of the fund's holdings are identical to the holdings of the index.
[17] Cremers et al. (2016) find that closet indexing (a practice in which so-called active funds are largely passively managed) is common, with about 15% of the mutual fund assets in the U.S. being managed by closet indexers.

fund in the banned and control samples invests 27.15% and 18.05%, respectively, of its total net assets in the information technology sector, with a difference of 9.10%. Thus, the data do not establish that the banned funds boycott the energy sector, as alleged in the Texas legislation. The data also do not suggest that banned funds invest in sectors that are detrimental to Texan interests (unless the information technology sector can be said to oppose fossil fuels).

We repeat the mean and median comparisons after excluding the investments in the energy sector (Table 5, Panel B). For each fund, we recalculate the percentage holdings in each sector after removing the aggregate holdings in the energy sector. Both mean and median comparisons show that banned funds still invest significantly more in the information technology sector and significantly less in the utilities sector compared with the control funds. Mean, but not median, comparisons show that banned funds still invest less in materials and financials.

Finally, we identify the overlap among individual equity securities held by both the banned funds and the control funds. We tabulate the percentage of securities held by the control funds that are also held by the banned funds.[18] Panel C of Table 5 presents the frequency distributions by sector and compares the frequency in the energy sector with each of the remaining ten sectors. Results show that 61.4% of securities in the energy sector, held by the control funds, are also held by the banned funds. For example, DWS ESG Core Equity Fund invested 2.64% of its total net assets in ExxonMobil (ranked as top 5 out of 89 holdings for DWS ESG Core Equity Fund) for the reporting period ending June 30, 2022. Untabulated results show that the frequency of finding firms in the energy sector is not significantly different from the frequency of finding firms in the materials sector (60.3%) based on pairwise Chi-square test of equal frequencies (Chi-square value of 0.059).

[18] Among securities held by the banned funds, only 23 do not appear in the universe of securities held by the control funds.

This analysis, combined with results in Table 4, shows no convincing evidence that the banned funds boycott the energy sector. Most of them are index funds or closet indexers, albeit with a little less exposure to energy and a little more exposure to information technology stocks. These findings raise the question of whether replacing banned funds by control funds would dramatically change the flow of capital toward fossil fuels. At an extreme, these findings cast doubt on three assertions in the Texas controller's statements: (i) these funds use "their financial clout to push a social and political agenda shrouded in secrecy," (ii) "our review focused on the boycott of energy companies," and (iii) the aim was to "create some clarity for Texans whose tax dollars may be working to directly undermine our state's economic health."

4.2 Fund Performance

We examine our second research question: Does the boycott make any difference to the fortunes of banned funds?

We compare the relative performance of the banned and control funds before and after August 24, 2022, when banned firms were announced by the Texas comptroller's office. We obtain each fund's daily returns per share from the CRSP Survivor-Bias-Free Mutual Fund Database, which calculates daily returns as the change in fund's net asset value, including reinvested dividends. We calculate the weighted-average daily returns for banned funds and for control funds separately, with each fund's latest month-end total net assets (on June 30, 2022) used as the weight.

Figure 1 plots the weighted-average daily returns over a 54-trading day window starting from July 18, 2022 (trading day -27) and ending on September 30, 2022 (trading day +26 and the last available date for fund returns as of the writing of this study). The returns patterns for the banned funds are virtually indistinguishable from those of the control funds either before or after the Texas announcement (pairwise comparison *t*-statistic of 0.99 in the pre-announcement window and 0.66 in the post-period).

We also conduct a regression analysis to compare the return performance of banned and control funds. Table 6 presents results from a Carhart (1997) four-factor model, in which daily fund returns (at the share class level), in excess of the risk-free rate, are regressed on the market excess returns (*MKTRF*) and returns on three factor-mimicking portfolios for size (*SMB*), book-to-market (*HML*), and momentum (*UMD*). Daily *MKTRF*, *SMB*, *HML*, *UMD*, and risk-free rate are extracted from Wharton Research Data Services. We estimate the four-factor model in the pre- and post-periods and for banned and control funds separately and then compare the alphas across the banned and control funds.[19] Results show that the banned funds' alpha is not significantly different from the control funds' alpha in the pre-announcement period. Banned funds have a lower alpha in the post-period, but the change in their alpha from the pre- to the post-period is not significantly different from that of the control funds.

These results show that the boycott makes no difference to the performance of the banned funds and that replacing banned funds by control funds would not significantly change the risk-return characteristics of Texas retirement funds.

4.3 Impact on Banned Financial Companies

We more directly examine whether the Texas ban affects the fortunes of financial companies on the Annex I list. The Texan ban may serve as a warning for other ESG funds if it imposes significant damage to the prospects of BlackRock, such as causing mass withdrawals, at

[19] To compare alpha, we create two indicator variables, *TX* (equals one if the fund is a banned fund) and *POST* (equals one for the post-announcement period). We then estimate a fully interactive model (including all two-way and three-way interactions with *TX* and *POST*) using a combined sample of pre- and post-period, banned and control funds.

an extreme. Investors in BlackRock would consider such a possibility. The informational value of the Texan ban should become apparent in the stock returns on the Texas announcement date. To test this idea, we extract daily returns for BlackRock (ticker: BLK) and the S&P 500 Financials sector from Yahoo! Finance and plot them over a 54-trading day window starting on July 18, 2022 and ending on September 30, 2022, as shown in Figure 2. A paired t-test (two-sided) shows an average daily return of -0.14%. We calculate average daily return in the three-day window (-1, 0, +1) surrounding the Texas ban announcement for BlackRock. The average of 0.74% for BlackRock and 0.55% for the S&P 500 Financials sector (a difference of 0.19%, t-statistic = 0.81) shows that BlackRock returns are not significantly different from the financials sector returns in the three-day window.

We also examine whether the Texas ban caused any large funds withdrawal problem for BlackRock. Its assets under management declined from $10.04 trillion to $8.59 trillion during the fiscal year ending December 31, 2022, a decline of 14.4%. However, this could reflect a general decline in stock prices and strengthening of the U.S. dollar.[20] Contrary to the idea of large withdrawals, BlackRock's net fund flows were positive during the year, at $393 billion.

Overall, the impact of this ban on the investments of Texas public plans on BlackRock's stock price and on the stocks held by the banned funds does not appear to be substantial. In addition, it is not clear whether Texas retirement funds have fully divested BlackRock's investments.[21]

[20] The Dow Jones Industrial Average declined from 36,338.30 to 33,147.25, which is about 9%. The Nasdaq Composite declined from 15,741.56 to 10,466.48, which is about 34%.

[21] See the Bloomberg news item dated February 22, 2023: "BlackRock's $4 Billion of Texas Assets Undercuts State's Divestment Vows," available at https://www.bloomberg.com/news/articles/2023-02-22/blackrock-s-4-billion-of-texas-assets-undercuts-divestment-vows#xj4y7vzkg.

4.4. Materiality of Banned Funds' Holdings by Texas State Funds

Our third research question is: Do the Texas retirement funds themselves invest largely in the energy sector, as professed by Texas politicians? We examine this question by investigating the holdings of Texas public plans. We identify three Texas state funds covered by Thomson Reuters Institutional (13F) Holdings database: Texas Permanent School Fund, Employees Retirement System of Texas, and Teacher Retirement System of Texas.[22] We obtain the most recent available data (with report date of December 31, 2021) on their holdings. For each holding, we calculate the dollar value (shares held at end of quarter × end of quarter price) and the percentage of each fund's total dollar value covered by the holding. We then match the individual holdings with CRSP and Compustat data.

Table 7, Panel A, shows that these three funds invested 2.20%, 3.05% and 1.88% of their total portfolio values in the energy sector, respectively. These proportions are remarkably lower, or no different, relative to the average of 3.51% energy holdings by the banned funds (see Table 5, Panel A).[23] Similar to banned funds, these Texan pension funds invested the most in the information technology sector (28.52%, 27.46%, and 28.13%). Thus, at least based on these sector allocations, it does not appear that investments in information technology sector, or that sector itself, undermine Texas' economic health. On the contrary, Texas has created favorable conditions for technology companies, such as Caterpillar, Hewlett Packard, Oracle, and Tesla, to relocate their headquarters to Texas.[24]

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[22] The remaining three state funds (Texas County and District Retirement System, Texas Municipal Retirement System, and Texas Emergency Services Retirement System) are not covered by Thomson Reuters. They do not have 13F filings on the U.S. Securities and Exchange Commission Electronic Data Gathering, Analysis, and Retrieval (EDGAR) database as of the date of the Texas announcement.

[23] The total percentages do not add up to 100 as each fund has investments that are not common stocks that we can match to CRSP and Compustat data.

[24] See https://www.investopedia.com/why-silicon-valley-companies-are-moving-to-texas-5092782.

Panel B of Table 7 presents the top 50 holdings across these funds based on the weighted-average percentage holdings. Four of the top five, ranked holdings are technology giants, Apple, Microsoft, Amazon and Alphabet, and the remaining top holdings consist of primarily large companies, many of which overlap with the top holdings of banned and control funds. Notably, ExxonMobil is not among the top 50 holdings. At least this analysis provides no evidence that Texas retirements funds primarily invest in energy or that they consider investments in information technology to be harmful to their interests.

In addition, we examine the materiality of pension funds' holdings in either the banned asset management companies (on the Texas Annex I list) or the banned funds themselves (on the Annex II list). We find that among companies on the Annex I list, only BlackRock's common stock appears on the list of holdings. While these pension funds do not hold any banned funds on the Annex II list, they hold several iShares ETF, gold and silver trusts marketed by BlackRock, which we include in this analysis. Panel C shows the dollar value and the percentages of each fund's portfolio value that are invested in BlackRock common stock and BlackRock funds. All together, these funds invested \$43 million in BlackRock common stock and \$512 million in BlackRock funds, summing up to a total value of \$555 million. This accounts for just 2.13% of their total portfolio value, which is approximately \$26 billion, across the three funds.[25] Stated differently, the newly imposed ban could make no material difference to the exposure of Texas retirement funds toward banned ESG funds or toward the energy sector.

[25] Most of the investments (except those in iShares Core S&P 500 ETF by the Teacher Retirement System of Texas) account for less than 0.5% of the fund's portfolio. Thus, the weighted-average percentage of the total portfolio value that is invested in BlackRock is only 0.34%.

5. Conclusion

Politicians in Texas claim that the ban on ESG-heavy asset management firms would penalize companies that potentially harm the state's interest by boycotting the energy sector. We find little economic substance behind such claims or the reasoning for their ban. Banned funds are largely indexers with portfolio tilts toward information technology and away from energy stocks. Importantly, banned funds carry significant stakes in energy stocks and hold 61% of the energy stocks held by the control sample of funds. The risk and return characteristics of banned funds are indistinguishable from those of control funds. A shift from banned funds to control funds is unlikely to result in a large shift of retirement investments toward the energy sector. The Texas ban, and similar follow-up actions by Republican governors and senior officials, appear to lack significant economic substance. Perhaps the ban is merely political rhetoric meant to generate news headlines and to appeal to a voter base that does not believe in ESG causes.

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Figure 1
Weighted-Average Daily Returns: Banned Funds and Control Funds
(Renders well only in color)

This figure plots the weighted-average daily returns for banned funds and control funds, with each fund's latest month-end total net assets on June 30, 2022 used as the weight. The returns window spans 54 trading days starting on July 18, 2022 (trading day -27) and ending on September 30, 2022 (trading day +26), with the blue vertical line indicating trading day 0 or August 24, 2022.

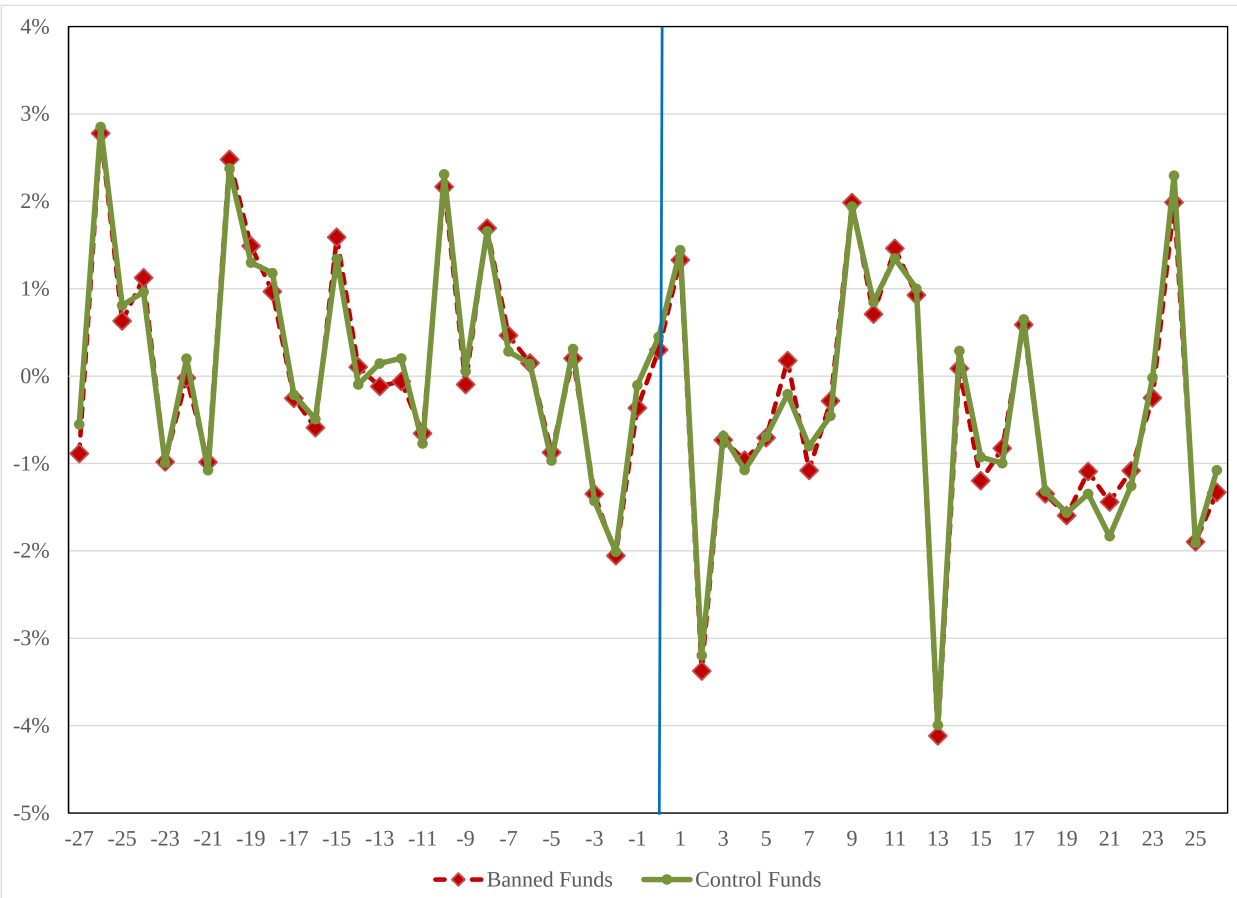

Figure 2
Daily Returns: BlackRock and S&P 500 Financials
(Renders well only in color)

This figure plots the daily returns for BlackRock and the S&P 500 Financials sector. The returns window spans 54 trading days starting on July 18, 2022 (trading day -27) and ending on September 30, 2022 (trading day +26), with the blue vertical line indicating trading day 0 or August 24, 2022.

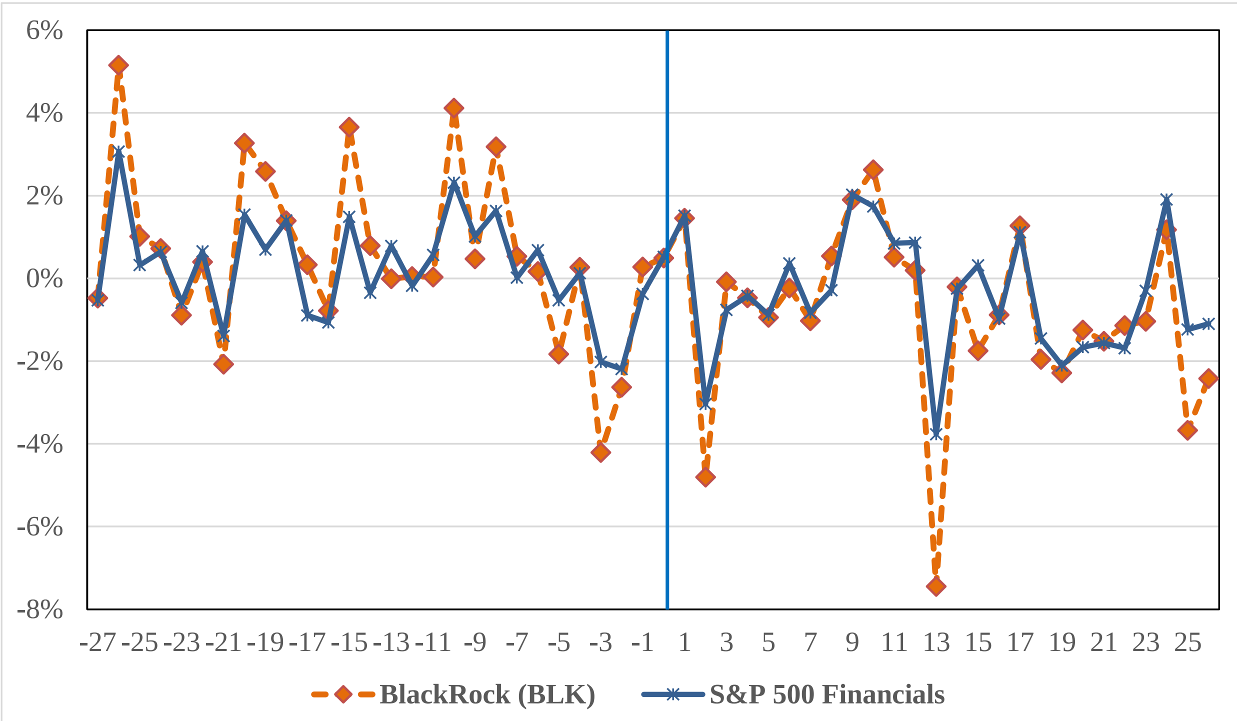

Table 1
Sample Selection

This table shows the steps in our sample selection process. CRSP = Center for Research in Security Prices.

Panel A: Selection of Texas exclusion funds

Selection Criterion	**# of Texas Funds**	**# of Unique Ticker or CRSP Fund Number**
Funds from Texas Annex II list	348	746
Data cleaning to identify tickers shared by multiple funds	346	740
Matched to CRSP Survivor-Bias-Free Mutual Fund Summary Database by ticker	340	725
After removing observations with the latest effective date for summary data before 2022; that is, 2022 data not available	338	719
Keep funds with CRSP level 1 investment objective label of "equity"	226	454
Subtotal: Keep funds with CRSP level 2 investment objective label of "domestic"	127	237

Panel B: Selection of exclusion funds with unique CRSP Portfolio number

Selection criterion	**# of Texas Funds**	**# of Unique CRSP Portfolio Number**
237 CRSP fund numbers matched with CRSP portfolio holdings	127	127
Keep funds with CRSP permanent stock issue identifier (PERMNO) from the latest portfolio holdings	89	89
Treatment sample Funds with latest portfolio holdings matched to both Compustat and CRSP	79	79

Table 2
Domestic Equity Funds from the Texas Annex II List

This table presents the names of 79 domestic equity funds from the Texas Annex II list that are matched to Center for Research in Security Prices Survivor-Bias-Free Mutual Fund Database along with the names of the management companies associated with these funds.

Fund	Management Company
AB Sustainable U.S. Thematic Portfolio	AB Cap Fund, Inc.
Abrdn Realty Income & Growth Fund	Abrdn Funds
Alger Responsible Investing Fund	Alger Funds II
Alger Weatherbie Enduring Growth Fund	Alger Funds
Aspiration Redwood Fund	Aspiration
Avantis Responsible U.S. Equity ETF	American Century Investments
BlackRock Sustainable Advantage Large Cap Core Fund	BlackRock Funds
BlackRock Sustainable U.S. Growth Equity Fund	BlackRock Funds VII, Inc.
BlackRock Sustainable U.S. Value Equity Fund	BlackRock Funds VII, Inc.
BlackRock U.S. Impact Fund	BlackRock Funds
BNY Mellon Global Real Return Fund	BNY Mellon Advantage Funds, Inc.
BNY Mellon Sustainable U.S. Equity Fund	BNY Mellon Investment Management
BNY Mellon Tax-Sensitive Large Cap Multi-Strategy Fund	BNY Mellon Funds Trust
BNY Mellon U.S. Equity Fund	BNY Mellon Strategic Funds, Inc.
Boston Common ESG Impact U.S. Equity Fund	Boston Common Asset Management
Boston Trust Walden SMID Cap Fund	Boston Trust Walden
Brown Advisory Sustainable Growth Fund	Brown Advisory Funds
Brown Advisory Sustainable Small-Cap Core Fund	Brown Advisory Funds
Clearbridge Sustainability Leaders Fund	Legg Mason Partners Investment Trust
DFA U.S. Social Core Equity 2 Portfolio	DFA Investment Dimensions Group Inc.
DFA U.S. Sustainability Targeted Value Portfolio	DFA Investment Dimensions Group Inc.
DFA U.S. Sustainability Core 1 Portfolio	DFA Investment Dimensions Group Inc.
Domini Impact Equity Fund	Domini Investment Trust
DWS ESG Core Equity Fund	Deutsche DWS Investment Trust
Fidelity Environment and Alternative Energy Fund	Fidelity Investments
Fidelity SAI Sustainable Sector Fund	Fidelity Investments
Fidelity SAI Sustainable U.S. Equity Fund	Fidelity Investments
Fidelity Sustainable U.S. Equity Fund	Fidelity Investments
Fidelity U.S. Sustainability Index Fund	Fidelity Investments
Flexshares ESG & Climate Emerging Markets Core Index Fund	Flexshares
Flexshares ESG & Climate U.S. Large Cap Core Index Fund	Flexshares
Gabelli ESG Fund	Gabelli Funds

Fund	**Management Company**
Green Century Equity Fund	Green Century Funds
HSBC Radiant ESG U.S. Smaller Companies Fund	HSBC Funds
Invesco ESG Nadsaq 100 ETF	Invesco
Invesco ESG Nasdaq Next Gen 100 ETF	Invesco
Invesco ESG S&P 500 Equal Weight ETF	Invesco
Invesco U.S. Large Cap Core ESG ETF	Invesco
John Hancock ESG Large Cap Core Fund	John Hancock Investment Trust
JPMorgan U.S. Sustainable Leaders Fund	JPMorgan Trust I
Karner Blue Biodiversity Impact Fund Butterfly Class	Ultimus Managers Trust
Kennedy Capital ESG SMID Cap Fund	Investment Managers Series Trust II
Knights of Columbus Large Cap Growth Fund	Advisors' Inner Circle Fund III
Knights of Columbus Large Cap Value Fund	Advisors' Inner Circle Fund III
Knights of Columbus Long/Short Equity Fund	Advisors' Inner Circle Fund III
Knights of Columbus Real Estate Fund	Advisors' Inner Circle Fund III
Knights of Columbus Small Cap Fund	Advisors' Inner Circle Fund III
Knights of Columbus U.S. All Cap Index Fund I Shares	Advisors' Inner Circle Fund III
Lazard U.S. Sustainable Equity Portfolio	Lazard Funds, Inc.
Neuberger Berman Sustainable Equity Fund	Neuberger Berman Equity Funds
Neuberger Berman U.S. Equity Impact Fund	Neuberger Berman Equity Funds
Northern U.S. Quality ESG Fund	Northern Funds
Nuveen ESG Small-Cap ETF	Nuveen Investor Services
Nuveen Winslow Large-Cap Growth ESG ETF	Nuveen Investor Services
Nuveen Winslow Large-Cap Growth ESG Fund	Nuveen Investment Trust II
Parnassus Core Equity Fund	Parnassus Investments
Parnassus Endeavor Fund	Parnassus Investments
Parnassus Mid Cap Fund	Parnassus Investments
Parnassus Mid Cap Growth Fund	Parnassus Investments
Pax Large Cap Fund	Pax World Funds Series Trust I
Pax Small Cap Fund	Pax World Funds Series Trust I
Pax U.S. Sustainable Economy	Pax World Funds Series Trust I
Praxis Growth Index Fund	Praxis Mutual Funds
Praxis Small Cap Index Fund	Praxis Mutual Funds
Praxis Value Index Fund	Praxis Mutual Funds
Reynders McVeigh Core Equity Fund	Capitol Series Trust
Sphere 500 Fossil Free Fund	Sphere
TIAA-CREF Social Choice Equity Fund	TIAA-CREF Funds
TIAA-CREF Social Choice Low Carbon Equity Fund	TIAA-CREF Funds
Trillium ESG Small/Mid Cap Fund Institutional	Professionally Managed Portfolios
UBS U.S. Small Cap Growth Fund	UBS Funds
UBS U.S. Dividend Ruler Fund	UBS Funds

Fund	**Management Company**
UBS U.S. Quality Growth at Reasonable Price Fund	UBS Funds
Vanguard ESG U.S. Stock ETF	Vanguard
Vanguard FTSE Social Index Fund	Vanguard World Funds
Xtrackers MSCI USA ESG Leaders Equity ETF	DWS
Xtrackers S&P 500 ESG ETF	DWS
Xtrackers S&P Midcap 400 ESG ETF	DWS
Xtrackers S&P Smallcap 600 ESG ETF	DWS

Table 3
Matching Texas Exclusion Funds and CRSP Funds

This table presents basic characteristics of Texas exclusion funds and control funds from the Center for Research in Security Prices (CRSP). We match (without replacement) the Texas exclusion or banned funds with the ten closest CRSP funds by net assets that are not included on the Texas Annex II list and are labeled with the investment objective of domestic equity based on total net assets. Panel A shows the distribution of total net assets and the number of holdings. Panel B shows the percentage of funds' names containing certain environmental, social, and governance (ESG)–related words.

Panel A: Total Net Assets and Number of Holdings

Variable	*N*	Mean	Std Dev	25th Pctl	Median	75th Pctl
Exclusion funds						
Total net assets (millions of dollars)	79	1,137	3,199	13	119	627
# of holdings	79	268	471	50	77	277
CRSP matched funds						
Total net assets (millions of dollars)	790	1,136	3,175	14	119	630
# of holdings	790	257	620	48	78	190
% difference in total net assets	790	0.36	2.40	0.00	0.01	0.02

Panel B: Names of Funds Containing Keywords

	Texas Exclusion Funds		CRSP Control Funds	
Keyword	***N***	**Mean**	**N**	**Mean**
ESG	79	27.8%	790	0.9%
Sustainab	79	22.8%	790	2.2%
Social	79	5.1%	790	0.6%
Climate	79	2.5%	790	0.1%
Fossil	79	1.3%	790	0.0%
Biodiversity	79	1.3%	790	0.0%
Carbon	79	1.3%	790	0.0%
Any of the above	79	58.2%	790	3.8%

Table 4
Individual Equity Securities Held by Texas Exclusion Funds and Control Funds

This table presents information on the individual equity securities held by Texas exclusion funds and the Center for Research in Security Prices (CRSP) control funds. The top 50 equity securities held by Texas exclusion funds (control funds) are presented in Panel A (Panel B). The ranking of a security is obtained by calculating its weighted-average percentage in the total net assets of a fund and then weighting it by total net assets managed by each fund (*%TNA_VW_TX* and *%TNA_VW_CRSP*). For funds that do not hold that security in their portfolios, its percentage is set to zero. Panel C shows the Pearson (above the diagonal) and Spearman (below the diagonal) correlations between *%TNA_VW_TX*, *%TNA_VW_CRSP*, and the security's market value of equity (*MVE*) on June 30, 2022. In Panel D, a fund is identified to its closest benchmark fund, following Cremers and Petajisto (2009). We then sort the benchmark indices by increasing percentage of "active share," which represents the lack of matching of securities held by the fund and that benchmark index. Panel D shows the numbers of indexers and closet indexers based on the active share of funds with respect to their benchmark indexes.

Panel A: Top 50 Holdings of Texas Exclusion Funds

Ranking	Security	% of Total Net Assets	Market Value of Equity ($ millions)
1	Microsoft Corp.	5.38	1,920,840
2	Alphabet Inc.	3.73	1,340,937
3	Apple Computer Inc.	2.81	2,212,838
4	Mastercard Inc.	1.80	304,413
5	Danaher Corp.	1.57	184,329
6	Fiserv Inc.	1.40	57,510
7	Procter & Gamble Co.	1.30	344,995
8	Becton Dickinson & Co.	1.29	70,277
9	Comcast Corp New	1.28	175,425
10	Deere & Co.	1.27	91,529
11	Nvidia Corp.	1.27	378,975
12	S & P Global Inc.	1.26	116,994
13	Adobe Systems Inc.	1.18	172,414
14	C M E Group Inc.	1.16	73,573
15	Verisk Analytics Inc.	1.15	27,331
16	American Tower Corp. New	1.12	116,638
17	Linde plc	1.09	144,758
18	Amazon.com Inc.	1.09	1,080,623
19	Home Depot Inc.	1.06	281,882
20	Schwab Charles Corp New	1.01	114,802
21	Thermo Fisher Scientific Inc.	1.01	212,673
22	Verizon Communications Inc.	0.96	213,132
23	Tesla Motors Inc.	0.87	697,670
24	Nike Inc.	0.83	129,667
25	Canadian Pacific Railway Ltd.	0.82	64,942

26	Ball Corp.	0.82	21,992
27	T Mobile U.S. Inc	0.79	168,657
28	Visa Inc.	0.76	324,026
29	Gilead Sciences Inc.	0.76	77,529
30	Costco Wholesale Corp. New	0.75	212,428
31	Waste Management Inc. Del	0.75	63,518
32	UnitedHealth Group Inc.	0.66	481,873
33	Texas Instruments Inc.	0.64	141,686
34	Mondelez International Inc.	0.62	85,928
35	Sherwin Williams Co.	0.62	58,246
36	Marsh & McLennan Cos. Inc.	0.62	77,922
37	Boston Scientific Corp.	0.61	53,174
38	Alexandria Real Estate Equities Inc.	0.59	23,672
39	Applied Materials Inc.	0.57	79,148
40	Merck & Co. Inc New	0.53	230,551
41	CoStar Group Inc.	0.52	23,936
42	Intercontinental Exchange Group Inc.	0.51	52,499
43	PepsiCo Inc.	0.51	230,438
44	Sysco Corp.	0.50	43,158
45	Union Pacific Corp.	0.49	133,945
46	Booking Holdings Inc.	0.48	71,049
47	Micron Technology Inc.	0.48	61,084
48	Intuit Inc.	0.47	108,724
49	Accenture plc Ireland	0.44	184,412
50	Cisco Systems Inc.	0.44	176,571

Table 4 Continued

Panel B: Top 50 Holdings of CRSP Control Funds

Ranking	Security (CRSP)	% of Total Net Assets	Market Value of Equity ($ millions)
1	Microsoft Corp.	3.03	1,920,840
2	Apple Computer Inc.	2.55	2,212,838
3	Alphabet Inc.	2.09	1,340,937
4	Amazon.com Inc.	1.67	1,080,623
5	Tesla Motors Inc.	1.20	697,670
6	UnitedHealth Group Inc.	1.17	481,873
7	Nvidia Corp.	0.82	378,975
8	Visa Inc.	0.76	324,026
9	Johnson & Johnson	0.67	467,100
10	JPMorgan Chase & Co.	0.61	330,741
11	Lilly Eli & Co.	0.57	308,070
12	Mastercard Inc.	0.57	304,413
13	Facebook Inc.	0.56	369,830
14	Berkshire Hathaway Inc. Del	0.51	602,131
15	ExxonMobil Corp.	0.51	360,762
16	Danaher Corp.	0.44	184,329
17	Bank of America Corp.	0.43	250,811
18	Thermo Fisher Scientific Inc.	0.43	212,673
19	Adobe Systems Inc.	0.42	172,414
20	Broadcom Inc.	0.41	196,179
21	Chevron Corp. New	0.41	284,466
22	Home Depot Inc.	0.41	281,882
23	Comcast Corp. New	0.40	175,425
24	Wells Fargo & Co. New	0.40	148,468
25	Pfizer Inc.	0.39	294,179
26	Procter & Gamble Co.	0.38	344,995
27	Accenture plc Ireland	0.38	184,412
28	ConocoPhillips	0.37	116,165
29	Linde plc	0.35	144,758
30	American Tower Corp. New	0.34	116,638
31	Wal Mart Stores Inc	0.34	333,269
32	AbbVie Inc.	0.34	270,651
33	NextEra Energy Inc.	0.33	152,170
34	Anthem Inc.	0.33	116,343
35	Raytheon Technologies Corp.	0.33	142,936
36	Merck & Co. Inc. New	0.32	230,551

37	Texas Instruments Inc.	0.31	141,686
38	Costco Wholesale Corp. New	0.31	212,428
39	Abbott Laboratories	0.30	190,240
40	Nike Inc.	0.30	129,667
41	Cigna Corp New	0.30	83,608
42	Coca-Cola Co.	0.30	272,717
43	Bristol Myers Squibb Co.	0.30	163,938
44	Analog Devices Inc.	0.30	75,938
45	PepsiCo Inc.	0.29	230,438
46	Disney Walt Co	0.28	171,948
47	Verizon Communications Inc.	0.28	213,132
48	Salesforce.com Inc.	0.28	164,215
49	Medtronic plc	0.27	119,252
50	Lowes Companies Inc.	0.27	111,637

Panel C: Correlations

Variable	*%TNA_VW_TX*	*%TNA_VW_CRSP*	*MVE*
%TNA_VW_TX		0.823	0.800
%TNA_VW_CRSP	0.836		0.956
MVE	0.823	0.869	

Panel D: Indexers and Closet Indexers

Indices	# of Funds	# of Index Funds	# of Funds with Active Share <= 60%	Mean Active Share
S&P 500 Growth	1	1	1	17%
S&P SmallCap 600	1	1	1	22%
S&P 500 Value	1	1	1	29%
Russell 3000	2	0	2	34%
S&P 500	1	0	1	52%
Russell Top 200 Growth	3	0	3	52%
FTSE4Good U.S. Benchmark	4	0	2	58%
MSCI KLD 400 Social	5	0	3	59%
Russell 2000 Value	1	0	1	59%
Russell Top 200	1	0	0	65%
S&P 100	5	0	0	69%
NASDAQ 100	1	0	0	70%
Russell Top 200 Value	1	0	0	80%
DJ Industrial Average	1	0	0	83%
Russell Mid Cap Growth	2	0	0	87%
Russell 2000 Growth	3	0	0	90%
Total (average)	33	3	15	(58%)

Table 5
Equity Investments in Each Sector by Texas Exclusion Funds and Control Funds

This table compares the equity investments in each sector by Texas exclusion funds (TX) and Center for Research in Security Prices (CRSP) control funds. Panels A and B show the mean and median percentage holdings by sector. Panel B tabulates the recalculated percentage holdings after excluding investment in the energy sector. The percentage holdings by sector are calculated for each fund by summing up the percentage of the fund's total net assets invested in firms that are assigned to a given sector (based on two-digit Global Industry Classification Standard). Significant differences in mean (median) between Texas exclusion funds and CRSP control funds are identified at the 10%, 5%, and 1% level based on two-sided *t*-tests (Wilcoxon rank-sum tests) and are denoted *, **, and ***, respectively. Panel C presents the percentage of securities held by the control funds that are also held by the Texas exclusion funds.

Panel A: Difference in Percentage Holdings by Industry Sector

	# of Funds		Mean				Median			
Industry Sector	**TX**	**CRSP**	**TX**	**CRSP**	**TX – CRSP**		**TX**	**CRSP**	**TX – CRSP**	
Energy	38	534	3.51	7.14	-3.63	***	3.42	4.87	-1.45	***
Materials	72	604	3.97	5.21	-1.24	***	3.30	3.66	-0.36	
Industrials	77	697	10.69	11.39	-0.70		9.01	10.09	-1.08	
Consumer discretionary	77	710	10.61	11.20	-0.59		10.56	10.37	0.19	
Consumer staples	68	589	5.54	5.32	0.22		5.80	4.21	1.59	***
Health care	76	683	14.05	14.59	-0.53		13.90	12.82	1.08	*
Financials	74	664	11.44	13.43	-2.00	***	11.50	11.46	0.03	
Information technology	76	710	26.11	21.29	4.82	***	27.15	18.05	9.10	***
Communication services	74	644	6.24	6.67	-0.44		6.31	5.21	1.10	
Utilities	54	430	2.51	4.12	-1.62	***	2.15	2.75	-0.60	**
Real estate	68	550	6.47	7.51	-1.05		3.35	3.11	0.25	

Table 5 Continued

Panel B: Difference in Percentage Holdings by Sector, Excluding the Energy Sector

	# of Funds		Mean				Median			
Industry Sector	**TX**	**CRSP**	**TX**	**CRSP**	**TX − CRSP**		**TX**	**CRSP**	**TX − CRSP**	
Materials	72	604	4.04	5.63	-1.59	***	3.38	3.87	-0.50	
Industrials	77	697	10.90	12.16	-1.26		9.06	10.75	-1.69	
Consumer discretionary	77	710	10.79	11.66	-0.87		10.67	10.86	-0.18	
Consumer staples	68	589	5.65	5.59	0.05		5.81	4.36	1.45	***
Health care	76	683	14.28	15.16	-0.88		14.14	13.65	0.50	
Financials	74	664	11.70	14.19	-2.48	***	11.80	12.18	-0.37	
Information technology	76	710	26.48	22.09	4.39	***	27.34	19.36	7.98	***
Communication services	74	644	6.33	6.91	-0.58		6.40	5.48	0.92	
Utilities	54	430	2.57	4.59	-2.01	***	2.25	2.93	-0.68	***
Real estate	68	550	6.56	7.73	-1.17		3.39	3.23	0.16	

Panel C: Overlap of Securities Held by Control Funds and TX Funds

Sector	**# of Equity Securities Held by Control Funds**	**% also Held by TX Funds**
Energy	236	61.4
Materials	232	60.3
Industrials	557	80.6
Consumer discretionary	501	78.0
Consumer staples	162	79.0
Health care	999	53.6
Financials	712	80.2
Information technology	632	71.7
Communication services	202	69.8
Utilities	86	86.0
Real estate	207	83.6

Table 6
Fund Performance

This table presents results of a Carhart four-factor model in which the daily fund excess returns are regressed on excess market returns (*MKTRF*) and returns on three factor-mimicking portfolios for size (*SMB*), book-to-market (*HML*), and momentum (*UMD*). The pre-announcement period spans 27 trading days from July 18, 2022 to August 23, 2022. The post-announcement period spans 27 trading days from August 24, 2022 to September 30, 2022. *t*-statistics are in parentheses. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 level, respectively, on a two-tailed basis.

Panel A: Pre-Announcement Period

Factor	Banned Funds		Control Funds	
Intercept	-0.0003	***	-0.0002	***
	[-3.53]		[-5.88]	
MKTRF	0.997	***	0.952	***
	[110.11]		[227.09]	
SMB	0.153	***	0.314	***
	[9.62]		[42.78]	
HML	-0.091	***	0.122	***
	[-6.87]		[20.01]	
UMD	0.139	***	0.068	***
	[11.10]		[11.69]	
# of observations	4,455		51,805	
Adj. *R*-squared	86.4%		70.2%	

Panel B: Post-Announcement Period

Factor	Banned Funds		Control Funds	
Intercept	-0.0003	***	0.000	
	[-3.62]		[0.27]	
MKTRF	0.878	***	0.924	***
	[134.91]		[263.93]	
SMB	0.018		0.278	***
	[1.21]		[34.27]	
HML	0.051	***	0.246	***
	[3.71]		[33.32]	
UMD	-0.157	***	-0.118	***
	[-12.81]		[-17.88]	
# of Observations	4,455		51,507	
Adj. *R*-squared	91.4%		76.6%	

Panel C: *Alpha*

Pre-announcement: Banned versus control	-0.0001	
	(*t*-statistic = 0.63)	
Post-announcement: Banned versus control	-0.0003	**
	(*f*-statistic = 4.36)	
Difference-in-difference	-0.0002	
	(*t*-statistic = 0.27)	

Table 7
Investments by Texas Pension Funds prior to the Sanction

This table presents the equity security holdings by three Texas pension funds before the exclusion announcement (on December 31, 2021). Panel A shows the percentage of holdings in each sector. Panel B shows the top 50 equity securities held by the pension funds. The ranking of a security is obtained by calculating the weighted-average percentage of the security in that retirement portfolio and then weighting it by the total portfolio value managed by that retirement fund.

Panel A: Investments by Sector

	% of Total Portfolio Value		
Sector	**Texas Permanent School Fund**	**Employees Retirement System of Texas**	**Teacher Retirement System of Texas**
Energy	2.20	3.05	1.88
Materials	3.16	2.95	1.72
Industrials	10.03	7.23	6.35
Consumer discretionary	10.00	8.97	15.23
Consumer staples	5.76	4.55	5.25
Health care	12.94	12.09	11.39
Financials	10.96	9.56	10.03
Information technology	28.52	27.46	28.13
Communication services	6.97	7.37	8.71
Utilities	4.29	3.92	3.09
Real estate	4.88	11.36	2.33

Table 7 Continued

Panel B: Top Equity Securities

Ranking	Name of Security	% of Total Portfolio Value	Market Value of Equity on 12/31/2021 ($ millions)
1	Apple Inc.	11.52	1,098,210
2	New Oriental Education & Technology Group	4.13	17,102
3	Microsoft Corp.	3.09	1,199,542
4	Amazon.com Inc.	2.43	970,044
5	Alphabet Inc.	1.88	745,103
6	Nvidia Corp.	1.73	161,366
7	NetEase Inc.	1.66	41,365
8	Intercontinental Exchange Inc.	1.14	109,130
9	NextEra Energy Inc.	1.11	117,663
10	Tesla Inc.	1.09	96,416
11	Facebook Inc.	1.04	401,321
12	Johnson & Johnson	1.04	345,659
13	Tal Education Group	0.93	20,505
14	JPMorgan Chase & Co.	0.85	274,321
15	Claros Mortgage Trust Inc.	0.79	2,180
16	Berkshire Hathaway Inc.	0.73	252,671
17	Procter & Gamble Co.	0.73	272,360
18	Alibaba Group Holding Ltd.	0.73	521,790
19	UnitedHealth Group Inc.	0.65	236,662
20	Verizon Communications Inc.	0.63	222,335
21	Visa Inc.	0.62	274,871
22	Mastercard Inc.	0.59	240,111
23	Life Time Group Holdings Inc.	0.58	3,322
24	AT&T Inc.	0.56	209,093
25	Merck & Co Inc.	0.56	194,274
26	Walmart Inc.	0.53	321,772
27	Intuitive Surgical Inc.	0.53	58,670
28	Home Depot Inc.	0.49	200,527
29	Coca-Cola Co.	0.49	189,965
30	Intel Corp.	0.47	228,763
31	Pfizer Inc.	0.47	181,087
32	Netflix Inc.	0.45	165,937
33	CoStar Group Inc.	0.44	22,102
34	Adobe Inc.	0.43	153,001
35	Comcast Corp.	0.42	156,191

Ranking	Name of Security	% of Total Portfolio Value	Market Value of Equity on 12/31/2021 ($ millions)
36	Affirm Holdings Inc	0.42	20,916
37	Merrill Lynch Capital Trust	0.42	184,170
38	Philip Morris International	0.41	115,888
39	Salesforce.com Inc.	0.41	128,862
40	Chevron Corp.	0.41	135,283
41	Cisco Systems Inc.	0.40	166,841
42	Thermo Fisher Scientific Inc.	0.40	112,022
43	Accenture PLC	0.40	108,078
44	PepsiCo Inc.	0.39	166,819
45	Edwards Lifesciences Corp.	0.39	39,044
46	Costco Wholesale Corp.	0.39	125,873
47	Celgene Corp.	0.38	126,140
48	Wells Fargo & Co.	0.38	117,354
49	Gilead Sciences Inc.	0.38	94,173
50	Abbott Laboratories	0.37	139,592

Table 7 Continued

Panel C: Investments in Texas Exclusion Financial Companies

Security	**Ticker**	**Pension Fund**	**Value of Holdings ($ millions)**	**% of Total Portfolio Value**
BlackRock Common Stock	BLK	Employees Retirement System of Texas	17	0.30
		Teacher Retirement System of Texas	18	0.12
		Texas Permanent School Fund	9	0.17
BlackRock Funds				
iShares Core S&P 500 ETF	IVV	Teacher Retirement System of Texas	306	1.98
iShares Core S&P 500 ETF	IVV	Texas Permanent School Fund	3	0.06
iShares Core S&P Mid-Cap ETF	IJH	Texas Permanent School Fund	1	0.02
iShares Core S&P Small-Cap ETF	IJR	Employees Retirement System of Texas	4	0.08
iShares Core S&P Small-Cap ETF	IJR	Texas Permanent School Fund	6	0.11
iShares Core U.S. Aggregate Bond ETF	AGG	Teacher Retirement System of Texas	52	0.33
iShares Gold Trust Micro	IAUM	Teacher Retirement System of Texas	37	0.24
iShares JPMorgan USD Emerging Markets Bond ETF	EMB	Employees Retirement System of Texas	29	0.52
iShares MSCI EAFE ETF	EFA	Employees Retirement System of Texas	4	0.07
iShares MSCI Emerging Markets ETF	EEM	Teacher Retirement System of Texas	1	0.00
iShares MSCI Emerging Markets Min Vol Factor ETF	EEMV	Teacher Retirement System of Texas	55	0.36
iShares MSCI Emerging Markets Small-Cap ETF	EEMS	Employees Retirement System of Texas	0	0.01
iShares Silver Trust	SLV	Teacher Retirement System of Texas	12	0.08
iShares U.S. Real Estate ETF	IYR	Employees Retirement System of Texas	2	0.03
Total dollar value			555	
Weighted average				0.34