# The power of ESG transparency: the effect of the new SFDR sustainability labels on mutual funds and individual investors

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**Abstract**

This paper analyses the effect of the Sustainable Finance Disclosure Regulation (SFDR) on mutual funds and individual investors in the EU. First, we study whether affected funds increase their sustainability compared to a control group. Second, we examine if the regulation makes individual investors allocate more capital into more sustainable funds. In a difference-in-differences setting, we analyse the influence of the regulation on ESG fund scores and fund net inflows. Our results show that affected funds increase their sustainability rating after the policy intervention. Additionally, we find that a better ESG label leads to larger fund net inflows.

**Keywords:** Mutual Fund, ESG, Sustainability Ratings, Fund Flows, Policy Intervention

**JEL codes:** G11, G18, G23

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# 1 Introduction

On the 27th of November 2019, the European Parliament and Council published the Regulation (EU) 2019/2088 on sustainability-related disclosure in the financial services sector (SFDR) being effective as of March 10, 2021. The preamble of the regulation states that to fight climate change "urgent action is needed to mobilise capital not only through public policies but also by the financial services sector". Introducing this new kind of regulation, the EU tries to change behavior patterns in the financial sector, discouraging greenwashing, and promoting responsible and sustainable investments.

The new policy applies to all European financial market participants (FMPs). These include investment firms, pension providers, and insurance-based investors, as well as qualifying venture capital and social entrepreneurship activities. Besides the increasing reporting duty, one of its main requirements for the FMPs is the classification of ESG-related products and non-ESG products as either article 6, 8 or 9 funds depending on the degree of ESG integration*. Here, article 8 comprise those funds that do consider ESG aspects in their investment process but are focused on financial materiality, whereas article 9 products aim to create an environmental and social impact alongside generating a financial return. This can usually be done by aligning the portfolio to the UN Sustainable Development Goals (SDGs) or to the Paris Agreement. More specifically, article 8 applies where "a financial product promotes, among other characteristics, environmental or social characteristics, or a combination of those characteristics, provided that the companies in which the investments are made follow good governance practices" (Regulation (EU) 2019/2088). In contrast, article 9 refers to funds which have generating a real impact as their primary goal alongside a financial return. Finally, article 6 products are those funds which do not fulfill the requirements to be labeled as article 8 or 9 and thus represent all funds that do not or to a very low degree integrate sustainability in their investment process.

The goal of this paper is to analyze the effect of the policy intervention on achieving the stated goal of fighting climate change by incentivizing FMPs to become more green and by mobilizing capital in the financial services sector. To analyze the extent to which this goal has been accomplished we study both, the demand and supply side. Thus, we examine how mutual fund managers and private customers react to the policy intervention, respectively.

If investors are better informed about the sustainability of funds, this creates an incentive for funds to invest in more sustainable ways (Hartzmark and Sussmann (2019)). Firstly, we

*The name of the fund categories refer to the respective articles in the sustainable finance disclosure regulation.

expect an increase in the sustainability scores of funds that are affected by the intervention compared to the unaffected funds after the public disclosure of the upcoming regulation in December 2019.

Following Mugerman et al. (2022) we use a difference-in-differences methodology as our main identification strategy and divide our sample into two groups. The first one, being the treatment group, contains all European funds that are affected by the regulation. For our control group, we use all U.S. based mutual funds since they are not exposed to the intervention and represent the largest part of mutual funds worldwide. In order to control for potential differences between the treatment and the control group, we use a 1:1 nearest neighbour matching (Ammann et al. (2019) & Bilbao-Terol et al. (2017)). We then estimate if European funds increased their ESG scores relatively to the control group as a result of the SFDR.

The demand side then implies that an increase in transparency and sustainability leads to more inflows towards sustainable funds (Alda (2020), Ghoul and Karoui (2021)). The disclosure of being an article 6, 8 or 9 fund could directly influence the investment decisions of private customers. Huang et al. (2020) show that funds which are being given some sort of performance label should experience an increase in their inflows due to jumps in reputation. However, this depends on how investment firms promote their labels. Again, we examine this in a difference-in-differences setting to analyze whether the intervention had a significant impact on the fund net inflows within the first four months after March 10, 2021, the day on which the funds label were first publicly disclosed.

Overall, our results are consistent with the literature: For the supply side, we find that the increasing transparency of sustainability enforced by the new regulation incentivize mutual funds to increase their ESG efforts. EU funds, which are affected by the new SFDR rule increased their ESG scores more than funds in the non-EU control group.

For the demand side, our results indicate that the intervention had a statistically significant impact on the fund flows within the first four months after the intervention. Article 8 and 9 funds did see positive net inflows compared with less sustainable EU funds. This is in accordance with houl and Karoui (2021), Aasheim et al. (2021), Ammann et al. (2019) and Huang et al. (2020) who show that funds which are associated with a higher ESG alignment attract higher inflows from investors.

Our paper makes two contributions to the mutual fund literature. First, we add to the scarce literature of policy interventions and their effect on capital markets. Zhang et al. (2020) examine the impact of the implementation of "Guidelines for Establishing a Green

Financial System" in China and show that afterwards the risk-adjusted return for the highest ESG portfolio nearly doubles.

Second, we contribute to the literature on the relationship between fund flows and sustainability. Ammann et al. (2019) examine the effect of the introduction of Morningstar's Sustainability Rating on mutual fund flows. They find strong evidence that retail investors shift money away from low-rated and into high-rated funds. Ghoul and Karoui (2021) show that funds which have changed their names to a sustainability-related appellation exhibit larger inflows. Alda (2020) show that a higher ESG screening intensity triggers larger inflows. Ceccarelli et al. (2021) find that active funds which missed a "low carbon designation" label by Morningstar at its release, shifted their holdings towards less carbon-intensive firms. Lastly, Rzeźnik et al. (2021) show that some investors buy assets after a misconceived ESG score upgrade. This is evidence for the fact that it is not the true sustainability that seems to matter but only the ESG label. Therefore, we extend the literature by examining the unique setting of a policy intervention and its effects on mutual funds.

# 2 Data

Our study is based on 9,722 EU mutual funds and 15,896 U.S. funds for the period between September 2019 and June 2021[†]. While we are mostly interested in the effect of the regulation on European mutual funds, the U.S. data is used as a control group lacking the policy intervention. We gather data from the Morningstar database on the portfolio (monthly) ESG scores as well as the (monthly) fund size and the inception date. Following Ammann et al. (2019), we analyze the sustainability of a mutual fund using the Morningstar Sustainability Rating. The Morningstar Sustainability Rating is being calculated based on the individual securities in each fund. In doing so, Morningstar evaluates how well an issuer manages environmental, social and governance risks and opportunities. The rating of the fund is then calculated based on a peer group comparison. It ranks mutual funds on a scale from one (worst) to five (best) within their global category. Further, Morningstar also provides data on each fund's SFDR classification. Here, the funds are either labeled as an article 8 fund, article 9 fund or not classified (i.e., article 6). Similarly to other studies, we retrieve data on our control variables - fund age, fund size, total net asset values and returns - and drop all observations with missing data (e.g. Alda (2020), Barber et al. (2005) and Morey (2002)). Following Sirri and Tufano (1998) net mutual inflows are calculated as the growth in total

[†]In September 2019 Morningstar changed how the sustainability rating is calculated (Ferriani and Natoli (2021)). Rzeźnik et al. (2021) show that investors misconceived the changes in the Morningstar methodology. To ensure our results are not driven by the change in methodology, we exclude data before September 2019.

assets reduced by the monthly returns as a percentage of total net assets at the beginning of the previous month:

$$Flow_{i,t} = \frac{TNA_{i,t} - TNA_{i,t-1}(1 + R_{i,t})}{TNA_{i,t-1}} \tag{1}$$

Whereby $TNA_{i,t}$ indicates the total net assets of a given fund $i$ at the end of month $t$ and $R_{i,t}$ is the return of fund during the month $t$. Since we are comparing EU to U.S funds as well as fund flows among the different SFDR categories, we create two different samples where the first one contains all U.S and EU and the second one all EU funds that have a SFDR classification in Morningstar. All control variables in both samples and the fund flows are winsorized at the 1% and 99% level.

Finally, we apply the 1:1 nearest-neighbour matching method from Rubin (1973). This matches funds from our control groups to the treated funds using fund age, fund size, fund returns and fund net inflows. Non-matched funds from the control group are removed from the sample. This ensures that we avoid any bias from inadequate comparison and improves parametric statistical models (Ammann et al. (2019), Bilbao-Terol et al. (2017) and Joliet and Titova (2018)). Table 1 offers an overview of the summary statistics. The mean sustainability rating for EU funds in the sample is 0.43 higher than for U.S. funds. Also, as expected, EU funds that are classified as article 9 have the highest sustainability rating while article 6 funds have the lowest one within the EU sample.

**Table 1: Summary Statistics**. This table reports summary statistics of the monthly portfolio sustainability scores as well as on the different fund characteristic measures. All control variables are winsorized at the 1% and 99% level.

| Panel A: EU vs. US | | | | | | |
|---|---|---|---|---|---|---|
| EU Funds (All) | | | | | | |
| | No of Obs | Mean | Median | SD | Min | Max |
| Sustainability Rating | 92,310 | 3.29 | 3.00 | 1.07 | 1.00 | 5.00 |
| Fund Age (Months) | 92,310 | 160 | 145 | 108 | 2 | 439 |
| Fund Size (in Million Euro) | 92,310 | 489 | 138 | 1,191 | 1 | 30,593 |
| Total Returns (in %) | 92,310 | 1.57 | 1.89 | 4.94 | -17.33 | 13.26 |
| Fund Flows (in % of TNA) | 92,310 | 0.22 | -0.35 | 9.52 | -30.59 | 62.01 |
| US Funds (All) | | | | | | |
| | No of Obs | Mean | Median | SD | Min | Max |
| Sustainability Rating | 94,173 | 2.96 | 3.00 | 0.98 | 1.00 | 5.00 |
| Fund Age (Months) | 94,173 | 147 | 126 | 99 | 2 | 439 |
| Fund Size (in Million Euro) | 94,173 | 621 | 295 | 1,195 | 1 | 40,449 |
| Total Returns (in %) | 94,173 | 1.75 | 2.40 | 5.78 | -17.33 | 13.26 |
| Fund Flows (in % of TNA) | 94,173 | -0.35 | -0.86 | 8.97 | -30.59 | 62.01 |
| **Panel B: EU** | | | | | | |
| EU Funds (Article 6) | | | | | | |
| Sustainability Rating | 32,835 | 3.12 | 3.00 | 1.05 | 1.00 | 5.00 |
| Fund Age (Months) | 32,835 | 155 | 140 | 106 | 2 | 421 |
| Fund Size (in Million Euro) | 32,835 | 500 | 159 | 865 | 1 | 4,594 |
| Total Returns (in %) | 32,835 | 1.38 | 1.95 | 5.58 | -22.19 | 10.18 |
| Fund Flows (in % of TNA) | 32,835 | 0.00 | -0.45 | 9.14 | -28.48 | 53.44 |
| EU Funds (Article 8) | | | | | | |
| Sustainability Rating | 29,960 | 3.58 | 4.00 | 1.01 | 1.00 | 5.00 |
| Fund Age (Months) | 29,960 | 160 | 140 | 111 | 2 | 421 |
| Fund Size (in Million Euro) | 29,960 | 591 | 213 | 931 | 1 | 4,594 |
| Total Returns (in %) | 29,960 | 1.51 | 2.05 | 5.55 | -22.19 | 10.18 |
| Fund Flows (in % of TNA) | 29,960 | 0.46 | -0.22 | 9.32 | -28.48 | 53.44 |
| EU Funds (Article 9) | | | | | | |
| Sustainability Rating | 2,799 | 4.01 | 4.00 | 0.89 | 1.00 | 5.00 |
| Fund Age (Months) | 2,799 | 138 | 119 | 103 | 4 | 421 |
| Fund Size (in Million Euro) | 2,799 | 571 | 265 | 827 | 1 | 4,594 |
| Total Returns (in %) | 2,799 | 1.59 | 2.21 | 5.67 | -22.19 | 10.18 |
| Fund Flows (in % of TNA) | 2,799 | 1.96 | 0.83 | 11.01 | -28.48 | 53.44 |

# 3 The Influence of the EU Directive on Sustainability Scores

First, we examine the introduction of the new SFDR policy and its effect on the sustainability rating of the affected funds by estimating the following model:

$$ESG_{i,t} = \beta_0 * Treated_i + \beta_1 * Post_t + \beta_2 * Treated_i \times Post_t + \beta_3 * Size_{i,t-1} + \beta_4 * Age_{i,t-1} + \beta_5 * Ret_{i,t-1} + \beta_6 * Flow_{i,t-1} + \mu_i \quad (2)$$

where $ESG_{i,t}$ describes the sustainability rating of fund $i$ at month $t$. The dummy $Treated_i$ equals one if fund $i$ is a EU-based mutual fund and thus affected by the SFDR. The dummy $Post_t$ equals one for all months after November 2019. November 2019 marks

the date when the European Commission passed the new regulation. Thus, FMPs had time since 2019 to adjust their portfolios and make them more ESG aligned, whereas customers had no information about the fund labels before March 2021. $Size_{i,t-1}$ are the total net assets of fund $i$ at month $t-1$; $Age_{i,t-1}$ describes the total months between $t-1$ and the inception date of fund $i$; $Flows_{i,t-1}$ are the flows of fund $i$ at month $t-1$; and $Ret_{i,t-1}$ is the return of fund $i$ and month $t-1$. Our difference-in-differences estimator $Treated_i \times Post_t$ indicates observations for EU funds in the period after the introduction of the SFDR policy. In addition, we use fund fixed effects $\mu_i$ to control for any time-invariant effects and estimate our model using fund-clustered standard errors.

Table 2 reports the results for equation (2). The interaction term in column (2) shows that the intervention achieved its desired effect. The ESG rating for European mutual funds significantly rose after the announcement of the SFDR regulation relatively to the U.S peers. The average difference in fund ratings between EU and U.S. funds rose by nearly 0.03 rating grades. This is in accordance with our initial expectations since mutual funds might anticipate higher fund inflows if they are publicly being labeled as a green investment. Hence, EU funds increase their sustainability level more than U.S. funds. Further, column (1) shows that the average EU funds score is 0.313 higher than for US funds while the average base level in the sample is about 2.99.

**Table 2: The Influence of the EU Directive on Sustainability Scores**. The dummy *Treated* takes the value one for all EU funds and zero otherwise. The dummy *Post* in indicate the time period after November 2019. T-statistics (in parentheses) are based on fund-clustered standard errors. ***, **, * denote statistical significance at the 1%, 5% and 10% level, respectively. Significance levels are calculated using fund-clustered standard errors.

| | (1) | (2) |
|---|---|---|
| Dependent Var. | ESG Fund Rating | |
| Intercept | 2.992*** | |
| | (102.00) | |
| Treated | 0.313*** | |
| | (24.52) | |
| Post | -0.017* | -0.003 |
| | (-1.74) | (-0.48) |
| Treated x Post | 0.019 | 0.027** |
| | (1.37) | (2.62) |
| Controls | Yes | Yes |
| Fixed Effects (Fund) | No | Yes |
| $R^2$ adj. | 0.027 | 0.001 |
| Observations | 186,483 | 186,483 |

# 4 Impact on Investors

After analyzing the supply side, we now shift our focus onto the demand side. Huang et al. (2020) and Ammann et al. (2019) show that mutual funds with a better rating or label attract more inflows compared to less sustainable funds. Consequently, funds that received the article 8 or article 9 label should experience higher net inflows compared to article 6 funds. Again, we use the 1:1 nearest-neighbour matching to create three samples: for column (1), we exclude all article 9 funds and match each article 8 fund with the respective article 6 fund; for column (2) we exclude all article 8 funds and match each article 9 fund with the respective article 6 and for column (3) we match all article 8 and 9 funds with article 6 funds. In all specifications, unmatched article 6 funds are removed from the sample. We examine this hypothesis by estimating the following model:

$$Flow_{i,t} = \beta_0 * Treated_i + \beta_1 * Post_t + \beta_2 * Treated_i \times Post_t + \beta_3 * Size_{i,t-1} + \beta_4 * Age_{i,t-1} + \beta_5 * Ret_{i,t-1} + \mu_i \quad (3)$$

with $Flows_{i,t}$ being the net flows of fund $i$ in month $t$. $Post_t$ now marks the effective date of the intervention, i.e. all observations beginning with March 2021. We use this date since the sustainability labels were not disclosed before March 2021 and thus customers could not take it into account when allocating their money. In column (1), (2) and (3) the dummy $Treated_i$ takes the value one for all funds classified as article 8, article 9 and article 8 or 9, respectively and zero otherwise. Control variables remain unchanged. We again use fund fixed effects $\mu_i$ and fund-clustered standard errors.

**Table 3: The Influence of the EU Directive on Fund Flows**. In columns (1), (2) and (3) the dummy *Treated* takes the value one for all funds classified as article 8, article 9 and article 8 or 9, respectively and zero otherwise. The dummy *Post* indicates the time period beginning with March 2021. T-statistics (in parentheses) are based on standard errors. ***, **, * denote statistical significance at the 1%, 5% and 10% level, respectively. Significance levels are calculated using fund-clustered standard errors.

| | (1) | (2) | (3) |
|---|---|---|---|
| | Art. 8 | Art. 9 | Art. 8 & 9 |
| Dependent Variable | Fund Flows | | |
| Post | 0.017*** | 0.019*** | 0.017*** |
| | (10.56) | (3.57) | (11.09) |
| Treated x Post | 0.005*** | 0.006 | 0.005*** |
| | (2.69) | (0.89) | (2.93) |
| Controls | Yes | Yes | Yes |
| Fixed Effects (Fund) | Yes | Yes | Yes |
| $R^2$ adj. | 0.020 | 0.012 | 0.018 |
| Observations | 60,013 | 5,581 | 65,594 |

Table 3 displays the results of the difference-in-differences estimation. The interaction term in column (3) shows that funds which were labeled as either article 8 or 9 were able to significantly increase their net fund flows after the intervention. In particular, more sustainable funds are able to generate 0.5 percentage points per month more inflows than less sustainable funds. The significance of the interactions terms in columns (1) and (2) indicate that this result might be largely driven by article 8 funds given the smaller sample size of article 9 funds. This is in line with the findings of Aasheim et al. (2021) or Ammann et al. (2019) who find an abnormal flows of 1.83% during the first 6 months after the publication of Morningstar sustainability fund ratings. This supports our hypothesis that an increase in transparency and sustainability will lead to more sustainable investments. However, it is not entirely clear how much of the effect can be attributed to increase in transparency or sustainability. Rzeźnik et al. (2021) show that investors care more about the label itself than the actual degree of ESG integration.

# 5 Conclusion

In this paper, we study the impact of the SFDR – a legislation regarding sustainability disclosure for mutual funds – on the sustainability and fund flows of mutual funds. Using difference-in-differences regressions and 1:1 nearest neighbor matching, we compare funds affected by the legislation (EU-based funds) with unaffected funds (U.S.-based funds). Our results show a significantly higher increase in sustainability ratings for the EU-based funds after the announcement of the SFDR. This shows that, on the fund level, the intervention so far achieved its purpose of moving capital into more sustainable investments. To observe whether the legislation also has an impact on investors we investigated the changes in fund flows of different sustainability classifications introduced by the SFDR. Here, we find that investors appreciate a higher degree of ESG alignment and allocate their capital accordingly. Funds with classifications indicating a more advanced level sustainability integration experience significantly higher net fund flows after the public disclosure of fund labels. Our findings have direct implications for investors and practitioners. First, due to investors investing more in article 8 and article 9 funds, asset manager should increase their sustainability efforts according to article 8 and article 9 of the SFDR. Second, it is likely that the newly introduced labels will increase the threat of a possible ESG overvaluation (Bofinger et al., (2022)). An increasing amount in indications for sustainable investments can potentially lead to even higher investments towards overvalued firms. In summary, our study shows the effectiveness of the newly introduced regulation on sustainability-related disclosures in the financial services sector and points towards the SFDR mobilizing capital

towards sustainable investments.

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