

HOW LONG IS LONG ENOUGH?

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Abstract

Defined Contribution (DC) Plan (DCP) fiduciaries are often faced with conflicting perspectives when it comes to executing their responsibilities and terminating underperforming active managers. Consultants, academics, investment managers and capital market intermediaries generally argue that more time is needed to prove an investment strategy is suboptimal. These parties often have inherent conflicts of interest to argue for active management over passive management. Most conflicts are economic in nature, but some are steeped in intellectual hubris. In this article we enter the fray from the plan participants' (PP) side. Ultimately, the very essence of a DCP is to offer a menu of investment options that enable PP to optimize wealth aggregation in a diversified manner using a multi-asset class solution. We show that PP are better served when fiduciaries monitor active investment managers and replace them with passive alternatives in a timely manner if they underperform. Too often plan fiduciaries churn a DCP by replacing underperforming active funds with other active funds.

Key takeaways:

- We show that DC plan participants are better served when fiduciaries monitor active investment managers and replace them with passive alternatives in a timely manner if they underperform.
- A three-year rolling return window to compare active fund returns with benchmark returns seems to provide the best decision criterion for the active-to-passive decision.
- Plan participants are far better served by fiduciaries who have a well-structured discrete decision framework for replacing underperforming active funds.

Keywords and JEL codes:

Wealth management, retirement, mutual fund performance, passive strategies. G10, G11, G14.

Introduction

Buetow, Hanke, and Zaganov (2020) highlight the difficulty of identifying consistently outperforming active managers, particularly for DC pension plans.³ The findings of Buetow et al (2020) illustrate the difficulty of achieving superior performance using active management as well as identifying outperforming managers on an ex-ante basis. This is simply the nature of the investment profession. Market efficiency and mean reversion lead to inconsistent returns among most active managers. This is a reality that needs to be at the forefront of DCP fiduciaries' minds as they structure and monitor their plans. Every decision a DCP fiduciary makes needs to be in the best interest of plan participants (PP). As a result, the question arises how long a fiduciary should wait until they replace underperforming funds and what the replacement should be? This is the topic of our paper.

Not surprisingly a wealth of literature exists that attempts to justify active management. We can't possibly review it all in this paper. Goyal and Wahal (2008) suggest that funds underperforming over a trailing three-year period have a strong likelihood of being terminated by plan sponsors. This is also documented in Frazzini and Lamont (2008) and Chevalier and Ellison (1997). Cornell, Hsu, and Nanigian (2017) validate the work of Hsu, Myers and Whitby (2016) and conclude that underperforming funds subsequently outperform and so termination is suboptimal. They are only looking at the active to active replacement dynamic. A possible explanation for this reverting dynamic might be due to the factor exposures of the strategy as documented by Chen, Jegadeesh, and Wermers (2000) and Grinblatt, Titman, and Wermers (1995).⁴ Arnott, Kaleski, and Wu (2018) confirm that past performance is not statistically meaningful in explaining future performance once fees and fundamental factors are accounted for. This is largely consistent with Sharpe (1966), Jensen (1968), Carhart (1997), Wermers (2000), and Harvey and Liu (2017).⁵ Interestingly, Arnott et al conclude that funds shouldn't be replaced based on performance and Cornell et al find that previously poorly performing funds are likely to outperform subsequently. These studies focus on active managers and oscillating performance through time. We offer some clarity by restructuring the framework by focusing on active to passive replacement and empirically investigating the benefits to the PP.

Not surprisingly, the difficulties of using performance as a selection or retention criterion has resulted in a body of literature that investigates alternative factors. Cornell (2011) suggests that the soundness of the investment objective should be a critical characteristic. Other considerations include an alignment of fund ownership with fund management (Khorana, Servaes, and Wedge (2007), managerial compensation linked to performance (Ma, Tang, and Gomez (2012), high active share (Cremers and Petajisto (2009), Amihud and Goyenko (2013)),

³ For DC plans there are two levels of decision makers, plan fiduciaries and plan participants. This structure further complicates identifying consistently outperforming active managers.

⁴ Several studies suggest that some factors can be exploited and thus might revert. See Campbell and Shiller (1998), Cochrane (2008), Asness, Friedman, Krail and Liew (2000), and Garcia-Feijoo, Kichard, Sullivan and Wang (2015). For an exposition on factor models see Fama and French (1993, 2015).

⁵ The annual SPIVA® US Scorecard is another source that exhibits how difficult it is for active managers to outperform passive alternatives.

redemption fees (Finke, Nanigian, and Waller (2015)), and firm culture (Heisinger, Hsu, and Ware (2015)). These all represent somewhat qualitative criteria that a diligent fiduciary certainly should consider. However, if an inexpensive alternative to active funds exists that offers superior performance, doesn't require costly monitoring and that is an effective representation of an asset class, then why would fiduciaries choose otherwise? It seems only logical that having the ability to largely bypass these complexities and deliver superior performance would be preferable for both fiduciaries and, more importantly, plan participants. Additionally, by using the passive approach the PP has the potential for greater wealth accumulation.

Most of the cited research illustrates how replacing one active fund with another active fund often results in poor investment results. This is borne out in Buetow et al. We are changing the mandate and replace active funds with low cost passive exposures if the active manager underperforms. One benefit of this approach is that it greatly facilitates the fiduciary process. DC fiduciaries reduce costs by effectively eliminating the need for third party consultants. Monitoring a DCP consisting only of passive alternatives greatly simplifies the oversight function for plan fiduciaries.

The benefiting parties throughout the investment industry need active management to retain their livelihoods and so are unable to offer objectivity.⁶ The economic conflict of interest is what has maintained the investment industry for the past several decades. The delusional and often impossible search for perpetual alpha has perverted multi-asset class wealth solutions. Perennial underperformance is commonly ignored in hopes that next year it will turn around. This same mindset often prevents responsible fiduciary decision making. In the end, the PP loses wealth. Consistent active management is extremely difficult. We are all for exploiting it if it adds net value. The question is, how long should you wait until you replace active management with the appropriate passive alternative once it starts to underperform?

The existing academic and practitioner literature does not offer any clear recommendations on this question. Despite this we present what we believe to be a balance between "not too short" and "not too long". In the end, our objective is to present the evidence in an objective manner. Fiduciaries are faced with the problem of optimizing the investment alternatives presented to PP. The PP relies on that decision to be able to maximize wealth using an optimal balance of risk and return. The fiduciary should not be selecting active management that interferes with that investment objective. Replacing active managers with passive alternatives in a timely manner enables fiduciaries to meet their mandate.

DATA AND METHODOLOGY

Our approach is straightforward. Using the Morningstar Direct Mutual Fund Database from 1979 through December 2019 we empirically investigate replacing active funds with passive alternatives using various performance windows. In this study we focus only on actively managed

⁶ We are not arguing that consistently outperforming active management doesn't exist. However, most DCP fiduciaries simply don't have the proper infrastructure to identify these funds.

US equity funds. We employ the commonly used Morningstar size and style categorizations as our conforming asset class distinctions. We then compare performance within each of these categorizations to the appropriate asset class index.

EMPIRICAL ANALYSIS

Performance Thresholds

To evaluate our approach, we compare two universes of investments. One is a universe of all active funds and the other is a universe of active funds being replaced with passive alternatives in the month following a 3- or 5-year underperformance period. This is to simply examine whether plan participants and fiduciaries would be better served with a passive replacement rather than retaining their active fund investment regardless of its relative performance. We use this approach rather than simply comparing active and passive fund returns in order to illustrate a simple and disciplined decision-making process that a fiduciary could adopt in practice. Effectively, it compares the active to passive decision to an active to active decision or no decision at all (i.e., retention).

We divide the US equity space along the lines of the commonly used 3X3 size/style categories and use the Russell equity indices for each style cell to evaluate performance as follows:

Passive Indices Used

		Style		
		Blend	Value	Growth
Size	Large	Russell 1000	Russell 1000 Value	Russell 1000 Growth
	Mid	Russell MidCap	Russell MidCap Value	Russell MidCap Growth
	Small	Russell 2000	Russell 2000 Value	Russell 2000 Growth

Exhibit 1 shows the results for our active-to-passive replacement strategy.⁷ For each active US equity fund in the Morningstar database from 1979 through 2019 we start out with an investment in an active fund and replace it with passive once the active fund has underperformed its benchmark based on a rolling 3-year or 5-year window updated on a monthly basis. Once a switch from active to passive has been triggered, we retain the passive investment until the end of the sample period. We then compare the returns achieved using the replacement strategy (“Strat”) to the returns of remaining invested in the active fund throughout the entire period (“Orig”). This creates two investment universes as described above.

⁷ We use passive index returns instead of the returns of passive funds for this analysis. Not all indices we use have passive funds tracking them for our entire sample period from 1979. Return differences between indices and passive funds tracking these indices are usually very small due to the funds’ low fee levels and close tracking.

Exhibit 1: Results for Active-to-Passive Replacement Strategy (1979-2019) – Simple Underperformance

This table compares the returns of an active-to-passive replacement strategy (“Strat”) to the returns of remaining invested in active funds (“Orig”) regardless of their performance. The following information is shown in the table:

# of Funds	Number of funds in Morningstar
Avg # of Months	Average number of months across funds that we have data for
Avg Geo Ret Strat - Orig (Ann)	Average geometric return Strat return minus Orig return (annualized)
Avg Arith Ret Strat - Orig (Ann)	Average arithmetic return Strat return minus Orig return (annualized)
Avg Alpha Strat vs. Orig (Ann)	Average alpha from a regression of Strat returns on Orig returns (annualized)
Avg t(alpha)	Average t-stat on alpha (averaged across funds)
Avg Beta (Strat vs. Orig)	Average beta coefficient across funds from regression
Avg corr(Orig,Index)	Average across funds of correlation between Orig and Index
% switched	Percentage of funds that are switched to passive over the entire period

Metric		Large-Blend	Large-Growth	Large-Value	Mid-Blend	Mid-Growth	Mid-Value	Small-Blend	Small-Growth	Small-Value
# of Funds	3YR	401.00	590.00	433.00	138.00	268.00	160.00	213.00	253.00	145.00
	5YR	401.00	590.00	433.00	138.00	268.00	160.00	213.00	253.00	145.00
Avg # of Months	3YR	186.85	222.87	199.94	164.59	204.46	179.22	188.68	184.39	166.67
	5YR	186.85	222.87	199.94	164.59	204.46	179.22	188.68	184.39	166.67
Avg Geo Ret Strat - Orig (Ann; %)	3YR	0.80	0.62	0.44	1.39	0.55	0.96	0.18	0.01	0.39
	5YR	0.56	0.48	0.32	1.14	0.48	0.73	0.10	0.13	0.26
Avg Arith Ret Strat - Orig (Ann; %)	3YR	0.69	0.52	0.39	1.18	0.51	0.82	0.26	0.13	0.31
	5YR	0.49	0.41	0.29	0.98	0.44	0.61	0.15	0.20	0.22
Avg Alpha Strat vs. Orig (Ann; %)	3YR	1.10	1.07	0.75	1.76	0.99	1.35	0.28	0.17	0.76
	5YR	0.77	0.82	0.54	1.37	0.76	1.05	0.17	0.22	0.49
Avg t(alpha)	3YR	1.33	1.07	0.91	1.55	0.73	0.99	0.24	0.03	0.33
	5YR	1.13	0.97	0.80	1.38	0.56	0.89	0.25	0.24	0.15
Avg Beta (Strat vs. Orig)	3YR	0.96	0.95	0.96	0.94	0.95	0.94	1.00	1.00	0.96
	5YR	0.97	0.96	0.97	0.96	0.97	0.95	1.00	1.00	0.97
Avg corr(Orig,Index)	3YR	0.94	0.92	0.93	0.93	0.91	0.93	0.94	0.93	0.92
	5YR	0.94	0.92	0.93	0.93	0.91	0.93	0.94	0.93	0.92
% switched	3YR	87.78	94.24	90.30	89.13	92.16	91.88	94.37	89.33	88.97
	5YR	79.80	88.81	82.22	82.61	84.33	84.38	84.98	80.63	75.86

Exhibit 1 shows that for all 3x3 size/style categories average returns achieved are higher for the replacement strategy than for the purely active strategy. This is true both for both investment windows, 3-year and 5-year.⁸ However, on average, the return premium achieved is larger for the 3-year strategy than for the 5-year strategy. Replacing an active fund with the passive alternative upon hitting the underperformance trigger (<0) enables more wealth accumulation potential for PP. Using the 3-year performance window creates more wealth aggregation than the 5-year window. This property is true for all equity asset classes in Exhibit 1. The highest outperformance is for mid-blend funds with an average geometric return premium of 1.39% per year (“Avg Geo Ret Strat – Orig (Ann; %)”) and an average arithmetic return premium of 1.18% per year (“Avg Arith Ret Strat – Orig (Ann; %)”). On a risk-adjusted basis, return premia tend to be even higher. The average alpha from a regression of “Strat” returns on “Orig” returns ranges between 0.17% (small growth) per year to 1.76% (again, mid-blend) per year using the 3-year window. T-statistics on those risk-adjusted return premia or alpha (“Avg t(alpha)”) are however not statistically significant using standard significance levels. Interestingly, average betas from this regression (“Avg Beta (Strat vs. Orig)”) are always 1 or lower, indicating that the active-to-passive replacement strategy generates return series that always have the same or lower risk as the original active investment. Average correlations between “Orig” returns and index returns (“Avg corr(Orig,Index)”) returns are always above 90% as one would expect for a properly chosen

⁸ Often the term “market cycle” is often used in place of an easily defined investment window. The problem with using market cycles for performance evaluation is that they are simply not quantifiable and can’t be used for fiduciary decision making. Additionally, they would vary in length and would be arbitrary. It has been our experience that this term is used more to obfuscate the fiduciary decision process.

benchmark. The last two rows of Exhibit 1 (“% switched”) show the percentage of funds that have been switched to passive by the end of the sample period. These percentages range between 75% and almost 95%. This is not surprising as it corroborates the findings of Buetow et al (2020) that most active managers tend to have at least one period of underperformance.

Exhibit 1 illustrates that within a fiduciary framework PP are better off when active funds are replaced with passive funds using either investment window. Moreover, the fiduciary would best serve PP by replacing active funds with the passive alternative using a 3-year investment window. The highest return premium available for PP across most asset classes uses this window. The only exception seems to be small capitalization growth stocks. On average, delaying the replacement decision destroys wealth.

Statistically Significant Performance Thresholds

A common academic criticism of using a performance threshold to trigger active fund replacement is that it lacks statistical significance and that any fixed investment window is never long enough. This argument suffers from all the inherent conflicts of interest we presented above. To most, statistical significance is not a relevant measure if wealth is being destroyed. It has been our experience that clients rarely, if ever, use any form a statistical significance in the investment review process. It is simply an approach that buys more time for the active manager and is not in the best interest of the investor. This contributes to an environment where fiduciaries never have to make a replacement decision. We are presenting a fiduciary framework where decision metrics are easily measured and implemented. It is a convenient construct that fails to take the best interest of plan participants into consideration. Our results in Exhibit 1 clearly show that plan participants are better off by replacing underperforming active managers with appropriate passive alternatives. And the sooner this is done the better for the investor. The question is whether statistical significance and a longer investment window adds value or whether it only destroys wealth.

We now turn to show this empirically. Exhibit 2 shows the results if we require statistical significance. As before, we use 3-year and 5-year rolling return windows. In addition, we also use an expanding window where we start with a 12-month return window which is then gradually increased month by month over our sample period. In addition to underperformance, we require the active fund underperformance to be statistically significant (at the 5% significance level) over the return window examined before we switch from active to passive. This more stringent requirement merely causes us to delay replacement from active to passive. As Exhibit 2 shows, the more we delay the replacement decision, the lower the return premium of the replacement strategy over the active universe. Not surprisingly, fewer funds are replaced than in Exhibit 1 as adding an additional requirement reduces the replacement universe.

Exhibit 2: Results for Active-to-Passive Replacement Strategy (1979-2019) - Statistical Significance

The same information as in Exhibit 1 is shown here for replacement strategies that require active fund underperformance to be statistically significant (at the 5% significance level).

Metric		Large-Blend	Large-Growth	Large-Value	Mid-Blend	Mid-Growth	Mid-Value	Small-Blend	Small-Growth	Small-Value
# of Funds	Expanding	401.00	590.00	433.00	138.00	268.00	160.00	213.00	253.00	145.00
	3YR	401.00	590.00	433.00	138.00	268.00	160.00	213.00	253.00	145.00
	5YR	401.00	590.00	433.00	138.00	268.00	160.00	213.00	253.00	145.00
Avg # of Months	Expanding	186.85	222.87	199.94	164.59	204.46	179.22	188.68	184.39	166.67
	3YR	186.85	222.87	199.94	164.59	204.46	179.22	188.68	184.39	166.67
	5YR	186.85	222.87	199.94	164.59	204.46	179.22	188.68	184.39	166.67
Avg Geo Ret Strat - Orig (Ann; %)	Expanding	0.24	0.13	0.06	0.46	0.20	0.20	0.05	-0.06	0.11
	3YR	0.46	0.39	0.17	0.94	0.47	0.50	0.10	0.01	0.13
	5YR	0.38	0.30	0.10	0.74	0.34	0.40	0.07	-0.02	0.11
Avg Arith Ret Strat - Orig (Ann; %)	Expanding	0.19	0.11	0.04	0.42	0.19	0.16	0.06	-0.04	0.11
	3YR	0.39	0.32	0.14	0.80	0.42	0.40	0.10	0.02	0.09
	5YR	0.32	0.25	0.07	0.65	0.31	0.32	0.07	-0.01	0.09
Avg Alpha Strat vs. Orig (Ann; %)	Expanding	0.34	0.21	0.14	0.55	0.24	0.33	0.05	-0.05	0.14
	3YR	0.64	0.62	0.30	1.15	0.62	0.80	0.14	0.05	0.25
	5YR	0.53	0.46	0.23	0.89	0.44	0.65	0.08	0.01	0.20
Avg t(alpha)	Expanding	0.34	0.05	0.31	0.43	-0.18	0.09	-0.34	0.11	0.73
	3YR	1.12	0.73	0.51	1.12	0.59	0.81	0.05	0.09	0.44
	5YR	0.93	0.83	0.34	0.98	0.66	0.90	-0.07	-0.08	0.55
Avg Beta (Strat vs. Orig)	Expanding	0.98	0.99	0.99	0.98	0.99	0.98	1.00	1.00	0.99
	3YR	0.97	0.97	0.98	0.96	0.98	0.96	1.00	1.00	0.98
	5YR	0.98	0.98	0.98	0.97	0.98	0.96	1.00	1.00	0.99
Avg corr(Orig, Index)	Expanding	0.94	0.92	0.93	0.93	0.91	0.93	0.94	0.93	0.92
	3YR	0.94	0.92	0.93	0.93	0.91	0.93	0.94	0.93	0.92
	5YR	0.94	0.92	0.93	0.93	0.91	0.93	0.94	0.93	0.92
% switched	Expanding	27.68	19.15	18.94	31.16	16.04	23.13	5.63	9.09	12.41
	3YR	67.83	71.02	55.66	68.84	63.81	65.63	39.44	43.87	37.93
	5YR	61.35	62.71	53.35	65.22	52.61	60.00	21.60	31.62	24.83

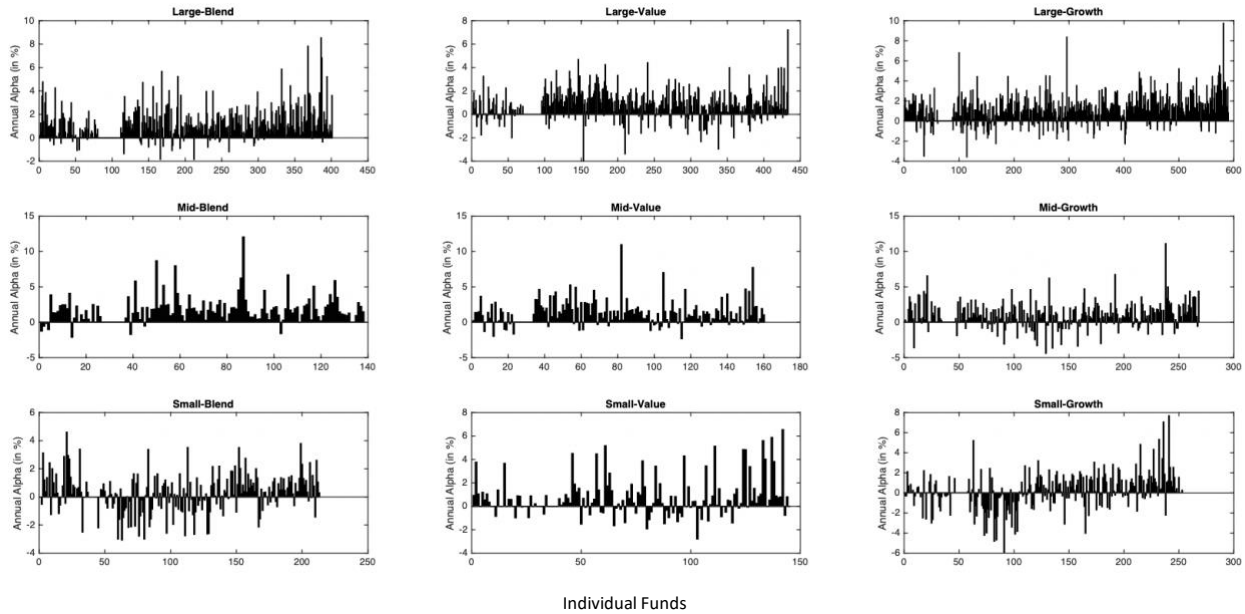
As a result, while academics argue for statistical significance and longer (often unquantifiable) investment windows to evaluate active funds, they are essentially creating a framework that rarely produces a replacement trigger. This creates what we call the fiduciary paradox. By arguing for longer periods and statistical significance the fiduciary rarely has to make a responsible replacement decision. Our results above show this to be the case as the expanding investment window has by far the lowest replacement percentages. Even though this approach almost always adds value relative to simply remaining invested in active funds regardless of their performance, the added value is only a fraction of our earlier results. Fiduciaries should have a discrete framework to be able to make optimal decisions more easily and thus operate exclusively in the best interest of PP. The approach presented here allows for such a framework.

To illustrate risk-adjusted return premia that can be earned by adopting the replacement strategy (“Strat”) vs. retaining the active funds (“Orig”), Exhibit 3 shows the same annual alphas presented in Exhibit 1 and 2 above, but on an individual fund level. We use the 3-year replacement strategy shown above for this illustration. This is a more granular presentation of the empirics that were used to create the above exhibits. Alphas are obtained from regressing “Strat” returns on “Orig” returns over our entire sample period from 1979 through 2019 for each fund (or a subperiod for active funds that existed during a subperiod only). Individual fund-level alphas are shown separately for funds in each of the 3x3 size/style buckets. The horizontal axes are simply a fund count.

Exhibit 3 demonstrates that for most funds annual alphas would have been improved substantially if underperforming funds had been removed and replaced with a passive investment after underperformance using the 3-year investment window. Graphs for alternative investment windows show similar results but are not included here.

Exhibit 3: Alphas of Replacement Strategy (“Strat”) vs. Active (“Orig”) (3-Year Window)

This exhibit shows annualized risk-adjusted return premia (alphas) on an individual fund level within each 3x3 size/style groups that can be achieved by investing in the active-to-passive replacement strategy rather than investing in active strategies regardless of their performance. Alphas are obtained from regressing “Strat” returns on “Orig” returns for each fund over our entire sample period from 1979 through 2019 (or a subperiod for active funds that existed during a subperiod only). A three-year rolling return window is used for the replacement strategy. The data is shown for our entire sample period from 1979 through 2019.



Conclusion

We show that DC plan participants are better served when fiduciaries monitor active investment managers and replace them with passive alternatives in a timely manner if they underperform. We offer a framework for fiduciaries to more easily monitor and implement decisions in the best interest of PP. Too often plan fiduciaries replace underperforming active funds with other active funds instead of with passive funds. This just churns the DCP and pays unnecessary active fees and increases the fiduciaries cost to monitor the plan. Moreover, delaying decisions of replacing underperforming active funds with passive funds only destroys value for plan participants and suffers from the same cost increasing characteristics. A three-year rolling return window to compare active fund returns with benchmark returns seems to provide the best decision criterion for the active-to-passive decision. PP will be far better served by fiduciaries who have a well-structured discrete decision framework for replacing underperforming active funds. Our framework adds wealth for PP, eases monitoring and associated costs for the fiduciary, and reduces overall management fees. All of the primary parties involved in the DCP process are better off.

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