

# SFI Public Discussion Note

## Sustainable Finance in a Shifting World Order



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With its Public Discussion Note series the Swiss Finance Institute (SFI) is actively promoting a well-founded discussion of topics relevant to the financial industry, politics, and academia. Furthermore, SFI disseminates its findings through research, publications, Master Classes, and conferences.

# 1 Motivation and Overview

The last three years have seen two "black swan" events. First, the outbreak of a pandemic. Second, the outbreak of war in Europe. Both events have caused and still cause immense and unnecessary human suffering and have changed and are changing the way we live. But that's not all the bad news. In the first half of 2022, the specter of inflation appeared in an intensity not seen in more than a generation; a recession is looming—or has begun. Climate change is becoming ever more apparent; massive migration, with severe consequences for many countries, is bound to happen. China is taking an increasingly assertive stance in international relations; countries and global companies can expect to find themselves in a new situation. While there is always change in the world, it certainly feels like the world order is shifting particularly fast these days. Granted, some positive changes are happening as well, not least through scientific and technological advances. When it comes to the issues that are the focus of the United Nations Sustainable Development Goals, in particular, there has been progress on many dimensions.<sup>1)</sup> But preserving and continuing this progress is a challenge. These days, the song "What a Wonderful World," made famous by Louis Armstrong, seems difficult to sing with unabated joy.

The key question is *how* do we make the world a "wonderful" place? Individual efforts surely are essential, as are the right policy frameworks, and finance should play a central positive role in supporting both. Finance is about allocating resources in the economy, and addressing the challenges we face—from climate change to clean water, from gender equality to education, from poverty to health—requires sufficient resources.

A piece of good news, at least at first glance, is that sustainable finance has recently become a major trend in capital markets.<sup>2)</sup> Figure 1 provides four different perspectives on this trend, looking at investments that consider environmental, social, and governance (ESG) factors in portfolio selection and management, broadly defined, from 2016 to

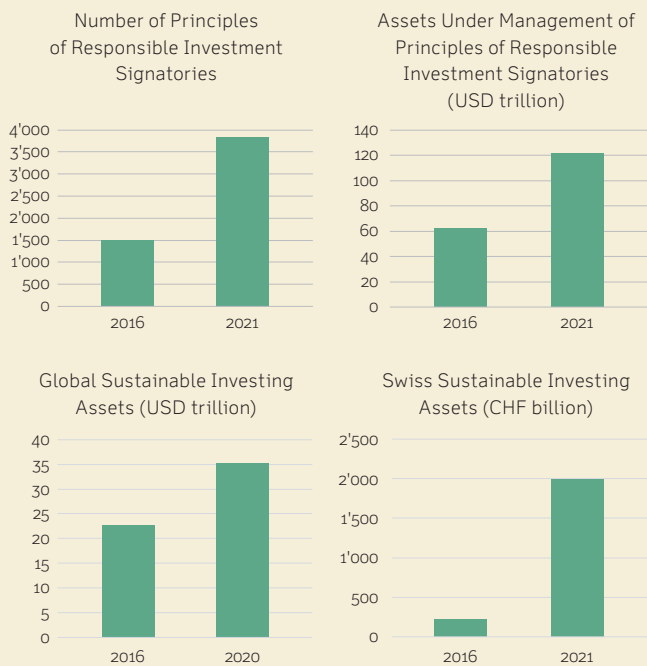
2020/21. The Principles for Responsible Investment (PRI), established by the United Nations in 2006, was signed by 63 investors managing a total of USD 6.5 trillion at the time. In 2016, PRI had 1'501 signatories managing USD 62 trillion and, by the end of 2021, its numbers had grown to 3'826 investors, representing USD 121 trillion. (Of course, not all of their assets are sustainable investments.) The Global Sustainable Investment Alliance (2021) estimates that in 2016, sustainable investments totaled USD 23 trillion, and in 2020 (the most recent year in the study), they amounted to USD 35 trillion. In Switzerland, sustainable investment increased in total volume from CHF 41 billion in 2011, to CHF 215 billion in 2016, and to CHF 1'983 billion in 2021 (Swiss Sustainable Finance, 2022). A staggering 53% of the total funds market of Switzerland is now considered to be sustainable.

These numbers do not mean that such enormous amounts of money are invested to actually achieve more sustainable development. Both globally and in Switzerland, impact/community investing makes up only a very small portion of sustainable investing; the vast majority of such investments are based on ESG integration and negative/exclusionary screening, followed by corporate engagement and shareholder action. Put bluntly, the trillions invested in "sustainable" assets are mostly targeted to achieve returns for investors—not to deliver positive impacts on the planet. Moreover, sustainable investing is not always a success: Many such strategies performed poorly in the first half of 2022. Almost by construction, they missed out on the energy-stock rally and, at the same time, experienced losses by being overweight in technology stocks, which took a major hit.

1) See <https://sdg-tracker.org/> for a list of measures for the Sustainable Development Goals.

2) Philosophically, one might argue that it would be even better if sustainable finance were not needed. Its emergence could be seen as bad news, in the sense that it arose because of bad outcomes and a failure to control externalities.

**Figure 1: Growth in Sustainable Investing**



Sources: Global Sustainable Investment Alliance (2021), Principles for Responsible Investment (2022), and Swiss Sustainable Finance (2022)

These fluctuations in the value of sustainable investments may be temporary; more important is the fundamental critique sustainable finance has received. Long-time insiders—such as Tariq Fancy (the former Chief Investment Officer for Sustainable Investing at BlackRock) and Stuart Kirk (the former Global Head of Responsible Investing at HSBC Asset Management)—have criticized it as being, for lack of better terms, both irresponsible and unsustainable. The Economist (2022) launched a blistering critique, calling ESG investing "a broken idea." Anecdotes abound of companies receiving high ESG scores, despite what common sense would consider their unsustainable behavior. Robert Eccles, a leading authority on integrated reporting and corporate sustainability, is quoted in the Harvard Business Review as saying that "we would be better off if ESG investing would just go poof" (Pucker & King, 2022). Especially in the US, a veritable anti-ESG movement has emerged.

In light of the major crises we face—most recently the COVID-19 pandemic and the Russia-Ukraine war—and of the criticism leveled against sustainable



finance, it is time to take stock and reassess. Can we expect the trends in sustainable investment to continue or even to accelerate in the coming years? Will they pause or even reverse themselves as other, more immediate needs become more important? Are corporate responsibility, on the one hand, and investor focus on ESG quality, on the other hand, luxury goods? Or does sustainable finance become particularly relevant in times of crisis?

To derive evidence-based conclusions—or at least to inform the debate with well-founded analyses—this Public Discussion Note draws on the most recent research. It indicates gaps in academic knowledge and particular practical challenges. Two limitations must be made clear at the outset. First, this Note is written at a dramatic and volatile time, but it is not a news commentary. It attempts to distill insights, or at least raise questions, of lasting interest. Second, this Note cannot cover everything that deserves to be covered in a comprehensive review. It focuses on public equity markets (largely due to available data), although private markets clearly play a major role in funding sustainability projects. It briefly looks at banks, but surprisingly little research exists on their role in sustainable finance. It does not discuss microfinance, green bonds, impact investing, or household decisions. It focuses on the environmental ("E") and a few of the social ("S") aspects of ESG, although governance ("G") is equally important.

This Note proceeds as follows: Section 2 discusses what we know about the long-run, or average, pricing of sustainability. Section 3 considers whether sustainability criteria help identify companies that are resilient to crises. Section 4 suggests ways in which finance could play a positive role in making the world more sustainable, with some caveats. Section 5 concludes.

The seven key findings are as follows:

1. **Results regarding the pricing of sustainability by equity investors and debt providers are disparate, but it is clear that some investors value the sustainability, responsibility, and integrity of firms.** Given such preferences, sustainable investments should have lower returns in the long run, but further shifts in preferences could lead to at least temporary outperformance.
2. **Certain types of screening identify low-risk sustainable assets, but a portfolio combining such assets may exhibit a relatively high risk due to loss of diversification.** As such, giving attention to whether an individual sustainable investment outperforms others is incomplete. Taking a portfolio view is essential.
3. **Existing ESG scores do not reliably identify companies that are resilient against all crises.** While some evidence suggests that firms scoring high in some ESG ratings did well at the onset of the COVID-19 crisis, ESG scores do not explain global stocks' performance in the days following the outbreak of the Russia-Ukraine war.
4. **An analysis of investor reactions to political events is consistent with the view that sustainable finance is a productive response to governmental and policy failures.** This finding contradicts the claim that sustainable finance is merely a dangerous placebo slowing down hard policy choices, especially in the realm of climate policy.
5. **The initial stock price reactions to the Russia-Ukraine war suggest that investors expected the transition to a low-carbon economy to slow down significantly in the US and to remain steady or speed up in Europe.** It remains to be seen whether the recently passed US Inflation Reduction Act can undo this problematic divergence in the speed of the transition.

6. **Effective sustainable finance requires both channeling of capital and application of voice, that is, engagement with companies.** It is a dangerous misconception to think that the boom of ESG investing, per se, means that trillions of Dollars, Euros, Swiss Francs, etc. are being employed to finance the transformation to a more sustainable economy. Banks can play a productive role, but while some provide cheaper financing to "green" firms, others give "brown" firms more attractive access to funding.
7. **While sustainable finance has led to some progress, there can be large-scale trade-offs for society.** While much discussion has focused on "fossilflation" (the increase in energy prices and, therefore, general inflation as fossil fuels become scarce), more emphasis on a green economy may also lead to higher inflation ("greenflation"). Policy-makers will need to balance these trends and keep in mind that inflation hits the most vulnerable members of the population the hardest.



### What Is Sustainability?

Before we delve into the promises and perils of sustainable finance, it is worth stopping to ask: What is sustainability? This box gives a conceptual answer to the question and then points to concrete operationalizations. Of course, there is no uniformly accepted definition of sustainability. Even starting points differ. Some theorists come at the issue from a moral perspective, some from the perspective of impact, some from an economic one. Accepting that multiple perspectives are necessary, this Note takes an economic approach.

With its 1987 report, "Our Common Future," the Brundtland Commission (World Commission on Environment and Development, 1987) placed sustainability on the international political and scientific agendas. It proposed the widely embraced definition that "*development is sustainable when it meets the needs of the present without compromising the ability of future generations to meet theirs.*" While intuitive, this definition, with its emphasis on intergenerational equity, lacks a requirement for economic efficiency. Put bluntly, constant consumption—at no more than a subsistence level—could satisfy the Brundtland Commission's definition. Yet surely subsistence-level living would not be accepted as meeting reasonable social goals for public policy or the financial goals of corporations.

In Stavins et al. (2003), we argue instead that sustainability requires both intergenerational equity (as per the Brundtland Commission's definition) and dynamic efficiency, that is, a consumption path which places the economy on the "Pareto frontier," meaning that no resources go to waste. This definition, too, has limitations in practice. Ideally, it requires policy and corporate actions to seek actual Pareto improvements, which make everyone strictly better off. Unfortunately, such possibilities are very rare or indeed non-existent.

Therefore, we apply an analogy. In a typical policy analysis, the world is viewed as being made better off if the magnitude of gains and the magnitude of losses are such that the gainers can fully compensate the losers for their losses and still be better off themselves—a so-called *potential* Pareto improvement. This focus on potential, rather than actual, Pareto improvements leaves to the political arena the allocation of net gains among individuals and, hence, the resolution of disputes regarding distributional equity. We can apply an analogous approach to sustainability debates. In theory, it may be argued that sustainability is ultimately the most desirable policy goal. But in practice, it may be more reasonable to aim for *potential* sustainability in the form of dynamic efficiency. An economy that fulfils the criterion of dynamic efficiency can, in principle, be made fully sustainable by appropriate intergenerational transfers. Ideally, the assessment of efficiency is done using an all-encompassing social welfare function; there have been attempts at this ("green accounting", for example).

Using our definition, a company or a financial transaction contributes to sustainability if it either 1) supports intergenerational equity, or 2) helps society to use resources in a more efficient way. Traditionally, such actions have been taken most visibly in the environmental domain ("E"). In recent years, social concerns ("S") have come increasingly to the fore. And it is clear that poorly governed companies ("G"), or companies that engage in practices that lead investors to misallocate resources, such as earnings misrepresentation, cannot make efficiency-enhancing decisions. As such, sustainable finance can be understood as the study and practice of financial decision-making that integrates environmental, social, and governance (ESG) issues.

## 2 Are Sustainable Firms Rewarded by the Market?

One way to assess the role of sustainable finance is to see whether different assets or companies receive different valuations depending on their contribution to sustainability. Fundamentally, a firm's value derives from its expected cash flows and discount rates; sustainability can thus have a positive effect on the firm's value by increasing the former, decreasing the latter, or both. Non-fundamental factors, such as non-pecuniary preferences, might also increase demand for certain assets. It can be hard to distinguish fundamental factors from non-fundamental ones. Societal or political shifts, even when driven by purely emotional factors, can have a real impact on a firm's expected future cash flows. As such, they could be mapped onto the standard, fundamental valuation framework.

Two basic observations are in order here: First, some investors appear to be under the impression that, even in the long run, an investment can have both a high price and high expected future returns. But a higher price today implies—and will result in—lower expected returns, in equilibrium, going forward. Second, if investors price the potential effect of sustainability for a firm correctly, then no ex-post outperformance of sustainable investing should be realized.

### 2.1 The Pricing of Sustainability

This Note can only briefly discuss what we know about the long-run, or average, performance of sustainable investments.<sup>3)</sup> Sustainability has many dimensions, and the literature on how it is priced is enormous. In recent years, for example, we have seen a flurry of research papers on how investors perceive the value of firms that are more, or less, exposed to climate change.<sup>4)</sup> Much of that literature

takes carbon emissions as a proxy for exposure to climate change—in particular, for the so-called transition risk, that is, the set of corporate risks that derive from regulation supporting the transition from a fossil-fuel-reliant economy to a lower-carbon economy. Some studies find that the stocks of firms with higher carbon emissions, which presumably are bearing higher transition risk, indeed earn higher returns (Bolton & Kacperczyk, 2021). But other studies find the opposite (In et al., 2017; Cheema-Fox et al., 2021). A broader analysis of "green" vs. "brown" firms finds that green has outperformed brown over the last decade (Pástor et al., 2022). In other topics (such as the pricing of diversity), there are also somewhat diverging results.

When we turn to debt financing, things are even more complicated (or intriguing, depending on your viewpoint), because companies can finance themselves with either bonds or bank loans or a combination of the two. Duan et al. (2022) find that, while bonds of more carbon-intensive firms are riskier, they actually earn lower returns. They argue that this result is explained by the underreaction of investors to the relation between carbon-intensity and fundamental performance. However, Degryse et al. (2022) find that green firms borrow at a lower spread, and Beyene et al. (2021) document that the bonds of firms with a higher risk of having stranded fossil fuels—computed as a combination of the quantity of fossil fuels a firm holds within a country and that country's potential willingness to implement a stricter climate policy—are issued at a higher yield. Interestingly, Beyene et al. (2021) also find that the loan rates on syndicated bank loans do not differ among firms with different exposures to fossil fuels,<sup>5)</sup> and that big banks appear especially willing to provide cheaper financing to fossil fuel firms.

It is too early to tell what might be behind this phenomenon, if it is proven to be robust—a challenging task, given the wide variety of factors that determine bank loan rates and the possibility of cross-selling, etc. For example, big banks may be better diversified (and so can handle the risk); it is also possible that their senior managers, typically

3) Recent surveys of the literature are Matos (2020) and Kräussl et al. (2022).

4) The implications of climate change for firm value and the economy have still to fully materialize, in terms of both physical consequences and societal reactions. Indeed, many observers believe they are currently underestimated in asset prices (Stroebele & Wurgler, 2021).

5) Studying loan rates in detail, Delis et al. (2019) find that firms with more fossil fuel assets pay higher loan spreads if climate policy is stringent enough, and increasingly so after the Paris Agreement of 2015.



having grown up with more traditional mindsets, do not pay as much attention to climate change.

Reports of equity market outperformance by green, responsible, diversity-focused, or otherwise "good" investments are often accepted as "natural" by those in favor of sustainable investing. However, from an economic perspective they can be puzzling. Consider again the example of green investments. In principle, green assets should have lower expected returns than brown ones for two reasons (Pástor et al., 2021). First, investors with a preference for green investments are willing to hold them even if they offer lower returns. Second, green assets are a better hedge against environmental risks. However, green assets can have higher realized returns when agents' demands shift unexpectedly in the green direction.

While this is only a cursory overview, there are several takeaways from these and other studies. First, when assessing sustainable investments, investors have to take a stance on whether they believe that the market already incorporates the full (or even an exaggerated) value of sustainability into the share price or not. By and large, smaller, less liquid, less-followed firms are more likely to exhibit somewhat less than fully efficient pricing, but, unfortunately, there is no way to tell in any given circumstance.

Second, how to measure the underlying variables is a key difficulty. Recent research finds, for example, that the carbon emissions disclosed by companies are not associated with returns, whereas the emissions estimated by data vendors are (Aswani et al., 2022). This finding is intuitive, given that the estimation of carbon emissions often uses factors that are themselves associated with stock returns. In short, investors should be careful when using estimated carbon emissions data; they may simply be picking up other firm characteristics.

It is also well known that ESG ratings differ across rating providers (Berg et al., 2022; Chatterji et al., 2016), and the uncertainty about ESG performance is priced in the market (Gibson Brandon et al., 2021).<sup>6)</sup> Promising developments here are due to the application of textual analysis, including machine-learning techniques. For example, recent work using textual analysis has developed proxies for the exposure of firms to climate change, in terms of physical risk, transition risk, and opportunities (Kölbl et al., 2022; Sautner et al., 2022). Other work using text as data has constructed proxies for employee satisfaction (an "S" element), and many other applications are conceivable.

Third, and very importantly, almost all of the reviewed work concerns the performance of individual stocks or assets. What matters for most investors, however, is how sustainable investing performs in a portfolio context.

## 2.2 A Portfolio View

That a portfolio-level view can yield additional considerations, compared to the single-investment view, is best illustrated with investments in climate-friendly stocks. In Ceccarelli et al. (2022), we collect data on the empirical performance of approximately 10'000 European and US mutual funds, as well as data on their underlying individual equity holdings. We merge the funds data with the Morningstar "carbon risk" scores, leading to a sample of about 6'000 funds. According to Morningstar and Sustainalytics, who originally developed this measure, the firm-level carbon risk score quantifies a company's exposure to, and management of, material climate transition risk. (The measure does not aim to reflect a portfolio's exposure to extreme weather events, which are likely to impact the firms' assets and operations and, hence, to cause significant losses for investors.)

6) For more details on sustainability metrics, see the corresponding SFI Public Discussion Note from October 2021.

Using these data, we obtain the results displayed in Figure 2. Panel A shows that investment funds with lower carbon risk scores have holdings that are, on average, less risky. Not displayed, but also true, is the fact that low-carbon-risk stocks do better when there is bad climate news. Thus, they provide a hedge against climate risks.

Strikingly, however, Panel B shows that the total portfolio risk is *not* lowest for the funds with the lowest carbon risk. How can the seemingly contradictory results of these two panels be reconciled?

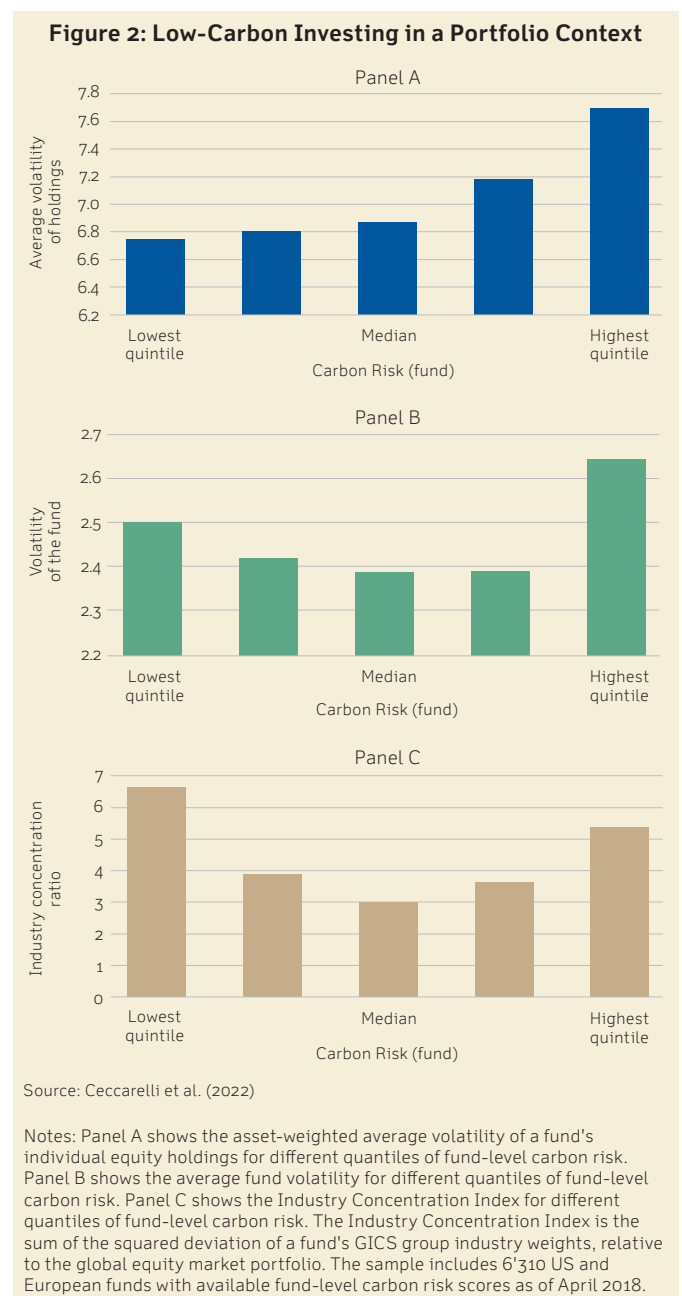
Panel C provides the answer: The funds with the lowest carbon risk have the highest industry concentration ratio; that is, they are the least diversified. They have systematically lower exposure to certain sectors.

A few comments are in order here. First, efforts are being made to find ways of investing in low-carbon assets while retaining as much diversification as possible. That is, these figures do not say that every low-carbon-oriented fund has low diversification. But they do point to an empirical, not merely theoretical, regularity in the data.

Second, while the effects are particularly striking in the case of low-carbon investing, they apply, in principle, to other ESG investments as well. The extent to which they apply depends on exactly which criteria an investor uses to select investments. Specifically, for sustainability criteria that are based on a "best-in-class" approach, the investor will end up holding all industries and will, therefore, not suffer from reduced diversification. However, such an investor will then also hold industries that may, in aggregate, be considered "dirty" or "bad."

Third, this less-than-optimal diversification is a problem only as long as the market portfolio remains as it is now. If, as some proponents of low-carbon investing predict, the value of high-carbon assets diminishes dramatically over time, leaving these assets aside would no longer entail a major loss of

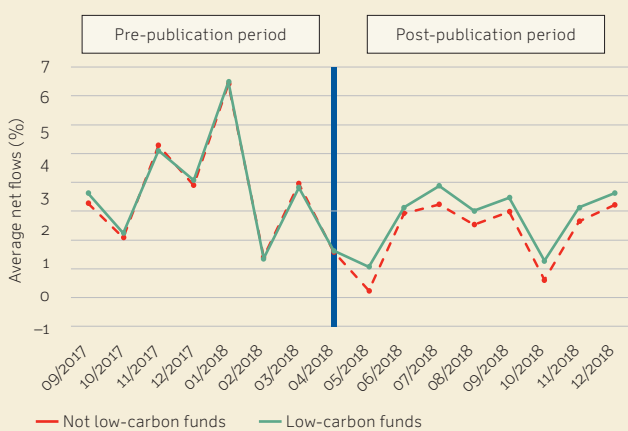
diversification. Conversely—as many sustainability investors painfully experienced in the first half of 2022—when "brown" assets appreciate in value, then underdiversification by investing in sustainability effectively results in underperformance.



### 2.3 Investor Preferences

Despite the disparate evidence on stock prices—which reflect the trading decisions of the so-called marginal, often highly sophisticated, investors, not necessarily the majority—the evidence is quite clear that a wide range of investors hold a preference for sustainability. For example, when Morningstar released its low-carbon designation (LCD) in April 2018, mutual funds that received the designation experienced a sizable boost in net flows; LCD uses both the carbon risk, mentioned above, and a measure of the fossil fuel involvement of the underlying assets. Figure 3 illustrates this point for European funds. In the 8 months following the release of the LCD label, low-carbon funds received additional net flows of approximately 2% of assets under management. To calibrate, such added flows would require, everything else being equal, a performance 1.6 percentage points higher in terms of monthly returns. In other words, sustainability was clearly a value for these fund investors.

**Figure 3: Net Flows of Low-Carbon Mutual Funds**



Source: Ceccarelli et al. (2022)

Notes: This graph shows the equally weighted average monthly net flows of funds designated as "low carbon" at the end of April 2018 (solid green lines) and conventional funds (dashed red lines) domiciled in Europe, from September 2017 through December 2018. The Low Carbon Designation was introduced at the end of April 2018.

A deeper analysis reveals that, while investors on average like to invest in low-carbon funds, they do so particularly when the fund has a low portfolio risk overall (meaning that the fund's managers have been able to retain relatively good diversification). Moreover, Ceccarelli et al. (2022) also find that while fund managers decreased their high-carbon holdings after the release of the new carbon risk scores by Morningstar in April 2018, that behavior was most pronounced when it led to the smallest losses in diversification. These findings emphasize the importance of considering the entire portfolio, rather than individual assets, when it comes to sustainable investments.

This study and others that rely on archival data do not observe the investors' preferences directly; here, experimental research can provide additional insights. The literature suggests that some investors invest with firms high in ESG performance because they hold environmental and social values, whereas others invest with high ESG firms to lower their investment risk or to comply with an insurance motive (Jansson & Biel, 2011; Zolotoy et al., 2019; Riedl & Smeets, 2017). This finding also applies to other types of firm sustainability, for example, ethical integrity. Gibson et al. (2022) find that participants perceive a CEO to be more committed to honesty when they infer that the CEO is engaged less in earnings management. For investment decisions, having a CEO who is perceived as more committed to honesty reduces the relevance of differences in that CEO's claimed future returns from those of another CEO. This effect is most prominent among investors who primarily care about their own welfare. To investors who also care about how their choices affect others, their own honesty values and those attributed to the CEO matter directly, while returns only play a secondary role.

These results suggest that motives related to sustainability, responsibility, and even ethical integrity are not a niche concern for norm-constrained investors, but instead matter to different categories of investors for distinct reasons.

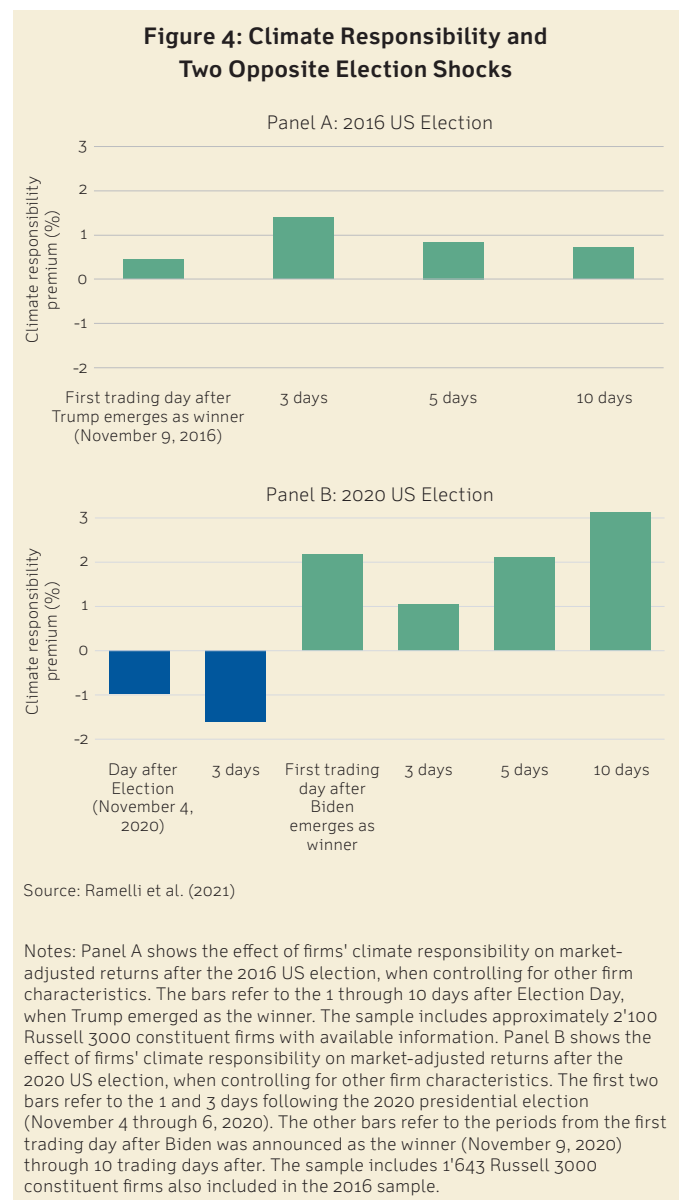
## 2.4 A Placebo or a Productive Response?

Some commentators argue that sustainable finance is a dangerous placebo slowing down hard policy choices, especially in the realm of climate policy. Others posit that sustainable finance is endogenously created by and a productive response to (hopefully short-term) governmental and policy failures.

To illustrate how research on sustainable finance can shed light on these issues, consider climate-responsible investing around the time of the US elections in 2016 and 2020. Climate responsibility here includes firms' future-oriented strategies and their voluntary initiatives to prepare for the transition to a low-carbon economy, such as the adoption of ambitious emission reduction targets and green investment plans.<sup>7)</sup> After the surprise election of Donald Trump in 2016, climate-responsible stocks did better than their peers; see Figure 4, Panel A. This result runs counter to what we might expect to see when a clearly climate-change-skeptical administration enters the White House.

To explain this puzzling climate responsibility premium, we propose the "boomerang hypothesis" (Ramelli et al., 2021). This explanation holds that investors, and especially those oriented toward the long term, expected the rollback in climate regulation during the Trump administration to be transitory and to pave the way for a much more ambitious long-term climate policy than would have prevailed absent the Trump shock. Consistent with this prediction, climate responsibility was a key driver in stocks heavily held by long-term investors (identified by their trading patterns). By contrast, in stocks heavily held by short-term investors, carbon intensity played a bigger role for stock-price reactions.

7) Note that the current environmental footprint (proxied by greenhouse gas emissions intensity) and the future-oriented climate responsibility of firms is only weakly correlated, indicating that these two measures capture different dimensions of a firm's climate performance. This observation is important because recent disclosure requirements focus mostly on current emissions.



The presidential election of November 3, 2020 provided a test of the boomerang hypothesis. This election pitted two very different visions for America and the world against each other, with particularly dramatic differences regarding climate and environmental policy. Interestingly, the election effectively provided two events for the price of one: First, just before the election, Biden was widely

expected to win. However, Trump's showing in the election was stronger than expected. Indeed, in the 3 days immediately following the election, no major news network called the election race for either of the two candidates. Consistent with the surprising possibility of a Trump victory, climate-responsible stocks fared poorly during these 3 days. Second, on the weekend of November 7 and 8, all major networks finally called the election for Biden. Consequently, from Monday, November 9 onward, climate-responsible stocks performed strongly; see Figure 4, Panel B.

While the Biden administration initially ran into roadblocks implementing its ambitious climate policies, in late summer 2022 major progress occurred with the passage of the Inflation Reduction Act. This bill includes significant funding for the

transition to a low-carbon economy. It weaves together a vast array of tax credits, loan guarantees, and grants, seeking to encourage people to make low-carbon purchases, such as of electric cars, and to encourage businesses to invest in green technologies. It also does contain provisions that will likely lead to more drilling for oil and gas; it therefore does not shut down the carbon-emitting part of the US economy. Arguably, however, the boomerang has arrived.

The fact that long-term investors rewarded climate responsibility right after the Trump election in 2016 can be interpreted as a call to action for governments to accelerate the energy transition. This evidence suggests that sustainable finance is not slowing down policy, but is instead a response to policy failures.



## 3 Are Sustainable Firms More Resilient to Crises?

A company's high degree of sustainability, rather than adding value on average, may become particularly valuable in crisis situations. The idea here is that customers and employees may trust sustainable companies more, and trust is at a premium in times of crisis. If true, sustainable finance plays a positive role in society by channeling funds to firms that can best withstand crises—surely a desirable goal. This argument is informed by past experience. Lins et al. (2017) find that during the 2008-2009 financial crisis, for example, companies with high ESG scores did better than those with lower scores. The two recent crises, the COVID-19 pandemic and the Russia-Ukraine war, provide valuable, if unfortunate, opportunities for further testing this argument. In both cases, stock price reactions can be used to assess investors' perceptions of a firm's resilience. These assessments are also of value to corporate decision-makers, as they consider adjusting their environmental, social, and governance actions.

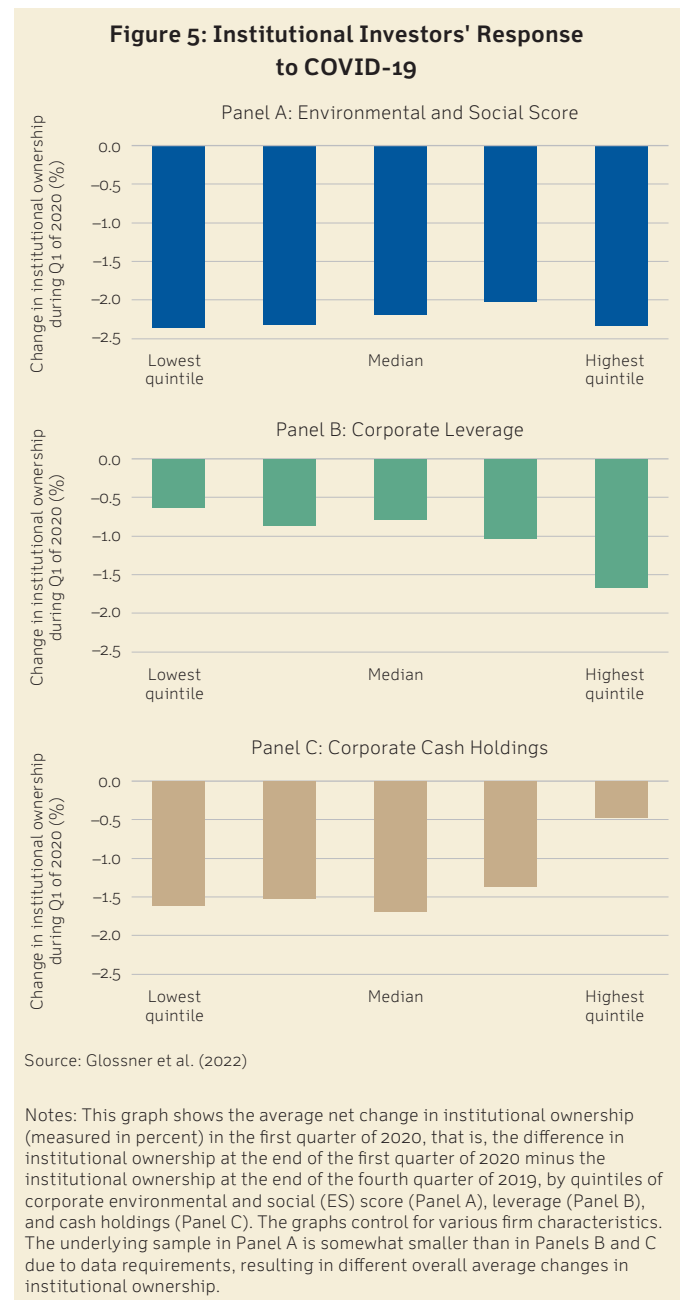
### 3.1 COVID-19

The COVID-19 pandemic brought about a major shock to a wide range of companies. Naturally, different industries were affected differently. These between-industry differences intuitively reflect the different degrees of disruption in the firms' operations caused by social distancing and lockdown measures (Pagano et al., 2020). From the end of February 2020 to the end of March 2020, what Ramelli and Wagner (2020) labeled the "Fever Phase" of the crisis, concerns about corporate leverage and liquidity played an especially important role. Within the same industry, and controlling for standard firm characteristics, highly indebted firms suffered severely during the Fever Phase, while high-cash firms performed relatively better. From a systemic perspective, the surge in the value of cash also suggests that, as the crisis unfolded, investors became increasingly concerned about a tightening of firms' access to external finance. In that sense, high cash and low debt played a role in the sustainability of the economy.



Besides such "hard" factors as the degree of exposure to lockdown measures, financial strength, and reliance on international trade, at first sight some "softer" factors were perceived to play an important role. For example, Albuquerque et al. (2020) document that stocks of firms with high environmental and social (ES) ratings fared better during the market turmoil. Garel and Petit-Romec (2021) confirm this result and find, interestingly, that it is the environmental responsibility dimension in particular that appears to explain investors' responses.

These findings, however, have been subject to criticism. First, Demers et al. (2021) argue that, when controlling for measures of intangibles, ESG scores do not remain significant determinants of stock returns during the crisis. Second, given the well-known discrepancies between ESG ratings, it is important to check robustness for different measures. Bae et al. (2021) argue that the Albuquerque et al. (2020) findings do not hold when other ESG measures are used. A different perspective on the matter can be gained by considering changes of institutional investor holdings in the first quarter of 2020. An analysis of these changes suggests that institutional investors mostly focused on hard measures of financial resilience and did *not* noticeably increase their stakes in high-ES firms (suggesting that retail investors may have been responsible for the strong performance of those companies). This analysis is illustrated in Figure 5, which shows the change in institutional investor ownership (measured in percent) in different groups of companies. Each panel uses a different sorting variable: Panel A uses the ES score, Panel B uses leverage, and Panel C uses cash holdings. As can be seen, when the crisis unfolded institutional ownership decreased in all groups, on average, as institutional investors reduced their equity exposure. Moreover, Panels B and C illustrate that institutional investors were more prone to sell low-cash and high-debt companies. By contrast, the ES scores do not explain institutional investor trading.<sup>8)</sup>



8) See Glossner et al. (2022). Institutional investors, incidentally, did not act as a stabilizing force in COVID-19. Instead, it appears that they engaged in fire sales.

Overall, the evidence that ESG characteristics promote crisis resilience is mixed at best, when based on the existing ESG scores. This result is particularly puzzling, as we would expect the "S" dimension to play a major role in a crisis such as COVID-19. Early evidence, however, suggests that taking a more granular approach may help. For example, in Howe et al. (2022) we explore how CEOs acknowledged human costs at the onset of the COVID-19 crisis in earnings calls with financial analysts, and then how that acknowledgement of human costs relates to their companies' stock returns. We discover that, while most CEOs acknowledged the economic costs (e.g., threats to business operations) of the crisis, only about half acknowledged its human costs. Yet, the more CEOs mentioned the human costs, the

better their companies fared on the stock market when stock prices tumbled globally. Intriguingly, further explorations suggest that acknowledging the human costs strengthened the perception of a CEO's benevolence among research participants acting as financial analysts, which fostered more positive evaluations of a company's stock market performance during a crisis. We might have thought that financial analysts would primarily care about whether a CEO seemed competent enough to ward off financial threats to their company in a crisis (i.e., CEO ability). By contrast, these exploratory findings suggest that analysts' beliefs that CEOs have their—or even other people's—best interests at heart (i.e., CEO benevolence), do play a role in their evaluations of a company's performance.





### 3.2 The Russia-Ukraine War

How did ESG firms fare when the Russia-Ukraine war broke out? Again, we might expect high-ESG firms to do well in such a phase of heightened uncertainty. But the evidence does not support this expectation. Deng et al. (2022) investigate the stock price reactions of roughly 3'500 global stocks. Their key finding regarding the role of ESG is summarized in Figure 6. This figure displays the average, cumulated performance over time (starting from January 24, 2022, the day after NATO troops were put on standby) of firms with an ESG score one standard deviation above the average, compared to the performance of the average firm. Positive values indicate outperformance of high-ESG firms, negative values indicate underperformance. The analysis controls for a wide range of firm variables (such as firm size, cash holdings, exposure to market risks, etc.) and country and industry fixed effects. The vertical line indicates the day of the invasion, February 24, 2022.

What we might have expected—in line with experience from the 2008-2009 financial crisis and to some extent from the COVID-19 pandemic—is that firms with high ESG scores would outperform after the invasion and would continue outperforming, at least for a while. By stark contrast, Figure 6 illustrates that the pricing of ESG firms fluctuated quite strongly both before and after the invasion. Some of the ESG scores are indeed positively related to returns just after the war broke out. There is also opposite evidence, in certain periods, to the prediction that firms with better ESG scores would fare better during a crisis. Many cases show no statistically significant relation, and the picture that emerges is mixed.

In sum, investors cannot easily rely on ESG scores for their investment decisions in the face of a disaster like war. Our results do not say that, going forward, ESG can never be a tool for identifying resilient firms. Perhaps ESG is particularly useful when trust is the main issue. These are issues that need to be explored by further research.



## 4 Can Finance Make the World More Sustainable?

Occasionally it seems that sustainable finance has become nothing more than an investment style — another way to make money. It is, of course, perfectly legitimate in a capitalist system for producers to cater to the demands of their consumers. It is also not particularly surprising that, in such an endeavor, there will be more and less honest producers. Some companies will actually fulfill what they are claiming to do; others will simply write glossy sustainability reports, which might even win awards, but which will not change anything. But what can sustainable finance achieve more broadly? And are there unforeseen side effects? This section highlights a few facets of these questions.

### 4.1 Insights Regarding Policy

One conceptual virtue of financial markets is that they can provide real-time insights that are otherwise difficult for policy-makers to obtain. Consider the Russia-Ukraine war as an example. Besides the direct human toll of the war, a key question is whether the geopolitical crisis due to the Russian invasion of Ukraine is likely to accelerate or retard the transition to a low-carbon economy. Unfortunately, the spread of the conflict, future sanctions, the responses of companies and other countries, and individuals' behavior are unknown, complicating any attempts to quantify the expected economic impact of the war. However, we can gain valuable information about current expectations from changes in asset prices.

The cross-section of stock price reactions offers a particularly informative preview of the future economic impact of the Russia-Ukraine war, particularly its impact on the energy transition to a lower-carbon economy. The general idea is that some companies are at higher risk, emanating from regulations supporting the transition, than others are. When the stock prices of those companies with higher transition risk increase, relative to those with lower transition risk, this means that investors expect the transition to a low-carbon economy to slow down. Such an analysis obviously requires

measures of transition risk. The literature computes such measures based on managerial statements on corporate conference calls (Sautner et al., 2022) or in dedicated corporate risk disclosures (Kölbel et al., 2022).

Figure 7 shows the results of such an analysis. This figure plots the average, cumulative performance over time (starting from January 24, 2022) of firms with a transition risk one standard deviation above the average, compared to the performance of the average firm. Positive values indicate outperformance of high-transition-risk firms, negative values indicate underperformance. The analysis controls for a wide range of other variables that could affect returns. The light blue (middle) line displays results for the full sample of global companies. The dark blue (top) line shows results for US companies, and the green line for European companies.

The results for all firms together show that high-transition risk firms outperformed. This suggests that investors generally expect the transition to a low-carbon economy to slow down. These results hold in an even more pronounced fashion in the US. Surprisingly, European stocks with high transition risk did not exhibit such noticeable outperformance. This result may be due to stronger expected policy responses supporting renewable energy sources; given Europe's relatively pronounced dependency on Russian oil and gas, such a response is arguably the only way for Europe to enhance its energy security. Notice that these results do not compare individual firms directly between the US and Europe, but rather the overall effect of transition risk on equity returns within the two regions.

In short, at least in the three months following the invasion, investors expected the speed of transition to a low-carbon economy to diverge between the US and Europe. It remains to be seen whether the passage of the US Inflation Reduction Act (IRA) in August 2022 will undo at least some of this effect. Our initial findings suggest that the effect for transition risk was not reversed and may indeed

have been strengthened, consistent with the fact that the IRA also contains provisions that benefit fossil fuel firms. However, the stock prices of firms with opportunities from renewable energy soared, consistent with the IRA containing significant incentives for companies and consumers to pivot in the lower-carbon direction. This analysis indicates, by way of example, that policy-makers should be mindful of relative asset price moves when utilizing the financial market as a crystal ball.

**Figure 7: The Net-Zero Transition and the Russia-Ukraine War**



Source: Deng et al. (2022)

Notes: The graph shows the outperformance or underperformance of firms with high transition risk (controlling for other firm characteristics) over time. The vertical line indicates the date of the Russian invasion in Ukraine. For details on the construction of the figure, see the text.

#### 4.2 Exit and Voice

Theoretically, "exit" and "voice" describe two ways investors can channel their capital: by exiting or divesting from companies whose policies conflict with their values, and by applying their voices, that is, by engaging with companies.

When talking about "exit", we need to take into account the difference between the primary and secondary equity markets. For primary markets, if investors withhold funds from projects or companies deemed unsustainable, then these indeed do not

come into existence. For secondary markets, by contrast, when shares in a company get sold, the first-order effect is that the shares simply change owners; money does not flow away from the company. This discrepancy has led to concerns of "brownspinning." For example, public companies that own fossil fuels sell them and, in so doing, reduce their carbon footprint. But the buyer—often a private company—then continues to extract the fuels, often with less scrutiny by market participants. It is true that, at least theoretically, sufficient divestment of a polluter's stock by green investors can raise the polluter's cost of capital (Heinkel et al., 2001). Whether this exit effect works in practice, however, is unclear. Calibrating this model to real data, Berk and van Binsbergen (2022) find that ESG divestiture strategies have little impact on the actual investment decisions of the affected firms. De Angelis et al. (2022) do find that green investing can spur companies to mitigate their carbon emissions, by raising the cost of capital of the most carbon-intensive companies, but again the quantitative effect is limited.

Survey evidence indicates that institutional investors consider ESG engagement (voice), rather than divestment (exit), to be the more effective way to deal with externalities (Krueger et al., 2020). Dimson et al. (2021) find that a two-tier engagement strategy, combining lead investors with supporting investors, is particularly effective. Edmans et al. (2022) show theoretically that holding a "brown" company if the company has taken a corrective action may be more effective for reducing negative externalities than divesting with the intent to starve the company of capital. However, Heath et al. (2022) find that, while socially responsible investment funds select firms that pollute less, there is no evidence that the activity of such funds improves firm behavior. Overall, evidence of the actual impact of investors on the sustainability of firms is mixed. This does not mean that they cannot have an impact, however.

Historically, stock markets have been more effective than debt financing at facilitating green innovation in carbon-intensive sectors (De Haas & Popov, 2021). Still, banks can potentially play an important role. When banks withhold financing from certain companies (or make such financing prohibitively expensive), their action tilts the balance of projects that get accomplished and is likely to have further incentive effects for companies in that economy. This is the basic idea behind such initiatives as the Glasgow Financial Alliance for Net Zero (Gfanz). As noted earlier, recent research suggests that bank loan rates reflect climate risks to a smaller extent than bond yields do. This observation not only has interesting implications for differences in how market-based and bank-based finance value sustainability, but it also suggests that fossil fuel firms are incentivized to switch from corporate bonds to bank loans. There is some evidence that "green" banks do finance "green" firms more often (Degryse et al., 2022; Kacperczyk & Peydró, 2022). However, there are important cross-country differences. In the US, banks are more likely to lend to firms that are more negatively exposed to the transition to the low-carbon economy; in Europe, the opposite holds (Mueller & Sfrappini, 2022). Somewhat worryingly, lenders evade stringent domestic climate policies by increasing their cross-border lending (Benincasa et al., 2022). These findings further emphasize the importance of having concerted global climate policies.

As a final word of caution on the topic of "Exit and Voice," there is some concern that divestment does have real consequences in emerging markets—but not the desired ones. A study based on interviews with practitioners of sustainable investing suggests that it effectively results in risk avoidance, rather than in a focus on opportunities for impact, and that the avoidance of risk leads to capital being diverted from developing and frontier markets (Mobilist, 2022). Future research needs to systematically investigate this facet of sustainable investing.

### 4.3 Walking the Climate Talk

To the extent that it is in the interest of firms to be perceived as being sustainable, they are going to tilt their disclosures accordingly. Sustainability reports are growing. Partly this trend is driven by regulatory developments (which are too voluminous to survey in this Note). But are the disclosures of firms truthful, on average, and related to what they, in fact, do? Or is sustainability reporting mostly greenwashing? The evidence on this question, and on how markets respond to such actions, is still being accumulated. While some studies argue that firms use climate and environmental disclosures as a decoy (Hail et al., 2021), others indicate that environmental talk is indeed associated with better environmental performance, such as greater pollution abatement and a higher number of future green patents (Chava et al., 2021). It appears that more talk about climate matters does go hand-in-hand with future carbon emissions reductions (Dzieliński et al., 2022).

### 4.4 Climateflation, Fossilflation, and Greenflation

While some commentators have long warned of the inflationary consequences of a loose monetary policy, those warnings were typically drowned out by the fact that inflation did not, in fact, noticeably move up. "Climateflation," driven by natural disasters and severe weather events that increase food prices, for example, is a factor that has only recently come to the fore. The additional supply shock due to the Russia-Ukraine war appears to have shifted inflation expectations. "Fossilflation" (Schnabel, 2022) is a direct consequence of the significant reliance on fossil fuels and the rather abrupt attempt by Europe, in particular, to wean itself off Russian fossil fuels. A third possibility is "Greenflation," namely, that sustainable finance itself will lead to higher prices. For example, the price of carbon emissions, paid through emission permits and taxes, will find its way into product

prices, while the materials needed for the production of sustainable energy will become increasingly expensive (see, for example, the massive recent price increase of lithium). Moreover, if the efforts of ESG are successful, and the cost of capital for "brown" companies increases, these companies will likely attempt to raise their product prices in order to cover that additional cost. On the other hand, faster technological progress, cheaper financing for sustainable companies, and, most of all, a lower volume of consumption might lead to lower prices.

Uncertainty about all of these effects of sustainable finance on inflation is high, and more research is

needed to understand whether it enhances inflation threats or perhaps could even contribute to a smoother transition. Central banks need to assess the importance of the three types of inflation sources mentioned: Climateflation, Fossilflation, and Greenflation. Fundamental issues of equality are at stake, as inflation hits the weakest members of our society the hardest.

In short, the enhancement of sustainability, or greening, of the economy in some dimensions may fundamentally lead to reduced sustainability in other dimensions. Policy-makers will have to carefully consider this trade-off.



## 5 Conclusion: What Now?

For years, sustainable finance has been a success story and, indeed, a story of hope. While the economy and financial markets boomed, and companies were flush with cash, sustainable investment boomed as well. Even the brutal, but in aggregate short-lived, shock of the COVID-19 pandemic did not stop this development. The real test for sustainable finance and investments appears to be happening now. Will they keep attracting positive attention when there is a severe downturn in the economy? The market responses to the Russia-Ukraine war offer a first glimpse of the hard choices at hand. Suddenly, the desire to achieve the transition to a net-zero economy must be balanced against the need for energy security.

Sustainable finance itself is also undergoing change. First, the question of what is considered as contributing to sustainability is constantly being reassessed. This debate was seen in the context of the EU Green Taxonomy, when natural gas and nuclear energy were put forward as green activities. Lately, the question has arisen with respect to some hitherto clearly "non-sustainable" investments, such as the investment in defense. Is weapons production sustainable? A year ago, even asking this question would have been considered outrageous. Things have certainly changed, as some investors now consider investing in defense as a way to uphold their values. Conversely, the war in Europe also puts issues of corporate political responsibility up front and center. How should responsible companies think about exiting countries that engage in war or other activities widely considered inappropriate? It is easy to make these decisions when little is at stake, but in some instances major economic consequences are attached.

Concerns about greenwashing, brownspinning, excessive claims of "ESG integration," and the sometimes outright greedy mentality of some in the industry have led to a backlash against sustainable finance and, not least, to calls for more regulation of it. As many past examples have shown, regulation is rarely the definitive answer. Moreover, focusing on one dimension only, such as the environment (or even only on certain types of emissions), as some commentators have demanded, also hardly seems to be the right approach in the face of the complexity of the world. Too narrow of an approach is dangerous. The focus on carbon emissions, for example, has meant less of a focus on methane, even though reducing methane emissions holds significant promise. Certain initiatives to promote renewable energy use leave aside dramatic costs in terms of biodiversity. And so on. We need to be modest, and to acknowledge that we do not know everything, when trying to assess which are the most important dimensions of sustainability to focus on.

A functioning allocation of resources is important, and that is what (sustainable) finance can help provide, no more and no less. Understanding and leveraging individual motivations—that is, the behavioral economics and finance of sustainability—is likely a fruitful field for future research and policy action. After all, ultimately it is the individual effort, the responsible behavior of each person in whatever concrete situation they find themselves that can make the world a happier and more sustainable place.

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