ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) INVESTING: **An Evaluation of the Evidence**

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Environmental, Social, and Governance (ESG) Investing: An Evaluation of the Evidence By Wayne Winegarden May 2019

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Executive Summary

Environmental, social, and governance (ESG) criteria are used as a guideline for both corporate management and investing (an investment strategy known as ESG investing). ESG programs often make sense, but, as documented by many studies, these programs can also be detrimental to a firm's financial performance. Consequently, investors need an individualized and objective view to effectively evaluate the merits of ESG related shareholder proposals, or when considering an ESG investment strategy.

Starting with the former, there are concerns that the two major proxy advisory firms – ISS and Glass Lewis, which control 97 percent of the proxy advisory market – have a conflict of interest that biases their recommendations in favor of ESG shareholder proposals regardless of the resolution's merits. When coupled with these firms' inadequate transparency and lack of individualized analysis, there is growing evidence that the proxy advisory firms are biasing votes toward supporting value-reducing ESG proposals.

With respect to ESG as an investment strategy, there is a growing trend of investors using a company's impact on the environment, social issues, and/or how it treats its employees as criteria for making investment decisions. How ESG funds apply these criteria will vary significantly. Some ESG funds are, for all intents and purposes, broad-based index funds that simply exclude certain industries (e.g. gun or tobacco manufacturers). Other ESG funds will actively invest their money into companies that are pursuing specific ESG goals such as alternative clean energy.

Several reports have documented that some ESG funds are outperforming their benchmarks. In response to these reports, this analysis evaluated the performance of 30 ESG funds that have either existed for more than 10-years or have outperformed the S&P 500 over a short-term timeframe. The findings showed that, over the long-term, it is difficult for ESG funds to outperform the broader market indices.

Of the 18 ESG funds examined that had a full 10-year track record, a \$10,000 ESG portfolio (equally divided across the funds including the impact from management fees) would be 43.9 percent smaller after 10-years compared to a \$10,000 investment into an S&P 500 index fund. Further, only 1 of the 18 funds was able to exceed the earnings of an S&P 500 benchmark investment over a 5-year investment horizon, and only 2 of the 18 funds were able to beat the S&P 500 benchmark over a 10-year investment horizon.

Two other material differences were the higher expense ratios and higher risks associated with ESG funds. With respect to higher expenses, the average expense ratio was 0.69 percent for the 30 ESG funds examined compared to the expenses associated with a broad-based S&P 500 index fund of 0.09 percent. It is common wisdom that a critical consideration for investors, particularly for small investors, is to ensure that a fund's expenses are as low as possible.

The higher risks ESG funds create can be measured by the higher share of funds they allocate toward their top 10 holdings on average (37 percent) compared to a broad-based S&P 500 index fund (21 percent). The higher exposure to the top ten holdings means that the ESG funds' performance are driven by the returns of relatively fewer stocks, significantly reducing any diversification benefits.

Judged against past performance, ESG funds have not yet shown the ability to match the returns from simply investing in a broad-based index fund. Explicitly recognizing this tradeoff is essential to enable investors to better pursue their financial goals in the manner that reflects their values and the costs they are willing to bear.

Introduction

Environmental, social, and governance (ESG) investing is an investment strategy that incorporates nonfinancial criteria as well as the investments' expected financial returns into investment decisions. These non-financial criteria typically include a company's impact on the environment and its impact on pressing social issues, such as gun violence. The criteria also include how a company treats its employees, vendors, and other business partners. The flip side of ESG investing is the ESG programs that companies will often implement, such as implementing policies that ensure women are appointed to the corporate board or policies that govern the company's business practices. These goals are above the legal requirements a company must meet.

Investors are allocating an increasing share of dollars toward ESG compliant assets. According to the US SIF Foundation, assets that were denoted as socially responsible products "grew from \$8.7 trillion at the start of 2016 to \$12.0 trillion at the start of 2018, a 38 percent increase. This represents 26 percent or 1 in 4 dollars—of the total US assets under professional management."¹ Further, there are growing reports that using ESG criteria as an investment consideration will not necessarily come at the expense of financial returns. Several recent financial news reports have documented the ability of some ESG funds to outperform their benchmarks. For example, a *Morningstar* analysis found

that 41 of the 56 Morningstar's ESG indexes outperformed their non-ESG equivalents (73%) since inception. ESG screens largely added value in Europe and Asia, thanks to stocks like Vodafone, Allianz, Taiwan Semiconductor, and Sony. The picture in the U.S. market was more ambiguous. Stellar performers in recent years, such as Apple, Amazon. com, and Facebook, are not as strong from an ESG perspective, though better-scoring companies, such as Intel and Medtronic, lifted the returns of some U.S.-focused indexes.²

An analysis of its own ESG index funds performed by Morningstar found "that Morningstar ESG indexes tend to select companies that are less volatile and possess stronger competitive advantages and healthier balance sheets than their non-ESG equivalents."³ Similarly, reports also state that companies with better ESG ratings are more likely to outperform their competitors. For instance, a story in the *Financial Times* noted that,

Companies with better environmental, social and governance standards typically record stronger financial performance and beat their benchmarks, according to research from Axioma.

The risk and portfolio analytics provider said the majority of portfolios weighted in favor of companies with better ESG scores outperformed their benchmarks by between 81 and 243 basis points in the four years to March 2018.⁴

Scratch the surface on these claims, however, and a more complex reality emerges. For example, according to *InvestmentNews*, "the Morningstar ratings assess funds on environmental, social and governance factors, even if the funds don't label themselves as ESG investments."⁵ While funds may appreciate the label, it is very different to be labeled an ESG fund as an afterthought than to intentionally devise an ESG fund as an explicit strategy. More importantly, there are several concerns regarding the ESG performance claims that raise significant questions regarding their long-term applicability.

First, similar to investment management in general, over the long-term, it is difficult for ESG funds to outperform the broader market indices. In fact, while some funds have outperformed a passive S&P 500 index fund over select short-term periods, ESG funds rarely do so over the long-term.

Second, ESG funds dramatically differ from one another. Some ESG funds are, for all intents and purposes, broad index funds that exclude only a select list of industries. For example, the only restriction on the American Century NT Emerging Markets Institutional fund (ACLKX, an ESG fund) is to not invest in tobacco companies. While there is an opportunity cost from this restriction (e.g. the strong dividends paid by stable companies can be valuable during periods of economic weakness), it is unlikely that this restriction is stringent enough to materially impact a fund's performance. In fact, often the ESG funds that provide competitive financial performance are the same funds whose holdings are similar to a typical investor fund. As the restrictions grow, the underperformance of the ESG funds often increase.

Third, short-term performance metrics often reflect unique factors that are not indicative of the longterm investment value. For example, back in 2016 American Century Sustainable Equity Fund (AFDIX) transformed into an ESG fund. As part of adhering to its new ESG criteria, AFDIX divested its holdings

of ExxonMobil and increased its holdings of Conoco Philips because ExxonMobil "lagged its peers on environmental initiatives" but ConocoPhillips "had an action plan to lower its greenhouse gas emissions, among other things".⁶ Since its transition, AFDIX has also posted a 16.7 percent annualized return and ConocoPhillips has outperformed ExxonMobil.

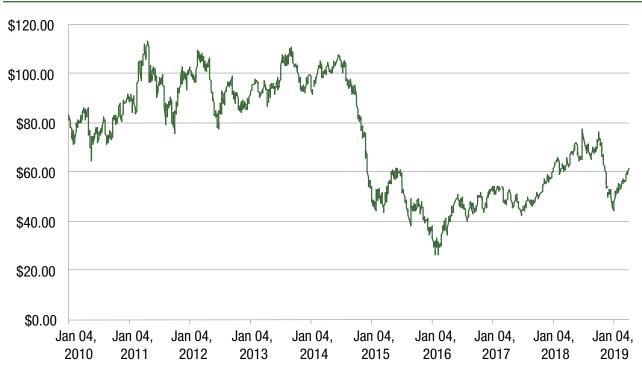
While these facts give the impression that the ESG criteria have enabled financial outperformance there is a missing factor – oil prices. As Figure 1 illustrates, oil prices had just bottomed out around \$26 per barrel in 2016, and experienced a steady rise to nearly \$80 per barrel by the end of 2018. ExxonMobil (market capitalization over \$330 billion) and ConocoPhillips

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(market capitalization under \$77 billion) are very different types of oil companies. ConocoPhillips is an independent oil and gas exploration and production company, compared to ExxonMobil, which is the largest integrated oil major. Due to these different corporate structures, their respective performance should vary significantly, particularly during periods of wild oil price swings; and, this was the case in 2016.

Starting at the end of 2014 until the beginning of 2016 oil prices crashed from historically high prices. ConocoPhillips' stock price crashed much further than ExxonMobil's during the oil price crash. It would not be surprising, consequently, to see its stock rise faster than ExxonMobil's during the ensuing recovery, which is what happened. The example of ExxonMobil and ConocoPhillips exemplifies the importance of evaluating whether other factors are driving the performance results.

Figure 1 Spot Oil Prices January 4, 2010 through April 1, 2019



Source: Energy Information Administration

Due to the combination of these impacts, the assertion that ESG considerations enhance financial performance should be viewed with care. It should be noted that whether or not an ESG strategy outperforms holding a broad-based index of stocks (such as an S&P 500 index fund), individual investors who care about social and environmental issues may prioritize these concerns over purely financial returns. ESG funds serve an important purpose for these investors. It is important, however, to accurately document the alternative trade-offs that investors are making when choosing ESG investment options.

Similarly, the inability of ESG funds to outperform the S&P 500 over the long-term does not mean that corporate ESG programs add no value. In many instances consumers value products to be produced in an ESG compliant manner, and will value these products higher than products that are produced in a non-compliant manner. Similarly, workers may prefer organizations that are ESG compliant over employment alternatives that are not. In these instances, ESG is consistent with the firms' financial responsibilities, and companies should be pursuing these ESG programs. Given the proliferation of responsibility programs throughout Corporate America, clearly, most companies value these programs to some extent. But, simply because some ESG programs have value does not mean that all programs have value. Suggested ESG programs raised via proxy votes (the proposals brought to a vote at corporate shareholder meetings) are an excellent example of the latter. Many of these proposals are neither desired by customers nor employees. As a consequence, these programs are linked to financial under-performance and warrant caution.

The remainder of this study evaluates the financial returns of a sample of ESG funds that were documented as a top/strong performing fund to substantiate these claims. This evaluation demonstrates that, generally speaking, the top performing ESG funds lag the returns of an S&P 500 index fund over short-, medium-

and long-term time horizons. Further, at the corporate level, the link between ESG proxy votes and lower company returns will be discussed. As a consequence, the general proclivity of institutional funds (via the advice they receive from their proxy advisory firms) to support ESG proxies is detrimental to future financial returns, and the general support of proxy advisory firms for these policies is unwarranted.

Evaluating ESG Fund Performance

In an April 2018 Field Bulletin, the Department of Labor "reiterated its longstanding view that, because every investment necessarily causes a plan to forego other investment opportunities, plan fiduciaries are not permitted to sacrifice investment return or take on additional investment risk as a means of using plan investments to promote collateral social policy goals."⁷ While the memo was written for pension plan fiduciaries, this concern is well founded with respect to the long-standing ESG funds.

In an apparent contradiction of these concerns, several reports have documented the strong performance of ESG funds over the past year. In 2017, Think Advisor (an investment advisory firm) documented the 10-best performing ESG funds as ranked by Morningstar that all outperformed the S&P 500 over the past year.⁸ However, this short-term outperformance was atypical for ESG funds. Further, over the longerterm ESG funds have underperformed the returns of the S&P 500 index. Additionally, the performance measures fail to consider the higher risks ESG funds impose on investors, or the ESG funds' higher management cost.

To illustrate these points, this analysis evaluated the performance of 30 ESG funds that have been documented as either having existed for more than 10-years or having outperformed the S&P 500 over a short-term timeframe.⁹ Table A1 in the Appendix list these funds and summarizes their ESG strategy. Table A1 categorizes the ESG funds into 3 different subcategories based on their ESG strategy.

The first sub-category of ESG funds are denoted as "broad-based index" funds because the ESG strategy prohibits investments in specific industries that typically include one or more of the following industries: gambling, alcohol, tobacco, gun manufacturers, or fossil fuel companies. Other than these relatively minor restrictions, these funds operate similarly to any other broad-based, actively managed, index fund.

The second sub-category of ESG funds, "waste and clean tech" takes a more pro-active approach to

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fulfilling the ESG mission statement. As Table A1 illustrates, these funds invest in alternative technology companies and clean waste management companies. The ESG funds in this sub-category differ substantially from those funds in the first category. These funds employ an investment strategy that explicitly pursues an ESG goal – in this case environmental goals.

The third sub-category of ESG funds, "social goals", is similar to the second - only instead of actively investing in clean tech companies, these ESG funds use explicit social criteria to select the companies in

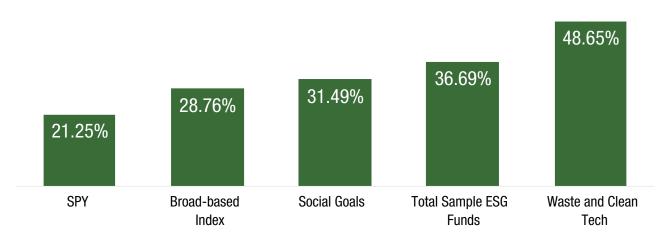
their portfolio. For example, the WIL fund invests in companies that demonstrate strong women leadership (either as CEOs or ample board membership). The SDG fund invests in companies pursuing the United Nations Sustainable Development Goals.

A concentration of investments into a single industry enables outsized returns should the selected industry outperform the market, but exposes the funds to outsized losses should the selected industry experience outsized losses. Over the long-term, the returns from the broad-based index funds should be closer to the returns of a broad index fund than the pro-active ESG categories because the ESG prohibitions place marginal restrictions on the funds' options, which can be seen in Table A2. Table A2 lists the top 10 holdings of the SPY (an S&P 500 index fund) as well as the holdings of the 30 ESG funds evaluated. The holdings of the broad-based index ESG funds vary depending upon whether the fund focuses on large-caps, mid-caps, or small caps. While the top 10 holdings of the large-cap ESG funds (those that are directly comparable to the SPY) varies from the SPY, the holdings are similar. This directly results from the reality that the prohibition on investing in tobacco companies or investing in fossil fuel companies would only impact, possibly, one of the top ten holdings of the SPY.

Table A2 also demonstrates that the investments of the pro-active ESG funds, particularly the waste and clean-tech funds, are concentrated in the selected industries. A concentration of investments into a single industry enables outsized returns should the selected industry outperform the market, but exposes the funds to outsized losses should the selected industry experience outsized losses. For example, Tesla and First Solar are one of the top ten holdings for many of the funds in the waste management and cleantech sub-category. As a result, if Tesla is able to meet its current aggressive sales goals, these funds will likely perform extremely well in the short-term, but if Tesla were to go bankrupt, these funds will likely significantly underperform the S&P 500. These higher risks associated with all of the ESG funds, but particularly the pro-active ESG funds, are summarized in Figure 2.

Figure 2





Source: ETF.com and Yahoo! Finance

Figure 2 presents the top ten holdings' share of the total portfolios of an S&P 500 index fund (SPY) compared to the average share of the funds that comprise the three ESG sub-categories, as well as the average share for the total sample of ESG funds. The higher the share of the top ten investments, the more a fund's performance will be influenced by the performance of these holdings, and the smaller the fund's benefits from diversification will be.

The top ten holdings of the SPY comprise 21.25 percent of the total portfolio. Compared to this amount, all of the ESG funds face significantly more exposure to the performance of its top ten holdings. For the total sample of ESG funds examined, the top 10 holdings comprised 36.69 percent of the total portfolio. The waste and clean tech ESG funds have an even larger exposure to the performance of their top ten holdings as these stocks represent nearly one-half of their total portfolios. In one fund, the EVX, the top ten holdings represent 64.03 percent of the entire portfolio. Concentration at these levels imposes a very large amount of risk on the investors in these ESG funds should these holdings underperform.

In addition to the important issue of risk, ESG funds also tend to have higher expense ratios, see Figure 3. Figure 3 illustrates that the expense ratio for the SPY is very low – 0.09 percent. In comparison, the costs for the ESG funds are significantly higher. The average expense ratio associated with the social goals subcategory (0.89 percent) is the highest, which makes sense since executing on the specific "social" strategies will typically require significantly more work on the part of management compared to the broad-based funds, for instance, which only need to apply the appropriate investment screen.

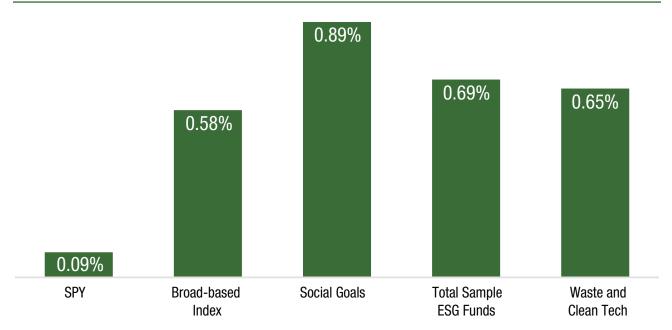


Figure 3 Expense Ratio: SPY Compared to Average of ESG Funds and ESG Fund Sub-Categories

Source: ETF.com and Yahoo! Finance

The expense ratios matter because these costs directly offset the investment returns. Over time, even if alternative investments earn the exact same investment returns, higher expense costs will lead to significantly lower overall investment returns. These considerations are illustrated in Table 1. Table 1

projects out the cumulative impact from the alternative expense ratios over a 25-year investment horizon assuming a similar 10 percent annual return for all investment alternatives. Therefore, the performance difference between the SPY and the three ESG sub-categories is completely driven by the alternative average expense ratios of each group. And, as Table 1 illustrates, the ultimate impact on the value of an investor's portfolio is large.

Table 1Hypothetical Investment Returns Accounting for Alternative Expense Ratios:SPY Compared to Average of ESG Funds and ESG Fund Sub-Categories

| | SPY | BROAD-BASED INDEX | SOCIAL GOALS | WASTE AND CLEAN TECH |
|----------------------------|-----------|-------------------|--------------|----------------------|
| Annual Return | 10.0% | 10.0% | 10.0% | 10.0% |
| Initial Investment | \$10,000 | \$10,000 | \$10,000 | \$10,000 |
| Year 1 | \$10,991 | \$10,942 | \$10,911 | \$10,935 |
| 2 | \$12,080 | \$11,973 | \$11,906 | \$11,956 |
| 3 | \$13,277 | \$13,101 | \$12,991 | \$13,074 |
| 4 | \$14,593 | \$14,335 | \$14,175 | \$14,296 |
| 5 | \$16,039 | \$15,685 | \$15,467 | \$15,632 |
| 6 | \$17,629 | \$17,162 | \$16,876 | \$17,092 |
| 7 | \$19,376 | \$18,779 | \$18,414 | \$18,690 |
| 8 | \$21,296 | \$20,548 | \$20,093 | \$20,436 |
| 9 | \$23,406 | \$22,484 | \$21,924 | \$22,346 |
| 10 | \$25,726 | \$24,602 | \$23,922 | \$24,435 |
| 11 | \$28,275 | \$26,919 | \$26,102 | \$26,718 |
| 12 | \$31,078 | \$29,455 | \$28,481 | \$29,215 |
| 13 | \$34,157 | \$32,230 | \$31,077 | \$31,945 |
| 14 | \$37,542 | \$35,266 | \$33,909 | \$34,931 |
| 15 | \$41,263 | \$38,588 | \$36,999 | \$38,195 |
| 16 | \$45,352 | \$42,223 | \$40,371 | \$41,765 |
| 17 | \$49,846 | \$46,200 | \$44,051 | \$45,668 |
| 18 | \$54,786 | \$50,552 | \$48,065 | \$49,936 |
| 19 | \$60,215 | \$55,314 | \$52,446 | \$54,603 |
| 20 | \$66,183 | \$60,525 | \$57,226 | \$59,706 |
| 21 | \$72,741 | \$66,226 | \$62,441 | \$65,285 |
| 22 | \$79,950 | \$72,465 | \$68,132 | \$71,387 |
| 23 | \$87,873 | \$79,291 | \$74,341 | \$78,058 |
| 24 | \$96,581 | \$86,760 | \$81,116 | \$85,353 |
| 25 | \$106,152 | \$94,933 | \$88,509 | \$93,329 |
| % Returns Relative to SPY | - | -10.6% | -16.6% | -12.1% |
| \$ Returns Relative to SPY | - | -\$11,219 | -\$17,644 | -\$12,823 |

Table 1 illustrates that over 25 years, an initial investment into the SPY of \$10,000 would become \$106,152. Relative to this return, the average broad-based index ESG fund would become \$94,933, or 10.6 percent lower than the SPY; the average social goals ESG fund would become \$88,509, or 16.6 percent lower; and, the average waste and clean tech ESG fund would become \$93,329, or 12.1 percent lower. Of course, these investment discrepancies have assumed the exact same annual investment return of 10.0 percent annually. Therefore, these lower realized returns from the ESG funds are due to the higher costs associated with running these funds.

Considering the risks inherent in the ESG funds' investment concentration, as well as the higher management fees, the ESG funds are at a significant disadvantage relative to a broad index fund based on the S&P 500 even before the alternative returns of these investments are considered. On top of these disadvantages, overall, ESG funds have not performed as well as the S&P 500.

Of the 30 funds considered, only 18 of these funds had a track record for at least 10-years. Since the basis of this evaluation is to include long-term considerations, only these 18 funds are compared in the series of charts below. The Appendix Table A4 presents the financial returns (including the impact from the expense ratios) for all 30 funds. Evaluating the performance of the 18 ESG funds with a full 10-year track record over a 1-year, 5-year, and 10-year performance illustrates that, in addition to the previous disadvantages, the majority of these funds are unable to replicate the performance of a benchmark S&P 500 index fund. Further, while 5 of the 18 funds were able to beat the benchmark over the past 12 months through April 2019, only one and two funds beat the S&P 500 benchmark over a 5-year and 10-year investment horizon, respectively. Figures 4 through 6 present these trends.

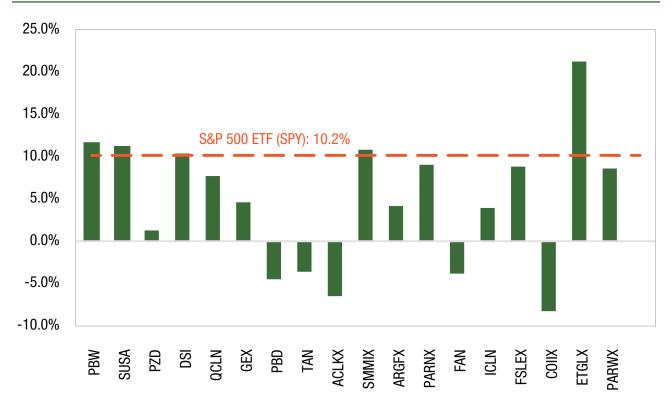
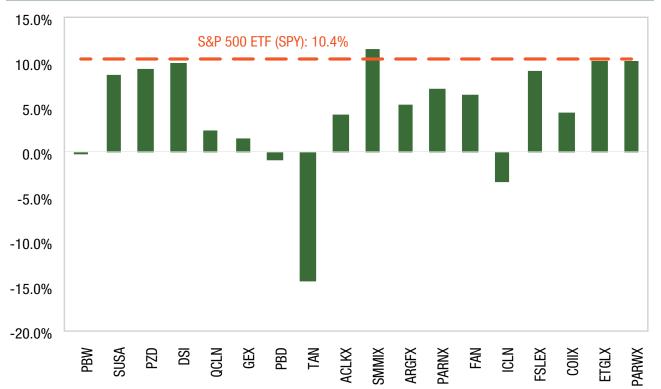
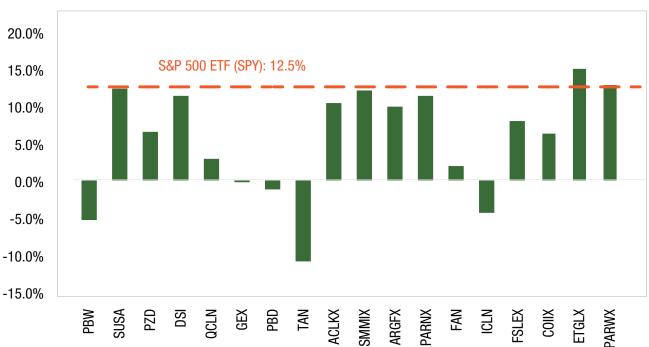


Figure 4 1-year Annual Returns SPY Compared to ESG Funds With 10-Year Return Data

Figure 5 5-year Compound Annual Growth Rate: SPY Compared to ESG Funds With 10-Year Return Data

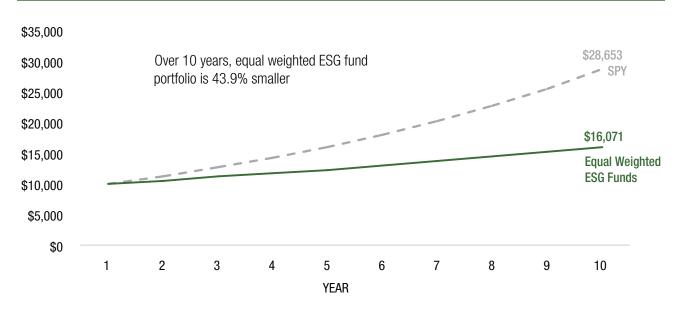






As a final measure of how the ESG funds performance compares to the SPY, Figure 7 compares the 10year growth rate of a \$10,000 investment into the SPY to the 10-year growth rate of a \$10,000 investment equally divided across the 18 ESG funds with a 10-year track record. As Figure 7 demonstrates, including the impact from management fees, a \$10,000 investment into the SPY would yield an extra \$12,581 compared to the ESG investment – starting with the same initial investment, the ESG portfolio would be 43.9 percent smaller after 10-years.

Figure 7 Historical Performance: SPY Compared to Equal Weighted ESG Fund Portfolio Management Expenses Included



There is one more caveat concerning the 10-year returns reviewed. Over the past 10-years, there has not been a sustained bear market for stocks. The last sustained bear market occurred between 2007 and 2009. Without a full understanding of the impact of a bear market on the long-term returns of ESG funds, questions regarding the funds' long-term performance will remain.

The Impact from ESG Programs on Corporate Performance

The relative underperformance of ESG funds relative to a broad-based index fund speaks to ESG as an active investment strategy. It does not address the value of ESG programs from a corporate management perspective.

Undoubtedly, some ESG programs make sense. For a specific publicly-owned company, consumers may demand that the products are produced in a manner consistent with ESG criteria. In this case, the company is providing its customers with the products they desire in the manner they want it produced, and adhering to these ESG criteria is a win-win proposition. Similarly, adhering to other ESG criteria could

improve worker morale, and consequently, improve overall efficiency and profitability. These ESG criteria are worth pursuing as well. From an individual investor's perspective, these ESG programs will improve corporate performance and paying attention to these considerations will help investors earn competitive financial returns.

While ESG programs can be financially viable, these programs can also be financially harmful and there are many studies that have concluded that ESG programs are often detrimental to a firm's financial performance or, at best, simply a distraction. This point, as represented by ESG shareholder proposals, was emphasized by a report by the Center for Capital Markets Competitiveness which noted that

Shareholder proposals increasingly deal with social or political matters that most shareholders deem immaterial to their decision making. The Manhattan Institute's Proxy Monitor Report found that in 2017, fully 56% of shareholder proposals at Fortune 250 companies dealt with social or policy concerns. Despite the prevalence of such proposals, shareholders have overwhelmingly rejected them when put to a vote. To highlight just one example, from 2006 to 2016, Fortune 250 companies received 445 proposals dealing with political spending disclosures – a perennial favorite topic of activists. Only 1 of these proposals during that time frame received majority backing, and in most years, proponents failed to garner the support of more than 20% of voting shareholders. Proposals dealing with other social or political matters have similarly received very low support when put to a vote.

Main Street investors have also demonstrated an aversion to bringing social and policy issues into corporate governance. A striking survey released earlier this year by the Spectrem Group found that 88% of public pension plan beneficiaries want plan assets to be used for maximizing returns and not political agendas, even if they agree with whatever cause the overseers of the plan may be advocating. The survey also found that beneficiaries largely believe pension funds should have to explain and justify their votes on proxy matters such as shareholder proposals, or abstain from voting if it cannot.¹⁰

A 2002 study by Tracie Woidtke in the *Journal of Financial Economics* directly examined the impact from activist public pension funds on the market values of a sample of Fortune 500 companies.¹¹ Professor Woidtke's results illustrate that increased shareholder activism by public pension funds is negatively correlated with stock returns. Particularly noteworthy, the firms who received proposals from public pension funds that were demonstrably advancing social agendas were valued 14 percent lower than similar companies that did not receive such proposals.

These results illustrate that investors will also often view ESG programs as detrimental to corporate performance. This makes the inclination to view these programs positively problematic, particularly the bias illustrated by proxy advisory firms due to their influence over the voting behavior of institutional investors. Two proxy advisory firms, ISS and Glass Lewis, control 97 percent of the proxy advisory market – effectively, the proxy advisory market is controlled by a duopoly. A 2018 Manhattan Institute study found "a positive association between ISS recommendations and shareholder voting and a negative relationship between share value and public pension funds' social-issue shareholder-proposal activism (which is much more likely to be supported by proxy advisory firms than by the median shareholder)."¹²

These negative associations emerge because the two major proxy advisory firms establish their position on ESG without adequate transparency, without considering how the programs can impact different investors (the advisory firms generally employ a one-sized fits all approach to deciding issues), and their internal ESG advisory programs demonstrate a conflict of interests/bias. As a result, institutional investors (particularly public pension funds) may be violating their fiduciary responsibilities when they adopt the ESG voting positions suggested by these proxy advisory firms.

Conclusion

As the old investment adage goes, "past performance is not indicative of future results". Past performance is not irrelevant, however. Judged against its past performance, ESG funds have not yet shown the ability to match the returns from simply investing in a broad-based index fund. By intention, ESG funds limit their investment options, creating higher investment risks. ESG funds also charge investors higher expense ratios and typically earn lower investment returns. Based on this historical performance, ESG funds provide investors with financially inferior results.

Some investors may prioritize other non-financial goals in addition to their investment returns, and for these investors, the lower financial returns may not be relevant. For other investors, particularly institutional funds such as public pension funds that have fiduciary responsibilities to their investors, the lower financial returns are material. The historical data do not recommend that these investors should invest in ESG funds.

Explicitly recognizing the tradeoffs between ESG goals and financial returns is essential to empower investors. With this knowledge, investors are better positioned to pursue their financial goals in the manner that reflects their values and the costs they are willing to bear.

Appendix

Table A1ESG Fund Name and Strategy

| FUND NAME | FUND SYMBOL | ESG STRATEGY | | | |
|--|-------------|---|--|--|--|
| SPDR S&P 500 ETF | SPY | N/A | | | |
| Broad-based Index | | | | | |
| iShares MSCI KLD 400 Social ETF | DSI | DSI tracks a market-cap-weighted index of 400 companies deemed to have positive environmental, social and governance characteristics by MSCI. | | | |
| ClearBridge Large Cap Growth ESG ETF | LRGE | LRGE is an actively managed fund that seeks long-term capital appreciation. The fund focuses on global large-cap stocks with positive ESG attributes. | | | |
| iShares MSCI U.S.A. ESG Select ETF | SUSA | SUSA tracks an index of 250 companies with high environmental, social and governance (ESG) factor scores as calculated by MSCI. | | | |
| iShares MSCI ACWI Low Carbon Target ETF | CRBN | CRBN tracks an index of stocks from global firms selected for a bias toward lower carbon emissions, but with tight constraints to the broad, marketlike ACWI index. | | | |
| iShares ESG MSCI U.S.A. ETF | ESGU | ESGU tracks an index composed of US companies that have been selected and weighted for positive environmental, social, and governance characteristics. | | | |
| SPDR MSCI ACWI Low Carbon Target ETF | LOWC | LOWC tracks an index of stocks from global firms selected for a bias toward lower carbon emissions but with tight constraints to the parent broad and marketlike ACWI index. | | | |
| American Century NT Emerging Markets Fund G Class | ACLKX | The fund invests at least 80% of its net assets in equity securities of companies located in emerging market countries. The fund cannot invest in tobacco stocks. | | | |
| Invesco Summit Fund Class P | SMMIX | The fund invests primarily in equity securities of issuers of all market capitalizations. It does not invest in companies whose primary business involves alcohol, tobacco or gambling. | | | |
| Ariel Fund Investor Class | ARGFX | The fund invests in mid-cap value stocks. It does not invest in companies whose primary source of revenue comes from tobacco and handgun manufacturing. | | | |
| American Century Sustainable Equity Fund Investor Class | AFDIX | AFDIX generally invests in large-cap stocks taking into account ESG factors when making investment decisions. | | | |
| Parnassus Fund | PARNX | Large growth fund that avoids investing in fossil fuel companies. Accounts for all ESG factors when making investment decisions. | | | |
| Waste and Clean Tech | | | | | |
| VanEck Vectors Environmental Services ETF | EVX | EVX tracks a tiered equal-weighted index of companies that stand to benefit from increased demand for waste management. | | | |
| Invesco Cleantech ETF | PZD | PZD tracks a tiered equal-weighted index of companies in the cleantech industry selecte for their outperformance potential. | | | |
| VanEck Vectors Global Alternative Energy ETF | GEX | GEX tracks a market-cap-weighted index of companies that derive at least 50% of their revenues from alternative energy. | | | |
| Invesco Global Clean Energy ETF | PBD | PBD tracks an index of companies that focus on cleaner energy weighted equally in tiers. | | | |

| Invesco WilderHill Clean Energy ETF | PBW | PBW tracks a modified equal-weighted index of companies involved in cleaner energy sources or energy conservation. |
|--|-------|--|
| First Trust NASDAQ Clean Edge Green Energy Index Fund | QCLN | QCLN tracks a market-cap-weighted index of US-listed firms involved in clean energy. |
| Invesco Solar ETF | TAN | TAN tracks an index of solar energy companies selected based on the relative importance of solar power to the company's business model. |
| First Trust Global Wind Energy ETF | FAN | FAN tracks an index of companies involved in the wind energy industry weighted according to float-adjusted market cap with strict limits on individual holdings. |
| iShares Global Clean Energy ETF | ICLN | ICLN tracks a market-cap-weighted index of 30 of the most liquid companies involved in businesses related to clean energy. |
| Global X YieldCo & Renewable Energy Income FTF | YLCO | YLCO tracks a market-cap-weighted index of global holding companies for renewable energy projects and other renewable energy companies. |
| Fidelity Select Envir and Alt Energy Portfolio | FSLEX | FSLEX invests in companies engaged in alternative energy and clean environment products and services. |
| Social Goals | | |
| iShares MSCI Global Impact ETF | SDG | SDG tracks an index composed of companies whose revenues are driven by products and services that address at least one of the United Nations Sustainable Development Goals. |
| Global X Conscious Companies ETF | KRMA | KRMA tracks an equal-weighted index composed of U.Slisted companies that exhibit environmental, social, and corporate governance (ESG) characteristics. |
| Barclays Women in Leadership ETN | WIL | WIL tracks an index of US stocks issued by firms with women as CEOs or board members. The index picks a maximum of 10 such stocks from each sector. Stocks are market cap weighted. |
| Eventide Healthcare & Life Sciences Fund CLASS I SHARES | ETIHX | Seeks out companies (particularly healthcare) with ethical governance, that promote family and community and practice environmental stewardship. Avoids companies that promote addictive behaviors such as gambling, pornography, tobacco, alcohol, and weapons proliferation. |
| Calvert International Opportunities Fund Class I | COIIX | The fund invests primarily in common and preferred stocks of non-U.S. small-cap to mid- cap companies. Investment decisions guided by the Calvert Principles for Responsible Investment. |
| Calvert Emerging Markets Equity Fund Class I | CVMIX | Invests primarily in emerging markets in companies that contribute toward addressing one or more global sustainability challenges including development, poverty, health, environment, climate change, and rights. |
| Eventide Gilead Class N | ETGLX | Seeks out companies with ethical governance that promote ESG principles. Avoids companies that promote addictive behaviors and products such as gambling, pornography, tobacco, alcohol, and weapons. |
| Parnassus Endeavor Fund Investor Shares | PARWX | The fund invests in companies that provide good workplaces for their employees, and avoids companies engaged in any part of the fossil fuel business. |

Table A2 Top 10 Holdings

| FUND Symbol | TOP 10 HOLDINGS | | | | | | | | | |
|----------------|---------------------------|--|--------------------------------------|------------------------------------|---------------------------------|---------------------------------------|--------------------------------|---|---------------------------------|--|
| SPY | Microsoft Corp. | Apple Inc. | Amazon.com, Inc. | Facebook Inc. A | Berkshire Hathaway Inc. B | Johnson & Johnson | Alphabet Inc. Class C | Alphabet Inc. A | ExxonMobil Mobil Corp. | JPMorgan Chase & Co. |
| | Broad-based Ir | ndex | | | | | | | | |
| DSI | Microsoft Corp. | Facebook, Inc. Class A | Alphabet Inc. Class C | Alphabet Inc. Class A | Visa Inc. Class A | Procter & Gamble | Intel Corporation | Cisco Systems, Inc. | Verizon Communications | Home Depot, Inc. |
| LRGE | Amazon.com, Inc. 6.48% | Facebook, Inc. Class A 4.99% | Microsoft Corporation 4.73% | Visa Inc. Class A 4.17% | Apple Inc. 3.99% | W.W. Grainger, Inc. 3.24% | Alphabet Inc. Class C 3.23% | United Health Group Inc.orp. orated 3.05% | Walt Disney Company 2.82% | Comcast Corporation Class A 2.73% |
| SUSA | Microsoft Corp. | Ecolab Inc. | Apple Inc. | 3M Company | Accenture Plc Class A | Alphabet Inc. Class A | BlackRock, Inc. | Salesforce.com Inc. | Northern Trust Corporation | Agilent Technologies, Inc. |
| CRBN | Apple Inc. | Microsoft Corp. | Amazon.com Inc. | Facebook Inc. A | Alphabet Inc. A | Johnson & Johnson | Alphabet Inc. Class C | JPMorgan Chase & Co. | Tencent Holdings Ltd. | Visa Inc. Class A |
| ESGU | Microsoft Corporation | Apple Inc. | Amazon.com, Inc. | Alphabet Inc. Class C | Facebook, Inc. Class A | Alphabet Inc. Class A | Johnson & Johnson | JPMorgan Chase & Co. | ExxonMobil Mobil Corporation | Visa Inc. Class A |
| LOWC | Apple Inc. | Microsoft Corporation | Amazon.com, Inc. | Facebook, Inc. Class A | Alphabet Inc. Class A | Johnson & Johnson | JPMorgan Chase & Co | Alphabet Inc. Class C | Visa Inc. Class A | Nestle S.A. |
| ACLKX | Tencent Holdings Ltd. | Taiwan Semiconductor Manufacturing Co. Ltd. | Alibaba Group Holding Ltd. ADR | Samsung Electronics Co. Ltd. | NOVATEK PJSC GDR | China Construction Bank Corp. H | HDFC Bank Ltd. | Naspers Ltd. Class N | CNOOC Ltd. | Industrial And Commercial Bank Of China Ltd. H |
| SMMIX | Amazon.com Inc. | Alphabet Inc. Class C | Visa Inc. Class A | Facebook Inc. A | UnitedHealth Group Inc. | Salesforce.com Inc. | Microsoft Corp. | Mastercard Inc. A | Lowe's Companies Inc. | Alibaba Group Holding Ltd. ADR |
| ARGFX | KKR & Co. Inc. | Zebra Technologies Corp. | MSG Networks Inc. Class A | Lazard Ltd. Shs A | Tegna Inc. | Kennametal Inc. | Nielsen Holdings PLC | JM Smucker Co. | Viacom Inc. B | Northern Trust Corp. |

| FUND Symbol | | TOP 10 HOLDINGS | | | | | | | | |
|----------------|--|---------------------------------|---|--|---|--|--|--|---------------------------------------|---|
| AFDIX | Microsoft Corp. | Bank of America Corp. | Apple Inc. | Exelon Corp. | Amazon.com Inc. | Procter & Gamble Co. | JPMorgan Chase & Co. | Cisco Systems Inc. | Visa Inc. Class A | Prologis Inc. |
| PARNX | Alliance Data Systems Corp. | Thomson Reuters Corp. | Signature Bank | Motorola Solutions Inc. | Mondelez International Inc. Class A | Hologic Inc. | Cadence Design Systems Inc. | Alphabet Inc. A | Linde PLC | Novartis AG ADR |
| W | laste and Clear | Tech | | | | | | | | |
| EVX | Waste Connections, Inc. | Waste Management, Inc. | STERIS PIC | Republic Services, Inc. | Stericycle, Inc. | ABM Industries Inc. | Donaldson Company, Inc. | Covanta Holding Corporation | Advanced Disposal Services | Clean Harbors, Inc. |
| PZD | BorgWarner Inc. | Roper Technologies, Inc. | Autodesk, Inc. | Intertek Group plc | ANSYS, Inc. | Kingspan Group Plc | Vestas Wind Systems A/S | Sensata Technologies | Xylem Inc. | Schneider Electric SE |
| GEX | Vestas Wind Systems A/S | AMETEK, Inc. | Microchip Technology Inc. | Eaton Corp. Plc | Tesla Inc. | Cree, Inc. | NIBE Industrier AB Class B | First Solar, Inc. | Siemens Gamesa Renewables | VERBUND AG Class A |
| PBD | Tesla Inc. | Signify NV | Cree, Inc. | NIBE Industrier AB Class B | Kingspan Group Plc | Acuity Brands, Inc. | Universal Display Corp. | GS Yuasa Corp. oration | Landis+Gyr Group AG | Hannon Armstrong |
| PBW | SunPower Corporation | JinkoSolar Holding Co., Ltd. | Daqo New Energy Corp. | Tesla Inc. | First Solar, Inc. | Hexcel Corp. oration | Enphase Energy, Inc. | Canadian Solar Inc. | Ormat Technologies, Inc. | Albemarle Corp. |
| QCLN | ON Semiconductor Corporation | Albemarle Corp. | Tesla Inc. | Universal Display Corp. | Hexcel Corporation | Cree, Inc. | Brookfield Renewable Partners | First Solar, Inc. | Littelfuse, Inc. | Acuity Brands, Inc. |
| TAN | First Solar, Inc. | Xinyi Solar Holdings Ltd | SolarEdge Technologies | Sunrun Inc. | Canadian Solar Inc. | Scatec Solar ASA | Enphase Energy, Inc. | JinkoSolar Holding Co., Ltd. | Hannon Armstrong Sustainability | TerraForm Power, Inc. |
| FAN | Siemens Gamesa Renewable Energy, S.A. | Orsted | Vestas Wind Systems A/S | China Longyuan Power Group Corp. Ltd. Class H | Northland Power Inc. | Pattern Energy Group, Inc. Class A | Renewables Infrastructure Group Limited GBP Red.Shs | Nordex SE | Boralex Inc. Class A | Xinjiang Goldwind Science & Technology Co., Ltd. Class H |
| ICLN | Siemens Gamesa Renewable Energy, S.A. | Vestas Wind Systems A/S | Companhia Energetica de Minas Gerais SA Sponsored ADR Pfd | Meridian Energy Limited | Contact Energy Limited | First Solar, Inc. | Pattern Energy Group, Inc. Class A | China Everbright International Limited | VERBUND AG Class A | Covanta Holding Corp. |

| FUND Symbol | TOP 10 HOLDINGS | | | | | | | | | |
|----------------|---|------------------------------------|--------------------------------------|--|----------------------------------|--------------------------------------|--|--|--|---|
| YLCO | ENGIE Brasil Energia S.A. | Vestas Wind Systems A/S | EDP-Energias de Portugal SA | Enel Americas S.A. | Orsted | AGL Energy Limited | Meridian Energy Limited | Enel Chile SA | Brookfield Renewable Partners LP | Algonquin Power & Utilities Corp. |
| FSLEX | 3M Co. | Honeywell International Inc. | Danaher Corp. | Eaton Corp. PLC | Ingersoll-Rand PLC | TE Connectivity Ltd. | Cummins Inc. | Parker Hannifin Corp. | Innospec Inc. | Comfort Systems USA Inc. |
| | Social Goals | 5 | | | | | | | | |
| SDG | Umicore | Johnson Matthey Plc | Procter & Gamble Company | AbbVie, Inc. | East Japan Railway Company | Tesla Inc. | Vestas Wind Systems A/S | Gilead Sciences, Inc. | Central Japan Railway Company | SUEZ SA |
| KRMA | Estee Lauder Companies Inc. Class A | Best Buy Co., Inc. | Apple Inc. | KLA-Tencor Corp.oration | Keysight Technologies Inc. | Intuit Inc. | Air Products and Chemicals, Inc. | Lowe's Companies, Inc. | Danaher Corp. oration | VMware, Inc. Class A |
| WIL | | | | | | NA | | | | |
| ETIHX | Sarepta Therapeutics Inc. | Sage Therapeutics Inc. | Ascendis Pharma A/S ADR | Zogenix Inc. | argenx SE ADR | Blueprint Medicines Corp. | Immunomedics Inc. | Vertex Pharmaceuticals Inc. | Biohaven Pharmaceutical Holding Co. Ltd. | KalVista Pharmaceuticals Inc. |
| COIIX | Sika Ag Reg Common Stock Chf.01 | SpareBank 1 SR Bank ASA | Melrose Industries PLC | IMCD NV | CAE Inc. | Cembra Money Bank AG | WH Smith PLC | Halma PLC | Rubis SCA | Smith (DS) PLC |
| CVMIX | Tencent Holdings Ltd. | Samsung Electronics Co. Ltd. | Alibaba Group Holding Ltd. ADR | Taiwan Semiconductor Manufacturing Co. Ltd. ADR | AIA Group Ltd. | Techtronic Industries Co. Ltd. | KB Financial Group Inc. | Bank Rakyat Indonesia (Persero) Tbk Class B | NARI Technology Co. Ltd. | Itau Unibanco Holding SA Participating Preferred |
| ETGLX | SendGrid Inc. | Ascendis Pharma A/S ADR | Splunk Inc. | Palo Alto Networks Inc. | The Trade Desk Inc. A | Sarepta Therapeutics Inc. | Sage Therapeutics Inc. | Lowe's Companies Inc. | Wayfair Inc. Class A | XPO Logistics Inc. |
| PARWX | Mattel Inc. | Micron Technology Inc. | Applied Materials Inc. | Cummins Inc. | Hanesbrands Inc. | Gilead Sciences Inc. | Lam Research Corp. | American Express Co. | Alliance Data Systems Corp. | NVIDIA Corp. |

Table A3Top 10 Holdings Share of Total Assets, Expense Ratio, and Net Assets

| FUND SYMBOL | SHARE OF TOP 10 Holdings | EXPENSE RATIO | NET ASSETS (BILLIONS) |
|------------------------|-----------------------------|---------------|-----------------------|
| SPY | 21.25% | 0.09% | \$264.06 |
| Broad-based Index | 28.76% | 0.58% | \$8.96 |
| DSI | 27.23% | 0.25% | \$1.34 |
| LRGE | 39.43% | 0.60% | \$0.12 |
| SUSA | 29.02% | 0.25% | \$0.94 |
| CRBN | 10.91% | 0.20% | \$0.12 |
| ESGU | 20.64% | 0.15% | \$0.18 |
| LOWC | 11.02% | 0.20% | \$0.06 |
| ACLKX | 30.17% | 1.19% | \$0.45 |
| SMMIX | 40.88% | 0.90% | \$2.30 |
| ARGFX | 36.28% | 1.01% | \$2.23 |
| AFDIX | 30.27% | 0.79% | \$0.28 |
| PARNX | 40.56% | 0.84% | \$0.94 |
| Waste and Clean Tech | 48.65% | 0.65% | \$1.34 |
| EVX | 64.03% | 0.56% | \$0.03 |
| PZD | 30.46% | 0.67% | \$0.17 |
| GEX | 66.81% | 0.63% | \$0.09 |
| PBD | 17.63% | 0.75% | \$0.05 |
| PBW | 32.00% | 0.70% | \$0.12 |
| QCLN | 56.10% | 0.60% | \$0.10 |
| TAN | 58.36% | 0.70% | \$0.30 |
| FAN | 54.24% | 0.60% | \$0.07 |
| ICLN | 51.98% | 0.47% | \$0.21 |
| YLCO | 53.88% | 0.65% | \$0.02 |
| FSLEX | 49.66% | 0.87% | \$0.19 |
| Social Goals | 31.49% | 0.89% | \$9.76 |
| SDG | 36.89% | 0.49% | \$0.05 |
| KRMA | 7.17% | 0.43% | \$0.06 |
| WIL | N/A | 0.45% | \$0.04 |
| ETIHX | 38.70% | 1.31% | \$0.97 |
| COIIX | 15.44% | 1.10% | \$0.32 |
| CVMIX | 39.66% | 0.99% | \$1.72 |
| ETGLX | 32.25% | 1.40% | \$2.38 |
| PARWX | 50.32% | 0.92% | \$4.23 |
| Total Sample ESG Funds | 36.69% | 0.69% | \$29.02 |

Table A41-year, 5-year and 10-year Average Annual Returns

| | 1-YEAR GROWTH | 5-YEAR CAGR | 10-YEAR CAGR |
|-------|---------------|-------------|--------------|
| SPY | 10.1% | 10.3% | 12.4% |
| PBW | 11.8% | -0.1% | -5.4% |
| SUSA | 11.3% | 8.7% | 12.3% |
| PZD | 1.3% | 9.2% | 6.5% |
| DSI | 10.3% | 9.9% | 11.4% |
| QCLN | 7.7% | 2.4% | 2.8% |
| GEX | 4.6% | 1.4% | -0.2% |
| PBD | -4.4% | -1.1% | -1.4% |
| TAN | -3.6% | -14.5% | -11.0% |
| ACLKX | -6.5% | 4.2% | 10.2% |
| SMMIX | 10.7% | 11.3% | 12.0% |
| ARGFX | 4.2% | 5.2% | 9.8% |
| PARNX | 9.1% | 7.1% | 11.2% |
| FAN | -3.8% | 6.3% | 1.9% |
| ICLN | 3.9% | -3.4% | -4.4% |
| FSLEX | 8.9% | 9.0% | 7.9% |
| COIIX | -8.3% | 4.4% | 6.3% |
| ETGLX | 21.1% | 10.1% | 14.8% |
| PARWX | 8.6% | 10.1% | 12.7% |
| EVX | N/A | 11.0% | N/A |
| LRGE | 16.7% | N/A | N/A |
| CRBN | 4.6% | 6.3% | N/A |
| ESGU | 11.3% | N/A | N/A |
| LOWC | 4.1% | 6.5% | N/A |
| AFDIX | 9.6% | N/A | N/A |
| YLCO | 15.2% | -0.4% | N/A |
| SDG | 4.2% | N/A | N/A |
| KRMA | 12.5% | N/A | N/A |
| WIL | 6.2% | 5.7% | N/A |
| ETIHX | 24.1% | 13.5% | N/A |
| CVMIX | -3.0% | 5.2% | N/A |

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About the Author

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Center for Medical Economics and Innovation

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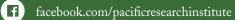
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