

CAN ACTIVE FUND MANAGERS BE REPLACED WITH EXCHANGE TRADED FUNDS?

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ABSTRACT

There is a long-standing debate about whether active investment management can outperform a passive benchmark, usually expressed as an index. The debate is usually considered on the manager-level, comparing the active management return of a particular manager against an appropriate index. This paper looks at the topic on a portfolio level. Using the average asset allocation of a large, private foundation, this paper replaces managers with exchange traded funds that invest in a similar strategy. For 2017 the average portfolio return of the average, large private foundation (the actively managed portfolio) produced an average return of 14.3% compared to the portfolio comprised of exchange traded funds (the passively managed portfolio) produced a return of 11.9%. The active portfolio outperformed the exchange traded fund portfolio across every broad asset class.

JEL: G11

KEYWORDS: Active Investing, Passive Investing, ETFs, Active Versus Passive Investing

INTRODUCTION

A popular and pervasive research topic in investing is whether the returns from active management can beat passive returns. Morningstar produces an annual report that compares active managers against relevant benchmarks. In 2016 the report stated that 26% of active managers beat their benchmark, and this increased to 43% in 2017. Conversely it can be said in 2016 passive management outperformed active management in 74% of the observations, and in 57% of the observations in 2017. These findings are not unusual, which usually leads to a discussion of whether active management is worth the fees. Most studies focus at the manager level – comparing the manager to a relevant benchmark. Largely these benchmarks are indices. In some strategies, such as private equity and other alternatives, the index is not investable. While still providing a comparison for determining performance, an index that is not investable does not provide an alternative investment option.

The underlying idea of passive investing is not that you invest in an index, but that you do not pay for management expertise. S&P calculates over 1,200,000 indices on a daily basis – there is most likely an index available for every comparison one would like to make. The large growth in exchange traded funds (ETFs) provides an investment option that allows the investor the ability to invest in strategies at a cost that is much less than active management and with none of the drawbacks of some index funds (the index is not investable, the fund created to mirror the index may not guarantee liquidity, tracking error may be considerable, to name a few). This paper looks at the issue a different way – instead of looking at the active/passive debate at a manager level it takes the average institutional portfolio and replaces all the active managers with ETFs. The ETFs chosen will be within the same strategy as the active manager that they are replacing, to fulfill that same strategy, then compares the return between the actively managed portfolio and the replacement portfolio made up of ETFs. This paper contributes to the literature by expanding the scope of how the research is conducted on the active/passive investing debate from the manager level to the portfolio level. This also opens up the possibility of future research looking at hybrid portfolios – those

that utilize some active management and some passive management, rather than using one or the other. These may also lead to more variations of optimal portfolio strategies.

As it turns out, the actively managed average portfolio outperformed the ETF portfolio in every asset class. This may be based on the process used in constructing the ETF portfolio. The results of this paper hopefully will spawn more research using average asset allocations from different studies (for example, the study of college endowments) and alternatives to using indices as the replacement for active management. This paper also provides ample opportunity for future studies to change some of the protocols in selecting the ETF replacement portfolio and to refine the results, and possibly come to differing conclusions.

The remainder of the paper is organized as follows: the next section is the literature review, where relevant papers are reviewed and discussed, providing examples of other ways the passive vs. active debate has been addressed, and provides a narrative for development of the section that follows, data and methodology. In data and methodology I discuss the process answering the researching question and from where the data is derived. In results and discussion I discuss the results of the empirical test, and in the penultimate section are the conclusions, followed by the final section which provides some concluding comments.

LITERATURE REVIEW

The investing literature is considerably broad when considering the active versus passive debate. A starting point for the review of the literature might be a consideration of why does this debate exist. For many investments there are passive index funds that are investable. Actively managed funds within the same strategy claim superior performance, and hence a rationale for paying manager fees. Research regarding whether active management outperforms passive investing is a good introduction. A series of papers developed this concept starting with a robust data set of institutional-quality equity managers Haber (2012) and found that equity managers consistently did not beat their benchmark on an annual basis over the 11 year period of the data. This was one way to consider the topic – during the 11 years of the study, how many years did the active manager outperform their passive benchmark. The study included 964 institutional-quality funds in 9 strategies. Only 2 actively managed funds beat the index each of the 11 years. This would imply that active management is not worth the fees and that investors are better off in low or no cost index funds. Crane and Crotty (2018) took a different approach.

They started by examining whether active management outperforms passive management not by looking at manager skill, but by looking at the dispersion of the passive performance. They found that there was dispersion in the passive index, which tend to overstate conclusions regarding active versus passive – the conclusions tend to be based on the assumption that any findings are due to the performance of active management (whether this relative performance was outperforming or underperforming) as opposed to the findings arising as a result of the dispersion of the passive performance. Malkiel (2003) found support for passive investing across all asset classes. Comparing the return of an active manager against a passive index on an annual basis and then summing annual wins and losses is one approach. Another is to consider cumulative returns. An investor is more concerned with the cumulative return than an annual win or loss. This was the basis for a follow-on paper by Haber (2013). A thought experiment went something like “if the active manager beat the index 10 out of 11 years they would be considered a failure, since they didn’t beat the index every year. But they could have beaten the index significantly each of the 10 years they outperformed, but slightly underperformed the year they failed to beat the benchmark. Would the investor be pleased or not?” On this basis Haber (2013) found that in the 9 strategies the cumulative active performance exceeded the cumulative passive performance over the 11 years by 84%, 78%, 80%, 79%, 69%, 77%, 94%, 79% and 90%. Significantly different results. Another way to think about the debate is to consider that if passive investing outperforms active investing, then passive investments should garner a majority of the investments, if investors were rational and knowledgeable. Sushko and Turner (2018) found that passive funds represented 43% of US equity fund assets, sizable, but less than one would expect. And

considering that many passive vehicles are used as a transient holding account for funds waiting to be invested, this percentage is likely substantially lower on a permanently invested basis.

There is contradictory evidence about whether active investing outperforms passive investing depending on how the research is conducted. Considering the research that finds that active investing outperforms passive on a cumulative return basis, a question arises as to don't the investors holding these funds know that? A common complaint among investing professionals is the difficulty in finding managers that outperform a passive index. Why do they experience something different? Haber (2013) looked at this dichotomy by considering that a cumulative return over 11 years is only relevant to the investor if they invested for the full 11 years. An investor new to a fund during this time, or one redeeming, would not experience the cumulative 11 year return but a cumulative return based a lesser number of years.

Suppose the 11 year return was driven by an abnormal positive return in one year –the cumulative 11 year return would be influenced by this abnormal, positive return, but not the returns for those entered after or left before. Other research has used the active/passive debate for additional conclusions. Haber (2015a) took the returns of active managers on a gross-of-fee basis and compared the returns to passive indices (no or low fee alternatives) and found that active management outperformed passive. The purpose was to then impute fees on the actively managed funds to determine at what level the fees change the outperformance to underperformance. This turned out to be 160 basis points. If active fund management has a fee lower than 160 basis points it will provide outperformance when compared to a passive index, on average. Leippold (2016), et al, considered the effect ETFs have on stock return correlations. As more vehicles have developed that hold individual stocks, this should have an effect on correlations. They found that prior to growth of ETFs correlations were largely driven by fundamentals, but since the growth of ETFs correlations are also driven by the trading activity in ETFs. Da and Shive (2016) found a similar result, that ETFs contribute to equity return comovement using a sample of 549 US equity ETFs and 4,887 Stocks over a seven and a half year period, Managers are put through a rigorous due diligence before being hired. Indices are not subject to the same scrutiny. One paper Haber (2015b) took the S&P 500 index and looked at its returns over 11 years as if it were the returns of a manager. The first three years the index was in the 2nd quartile, the next three years the index was in the 3rd quartile, in the 7th year the index was in the 4th quartile, and for the remaining four years the index was in the 3rd quartile. It is unlikely a manager would survive due diligence with this quartile performance.

A reasonable question could be whether ETFs are a good choice for an institutional portfolio. Fender (2003) notes that ETFs are highly liquid, can be bought quickly or sold short and have been able to replicate many strategies on a low cost basis. The literature provides a rich and robust archive of research that identifies a debate over whether active management can outperform a passive index on a manager level, and that ETFs have become an important investment vehicle. This paper takes a portfolio consisting largely of active management and replaces the managers with ETFs. The ETFs that were selected were designed to be low-expense and not an active manager within an ETF framework. This provides a meaningful and useful extension of the literature.

DATA AND METHODOLOGY

There are many publications that look at average portfolios of institutional investors. This paper will use the “2017 Study of Investment of Endowments for Private and Community Foundations” (the “Study”) prepared by a joint effort of the Council on Foundations and the Commonfund Institute. The Study divides the population into three size tiers, large (total assets over \$500 million), mid-size (total assets between \$101 and \$500 million) and small (total assets under \$101 million). The Study also further breaks down the respondents based on the type of foundation (private – independent, private – family, community). This paper will use large, private foundations as the baseline against which the passively managed ETF portfolio

will be compared. The Study included 23 private foundations where each held over \$500 million in investments. The average asset allocation of these private foundations are shown in Table 1.

Table 1: Asset Allocation

US Equities	22%
Fixed income	7%
Non-US equities	21%
Alternatives	48%
Cash, short-term	2%
Total	100%

This table shows the average asset allocation of a large, private foundation based on the broad asset class designations

The average foundation held 43% in equities (22% in US equities and 21% in non-US equities), 7% in fixed income, 48% in alternatives and 2% in cash and short-term investments. Roughly 90% of the portfolio was in equities and alternatives. The Study contained additional data to make more granular asset allocation decisions. Table 2 shows the composition of the allocation of 22% to US equities.

Table 2: Components of US Equities

Active	18.26%
Passive	3.74%
Total	22.00%

This table shows the components of the 22% allocation to US equities, which is 18% active, 4% passive

Most of the allocation to US equities was invested in active strategies (82% of the allocation to US equities (18% of the total portfolio) was held by active managers and 18% (4% of the total portfolio) was held in passive. Table 3 shows the composition of the allocation of 7% to fixed income.

Table 3: Components of Fixed Income

US Investment Grade (Active)	4.62%
US investment grade (passive)	1.96%
US non-investment grade	0.35%
Non-US investment grade	0.07%
Emerging markets	0.00%
Total	7.00%

This table shows the components of the 7% allocation to fixed income, which is 5% to US investment grade (active) and 2% to US investment grade, passive

Among the many possible fixed income strategies, only two were accessed by the average foundation in the study. Both were US investment grade fixed income investments, 71% of the fixed income allocation (5% of the total portfolio) was invested on an active basis and 29% of the fixed income allocation (2% of the total portfolio) was invested on a passive basis. Table 4 shows the composition of the allocation of 21% to non-US equities.

Table 4: Components of Non-US Equities

Active MSCI, EAFE	13.65%
Passive index MSCI, EAFE	1.68%
Emerging markets	<u>5.67%</u>
Total	21.00%

This table shows the components of the 21% allocation to non-US equities, which is a 14% allocation to a fund actively managed to an index (MSCI, EAFE), a 2% allocation to a passive index (MSCI, EAFE), and a 6% allocation to emerging markets

There were three strategies employed for non-US equity investing, active (66% of the allocation and 14% of the total portfolio), passive (7% of the allocation and 1% of the total portfolio) and emerging markets (27% of the allocation and 6% of the total portfolio). Table 5 shows the composition of the allocation of 48% to alternatives.

Table 5: Components of Alternatives

Private Equity	8.64%
Marketable alternatives	17.76%
Venture capital	8.16%
Private real estate	4.32%
Energy, natural resources	4.32%
Commodities and managed futures	0.96%
Distressed debt	<u>3.84%</u>
Total	48.00%

This table shows the components of the 48% allocation to alternatives, which is a 9% allocation to private equity, an 18% allocation to marketable alternatives, an 8% allocation to venture capital, a 4% allocation to private real estate, a 4% allocation to energy and natural resources, a 1% allocation to commodities and managed futures and a 4% allocation to distressed debt

The alternatives used were private equity (18% of the allocation and 9% of the total portfolio), marketable alternatives (37% of the allocation and 18% of the total portfolio), venture capital (16% of the allocation and 8% of the total portfolio), private real estate (8% of the allocation and 4% of the total portfolio), energy and natural resources (8% of the allocation and 4% of the total portfolio), commodities and managed futures (2% of the allocation and 1% of the total portfolio) and distressed debt (8% of the portfolio and 4% of the total portfolio).

To build the hypothetical portfolio this paper uses \$750 million as the amount of the ETF endowment. The Study had \$500 million as the minimum asset size to qualify for the largest class, but did not present the average size investment portfolio for the private foundations included in this largest class. Given that the average asset size for the group in this class has to be larger than \$500 million, an increase to \$750 million to represent an estimate of the average would seem to be reasonable.

In selecting the number of managers to be used for any allocation, a useful heuristic is that no manager can represent more than 5% of the portfolio. Therefore, the maximum amount placed in any ETF could not exceed \$37.5 million (\$750,000,000 x 5%). Depending on the allocation to the asset class this means that often more than one ETF had to be selected for certain asset class allocations.

From Table 2: Components of US Equities the allocation to active strategies was 18.26%. This percentage times the portfolio value of \$750,000,000 provides an allocation of \$136,950,000. With a limit of \$37,500,000 per manager, it will take 4 managers to fill out this strategy. So \$136,950,000 divided by 4 produces an allocation of \$34,237,500 to each of the 4 managers. This procedure was then followed for each of the allocations. The granular asset class allocation is shown on Table 6.

Table 6: Granular Asset Allocation

US Equities	165,000,000
Active	34,237,500
Active	34,237,500
Active	34,237,500
Active	34,237,500
Passive	28,050,000
Fixed income:	52,500,000
US investment grade (active)	34,650,000
US investment grade (passive)	14,700,000
US non-investment grade	2,625,000
Non-US investment grade	525,000
Emerging markets	0
Non-US equities:	157,500,000
Active MSCI, EAFE	34,125,000
Active MSCI, EAFE	34,125,000
Active MSCI, EAFE	34,125,000
Passive index MSCI, EAFE	12,600,000
Emerging markets	21,262,500
Emerging markets	21,262,500
Alternative investments:	360,000,000
Private equity	32,400,000
Private equity	32,400,000
Marketable alternatives	33,300,000
Marketable alternatives	33,300,000
Marketable alternatives	33,300,000
Marketable alternatives	33,300,000
Venture capital	30,600,000
Venture capital	30,600,000
Private real estate	32,400,000
Energy, natural resources	32,400,000
Commodities and managed futures	7,200,000
Distressed debt	28,800,000
Cash, short-term	<u>15,000,000</u>
Total	750,000,000

This table shows the dollar allocation to the various asset classes

The next step was to fill the slots with ETFs. Using the E*TRADE platform, all the ETFs offered were downloaded. The first step was to eliminate any return information. Since this paper is comparing 2017 returns and those returns are already known, all return information was eliminated to remove the bias in selecting better performing managers. The list was then sorted by fund category (strategy). In order to use only passive ETFs and not actively managed funds marketed in an ETF format, all funds with an expense ratio of greater than 0.19% (19 basis points or bps) were eliminated. For allocations denoted as passive, the ETF chosen was an index-replication strategy. Because some strategies were represented by many ETFs the one (or more) chosen was based on using Morningstar rankings and whether they were considered “All Star ETFs.” When there were multiple managers to be selected (such as the 4 managers needed for the active US equity allocation) a variety of strategies were chosen. For the 4 US equity ETFs, the strategies chosen were mega- cap growth, large cap value, mid-cap value and mid-cap growth. For the active non-US equities all three of the ETFs chosen were large blends because of a lack of differentiation available. The 2 emerging market equity ETFs were both listed as diversified, again due to a lack of availability of a more granular strategy.

Selecting alternative investment ETFs was difficult using the E*TRADE platform. There were limited choices, and often the expense ratio was near active management pricing (200 bps). Doing an internet search turned up potential matches, but none that met the less than 20 bps threshold. Therefore, for ETFs replacing alternative allocations, a higher limit of a maximum of 79 bps was used. Given the illiquid nature of many alternative asset strategies (such as private equity, real estate, private real estate, venture capital) some of the ETFs may not be as close a replacement as one would have liked. After the asset allocations within the replacement portfolio were populated with ETFs the returns were calculated.

RESULTS AND DISCUSSION

The ETF portfolio produced a return of 11.94%. This compares unfavorably against the Study return of 14.30%. The return calculation is detailed in Table 7.

Table 7: Return Calculation

		2017	01/03/17	12/29/17
	EFT	Allocation	Net Return	Open Close
US equities:		165,000,000	18.39%	
Active	MGK	34,237,500	27.15%	87.56 111.33
Active	VYM	34,237,500	12.33%	76.23 85.63
Active	VOE	34,237,500	13.88%	97.97 111.57
Active	VOT	34,237,500	19.96%	106.47 127.72
Passive	VOO	28,050,000	18.68%	206.68 245.29
Fixed income:		52,500,000	1.86%	
US investment grade (active)	VCIT	34,650,000	2.27%	85.45 87.39
US investment grade (passive)	BIV	14,700,000	1.23%	82.81 83.83
US non-investment grade	VMBS	2,625,000	0.17%	52.35 52.44
Non-US investment grade	BNDX	525,000	0.50%	54.10 54.37
Emerging markets		0	0.00%	
Non-US equities:		157,500,000	25.02%	
Active MSCI, EAFE	IEFA	34,125,000	22.71%	53.86 66.09
Active MSCI, EAFE	IXUS	34,125,000	24.20%	50.79 63.08
Active MSCI, EAFE	VEU	34,125,000	23.05%	44.47 54.72
Passive index MSCI, EAFE	VXUS	12,600,000	22.94%	46.21 56.81
Emerging markets	VWO	21,262,500	26.89%	36.18 45.91
Emerging markets	IEMG	21,262,500	32.60%	42.91 56.90
Alternative investments:		360,000,000	5.26%	
Private equity	BDCS	32,400,000	-8.95%	22.80 20.76
Private equity	BDCL	32,400,000	-18.12%	20.09 16.45
Marketable alternatives	MNA	33,300,000	5.65%	29.39 31.05
Marketable alternatives	QAI	33,300,000	6.03%	28.71 30.44
Marketable alternatives	PBP	33,300,000	0.56%	21.33 21.45
Marketable alternatives	MRGR	33,300,000	1.71%	35.65 36.26
Venture capital	IPO	30,600,000	35.49%	20.82 28.21
Venture capital	IWC	30,600,000	10.96%	86.26 95.71
Private real estate	USRT	32,400,000	1.99%	48.64 49.61
Energy, natural resources	VAW	32,400,000	20.60%	113.35 136.70
Commodities and managed futures	GSP	7,200,000	5.79%	14.69 15.54
Distressed debt	ANGL	28,800,000	3.85%	28.84 29.95
Cash, short-term	VGSH	<u>15,000,000</u>	-0.63%	60.66 60.28
Total		750,000,000	11.94%	

This appendix provides details on the calculation of the replacement portfolio return. For the year the return was 11.94%, with US equities returning 18.39%, fixed income returning 1.86%, non-US equities returning 25.02%, alternative investments returning 5.26% and cash and short-term investments losing 0.63%

A comparison of the broad asset class returns shows that the Study was also superior in each asset class return. Table 8 compares the returns shown in The Study against the returns of the ETF replacement portfolio.

Table 8: Return Comparison

Asset Class	ETF Portfolio	The Study
US equities	18.39%	21.50%
Fixed income	1.86%	3.80%
Non-US equities	25.02%	28.20%
Alternative investments	5.26%	9.80%
Cash, short-term	-0.63%	0.80%
Total	11.94%	14.30%

This table compares the returns of the two portfolios, in total and by asset class. The average portfolio in The Study outperformed the ETF portfolio

The returns in The Study outperformed the ETF replacement portfolio in total return, as well as in every asset category. The process for selecting ETFs for the replacement portfolio was a process that, at best, could be described as “naïve.” A more typical process would have involved reviewing past returns, examining lead portfolio manager succession plans, governance ratings, reviewing risk management procedures, consideration of volatility and other steps that usually would be performed during an initial due diligence process. None of that was done in selecting the ETF portfolio. Using the Morningstar rating and whether or not the ETF was classified on the E*TRADE site as an “All-star ETF” was the sole selection criteria among ETFs in a given strategy.

Once the ETFs populated the asset allocation the annual return was applied to the allocation for the individual ETF. There was no rebalancing or the use of monthly returns, only annual. Lastly, the data set for private foundations over \$500 million was small and seemingly varied. Reviewing the names of the private foundations that responded to the survey shows great diversity in size, geography and how they manage their portfolios, even though this portion of the survey had only 23 respondents. Areas for additional research include using prior returns as a basis for choosing ETFs, considering more factors in the return calculation (monthly returns, rebalancing), extending the time frame beyond one year, using a study with more respondents and doing a similar procedure with college endowments. The last, and probably most important limitation is that this paper covers a single year. For many reasons that makes the results applicable to only 2017 and not generalizable to other periods.

CONCLUSION

This paper provides a different approach to the question of whether active investment management can beat a passive benchmark return. Using the average asset allocation of a large foundation, as shown in the study conducted by the Council on Foundations-Commonfund (2017), each of the managers was replaced with an ETF fund that followed a similar investment strategy. The ETFs chosen came from a list of ETFs available on the E*TRADE platform. Since the comparison was for a prior year, and the relevant returns for the ETFs are known, it was important in the design to ensure that no bias was introduced by selected ETFs that had performed better. No return information was used, even for prior years. The only differentiation and selection protocol used when there were multiple, suitable ETFs was to select those with a higher Morningstar rating and/or a designation of “All Star ETFs.”

The average foundation portfolio outperformed the ETF replacement portfolio on an overall basis (14.30% versus 11.94%, as well as in each broad asset class (US equities, Fixed Income, Non-US equities,

Alternative investments and Cash, short-term). One of the limitations of this paper is that the ETF portfolio was “naïve.” Conventionally when a portfolio is selected prior returns are a critical metric used in the decision process. This paper could have used the 2016 and earlier returns to select the ETFs to be used. This is an area for future research. The results show that active management can outperform a passively managed portfolio, given the limitations in assembling the passively managed portfolio. That assumes the foundations included in the Study (whose average asset allocation and returns provided the comparison) are representative of the foundation community as a whole. If there was bias in which foundations provided data to the study (such as only better performing foundations chose to be included) then the results are not generalizable. Another limitation is that a one-year result can be an anomaly for one of many reasons. An area for future research is to conduct the study over a longer time period. This would provide a useful extension of this paper.

CONCLUDING COMMENTS

The debate over whether active management can outperform a passive index is long-standing, with support for both sides of the argument. The topic has proven to be a rich one for research, offering a multitude of approaches. Typically, the research has been focused at the manager level, comparing managers against appropriate indices. This paper takes an entire portfolio and replaces the managers with ETFs. Further, the ETFs were chosen without any of the normal due diligence and risk management procedures performed. Further research should select EFTs with a more typical process (reviewing prior returns, news feed searches for enterprise information of the ETF, strategic combining of ETFs with other vehicles, as well as possibly retaining some active management in those limited allocations where there isn’t a suitable alternative.

REFERENCES

- “Active vs. Passive Fund Management: Our Research on Performance,” March 26, 2018, <https://www.morningstar.com/blog/2018/03/26/end-active-passive.html>
- Council on Foundations-Commonfund, “2017 Study of Investment of Endowments for Private and Community Foundations.”
- Crane, A. and K. Crotty, “Passive versus Active Fund Performance: Do Index Funds Have Skill?” *Journal of Financial and Quantitative Analysis*, Volume 53, Issue 1 (February 2018), p. 33-64
- Da, Z. and S. Shive, “Exchange Traded Funds and Asset Return Correlations,” *European Financial Management*, Vol 24, No 1 (2016), p. 136-168
- Fender, I., “Institutional Asset Managers: Industry Trends, Incentives, and Implications for Market Efficiency,” *BIS Quarterly Review*, September, 2003, p. 75-86
- Haber, J., “The Failure of Equity Managers to Beat Their Benchmark: Lord, Is It I (Or Is It the Benchmark)?” *Journal of International Business Management & Research*, Volume 4, Issue 11 (2012), p. 122-129
- Haber, J., “Resolving the Dichotomy between Investors and Managers About Whether Active Management Beats the Index,” *Journal of Business and Economics*, Volume 4, Number 10 (October 2013), p. 1033-1037
- Haber, J., “When Do Manager Fees Start to Matter?” *Journal of Knowledge and Human Resource Management*, Volume 6, Issue 13 (2015a), p. 96-108

Haber, J., “Can Active Management Outperform a Benchmark: Let’s Stop the Madness – The Benchmark is an Unattractive Investment,” *American Journal of Management*, Volume 15(1) (2015b), p. 101-110

Leippold, M., L. Su and A. Ziegler, “How Index Futures and ETFs Affect Stock Return Correlations,” (April 24, 2016). Available at SSRN: <https://ssrn.com/abstract=2620955> or <http://dx.doi.org/10.2139/ssrn.2620955>

Malkiel, B., “Passive Investment Strategies and Efficient Markets,” *European Financial Management*, Vol 9, No 1 (2003), p. 1-10

Sushko, V. and G. Turner, “The Implications of Passive Investing for Securities Markets,” *BIS Quarterly Review*, March 2018, p.113-131

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