Do "Good Guys" Finish Last? The Relationship between Morningstar Sustainability Ratings and Mutual Fund Performance

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Abstract

Given the rapid growth of investment products focused on socially responsible investing (SRI), in March 2016 Morningstar began reporting standardized metrics to "grade" the Sustainability (i.e., SRI) level of thousands of mutual funds. While traditional financial theory suggests funds that limit their investment universe should underperform, we find that funds with high Sustainability scores have about the same risk-adjusted returns (i.e., alphas) as other funds. Thus, investors can apparently follow a social mandate without sacrificing financial performance, particularly within the large-cap space. We also find that funds with high Morningstar Sustainability scores generally mimic those of self-proclaimed SRI funds, suggesting that the new metric opens up a larger pool of potential funds for investors focused on SRI. However, funds that specifically designate a social mandate do experience more stable cash flows, suggesting that the mandate may be more beneficial for the fund company than it is for investors.

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Introduction

Ethically-based investing can be traced back to ancient Abrahamic traditions, whose teachings promote how to use money ethically. While most modern-day socially responsible investing (SRI) is not purely a religions endeavor, it nonetheless focuses on key items such as social awareness and accountability. In fact, many current SRI mutual funds trace their origins to some form of activist social (i.e., anti-discrimination) or political (i.e., anti-war) movement. For example, the first modern SRI mutual fund was the Pax World Fund, which was founded in 1971 and focused on serving investors who opposed the Vietnam War.

While the expansion of SRI funds started slowly, the pace has definitely quickened in recent years. For example, the U.S. Forum for Sustainable and Responsible Investment (2016) reports that the assets of funds that focus on sustainable investing have seen a 33 percent growth since 2014, and they report that SRI assets currently represent over $8 trillion (or about 20 percent) of the approximately $40 trillion of assets under professional management in the United States. Large investment companies now have multiple SRI offerings, including mutual funds, ETFs, and separate accounts.

As the value of such assets has grown, a key question that has engendered much debate is whether such an investment focus negatively impacts investment returns. In particular, appealing to Modern Portfolio Theory (MPT), critics argue that, *ceteris paribus*, limiting the number of assets from which an investment manager can choose should lead to a less optimal portfolio, i.e., lower risk-adjusted returns. In contrast, proponents suggest that firms ignoring socially responsible

practices are not good investments, and excluding will not negatively affect an investor's performance.

While there is a large (and growing) amount of recent research dedicated to analyzing socially responsible companies and mutual funds, there does not seem to be a standard definition for what socially responsible investing actually is. Many funds use proprietary measures, and comparing investments on this dimension is difficult for investors. Moreover, outsiders to the firms also will have difficulty evaluating and verifying a company's actions related to sustainability. The lack of standardization and prevailing opacity may contribute to the lack of consistency in the results of existing studies of SRI investment performance. Fortunately, Morningstar®, the accepted leader in mutual fund data, recently (March 2016) began reporting ESG (Environmental, Social, and Governance) and Sustainability scores for a large number of mutual funds. While the newness of these scores implicitly limits the time frame we are able to examine, as well as the longer-term robustness of our results, we believe it is worthwhile to consider how these simple metrics demonstrate the impact of SRI on portfolio performance. It also marks a step towards offering socially conscious investors some guidance for selecting funds that coincide with their investment philosophies.

Our primary contribution to the literature is to show that funds with higher Sustainability scores (i.e., those with underlying investments in the most socially responsible companies) have risk-adjusted returns (i.e., alphas) that are neither statistically nor economically different from those with lower Sustainability scores. We believe this provides useful information in the debate surrounding the efficacy of SRI. In particular, our results suggest that socially responsible investors on average can choose funds that are consistent with their personal philosophies without sacrificing financial performance. We do, however, find one possible investor tradeoff: small-cap funds

generally have lower Sustainability scores. In the context of portfolio optimization, investors who choose to employ a social filter may therefore inadvertently construct portfolios that are biased toward larger-cap investments. In the absence of leverage, investors may be unable to allocate investments to their desired risk exposure.

We next consider the new Morningstar Sustainability metrics for funds marketed specifically towards socially conscious investors. In the past, such investors would have been limited to those funds that specifically market themselves as having a defined SRI mandate with no external confirmation of how well the fund follows the mandate. While growing, only a small number of active equity funds have this mandate as of the end of 2016 (around 30 according to the U.S. Forum for Sustainable and Responsible Investment). Fortunately, with the new rankings, socially responsible investors may be able to widen their list of funds that meet socially responsible criteria, while also verifying that self-proclaimed funds follow their stated mandate. We compare a list of self-proclaimed SRI funds versus those that fall in the top 50 (and 20) percent of Morningstar's Sustainability scores. We find little difference between the two sets with regard to performance or the range of sustainability scores, which suggests that investors who seek to employ a social mandate no longer need to rely exclusively on self-proclaimed SRI funds.

Finally, we consider investor behavior towards SRI funds. Funds that score high on the Morningstar Sustainability metrics do not appear to be any more attractive to investors, as compared to low scoring funds. In contrast, funds with a mandate for SRI have performed significantly better with regard to fund flows, bringing in nearly 0.5% more cash flow (as a percentage of TNA) per month over funds with similar scores. Some investors place a lot of value on having socially responsible funds in their portfolio, and funds that publicly commit to pursuing

these strategies have benefited as a result. Of course, with the new Morningstar ratings now available, the cash flow dynamics of mandate and non-mandate funds may change in the future.

Previous Research

Why Socially Responsible Investing?

To illustrate why investors may choose socially responsible mutual funds, Riedl and Smeets (2017) provide a metaphor of a family that has installed solar panels on their house. They allude that the family may not have the solar panels for the sole reason of environmental care, but may have installed them for a variety of reasons: (1) they will pay off financially; (2) they provide the family with an 'environmentally friendly' reputation among their peers; and/or (3) they view them as a substitute for donations to their favorite environmentally friendly charities.

Applying this rationale to investing, Riedl and Smeets (2017) question if socially responsible investments are truly a reflection of a search for a better investment portfolio or if they are driven by social preferences and other nonfinancial factors. Using investor responses and incentivized experiments to collect behavioral data, Riedl and Smeets (2017) find that while some investors are willing to forego higher returns in order to remain in line with their social preferences, most investors are less likely to invest in a SRI fund that is predicted to underperform relative to a conventional fund. In addition, their results suggest that investors are not more likely to invest in SRI funds even if they expect the SRI funds to perform better than conventional funds. Consistent with Barreda-Tarrazona, et al. (2011), Riedl and Smeets (2017) therefore conclude that social preference (not financial performance) is the primary factor for investors choosing SRI funds. Nonetheless, all else equal, if two funds were exactly the same with respect to social awareness, investors would generally choose the higher performing fund.

Portfolio Efficiency and the Potentially Negative Impact of SRI

In his seminal work, Markowitz (1952) developed the underlying principles of Modern Portfolio Theory (MPT), which are still widely accepted today. In fact, a report by RBC Global Asset Management (2012) sites MPT as a cornerstone principle for why SRI funds should underperform more traditional mutual funds. In particular, MPT suggests that adding available investments from which an investor can choose will result in a more efficient (i.e., higher return and/or lower risk) portfolio. Thus, selecting from a potential set of 2,000 companies will allow an investor to create a more efficient portfolio than choosing from, say, only 1,500 or 1,000 companies. Because SRI funds limit their investment universe, they should by definition have less efficient portfolios. Thus, opponents of SRI argue that using such qualitative considerations as social responsibility when analyzing funds can lead to lower risk-adjusted returns simply because there are fewer investment options available after the social criterion is applied, thereby increasing unsystematic risk.

Stanley and Herb (2007) discuss the potential performance of SRI funds within the MPT context, with the intention of determining whether or not investors should include socially responsible funds in their portfolios. As MPT principles would suggest, they cite evidence suggesting SRI funds tended to underperform conventional funds. However, they only provide survey evidence from a limited set of studies, and they do not provide any of their own empirical work. Further, they attribute much of the underperformance to transaction costs and fund management fees associated with small funds. Given the growth in SRI assets in recent years, it is possible that such underperformance may have been eliminated as transaction fees have fallen, as other providers have entered the market, and as SRI investment methods have evolved.

Potentially Positive Impact of SRI

Proponents of SRI funds note that since its inception in 1990 the MSCI KLD 400 (formerly known as the Domini 400 Social index), the oldest 'sustainable and responsible' index, has consistently outperformed the S&P 500. Further, there seems to be a growing view among prominent business leaders and investors that social responsibility positively impacts shareholder value. For example, in 2015 Morgan Stanley launched their Institute for Sustainable Investing, whose focus was to create sustainable finance solutions with "competitive returns."

In a report from Deutsche Bank Group, Fulton, et al. (2012) examine more than 100 academic studies of sustainable investing around the world and note that they generally find a lower cost of capital (in terms of both debt and equity) for more socially responsible firms. This relationship suggests that the market perceives these companies to have lower risk and therefore rewards them through a lower cost of capital. Fulton, et al. (2012) go as far as to say that this finding alone should put SRI on the radar for every company CFO (and for potential investors). In contrast, they find no support that SRI funds outperform their non-SRI counterparts with regard to return. Nonetheless, if the return is constant, but the risk is lower, then this would suggest a more efficient portfolio, which would contradict the principles of the MPT argument.

While their overall findings are generally consistent with this view, Veryheyden, et al. (2016) arrive at the outcome via the opposite framework. In particular, they examine opportunities that may arise when investors incorporate ESG information into their investment approach regardless of their interest in sustainability initiatives. Using global 'screened' (i.e., SRI criterion employed) and 'unscreened' (i.e., no criterion such as SRI applied) funds, the study finds that while the 'screened' funds introduce risk specific to ESG screening (i.e., more unsystematic risk / higher volatility), it is more than offset by the excess returns that are generated. The study also finds that funds with the greatest outperformance have underlying holdings from mainly North

America and Europe, where ESG data is more readily available, suggesting that location may have an impact on the results.

The Prevailing Consensus View on SRI

Given the differing views regarding the financial efficacy of SRI, there is still an ongoing debate, so it is difficult to identify a consensus to which every researcher would agree. Nonetheless, Renneboog, et al. (2007) attempt to provide a consolidated summary of the literature regarding the performance of SRI related mutual funds. While the field is wide, their summary posits one key takeaway:

> The performance of SRI funds is not significantly different from that of conventional funds. In particular, the difference in alpha (used as a benchmark to gauge active return on an investment) is not statistically significant between SRI funds and conventional funds.

Given that it is a proposed summary of the field, it is not surprising that many other studies tend to echo this conclusion. For example, investment management firm Phillips, Hager & North (2007) questions whether there is a literal and figurative price to be paid for investing in socially responsible mutual funds. The firm compares the performance of SRI indices and funds with their conventional counterparts. Their results suggest that SRI funds have neither lower nor higher returns; therefore, they conclude that investors can pursue their socially responsible preferences without "paying for it." Similarly, a study by Envestnet PMC (2014), which analyzed mean performance and total and risk-adjusted returns of SRI and non-SRI domestic equity mutual funds, found that SRI and non-SRI fund performance was nearly identical at the mean. So, while there was no value added, neither was there any harm from the SRI investments. These findings are generally consistent with Humphrey and Tan (2001), who find that there is no significant difference in risk-adjusted returns of SRI funds and conventional funds.

If this is the prevailing view, then why do we plan to revisit this issue? The key element is that until this point there has been no industry-wide standard by which to judge how "socially responsible" a mutual fund actually is. In particular, existing studies have been inherently limited in scope as they, by necessity, have relied on simple industry lists of funds that marketed themselves as having a self-proclaimed SRI mandate. With the new Morningstar ratings, we can now directly examine funds on a more objective basis and determine if prior results are robust to the broader industry. Further, with the new ratings we may be able to determine if some self-proclaimed funds are actually "wolves in sheep's clothing." Given this focus, we next turn to a discussion of SRI and the new Morningstar Sustainability ratings.

ESG and Sustainability Score Background

The U.S. Forum for Sustainable and Responsible Investment (USSIF) advises that considering ESG factors as criteria for investment holdings is one of the primary principles of sustainable and responsible investing. While ESG factors are not limited to a defined set, many factors have become hallmarks. For example, the Chartered Financial Analyst (CFA) Institute defines ESG factors as addressing the following issues:

Environmental	Social	Governance
• Carbon emissions • Greenhouse gas emissions • Hazardous waste disposal • Pollution • Toxic chemical use and disposal	• Animal welfare • Child labor • Community relations • Discrimination • Facilities • Living wage disputes • Sexual harassment • Slave labor	• Management rights, roles, and responsibilities • Cumulative voting • Dual-class share structure • Executive compensation • Majority voting • Shareowner rights

While SRI funds have been around for many years, it has not been until the last decade where significant growth has occurred. For example, Davidson (2015) reports that assets in ESG marketed funds have more than doubled since December 2013, with over 25 new ESG ETFs tracking MSCI indexes. Additionally, the number of ESG indexes has increased to more than 150 in 2015, from only 25 indexes in 2010. However, as noted above, these indexes and funds are not necessarily created equal, as each manager is free to set their own ESG definitions and criteria. Further, to some extent, which companies are defined as being socially responsible (or not) is based on their own voluntary corporate disclosures. Thus, it would be valuable to have some type of standardized mechanism for comparing the level of actual social responsibility across investment funds. This is the contribution provided by Morningstar's (2016) new ratings.

Morningstar ESG and Sustainability Ratings

In March 2016, in response to the widespread and growing interest in sustainable investing, Morningstar, Inc. began soring mutual funds based on Environmental, Social, and Governance (ESG) and related Sustainability factors. As part of a larger effort, Morningstar labeled thousands of funds with their respective ESG and related Sustainability scores. The ratings are based on the SRI attributes of the underlying company holdings of the fund. The basic ESG research on which the score is based is conducted by Sustainalytics, an independent provider of ESG and corporate governance ratings and research. The whole process adds a level of objectivity and standardization to an area long in need of such a definition.

When a fund has at least 50 percent of its assets covered by company-level ESG scores from Sustainalytics, it receives a Morningstar Portfolio Sustainability Score™, which is updated each month using the most recent Sustainalytics data. The Portfolio Sustainability Score is an asset-weighted average of normalized company-level ESG scores with deductions made for

companies involved in controversial incidents, such as environmental accidents, fraud, or discriminatory behavior (calculated into a general Controversy score). As such, the Sustainability score is essentially the ESG score minus the Controversy score.[1] Ratings are entirely objective and based on a mathematical formula applied to underlying sustainability data.

Morningstar provides an overall absolute score for both ESG and Sustainability, which allows for objective comparison across funds. In addition, Morningstar also creates interval measures that summarize where a fund stands in relations to its peers. For example, the ESG and Sustainability ratings are categorized as Low, Below Average, Average, Above Average, and High, where the Low includes the bottom 10 percent of funds and High includes the top 10 percent. These scores are depicted by globe icons where Low equals 1 globe and High equals 5 globes. Of approximately 20,000 funds rated:

- 10 percent received 5 globes
- 22.5 percent received 4 globes
- 35 percent received 3 globes
- 22.5 received 2 globes, and
- 10 percent received 1 globe

Upon an initial analysis of the ratings, Morningstar confirmed that funds who explicitly mandate sustainable or responsible practices (less than 2% of the entire Sustainability-rated fund universe) generally "practice what they preach." In particular, nearly two-thirds of such funds received the highest ratings; however, that begs the question whether the other one-third of self-proclaimed SRI funds are really investing as they profess. We further examine this issue in a later section.

While Morningstar is confident that this added rating mechanism will be beneficial to a range of investors, some asset managers fear that funds are in danger of losing billions of dollars

[1] More detail on the scoring system can be found on Morningstar's website: http://www.morningstar.com/company/sustainability.

as a result of this new sustainability initiative. For example, Mooney (2017) reports that asset managers fear that since Morningstar has such a significant impact on the decisions of investors and their portfolio managers, the implications of these new scores could be negative for those funds that have never been too keen on falling in line with sustainable investing. Thus, the relationship between ESG/Sustainability screening and fund performance is becoming an even more critical issue, which is why our current research is so timely.

Contribution

As noted above, the empirical research regarding risk and return in SRI funds is far from unanimous, potentially due to limited lists of so-called socially conscious funds. Some suggest SRI is harmful, others say it is helpful, and yet others conclude it has no impact whatsoever. Whatever the view, no one can argue that answering this question is even more important today given the increasing amount of assets being placed with SRI-focused funds. It is with this in mind that we aim to add some clarity to the research in this area. While it would be difficult to accomplish such a task given the wide breadth of the existing research, the addition of the standardized ESG and Sustainability scores by Morningstar provides such an opportunity. As such, our research focuses on the importance and relationship between Morningstar's ESG and Sustainability ratings and mutual fund performance. Granted, the fact that the scores were only incepted in March 2016 prevents longer term analysis; nonetheless, we believe this is a significant contribution, as we are not aware of any other research that has yet to focus on this specific metric.[2] Because Morningstar truly holds such an authoritative position in mutual fund research, any finding should carry great weight with potential investors and portfolio managers.

[2] Bos (2017) examines the process by which Morningstar ESG scores are calculated, but he does not study the relationship to performance.

Knowing whether socially responsible investing is worth the "figurative and literal" cost is key to the future of SRI. If we observe lower risk-adjusted returns in funds with high ESG and Sustainability scores (i.e., presumably more socially conscious funds), then we may agree with RBC Global Asset Management (2012) that SRI may never be more than a "niche market." However, if we observe higher risk-adjusted returns in SRI funds, then we might predict a brighter future for SRI funds as they are highlighted as a more profitable, mainstream form of investment. Finally, if we observe no difference, then socially responsible investing can continue to be used as an alternative for those investors who wish to incorporate their social preferences into their investing strategies, but they really serve as a philosophical alternative, rather than a positive financial contributor to one's portfolio. We, therefore, hope that this analysis will provide the evidence needed to bring us closer to more conclusive and consistent research in the field of socially responsible investing.

Data

Using Morningstar, we collect initial data on all U.S. domestic mutual funds, with data covering January, 2012 to December, 2016. Given our focus, we concentrate on those funds that have ESG and Sustainability scores available, which (as described above) requires at least 50 percent of a fund's holdings to be covered by Sustainalytics.[3] Within this list of remaining funds, following previous studies, we consolidate multiple share classes into a single observation using weights based on total net assets (TNA), thereby providing metrics that would be consistent with the "average" investor experience in the respective fund. For the year 2016, which is the first year

[3] This includes more than 95% of active equity funds. Funds that were excluded were mostly in the small cap fund style category.

ESG and Sustainability scores are available, our collection process results in a set of 1,853 funds. The total sample includes 8,872 fund-year observations and 102,721 fund-month observations.

One inherent limitation in our sample is that the Morningstar Sustainability scores are only available beginning in 2016, so our sample essentially assumes that each fund's sustainability score is constant prior to 2016. Further, we readily admit that there may be some (reverse) survivorship bias, as all the funds available in 2016 are not five years old and therefore do not have data in all subsequent periods. However, this is unavoidable given the lack of historical data. Nonetheless, for three reasons, we believe the impact on our results should be negligible. First, unless a fund has significant turnover, its Sustainability score should be relatively stable. Second, the number of fund year observations for 2012 is 1,741, which is almost 94 percent of the total number of 2016 observations, suggesting a limited number of lost observations. Third, for robustness we repeat all of our analysis examining only 2016 values and find that our results are generally unchanged, albeit with weaker statistical power. We recognize, however, that our results provide only a first step in the analysis of the new Morningstar metrics, and we encourage researchers to revisit these issues as additional data become available.

Descriptive Statistics

As a first step, we calculate means and standard deviations for our primary variables of interest by year and across the entire time period (2012-2016), and we report these results in Exhibit 1. *Sustainability* and *ESG*, as discussed earlier, are scores calculated by Sustainalytics and reported by Morningstar. *Annual return* is the average annual percentage return across the sample funds, and *Std. Dev.* is the annualized average standard deviation of the return of the sample funds. *Beta* is the standard measure of market risk as calculated using the capital asset pricing model.

Carhart alpha is the average of the intercepts from the Carhart (1997) time-series factor regressions, and it represents a standard measure of (monthly) risk-adjusted excess return. *Expenses* and *Turnover* are the expense ratio and turnover ratio, respectively, and *TNA* is the total net assets under management, measured in millions of dollars

<< Insert Exhibit 1 about here>>

The mean Sustainability score across the full sample is 43.98, and the mean ESG score is 48.44. Across our sample, the Sustainability and ESG scores (for individual funds) range from 37.22 to 53.79 and from 38.31 to 61.32, respectively. Given that the sustainability score is effectively the ESG score minus an adjustment for controversy, we expect a high correlation between the two metrics. As such, we find that the correlation between the sustainability and ESG scores is .9351. Rather than reporting subsequent results based on both measures, for brevity we choose to focus on the sustainability value because it is an inclusive value and industry practitioners seem to focus more on the Sustainability score. However, for robustness, in unreported results we repeat all subsequent analyses using the ESG score, and we find our results to be qualitatively unchanged.

The average annual return across the entire sample is 13.55 percent, which is consistent with the longer-term average return of the market, particularly for a sample that includes both larger and smaller cap funds; however, the deviation of 12.18 percent is somewhat lower, indicating a relatively stable time in the market over the last few years. As would be expected, the average beta is close to 1, and the monthly alpha value is close to zero, but slightly negative (likely due to the underlying expense ratios of the funds). The levels of both the expense and turnover ratios are consistent with prior research. While the summary statistics provide us with some base values and suggest that are sample is consistent with data examined in previous mutual fund

studies, our primary focus is on the relationship between Sustainability and fund performance, so in the next few sections we begin to explore the data using various SRI-related segmentation criteria.

Data Segmented by Style

Morningstar classifies funds according to a standard style box based on size (large, mid, and small) and type of investment (growth, blend, and value). To determine whether there are any potential differences across styles, we segment our sample accordingly. Our initial hypothesis is that small-cap funds will generally exhibit a lower Sustainability score as such companies are more focused on simple financial survival and may not have either the financial or human resources necessary to undertake a broad-based sustainability initiative. We also expect these firms to be harder for third parties to evaluate for SRI practices. With regard to value versus growth, we are agnostic concerning any potential differences.

We report Sustainability scores (and number of fund year observations) for each category in Exhibit 2. We also report differences (and *t*-statistics from difference tests) between the growth and value categories, as well as the large and small categories. As expected, we find that small-cap funds have lower Sustainability scores, and the differences are highly significant. Given these differences, if SRI focused investors were to employ Sustainability metrics as a screening criterion, they would (potentially unknowingly) create portfolios biased toward large-cap investments. We explore this issue in more detail when we examine factor loads in our Fama-French-Carhart time-series analysis. With regard to type of investment, only small differences in Sustainability scores exist between value and growth strategies, suggesting that there will be no difference in the style factor in the forthcoming time-series regressions.

<< Insert Exhibit 2 about here>>

Data Segmented by Sustainability Score

Recall from above that the sustainability scores for the individual funds range from 37.22 to 53.79, so there is a relatively narrow range of values. Thus, small differences in this score are comparatively more meaningful. To investigate this issue in more detail and also to identify the potential relationship of Sustainability to performance, we segment our sample based on Sustainability scores. In particular, we segment the sample into quintiles by Sustainability score at the end of every year, and in Exhibit 3 we show characteristics of three groups: the bottom 20%, middle 60%, and top 20% of Sustainability scores.[4] As many variables represent annual values, to avoid overlap we only use observations as of the December of each year in the sample. In Panel A we report average values of our key variables for funds, as well as the *t*-statistic from difference tests between the top and bottom quintiles. Panel B shows what percentage of each group has funds of a particular style.

<< Insert Exhibit 3 about here>>

As would be expected, the top quintile of funds has a higher average Sustainability score, although, as discussed above, the range of values is quite narrow. With regard to return, top quintile funds have a lower average return (12.99% vs. 14.48%), which would be consistent with the arguments proposed by critics of SRI. We also find that funds with higher Sustainability scores have lower standard deviations and betas, which is consistent with lower risk. Moreover, the alphas are indistinguishable. Contrary to our expectations, we find that funds with high Sustainability scores have lower expense ratios. In contrast, funds with higher Sustainability scores exhibit lower turnover.

[4] We also considered decile portfolios to more closely match other studies (e.g., Carhart, 1997), and found the results to be generally similar.

However, many of these differences may be driven by the fact that smaller cap funds appear to have lower Sustainability scores and therefore would be more highly represented in the bottom quintile. Panel B looks at what percentage of observations within each group have a particular style. The lowest Sustainability group overwhelmingly consists of small cap funds (95% of group observations), while the highest group consists almost entirely of large cap funds (93%). Given the differences in risk and costs to trade among the two different types of stocks, the differences seen in Panel A of Exhibit 3 are likely driven by the relative tendency of large companies to practice sustainable policies.

Data Segmented by Mandate

Our key research question is whether or not SRI funds (or those with high sustainability scores) perform better than those that do not focus on such metrics. A related issue is whether or not the new Morningstar scoring system provides an alternative mechanism for socially conscious investors to use in selecting funds. If it does, then the list of potential funds available for such investors will significantly increase. To explore this relationship in more detail, we collected a list of funds that self-identify as being focused on SRI investing. This list is provided by The U.S. Forum for Sustainable and Responsible Investment.[5] Merging this list with our sample provides a set of 31 unique funds that both identify as having an SRI mandate and have relevant Sustainability data available through Morningstar. While this is a small sample, it is consistent with Morningstar's analysis that less than 2% of funds specifically proclaim an SRI mandate.

Given that there are only 31 funds, we are able to explore this particular set in more detail. As would be expected, the list includes SRI pioneers such as Calvert, Pax, Parnassas, Ariel, and Walden; however, there are other funds that are offered by investment providers not typically

[5] http://www.ussif.org/

affiliated with SRI – such as American Century and Neuberger Berman. Rather than the names of the providers, though, the more interesting metric revolves around the range of Sustainability scores received by the funds. For example, sustainability scores for these funds range from 39.99 to 49.44. So, while the distribution is skewed toward the higher end of the range, there are actually 11 (of the 31) self-proclaimed SRI funds that have sustainability scores below the top quintile (i.e., outside the top 20%). Some of this may be a function of style, in that three of the funds are small-cap focused; however, the majority are not. Thus, while an investor may believe s/he is investing sustainably based on a fund's dedicated marketing material, the fund's underlying holdings may not be entirely reflective of this philosophy.[6]

To further explore these differences, we consider characteristics for the set of 31 self-proclaimed SRI funds and compare them to the more traditional funds. Given that 29 of the funds fall within the top 50% of sustainability scores, we focus solely on the top half of all available funds in our sample. We report these values, along with *t*-statistics from a difference test, in Exhibit 4.[7] As would be expected, self-identified SRI funds (i.e., *Mandate*=1) have significantly higher Sustainability (47.21 vs. 46.27) scores. As Morningstar has stated, this difference affirms that funds that explicitly claim to be sustainable are, on average, "practicing what they preach" in terms of their underlying holdings. However, when we review the range of scores for these self-proclaimed SRI funds, we find that the SRI touted funds do not necessarily have exclusively higher Sustainability scores. For example, recall that the range of Sustainability scores for SRI marketed funds is 39.99 to 49.44. In comparison, the range for all other funds is 37.22 to 53.79. So, while the low end of the range for SRI funds is much higher, there are still many non-SRI proclaimed

[6] Though not all funds have high Sustainability scores, some investors may still prefer a fund that has mandate due to the binding nature of this public commitment. Further, a fund may pursue a specific type of Sustainability that doesn't match well with Sustainanalytics, but yet is desirable for a subset of the investing population. For example, a solar cell company might be considered sustainable by a fund due to the nature of its product, but Sustainalytics may consider the firm's organizational practices to merit a lower score.

[7] We also explore the relationship versus the top 20 percent of funds, finding similar results.

funds that have higher Sustainability scores. This suggests that investors seeking SRI funds may be able to broaden their choice beyond those funds who specifically market themselves as such, or at least use these scores in conjunction with industry lists of SRI mandated funds.

<< Insert Exhibit 4 about here>>

With regard to our other variables, we find little difference between funds with a proclaimed mandate and other funds with similar Sustainability scores. This adds further evidence to suggest that investors interested in SRI can expand their list of available funds beyond those firms that purely market themselves as such. The one difference we do find is that SRI mandated funds have lower turnover. To the extent that lower turnover reduces internal fund costs, such a difference may offset otherwise negative effects of limiting investment choices.

Methodology and Results

While our simple summary results provide some meaningful insights, we are concerned that the univariate sorting may not fully capture some of the underlying relationships, in particular the potential association between Sustainability scores and small-cap funds. Thus, we follow standard practice and calculate risk-adjusted performance using the Carhart (1997) time-series regression model, which is given as:

$$RET - RF = \alpha + \beta_1 MKT + \beta_2 SMB + \beta_3 HML + \beta_4 UMD \quad (1)$$

where, *RET - RF* is the net portfolio return premium for the fund in each month; MKT, SMB, and HML are the factors described in Fama and French (1993); and UMD is the momentum factor from Carhart (1997).[8,9]

[8] For robustness, we also repeat our results using the standard Capital Asset Pricing Model (CAPM), as well as the Fama and French (1993) three-factor model. Our results remain robust.

[9] We thank Ken French for making the factors available at his website: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

Using data from the 2012 to 2016 time period, we create value-weighted portfolios at the beginning of each month based on the end of prior month total net assets.[10] Each fund is assigned to one of three portfolios based on its Sustainability ranking: top 20%, middle 60%, or bottom 20%. Using monthly portfolio returns, we have 60 monthly observations on which to conduct the analysis. We report the results of the regressions in Exhibit 5. In addition, in the final column we report the results from a zero-cost portfolio buying the Top 20% portfolio and selling the Bottom 20% portfolio. Across all the regressions, we pay particular attention to the estimated alpha, which essentially provides a measure of monthly risk-adjusted excess return.

<< Insert Exhibit 5 about here>>

Examining the results, we find that our initial outcomes generally hold up even after controlling for the standard portfolio factors. For example, across the three portfolios the alpha is significantly negative. The values suggest a monthly alpha of -0.11%, or about -1.32% per year. This result is consistent with most prior studies (e.g., Fama and French (2010)), and the negative value is likely reflective of the fees charged by fund managers. For example, recall an average expense ratio of roughly 1.1% in Exhibit 3. Of more importance, however, we find that there is no difference in alpha between the Top 20% portfolio and the Bottom 20% portfolio. Thus, consistent with our earlier findings, we conclude that socially conscious funds (as measured by Sustainability) have neither higher nor lower risk-adjusted return than other funds. Socially conscious investors, therefore, do not appear to incur any performance penalty for their philosophical choice.

Given the style distribution seen in Exhibit 2, we expect to see some differences in factor exposures between the portfolios. We do find that the Top 20% portfolio has smaller risk exposures

[10] We also calculate portfolios on an equal weighted basis, finding our results to be qualitatively unchanged.

(i.e., *MKT* coefficient), which is likely consistent with studies (e.g., Fulton, et al, 2012) suggesting a lower cost of capital for Sustainable companies. With regard to the remaining factors, the only consistently significant coefficient is on the size variable, which is reflective of the premium earned on small-cap stocks. Comparing between the segments, as expected the Top 20% has less exposure to the size premium, while the Bottom 20% has a higher exposure. The Bottom 20% also have a greater exposure to the value premium. As such, investors who choose funds solely based on Sustainability will likely forego a premium that would be earned from a greater exposure to these two risk factors.

Portfolios Determined by Mandate

Following our earlier segmentation, we repeat the time-series analysis on portfolios segmented by whether or not a fund has a defined social mandate that is marketed to investors. Our *Mandate=1* portfolio is comprised of the 31 funds identified earlier, while our *Mandate=0* portfolio is comprised of all remaining funds that also have a Sustainability score in the top 50% of funds. We report these results in Exhibit 6.

<< Insert Exhibit 6 about here>>

Examining Exhibit 6, we find results that are generally consistent with the prior exhibit. In particular, the alpha is small and slightly negative, although less significant for the *Mandate=1* portfolio. Nonetheless, there is still no significant difference between the alphas of the two portfolios. Further, there is no difference in beta, which is to be expected given that we limited the comparison portfolio to those with higher levels of Sustainability. Consistent with the previous exhibit, we find a difference in the size factor, suggesting that funds with a mandate may be more likely to forego this premium (i.e., less likely to have small-cap exposure). Taken together, the results suggest that investors interested in SRI could employ Morningstar's new Sustainability

rankings, particularly if they were to limit their universe to those in the top quintile of Sustainability.

Investor Response

In addition to focusing on risk-adjusted return, prior studies also explore whether SRI funds exhibit more stable fund flows than conventional funds. For example, Renneboog, Horst, and Zhang (2010) generally find more stable fund flows across SRI related funds. Continuing this research, we explore whether investors show a different response for funds with high Sustainability scores compared to those with lower scores. In particular, in Exhibit 7 we report median monthly cash flows (as a percent of total net assets) segmented by Sustainability scores, investment style, and whether or not the fund has a defined social mandate.

<< Insert Exhibit 7 about here>>

With regard to funds with a self-proclaimed SRI mandate, we find results that are consistent with prior studies. In particular, our results in Panel B suggest that while the average conventional fund had negative cash flows over the period (-0.38% per month), funds with SRI mandates actually experienced positive fund flows (0.08% per month). Further, as we illustrate in Panel D, this result is robust to all investment styles. In contrast, we find in Panel A that funds with high Sustainability scores have negative fund flows and that the flows are not significantly different from funds with lower Sustainability. Further, when we segment by Sustainability and Mandate (i.e., Panel C), we find that the Mandate is main driver. Thus, investors desiring SRI assets have relied heavily on the self-declared mandates, presumably due to the high cost of evaluating the SRI qualities of fund holdings. The new Morningstar metrics should reduce this cost and potentially bring new cash flows to funds without mandates at the expense of funds with mandates.

Other factors may be confounding these univariate results, so to control for potential underlying relationships, we expand our analysis of fund flows by employing the following multivariate model:

$$FLOW = Constant + \beta_1\, Bottom20\%DV + \beta_2\, Top20\%DV + \beta_3\, MandateDV + \beta_4\, MandateDV*Top20\%DV + \beta_5\, RetBottom20\%DV + \beta_6\, RetTop20\%DV + \beta_7\, Ln(TNA) + \beta_8\, Turnover + \beta_9\, Expenses + \beta_{10}\, Ln(Age)$$

where *FLOW* is the monthly fund flow as a percentage of beginning of month TNA. DV identifies dummy variables related to each of our prior variables of interest. For example, *Bottom20%DV* (*Top20%DV*) is a dummy variable equal to 1 if the fund was in the bottom (top) 20% of the Sustainability scores. *MandateDV* is equal to 1 if the fund is on our list of self-proclaimed SRI funds. Based on prior studies (e.g., Sirri and Tufano (1998), and Huang, Wei, and Yan (2007)), we also include control variables for past performance (*RetBottom20%DV* and *RetTop20%DV*), fund size (*LnTNA*), fund turnover (*Turnover*), fund expense ratio (*Expenses*), and fund age (*LnAge*).[11] We also include variables to control for time period, and we report our results in Exhibit 8.

<< Insert Exhibit 8 about here>>

Consistent with prior studies, we find that investors invest less (more) in funds with low (high) returns. Further, larger and older funds experience more outflow, as do those with higher turnover and expenses. With regard to our variables of interest, we find results consistent with our univariate analysis. In particular, investors prefer funds with a self-defined SRI mandate, *ceteris paribus*; however, funds with high levels of sustainability do not experience any significant difference in fund flows. From our earlier results, we found that funds with an SRI Mandate are not much different from funds with a high Sustainability score. Taken together, we therefore conclude that funds with an SRI mandate provide significant benefits to the funds' advisors (in the

[11] For robustness, we also repeat the regression using both year and style fixed effects; however, our results remain consistent.

form of more stable assets under management), yet do not seem to provide performance that is all that different from funds with similar Sustainability profiles.

Conclusion

As is clearly apparent by prevailing industry trends, there is an increasing number of consumers, businesses, and investors who are interested in supporting socially responsible endeavors. This is even more evident given the growth in both the number and size of socially responsible mutual funds. While this increased focus has led to a growing body of research, there is a general lack of consensus with regard to the efficacy of such an approach. Fortunately, Morningstar has begun reporting ESG and Sustainability scores for a large number of mutual funds. These metrics provide some objectivity in determining whether (1) a fund is truly pursuing a social mandate and (2) whether such a focus has in impact on performance.

As a result of our analyses, we believe that we can draw three major conclusions. First, while traditional Modern Portfolio Theory suggests SRI focused funds should underperform since they pull from a limited investment universe, we find that there is no practical difference in risk-adjusted returns. However, there is a difference in risk profile, with high Sustainability scores largely confined to large cap funds. Thus, investors may find it difficult to create a portfolio that matches their risk preferences without using leverage.

Second, investors who are either personally or professionally interested in SRI funds have historically been limited to those who specifically define themselves as such. With the new Morningstar Sustainability scores, investors can now evaluate a fund's level of social consciousness using a more objective, standardized metric. In fact, our analysis shows that investing in a fund with a 5-globe (or even 4-globe) rating is similar to investing in a fund that

strictly markets itself as an SRI fund. In our sample alone, this would increase the number of funds from which a socially conscious investor could choose from 31 to 452 in the top 20% of Sustainability.

Third, while investors do not appear to capture any significant financial benefit from SRI focused funds, the fund companies themselves do seem to benefit. In particular, funds that market themselves as having an SRI mandate receive more cash flows, netting a positive inflow on average despite the outflow of cash from active equity funds over the past five years. Of course, the Morningstar metrics becoming available will decrease the research cost for any investor wanting to research a fund's true Sustainability and potentially make funds without a declared benchmark more desirable. It will be interesting to see if this relationship holds up as the new Morningstar metrics become more widely adopted.

While we readily admit the potential limitations associated with using a metric that is so new and for which longer-term comparative data is unavailable, we believe that providing these preliminary results is helpful for both investors and future researchers. Thus, we encourage both investors and researchers to continue to explore the efficacy of the new Morningstar ratings and, as appropriate, to incorporate them into their investment decisions.

Works Cited

Barreda-Tarrazona, I., Mattalin-Saez, J., and Balaguer-Franch, M. (2011). Measuring Investors' Socially Responsible Preferences in Mutual Funds. *Journal of Business Ethics,* 103(2): pp. 305-330.

Bos, J. (2017). Sustainability Scores for Investment Funds. *CFA Institute Magazine,* 28(1); pp. 26-28.

Carhart, M. (1997). On Persistence in Mutual Fund Performance. *The Journal of Finance*, 52(1): pp. 57–82.

Davidson, A. (2015). A Guide to Sustainable Investing. *Wall Street Journal*. (Nov. 8). N.p. Web.

Envestnet PMC. (2014). How and Why SRI Performance Differs from Conventional Strategies. *Envestnet PMC.* N.p. Web.

Fama, E., and French, K. (1993). Common Risk Factors in the Returns on Stocks and Bonds. *Journal of Financial Economics,* 33(1): pp. 3-56.

Fama, E., and French, K. (2010). Luck versus Skill in the Cross-Section of Mutual Fund Returns. *Journal of Finance,* 65(5): pp. 1915-1947.

Fulton, M., Kahn, B., and Sharples, C. (2012). Sustainable Investing: Establishing Long-Term value and Performance. *Deutsche Bank Group.* N.p. Web.

Huang, J., Wei, K., and Yan, H. 2007. Participation Costs and the Sensitivity of Fund Flows to Past Performance. *Journal of Finance, 62: p. 1273-1311.*

Humphrey, J., and Tan, D. (2011). The Many Faces of Socially Responsible Investing - Does the Screening Mechanism Affect the Risk and Return of Mutual Funds? *Available at SSRN, abstract 1913987.*

Markowitz, H. (1952). Portfolio Selection. *Journal of Finance*, 7(1): pp. 77-91.

Mooney, A. (2016). Morningstar Ethical Rating Could Cost Fund Billions. *Financial Times* (Jan 17). N.p. Web.

Morgan Stanley. (2015). Institute for Sustainable Investing. *Morgan Stanley.* N.p. Web.

Morningstar, Inc. (2016) Morningstar Introduces Industry's First Sustainability Rating for 20,000 Funds Globally. *Morningstar*. N.p. Web.

Phillips, Hager, & North. (2007). Does Socially Responsible Investing Hurt Investment Returns? *Phillips, Hager, & North Investment Management Ltd.* 1-11. Web.

RBC. (2012). Does Socially Responsible Investing Hurt Investment Returns? *RBC Global Asset Management*. N.p. Web.

Renneboog,L., Horst, J., Zhang, C. (2007). Socially Responsible Investments: Methodology, Risk Exposure and Performance. *TILEC Discussion Paper 2007-013. Available at SSRN, abstract 985267.*

Renneboog,L., Horst, J., Zhang, C. (2010). Is Ethical Money Financially Smart? Nonfinancial Attributes and Money Flows of Socially Responsible Investment Funds. *Journal of Financial Intermediation*, 20 (4): pp. 562-588.

Riedl, A., and Smeets, P. (2017). Why Do Investors Hold Socially Responsible Mutual Funds? *Journal of Finance*, forthcoming.

Sirri, E., and Tufano, P. (1998). Costly Search and Mutual Fund Flows. *Journal of Finance,* 53: pp. 1589-1622.

Stanley, D. J., & Herb, C. R. (2007). The Moral and Financial Conflict of Socially Responsible Investing. *Graziadio Business Review,* 10(1). N.p. Web.

USSIF. (2016). 2016 Report on US Sustainable, Responsible, and Impact Investing Trends. *USSIF*. N.p. Web.

Verheyden, T., Eccles, R., and Feiner, A. (2016). ESG for All? The Impact of ESG Screening on Return, Risk, and Diversification. *Journal of Applied Corporate Finance,* 28(2): pp. 47-55.

Exhibit 1. *Summary Statistics*

The following exhibit provides summary statistics segmented by year, as well as across our entire sample. We provide mean values, as well as standard deviations (in parentheses) observed as of December of each year. *Sustainability* and *ESG* are scores calculated by Sustainalytics and reported by Morningstar. *Annual return* is the average annual percentage return across the sample funds, and *Std. Dev.* is the average standard deviation of the return of the sample funds. *Beta* is the standard measure of risk relative to the market as calculated using the capital asset pricing model. *Carhart alpha* is the intercept from the Carhart (1997) time series factor regression, and it represents risk-adjusted return. *Expenses* and *Turnover* are the expense ratio and turnover ratio, respectively, and *TNA* is the total net assets under management measured in millions of dollars

Year	Sustainability	ESG	Annual return (%)	Std. Dev. (%)	Beta	Carhart alpha (%)	Expenses	Turnover	TNA
2012	44.15	48.67	14.96	12.34	1.06	0.05	1.13	66.75	1,370
n=1,741	-2.83	-5.33	-4.52	-0.71	-0.26	-0.53	0.37	58.60	4,950
2013	44.08	48.59	34.88	9.67	1.00	-0.1	1.10	64.19	1,880
n=1,738	-2.81	-5.34	-6.71	-0.44	-0.17	-0.64	0.36	55.19	6,410
2014	43.96	48.41	7.94	11.14	1.09	-0.15	1.08	61.47	1,950
n=1,774	-2.79	-5.38	-5.45	-0.8	-0.21	-0.44	0.35	54.48	6,670
2015	43.87	48.3	-1.93	13.84	0.93	-0.15	1.07	60.83	1,850
n=1,809	-2.74	-5.37	-5.47	-0.58	-0.15	-0.35	0.34	52.10	6,540
2016	43.84	48.24	12.27	13.81	1.12	-0.26	1.06	62.28	1,850
n=1,853	-2.76	-5.38	-8.55	-1.04	-0.29	-0.5	0.35	54.28	6,700
Total	43.98	48.44	13.55	12.18	1.04	-0.12	1.09	63.09	1,780
n=8,915	-2.79	-5.36	(13.57)	-0.88	-0.23	-0.51	0.35	54.99	6,290

Exhibit 2. *Sustainability Values by Morningstar Fund Classifications*
The following exhibit provides average sustainability values (and number of sample funds) categorized by standard style classification as defined by Morningstar, Inc. In the last column we provide differences and [*t*-statistics] from a standard difference test between the growth and value categories, and in the last row we provide differences and [*t*-statistics]from a standard difference test between the large and small categories Data are based on the 2012 to 2016 time period using values calculated by Sustainalytics and reported by Morningstar. *** denotes significance at the 1% level; ** denotes significance at the 5% level.

	Growth	Core	Value	Totals	Growth vs. Value
Large	45.60 (1,824)	46.08 (1,566)	46.01 (1,374)	45.97 (4,764)	-0.40*** [-3.12]
Mid	43.31 (858)	43.59 (486)	44.24 (449)	43.63 (1,793)	-0.99*** [-4.96]
Small	40.33 (910)	40.35 (929)	40.28 (476)	40.43 (2,315)	0.00 [0.02]
Totals	43.87 (3,592)	43.90 (2,981)	44.61 (2,299)	44.11 (8,872)	-0.75*** [-4.92]
Large vs Small	-5.37*** [-39.00]	-5.87*** [-44.10]	-5.77*** [-31.61]	-5.55*** [-63.57]	

Exhibit 3. *Summary Statistics Sorted by Sustainability*
The following exhibit provides summary statistics segmented by sustainability scores. The first column provides values for funds falling in the lowest quintile; the final column provides values for funds falling in the top quintile; and the middle column reports values for the remaining funds (i.e., quintiles 2 through 4). All variables are as defined in Exhibit 1. We report average values across our entire 2012 to 2016 sample period based on monthly observations. In the final column we provide a *t*-stat from a difference test between the top and bottom quintiles. *** denotes significance at the 1% level; ** denotes significance at the 5% level.

Panel A: Summary statistics by sustainability score

Variable	Bottom 20% (n=1,754)	Middle 60% (n=5,230)	Top 20% (n=1,721)	Top vs. Bottom *t*-statistic
Sustainability score	39.86	44.17	47.53	
Annual return (%)	14.48	13.43	12.99	-3.07***
Std. Dev. (%)	14.28	11.91	10.84	-36.14***
Beta	1.16	1.03	0.96	-27.39***
Carhart alpha (%)	-0.11	-0.13	-0.11	0.14
Expense ratio (%)	1.20	1.06	1.02	-14.3***
Turnover ratio (%)	69.44	65.34	47.16	-12.02***

Panel B: Style distribution by sustainability score

Sustainability group	% Large	% Mid-Cap	% Small	% Value	% Blend	% Growth
Bottom 20%	1%	4%	95%	21%	39%	40%
Middle 60%	58%	31%	11%	24%	31%	44%
Top 20%	93%	5%	0%	34%	36%	29%

Exhibit 4. *Summary Statistics Sorted by Mandate*

The following exhibit provides summary statistics segmented by funds that market themselves as being focused on SRI (i.e., *Mandate=1)* versus funds that do not. For consistency of comparison, our alternative set (i.e., *Mandate*=0) provides averages for all other funds that also have sustainability scores in the top 50%. All variables are as defined in Exhibit 1. We report average values across our entire 2012 to 2016 sample period based on December observations. In the final column we provide a *t*-statistic from a difference test between the two samples. *** denotes significance at the 1% level; ** denotes significance at the 5% level.

Variable	Mandate=1 (n=98)	Mandate=0 (n=4,231)	Top vs. Bottom *t*-statistic
Sustainability score	47.21	46.27	7.19***
Annual return (%)	13.2	13.35	-0.13
Std. Dev. (%)	11.26	11.11	1.66**
Beta	0.9972	0.98	0.59
Carhart alpha (%)	-0.11	-0.1	-0.18
Expense ratio (%)	1.06	1.01	1.47
Turnover ratio (%)	36.03	57.82	-4.17***

Exhibit 5. *Carhart (1997) Time-Series Regression – Sustainability Portfolios*
The following exhibit provides coefficient estimates [and *p*-values] from the standard Carhart (1997) time-series regression (using monthly returns over the 2012 to 2016 period). The first column provides estimates from a portfolio comprised of funds falling into the highest quintile based on Sustainability scores (*Top20%*); the third column provides estimates from a portfolio comprised of funds falling into the lowest quintile based on Sustainability scores (*Bottom20%*); and the middle column reports values for a portfolio comprised of the remaining funds (i.e., *Middle60%*). In addition, the final column provides estimates from a portfolio long in the *Top20%* and short in the *Bottom20%*. *** denotes significance at the 1% level; ** denotes significance at the 5% level.

Variable	Top20%	Middle 60%	Bottom20%	Long-Short
Alpha	-0.11***	-0.10**	-0.13**	0.02
	[0.000]	[0.045]	[0.027]	[0.775]
MKT	0.96***	0.99***	1.00***	-0.03*
	[0.000]	[0.000]	[0.000]	[0.081]
SMB	-0.07***	0.15***	0.74***	-0.81***
	[0.000]	[0.000]	[0.000]	[0.000]
HML	-0.02*	-0.05**	0.16***	-0.18***
	[0.081]	[0.048]	[0.000]	[0.000]
UMD	-0.02**	-0.01	0.03*	-0.06***
	[0.011]	[0.394]	[0.072]	[0.004]
n	60	60	60	60
R-squared	0.997	0.989	0.991	0.962

Exhibit 6. *Carhart (1997) Time-Series Regression – Mandate Portfolios*
The following exhibit provides coefficient estimates [and *p*-values] from the standard Carhart (1997) time-series regression (using monthly returns over the 2012 to 2016 period). The first column provides estimates from a portfolio comprised of funds with no defined social mandate and who are also in the top 50% of Sustainability rankings (*Mandate=0*); the second column provides estimates from a portfolio comprised of funds that have a self-proclaimed social mandated (*Mandate=1).* In addition, the final column provides estimates from a portfolio long in the *Mandate=0* portfolio and short in the *Mandate=1* portfolio. *** denotes significance at the 1% level; ** denotes significance at the 5% level.

Variable	Mandate=0	Mandate=1	Long-Short
Alpha	-0.10**	-0.07	-0.03
	[0.011]	[0.217]	[0.406]
MKT	0.98***	0.98***	0.00
	[0.000]	[0.000]	[0.911]
SMB	0.20***	0.14***	0.07***
	[0.000]	[0.000]	[0.000]
HML	0.00	-0.032	0.04*
	[0.851]	[0.234]	[0.060]
UMD	-0.01	-0.01	0.00
	[0.305]	[0.537]	[0.890]
n	60	60	60
R-squared	0.994	0.986	0.317

Exhibit 7. *Median Fund Flow Segmented by Fund Attributes*
The following exhibit provides median fund flows as a percentage of total net assets. Panel A provides values sorted by Sustainability score; Panel B is sorted by whether or not the fund has a SRI mandate; Panel C is sorted by Sustainability and Mandate; and Panel D is sorted by investment style and whether or not the fund has a mandate. In each panel we also report the differences and denote whether they are significant using a Wilcoxon rank-sum test of equality of medians. *** denotes significance at the 1% level. Data is from Morningstar for the 2012 to 2016 time period.

Panel A: Sorted by Sustainability

Top20%	Middle 60%	Bottom20%	Difference
-0.35%	-0.33%	-0.42%	0.07%***

Panel B: Sorted by Mandate

Mandate=1	Mandate=0	Difference
0.08	-0.38%	0.46%***

Panel C: Sorted by Sustainability and Mandate

Sustainability	Mandate=1	Mandate=0	Difference
Top 20%	0.01%	-0.37%	0.38%***
Middle 60%	0.30%	-0.34%	0.68%***
Bottom 20%		-0.42%	n/a

Panel D: Sorted by Investment Style and Mandate

Style	All Funds	Mandate=1	Mandate=0	Difference
Large Blend	-0.40%	-0.21%	-0.40%	0.20%***
Large Growth	-0.46%	0.01%	-0.47%	0.48%***
Large Value	-0.31%	-0.27%	-0.31%	0.04%
Mid-Cap Blend	-0.32%	0.06%	-0.33%	0.39%***
Mid-Cap Growth	-0.45%	1.35%	-0.47%	1.82%***
Mid-Cap Value	-0.11%		-0.11%	n/a
Small Blend	-0.27%	1.60%	-0.28%	1.88%***
Small Growth	-0.46%	-0.02%	-0.47%	0.45%***
Small Value	-0.20%	0.99%	-0.21%	1.21%***

Exhibit 8. *Fund Flows Multivariate Regression*
The following exhibit provides coefficient estimates [and *p*-values] from a standard multivariate regression. *FLOW* is the dependent variable and is the median monthly fund flow (in percent). DV identifies dummy variables related to each of our prior variables of interest. For example, *Bottom20%DV* (*Top20%DV*) is a dummy variable equal to 1 if the fund was in the bottom (top) 20% of the Sustainability scores. *MandateDV* is equal to 1 if the fund is on our list of self-proclaimed SRI funds. We also include control variables for past performance (*RetBottom20%DV* and *RetTop20%DV*), fund size (*LnTNA*), fund turnover (*Turnover*), fund expense ratio (*Expenses*), and fund age (*LnAge*). We also include variables to control for time period (using monthly returns over the 2012 to 2016 period). *** denotes significance at the 1% level; ** denotes significance at the 5% level.

Variable	(1)	(2)	(3)
Constant	0.0074***	0.0053***	0.0073***
	[0.000]	[0.000]	[0.000]
Bottom20%DV	-0.0015**		-0.0014**
	[0.017]		[0.022]
Top20%DV	-0.0008		-0.0010
	[0.123]		[0.077]
MandateDV		0.0054***	0.0056***
		[0.000]	[0.001]
MandateDV*Top20%DV			-0.0013
			[0.592]
RetBottom20%	-0.0138***	-0.0137***	-0.0138***
	[0.000]	[0.000]	[0.000]
RetTop20%	0.0195***	0.0195***	0.0195***
	[0.000]	[0.000]	[0.000]
Ln(TNA)	-0.0039***	-0.0029***	-0.0039***
	[0.000]	[0.000]	[0.000]
Turnover	-0.0018***	-0.0016***	-0.0018***
	[0.000]	[0.000]	[0.000]
Expenses	-0.0007**	-0.0001	-0.0007**
	[0.010]	[0.654]	[0.011]
Ln(Age)	-0.0112***	-0.0112***	-0.0112***
	[0.000]	[0.000]	[0.000]
n	80,166	84,921	80,166
R-squared	0.994	0.986	0.317