

# ➤ Sustainable Investing and Green Returns

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## Background

The recent growth of sustainable investing is one of the most dramatic trends in the asset management industry over the past decade. Given this trend, research must try to answer several questions: How has the rise of sustainable investing affected asset prices? Are green assets a hedge for risks related to climate change? Should we expect higher or lower returns from green assets? How have green assets performed recently, and was that performance expected or a surprise? How does being “green” affect a company’s cost of capital? Finally, can sustainable investing have real impacts that help solve the climate crisis? This brief relays findings on these critical questions.

## Sustainable Investing in Equilibrium

In “[Sustainable Investing in Equilibrium](#),” Lubos Pastor, Robert Stambaugh, and I analyze the financial and real effects of sustainable investing. We built a simple equilibrium asset pricing model in which firms differ in their environmental, social, and governance (ESG) characteristics (“greenness”), and investors vary in their ESG preferences. The model studies how agents’ ESG preferences can move asset prices, tilt portfolio holdings, determine the size of the ESG investment industry, and impact society.

Our model implies that greener assets have lower expected returns for two reasons. First, many investors get satisfaction from feeling that they are investing responsibly by allocating more to green assets while reducing or divesting their brown holdings.

The relatively higher demand for green assets means they command higher prices, thereby implying lower expected future returns. Second, green assets perform better than brown in the face of adverse climate news. These superior returns thus soften the blow of that news for green asset holders. This hedging ability makes green assets less risky, resulting in higher prices and lower expected returns for green assets relative to brown.

While our theory predicts lower expected returns for greener assets, we also show that greener assets can have higher realized returns when positive shocks hit the ESG factor, which captures unexpected shifts in investor or consumer tastes. We also show that sustainable investing produces positive social impact by changing firms’ cost of capital, which encourages all firms to become greener and shifts real investment toward green firms.

## Dissecting Green Returns

In “Dissecting Green Returns,” we test some of the theory’s implications. The study’s main message is that green assets outperformed in recent years, but green assets always had—and continue to have—lower expected returns than brown assets. In other words, green assets’ recent outperformance was unexpected, and we should not expect it to continue.

Investors often cite improved returns as a top motivation for applying ESG criteria, and investment managers often market sustainable investment products as offering superior returns. Moreover, during the last decade, environmentally friendly stocks outperformed those at the

opposite end of the environmental spectrum. Of course, investment managers must warn clients that past performance does not necessarily predict future returns. In our study we show why investors would be especially well advised to heed that warning when investing in green assets. Indeed, the wedge between historical returns and what investors should expect going forward is central to our study.

The main prediction we test is that greener assets should have lower expected returns. We perform two tests.

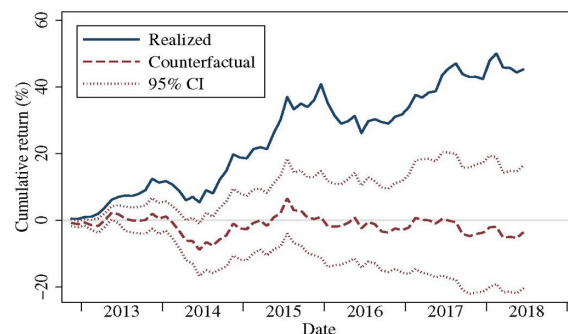
First, we compute the rate of return that equates an asset's current price to the discounted stream of its future payoffs. For a bond, this rate of return is simply its yield to maturity. For a stock, we use its implied cost of capital (ICC), as the expected stock return is not directly observable. In both cases, this computed rate of return corresponds to the future return on the asset that an investor should expect. We then compare these expected returns for green versus brown assets.

For bonds, starting in 2020, the German government bond market has offered a clean comparison between green and non-green bonds, and the former have consistently had lower yields. For stocks, green stocks consistently had lower ICCs than brown stocks over the previous decade, with their greenness measured using MSCI environmental ratings. These results imply that being green reduces the expected return for both bonds and stocks.

Second, we look at what has driven realized returns, recognizing what was expected can differ from what really happened. Green stocks have outperformed over the previous decade because their prices rose unexpectedly, relative to brown. The

principal driver of that outperformance was adverse climate news. During months when major news outlets ran especially negative climate news, green stocks significantly outperformed brown ones. If we remove those climate-news shocks and unanticipated earnings news, we find that green stocks would have underperformed brown stocks. The figure below displays this result.

Figure 1: GMB Portfolio Performance



The solid line shows a strongly positive realized performance of a green-minus-brown (GMB) portfolio, which goes long green stocks and short brown stocks. The dashed line shows a modestly negative counterfactual performance of the GMB portfolio, which we estimate would have occurred in the absence of shocks to the climate and earnings. The figure shows that the realized performance substantially exceeded the counterfactual performance. The dashed line provides a better estimate of the GMB portfolio's expected performance in the future than the solid line. The solid line lies well above the 95% confidence interval for the counterfactual performance, indicating that the realized performance of green stocks relative to brown was significantly higher than expected.

Why should adverse climate news raise the prices of green stocks and lead to unanticipated outperformance? First,

heightened climate concerns can increase investors' desire to hold green assets. Also, heightened climate concerns are likely to raise the expected future profits of green companies and lower the expected profits of brown companies, for example, by raising expected electric vehicle sales while increasing the likelihood of carbon taxes and regulations.

Our study also offers new insight into the contrasting styles of value and growth investing. For nearly a century, value stocks outperformed growth stocks on average. However, value stocks sharply underperformed growth during the last decade, to an extent previously not experienced. This historical underperformance of value stocks can largely be attributed to the outperformance of green stocks versus brown. Once we control for our green factor—the theoretically motivated difference between green and brown stock returns—most of this underperformance disappears. The simple reason is that value stocks tend to be brown on average, while growth stocks tend to be green.

Overall, our findings suggest that investors should not expect to earn superior returns on green assets in the future. Green assets did earn superior returns in the past, but these returns were driven by unexpected shocks that cannot be expected to repeat in the future.

Another important implication concerns firms' cost of capital. A common mistake is to forget that cost of capital and expected return are the same concept. For example, it is a contradiction to say, "I expect my ESG portfolio to outperform, but my ESG investing also reduces firms' cost of capital." One might look at green assets' high recent realized returns and

incorrectly conclude that green assets have high expected returns and hence a high cost of capital. Our findings imply the opposite: being green reduces an asset's cost of capital. This result is good news for those concerned with climate change. If we can make capital cheaper for green activities and more expensive for pollutive activities, the economy will naturally become greener. Of course, changing firms' cost of capital cannot solve the climate crisis by itself, but it can be part of the solution.

## Works Cited

Pástor, Luboš, Robert F. Stambaugh, and Lucian A. Taylor. “Sustainable investing in equilibrium.” *Journal of Financial Economics* 142.2 (2021): 550-571.

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