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## Sustainable Investing, Economic Theory, and Evidence

*By Larry E. Swedroe*



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**S**ustainable investing has grown dramatically in the past decade. Environmental, social, and governance (ESG) investing now accounts for more than one-third of total assets under management in the United States, or about \$17 trillion, a 42-percent increase since 2018.<sup>1</sup>

Does this trend influence company valuations and thus the cost of capital, and by implication, the returns investors can expect?

When seeking answers to such questions, investors are best served by learning what the academic research has to say rather than relying on opinions. Reviewing the research findings will allow you to make an informed decision.

We begin with a discussion on what economic theory has to say about the impact of sustainable investment strategies on valuations and expected returns.

## **ECONOMIC THEORY ON TASTE, RISK, AND DIVERSIFICATION**

Although sustainable investing continues to gain in popularity, economic theory suggests that if a large enough proportion of investors chooses to favor companies with high sustainability ratings and avoid those with low sustainability ratings (i.e., sin businesses), the favored companies' share prices will be elevated and the sin-stock share prices will be depressed. In equilibrium, the screening out of certain assets based on investors' tastes should lead to a return premium on the screened assets.

The result is that the favored companies will have a lower cost of capital because they will trade at a higher price-to-earnings (P/E) ratio. The flip side of a lower cost of capital is a lower expected return to the providers of that capital. And the sin companies will have a higher cost of capital because they will trade at a lower P/E ratio, the flip side of which is a higher expected return to the providers of that capital.

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*The flip side of a lower cost of capital is a lower expected return to the providers of that capital.*

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The resulting hypothesis is that the above-market expected returns are required as compensation for the emotional cost of exposure to offensive companies. On the other hand, investors in companies with higher sustainability ratings are willing to accept lower returns as the cost of expressing their values.

There is also a risk-based hypothesis for the sin premium. It is logical to hypothesize that companies neglecting to manage their ESG exposures could be subject to greater risk, i.e., a wider range of potential outcomes, than their ESG-focused counterparts. The argument is that companies with high sustainability scores have better risk management and better compliance standards. The stronger controls lead to

fewer extreme events such as environmental disasters, fraud, corruption, and litigation as well as their negative consequences. The result is a reduction in tail risk for high-scoring firms relative to the lowest-scoring firms. The greater tail risk creates the sin premium.

Another important point is that investors in sustainable companies sacrifice some of the benefits of diversification relative to a broad-based market index fund because their investments are limited to the universe of stocks that meet a sustainable-investing screening process. In theory, less diversified portfolios are less efficient ones.

That's the economic theory, but is the evidence consistent with it? Before reviewing that evidence, it is important to understand some of the limitations of the research.

First, ESG investing has existed formally for only about 15 years. Asset pricing researchers like to have multiple decades of data to study. For example, comparative studies on the performance of small versus large and value versus growth stocks now have more than 90 years of data to analyze. The more data, the more robust the interpretations. With less than two decades of ESG data and not much more for socially responsible investment (SRI) studies or sin stock performance, investors should consider the findings from these studies to be preliminary.

Second, ESG ratings from different providers disagree dramatically. For

example, Berg et al. (2019) found that the correlations of ratings between the providers averaged just 0.61. Therefore, the information that decision-makers receive from rating agencies is ambiguous. The divergence of ratings poses a real challenge for empirical research. It is difficult to determine the performance of high-rated versus low-rated ESG stocks when we cannot agree on which stocks are rated high and which are rated low. A researcher's choice of one ESG rater versus another may significantly alter a study's results and conclusions. Other studies, including Billio (2020) and Conen et al. (2020), have confirmed the lack of consensus in ESG ratings.

ESG investors face considerable challenges in allocating assets because the data used to construct ESG portfolios differs widely among providers, and there are large divergences in materiality assessments. This should not be a surprise because there are no regulated, or even generally accepted, standards for what good ESG is. As a result, funds may not be aligned with investor objectives and beliefs. In addition, the return and risk of ESG funds can differ significantly and are driven by fund-specific criteria rather than by a homogeneous ESG factor. Users of ESG ratings and rankings should study the relevant definitions and methodologies before using them. With that said, a lack of transparency about the data sources, weightings, and methodologies can make it difficult to ensure that companies' true ESG performance is accounted for when making portfolio selection and investment decisions. Instead of attempting to compare and contrast ratings and rankings of different agencies, investors should determine the ESG constructs that are material to their own investment strategies and then match them with an ESG rating or ranking product that closely resembles those constructs.

We now turn to the evidence of ESG strategies on portfolio performance.

### SOVEREIGN WEALTH FUNDS: THE EVIDENCE

One of the largest SRI investors is the \$1-trillion Government Pension Fund of Norway, the country's sovereign wealth fund, which divests companies from its investment portfolio based on two types of exclusions. Product-based exclusions include weapons, thermal coal, and tobacco producers and suppliers. Conduct-based exclusions include companies with track records of human rights violations, severe environmental damage, and corruption. According to its 2017 analysis, Norges Bank Investment Management, which manages the sovereign wealth fund, found that the fund had missed out on 1.1 percent of cumulative additional gain due to the exclusion of stocks on ethical grounds during the past 11 years. Specifically, the exclusions of tobacco companies and weapons manufacturers reduced returns by 1.2 percent and 0.8 percent, respectively (Pielichata 2017).

Findings such as these have led to the development of an investment strategy that focuses on the violation of social norms: sin investing, also known as vice investing.

### SIN INVESTING: THE EVIDENCE

This strategy creates a portfolio of firms from industries that typically are screened out by sustainable mutual funds, exchanged-traded funds (ETFs), pension funds, and investment managers. Vice investors focus primarily on the so-called sin stocks: alcohol, tobacco, gambling, pornography, and weapons. The historical evidence on the performance of these stocks supports the theory.

Richey (2017) employed several factor models to determine whether a portfolio of vice stocks, specifically firms that manufacture and sell products such as alcohol, tobacco, gaming services, and national defense, outperforms the S&P 500, a benchmark to approximate the market portfolio, on a risk-adjusted basis. Factors are traits or characteristics

of stocks, such as whether they are large or small stocks and value or growth stocks. Factor models have been found to explain the majority of the variation in returns to diversified portfolios. Richey measured the performance of vice stocks using the single-factor capital asset pricing model (CAPM), the original Fama-French three-factor model, the Carhart four-factor model, and the newer Fama-French five-factor model. His dataset included 61 corporations from vice-related industries.

The following is a summary of the Richey (2017) findings:

- For the period October 1996–October 2016, the S&P 500 returned 7.8 percent annually versus 11.5 percent annually for the vice fund.
- All models found that the vice fund portfolio beta was between 0.59 and 0.74, indicating that the vice portfolio exhibited less market risk or volatility than the S&P 500 Index (beta of 1), reinforcing the defensive nature of sin portfolios.
- The annual alphas, or returns above the risk-adjusted benchmark, on the CAPM, three-factor, and four-factor models were 2.9 percent, 2.8 percent, and 2.5 percent, respectively. All were significant at the 1-percent level. These findings suggest that vice stocks outperform on a risk-adjusted basis. However, in the five-factor model, which adds the investment and profitability factors, the alpha virtually disappeared, falling to just 0.1 percent annually. This result helps explain the performance of vice stocks relative to the market portfolio that previous models fail to capture.
- Richey (2017) concluded that the higher returns to vice stocks occurred because they are more profitable and less wasteful with investments than the average corporation. Richey's findings are consistent with other studies on sin stocks.

Hong and Kacperczyk (2009) found that for the period 1965–2006, a U.S.

portfolio long sin stocks and short comparables had a return of 0.29 percent per month after adjusting for the four-factor model. As out-of-sample support, sin stocks in seven large European markets and Canada outperformed similar stocks by about 2.5 percent a year. They concluded that the abnormal risk-adjusted returns of vice stocks are due to neglect by institutional investors.

As further evidence that avoiding sin stocks comes at a price, Dimson et al. (2020) found that for industry indexes that covered the 120-year period 1900–2019, the highest returning industries in the United States were tobacco and alcohol. One dollar invested in the U.S. stock market in 1900 through 2019 would have provided an annualized return of 9.6 percent; that same dollar invested in the tobacco sector returned 14.2 percent. The second-best-performing industry was alcohol. The United Kingdom produced similar findings. During 1900–2019, the U.K. stock market provided an annualized 9.3-percent return. The best-performing industry was alcohol, returning 11.5 percent, and tobacco was the next-best performer.

Dimson et al. (2020) also examined the impact of screening out countries based on degree of corruption as a measure of the quality of governance. Countries were evaluated using the Worldwide Governance Indicators from Kaufmann et al. (2010). The indicators comprised annual scores on six broad dimensions of governance. Economic theory would suggest that corruption is a risk factor. Therefore, investors in countries with greater degrees of corruption will demand a premium as compensation for the risk.

Dimson et al. (2020) found 14 countries that posted a poor score, 12 that were acceptable, 12 that were good, and 11 with excellent scores. Post-2000 returns for the last three groups were between 5.3 percent and 7.7 percent. In contrast, the markets with poor control of

corruption had an average return of 11.0 percent. Interestingly, realized returns were higher for equity investments in jurisdictions that were more likely to be characterized by corrupt behaviors. As the authors noted, the time period is short and the result might just be a lucky outcome. On the other hand, it is also logical to consider that investors will demand a premium for taking corruption risk. However, the premium also may be a result of the same exclusionary factors found with sin stocks, i.e., investors boycott countries with high corruption scores, driving prices down, raising expected returns.

### THE PRICE OF TASTE FOR SUSTAINABLE INVESTMENT

Ciciretti et al. (2017) began by observing that the demand for SRI can be explained by two different effects: the favorable risk characteristics of responsible assets, and investors' taste for such assets. They wrote: "The risk effect arises when responsible assets exhibit financial risk characteristics that appeal to investors. For example, SRI might reduce exposure to stakeholder risk, such as potential consumer boycotts or environmental scandals, that have an impact on stock returns." Their explanation for the taste effect "is that certain investors do not want to facilitate 'irresponsible' corporate conduct and construct their portfolios accordingly." The authors then focused on the taste effect's contribution in risk-adjusted returns—in other words, "the price of taste."

To determine the price of taste, Ciciretti (2017) built a model that accounts for exposure to the market beta, size, value, and momentum factors, and incorporated an SRI score based on six dimensions: business behavior, corporate governance, community involvement, environment, human resources, and human rights. The study covered the period July 2005–June 2014 and 1,000 firms, with 295 firms in the United States, 512 in Europe, and 193 in the Asia-Pacific region. The following is a summary of their findings:

- Overall, the average monthly excess return declines as one moves from the worst to the best SRI portfolio.
- A strategy that buys the worst portfolio and sells the best portfolio yielded an additional excess return of 7.2 percent on an annual basis and was statistically significant ( $t$ -stat = 4.0).
- Constructing portfolios with firms that have higher responsibility scores does not increase the overall portfolio market beta, value, or momentum exposures. However, the size and corporate social responsibility risk factor betas decrease as you move from the worst to the best SRI portfolios; companies become larger and SRI scores become better, decreasing stakeholder risk exposure for firms with higher social responsibility scores.
- There is a significant and negative relationship between social responsibility scores and risk-adjusted returns, with price of taste amounting to 4.8 percent annually for the representative responsible firm.

Ciciretti (2017) concluded: "Both risk and taste play a role in explaining differences in returns between more and less responsible companies." They added that investors pay a price in terms of lower returns due to their preference for SRI and that the premium related to the responsibility score, the price of taste, is negative and significant—consistent with theory and prior research.

Ciciretti et al. (2019) found that firms with lower ESG scores exhibit higher expected returns—investors recognize increased risk and demand a premium for accepting it. Companies pay a price in the form of a higher cost of capital. The negative premium is driven mainly by ESG characteristics. They found that a one-standard-deviation decrease in ESG characteristics is associated with an increase in expected returns of 13 basis points on a monthly basis.

Based on an equilibrium model, Ciciretti et al. (2019) concluded that the results indicate that the cross-sectional variation of expected returns related to the ESG premium is driven mainly by investor preferences for ESG-related issues rather than that systematic risk components are captured by ESG scores. In other words, asset flows to ESG stocks have driven down expected returns. They added: “Irrespective of risk considerations, investors are willing to forgo potential returns if a firm scores well on ESG items (or alternatively, investors only are willing to hold firms that score low on ESG items if they are compensated with higher returns).”

Pástor et al. (2020) reached the same conclusion as Ciciretti et al. (2019). Both sets of authors noted that with the increased demand for ESG funds, the expected equilibrium likely has shifted. Firms with high ESG scores have rising portfolio weights, leading to short-term capital gains for their stocks—realized returns may rise temporarily, though expected long-run returns fall. Ciciretti et al. (2019) investigated how the long-run ESG premium evolves over time by calculating regressions of dividend-price ratios on the ESG characteristics, confirming this hypothesis. Pástor et al. (2020) also found the following:

- Investors differ in their preferences for sustainability, or ESG, preferences. These preferences have two dimensions. First, agents derive utility from holdings of green firms and disutility from holdings of brown firms. Second, though they care about firms’ aggregate social impact, they also care about financial wealth. However, they are willing to sacrifice some expected return in exchange for the utility benefits provided by green investing.
- Investors’ taste for green holdings affects asset prices—the greener the asset, the lower its CAPM alpha in equilibrium. Green assets have negative alphas and brown assets have positive alphas. Consequently, agents

with stronger ESG preferences, whose portfolios tilt more toward green assets and away from brown assets, earn lower expected returns.

- If ESG concerns strengthen unexpectedly, green assets can outperform brown assets despite having lower expected returns. The higher short-term returns are a result of the increased demand for the stocks of green firms on valuations. “Exposure to ESG risk is why green assets may outperform brown assets over a period of time.” Investor tastes or preferences can drive short-term returns through changes in valuations. The premium induced by exposure to the ESG risk factor can be large enough to overcome green stocks’ negative alphas.

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- The authors claim there is an ESG risk factor, because the strength of ESG concerns can change over time, both for investors in firms’ shares and for the customers who buy the firms’ goods and services. If ESG concerns strengthen, customers may shift their demand for goods and services to greener providers (the customer channel), and investors may derive more utility from holding the stocks of greener firms (the investor channel). Greener stocks are more exposed to the ESG risk factor.

### ENHANCING SUSTAINABLE INVESTING RETURNS

Hsu et al. (2018) examined whether screening for ESG firms with a high cost of capital would improve returns. For each top ESG universe, they sorted the stocks into quintile portfolios according to the cost of equity. The characteristics

chosen to estimate cost of equity were book-to-market, gross profitability, net operating assets, accruals, volatility, asset growth, and market beta.

Consistent with economic theory, they found that firms with a higher cost of equity tended to outperform firms with a lower cost of equity. Using Bloomberg scores, the firms with high costs of capital outperformed the firms with low costs of capital by 7.3 percent ( $t$ -stat = 1.9). Using Thomson Reuters scores, the outperformance was 6.9 percent ( $t$ -stat = 2.2). Using the S&P 500 as the benchmark, the authors found that a high-cost-of-capital ESG strategy outperformed by about 3 percent annually, with an annual turnover of about 60 percent; note that trading costs should be low given that the universe is the 500 largest stocks.

Taking these findings into account, it’s important to keep in mind that there are conflicting forces at work because investor preferences lead to different short- and long-term impacts on asset prices and returns.

### CONFLICTING FORCES

Given the trend to ESG investing, firms with high sustainable investing scores earn rising portfolio weights, leading to short-term capital gains for their stocks—realized returns rise temporarily. However, the long-term effect is that higher valuations reduce expected long-term returns. The result can be an increase in green asset returns even though brown assets earn higher expected returns.

In other words, there can be an ambiguous relationship between carbon risk and returns in the short term. As Görgen et al. (2020) noted, “Over time as the markets develop a better understanding of carbon risk and the unexpected component falls relative to the expected component, we should expect a positive relationship between returns and carbon risk.” Without this understanding, investors can misinterpret findings that appear to show a lack of a carbon

premium because of the dramatic increase in cash flows into green stocks. Given the continued trend in sustainable investing, it seems likely that it will be a while before we reach a new equilibrium. In the meantime, despite investors requiring a risk premium for carbon risks, green stocks can outperform brown stocks.

## SUMMARY

Although sustainable investing continues to gain in popularity, economic theory suggests that if a large-enough proportion of investors choose to avoid the stocks of companies with low sustainability ratings, the share prices of such companies will be depressed, so they would offer higher expected returns. With this knowledge, investors are positioned to pursue financial goals in the manner that reflects their values and the costs they are willing to bear to achieve those values. On balance, the evidence does suggest that investors who desire to express their views through socially responsible investing may be paying a price in the form of lower expected returns. However, there are some screens that result in reduced tail risks. The research suggests that it is possible that intelligent design of a sustainable investment strategy, including tilting portfolios to factors with premiums, can allow investors to create an efficient portfolio.

The reduction in risk, especially tail risk, is important and covers a wide spectrum of risks: reputation risk (e.g., Volkswagen's Dieseltgate scandal), human capital risk, litigation risk (e.g., PG&E's legal claims of more than \$10 billion for California wildfires; BP's \$18 billion in claims for the Deepwater Horizon disaster), regulatory risk, corruption risk, and climate risk, including the risk of stranded assets (Sautner and Starks 2021). Each of these risks can impact a company's stock price, its cost of capital, and its ability to compete.

As Pedersen et al. (2020) explain, investors should determine their own unique

efficient ESG frontiers, evaluating the costs and benefits of sustainable investing, and then construct portfolios based on those frontiers. Pedersen et al. (2020) also provided important insights into when ESG scores should predict returns positively (e.g., if the market has not yet fully incorporated information provided by positive governance ratings, which indicate reduced risks) or negatively in equilibrium (e.g., through screening out of assets with high expected returns). In addition, it is also possible that sustainable investors could benefit if an unexpected increase in ESG demand were to reinforce demand for green products, boosting the profits of green firms at the expense of brown firms. 🟡

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## ENDNOTE

1. See "Report on US Sustainable and Impact Investing Trends 2020," US SIF Foundation, <https://www.ussif.org/trends>.

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