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Conflicting Incentives in the
Management of 529 plans

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Conflicting Incentives in the Management of 529 Plans

by

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Abstract

Section 529 plans have experienced tremendous growth, yet we know little about how the incentives of their sponsors (i.e., states) and program managers affect investors. We study how the incentives of these key players relate to plan characteristics. Plans where states exhibit a greater tendency to extract revenue offer investment menus with higher underlying fees, weaker performance, and limited options. In addition, their sponsors offer no other direct or indirect benefits that offset these plans' inferior investment menus. Our evidence suggests conflicts of interest faced by program managers and lack of investment sophistication of sponsoring states as likely explanations.

Keywords: 529 plans, conflicts of interest, plan sponsor, program manager, revenue sharing

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1. Introduction

As the costs of college education in the U.S. soar to new highs, households are increasingly investing in Section 529 college savings plans to save for their children's education. In the past decade, total assets in these savings plans have tripled to $464 billion across more than 15 million accounts (College Savings Plan Network 2021). Section 529 college savings plans are often compared to their retirement savings counterparts (e.g., 401(k) plans), but they operate in a unique regulatory environment with implications that are not well understood. Their sponsors, which are state governments, are exempt from the Investment Company Act of 1940 and Securities Act of 1933, important federal laws that protect the interests of investors. Without this federal oversight and no mandated disclosure requirements, 529 college savings plans operate outside the jurisdiction of the Securities and Exchange Commission and have no one to answer to but their state sponsors.

In this paper, we study how the involvement and incentives of state governments affect the end investors in 529 plans.[1] Plan sponsors' stated goal is increased access to higher education, a goal which is more achievable by offering plans characterized by low fees and attractive investment returns. However, most states collect asset-based fees from their 529 plans and their incentives may not perfectly align with those of plan participants. States face budgetary constraints, which might force them to view their 529 plans as a potential source of revenue. This incentive conflict has been raised in a congressional hearing (e.g., Noven 2004) and the use of state fees from 529 plans to subsidize other state initiatives is noted in Curtis (2020). The importance of understanding these conflicting incentives and how they affect investors is amplified

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[1] The subject of our analysis are 529 college savings plans and not 529 prepaid tuition plans, as the latter group captures only a small fraction of all 529 plan assets and has limited data availability.

as states have begun sponsoring retirement plans for private sector employees that operate under the same regulatory regime[2]. Ours is the first paper to study this important issue using 529 plan data.

The incentive landscape is further complicated by the fact that states typically outsource program management to external managers, who may also face conflicting incentives. Research on company sponsored 401(k) plans shows that these intermediaries face conflicts of interest of their own that undermine the quality of the plan menu (Pool, Sialm, and Stefanescu 2021). The regulatory vacuum, combined with multiple layers of potentially conflicting incentives leads to our research question: how does a state's choice to pursue revenue generation in its 529 plans affect the end investors in these plans?

The answer to this question is not obvious ex-ante. States could use larger revenue streams from their 529 plans to invest in oversight. Given their likely lack of investment expertise, states could hire external consultants to evaluate the investment menu, or changes in it, designed by the program manager. This could lead to better investment menus. Alternatively, states, driven by a desire to generate revenue, could choose program managers that use aggressive fee and sales tactics to raise assets, but not subject them to strict oversight. This could generate more revenue for the state but lead to inferior investment menus. Given the large portion of fees that investors pay to states and program managers (60% of total fees), this is an important question. Which of these two effects dominates is the subject of our study.

Key to our investigation is constructing a metric that captures the variation in states' tendency to extract revenue from their 529 plans. These revenues are a function of two factors: the

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[2] See Shnitser (2020) for a discussion of the various state-sponsored private retirement plans and related issues.

state (trustee) fee collected by the state, which is applied as a percentage of assets, and total plan assets. States that desire higher revenues can negotiate a higher state fee with the program manager and/or allow the program manager to pursue aggressive sales practices via sales incentives for plan distributors to increase the plan assets. To measure compensation to these intermediaries, we use the distribution fees plus amortized front-end load fees (henceforth, distribution expense). Due to the existence of multiple revenue-increasing channels, we measure their combined information via the first principal component of the state fees and distribution expenses associated with each plan. Variation in this first principal component identifies differential tendencies of states to extract revenue from their 529 plans. We label this variable *Tendency to Extract Revenue (TER)*.

To validate our measure, we examine whether states that faced budget shortfalls around the time they negotiated state fees and distribution expenses with their chosen program manager have a higher-TER currently. We find that states with a budget shortfall in the year before the current program manager was chosen are associated with larger *TER*. Furthermore, this relation is statistically and economically significant and consistent across several alternative principal component specifications.

We next examine how variation in *TER* explains variation in 529 menu characteristics. First, we examine underlying fund fees, defined as the combined expense ratio of the underlying mutual funds that make up a given investment in a 529 plan. We find that high-TER plans offer investments with substantially higher underlying fund fees. A unit increase in *TER*, which is equivalent to its standard deviation, is associated with 9-11 bps of additional underlying fund fees, corresponding to 24%-29% of the sample mean of underlying mutual fund fees.

To rule out whether these higher fees are offset by superior investment performance, we examine the relation between the reported performance of plan investments net of all investment

fees and *TER*. We find that high-TER plans offer investments with significantly lower Sharpe ratios. This suggests that the higher fees investors are paying do not give them access to better-performing investments.

We next test whether high-TER plans offer direct, non-performance-related improvements to their investment menus. We measure these by looking at the existence of age-based portfolios and low-cost index fund options. Age-based portfolios are similar to target date funds and automatically adjust investment exposures throughout the investment period. Given that many investors may lack the skill to adjust these on their own, we view age-based portfolios as indicative of higher-quality menus. Similarly, low-cost index options are valuable for controlling costs. We find that high-TER plans offer fewer customized options and are less likely to include low-cost index options, further suggesting that higher fees in these plans do not coincide with better menu options.

Even in the absence of direct benefits, states could use the fee revenue to benefit their residents in other ways. They could, for example, increase participation in 529 plans through advertising; invest in higher education; or simply provide additional state tax benefits. We find no evidence that state residents are receiving any of these indirect benefits.

The inferior offerings of high-TER plans are somewhat puzzling. After all, states have all the bargaining power vis-à-vis their program managers and negotiating higher state fees does not necessarily preclude them from demanding better terms from program managers on behalf of plan participants.[3] One possible explanation for why this is not happening is that many states lack the sophistication to evaluate the investment menus and conflicting incentives of program managers.

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[3] The process of choosing a program manager follows a competitive request for proposals process, but in the end it is the state that makes the final decision as to whom to hire and for how long.

As such, they agree to receiving higher fees in return for more leeway for the program manager in setting menus and fees. Program managers use this latitude to extract higher rents from the plan through pursuit of indirect forms of compensation such as revenue-sharing agreements with mutual fund companies they choose for managing plan assets. Tilting the investment menus towards investment firms with which the program manager has revenue-sharing arrangements produces inferior investment menus. Program managers prefer this indirect form of compensation because it is less transparent—especially given the non-uniform disclosure in 529 plans—and therefore harder for plan sponsors and plan participants to understand. Consistent with this explanation, we find that program managers in higher-TER plans are more likely to use revenue sharing arrangements, which result in investments menus with higher fees but weaker investment performance.

Our paper contributes to an emerging literature studying the conflicting incentives of intermediaries involved in the design and management of goals-based investment plans such as DC plans or 529 plans. Cohen and Schmidt (2009) document that fund families managing a 401(k) plan put the business relation with the plan sponsor above the interests of plan participants. Pool, Sialm, and Stefanescu (2016) and Pool et al. (2021) show that 401(k) service providers face incentives to favor their own funds or the funds of other families with which they have revenue sharing arrangements for inclusion in the plan menus. The end result is inferior menus for the plan participants. We add to this literature by being first to examine how conflicts arising at the plan sponsor affect plan investors. Unlike sponsors of 401(k) plans, the sponsors of 529 plans (state government) operate in a regulatory vacuum that could be more conducive to such conflicts. Our findings that such conflicts negatively affect plan participants inform the debate on the merits of state involvement in 529 plans or state-sponsored private retirement plans.

Our paper also contributes to a very small literature that studies 529 plans. Two academic studies by Bogan (2014) and Curtis (2020) provide descriptive information on 529 plans in terms of plan fees and how they relate to plan characteristics such as plans size, distribution channel, and size of potential state tax benefits, among others. Building on this evidence, our study is the first to study the implications that conflicting incentives of program managers and states in the management of 529 plans have for plan investors in terms of investment fees, menu quality, and performance.

2. Data and Methodology

2.1. Data

Most of our 529 plan data comes from the College Saving Plans database in Morningstar Direct downloaded on March 30, 2021. The database covers 86 plans offered by 49 different states and the District of Columbia.[4] Most states offer at least one plan sold directly to investors and one sold through brokers or financial advisors. The Morningstar database provides the most recent snapshot of characteristics at the plan and investment level. Each investment is a portfolio of one or multiple mutual funds. The plan level data include plan characteristics, such as the sponsoring state, plan program manager, method of distribution, plan summary fees, state-specific tax advantages, etc. The investment level data include information on the most recent fees and historical information such as monthly assets and returns for each investment until February 28, 2021.

We supplement these data with plan disclosure documents downloaded from the plans' websites. From these, we hand-collect information to update stale fees in the Morningstar database

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[4] Wyoming is the only state that does not offer a 529 College Savings Plan.

and construct a variable indicating the presence of revenue sharing agreements between the plan program manager and mutual fund companies that manage the underlying mutual funds used in the plan. Finally, from the College Savings Plans Network we collect the most recent (as of end of March 2021) number of accounts and aggregate assets for each plan.

We collect state-level variables from the US Census Bureau. They include annual population for each state and a set of variables from the Annual Survey of State Government Finances reflecting the state's financial condition for each year from 1996 to 2019. The primary variables of interest are total gross revenue and expenditures, and education-specific expenditures. Using the population data, we also calculate per-capita measures of each of these spending variables.

2.2 Summary Information

The final panel for our analysis consists of 5,339 unique investments across 86 plans. Table 1 provides summary information. Panel A reports at the plan level. The average 529 plan has been in existence for about 16 years and has a program manager with a tenure of 12 years. Plan management is typically outsourced to external program managers and only 10% of the plans are managed in-house. In addition, 65% of the plans are sold directly to investors without the help of brokers or financial advisors. About a third of the plans operate under revenue sharing arrangements, whereby the investment companies managing the underlying investments share part of their revenue with the program managers. The voluntary nature and non-uniformity of plan disclosures do not allow us to observe the details of revenue sharing agreements; instead we simply observe their existence.

Panel B reports summary information at the investment level. Specifically, it reports information on the various fees and the annualized Sharpe ratio over the last three years as

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estimated by Morningstar. All the reported fees are asset-based and expressed as a percentage of total assets in a particular investment. Most plans offer low-cost options (e.g., money market funds) that typically have zero fees. The state fee—the fee collected by the state (also known as the trustee fee)—for the average investment is 4 bps and can be as high as 26 bps. Program managers collect 16 bps in program management fees on average. The distribution fee, which is similar to the 12b-1 fee for mutual funds, averages 34 bps. The average for the underlying fund fees is 38 bps with a maximum value of 129 bps. Finally, the total expense ratio, which combines all the various asset-based fees, has an average value of 91 bps and maximum value of 255 bps. This suggests that close to 60% of the total expense ratio goes to program managers, state governments, and intermediaries that help sell the 529 plan.

2.3. Measuring States' Differential Tendency to Extract Revenue

2.3.1. Approach

To construct a measure that captures cross-plan variation in states' tendency to extract revenue, we build on the notion that total revenue received by the state from a plan is the product of the fee it charges (state fee) and the corresponding level of assets in the plan. Thus, a state seeking higher revenue from its 529 plan will likely negotiate a higher state fee with the program manager and/or allow aggressive sales practices to increase plan assets. We observe the state fees directly but to capture the effort to grow plan assets, we employ the distribution expense, which reflects the compensation to intermediaries for selling a given plan investment. Assuming a holding period of seven years (e.g., Sirri and Tufano 1998), we calculate the distribution expense at the investment level as the distribution fee plus one-seventh of the front-end-load fee.

As states can utilize either (or both) of these approaches, we measure their combined information via the first principal component of the state fees and distribution expenses. There are

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several possible selection methods for determining the optimal number of principal components (e.g., Jolliffe 1986; Mason and Gunst 1986), but the general consensus is to keep components that have corresponding eigenvalues greater than one and cover at least 60% of the total variation. Using the first principal component in our setting satisfies both conditions. We use this first principal component to identify the differential tendencies of states to extract revenue from their 529 plans and we refer to it as the *Tendency to Extract Revenue (TER)*.

With few exceptions, investments in a given plan have the same state fee; however, distribution expenses vary at the investment level.[5] This allows for different ways of computing the first principal component. We first compute the principal component at the investment level, allowing for both within-plan and cross-plan variation in both state fees and distribution expenses (*TER_VER1*). The second method computes the principal component at the plan level allowing for cross-plan variation whereby both variables are aggregated at the plan level. We use two aggregating approaches. The first approach takes the average state fee and average distribution expense (*TER_VER2*), while the second takes the maximum value of each variable across all investments in a given plan (*TER_VER3*).

2.3.2. Validation

If our measures indeed capture the inclination of states to extract revenue from their 529 plans, then they should be even larger for states that negotiated the 529 plan contract when they were under budgetary pressures. To test this, we measure state budgetary constraints with an indicator variable indicating whether the state ran a budget shortfall in the year prior to when the current program manager started managing the 529 plan. We regress each of the three versions of

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[5] In some plans state fees vary by investment within the same plan and money market investments have state fees that are lower than other investments in the plan or even zero.

TER on this budget indicator. Since *TER_VER1* is constructed at the investment level, we aggregate it at the plan level by taking its average across all investments in a given plan.

Results reported in Table 2 show a positive and highly significant relation between budget shortfalls and all our *TER* measures. The relation is also economically significant in that the presence of a budget deficit leads to an increase in the *TER* measures that is almost as large as their standard deviation. The existence of heterogeneous "balanced budget provisions" across states likely underestimates the true effect of a state's financial situation on *TER*. What is clear is that states negotiating fees in the presence of a budgetary shortfall tend to end up with larger state fees and higher leniency for program managers to charge higher distribution fees.[6]

We choose *TER_VER3* for our analysis in the rest of the paper for two reasons. First, *TER_VER3* is less likely to be affected by zero-fee options (like money market investment), which are unlikely sources of fee revenue since plans cannot justify charging large fees to investors in near-zero yielding accounts. Second, since it is based on the maximum fees that states are willing to collect and maximum distribution expense they are willing to allow, *TER_VER3* captures the full willingness of states to pursue revenue-maximizing.

3. Analysis

3.1 Empirical Design

We examine the relationship between 529 plan features and the states' TER using OLS estimation in the following equation:

$$529\ Measure_{s,p,i} = \alpha + \beta_1 TER_{s,p,i} + \Gamma'F + \varepsilon_{s,p,i} \qquad (1)$$

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[6] This is further confirmed in Table B1 of the Internet Appendix where we separately examine the relation of state fees and distributions expenses with the budget deficit indicator.

State is denoted by *s*, 529 plan by *p*, and investment by *i*. $TER_{s,p,i}$ is *TER_VER3* described above. *F* is a vector of control variables. To control for investment style effects, we include fixed effects based on the Morningstar Investment Categories. We use equation (1) for analysis at the investment level. For analysis at the plan level, we modify equation (1) by aggregating all variables at the plan level.

3.2 Results

3.2.1. Underlying Fund Fess and Performance

We first examine whether revenue extraction by states from 529 plans is related to the underlying fund fees investors pay. Panel A of Table 3 shows estimates from regressions of underlying fund fees at the investment level on *TER*. In column (2) we control for various plan and state-level variables. Column (3) adds style fixed effects based on Morningstar investment categories to account for variation in fees attributable to different investment styles. The coefficients on *TER* are positive and statistically significant in all specifications suggesting that higher revenue extraction by states is associated with higher underlying fund fees. This effect is also highly economically significant: a one unit increase in *TER* (approximately a 1 standard deviation change) results in 9-11 bps of additional annual fees on the underlying funds, which amounts to 24%-29% of the sample mean of these fees.

The evidence presented above shows that high-TER plans have both higher state and distribution expenses (by construction) and also more expensive underlying investment options.[7] However, higher costs might be offset by better performance. We next examine the relationship between *TER* and underlying investment performance.

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[7] The relation between total fees and *TER* is shown in Table B2 of the Internet Appendix. The coefficients on *TER* range from 25-28 bps—more than double the coefficients from regressing underlying fund fees on *TER*.

Panel B of Table 3 presents results from regressing the annualized 3-year Sharpe ratio at the investment level on *TER*. Sharpe ratios are computed by Morningstar based on monthly returns net of all investment fees.[8] The coefficients on *TER* are negative and statistically significant in all specifications suggesting that higher revenue extraction by states is associated with significantly weaker risk-adjusted performance. This effect is also economically significant: a one unit increase in *TER* is associated with a Sharpe ratio reduction of 0.06-0.07, which amounts to 10% of the sample mean for the Sharpe Ratio. These results rule out that the higher fees investors are paying give them access to better-performing investments.

3.2.2 Other Direct or Indirect Benefits

Having shown that investors in 529 plans with greater revenue extraction tendency pay higher fees for investments with weaker net performance, we next examine whether these investors receive other benefits not related to performance. We first consider direct benefits that are related to investment menu quality. Our first measure of menu quality is the number of age-based portfolios available. Availability of these portfolios is attractive, especially for investors without the requisite skills to adjust portfolio exposures during the investment period. Our second measure is the availability of investment options tied to index mutual funds, which offer investors a low-cost alternative even when other options are relatively expensive.

We regress the number of age-based portfolio options in a 529 plan on *TER* and report results in Table 4. Plans with higher *TER* are associated with a significantly lower number of age-based portfolio options. A one standard deviation increase in *TER* is associated with 4 fewer age-based portfolios in a given plan. For context, the sample average of the number of age-based

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[8] Results reported in Tables B3 and B4 of the Internet Appendix are similar if we use alphas as measures of performance or Sharpe ratios computed based on different time horizons.

portfolios is 2.08. Turning to the second measure of menu quality, we regress the availability of index options in a plan, modeled via a (1/0) indicator variable, on *TER*. Results reported in the last two columns of Table 4 show a negative and significant coefficient on *TER*. In sum, high-TER plans offer fewer customized options and are less likely to offer index options. These results, combined with the evidence from the previous section, suggest that investors in these plans pay higher fees for an inferior investment menu.

Although we are unable to document any direct benefits, states could use the fee revenue from their 529 plans to benefit their residents in other indirect ways. For example, they could (1) invest in advertising to increase participation rates in their sponsored 529 plans; (2) invest in higher education; or (3) simply provide additional state tax benefits. In Table B5 of the Internet Appendix we examine the relation between variables proxying for the indirect benefits described above and *TER*. We find no evidence that state residents are receiving any of the previously-mentioned benefits.

3.2.3 Incentives of the Program Manager

Why does a high-TER state allow an inferior investment menu when doing so undermines the stated goal of the plan itself? One possible explanation is that high-*TER* plans result from states agreeing to receive higher fee revenue in return for more leeway for the program manager. States likely find the promised fee revenue attractive but lack the expertise to adequately assess choices made by the program manager.

This friction could enable the program managers to extract higher rents in a way that undermines menu quality. Pool et al. (2021) show that program managers of 401(k) plans favor indirect compensation in the form of revenue sharing arrangements—which are less

conspicuous—as opposed to direct compensation in the form of program management fees. This, in turn, leads to inferior investment menus because the program managers select investment companies with which they have revenue sharing arrangements at the expense of companies with which they don't.[9] Program managers might find compensation in the form of revenue sharing arrangements in 529 plans more attractive because they are harder to understand by plan sponsors and participants, which is exacerbated by lack of mandated uniform disclosure requirements.

To test this hypothesis, we examine the two forms of compensation for the program manager—direct and indirect—in relation to *TER*. If the inferior menus of high-*TER* plans result from program managers pursuing revenue sharing arrangements, we would expect high-TER plans to have "typical" program management fees but higher incidence of revenue sharing arrangements. We regress program management fees at the individual investment level on *TER* and report results in Panel A of Table 5. The coefficient on *TER* is statistically significant in two of the three specifications but of a small economic magnitude, providing only weak evidence that program managers charge slightly higher program management fees in higher-*TER* plans. Turning to indirect compensation, we relate the probability of a plan having revenue sharing agreements with *TER*. At the plan level we regress Revenue Share—a 1/0 variable indicating whether a plan has a revenue share arrangement—on *TER* and report results in Panel B of Table 5. The coefficients on *TER* are positive and significant. A one standard deviation increase in *TER* equates to 8.4%-9.5% percentage point increase in the likelihood of a revenue-sharing arrangement. This effect is economically meaningful given the unconditional probability of revenue sharing of 34%.

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[9] Indeed, Table B6 of the Internet Appendix shows that plans with revenue sharing arrangements offer investments with higher fees but weaker investment performance.

Importantly, there is no mandated requirement on the part of plan managers to disclose the presence of revenue sharing arrangements. This causes plans that do not disclose revenue sharing agreements to end up in the "*No-Revenue Share*" group, working against us finding a relation between *Revenue Share* and *TER*. Nonetheless, the large economic significance suggested by the coefficients provides strong support for our proposed explanation.

4. Conclusion

We know little about how the incentives of key players in the administration of 529 plans affect investors in these plans. This is puzzling because 529 plans constitute an increasingly popular way households use to save for higher education expenses. Understanding how these incentives shape the investment menus of 529 plans is important for yet another reason. As state governments are beginning to sponsor retirement plans for small private companies that operate in a similar regulatory vacuum, what we learn from 529 plans can also inform the debate on the merits of state involvement in the investment management of private retirement plans.

The main finding of our study is that 529 plans where states show a greater tendency to extract revenue offer investment menus with higher underlying fund fees, weaker net-of-fees performance, and fewer options. Investors in these plans do not receive any indirect benefits either. Thus, a greater tendency for revenue extraction negatively affects investors, which is in contrast with the stated objectives of 529 plans to support saving for higher education.

At first blush, this evidence might suggest that state governments are purposely putting their budget concerns ahead of the interests of their residents that participate in 529 plans. However, our evidence suggests that states—perhaps due to a lack of expertise—succumb to plan terms proposed by their program managers that provide more fee revenue to the state in return for

weaker oversight. Program managers take advantage of the weak oversight by pursuing their own interest at the expense of plan investors.

Our findings have implications for households that invest in 529 plans and for employees of small firms participating in retirement plans sponsored by their states. Understanding the fees collected by states and whether program managers get compensation via revenue sharing arrangements could help investors avoid costlier plans with weaker performance. Regulatory oversight at the federal level extended to 529 plans can also address weak and non-uniform disclosure practices and protect investor interests better.

Finally, our paper opens a new venue of research regarding the involvement of state governments in investment management. Historical data on the investment menus of 529 plans and their historical performance, which is currently unavailable, could provide additional insights on how the menus of these plans have evolved through time and whether changes in state governments led to changes in the investment menus of the 529 plans they sponsor.

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Table 1: Summary Statistics

This tables reports summary statistics for our sample of 529 plans. Panel A reports information at the 529 plan level and Panel B at the investment level.

Panel A: 529 Plan level

Variable	Obs	Mean	Median	Std. Dev.	Min	Max
Plan Age (years)	86	16.27	18.81	5.59	1.74	24.35
Program Manager Tenure (years)	86	12.11	10.51	7.27	0.16	24.35
State-Run Indicator	86	.10				
Direct Sold Indicator	86	.65				
Revenue Share Indicator	86	.34				
Morningstar Style Count	86	16.79	16.00	4.44	4	30
At Least one Index Option	86	.79				
Number of Age-based Tracks	86	2.08	1.00	1.41	1	8
Net Assets Plan ($ Billion)	86	4.2	1.62	9.26	.012	75.54
Plan Accounts	86	187607	82305	379647	2743	2461194

Panel B: Investment Level

Variable	Obs	Mean	Median	Std. Dev.	Min	Max
State Fee	5339	.04	.03	.04	0	.26
Program Management Fee	5339	.16	.05	.17	0	1.15
Distribution fee	5339	.34	.00	.41	0	1.75
Underlying Fund Fees	5339	.38	.38	.29	0	1.29
Total Expense Ratio	5339	.91	.75	.54	0	2.55
Sharpe Ratio (3y)	5339	0.65	0.67	1.01	-14.08	17.59

Table 2: Relation between *TER* Measures and State Budget Condition

This table presents OLS estimates from regressions of *TER* measures on a state budget deficit indicator. The indicator variable equals one if a state's expenses exceeded total revenues in the year before the current program manager started managing the 529 plan, and zero otherwise. Observations are at the plan level. Corresponding t-statistics in parenthesis. ***,**, and * denote statistical significance at the 1%, 5%, and 10% significance level, respectively.

	Ter_Ver1	Ter_Ver2	Ter_Ver3
	(1)	(2)	(3)
Budget Deficit Indicator	.906***	.913***	.909***
	(3.207)	(3.313)	(3.273)
Log (Plan Assets)	-.080	-.041	-.042
	(-0.607)	(-0.346)	(-.359)
Plan Age (Years)	-.076	-.077	-.077
	(-1.588)	(-1.548)	(-1.548)
Prog. Manager Tenure (Years)	.004	.007	.007
	(.134)	(.267)	(.269)
Log (Style Count)	-.307	-.248	-.253
	(-.366)	(-.283)	(-.288)
Log (State Population 2019)	-.156	-.166	-.162
	(-1.035)	(-1.080)	(-1.053)
Constant	5.459*	4.299	4.260
	(1.859)	(1.411)	(1.395)
Observations	86	86	86
R-squared	.473	.455	.450

Table 3: Relation of Underlying Fund Fees and Performance with *TER*

This table presents OLS estimates from regressions of underlying funds fees (Panel A) and performance (Panel B) on *TER*. Observations are at the individual investment level. Performance is measured as the annualized Sharpe ratio over the last three years. Panel B regressions include only Sharpe ratios computed from at least 18 non-missing return observations. Corresponding t-statistics in parenthesis. Standard errors are robust to heteroskedasticity and clustered at the state level. ***,**, and * denote statistical significance at the 1%, 5%, and 10% significance level, respectively.

Panel A. Dependent Variable: Underlying Fund Fees			
	(1)	(2)	(3)
TER	.113***	.097***	.086***
	(6.129)	(5.292)	(4.714)
Log (Plan Assets)		-.016	-.015
		(-1.099)	(-1.121)
Plan Age (Years)		-.005	-.004
		(-1.394)	(-1.229)
Prog. Manager Tenure (Years)		.012***	.013***
		(3.959)	(4.044)
Log (Style Count)		.282***	.261**
		(2.675)	(2.440)
Log (State Population 2019)		-.033*	-.034**
		(-1.869)	(-2.163)
Constant	.377***	.335	.413
	(17.105)	(.774)	(.984)
Observations	5339	5339	5339
R-squared	.219	.319	.411
Style FE	No	No	Yes

Panel B. Dependent Variable: Sharpe Ratio			
	(1)	(2)	(3)
TER	-.066***	-.073***	-.063***
	(-2.642)	(-4.072)	(-3.471)
Log (Plan Assets)		.025**	.026**
		(2.53)	(2.596)
Plan Age (Years)		.009**	.009*
		(1.996)	(1.931)
Prog. Manager Tenure (Years)		-.011**	-.012**
		(-2.029)	(-2.046)
Log (Style Count)		.239	.145
		(1.343)	(.715)
Log (State Population 2019)		.024	.027
		(1.348)	(1.392)
Constant	.59***	-1.011*	-.788
	(23.25)	(-1.758)	(-1.167)
Observations	4053	4039	4038
R-squared	.011	.023	.244
Style FE	No	No	Yes

Table 4: The Relation between Plan Menu Quality and *TER*

This table presents OLS estimates from regressions of plan menu quality measures on *TER*. The first measure is the number of age-based portfolios available in a given plan. The second measure is the availability of index options in a plan, a 1/0 variable indicating whether the plan offers at least one index-based option. Standard errors are robust to heteroskedasticity. Corresponding t-statistics in parenthesis. ***,**, and * denote statistical significance at the 1%, 5%, and 10% significance level, respectively.

Measure of Menu Quality:	Number of age-based tracks		Availability of index options	
	(1)	(2)	(3)	(4)
TER	-3.544***	-4.47***	-.036***	-.034**
	(-2.806)	(-3.689)	(-2.631)	(-2.452)
Log (Plan Assets)		2.105**		.012
		(2.191)		(.921)
Plan Age (Years)		-.138		-.005
		(-.456)		(-1.275)
Prog. Manager Tenure (Years)		.19		-.003
		(.891)		(-1.05)
Log (Style Count)		17.917***		-.101
		(2.923)		(-1.195)
Log (State Population 2019)		-.522		-.011
		(-.37)		(-.531)
Constant	16.662***	-70.864***	.144***	.464
	(10.871)	(-2.686)	(6.111)	(1.199)
Observations	86	86	86	86
R-squared	.088	.292	.052	.112

Table 5: The Relation of Program Manager Fees and Revenue Sharing Arrangements with *TER*

Panel A presents results from regressions at the investment level of the program manager fees on *TER*. Panel B presents results from a linear probability model at the plan level relating the probability of revenue sharing arrangements and *TER*. Standard errors are robust to heteroscedasticity and in Panel A are also clustered by state. Corresponding t-statistics in parenthesis. ***,**, and * denote statistical significance at the 1%, 5%, and 10% significance level, respectively.

Panel A. Dependent Variable: Program Manager Fee			
	(1)	(2)	(3)
TER	.018	.020*	.022*
	(1.421)	(1.724)	(1.829)
Log (Plan Assets)		.005	.005
		(.415)	(.388)
Plan Age (Years)		.003	.003
		(1.163)	(.994)
Prog. Manager Tenure (Years)		-.003	-.003
		(-.894)	(-.936)
Log (Style Count)		-.019	-.032
		(-.203)	(-.335)
Log (State Population 2019)		-.001	-.004
		(-.045)	(-.181)
Constant	.162***	.092	.190
	(8.800)	(.333)	(.707)
Observations	5339	5339	5339
R-squared	.015	.028	.054
Style FE	No	No	Yes

Panel B. Dependent Variable: Revenue Share Indicator		
	(1)	(2)
TER	.095*	.084*
	(1.896)	(1.802)
Log (Plan Assets)		.012
		(.235)
Plan Age (Years)		-.004
		(-.324)
Prog. Manager Tenure (Years)		-.007
		(-.898)
Log (Style Count)		.377*
		(1.861)
Log (State Population 2019)		-.024
		(-.322)
Constant	.383***	-.310
	(6.254)	(-.348)
Observations	86	86
R-squared	.055	.116

Internet Appendix

Conflicting Incentives in the Management of 529 Plans

by

Justin Balthrop and Gjergji Cici

A. Institutional Background

The overall growth in the number of accounts and assets in 529 plans suggests that these saving plans are indeed meeting a need in the marketplace and are getting more households to save for higher education, which is consistent with their stated goals. This trend is likely to continue or even accelerate given the continued rise in college tuition and recent expansions of 529 plan tax-free benefits to cover K-12 tuition, student-loan repayment, and apprenticeship program costs.[10]

In order for plan participants to benefit from tax exemption, 529 plans must comply with the requirements of Section 529 of the Internal Revenue Code introduced in 1996. One key requirement is that participants use distributions from 529 plans to only pay for qualified educational expenses. Compliance with this rule allows participants to make after-tax contributions to their plan accounts and receive distributions from these accounts that are exempt from federal taxes and state taxes.[11]

Another requirement is that 529 plans are sponsored by states. Because of this, interests in 529 plans are treated as municipal securities,[12] meaning that brokers or financial advisors that sell 529 plan investments fall under the regulatory authority of Municipal Securities Regulatory Board (MSRB), the rules of which are enforced by FINRA (e.g., Hurley, Flynn, and Toner 2018). However, 529 plans or the sponsoring states are not required to register with the SEC under the Investment Company Act of 1940. Nor are 529 investments required to be registered as securities

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[10] The change introduced by the 2017 Tax Cuts and Jobs Act allows families to make tax-free withdrawals from 529 plans to pay up to $10,000 in K-12 tuition expenses per child per year, while the change under the 2019 SECURE Act allows for student loan lifetime repayment of up to $10,000 per child and paying for apprenticeship programs costs.

[11] The exception to this are Alabama and Illinois. In particular, qualified distributions from a non-Alabama 529 plan are not exempt from Alabama state taxes, while qualified distributions from a non-Illinois plan are not exempt if the plan does not comply with certain disclosure conditions (https://www.savingforcollege.com/compare-529-plans, accessed on 8/28/2021).

[12] Municipal Securities Rulemaking Board, SEC No-Action Letter, Wash. Serv. Bur. (CCH) File No. 032299033 (Feb. 26, 1999).

under the Securities Act of 1933. This means that 529 plans do not answer to the SEC in matters of investor protection or investment disclosure. Hence, the regulatory vacuum could negatively affect plan participants since the sponsors and program managers of these plans are not subject to the fiduciary standards applicable to other investment management entities regulated by the SEC. Moreover, the lack of uniform and standardized disclosure makes it hard for investors to make informed decisions (e.g., Bullard 2004). Although the College Savings Plans Network, an affiliate of the National Association of State Treasurers, and all 529 plans have approved a set of Disclosure Principles intended to improve transparency, the extent to which these principles are followed by the states is completely voluntary.

As sponsors of 529 plans, states are responsible for the oversight of 529 plans, which they conduct through their politically appointed advisory boards (Curtis 2020). In most cases, state governments outsource the investment menu design and management of their 529 plans to an external program manager, which can be a record keeper (e.g., Ascensus), a mutual fund company (e.g., T. Rowe Price), or a bank (e.g., Union Bank & Trust Co). Only eight states offer plans that are managed in-house without the help of an external program manager.[13] The compensation of the program manager consists of a direct and an indirect component. The direct component is the program management fee, which is typically a percentage of assets under management and is contractually agreed upon by the state and the program manager. The indirect component comes from revenue sharing that the program manager could have arranged with the investment companies, whose underlying mutual funds the program manager selects for the investment menu. The program manager creates a menu of investments options, where each investment option is a

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[13] The states that offer in-house managed plans are Florida, Louisiana, North Carolina, Ohio, Pennsylvania, Tennessee, Utah, and Virginia. Out of these, Ohio and Virginia also offer plans managed by external managers.

portfolio consisting of a stand-alone or multiple mutual funds. Which mutual funds to choose in the construction of the plan investment menu is a key decision of the program manager. Similar to the 401(k) setting, this decision is potentially subject to conflicts of interest on the part of the program manager. Pool et al. (2021) show that in 401(k) plans revenue sharing arrangements cause plan managers to favor mutual funds with revenue sharing arrangements in the investment menu at the expense of mutual funds that do not. Similarly, for program managers that are mutual fund companies, they tend to favor their own mutual funds managed in-house at the expense of mutual funds offered by other mutual funds (Pool et al. 2016). Both of these effects lead to menus that contain investment options that are inferior in terms of investment fees and performance.

Most states receive a state fee as a percentage of plan assets, also referred to as a trustee fee, which is intended to cover expenses that states might incur in their involvement in 529 plans. Although there is reason to believe that state fees could be used to cover legitimate expenses, both Bogan (2014) and Curtis (2020) suggest that the presence of state fees introduces incentives on the part of state governments that are not aligned with the interests of plan participants. Bogan (2014) refers to state fees as "kickbacks" to the state that result from a revenue sharing arrangement between the state and the program manager. Furthermore, Bogan conjectures that the revenue states collect from their state fees might provide a disincentive for states to not negotiate better fees with the program manager on behalf of plan participants. Although there is little to no disclosure on how the state fees are used, Curtis (2020) identified a number of cases whereby states use state fee revenue from their 529 plans to support other initiatives, which effectively results in wealth transfers from the 529 plan participants to other state residents. For example, the state of Virginia used part of its $40 million in fees it collected from its CollegeAmerica 529 plan to cover the operating expenses of its prepaid tuition program; similar practices of using state fee revenue

to support other initiatives are currently or have been used in the past in other states, including New Jersey, Nevada, and Washington State (Curtis 2020).[14]

In addition to how state fee revenue is used, a related concern is that states might want to grow their own 529 plans by using aggressive sales approaches in order to generate more fee revenue. In a senate hearing on 529 plans Martin Noven, then Deputy Treasurer of the state of Illinois, expressed the concern that some states "seem to have lost [their consumer] focus in the interest of growing their [529] programs" (Noven 2004). The revenue that a given state generates from each 529 plan it sponsors is a function of the state fee, applied as a percentage of plan assets, and the total assets of the plan. Thus, states aspiring to generate more revenue from their 529 plans, could negotiate a higher state fee with the program manager and/or try to increase the plan assets. Although increasing plan assets is not in their immediate control, states could favor a program manager that follows aggressive sales practices intended to grow plan assets.[15] For example, a state could be more amenable to a plan structure that provides high compensation to brokers and financial advisors for selling the plan to investors because that could incentivize brokers to sell their plan even to out of state investors.[16] The compensation that 529 plans provide to the intermediaries that help sell the plan is paid by plan participants in the form of distribution fees that 529 plans levy as a percentage of assets and from front-end load fees. Distribution fees and

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[14] In addition to state fees, states might get other types of transfers from their program managers. For example, the treasurer of the state of Illinois negotiated an arrangement for the program manager of the Illinois' 529 plan to fund a plan marketing campaign with ads prominently featuring the state treasurer during a reelection year. Critics claimed the funds were in effect used for political campaigning by the treasurer (e.g., Kid 2002 and Lauricella 2003).

[15] This was also raised during the 2004 senate hearing on 529 plans in Noven's (2004) testimony stating "that an increasing number of states permit their vendors to charge high fees and commissions to consumers seeking to save for college in an effort to grow assets."

[16] Consistent with this, a number of brokers were found to sell investors out-of-state 529 plans from which they received higher compensation. In doing so, brokers did not disclose to investors the forgone state tax benefits from investing in their own state's 529 plan (Mincer 2006). More recently, FINRA has found other of questionable practices by brokers selling 529 plans (Beilfuss 2019).

front-end loads in 529 plans mirror, respectively, the 12-b1 fees and front-end loads of mutual funds.

Another unique feature of the 529 plan industry is that its structure undermines competition. There are two factors that contribute to this. First, the lack of standardized and uniform disclosure by 529 plans makes it hard for consumers to compare plans and their fees. Second, most states offer their residents tax deductions or tax credits only if they invest in their state's own 529 plans (e.g., Hurley et al. 2018). Both of these factors make investors less price-sensitive, potentially enabling 529 plans to extract rents in the form of fees that are higher than what they should have been in a fully competitive setting without the aforementioned frictions.

B. Additional Analysis and Robustness Tests

B.1 Robustness for State Finances and 529 Menu Costs

To check robustness of the relation documented in Table 2 between our *TER* measure and the state's financial condition, we examine the relation between each of the two variables that go into our principal component analysis and the state budget deficit indicator. Table B1 presents OLS estimates from regressions of state fees (Panel A) and distribution expenses (Panel B) on the budget deficit indicator. These regressions are conducted at the investment level to allow for within-plan and cross-plan variation of fee structures across investment options. In all specifications, including those that control for the underlying investment style via fixed effects, we find a strong positive relationship of state's budget deficit with state fees and distribution expenses.

B.2 Relation between Total Expense Ratio and TER

Next, we examine the relation between total fees of 529 investments and our *TER* measure. In Table B2 we regress the total expense ratio on *TER*. We find an economically large and highly significant coefficient in all specifications. Specifically. we find that a unit increase in TER (equivalent to a 1 standard deviation increase) is associated with an increase of between 25bps and 28bps in total expenses. The magnitude of these coefficients is more than double the magnitude of the TER coefficients in Panel A of Table 3 in our main text. Combined with the results of Table 3, this evidence confirms that investments in higher-TER plans have both higher state fees and distribution expenses as well as higher underlying fund fees.

B.3 Robustness of Performance Measures

The main results of our paper show that the risk-adjusted returns, as measured by a 3-year Sharpe ratio, are decreasing in our *TER* measure. To check that these results are robust to other performance measures and different time windows, we conduct two sets of additional tests. First, we repeat the analysis of panel B of Table 3 in our main text, but substitute in 3-year alpha as the dependent variable and report results in Table B3. Panel A of Table B3 uses alphas computed by Morningstar based on a one-factor market model, whereby the factor return is based on the S&P 500 index return. Panel B of Table B3 uses alphas computed by Morningstar from a one-factor model, whereby the factor is based on an investment category benchmark that changes depending on the investment category of the investment. In all specifications we consistently find that annualized alpha is significantly decreasing in *TER*, even when controlling for investment style fixed effects

Finally, in Table B4 we replicate the analysis from the last column of Panel B of Table 3 with annualized Sharpe ratios measured over the last 1, 5, and 10 years. In order to ensure we are measuring multi-year Sharpe ratios with as little noise as possible, inclusion in the regression is conditional on a sufficiently populated time series of monthly investment returns over the given window. Specifically. we require at least 30 months of observations for the 5-year window and at least 60 for the 10-year window. Although we tabulate only the specification including style fixed effects for each time window in Table B4, other specifications are qualitatively similar and have strong statistical significance. For all measurement windows we find a significant negative relationship between Sharpe ratios and our *TER* measure.

B.4 Relation between Indirect Measures of Investor Benefit and TER

The main results of our paper support the lack of direct benefits to savers/investors in 529 plans, but it is plausible that states utilize the extra fee revenues they generate to provide indirect benefits. For example, if states invest in marketing and educating citizens about the existence of 529 plans, they could increase the rate of utilization of these plans in their state. In that specific case, higher fee revenue collected by the state could generate a better overall rate of investment savings across the population. We test this hypothesis in column 1 of Table B5, using 529 plan accounts per state capita as our measure of participation rates at the state level. We find no relationship between higher fee plans and overall participation rates.

We next examine whether states use fee revenues to invest more heavily in general educational spending for their citizens. We regress total educational expenditures per capita on our TER measure and report the results in column 2 of Table B5. Again we show no evidence that states reinvest additional fee revenues back into broadly defined educational expenditures.

Lastly, given that there is significant variation in the tax treatment of education savings across states, we look into whether higher-TER states offer their citizens higher tax deductibility benefits. Specifically, we calculate the maximum dollar amount of state tax deductions offered for a state's plan and regress that on our TER measure. For states that do not report a specific maximum dollar amount, we fill in the data with the maximum yearly deductible allowed for all states that report specific dollar figures. Once again our results show no relationship between high TER and state tax deduction benefits.

B.5 The Relation of Revenue Sharing with Investment Fees and Performance

In this section we examine the impact that revenue sharing arrangements have on 529 plan investors. In Columns (1) and (2) of Table 6B we regress underlying fund fees and total expense

ratios, respectively, on our revenue share indicator and we find evidence of a positive and significant relationship. Investment in plans with revenue sharing agreements have underlying funds fees and total expense ratios that are approximately 8 and 18 basis points higher than investment from plans with no such agreements. Column (3) shows that these agreements are associated with a lower Sharpe ratio in the amount 0.81, ruling out the possibility of higher fees being associated with better overall performance. Again, we note that data limitations due to no required disclosure standards likely put some plans with unobservable revenue sharing into our "non-revenue-share" classification, which works against us finding a relation between investment fees and performance and the presence of such arrangements.

Table B1: Relation between State Budget Condition and State Fees and Distribution Expenses

This table presents OLS estimates from regressions of state fees (Panel A) and distribution expenses (Panel B) on a budget deficit indicator. The indicator variable equals one if a state's expenses exceeded total revenues in the year prior to the year the current program manager started managing the 529 plan, and zero otherwise. Observations are at the investment level. OLS coefficient estimates are listed with corresponding t-statistics in parenthesis. Standard errors are robust to heteroskedasticity and clustered at the state level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% significance level, respectively.

Panel A. Dependent Variable: State Fee

	(1)	(2)	(3)
Budget Deficit Indicator	.033***	.041***	.042***
	(3.392)	(5.889)	(6.273)
Log (Plan Assets)		-.003	-.003*
		(-1.649)	(-1.755)
Plan Age (Years)		0	0
		(-.347)	(-.162)
Prog. Manager Tenure (Years)		0	0
		(.223)	(.198)
Log (Style Count)		.004	.006
		(.304)	(.452)
Log (State Population 2019)		-.014**	-.009**
		(-2.303)	(-2.218)
Constant	.015*	.214**	.198**
	(1.770)	(2.165)	(2.111)
Observations	5339	5339	5339
R-squared	.204	.299	.331
Style FE	No	No	Yes

Panel B. Dependent Variable: Distribution Expense

	(1)	(2)	(3)
Budget Deficit Indicator	.191**	.216**	.186**
	(2.111)	(2.137)	(2.058)
Log (Plan Assets)		-.004	-.007
		(-.081)	(-.151)
Plan Age (Years)		-.036***	-.035***
		(-2.861)	(-2.716)
Prog. Manager Tenure (Years)		.011	.011
		(1.457)	(1.432)
Log (Style Count)		.845***	.811***
		(3.349)	(3.466)
Log (State Population 2019)		-.013	-.015
		(-.247)	(-.315)
Constant	.535***	-1.231	-1.080
	(8.309)	(-.957)	(-.911)
Observations	5339	5339	5339
R-squared	.032	.258	.304
Style FE	No	No	Yes

Table B2: Relation between Total Expense Ratio and *TER*

This table presents OLS estimates from regressions of the total expense ratio on *TER*. Observations are at the investment level. OLS coefficient estimates are listed with corresponding t-statistics in parenthesis. Standard errors are robust to heteroskedasticity and clustered at the state level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% significance level, respectively.

Dependent Variable: Total Expense Ratio			
	(1)	(2)	(3)
TER	.275***	.258***	.246***
	(11.006)	(10.148)	(9.392)
Log (Plan Assets)		-.066***	-.068***
		(-2.853)	(-2.967)
Plan Age (Years)		-.008	-.007
		(-1.151)	(-1.08)
Prog. Manager Tenure (Years)		.011**	.01**
		(2.373)	(2.436)
Log (Style Count)		.385**	.358**
		(2.167)	(1.991)
Log (State Population 2019)		-.041	-.046
		(-.924)	(-1.074)
Constant	.831***	1.74**	1.933***
	(23.493)	(2.339)	(2.657)
Observations	5339	5339	5339
R-squared	.337	.392	.433
Style FE	No	No	Yes

Table B3: Replication of Panel B from Table 3 using Alpha Measures of Performance

This table replicates the analysis from Panel B of Table 3 with annualized alphas measured over the last 3 years. Panel A uses alphas computed by Morningstar based on a one-factor market model, whereby the factor return is based on the S&P 500 index return. Panel B uses alphas computed by Morningstar from a one-factor model, whereby the factor is based on an investment category benchmark that changes depending on the investment category of the investment. Regressions include only alphas computed from at least 18 non-missing return observations. The regressions are at the individual investment level. OLS coefficient estimates are listed with corresponding t-statistics in parenthesis. Standard errors are robust to heteroscedasticity and clustered at the state level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% significance level, respectively.

Panel A. Dependent Variable: Alpha from a 1-Factor Market Model			
	(1)	(2)	(3)
TER	-.348***	-.316***	-.209**
	(-3.367)	(-4.039)	(-2.517)
Log (Plan Assets)		.113	.147
		(1.606)	(1.633)
Plan Age (Years)		.073***	.06***
		(3.729)	(3.119)
Prog. Manager Tenure (Years)		-.008	-.021
		(-.363)	(-.913)
Log (Style Count)		.119	.027
		(.218)	(.044)
Log (State Population 2019)		.021	.118
		(.126)	(.735)
Constant	-1.030***	-5.17	-6.744**
	(-6.632)	(-1.631)	(-2.112)
Observations	4039	4039	4039
R-squared	.009	.025	.451
Style FE	No	No	Yes

Panel B. Dependent Variable: Alpha from a 1-Factor Investment Category Benchmark			
	(1)	(2)	(3)
TER	-.179*	-.161*	-.19**
	(-1.908)	(-1.807)	(-2.539)
Log (Plan Assets)		.144	.134
		(1.486)	(1.583)
Plan Age (Years)		.047**	.05**
		(2.272)	(2.427)
Prog. Manager Tenure (Years)		-.01	-.008
		(-.423)	(-.358)
Log (Style Count)		.12	.176
		(.212)	(.332)
Log (State Population 2019)		.083	.098
		(.583)	(.692)
Constant	-.561***	-5.902**	-6.122**
	(-4.475)	(-2.298)	(-2.305)
Observations	4039	4039	4039
R-squared	.007	.022	.108
Style FE	No	No	Yes

Table B4: Replication of Panel B from Table 3 with Sharpe Ratios Measured over Different Horizons

This table replicates the analysis from the last column of Panel B from Table 3 with annualized Sharpe Ratios measured over the last 1, 5 , and 10 years. The regressions are at the individual investment level. In Columns (1) the regression includes only observations with Sharpe ratios computed based on 12 non-missing return observations. In Columns (2)-(3) regressions include only observations with Sharpe ratios computed, respectively, from at least 30 and 60 non-missing returns. OLS coefficient estimates are listed with corresponding t-statistics in parenthesis. Standard errors are robust to heteroscedasticity and clustered at the state level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% significance level, respectively.

Sharpe Ratio Measured over the last:	1 Year	5 Years	10 Years
	(1)	(2)	(3)
TER	-.135**	-.049***	-.045***
	(-2.575)	(-3.192)	(-3.087)
Log (Plan Assets)	.065***	.021**	.024***
	(3.012)	(2.291)	(3.468)
Plan Age (Years)	.012	.007*	.009*
	(1.227)	(1.789)	(1.965)
Prog. Manager Tenure (Years)	-.011	-.007	-.009**
	(-1.177)	(-1.403)	(-2.5)
Log (Style Count)	.463	.265	.254**
	(1.295)	(1.213)	(2.02)
Log (State Population 2019)	-.002	.009	.04**
	(-.056)	(.473)	(2.177)
Constant	-1.656	-.708	-1.222**
	(-1.18)	(-.947)	(-2.413)
Observations	4704	3580	2360
R-squared	.044	.28	.164
Style FE	Yes	Yes	Yes

Table B5: Relation between Measures of Indirect Benefits and *TER*

This table reports regressions of variables proxying for various indirect benefits on *TER*. The analysis is done at the state level. All plan variables are aggregated to the state level by taking an average across all plans sponsored by a given state. The three dependent variables are: Participation Rate, proxied by the number of accounts in all plans sponsored by a state normalized by the state population; Higher-Education Expense, state expense in higher education normalized by the state population; and (3) State Deduction, the total amount of state tax deduction allowed by the state for investment in 529 plans. Financial Literacy Score is from Champlain College (2017). District of Columbia is excluded from this analysis given the lack of information on the variables of interest. OLS coefficient estimates are listed with corresponding t-statistics in parenthesis. Standard errors are robust to heteroskedasticity. ***, **, and * denote statistical significance at the 1%, 5%, and 10% significance level, respectively.

Dependent Variable:	Participation Rate	Higher-Education Expense	State Deduction
	(1)	(2)	(3)
TER	-.007	.077	-807.583
	(-.42)	(1.014)	(-.613)
Log (Plan Assets)	.044**	.041	413.056
	(2.635)	(.567)	(.331)
Plan Age (Years)	0	.014	481.147
	(-.114)	(.792)	(1.565)
Prog. Manager Tenure (Years)	-.001	-.012	-591.603***
	(-.347)	(-.963)	(-2.784)
Log (Style Count)	-.06	-.746	11925.023
	(-.559)	(-1.521)	(1.468)
Log (State Population 2019)	-.047**	-.215**	222.175
	(-2.36)	(-2.51)	(.154)
Financial Literacy Score	0	.01	159.022
	(.145)	(1.183)	(1.032)
Constant	.003	5.777***	-50924.181*
	(.007)	(3.131)	(-1.684)
Observations	49	49	49
R-squared	.224	.303	.212

Table B6: Relation between Fees and Performance and Revenue Sharing Arrangements

This table presents OLS estimates from regressions of the underlying fund fees, total expense ratio, and Sharpe ratio on Revenue Share. Revenue Share is a 1/0 variable indicating whether a plan has a revenue sharing arrangement or not. Sharpe Ratio is as the annualized Sharpe ratio of each investment computed from returns over the last three years. The regressions are at the individual investment level. OLS coefficient estimates are listed with corresponding t-statistics in parenthesis. Standard errors are robust to heteroskedasticity and clustered at the state level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% significance level, respectively.

Dependent Variable:	Underlying Fund Fees	Total Expense Ratio	Sharpe Ratio
	(1)	(2)	(3)
Revenue Share	.079*	.181**	-.081*
	(1.911)	(2.267)	(-1.937)
Log (Plan Assets)	-.017	-.055*	.015
	(-1.201)	(-1.738)	(1.254)
Plan Age (Years)	-.007	-.016*	.009*
	(-1.518)	(-1.77)	(1.713)
Prog. Manager Tenure (Years)	.013***	.017**	-.012**
	(3.226)	(2.345)	(-2.332)
Log (Style Count)	.351***	.612***	-.039
	(3.030)	(2.952)	(-.221)
Log (State Population 2019)	-.034**	-.062	.019
	(-2.117)	(-1.271)	(.93)
Constant	.206	1.125	.072
	(.418)	(1.11)	(.11)
Observations	5339	5339	4039
R-squared	.327	.236	.236
Style FE	Yes	Yes	Yes

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