June 8, 2021

Securities and Exchange Commission
100 F Street, NE
Washington, DC 20549-0609
rule-comments@sec.gov

Attention: Acting Chair Herren Lee

I am a senior fellow in business and economics at the Pacific Research Institute (PRI). The mission of PRI is to champion freedom, opportunity, and personal responsibility for all individuals by advancing free-market policy solutions. Since its founding in 1979, PRI has remained steadfast to the vision of a free and civil society where individuals can achieve their full potential.

The Securities and Exchange Commission (SEC or Commission) has requested public comments regarding how the SEC can facilitate "the disclosure of consistent, comparable, and reliable information on climate change" as well as "comments generally as to how the Commission can best regulate climate change disclosures".

I have researched and published several analyses related to global climate change and Environmental, Social, and Governance (ESG) investing (a 2019 report on ESG investment performance is enclosed as an addendum to this letter). Based on my research, I am concerned that attempts by the SEC to implement "consistent, comparable, and reliable" climate change disclosure regulations, in the name of ESG, will result in burdensome reporting requirements that misinform investors and impose excessive costs on public companies.

It is important to note upfront that the well-established materiality standard already applies to any potential financial risks created by global climate change, just as it does to any other potential financial risk. This principles-based approach requires companies to disclose the risks to shareholders, but the disclosure is based on the company's hypothesis of what the uncertain future looks like.

Therefore, the pertinent question is not whether or not companies need to disclose any potential financial risks associated with global climate change. The pertinent questions are whether it is feasible for the SEC to impose consistent and more detailed disclosure standards on companies, and whether these standards would improve investors knowledge regarding the potential risks created by global climate change. The likely answer to these questions is no.

Additional Disclosure Requirements Will Generate Misinformation

One of the complaints leveled against the disclosure language that companies currently use is the language's vagueness. Consequently, it is argued that the disclosures provide investors with insufficient information regarding the potential financial risks they are bearing when investing in a company.

While this argument may have merit, imposing standards that require standardized and more precise details of the potential financial risks from global climate change will provide investors with information whose accuracy is difficult (if not impossible) to verify. As a result, precise disclosure statements will likely create greater confusion for investors than a policy of simply applying the current materiality standard.

Take the potential impact from global climate change on fossil fuel investments as an example. Fossil fuel companies are an important example because the financial risks posed by global climate change is more direct and certain on these companies than the impact from global climate change on most other public companies. They are a best-case example in this instance.

Yet, even in this instance, more precise disclosure requirements create an exceptionally large amount of uncertainty. Due to these uncertainties, fossil fuel companies will need to make an excessive number of assumptions without sufficient information to support these assertions. Each one of these assumptions will contain unknown errors, and how these errors will compound upon one another is also unknown. As a result, requirements that force companies to report more specific disclosure impacts from global climate change will be unreliable estimates of the potential financial risks. Mandating that companies provide investors with unreliable disclosures does not improve investors' understanding of these complex issues, and creates an unacceptably high risk that the companies will be providing investors with inaccurate information.

For example, the financial risks that fossil fuel companies face from global climate change arises because it is assumed that, due to the problem of global climate change, the demand for fossil fuels will decline and the use of alternative energy technologies will increase. The decline in oil demand will harm these companies' revenues, creating risk for investors.

The International Energy Agency's (IEA) Sustainable Development Scenario as part of its World Energy Outlook provides a sense of the potential economic outcome.[1] And, if this scenario were an accurate forecast, the major oil companies could use the IEA's Sustainable Development Scenario to assess global climate change's possible financial risks. However, the projection that the future demand for oil will decline is far from certain. In fact, there are sound arguments that support a forecast where fossil fuel demand will continue to grow for the foreseeable future.

First, there are many market realities that favor continued growth in the demand for fossil fuels. Oil currently fuels one-third of the world's energy needs and is an irreplaceable component in thousands of products that consumers use every day (all plastic products, for instance). While it is possible that

[1] "World Energy Outlook: 2020" International Energy Agency, https://www.iea.org/reports/world-energy-outlook-2020?mode=overview#executive-summary (accessed June 4, 2021).

viable alternatives for all of the current uses of fossil fuels will pan out, it is also possible that none of them will. And, even when the technologies pan out, these new innovations and technologies must experience dramatic growth in order for the demand for fossil fuels to decline. Such outcomes are far from certain.

Take electric vehicle (EV) sales as an example. EVs are supposed to be a major displacer of oil demand, yet still represent only 2.6% of global car sales according to the IEA.[2] Therefore, a radical market transformation is still necessary in order for EVs to displace a significant amount of oil demand from automobiles use.

There are significant concerns regarding whether such a displacement will occur over the relevant timeframe. As just one example, as of 2021, there are insufficient supplies of the rare earth elements that are necessary to build the envisioned number of EVs.[3] Without these materials, it is technologically impossible to physically build the necessary number of EVs to significantly displace fossil fuels. The shortage of EVs will mean that sales of traditional internal combustion engine automobiles will remain robust for many years into the future, as will oil demand.

There are also unknowns regarding whether consumers will accept EVs. According to the head of Ford UK, most people are "still concerned about a number of things - range, the charging infrastructure, the lack of information available to customers and obviously the price as well."[4] Unless consumers embrace EVs more wholeheartedly, the IEA's scenario where oil demand will decline is unlikely to come to pass.

Obstacles to the development of alternative energy is not just applicable to EVs either. Similar market obstacles exist for the alternative electricity generation technologies, the replacement for fossil fuel-based plastics, and the thousands of other products that use or are derived from fossil fuels.

Second, beyond the market uncertainties, there is the issue of whether the necessary policies will be implemented to foster the transition to these new technologies. Many of the stated climate goals in the Paris Agreement (not to mention previous global frameworks) have been labeled "unambitious". In fact, due to these unambitious targets and the poor track record of countries even meeting these climate goals, the IEA offers several other possible oil demand scenarios in their annual energy outlooks, which include scenarios where oil demand is flat or growing for the next two decades.[5]

The unwillingness of countries around the world to implement stringent emission reduction policies – likely in response to the large economic costs associated with these policies – creates additional uncertainty regarding the applicability of the declining oil demand scenario for the disclosure statements of fossil fuel companies.

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[2] "Global EV Outlook 2020" International Energy Agency, https://www.iea.org/reports/global-ev-outlook-2020 (accessed June 4, 2021).
[3] https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions.
[4] https://www.bbc.com/news/business-57200593.
[5] https://theconversation.com/dont-bet-on-the-un-to-fix-climate-change-its-failed-for-30-years-123308.

Third, there is the problem of how these targets will be achieved. The typical assumption is that countries will meet lower emissions goals by transitioning away from fossil fuels. But, this is also an assumption. Another way that global emission goals can be met is through carbon capture and sequestration, or other technologies that reduce emissions from fossil fuels. Meeting the targets through these technologies could mean that global emissions will be declining, but fossil fuel use may not be – it could even be increasing.

All of these unknowns make it extraordinarily difficult for an oil company to implement more precise disclosures regarding how global climate change will impact its business. If oil demand does grow, then the losses quantified under the Sustainable Development Scenario will not occur, and providing a more detailed disclosure based on the Sustainable Development Scenario will provide investors with inaccurate information.

Ultimately, it will be the investors who will bear these significant, and unnecessary, financial risks if the assumptions companies are required to use are wrong. Adverse consequences for investors will exist regardless of whether the firms overestimate the impact from global climate change on oil demand or underestimate these risks. A methodology that overestimates the decline in demand will impose a large opportunity cost by inaccurately discouraging oil investments. A methodology that underestimates the decline in demand will inaccurately encourage oil investments and set investors up for large financial losses.

Either way, in light of the large amount of uncertainty regarding the precise impact from global climate change, more specific disclosure requirements are more likely to perpetuate misinformation rather than promote greater clarity for investors. Further, if there were consistent assumptions used across all of the companies, then there is a risk that the reporting requirements would be perpetuating widespread systemic misinformation in the financial markets to the detriment of investors. These impacts would be more acutely felt by smaller investors who lack the resources to perform their own analyses.

This example demonstrates that there is a large risk that more detailed disclosure requirements will provide investors with a less accurate understanding of the potential financial risks from global climate change on an oil company compared to the current disclosure requirements.

The difficulties quantifying the impact are not lessened for companies in other industries that are less directly impacted by global climate change. How global climate change will impact demand for their products, cost structures, or financial risks is just as uncertain and attempts to provide a more precise reporting will prove costly, and likely inaccurate.

For instance, the lifespan of a solar panel is generally regarded as 25 to 30 years,[6] and disposal of the many hazardous materials that make up a solar panel creates potential environmental risks. These environmental risks could create material, yet unknown, financial liabilities for a company. To the extent that some companies will rely on alternative technologies for power generation, how should

[6] https://www.greenbiz.com/article/what-will-happen-solar-panels-after-their-useful-lives-are-over#:~:text=But%20the%20solar%20panels%20generating,t%20long%20from%20being%20retired..

these companies quantify the costs associated with the disposal of these assets? Questions such as this will thwart attempts to provide an accurate and standardized reporting on these issues.

Concluding thoughts

Requiring companies to provide more detailed disclosures will more likely promote misinformation for investors rather than information. Due to the large number of policy and market uncertainties, the potential costs from global climate change simply defies a precise and replicable methodology. Attempting to impose such a requirement provides investors with a false sense of certainty regarding an unknown outcome that is largely outside of the company's control.

For these reasons, the SEC should not pursue any additional disclosure requirements for companies, and should instead rely on the current materiality standards.

Thank you for the opportunity to submit these comments.

Sincerely,

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https://www.pacificresearch.org/wp-content/uploads/2019/05/ESG_Funds_F_web.pdf

ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) INVESTING:

An Evaluation of the Evidence

Wayne Winegarden

PACIFIC RESEARCH INSTITUTE

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 non-financial 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.

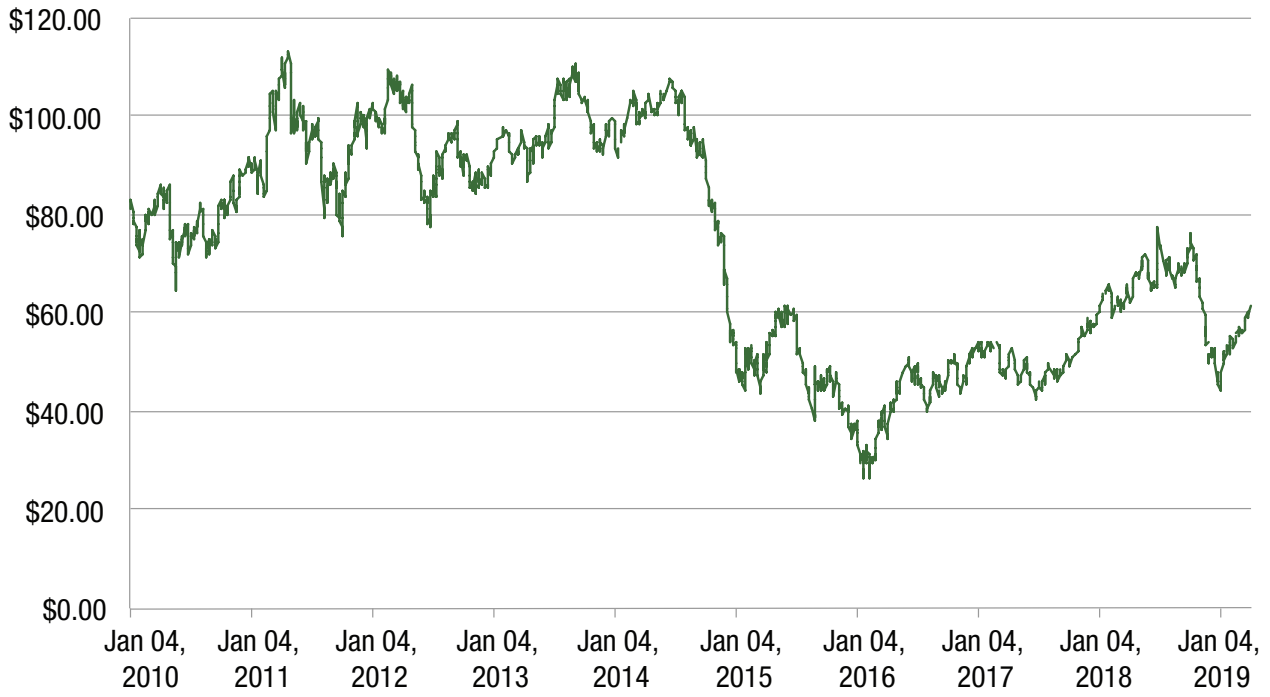
Third, short-term performance metrics often reflect unique factors that are not indicative of the long-term investment value. For example, back in 2016 American Century Sustainable Equity Fund (AFDIX) transformed into an ESG fund. As part of adhering to its new ESG criteria, AFDIX divested its holdings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

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 (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 longer-term 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 sub-categories based on their ESG strategy.

> "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.

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 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

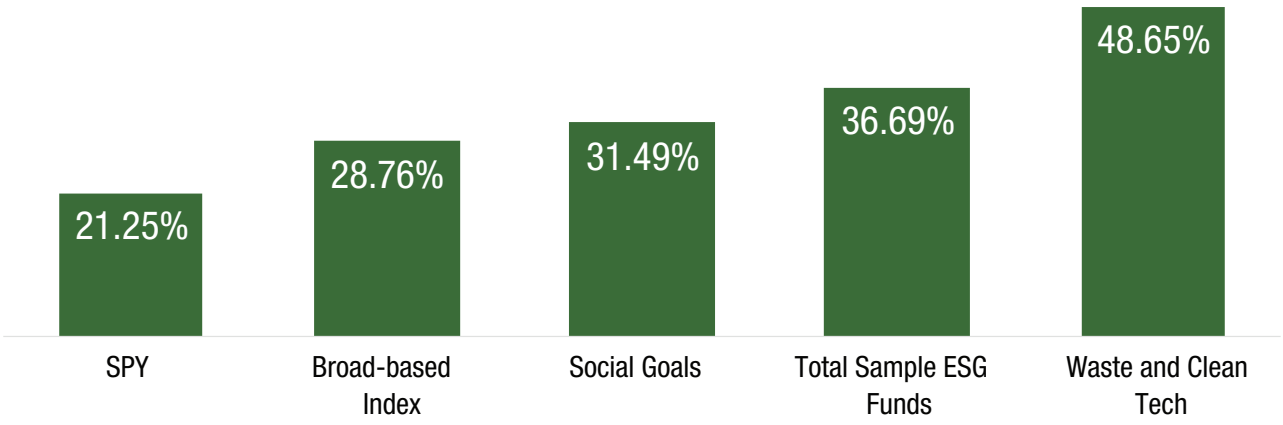
their portfolio. For example, the WIL fund invests in companies that demonstrate strong women leadership (either as CEOs or ample board membership). The SDG fund invests in companies pursuing the United Nations Sustainable Development Goals.

> 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
Top 10 Holdings Share of Total Portfolio
SPY Compared to Average of ESG Funds and ESG Fund Sub-Categories



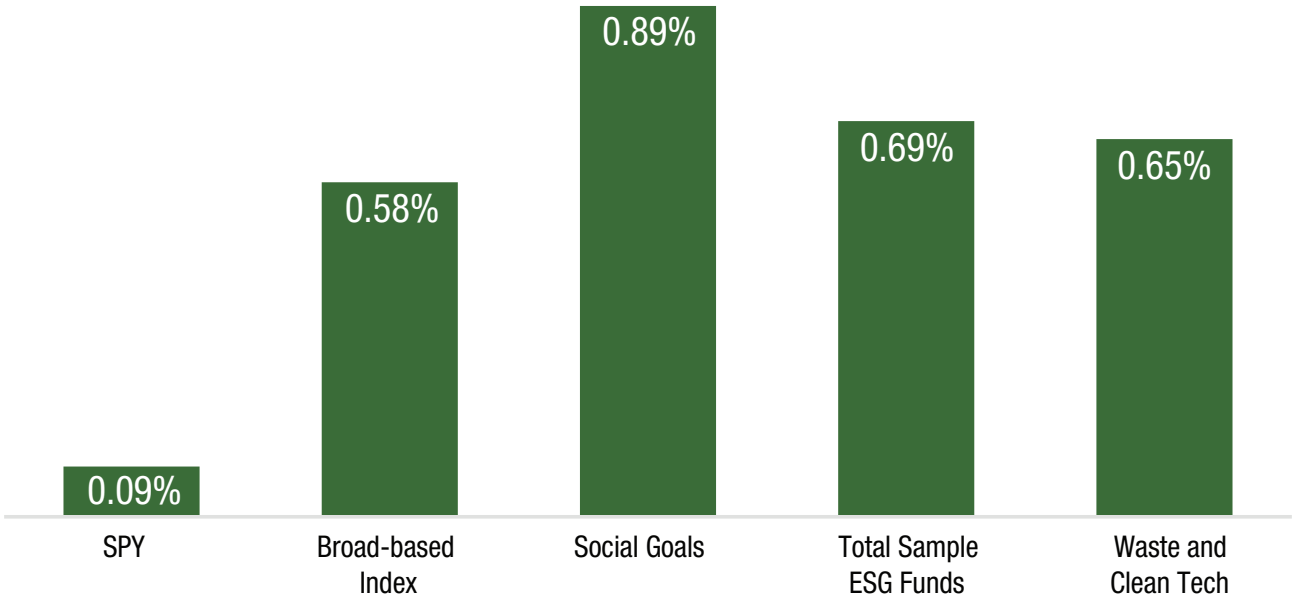
Source: ETF.com and Yahoo! Finance

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 sub-category (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 1
Hypothetical 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

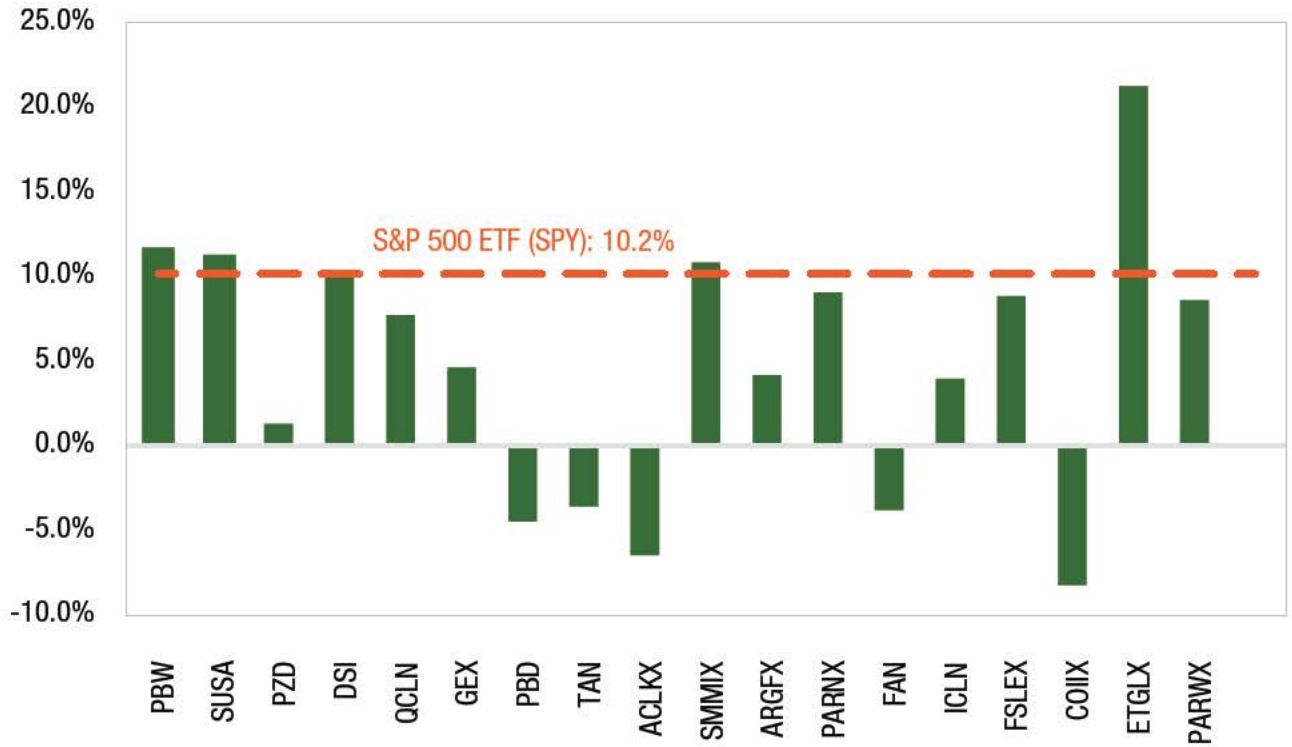


Figure 5
5-year Compound Annual Growth Rate: SPY Compared to ESG Funds With 10-Year Return Data

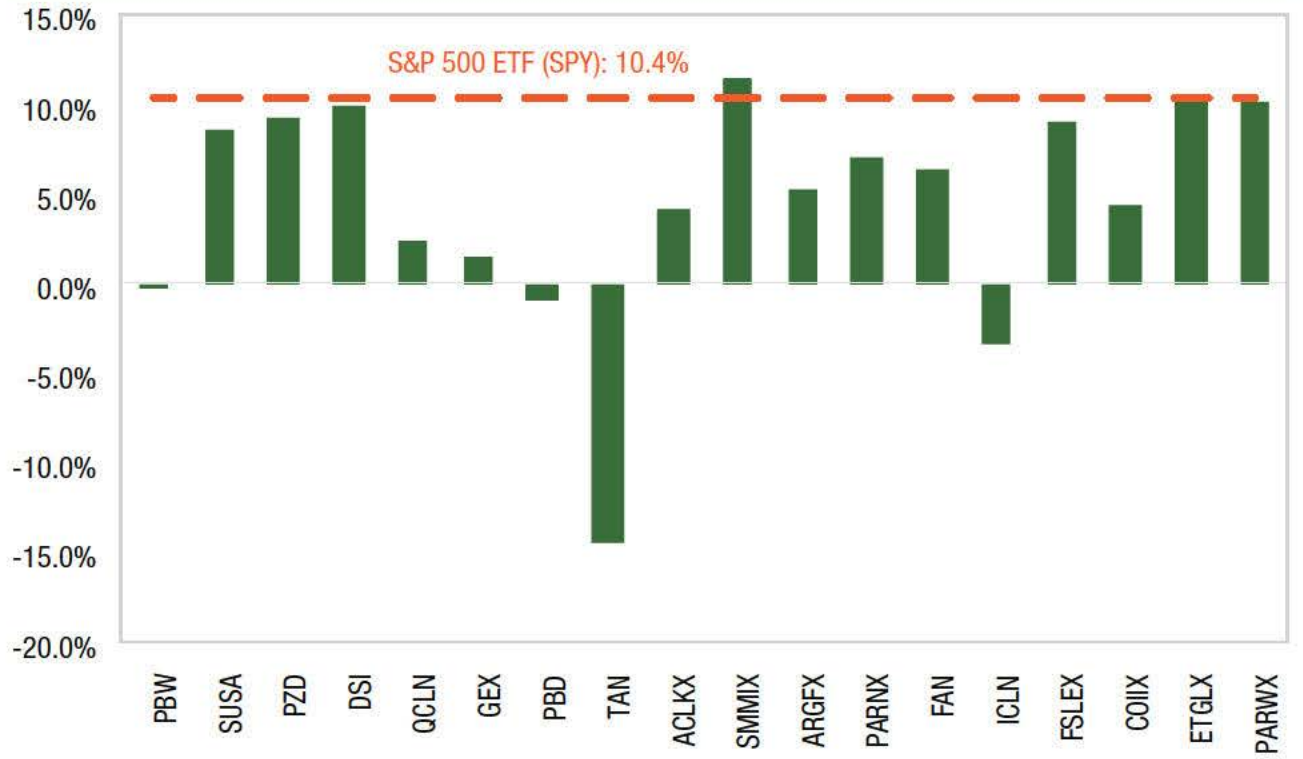
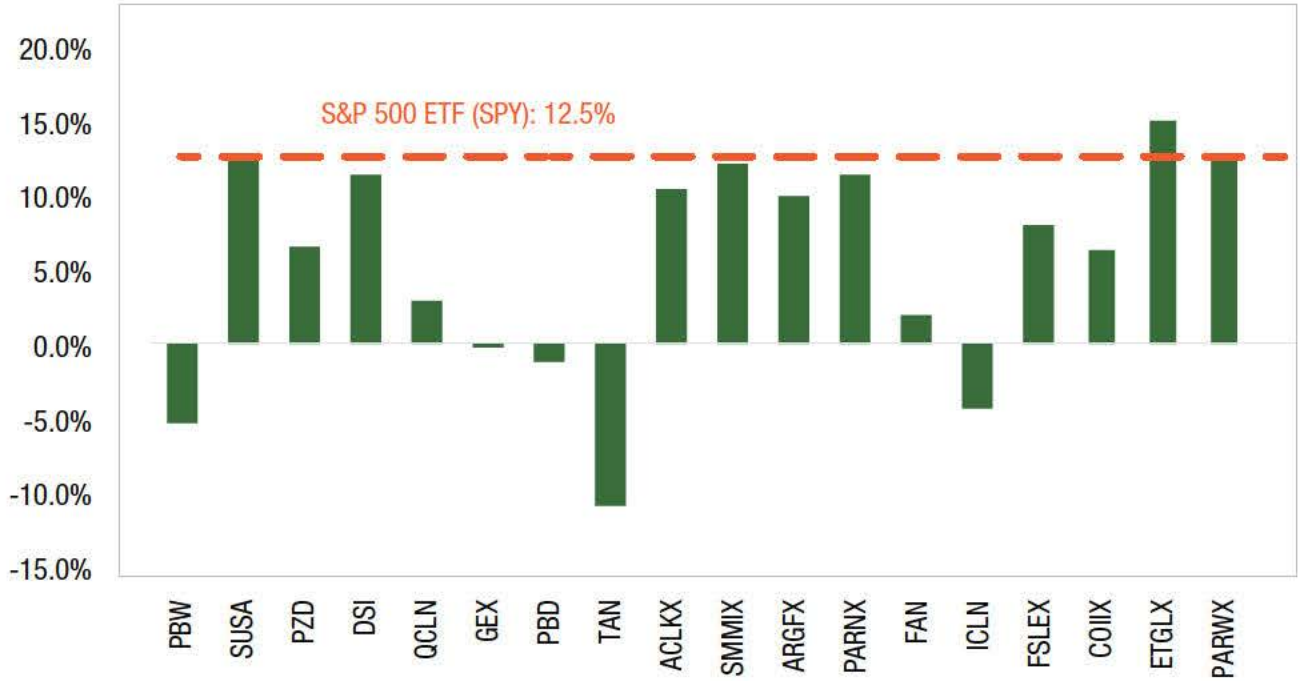
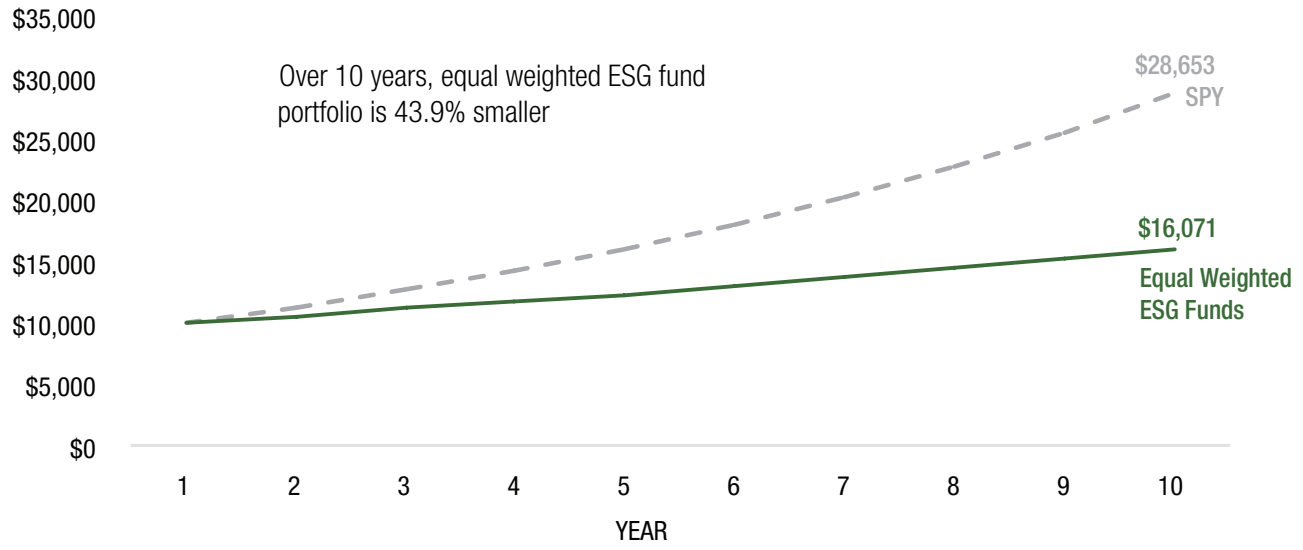


Figure 6
10-year Compound Annual Growth Rate: SPY Compared to ESG Funds With 10-Year Return Data



As a final measure of how the ESG funds performance compares to the SPY, Figure 7 compares the 10-year 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 A1
ESG 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 selected 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 ETF	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.S.-listed 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 Index										
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
Waste and Clean Tech										
EVX	Waste Connections, Inc.	Waste Management, Inc.	STERIS Plc	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										
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 A3
Top 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 A4
1-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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