Spring 2022

ESG Investing: From Fad to Force

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ABSTRACT

ESG Investing is the application of environmental, social, and governance factors to identify material investment risks and growth opportunities. Though traditionally viewed as non-financial factors, this paper asserts that ESG factors are indeed financially material. This work first surveys the current state of ESG Investing, its shortcomings, and its success despite these inherent issues. Section II adds a new perspective to ESG research by examining the applications of ESG scores in portfolio management. The study conducts t-tests to answer whether the typical holdings of an ESG mutual fund are more sustainable than those of traditional funds. The paper then focuses on the potential for ESG factors to be quantified, including raising new questions about this quantitative potential. Lastly, suggestions are made on how ESG could be cemented as a force of societal change instead of becoming another inconsequential ethical investing fad.

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Thesis Summary

This paper serves as a comprehensive overview of the knowledge I have gathered on ESG Investing during my finance studies as an undergraduate at the University of South Carolina, and during my internships at Ameriprise Financial and Brown Advisory. Sustainable Investing has been discussed in every one of my finance courses, but it is usually viewed negatively as a fad that is sure to lose relevance. This motivated me to do my own research on the topic, including speaking to some of the key leaders behind Brown Advisory's Large Cap Sustainable Growth Strategy led by Karina Funk, recognized as one of the most influential women in finance by Barron's and Forbes. This paper could be a primer for those new to ESG concepts, while also serving as an introduction to the cutting-edge issues that will surely guide the next stage of ESG research.

I: The Current state of ESG Investing: How Portfolio Managers Use ESG Today

In December 2019, $20 billion flooded into U.S. sustainable funds and approximately 500 actively managed U.S. funds added ESG factors into their prospectuses.[1] While some critics refer to ethical investing as a fad, major researchers and firms strongly disagree, crediting ESG investing as a way to identify resilient companies with latent alpha. Projections by Blackrock suggest an acceleration in sustainable investing, with sustainable ETF assets growing sixfold by 2030.[2] Understanding ESG's rapid transformation and subsequent rise to the public eye over the past decade is pivotal to discerning how the investment method can improve.

Traditionally, sustainable investing began as a simple negative screening technique. Mostly fueled by religious beliefs, investors actively divested from sin stocks like alcohol and tobacco. Although this method was strikingly basic, the underlying parameter of investing for an ethical impact still guides a part of the ESG approach today. However, as detailed in this paper, ESG Investing has evolved intricately beyond simple screening techniques.

Beginning in the early 90's, the world started to take note on the impending need for the intersection of business and ethics. 1989 was stained by the Exxon Valdez oil spill, 1991 exposed horrific labor practices of Nike in emerging markets, and 2001 highlighted the need for transparency and reliability with the Enron accounting scandal. Unknowingly, the business world experienced ESG risks and their potency first-hand. Events like these would continue to shock not only stockholders, but global stakeholders as leaders acknowledged the perils of pure profit maximization.

The past decade has been rife with action to put ESG risks into perspective. In 2011, the Sustainability Accounting Standards Board was established to outline principles for corporate reporting of ESG metrics. Four years later, the Paris Agreement spurred formal acknowledgement of climate risk. In 2018, Blackrock CEO Larry Fink implored business leaders to associate the mitigation of ESG risks with long-term, socially responsible profits. A year later, the Business Roundtable redefined the purpose of a corporation.[3] The most promising way to build long-term value is for a business to serve and promote all stakeholders, not just shareholders. Opponents dismissed the statement as empty rhetoric, noting that many signers did not update their corporate governance guidelines to confirm this commitment to stakeholders, nor did they remove language surrounding their dedication to shareholder primacy.[4]

COVID-19 has only accelerated the push towards long-term, more sustainable investing. While many tend to focus on the 'E' of ESG Investing, the summer of 2020 highlighted the repercussions of systemic inequality. Though many struggled to see the connection between racism and the corporation, the George Floyd protests reminded all that a corporate response to fight systemic racism is crucial, as a firm's action or non-action can be divisive.[5] And why should stockholders care? A high sense of employee belonging leads to a 56% increase in job performance and reduces employee turnover by 50%.[6] For a company with thousands of employees, a cohesive and inclusive corporate culture could result in millions of dollars in savings. Seemingly non-financial factors such as inequality can materially impact a firm's bottom line.

ESG Investing is, quite simply, a technique that uncovers non-financial information that is indeed financially material. According to the Vice President of Morgan Stanley, Peter Roselle, ESG integration enhances the 'antifragility of portfolios' by clarifying the financially-material

sphere of investing that is usually overlooked by traditional investment analysis[7]. The key to any financial analysis is reliable information about risks and opportunities. ESG data sheds light on future struggles or strengths of a company, resulting in alpha, and thus provides crucial market transparency to investors. Acceptance of non-financial information as material is not new to the finance industry. Insurance firms integrated ESG risks into their statistical analyses long ago when designing health and flood insurance, for example.

However, many traditional investors cite modern portfolio theory as a reason to distrust sustainable investing. Portfolio risk is reduced by holding securities whose returns are not highly correlated with one another. Ethical investing suggests investors screen out unsustainable sectors like industrials, which would result in less diversification benefits for the traditional investor—meaning ethical mandates could sacrifice returns and increase risks. In fact, the underperformance of portfolios screening out 'sin stocks' has been well documented (Fabozzi et al., 2008). Yet as ESG Investing has evolved beyond just negative screening, portfolio managers have shifted to a broad ESG strategy that picks the ESG winners of several sectors—satisfying both diversification and socially responsible requirements. (See section 3 for more on ESG and diversification)

Perhaps ESG Investing is just fundamental investing, cleverly reinvented. After surveying 127 asset managers, Van Duuren et al. (2016) finds that ESG and fundamental investing are very similar in principle. Fundamental analysts focus heavily on long-term performance and prefer firm-specific information over industry or sector metrics. This highly reflects ESG's mantra. Fundamental analysts also look for companies with quality management teams that are able to strategically plan ahead. ESG Investing underscores these factors as well,

instead coining these factors under the larger umbrella of ‘corporate governance’. Lower ESG risks are often a result of effective strategic planning.

The study uncovered how 251 ordinary portfolio managers integrate ESG investing into their traditional investing strategies. ESG integration is defined as the ‘systematic inclusion of ESG analyses in financial valuations’ (Van Duuren es al., 2016). A majority of surveyed portfolio managers utilized ESG information as a risk management technique to ‘red flag’ certain investments, but seldom focused on ESG’s upside potential. Less than half of managers used ESG metrics to actively monitor their holdings, so whether or not the ESG risk ever materialized largely went unnoticed, unless of course the ESG issue became a controversy. A true signal of ESG integration would be if a manger bought or sold an investment due to ESG factors. While some investors bought or sold with ESG reasons in mind, a large portion did not make any ESG-motivated moves in 2012.[7]

Many studies have cited that ESG-branded mutual funds have higher expense ratios. Perhaps the higher expenses are warranted. The average manager may consider third-party ESG ratings in their investing processes, but as noted by Van Duuren et al. (2016), very few follow up with continual ESG analysis. Thus, ESG risks fail to meaningfully impact portfolio decision making for many managers. True ESG integration is tedious and requires a team of analysts. Since ESG reporting is not mandated in the US, investment research firms are tasked with forming personal relationships with corporations to engage with them on a deeper level about their ESG profiles. This asymmetric access to information allows large investment management firms to make highly informed ESG decisions, while the average portfolio manager navigates the realm of ESG investing with rather shallow information.

Yet, even large investment management organizations with stronger ESG information have trouble effectively implementing ESG factors into the investment process. To gain entry into the realm of financial decision making, ESG must, to an extent, speak quantitatively. After all, it is numbers, ratios, and analytics that drive financial markets. ESG's uphill battle is measurement. Without an empirical link, ESG investing suffers from translation failure and could be written off as another ethical investing fad.

II: ESG—Progress and Pitfalls

Several attempts have been made to quantify ESG Investing, but such efforts have been largely undermined by the fact that ESG reporting is not mandated in the US. This results in uneven reporting, with some companies voluntarily disclosing information and some choosing to remain silent on the topic. While many are quick to praise firms that engage in this selective disclosure, a lack of standardization and regulation of ESG reporting causes many to question the information's reliability.[9] For example, the term 'sustainable' lacks a legal definition and has become a buzz word of marketing campaigns. There is evidence that firms overemphasize beneficial information to mislead the public to a positive impression.[10] Additionally, there are no rules to what a company should or should not report, leaving investors with information that is not comparable. Instead of providing increased market transparency to investors, unstandardized ESG reporting makes the space even more puzzling.

To complicate matters even more, perceptions of the barriers to ESG investing vary by region. In this Asia-Pacific region specifically, investors believe that ESG could produce alpha in a shorter time frame, while investors in Europe and the Americas are more confident that ESG alpha will reveal itself after 3 to 5 years, at minimum.[11] This misalignment in timeframes could be explained by the relatively underdeveloped nature of capital markets in Asia, or just the

general misunderstanding that ESG is more than just a 'quick fix' concept. The tables turn, however, when Eccles et al. (2017) asked investors whether ESG objectives should be considered in fiduciary duty. 61% of investors in the Asia Pacific region agreed that it should be, while only 44% agreed in Europe and the Americas. This disagreement could severely muffle ESG's potential, and the fact that ESG is less associated with fiduciary duty in the regions where it has seen the most success is very perplexing.

Since ESG is a complicated issue for an individual investor to process on their own, investors have started to look toward financial information companies like Bloomberg and Sustainalytics for processed ESG information. These companies have tacked ESG scores onto their platforms for individual securities and funds to satiate the demand for environmental, social, and governance data. However, these 'third party' ESG scores have only amplified the underlying issues of ESG information. Due to a lack of standardized and regulated information, third party ESG scores can still be skewed by public perception of a company. There is also a potential for conflicts of interest to arise between the ESG rating company and the firms being scored. ESG companies sell their services to the same firms they should be unbiasedly rating. Morningstar offers an "ESG Risk Rating License", and only firms that buy the license are able to earn a top-rated badge. Morningstar has essentially given preferential treatment to companies that are otherwise poorly rated by other ESG firms.[13]

Since a lot of ESG information is, at its core, subjective—the methods of 'scoring' or objectifying this information is unique to each provider. This results in large disparities between MSCI and Sustainalytics ESG scores for an identical security, even when put on a normalized scale.[12] Thus, there is no way to verify that an ESG score is accurate or precise. Another layer of complexity is added when trying to amend the ESG score for industry differences. Certain

industries, like technology, naturally pose fewer negative externalities to the environment than the energy sector does. Another concern: should ESG scores be size adjusted? Surely a large cap company has a greater impact on its community than a small cap firm. To truly make ESG scores comparable, third-party ratings companies must quantify several aspects of a firm and industry to arrive at a single number, perhaps losing the essence of ESG information in the process.

Since ESG scores are inherently ill-defined, so too are their applications in portfolio management. By definition, the typical holdings of an ESG mutual fund should be more sustainable (as measured by a higher ESG score) than those in traditional funds. To test this theory, ESG scores are gathered from the top ten holdings of 5 sustainable mutual funds and 5 traditional funds. The mutual fund is categorized as sustainable if ESG is mentioned in the fund's prospectus. Sustainable funds included: Brown Advisory Large Cap Sustainable Growth (BIAWX) , Calvert Large Cap Core Responsible Fund (CISIX) , BlackRock Large Cap Sustainable Advantage (BIRIX), BNY Mellon Sustainable U.S. Equity Fund (DRTHX) , and Fidelity U.S. Sustainable Fund (FITLX). Traditional mutual funds included: Fidelity OTC Portfolio (FOCPX), T. Rowe Price Global Stock Fund (TRGLX), Principal Blue Chip Fund (PBLAX), Fidelity Flex Large Cap Growth Fund (FLCLX), and Franklin DynaTech Fund (FKDNX).

To ensure that results are not influenced by a particular scoring methodology, ESG data is sourced from both MSCI and Sustainalytics. It is not necessary to normalize the ESG scores to compare them across providers because two separate t-tests are conducted.

The null hypothesis is that there is no difference in the average ESG scores of sustainable versus traditional mutual fund holdings. Table 1 displays results for Sustainalytics ESG scores while Table 2 uses MSCI ESG scores. In both cases, the null hypothesis cannot be rejected

because the t-statistic is not greater than 1.96. The p-values are also much larger than 0.05, therefore the difference in ESG scores is not statistically significant.

Do these results undermine the ESG strategy? Not necessarily. The lack of a significant difference could suggest that the sample of traditional mutual funds used in the study were relatively sustainable. This could be attributed to the high concentration of technology holdings across the funds. The technology industry is certainly less prone to damaging the environment than other industries like consumer cyclicals, so it may be the case that these technology names have inherently higher ESG scores. Additionally, there were many repeated names across the sustainable and traditional mutual funds, which limited the number of unique holdings in each category. It is rare to find a mutual fund without FAAMG stocks (Facebook, Apple, Amazon, Microsoft, and Google) as its top 5 holdings. This largely reflects the high concentration of these names in benchmark indices. Without holding these obvious winners, mutual fund managers would be putting themselves at a disadvantage in trying to beat the index. It would be interesting to conduct a t-test with just the non-overlapping holdings to get a clearer look at sustainability. Some of the unique holdings in the sustainable category were Accenture, Danaher, and Tesla. The Non-sustainable holdings included Lyft, Twitter, and Shopify.

Perhaps holdings in ESG funds are not as sustainable as suggested, at least not enough to warrant the use of the word ‘sustainable’ in a mutual fund’s name. Yet, this assumption may be short-sighted. A cornerstone of the ESG strategy is its long-term time horizon. Many sustainable managers pursue an ESG momentum strategy, where the objective is to invest in a firm that is not ESG-friendly at the moment but will transform its operations to be more resilient in the face of looming environmental, social, and governance risks. Because a conversion of this nature can entail completely rethinking the status quo of a firm’s operations, many businesses are reluctant

to initiate these changes without first being prompted by stakeholders. Thus, many ESG portfolio managers partake in ESG engagement. This is a strategy in which institutional investors and nongovernmental organizations join forces to drive an ESG-focused business transition. ESG engagement looks like participating in investor roundtables, voting at shareholder meetings, asking questions on earnings calls, and voicing concern for ESG risks. A popular ESG engagement organization is Climate Action 100+, an investor-led organization that collaborates directly with companies to set science-based targets for reducing greenhouse gas emissions. They recently aided Sasol, South Africa's largest energy and chemical plants, in designing decarbonization roadmaps for 2030.

Still, the fact that many ESG funds may not fundamentally be more sustainable is unsettling. The lack of consistency between sustainable promises in a fund's prospectus and actually carrying out subsequent ESG actions is one of ESG's largest pitfalls. Without the latter, ESG could be reduced to nothing more than shallow words in a prospectus.

Though the idea of an all-encompassing metric for ESG information is tempting, the opaque nature of ESG scores and their imprecise applications in portfolio management prove that this is a difficult field to quantify, especially without regulations and standards governing the space. Giudice and Rigamonti (2020) examine ESG scores before and after public controversies through a multivariate analysis, finding that companies with non-audited non-financial statements received a significant negative downgrade due to the controversy. This study confirms that ESG scores are meaningful if the underlying ESG information is audited by a third party, meaning that this space would greatly benefit from increased regulations.[14] Thus, for institutional investors, third party ESG scores are only the first step in a proprietary research journey.

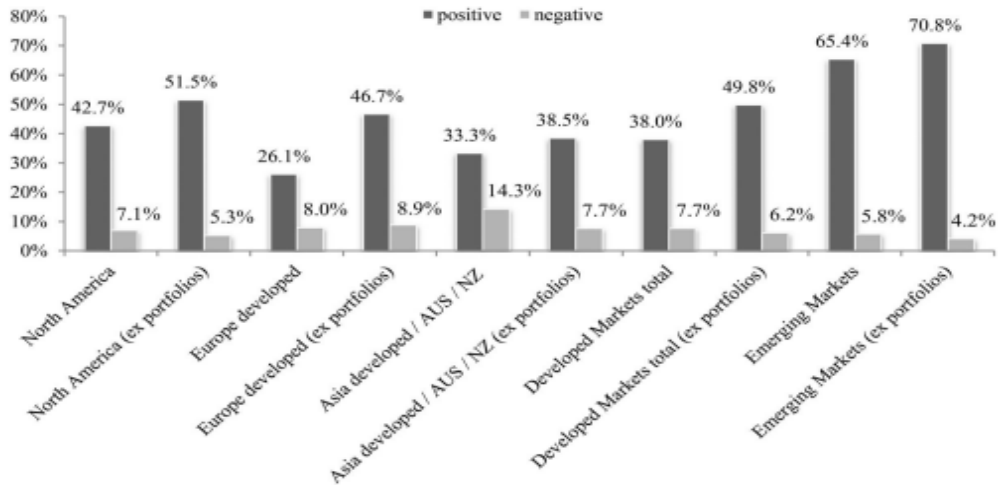
Because of ESG's many shortcomings, it is easy to see that not all investors that employ ESG strategies will be successful. Even if implemented correctly, Cappucci (2018) suggests that financial performance first declines and improves later on as an investment manager's ESG analyses increase. True ESG investors commit to a time horizon of 5^{+} years until the strategy delivers outperformance. This gives way to the 'ESG Integration Paradox': Investors recognize that ESG Integration leads to better risk-adjusted returns, but few of them adopt fully integrated ESG strategies.[15] The barriers discussed above begin to explain why very few professional investors will uncover alpha with ESG investing techniques.

III: Success in ESG

The evidence presented thus far insinuates that there is a very narrow path to success in ESG Investing. Despite a less than perfect regulatory framework for this investing technique, ESG Investing's success record continues to grow, causing the strategy to expand into developing countries and other asset classes.

Despite ESG's many shortcomings, managers are still seeing success in using the strategy. Friede et al. (2015) aggregate evidence from over two thousand studies of ESG and financial performance. This exhaustive overview finds that academic literature provides ample support for the empirical link between ESG and financial performance. Approximately 90% of the studies display a nonnegative relationship between these two factors that has been stable over time. The authors also uncovered that this correlation differs among regions. Although one may think that ESG would have a weaker relationship in developing markets because of a lack of ESG reporting, this study interestingly highlights that the opposite is true. The percentage of positive results for developed markets is only 38%, while emerging markets is at 65%.[16]

Figure 1: ESG and corporate finanial performance relation in various regions



Source: Journal of Sustainable Finance & Investment, Friede et al., 2015.

The Friede et al. (2015) study also makes distinctions between asset classes, finding that bonds have a significant higher share of positive findings than equities. This is not surprising, considering that green bonds can more clearly link their use of proceeds to specific environmental projects. Recently there has been exponential growth in 'labeled bonds', which encompass a whole category of ESG-related bonds. The global sustainable debt market grew to over $2 trillion in 2020.

Figure 2: Categories of Labeled Debt Securities

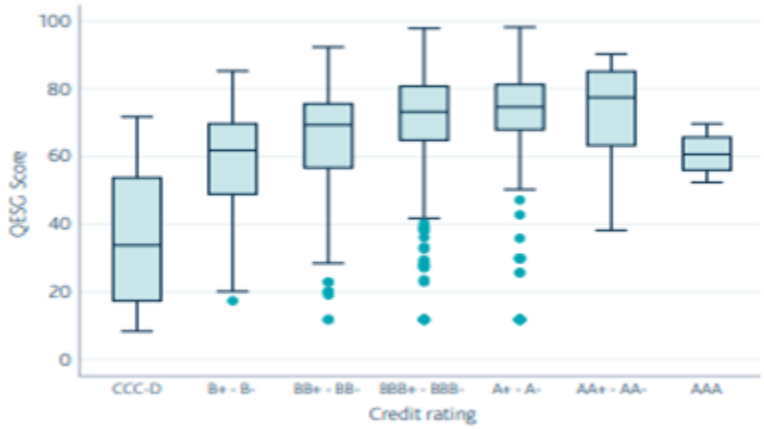
ASSET-BASED				CORPORATE/ENTITY-BASED	
Green Bonds	Social Bonds	Sustainability Bonds	Green Loans	Sustainability-Linked Loans	Sustainability-Linked Bonds
100% of proceeds used for eligible environmental activities	100% of proceeds used for eligible social activities	100% of proceeds used for eligible environmental and social activities	100% of proceeds used for eligible environmental activities	General purpose debt; issuer commits to green and/or social target	General purpose debt; issuer commits to green and/or social target
The Green Bond Principles	The Social Bond Principles	The Sustainability Bond Guidelines	Green Loan Principles	Sustainability-Linked Loan Principles	The Sustainability-Linked Bond Principles

Source: Brown Advisory, 2020.

Sustainability-linked bonds, for instance, are a debt security in which the proceeds are connected to ESG key performance indicators. These innovative securities provide a level of accountability and transparency that has yet to be seen in the equity space.[17]

To further cement the ESG relationship in the fixed income asset class, Hermes Credit finds that bond issuers with higher ESG scores tend to also have better credit ratings. Still, some low ESG scorers tend to have good credit ratings (as seen by the outliers in Figure 3), meaning that ESG risks are not perfectly accounted for in credit ratings.[18] On the whole, bond investors could benefit from reduced risk if they screen out issuers with poor ESG metrics.

Figure 3: Distributions of ESG Scores by Credit Ratings, 2012 to 2016

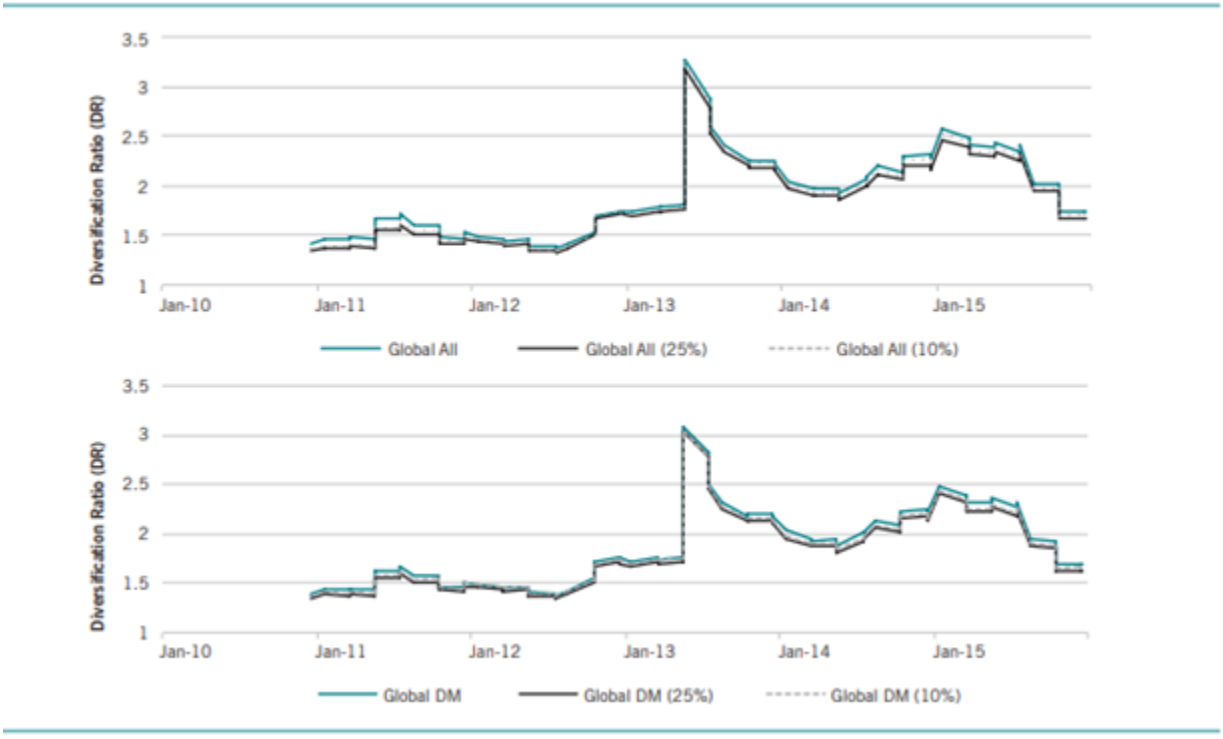


Source: Hermes Investment Management, 2017.

There is a myriad of evidence that ESG and financial performance are related across regions and asset classes, but does ESG screening deteriorate portfolio diversification and risk-adjusted returns? Eccles et al. (2016) addresses this issue by employing different ESG filters to

mimic the starting point of a fund manager's ESG screening. They structured a 10% best-in-class ESG filter and a 25% filter, which would effectively remove firms with the lowest 10% (or 25%) ESG rankings. The authors find that screenings resulted in higher returns, lower tail risk, and no significant loss in diversification benefits. The Sharpe ratios of three of the four screened universes outperformed the unscreened universe. One screened universe underperformed by only 0.01% per annum with a Sharpe ratio 0.005 lower than the unscreened universe. Overall, risk-adjusted returns were higher. As seen in Figure 4, the unscreened universe (Global DM) has a higher diversification ratio but the ESG screening leads to very minimal diversification losses on average. As a result, the study concludes that ESG information can be used to create risk-adjusted outperformance by actively modifying the investment universe.[19]

Figure 4: One year rolling diversification ratios (2010-2015)



Source: Journal of Applied Corporate Finance, Eccles et al., 2016.

Clearly, there is value that can be created in ESG strategies. What exactly does a successful ESG strategy look like, and how do we distinguish true success from the commonplace half-hearted ESG attempts?

Many corporate managers have treated ESG efforts like air bags in a car—they protect the firm's reputation from environmental, social, or governance scandals—but otherwise they do not help the car to perform better. This mindset results in near meaningless ESG outcomes. Those that see meaningful ESG dividends interweave it into their core business strategies and allow it to further differentiate themselves from the competition.[20] Firms can use an ESG mindset to create durable competitive advantages that are not easily replicable. Ikea is a great example of a company that has allowed ESG to meaningfully reshape product manufacturing. The firm wants to contribute to the 'circular economy' by creating products that can be refurbished or remanufactured to extend furniture's lifespan. Its less successful competitors are, on the other hand, encouraging the recycling of furniture after it has already been designed. Because Ikea is not engaging in mediocre end-of-pipe environmental clean-up solutions like its competitors, or window-dressing with ESG marketing tactics, it is and will continue to be a differentiated industry leader. Many doubt that environmental factors can accentuate enterprise value, but there is plenty of evidence that firm value can be created through corporate eco-efficiency. Guenster et. al (2005) finds that the premium on environmental leaders has increased over time, making environmental corporate policies a useful indicator of potential firm value.[21]

ESG actions will succeed if they clearly link business strategy to purpose. Plenty of profitable companies exist—but those that pointedly link profit and purpose will exceed their competitors in the long run. A recent Strategic Investor Initiative and KKS Advisors Study finds proof of this.[22] They analyzed various CEO presentations on long-term corporate strategy. Those

that successfully coupled the firm's business with social purpose experienced rising stock prices and trading volumes. In short, investors find value in purpose. It motivates people—employees, customers, and managers-- at a deeper level than money.

Investors who recognize this truth can capitalize on ESG initiatives. Take Brown Advisory's Large Cap Sustainable Growth strategy. It has outperformed the Russell 1000 Growth Index since 2009 and only holds 34 stocks compared to the index's 500 holdings. Clearly, Brown Advisory is making some distinction that the market is not. Karina Funk, the fund's manager, holds fast to the fund's performance-first mindset. According to her, sustainability is a means to identify performers who are on another level— those who are using sustainable outlooks to sharpen their already sound business models.[23] Before investing, Karina Funk speaks with company management to see if they truly recognize the connection between sustainability and long-term business strategy. If the CFO recognizes tangible ways that sustainability can strengthen a company's financial state, Funk confidently invests, calling this a 'sustainable business advantage.' One of the fund's most successful holdings is Ecolab. Funk recognized the industry leader back in 2010, whose valuation has since tripled. Ecolab creates dish detergent for restaurants. It has created exceptional value for itself by wisely investing in R&D to reduce the amount of water and energy needed to clean dishes. Sustainability has material financial impact, according to Funk, when it can lead to revenue growth, cost reductions, or improved brand value. Attractive business models with unrelated sustainability efforts are kept out of the portfolio at Brown Advisory. Similarly, sustainable companies without financial foundations are passed up. Funk has found success in ESG Investing by marrying sustainability with business fundamentals.

Success has also been found in using a best-in-class ESG approach.[7] Instead of starting with bottom-up ESG fundamentals to select stocks, ESG qualifications are used at the end of stock selection to serve as a tie breaker. The portfolio manager starts with best-in-class ESG public companies representing all sectors so that diversification requirements are still met in accordance with Modern Portfolio Theory. After conducting macroeconomic analysis to decide how portfolio sector weighting will look versus the relevant benchmark, the portfolio manager then chooses what style of strategy to use (large cap vs. small cap, growth versus value etc.). As per usual, the portfolio manager would then examine each stock quantitatively to decide whether to include them in the portfolio (valuation multiples, price history etc.). Finally, the portfolio manager would make final stock selections based on preferred ESG criteria or eliminate stocks if they lack these certain criteria. For example, one may only select stocks based on positive ESG momentum or only chose those with ESG scores in the top quartile for their sector. This best-in-class ESG strategy provides a middle ground for the portfolio manager who is more hesitant about integrating ESG investing into traditional analyses.

Other ESG funds have found success by investing in disruptive technologies. The Shelton Green Alpha Fund, managed by Garvin Jabusch, is one of them. The fund rose by 114% in 2020. Jabusch believes the partnership between sustainability and innovation are obvious: innovation is desperately needed to solve the climate crisis. He pursues bottom-up investment ideas instead of employing a top-down screening approach. The fund manager strives not to find a greener version of an index, because he believes firms in the S&P 500 are part of the legacy economy.[24] Instead, Jabusch wants to invest in the benchmark constituents of tomorrow. He searches for innovative companies with economic moats that are reinforced by intellectual property. The green component of his strategy is a little more subtle than Funk's. He sees sustainability's

impact on financial returns in its ability to translate into lower systematic market-level risk. In the face of climate risk, he believes that "innovative solutions in the service of mitigating system level risk gives us our best shot at long-term competitive returns" (Norton, 2020).

These success stories demonstrate that ESG techniques are much more than a mere afterthought in corporate strategy formulation. Firms that allow ESG risks to sharpen their operational performance or brand value will reap significant rewards. This is even evident among on an international level in countries with differing environmental standards. Dowell et al. (2000) finds a positive relationship between following strict environmental standards and market value, whereas market value tends to be destroyed in a 'race to the bottom' in the presence of poor environmental regulations.[25]

IV: From Fad to Force: ESG's Quantitative Potential

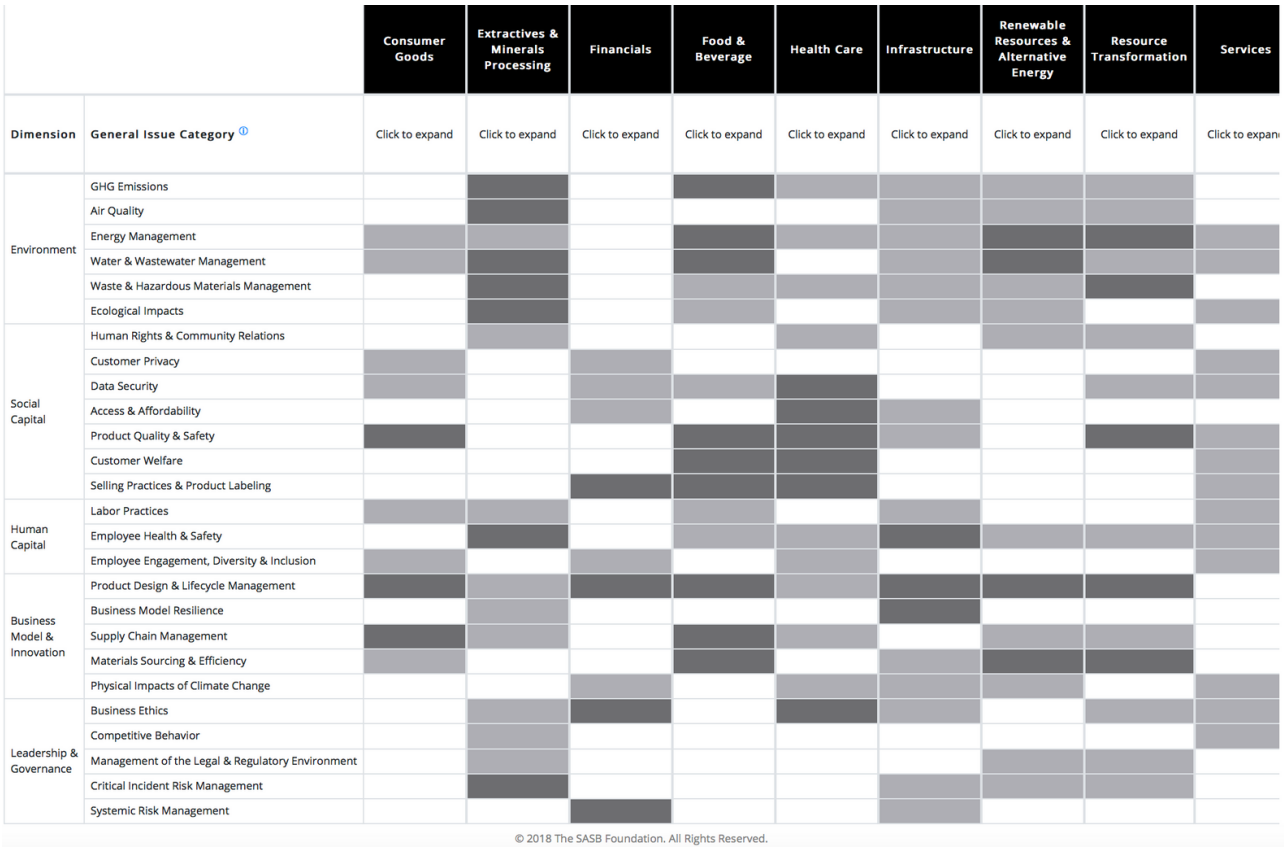
The burning question is no longer if ESG investing can create value, but how much additional value it can generate. In 2020, the ESG mantra became red hot and possibly overhyped. A flood of investors bought sustainable mutual funds or stocks that could even remotely be connected to ESG investing strategies. Investors hopped on the ESG investing bandwagon without examining these investments with the extra scrutiny that any firm referring to the ESG strategy deserves. Without regulations on the space, firms can exaggerate their ESG involvement with little repercussions. Some investors and hedge funds caught onto this mismatch in statements and corporate ESG actions, which lead to short selling of ESG stocks.[26] While ESG can truly generate additional value over the long run for companies that take it seriously, investors must be weary that the benefits of ESG investing could be overstated as it becomes an ever-popular technique.

Recognizing that ESG investments could potentially be overvalued by the market, investors have set out to quantify a worthwhile ESG premium. The quest is to quantitatively determine the extent to which ESG factors affect financial fundamentals. To become more than a fad in the financial world, ESG is in dire need of an empirical link. Could ESG one day reach quantitative sophistication? How should today's ESG data be modified to ensure that this technique is more than a fad?

The first step to refining the ESG technique is distinguishing material ESG data from the immaterial. A study by Khan, Serafeim, and Yoon (2016) clarifies why some sustainable investments are more efficient than others. As it turns out, firms should not exert significant resources on every ESG issue that comes their way. They should strategically choose the issues that are most significant given their industry classification and value proposition. For example, a company in the financial services industry should prioritize data security of its clients, while an industrials company should prioritize reducing its greenhouse gas emissions. An industrials company focusing on data security would not be a value enhancing ESG decision for shareholders. The authors of the study utilized calendar-time portfolio stock return regressions to reveal that firms that focus on material sustainability issues significantly outperform others. The authors also considered the fact that ESG value creation has a lagged effect; it takes time to turn an ESG issue into a point of value creation in a business model. Their study accounts for this by examining abnormal stock returns and changes in profitability or efficiency ratios one year later. This materiality distinction in ESG data is an essential one. In fact, it may explain why some papers studying ESG's ability to add value have statistically insignificant results. Only companies investing in material ESG issues will reap efficient rewards. Interestingly, the authors also examined performance of firms who solely focus on immaterial ESG issues. They find that

these inefficient firms do not outperform the efficient firm that strategically addresses material issues.[27] This is clear empirical support that pursuing greenwashing opportunities is value-destroying. Greenwashing, while it may have short term promotional benefits, is an intentionally poor allocation of resources from a financial perspective. For the institutional investor and the corporate manager, materiality has crucial implications for what type of data should be integrated into quantitative ESG decisions and studies. For the retail investor, materiality should change the way corporate social responsibility reports are read. To clarify this crucial concept, the Sustainable Accounting Standards Board (SASB) has published a materiality map to identify which ESG issues are salient for several industries.

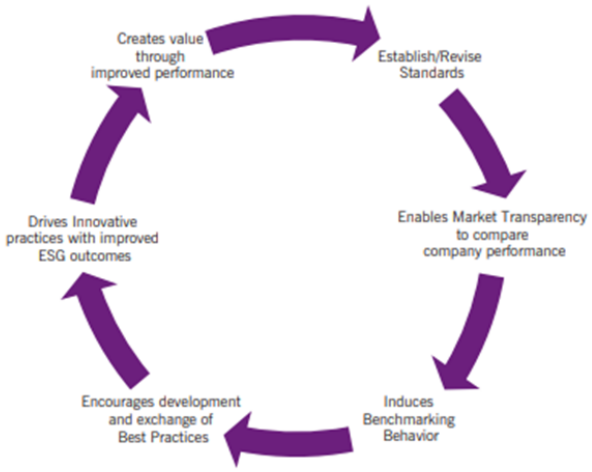
Figure 5: Materiality Map of ESG Issues by Industry



Source: Sustainability Accounting Standards Board, 2018.

It is not controversial that good data arms good decision making. Thus, an obvious first step to institute ESG's quantitative legitimacy is establishing data standards, such as the materiality map in Figure 5. Bloomberg has identified a theory of change for ESG data, which can be seen in Figure 6.

Figure 6: Bloomberg's Theory of Change for ESG Data



Source: Bloomberg

Improving data begins with implementing industry-wide standards. Once established, this set of standard ESG metrics will make ESG data comparable, consistent, and easily accessible. From this point on, the cycle of generating quality ESG data will perpetuate itself. Benchmarking

behavior, exchange of best practices, and healthy competition will motivate companies to innovate in the ESG realm. There is a lot of uncertainty in how to handle ESG issues, but keeping ESG as some nebulous, strictly qualitative concept will only perpetuate this uncertainty. Translating ESG into quantitative data will allow it to become an actionable risk. After all, it is ratios and metrics that motivate financial markets.

Treating ESG as 'non-financial' information undermines its very potential. According to a Papua New Guinea Proverb, knowledge is only a rumor until it lives in the muscle. ESG data is still being treated as rumor because analysts fail to translate it into quantitative form. A crucial next step in achieving ESG's quantitative potential is to treat it as financial information. According to Bloomberg's Curtis Ravenel and Andrew Park, "The process of bringing ESG into existence and overcoming its lack of financial legitimacy is, therefore, essentially a challenge of measurement…Therefore…ESG analytics must demonstrate itself to be fundamentally indistinguishable from mainstream financial analytics, thereby sharing a common language with the financial industry and, in time, establishing its own bona fides." To prove that ESG is a financial factor, MSCI outlines three transmission channels for linking ESG to financial fundamentals. The authors establish ESG's economic rationale through a cash channel, an idiosyncratic risk channel, and a valuation channel.[28]

The cash channel highlights that companies with strong ESG profiles are more competitive, and therefore more profitable which results in higher dividends. Logically, companies that master ESG techniques can derive a competitive advantage from their ability to efficiently allocate resources or create strategic business plans that address complex societal challenges. This competitive advantage is then leveraged to generate higher returns. The study verified each of these claims by examining profitability ratios of varying ESG-rated companies.

These companies were sorted into quintiles. Each quintile had higher profitability ratios than the one preceding it. This same pattern was distinguishable for dividend yields.

The idiosyncratic risk channel states that a strong ESG firm has better risk management practices, and therefore has a lower risk of severe incidents and a lower tail risk. Firms that have overcome ESG issue typically have a strong management team that is able to anticipate and ameliorate typical business risks and severe incidents such as fraud and lawsuits. Hoepner, Rezec, and Siegl (2017) equate this to an "insurance-like protection of firm value against negative events." This insurance against risk typically leads to less downside in stock prices. MSCI verified these patterns in data by observing idiosyncratic event frequency for top versus bottom ESG quintiles. Low-rated ESG companies demonstrated a higher frequency of risk incidents, which attests to their poor ability to mitigate business risks.[28]

The last channel most clearly links ESG factors with valuation. In the pursuit of creating a durable and risk resistant business model, high ESG performers tend to have low systematic risk exposure. For example, a company employing hydrogen-powered forklifts is immune to the fluctuating nature of gasoline or diesel fuel prices. A company with lower systematic risks is typically able to secure a lower cost of capital and therefore should have a higher valuation. MSCI verified that firms in higher ESG quintiles tend to have lower historical beta levels.

Another more controversial way to link ESG and financial data is through stranded asset valuation. Generation Investment Management proposes that assets should be valued with respect to priced-in externalities for carbon or water. Defending status quo industries such as oil and gasoline companies would then be less feasible. This is part of their broader vision for Sustainable Capitalism, which would result in stranded assets or industries that become unattractive due to this new pricing scheme.[30] While this idea seems a bit extreme, it could be viewed as similar to the

Value at Risk (VaR) concept in financial analysis. An ESG VaR metric would draw attention the lack of downside for firms with sustainable competitive advantages. Sustainable Capitalism also calls for integrated financial reporting. If ESG information is reported alongside other financial metrics in the 10-K, it would help ESG to break away from its 'non-financial' status. Along with integrated reporting, the Sustainable Capitalism vision calls for an end to quarterly earnings reports. Quarterly reporting encourages earnings management and overemphasizes the short-term investing mindset. To discourage this short-termism, firms should tie managers compensation to long-term sustainable performance metrics. Lastly, Generation Investment Management believes that ESG issues should be incorporated into business education at all levels, but especially for the CFA designation.

While ESG data is quickly proliferating, many ESG practitioners believe it should never resemble traditional quantitative trading. While quant traders make quick buy and sell decisions based off financial ratios and mathematical models, ESG quant will never be at this level. ESG information is, at its heart, a practice based on qualitative information like social responsibility. While attempts to quantify these variables are helpful for comparison and faster decision making, treating ESG as just another financial ratio in a valuation model would trivialize the information it represents. After all, ESG investors are not completely sure yet if environmental, social, and governance factors all equally translate into quantifiable variables. For instance, take the social pillar of ESG. Are we imposing a linear concept on social variables where in reality a non-linear pattern exists? In other words, is there a point where too much human capital development has decreasing marginal returns? Could scrupulous attention to quality controls hinder a company's efficiency, although its S score should technically be higher?

Another reason that ESG could never resemble a quantitative trading strategy is that ESG scores are lagged. They take time to update as a company evolves. Even still, most ESG scores function more like credit ratings, meaning that a credit downgrade happens after the market has already widely acknowledged that one is due. For example, Amazon's S score was only downgraded by Sustainalytics well after its controversies with worker health and safety during COVID-19. Lastly, treating ESG as a strictly quantitative strategy undermines the potential of ESG engagement strategies and ESG momentum. Although a company may have a low environmental score, some institutional ESG investors with a strong relationship with the company are expecting it to increase. As a result, the ESG score or data does not fully reflect future expectations, meaning an ESG trading strategy would suffer if it was *strictly* quantitative. The strategy is fundamentally a mix of both quantitative and qualitative considerations, although the advancement of quantified ESG metrics will aid with the adoption of the technique. The best ESG managers start with ESG data as the foundation for their analysis. However, they expand beyond just mere numbers with thoughtful qualitative information only derived from direct engagement with their portfolio companies.

V: What's next? Unlocking future ESG potential

ESG has a plethora of potential. However, to cement ESG as a meaningful investing technique, I propose three major changes to unlock more potential going forward. First, given the confusion and misrepresentation around the term 'ESG', it should be regulated by the SEC similar to other financial terminology. Second, the ESG technique should spread beyond an exclusive institutional investor audience. Client-focused ESG investment products are needed to raise awareness of how climate change can impact an individual investor's portfolio. Lastly, ESG investors should start investing more heavily in the energy sector.

Many individual investors looking for an impact investing product find themselves buying into ESG ETFs. However, with the lack of regulation on the ESG label, ESG ETFs can use sustainable buzz words in the prospectus while making half-hearted changes to their traditional investment strategy. This misleads individual investors, making the ESG ETF fool's gold. This mislabeling undermines ESG's potential because ESG is becoming strongly associated with poor transparency—ironically, this is exactly the kind of poor governance accountability the strategy is designed to expose. Increased regulation of ESG terminology could help rid of this negative connotation. After all, the SEC already defines and regulates numerous financial terms. If the SEC's goal is to regulate financial markets in order to protect investors against manipulation and fraud, ESG terminology should be more closely scrutinized. As of March 2022, the SEC preliminarily approved regulations on climate disclosure, but it is very likely that the regulations will be challenged in court. This means we may not see climate regulation be implemented for quite some time, but this is a step in the right direction.

The ESG investing method is built on the fundamental belief that investors influence societal change, albeit indirectly. The ESG strategy remains largely an institutional one. Individual investors, small financial advisors, and their private clients remain oblivious to how their money is being employed to generate a positive impact. Environmental impact is a topic that is especially vague for individual investors; while social and governance controversies are covered in the news, climate change is only discussed as a looming threat that lacks a cohesive, calculable response. Investment products that educate and empower investors on how to respond to ESG risks are essential for the method to broaden into the retail investing arena.

Blackrock is responding to this challenge with its new client-focused climate risk platform called Aladdin Climate. In 2019, the firm announced a partnership with Rhodium

group, a research company that combines econometrics, climate models, and data analytics to analyze the economic impact of climate change.[31] The partnership aimed to create a software that can quantify climate risk and translate it into financial impact, but most importantly to give investors actionable information on how to mitigate climate risk in their portfolios. Rhodium group analyzes historical weather data and historical economic data to create damage functions in econometric models. Thanks to an explosion in big data, researchers have information on how, for example, the economy of Fort Lauderdale, Florida reacts when a category 3 hurricane occurs. Researchers are then able to use this backwards looking data to create predictive climate models. They can estimate how increased greenhouse gas emissions creates a stronger probability of a category 5 hurricane.[32] Then, they will scale down the overall impact of a rare weather event to properly estimate how climate risk will burden local economies, making climate change a lot more personal. The Blackrock project also aims to quantify climate risk on a yearly basis, rather than just focusing on severe weather events. For example, if a city experiences 10 more days of temperatures above 95 degrees Fahrenheit, how could that impact a company's operating expenses? Many questions remain for the project, including how to estimate impacts across several asset classes. It is easy to imagine how climate risk could affect assets that are tied to a physical location (like municipal bonds, real estate, or utility companies), but how could climate risk be estimated and translated into financial repercussions for the multinational firm with mostly intangible assets? Faced with these difficult questions, Blackrock is leveraging the fact that sustainability is data-driven to create a platform for investors to understand the financial relevance of climate change. Not only is it crucial to raise awareness that climate risk is a financial risk, it is pivotal for individual investors to realize that their investment decisions

certainly influence societal change. Client-focused ESG investment products like Aladdin Climate will be crucial in allowing the ESG technique to shape retail investing.

ESG should influence how capital is allocated in battling climate change. To do this in an effective and timely manner, ESG strategies should actively invest in the energy sector. This industry is traditionally excluded from green funds as part of an initial screening technique. This is incredibly paradoxical; the very sector propelling the transition towards a lower carbon economy is not even considered by ESG portfolios. Many have the opposite view that including an industry plagued by greenhouse gas emissions in a green portfolio would be counterintuitive. However, this short-sighted perspective overlooks a myriad of investment opportunities arising from the slew of research being dedicated towards green energy innovation. A recent study (Cohen et al. 2021) begs the question: when will the energy sector be seriously considered by ESG investors? The study examines green patenting activity and finds that the energy sectors has nearly 3 times the relative focus on green innovation than the average industry. Out of the top 50 green patent producing companies, 14% of them are energy names.[33] The top green patent firms are Exxon Mobil, Honeywell International, Royal Dutch Shell, BP, and Conoco Phillips. One might propose that these are likely the largest green patent producers because they are mature firms with plenty of cash reserves for all types of innovative research, but even after controlling for these differences, energy firms still produce the most green patents. Another objection: what if these firms are engaging in an unnecessary amount of patent production just so they seem involved in strategic green patenting for marketing purposes? The authors drilled into the data to see if the green patenting activity was frivolous but find evidence that the green patenting by energy firms is heavily focused on climate change mitigation. Firms with several green patents should likely have higher ESG scores, but this is not the case. In fact, through empirical analysis

the study concludes that an additional green patent is associated with a lower ESG score for an energy company. Perhaps this is warranted though, since only a small percentage of patented technology will become commercially valuable. Many firms patent technology unnecessarily just in case the technology becomes successful. The authors instead turned toward measuring patent quality, via the number of citations each green patent received. The regression includes a dummy variable that equals one if the number of green patents citations for a company was in the 95th percentile for that year. On average, energy firms' green patents have 9% more citations than green patents belonging to other industries. Additionally, energy firms are 12% more likely to produce a blockbuster green patent. It is certainly not that there is a lack of quality green patents in the energy sector. Yet, energy firms still demonstrate a negative relationship between green patents and ESG scores. This is unique to the energy industry as a positive association was found for other sectors, which suggests that the energy sector receives less credit for each additional quality green patent in terms of ESG scores. This could be an error in the ESG scoring methodology. One might then conclude that ESG scores are not exactly calibrated to direct capital towards companies that are most likely to help solve the climate crisis. Maybe the lowered ESG scores of the energy sector are a result of the negative association of the entire sector as a large contributor to pollution. If so, then this highlights the nature of ESG scores as backward looking instead of forward looking. Sophisticated ESG investors looking to invest in the climate change leader of tomorrow must look beyond ESG scores then to reap opportunities for ESG momentum. After examining that energy firms are most likely to produce blockbuster green patents, it is puzzling why ESG funds are significantly less likely to hold energy firms than traditional funds. If the ESG funds do hold energy names, they are usually significantly underweight relative to the benchmark. This would imply that traditional funds, not ESG

oriented ones, are more likely to reap the rewards of this green research. Reversing this paradoxical reality would bolster ESG as a legitimate form of investing with purpose. It is pivotal that ESG investors begin to seriously consider the energy sector, while the investable opportunities are still ripe. After all, time is of the essence when speaking of climate change.

In the controversial 1972 MIT paper titled 'Limits to Growth' , Jay Forrester employs computer models to estimate various societal outcomes if the demands of economic growth came face-to-face with finite resources and pollution. One of the outcomes is a doomsday collapse in which the world experiences dramatic declines in food production, environmental conditions, the population, and economic output. Gaya Herrington, a sustainability analyst at KPMG, decided to check if this old model stood the test of time against empirical observations.[34] She finds that current data aligns well with the model's predictions. The model was right on target. Economic growth could slow, and economic collapse would be eminent around 2040 if current growth trends and pollution hold. But, according to Herrington, there is still hope. There is still time to transition to the scenario that does not end in collapse by embracing that economic growth in the future must be sustainable.[35] Society has faced similar scares in the past, such as resource scarcity in the '70s and worrisome population growth in the '90s, but these issues were overcome through innovation and societal adaptation. The issue that should be front and center on the agenda now is climate change, with a critical focus on the changes necessary to achieve sustainable economic growth.

ESG investing is a pivotal tool to help shape what sustainable economic growth will look like. After regulating ESG terminology, spreading into the retail investing space with ESG investment products, and more seriously investing in the energy sector, ESG investing can transform from a mere fad investing strategy into a society-changing force.

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Tables

Table 1: Results of Sustainalytics ESG Scores

The following table reports the results of a standard t-test of the distributions of ESG scores for the top ten holdings of sustainable versus traditional mutual funds. Panel A reports summary statistics of the total sample size, which is 52. Panel B reports the two-sample t test results assuming equal variances.

Panel A: Summary Statistics		
	Sustainable	**Traditional**
Mean	76.1	73.6
Variance	598.6	760.9
Observations	25	27
Pooled Variance	683.0	
Panel B: T-Test Results		
Hypothesized Mean Difference	0	
df	50	
t Stat	0.338	
P(T<=t) one-tail	0.368	
t Critical one-tail	1.676	
P(T<=t) two-tail	0.737	
t Critical two-tail	2.009	

Table 2: Results of MSCI ESG Scores

The following table reports the results of a standard t-test of the distributions of ESG scores for the top ten holdings of sustainable versus traditional mutual funds. Panel A reports summary statistics of the total sample size, which is 52. Panel B reports the two-sample t test results assuming equal variances.

Panel A: Summary Statistics		
	Sustainable	**Traditional**
Mean	63.5	58.3
Variance	206.2	399.9
Observations	25	27
Pooled Variance	306.9	
Panel B: T-Test Results		
Hypothesized Mean Difference	0	
df	50	
t Stat	1.06	
P(T<=t) one-tail	0.146	
t Critical one-tail	1.675	
P(T<=t) two-tail	0.293	
t Critical two-tail	2.009	