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THE INFLUENCE OF THE EU SFDR ON MUTUAL FUNDS AND INVESTORS

Master's Thesis
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Abstract

In this Master's thesis, I study what impact the EU Sustainable Finance Disclosure Regulation (SFDR) has thus far had on mutual funds and investors. On the supply side, I investigate whether the regulation has met one of its main objectives of incentivising mutual funds to increase their ESG alignment by reallocating capital into more sustainable investments. And on the demand side, I examine whether investors who appreciate a higher degree of ESG alignment allocate their capital accordingly. In separate settings, I further look into funds that have reclassified their SFDR sustainability label to a greener category as well as funds whose self-designated label is in conflict with an objective third-party sustainability rating. Contrary to other sustainability labels, my findings suggest that a greener profile under the SFDR classification is associated with poorer flow performance. I find no evidence that affected funds would increase their sustainability compared to a control group, or that SFDR reclassifications would affect funds' portfolio alignment or investor behaviour.

Keywords SFDR, EU, policy intervention, ESG, greenwashing, sustainability ratings, fund flows

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Tiivistelmä

Tässä maisterintutkielmassa pyrin selvittämään, mikä vaikutus EU:n kestävän rahoituksen tiedonantoasetuksella (Sustainable Finance Disclosure Regulation, SFDR) on tähän mennessä ollut sijoitusrahastoihin sekä sijoittajiin. Tarjontapuolella tutkin, miten asetuksen yksi päätavoitteista kannustaa rahastonhoitajia lisäämään vastuullista sijoittamista ohjaamalla pääomia kestävämpiin sijoituskohteisiin on toteutunut. Kysyntäpuolella tarkastelen miten asetuksen velvoittama rahastojen vastuullisuusluokittelujärjestelmä vaikuttaa sijoittajien markkinakäyttäytymiseen ja pääomien allokaatioon. Lisäksi tutkin erikseen luokituksen päivittämisen vaikutuksia rahastojen vastuullisuuteen ja rahavirtoihin sekä rahastoja, joiden asetuksen mukainen itseluokittelu on ristiriidassa riippumattoman vastuullisuusluokituksen kanssa. Muista vastuullisuusmerkinnöistä poiketen tulokseni viittaavat siihen, että vihreämmän luokituksen rahastot houkuttelevat keskimäärin vähemmän sijoittajien pääomia verrattuna rahastoihin, jotka eivät huomioi kestävyystekijöitä sijoitusprosessissaan. Sen sijaan en löydä näyttöä siitä, että asetuksen alaiset rahastot lisäisivät vastuullisuuttaan verrattuna sen vaikutuspiirin ulkopuolella oleviin verrokkirahastoihin, tai että uudelleenluokittelulla olisi vaikutusta rahastojen sijoitusten allokaatioon tai sijoittajien käyttäytymiseen.

Avainsanat SFDR, EU, tiedonantoasetus, ESG, vastuullisuusluokitus, viherpesu

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1. Introduction

1.1 Background and motivation

Over the past decade, the sustainable investment industry has grown substantially. At the beginning of 2020, global sustainable investment assets aggregated USD 35.3 trillion, representing a total share of 36% of all professionally managed assets.[1] This has created a need for independent and reliable information on financial products' sustainability levels. As a result, numerous agencies nowadays rate financial products according to their ESG characteristics.

However, a major problem with sustainability ratings is that unlike credit ratings, they experience a much higher level of divergence as the assessment of sustainability comes with a high degree of subjectivity (e.g. Berg et al., 2022). In the absence of harmonized rules on disclosures of sustainability-related information, asset managers have adopted divergent measures and market-based practices, making it difficult to compare different financial products. Such divergences could also cause confusion among end investors and distort their investment decisions. To address these issues, the European Union introduced the Sustainable Finance Disclosure Regulation (SFDR) in 2021, which aims to harmonise ESG disclosure requirements and increase transparency on sustainability-related factors. The EU has committed to be a frontrunner in the transition towards a more sustainable economy and the new disclosure regulation further reinforces the regulatory framework in Europe, which already accounts for more than 80% of global sustainable fund assets.[2]

In addition to imposing mandatory reporting requirements, the regulation obliges asset managers to categorise their products according to their sustainability objectives. These self-designated labels constitute yet another classification system to the diverse offering of different ESG labels. In addition, the classifications under the SFDR should reflect the sustainability of funds, thus guiding end investors to make more informed investment decisions. In turn, increased transparency on sustainability creates an incentive for funds to invest in more sustainable ways by increasing their ESG efforts and mobilizing capital in the financial services sector. Therefore, it is worthwhile to analyse the extent to which the new regulation regime has achieved its objectives – and on the other hand, what impact it has had on the demand side (i.e. end investors).

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[1] Global Sustainable Investment Review 2020, Global Sustainable Investment Alliance (GSIA).
[2] Morningstar, 'SFDR Article 8 and Article 9 Funds: Q2 2022 in Review', July 28, 2022.

The growing demand for sustainability-related financial products, combined with rapidly evolving regulatory regimes and the ever-expanding offering of such products also create a context that may be conductive to increased risks of greenwashing. Given that the asset management industry has experienced declining management fees for over two decades, asset managers have shifted their focus to ESG products. They may find it tempting to charge higher fees by selling them to end investors who are willing to pay a green premium. The unharmonised regulatory framework allows products marketed as ESG to be sold with unsubstantiated or misleading claims. For example, German authorities raided Deutsche Bank and its asset management unit DWS on suspicion of fraudulent advertising of sustainable investment funds in May 2022. In the same month, the U.S. Securities and Exchange Commission (SEC) imposed a USD 1.5 million fine on the investment arm of BNY Mellon for misrepresenting ESG information. And in June, Goldman Sachs announced that the SEC had launched an investigation into its ESG funds with more than USD 700 million in assets under management.

These recent examples highlight the tightening regulation around the sustainable investment industry. On the other hand, they also imply that asset managers are willing to tolerate the risk of even heavy sanctions and make misleading claims on sustainability aspects to attract more investor flows (and thus be able to charge more fees). Being a regulation set by the EU gives the SFDR credibility as a labelling regime, but the self-designation of the classifications leaves wide discretion to asset managers who may also have dubious motives. The dissonance between the self-designated green labels and third-party sustainability ratings has been prominent – while asset managers have been upgrading their products under the SFDR, Morningstar, a Chicago-based data provider and investment research house, has been stripping off sustainable investment tags from funds. In sum, the risk of greenwashing is worth bearing in mind when investigating the impacts of the new regulation.

1.2 Research questions and hypotheses

In this Master's thesis, I study what effects the SFDR has thus far had on mutual funds and investors. First, I investigate how the introduction of the new regulation has influenced the sustainability scores of funds, and on the other hand, how investors allocate their capital to different SFDR categories. I continue by focusing on funds that have already changed their classification by analysing what characteristics drive reclassification decisions, and what

impact upgrading the SFDR class has on ESG scores and investor inflows. Finally, I study potential greenwashing behaviour with a specific set of funds that lost their sustainable investment label in a review carried out by a third-party rating agency. This setting hopefully illuminates whether an SFDR green label helps to attract or preserve flows when the self-designated categorisation as a sustainable investment contradicts with the opinion of an independent third party.

Based on the topics elaborated above, I formulate the following research questions and related hypotheses:

1) What is the influence of the regulation on sustainability scores?

   In a difference-in-differences setting, I analyse whether funds subject to the SFDR increase their ESG alignment (expressed in Morningstar Globe Ratings) compared to non-affected (U.S.) funds after the regulation was first passed in November 2019. Further, I study how upgrading to a greener label is reflected in funds' ESG alignment. Presumably, increased transparency and stricter reporting requirements would create an incentive for funds to invest in more sustainable ways. It is also fair to assume that SFDR label upgrades are attributable to portfolio realignment and should thus be reflected in the fund's ESG characteristics. Drawing on the above, I make the following hypotheses:

   H1: Affected funds increase their sustainability scores compared to a control group

   H2: Upgrading a fund's SFDR classification is associated with an increase in its ESG alignment

2) How do investors react to SFDR-related information?

   To address this question, I examine on one hand whether the SFDR labels have had any effect on investor flows when considering also other sustainability-related information and on the other, does upgrading the SFDR category help to attract any new inflows. As documented in prior literature (Alda, 2020; El Ghoul and Karoui, 2020), an increase in transparency and sustainability leads to higher inflows into more sustainable funds. Consequently, upgrading to a greener category should be reflected in better flow performance. I thus propose the following hypotheses:

   H3: A greener profile under the SFDR classification leads to larger fund net inflows

H4: Upgrading a fund's SFDR classification is associated with increased net inflows

3) Does the SFDR incentivise any kind of greenwashing behaviour among fund managers?

Given the vague definitions of the SFDR self-designated categories and the large number of upward reclassifications despite of the dissenting view of a third-party sustainability rating agency, I also investigate the potential dubious behaviour that might arise due to the new regulation. By analysing what drives reclassification decisions, I attempt to find out whether fund characteristics such as poor flow performance or lack of other green labels increase the probability of upgrading to a higher category. Further, if investors appreciate a higher degree of ESG alignment and allocate their capital accordingly, a downgrade or removal of a fund's sustainability label would have the opposite effect i.e. investor outflows. However, other sustainability labels, including the self-designated ones, might dilute the expected flow decline if the remaining labels are considered sufficient indication of ESG alignment. If this is the case, fund managers would have an incentive to use the discretion given to them and label their products as greener than they would probably deserve to be. Based on this reasoning, I hypothesise as follows:

H5: Losing a sustainability label has a negative impact on a fund's flow performance

H6: A self-designated sustainability label helps a fund maintain its flow performance in case of the removal of another label

1.3 Main findings and key contributions

I find no evidence that EU funds would increase their sustainability compared to a control group after the introduction of the SFDR. I cannot either conclude that reclassified funds would reallocate their holdings towards more sustainable investments. In terms of investor reaction, I find (contrary to my expectations) that green-labelled funds attract less flows than non-green funds with similar characteristics. However, my findings do not suggest that label upgrades would have any impact on flows.

My analysis on the determinants of SFDR reclassifications shows that a deterioration in return performance increases the probability of a fund being upgraded, but the results of the other variables are either contradictory or insignificant. The caveat to the study of reclassifications is

that the available data does not allow for proper time series analysis. The limitations are further discussed in section 6.3. I also investigate a set of funds that are self-labelled as ESG products under the SFDR but had their third-party sustainable investment tag removed in an agency review. In line with my initial expectations, I document a negative flow impact from losing an objective sustainability label but do not find evidence that an SFDR green label would alleviate the flow decline.

This paper is among the first to examine the influence of the new EU disclosure rules on the behaviour of mutual funds and investors. It sheds light on whether the intervention has achieved its stated objective of incentivising mutual funds to increase their ESG alignment by reallocating capital into more sustainable investments. To the best of my knowledge, no other paper has studied the determinants and effects of fund reclassifications under the SFDR.

On a broader perspective, this paper also contributes to the mutual fund literature by studying the effectiveness of regulatory interventions from both the demand and supply sides and how new ESG-related information affects investor behaviour. Furthermore, I also add to the greenwashing literature by investigating potential greenwashing behaviour among SFDR funds.

1.4 Structure of the thesis

The rest of the study is structured as follows. Section 2 describes the SFDR. Section 3 provides an overview of the previous empirical literature on how investors react to ESG-related information, the effectiveness of environmental regulatory interventions, greenwashing and other SFDR-related studies. Section 4 presents the data and sample selection. In section 5, I introduce the applied methodologies and provide my empirical results. Section 6 discusses the results and provides practical implications as well as suggestions for further research. Section 7 concludes.

2. Sustainable Finance Disclosure Regulation (SFDR)

2.1 Introduction

The EU Sustainable Finance Disclosure Regulation, hereafter the SFDR, is a set of regulatory rules which impose mandatory ESG disclosure obligations for asset managers and other

financial market participants (FMPs). The aim of the regulation is to enhance end-investors' decision-making process by harmonising sustainability-related disclosure requirements and increasing transparency on the integration and consideration of sustainability risks. Under the SFDR, FMPs are required to classify their financial products as either Article 9 ("dark green"), Article 8 ("light green") or Article 6 (all other products). The definitions of these green profiles and classification criteria are covered more thoroughly in section 2.3.

The regulation links closely to the EU Taxonomy[3], a classification system for environmentally sustainable economic activities, which has been integrated into the SFDR. In order to satisfy both regulations, a fund has to disclose information on the extent to which they are aligned with the taxonomy. The alignment should be expressed as a proportion of the turnover, capital expenditures or operating expenses.

In September 2022, Article 8 funds represented 33.6% of the EU fund universe (by the number of funds) while the market share of Article 9 funds was 4.3%. In terms of assets, the two green categories accounted for a market share of 53.5%, which was split into 48.3% for Article 8 products and 5.2% for Article 9 products. The combined fund assets of light and dark green products stood at EUR 4.3 trillion.[4]

2.2 Background and aims of the regulation

2.2.1 Background – EU Sustainable Finance Action Plan

Sustainable development has long been at the heart of the European Union policy and an objective enshrined in the EU Treaties. The Paris Agreement on climate change and the UN 2030 Agenda for Sustainable Development in 2015 set out a framework for the European Union's long-term sustainable development goals. The Union and its Member States committed to the implementation of these agreements in a full and effective manner as well as incorporating the sustainability objectives into all Union actions and policy initiatives. These actions aimed to support the transition to a low-carbon, more sustainable, resource-efficient and circular economy and to ensure the long-term competitiveness of the EU economy.

[3] Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment and amending Regulation (EU) 2019/2088 (OJ L 198, 22.6.2020, p. 13–43).
[4] Morningstar, 'SFDR Article 8 and Article 9 Funds: Q3 2022 in Review', October 27, 2022.

The financial sector has a key role in achieving the sustainability objectives as sustainable development is largely about capital allocation and financial market activity. After recognising the importance of sustainable finance regulation in attaining the Union's long-term development goals, the EU has since sought to strengthen the regulation of sustainable finance. The objective of the regulatory measures is to incentivise (or obligate) the financial sector to direct resources toward more sustainable economic activities while diverting investments from unsustainable industries.

In March 2018, the European Commission introduced an action plan on sustainable finance (EU Action Plan on Financing Sustainable Growth) which builds upon a strategy to include environmental, social and governance concerns into the Union's policy framework and to mobilise financing for sustainable development. The action plan outlined ten reforms in three different areas: reorienting capital flows towards sustainable investment, incorporating sustainability into risk management and fostering transparency and long-termism in financial and economic activity. The first legislative package of the action plan was released in May 2018 and it included proposals on a uniform EU categorisation system (the EU Taxonomy), investor obligations and disclosures, low-carbon benchmarks and improved sustainability guidance.

One of the key action points in the plan is about clarifying institutional investors' and asset managers' duties on sustainability and increasing transparency on their strategy and climate-related exposures. The legislative initiative to implement this reform was the SFDR, which is at the core of the action plan. Together with the other reforms, it is also a crucial part of the EU's Sustainable Finance Framework and the European Green Deal.[5]

2.2.2 Implementation of the SFDR (Level 1)

On 27 November 2019, the European Parliament and the Council of the European Union published the Regulation (EU) 2019/2088[6] on sustainability-related disclosures in the financial services sector. This legislative act introduced a set of new regulatory rules and disclosure standards with aims to discourage greenwashing and promote responsible and sustainable investments. The SFDR Level 1 obligations came into force on March 10, 2021, requiring

[5] The European Green Deal (COM(2019) 640 final) is a set of policy initiatives introduced by the European Commission in 2019 with the aim of making the European Union climate neutral by 2050 and decoupling economic growth from resource use.

[6] Regulation (EU) 2019/2088 of the European Parliament and of the Council of 27 November 2019 on sustainability-related disclosures in the financial services sector (OJ L 317, 9.12.2019, p. 1–16).

financial market participants to make pre-contractual disclosures for products promoting environmental or social characteristics (Article 8) and for products with sustainable investment objective (Article 9). Large financial market participants referred to in Article 4(3)-(4)[7] of the regulation, however, were required to start reporting not until 30 June 2021.

2.2.3 Main regulatory objectives

Although the regulatory landscape before the SFDR was imposed required institutional investors and asset managers to integrate sustainability risks in their investment decisions and disclosure processes, they were not systematically considered and integrated in a consistent manner. In addition, the legislation on financial advice obliged investment firms and insurance intermediaries to act in accordance with the best interest of their clients, but it did not require an explicit consideration nor disclosure of environmental, social and governance risks when providing investment advice. The SFDR was set out to strengthen the regulatory framework by harmonising the disclosure of sustainability-related information.

The main objectives of the regulation are strengthening the protection of end investors and improving disclosure quality and transparency across the EU financial services sector. In the context of the SFDR, investor protection is about reducing information asymmetries in principal-agent relationships by setting out harmonised rules on the integration of sustainability risks, consideration of adverse sustainability impacts and promotion of ESG characteristics. Since financial market participants act as agents of end investors by receiving a mandate from their clients to take investment decisions on their behalf, the regulation aims to ensure that the aforementioned factors are integrated into their decision-making processes in a consistent manner. With greater transparency on sustainability-related information, investors are able to better compare financial products with regard to their ESG characteristics and make more informed investment decisions based on them.[8]

7 Article 4(3) to financial market participants which, at the balance sheet date, exceed an average number of 500 employees during the financial year. Article 4(4) applies to financial market participants which are parent undertakings of a large group within the meaning of Article 3(7) of Directive 2013/34/EU and which, at the consolidated balance sheet date, exceed an average number of 500 employees during the financial year.

8 Regulation (EU) 2019/2088 of the European Parliament and of the Council of 27 November 2019 on sustainability-related disclosures in the financial services sector (OJ L 317, 9.12.2019, p. 1–16).

2.3 Applicability

The SFDR applies to all financial market participants (FMPs) and financial advisers, including banks, insurers, asset managers, and investment firms operating in the European Union. This also comprises any non-EU entities or their subsidiaries who provide their services in the EU under Article 42 of the Alternative Investment Fund Managers Directive (EU AIFMD)[9].

With respect to financial products, the disclosure regime applies UCITS[10], alternative investment funds (AIF), separately-managed portfolios and sub-advisory mandates. In addition, the scope of the regulation extends to financial advice provided within the EU or by an EU-based investment firm.

By reason of the withdrawal of the United Kingdom from the EU, the country is out of the scope of the SFDR. However, in November 2021, the UK Financial Conduct Authority (FCA) issued a Discussion Paper on Sustainability Disclosure Requirements and investment labels (SDR), which set out proposals on labelling and disclosure rules for funds marketed as promoting ESG characteristics. Although the proposed labelling regime parallels the EU SFDR in part, including shared objectives to increase transparency and disclosure with regard to sustainable finance products and investments, they also have major differences – particularly in relation to labelling criteria. Since a significant number of firms have to comply with the requirements of both regulations, the FCA published a consulting paper (CP22/20), including a roadmap for considering how to treat products categorised under the SFDR in the proposed regime.

2.4 Disclosure requirements

The SFDR imposes pre-contractual and ongoing disclosure requirements at both entity and product levels. Entity-level obligations concern policies on decision-making on sustainability risks. On the product level, affected entities are required to classify all their products as ESG-related products and non-ESG products depending on the degree of their ESG integration. The ESG-related funds are further divided into light or dark green funds. Thus, the regulation sets

[9] Directive 2011/61/EU of the European Parliament and of the Council of 8 June 2011 on Alternative Investment Fund Managers and amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No 1060/2009 and (EU) No 1095/2010 Text with EEA relevance (OJ L 174, 1.7.2011, p. 1–73).

[10] Directive 2009/65/EC of the European Parliament and of the Council of 13 July 2009 on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (UCITS) (OJ L 302, 17.11.2009, p. 32–96).

up three different kinds of classification (Article 6, Article 8, and Article 9). Different reporting obligations will apply depending on which category asset managers classify their products.

2.4.1 Entity-level disclosures

Articles 3-5 of the regulation set out entity-level disclosure requirements for financial market participants and financial advisers. The disclosures must provide detailed information about their policies on how sustainability risks are integrated into the investment decision-making process. Further, the FMPs and FAs shall publish and maintain information on policies to identify and prioritise Principal Adverse Impacts (PAI) on sustainability factors. Under Article 5, they must also disclose their integration of sustainability risks in remuneration policies.

2.4.2 Article 6 funds

The first classification level is Article 6. The SFDR stipulates that products labelled as Article 6 should provide descriptions of how they integrate sustainability risks in their pre-contractual disclosures. This category can also be considered a mandatory disclaimer for non-ESG products.

2.4.3 Article 8 (light green funds)

Article 8 funds, also referred to as "light green" funds, are products that "promote environmental and/or social characteristics" (EU 2019/2088). They are also required to "follow good governance practices". However, the regulator has left the assessment of the minimum sufficient level of promotion to asset managers. There are also supplementary disclosure requirements for Article 8 funds, such as reporting what are the promoted characteristics and how they are met.

2.4.4 Article 9 (dark green funds)

Article 9, or the so-called "dark green" category, applies to funds that have adopted a sustainable investment objective. The SFDR defines a sustainable investment objective as an

“investment in an economic activity that contributes to an environmental objective”. For example, this kind of objective can be measured by key resource efficiency indicators on the use of energy, renewable energy, raw materials, water and land, on the production of waste and greenhouse gas emissions. The disclosure requirements stipulate that Article 9 funds must provide detailed information on how this objective has been achieved.

2.5 SFDR Level 2 – Regulatory technical standards (RTS)

The initial level (Level 1) requirements are supplemented by more detailed Level 2 requirements, which were originally planned to apply from January 2022, but were first postponed until July 2022 and again until January 2023. The regulatory technical standards (RTS) set out in the Commission Delegated Regulation (EU) 2022/1931[11] prescribe a mandatory template for reporting how financial market participants consider principal adverse impacts on sustainability factors in their investment processes. In order to facilitate the identification, assessment and prioritisation of principal adverse impacts, the Delegated Regulation introduces a core set of universal mandatory indicators, supplemented by an additional set of opt-in indicators. In addition, the RTS require financial market participants to disclose information on their policies on the identification of principal adverse impacts and actions taken or planned to mitigate them. Level 2 requirements aim to further enhance the comparability of financial products and support the policy objective of reducing the occurrence of greenwashing.

2.6 Interpretation issues and greenwashing concerns

In February 2021, a month before the SFDR took effect, the joint committee of European Supervisory Authorities (ESAs, consisting of EBA, ESMA and EIOPA) published a draft version of the SFDR regulatory technical standards (RTS) which were supposed to provide practical guidelines for Level 1 and Level 2 sustainability disclosures. The ESAs also sent a letter to the European Commission already in January 2021 where they addressed their concerns and areas of uncertainty regarding the interpretation of the SFDR. The letter insisted on urgent clarifications, but the Commission did not send a response before the RTS were published. If

[11] Commission Delegated Regulation (EU) 2022/1931 of 6 April 2022 on Commission Delegated Regulation (EU) 2022/1288 of 6 April 2022 supplementing Regulation (EU) 2019/2088 of the European Parliament and of the Council with regard to regulatory technical standards (OJ L 196, 25.7.2022, p. 1–72)

the supervisory authorities are left with such a level of uncertainty, one may ask how asset managers should interpret the SFDR. Especially, the definition of what constitutes an Article 8 fund has been considered as vague and ambiguous, which has also raised concerns about potential greenwashing behaviour. If the judgement of the sufficient level of ESG promotion is left to asset managers without proper guidelines, it is likely that funds with very divergent sustainability profiles will end up in the Article 8 or Article 9 categories.

Investor pressure on asset managers to demonstrate their commitment to sustainable investing is incentivising them to categorise their funds as Article 8 or Article 9. Morningstar reported that the two green categories already covered 45.6% of total European fund assets one year on from the introduction of the SFDR.[12] However, the divergent interpretations of the classification criteria have led to a broad and varying range of funds being labelled as light or dark green. A survey carried out by the European Fund and Asset Management Association (EFAMA) showed that the market share of Article 8 and 9 funds varies widely from one Member State to another, being highest in Sweden (92%) and lowest in Poland and Hungary, where the green-labelled funds hold only 1% of the domestic market.[13]

In July 2021, the European Commission confirmed that Article 8 requirements do not prescribe minimum investment thresholds for sustainable investments in order to be considered to be promoting ESG characteristics.[14] Further, the Commission stated that intrinsic characteristics such as sectoral exclusion (e.g. tobacco) also qualify as "promotion". As a result, Article 8 has essentially become some sort of a "catch-all" category, with a variety of ESG approaches labelled under this article. This has prompted suspicions that fund managers may exploit the light green category as an additional ESG label to attract more flows. These concerns have been backed up by analysis; for example, Morningstar reports in its Q3 2022 review of Article 8 and Article 9 funds[15] that less than half of the light and dark green funds disclose a minimum percentage of sustainable investments, and just one-third report a minimum percentage of taxonomy-aligned investments. In addition, the review claims that less than 5% of dark green funds aim for sustainable investment exposure of 90% or higher.

On the other hand, the Commission has clarified that the regulation is not essentially a labelling regime, but rather it is about disclosure of sustainability-related information.[16] Also, the

[12] Morningstar, 'SFDR Article 8 and Article 9 Funds: Q1 2022 in Review', May 5, 2022.
[13] EFAMA, 'The European ESG market in Q1 2021 – Introducing the SFDR', November 11, 2021
[14] European Commission, Q&A ON SUSTAINABILITY-RELATED DISCLOSURES, July 14, 2021
[15] Morningstar, 'SFDR Article 8 and Article 9 Funds: Q3 2022 in Review', October 27, 2022.
[16] e.g. Commission Delegated Regulation (EU) 2022/1931

implementation of the Level 2 disclosure requirements is expected to mitigate the ambiguity and divergence in the interpretation of the regulation.

In sum, the SFDR has engendered confusion and uncertainty among both asset managers and investors. Some asset managers have been more prudent in classifying their products, while others have adopted a more generous approach, resulting in a wide range of funds classified as light or dark green. This could cause further misunderstanding and increase the risk of greenwashing. Therefore, it is worthwhile to investigate how category choices align with third-party sustainability ratings and, on the other hand, how investors allocate their money to different categories.

3. Literature review

Due to the novelty of the SFDR, academic research on the topic is still scarce. Therefore, in addition to covering the papers directly related to the influence of the EU regulation on mutual funds, this literature review also discusses the literature on how investors react to other sustainability-related information as well as policy interventions. Furthermore, I collate some remarkable greenwashing studies as one of the areas of focus in this thesis is the potential greenwashing behaviour enabled by the regulation.

3.1 Effect of other ESG-related information on investors

With the growing popularity of ESG investing, a new branch of literature has emerged around the topic. One area of interest among academics has been how ESG information, disclosed either voluntarily or mandatorily, affects investor behaviour. Experimental evidence from recent literature suggests that investors do value sustainability and that investment decisions are also influenced by nonpecuniary motives (e.g. Bollen, 2007; Hartzmark & Sussman, 2019). Furthermore, prior research has shown that investor demand is higher for SRI funds (Bialkowski & Starks, 2016), Morningstar Globe Ratings (Hartzmark & Sussman, 2019) and UN PRI signatories (Kim & Yoon, 2021), inter alia. Hong and Kacperczyk (2009) find that sin stocks yield on average 2.5% higher returns and attribute it to social norms which cause investors to require a premium for holding sin companies in their portfolios.

Obviously, the most common and visible self-designated label is the name of a fund. Alongside informative objectives, namely fund category, management company, share class, geographical focus etc., funds are also being named for marketing purposes. Several studies have investigated fund name changes, focusing on both the drivers and the effects of re-labelling. Cooper et al. (2005) examine labelling behaviour in the U.S. mutual fund market and find evidence that funds change their names to reflect current hot investment styles in hope of attracting additional flows. El Ghoul and Karoui (2021) observe that "greening" fund names leads to an increase in fund flows and portfolio turnover. Similarly, Kaustia and Yu (2021) show that mutual funds with self-designated ESG labels receive higher inflows compared to other similar funds, and the effect remains favourable even with funds with inferior objective ESG profiles.

3.2 Impact of policy interventions on capital markets

Another area of research is concerned with the regulatory effectiveness of ESG policy interventions. Prior literature has shown that other mandatory disclosure requirements have led to improvements in the transparency and quality of ESG reporting (Ionannou and Seferim, 2019; Gibbons, 2021; Krueger et al., 2021). On the other hand, greater ESG disclosure has also been reported to increase disagreement about ESG metrics (Christensen et al., 2022). This might consequently raise confusion among investors, which is certainly not the desired effect of the reporting mandates.

Several studies have examined the ability of ESG standards and reporting mandates to drive changes in the sustainability levels of the subjects of the regulation. Chen et al. (2017) investigate how the Corporate Social Responsibility (CSR) reporting mandates of two Chinese exchanges affected pollution levels. They report that treated firms reduce their wastewater and SO_2 emissions but experience a reduction in profitability due to the costs of adjusting CSR activities. Similarly, introducing mandated reporting of greenhouse gas (GHG) emissions in the U.S. resulted in a 7.9% reduction in emissions following the disclosure (Tomar, 2021). In Europe, academics have found that after the UK introduced a carbon reporting mandate in 2013, affected firms reduced their GHG emissions by 10% ─ 18% (Jouvenot and Krueger, 2020; Downar et al., 2021; Grenwal, 2021), whereas passing EU directives mandating stricter CSR disclosures was reflected in increased CSR activities even before the regulation came into force (Fiechter et al., 2020). Regulatory initiatives in the EU and Canada on the mandatory extraction

payment disclosures[17] for oil, gas and mining companies have been reported to result in higher prices for extraction rights, decrease investments and obtain fewer extraction licences compared to non-disclosing firms (Rauter, 2020). As a conclusion, most academic studies find evidence that imposing disclosure requirements typically result in the desired outcome as firms tend to adjust and increase their CSR activities after the intervention.

Previous studies have also examined the effects of regulatory interventions on firm behaviour and green investment performance. Zhang et al. (2021) investigate the performance of ESG investing in China after the implementation of "Guidelines for Establishing a Green Financial System". They find that during the post-intervention period, high ESG portfolios have significantly higher abnormal returns compared to less ESG-aligned portfolios. Similar results have been documented by other studies as well. Leiter et al. (2011) analyse how regulatory stringency affects investments of manufacturing industries across Europe and find that environmental regulation can promote corporate green investment. Del Río et al. (2011) and Kesidou and Demirel (2012) also discover a positive relationship.

3.3 Studies on greenwashing in mutual funds

As one of the main research objectives of this study is to investigate whether there is any evidence of greenwashing behaviour among SFDR green funds, especially in Article 8 products, it is worthwhile to cover some previous findings from related literature. A number of studies examine greenwashing in mutual funds. Kim and Yoon (2020) show that on average, signatories of the United Nations Principles for Responsible Investment (UN PRI) do not exhibit improvements in ESG performance after signing the PRI. Chen et al. (2021) provide evidence that bond fund managers misclassify their holdings to appear less risky, and that misclassified funds receive higher investor inflows. Similarly for mutual funds, Dumitrescu et al. (2022) document that only 1 in 4 funds that claim to invest according to ESG objectives fail to live up to their claims. By analysing a sample of self-labelled ESG mutual funds, Raghunandan and Rajgopal (2022) find that the portfolio companies of these funds are less compliant with labour and environmental laws compared to non-ESG funds managed by the same financial institutions in the same years.

[17] Directives 2013/34 and 2013/50 in EU and "Extractive Sector Transparency Measures Act" in Canada. Extraction payments represent what regulated firms pay for the right to extract resources to their foreign host governments.

This study is also related to the strand of research that examines the relationship between greenwashing and ESG disclosures (e.g., Kim and Lyon, 2015; Marquis et al., 2016; Yu et al., 2020). For example, Yu et al. (2020) show that there is a considerable mismatch between ESG disclosure and ESG performance scores, indicating selective disclosure and misrepresentation of actual ESG alignment. Furthermore, Ramos et al. (2022) document findings that some ESG-labelled funds are not aligning their investment goals with label criteria and can bear high ESG risks. By contrast, Guo et al. (2020) study whether corporate green rankings are more closely associated with carbon reduction than carbon disclosure scores. They find a positive relationship between environmental scores and carbon performance but no linkage between disclosure scoring and carbon performance, indicating that introducing green-ranking systems can to a certain extent reduce greenwashing.

3.4 SFDR papers

As noted, there are as yet few SFDR-related publications analysing the influence of the regulation on mutual funds. Thereby, this thesis is among the first studies to document how mutual funds behave under the SFDR. I refer to two papers widely across this thesis. In the first paper, Becker et al. (2022) study whether funds affected by the SFDR increase their sustainability compared to U.S. funds which are not subject to the regulation. They also examine the influence of the SFDR classification on investor inflows. Consistent with the purpose of the regulation, they show that affected funds affected increase their sustainability significantly more than unaffected funds. Furthermore, they document that an Article 8 or Article 9 label leads to larger net inflows compared to article 6 funds. I follow closely their methodology in section 5.1 and introduce similar models in different settings in sections 5.2 and 5.3.

The second paper is from Yu (2022), who studies how fund characteristics are associated with their SFDR classification choice. The results of the research show that past flow and return performances as well as past sustainability levels influence the category choice. As expected, the findings also show that, in general, greener funds are more likely to be classified in greener categories under the SFDR. Additionally, the paper investigates fund flows during the post-SFDR period. In contrary with the findings of Becker et al., it finds that after controlling for other ESG labels, there is no evidence that the SFDR labels would add any additional flows. The author infers that this might be attributable to the fact that funds designated in the greener

categories are also likely to have other sustainability-related labels. Therefore, investors have already allocated their capital based on other label information, and adding a new green tag is not reflected in increased flows.

4. Data

4.1 Sample selection and propensity score matching

To get a holistic view of the impacts of the regulation, I extend my sample to cover all countries within the scope of the SFDR. Therefore, I collect data on all European-domiciled open-end UCITS mutual funds and exclude all non-EU domiciles from the sample. I further restrict my sample to funds that have continuous records of all variables in all months of the time period spanning from September 2019[18] to March 2022 (or October 2022 in section 5.3).

In each regression, the sample consists of a treatment group and a control group (see related sections for more thorough descriptions of sample formation). The control groups are formed by applying a 1:1 nearest neighbour matching method, which follows the methodology of Becker et al. (2022) and Ammann et al. (2019). It matches funds from control groups to treated funds by estimating propensity scores using age, size, returns and net inflows as comparative fund characteristics.[19] Using a logit model, I then regress dummy variables indicating whether the fund is in the treatment group or not on these fund characteristics. The propensity scores are fitted values from these regressions. I allow the same control fund to be matched to multiple treatment funds. All non-matched funds are removed from the sample. In section 5.1, the control group consists of U.S. funds which are unaffected by the SFDR. Thus, I also collect data on U.S.-domiciled funds.

4.2 SFDR label data

I obtain all data on fund SFDR classifications from Morningstar Direct. The related data point is "EU SFDR Fund type (Article 8 or Article 9)", which was introduced in parallel with the enforcement of the SFDR in March 2021 and is constantly being updated by Morningstar.

[18] September 2019 marks the change in the methodology of Morningstar Sustainability ratings. To ensure comparability over time, any earlier observations have been excluded from the sample.
[19] The characteristics are based on the initial month of the sample and the matched sample is kept constant over time.

However, one shortcoming of this data point is that only the most recent version of it is available at Morningstar Direct, meaning that the historical values cannot be obtained in order to conduct a proper time series analysis. Therefore, I have collected cross-section samples of the SFDR classifications of all EU-domiciled open-end UCITS mutual funds from July 2021 and March 2022. These datasets enable analysis of reclassifications which will be discussed in more detail in section 5.2.

4.3 Mutual fund data

I also stick to Morningstar Direct in the collection of mutual fund data. I obtain data on a monthly level. Retrieved fund characteristics include assets under management, fund age in months, monthly percentage returns and monthly inflows as a percentage of total net assets (TNA). I exclude all observations with missing data from the sample. The net inflows are calculated as follows:

$$Flow_{i,t} = \frac{TNA_{i,t} - TNA_{i,t-1} * \left(1 + Return_{i,t}\right)}{TNA_{i,t-1}}$$

In my analyses, I use Morningstar Globe Rating as an independent measure of sustainability level. The Globe Rating ranks funds on a scale from 1-5 based on the sustainability assessment of their individual holdings. Since Morningstar changed their methodology on how the sustainability rating is calculated in September 2019, I exclude any earlier observations from my sample when conducting a time series analysis. I also collect data on the Morningstar's sustainable investment tag (Sustainable Investment Overall or ESG label). Morningstar classifies "sustainable investment" as a fund that explicitly indicates any kind of sustainability, impact or ESG strategy in its prospectus or offering documents.

4.4 Summary statistics

Table 1 reports the summary statistics of sustainability scores and fund characteristics for EU and matched U.S. funds (Panel A) as well as separate statistics for Article 6, Article 8 and Article 9 funds (Panel B). Panel A shows that on average, EU funds (avg. score 3.25) have 0.28

higher sustainability scores than U.S. funds (2.97). From Panel B, it can be observed that the average sustainability score increases in parallel with the SFDR label – from an average Globe Rating of 3.11 for Article 6 funds to 3.29 for Article 8 and 3.78 for Article 9. This suggests that fund managers have categorised their products in accordance with the purpose of the SFDR (i.e. greener funds are more likely to be in the greener categories). A similar trend can also be observed in terms of size, return and flow.

TABLE 1: Summary statistics (5.1.1 and 5.1.2)

This table reports summary statistics of the monthly portfolio sustainability scores (measured as Morningstar Globe Ratings) as well as monthly fund characteristic measures, including age in months, assets under management, return and flow. Panel A covers datasets used for analysis in section 5.1.1 (EU funds and matched U.S. funds.) Panel B shows summary statistics for Article 6, Article 8 and Article 9 funds analysed in section 5.1.2. All control variables are winsorized at the 5% and 95% level.

Panel A: EU vs. U.S.						
Euro funds (all)						
	Obs.	*Mean*	*Median*	*SD*	*Min*	*Max*
Sustainability score	785 310	3.25	3	1.07	1	5
Fund age (in months)	785 310	145.17	127	96.11	23	346
Fund size (in Million Euro)	785 310	132.33	38.14	212.92	1.27	818.51
Monthly returns (in %)	785 310	0.58	0.59	3.50	-6.57	7.28
Fund flows (in % of TNA)	785 310	-0.08	0.00	2.72	-6.3	6.8
U.S. funds (matched)						
Sustainability score	144 990	2.97	3	1.03	1	5
Fund age (in months)	144 990	58.07	31	74.49	31	401
Fund size (in Million Euro)	144 990	423.99	118.91	684.29	1.88	2649.13
Monthly returns (in %)	144 990	0.90	0.72	3.64	-6.83	8.37
Fund flows (in % of TNA)	144 990	0.07	-0.18	3.31	-6.81	8.57
Panel B: EU						
EU funds (Article 6)						
	Obs.	*Mean*	*Median*	*SD*	*Min*	*Max*
Sustainability score	151 063	3.11	3	1.09	1	5
Fund age (in months)	151 063	156.30	148	69.18	56	268
Fund size (in Million Euro)	151 063	82.10	17.23	143.82	2.68	561.74
Monthly returns (in %)	151 063	0.53	0.53	3.37	-6.08	6.83
Fund flows (in % of TNA)	151 063	-0.31	0.00	1.85	-5.37	3.78
EU funds (Article 8)						
Sustainability score	199 950	3.29	3	1.07	1	5
Fund age (in months)	199 950	109.46	103	46.65	46	225
Fund size (in Million Euro)	199 950	196.54	62.98	303.23	1.12	1144.60
Monthly returns (in %)	199 950	0.65	0.71	3.66	-6.81	7.54
Fund flows (in % of TNA)	199 950	-0.05	0.00	3.35	-8.14	7.85
EU funds (Article 9)						
Sustainability score	16 523	3.78	4	1.08	1	5
Fund age (in months)	16 523	134.10	108	101.92	17	367
Fund size (in Million Euro)	16 523	201.92	67.92	286.19	0.74	1046.30
Monthly returns (in %)	16 523	0.83	1.12	4.06	-7.64	8.32
Fund flows (in % of TNA)	16 523	0.92	0.01	4.29	-7.44	12.94

4.5 Correlation matrix

TABLE 2: Correlation matrix of independent variables

This table displays the pairwise correlations for the independent variables used in the regression analysis. "Size" refers to the log of assets under management. "Return" is monthly percentage returns and "Flow" is monthly inflows measured as a percentage of total net assets. "Age" is fund age in months. The sustainability-related variables include "Name", which is a binomial variable indicating whether a fund has one or more keywords such as "sustainable", "ESG" or "SRI" in its name, "GR45", which indicates whether a fund has an above-average Morningstar Globe Rating (4 or 5), and "ESG" which shows whether a fund has been categorized as a sustainable investment (Sustainable Investment Overall) by Morningstar.

	Size	*Return*	*Flow*	*Age*	*Name*	*GR45*	*ESG label*
Size	1						
Return	0.00152	1					
Flow	-0.0006	-0.00012	1				
Age	0.124413	-0.01119	-0.00509	1			
Name	-0.01232	0.003417	-0.00116	-0.09436	1		
GR45	0.01467	-0.00249	0.00273	0.017704	0.107625	1	
ESG	0.043835	-0.01723	0.005338	-0.09766	0.348909	0.259362	1

5. Methodology and results

5.1 Influence of the SFDR on mutual funds and investors

The first section of the empiric part of this thesis tries to shed light on how both the demand (investors) and supply (fund managers) side behave under the SFDR. In this section I closely stick to the methodology of Becker et al. (2022) by replicating their analyses (see section 3.4). The rationale to do so is to further contribute to relevant literature by extending the time period by one year and conducting the analysis with a more comprehensive sample. Adding more months to the sample period of Becker et al.'s (their analysis only extends to June 2021) provides valuable information on the latest changes in the sample, which is essential as the new regulation has been effective for only a short period of time. Furthermore, the novelty of the disclosure rules may also lead to fundamental changes in the perceptions and behaviour of both sides as asset managers are still getting used to the new obligations and investors to the new information available. This calls for additional research on the topic.

5.1.1 Influence on sustainability scores

First, I investigate the influence of the SFDR on sustainability scores. The European Commission passed the new regulation in November 2019. Thus, asset managers have since had time to adjust their portfolios in order to make them compatible with the SFDR. Investors, on the other hand, had no information about the fund labels before March 2021. The regulation aims to increase the transparency of sustainability information and incentivise funds to increase their ESG efforts. If the directive works as it is intended to, it is fair to assume that funds affected by the SFDR should increase their ESG scores more than unaffected funds. I also use U.S. mutual funds as a control group in my sample because they are outside the scope of the regulation. In order to control for potential differences between the treatment group and the control group, I apply a 1:1 nearest neighbour matching method, that matches each EU fund with its closest U.S. counterpart based on fund characteristics such as fund age, size, returns and net inflows.

I assess the introduction of the SFDR and its influence on affected funds' sustainability ratings by following Becker et al. (2022) and conduct a difference-in-differences regression, with the sample period running from September 2019 to March 2022. The model is as follows:

$$GR_{i,t} = \beta_0 * Treated_i + \beta_1 * Post_i + \beta_2 * Treated_i * Post_i + \beta_3 * Size_{i,t-1} + \beta_4 *$$

$$\text{Age}_{i,t-1} + \beta_5 * \text{Return}_{i,t-1} + \beta_6 * Flow_{i,t-1} + \varepsilon_i$$

I use Morningstar Globe Ratings as a measure of sustainability and the dependent variable. "Treated" is a dummy that equals one for all EU funds affected by the SFDR. The post-treatment variable ("Post") takes the value of one for all months after November 2019 (which marks the first announcement of the regulation). The difference-in-differences estimator, "Treated*Post" should capture the impact for EU funds in the post-treatment period. The control variables include log of assets under management ("Size"), fund age in months ("Age"), monthly percentage returns ("Return"), and monthly inflows as a percentage of total net assets ("Flow"). All control variables are lagged by one month.

TABLE 3: The influence of the SFDR on sustainability scores

This table reports the results from a difference-in-differences regression on the influence of the EU SFDR regulation on fund sustainability scores between September 2019 and March 2022. The sample consists of 26,177 European funds a control group of 6,516 U.S. funds, matched by applying the 1:1 nearest neighbour matching method (same control fund allowed to be matched multiple times). The dependent variable is sustainability score (Morningstar Globe Rating). "Treated" is a dummy variable that equals 1 for European funds affected by the SFDR and 0 for U.S. funds. "Post" dummy takes the value of 1 for all months after November 2019. Their interaction ("Treated*Post") is the primary independent variable of interest. The control variables include log of assets under management ("Size"), monthly percentage returns ("Return"), fund age in months ("Age"), and monthly inflows as a percentage of total net assets ("Flow"). All control variables are lagged by one month and winsorized at the 5% and 95% level. The regression in column (2) controls for fund fixed effects. t-statistics, based on robust standard errors clustered at fund level, are reported in parentheses. ***, **, and * denote the statistical significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable	
	Morningstar Globe Rating	
	(1)	(2)
Treated	0.291***	-0.006
	(13.163)	(-0.241)
Post	-0.023**	-0.023**
	(-2.157)	(-2.375)
Treated*Post	0.015	0.011
	(1.233)	(0.963)
Size	0.063***	-0.092***
	(7.161)	(-6.162)
Return	-0.001***	-0.00001
	(-2.816)	(-0.067)
Age	0.0001	0.001***
	(1.383)	(4.365)
Flow	2.101***	0.116***
	(16.487)	(3.212)
Constant	2.474***	
	(34.244)	
Observations	495,288	495,288
Adjusted R^2	0.016	0.847
Fixed effects (fund)	No	Yes

Table 3 displays the results of the difference-in-differences estimation of the influence of SFDR labels on sustainability scores. The regression results reported in column (2) control for fund

fixed effects. Adding the fixed effects causes the coefficient for affected funds ("Treated") to lose statistical significance. Thus, it cannot be established that European or U.S. funds have on average higher sustainability scores than the other group. From the time series perspective, my findings suggest that U.S. funds in fact experienced 0.02 lower Globe Rating scores after the initial announcement of the SFDR in November 2019. The coefficients for the interaction variable ("Treated*Post") are statistically insignificant, suggesting that the intervention has not had the desired effect of increasing the sustainability of affected funds.

5.1.2 Impact on fund flows

After analysing the impact of the SFDR introduction on funds' sustainability levels, I shift my focus on investors. Therefore, it is also interesting to investigate how labelling funds as Article 8 or Article 9 affects the behaviour of the end investors. Given that light or dark green funds are likely to already have other sustainability-rated labels, the question of interest is whether an Article 8 or 9 label can attract any additional flows. To analyse these questions, I conduct the following difference-in-differences regression:

$$Flow_{i,t} = \beta_0 * Treated_i + \beta_1 * Post_i + \beta_2 * Treated_i * Post_i + \beta_3 * Size_{i,t-1} + \beta_4 *$$

$$\text{Return}_{i,t-1} + \beta_5 * \text{Age}_{i,t-1} + \sum(\beta_n * ESG(n)_{i,t-1}) + \varepsilon_i$$

The model follows closely Becker et al. (2022). However, the authors do not control for other ESG labels, which in my view neglects the fact that higher inflows experienced by Article 8 and 9 funds might be attributable to these existing labels. Therefore, I include additional sustainability-related dummy variables in my analysis. The included variables are ESG name label ("Name"), above-average Morningstar Globe Rating ("GR45") and Morningstar ESG label ("ESG"). The construction of the first mentioned variable follows Nofsinger and Varma (2022) and refers to funds which have one or more of the following words in their name: "environment", "ESG", "ethical", "governance", "green", "impact", "responsible", "social", "SRI", "sustainable" and "sustainability". "GR45" variable takes the value of one during months when a fund has above-average Globe Rating (4 or 5) and "ESG" during months when a fund possesses the Morningstar Sustainable Investment Overall classification (see section 5.3.1 for a more precise description).

I provide separate analyses for Article 8, Article 9, and Article 89 funds (i.e. the two green categories together). “Treated” takes the value of one if the fund is categorised as Article 8, Article 9, and Article 8 or 9, respectively. The post-treatment period is all months after February 2021 i.e. after the introduction of the SFDR. “Treated*Post” is the difference-in-differences estimator. Fund control variables remain unchanged from section 5.1.1. I use Article 6 funds as a control group and match treated funds 1:1 with their closest neighbours.

TABLE 4: The impact of SFDR classification on fund flows

This table reports the results from three difference-in-differences regressions on the relationship between SFDR green profiles and fund inflows, with monthly fund flows (expressed in percentage points) as the dependent variable. The time period spans from September 2019 to March 2022, and the sample consists of 11,856 European funds The independent variables of interest include "Treated", which is a dummy variable representing the SFDR classification categories Article 8, Article 9, and Article 8 or 9, respectively; "Post" dummy taking the value of 1 for all months after February 2021; and their interaction ("Treated*Post"). ESG dummy control variables include "Name" (equals 1 if fund name contains one or more sustainability-related buzzwords), above-average Morningstar Globe Rating, and Morningstar ESG label. Other control variables are log of assets under management ("Size"), monthly percentage returns ("Return") and fund age in months ("Age"). All control variables are lagged by one month and winsorized at the 5% and 95% level. All regressions control for fund fixed effects. t-statistics, based on robust standard errors clustered at fund level, are reported in parentheses. ***, **, and * denote the statistical significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable:		
	Fund flows		
	Article 8	Article 9	Article 89
Treated	0.0003	0.004***	0.002***
	(0.612)	(4.368)	(3.683)
Post	0.001***	0.001***	0.002***
	(4.074)	(3.436)	(7.501)
Treated*Post	-0.002***	-0.005***	-0.003***
	(-3.653)	(-4.868)	(-7.206)
Size	0.0001*	0.0001	0.0001
	(1.672)	(1.573)	(1.566)
Return	0.0004***	0.0004***	0.0004***
	(19.591)	(19.510)	(19.565)
Age	-0.00003***	-0.00002***	-0.00002***
	(-16.620)	(-16.434)	(-16.550)
Name	0.001	0.001	0.001
	(1.339)	(1.225)	(1.223)
GR45	0.003***	0.003***	0.003***
	(10.040)	(9.781)	(9.859)
ESG	0.005***	0.005***	0.005***
	(13.056)	(11.689)	(12.528)
Constant	-0.002	-0.002	-0.003*
	(-1.397)	(-1.291)	(-1.897)
Observations	170,264	170,264	170,264
Adjusted R^2	0.022	0.022	0.022
Fixed effects (fund)	Yes	Yes	Yes

Results of the difference-in-differences estimation on the impact of the SFDR labels on investor flows are presented in table 4. Columns (1), (2) and (3) display the regression coefficients for Article 8 funds, Article 9 funds and Article 8 or 9 funds, respectively. The interaction term ("Treated*Post") is statistically significant at 1% level in all three columns, while the signs of the coefficients are all negative. This suggests that after the entry into force of the regulation, funds labelled either as light or dark green have in fact generated lower monthly inflows than their non-labelled (Article 6) counterparts. The magnitude is even greater for Article 9 funds, as the results indicate that they have received 0.5 percentage points fewer flows than Article 6 funds, while the effect was only -0.2 percentage points for Article 8 funds.

The other ESG-related control variables, above-average Morningstar Globe Rating and Sustainable Investment Overall ("ESG") dummies, both receive positive and statistically significant coefficients (at 1% level). Funds with a Globe Rating of 4 or 5 are able to generate 0.3% more inflows per month than funds that scored 3 or less. Having an ESG label increased the monthly inflows by 0.5 percentage points.

5.2 SFDR reclassifications

Although the SFDR had come into force only around one year earlier, several funds already had updated their green profile classifications by March 2022. In its 2021 review of Article 8 and Article 9 funds, Morningstar reports that since March 2021, around 1,800 funds have upgraded either from Article 6 to Article 8 or 9 or from Article 8 to Article 9. However, no downgrades were identified. According to Morningstar, only a minority of the upgraded products have experienced a name change, indicating that the reclassifications are not related to a wider repurposing process but rather to fund managers thinking that they have initially misclassified their funds. I identify reclassifications by comparing the SFDR labelling of all EU-domiciled open-end UCITS mutual funds in July 2021 and March 2022 and observe that more than 2,100 funds have been upgraded from Article 6 to Article 8. All classification changes are reported in table 5.

Given the loose definition of Article 8 funds, the reclassifying behaviour is not surprising as fund managers may reconsider the classifications to have their products better aligned with the regulation. On the other hand, the vague classification rules may encourage to take a more

aggressive approach to categorise funds as Article 8 or Article 9. If this is the case, then investors could be misled into thinking that funds marketing themselves as promoting ESG characteristics or pursuing sustainable goals considerably differ from what they were before the SFDR or from similar products without the light or dark green label. However, the experienced upgrades may also be attributable to funds actually updating their investment strategies to increase their ESG alignments – consistent with the intuition and purpose of the regulation.

This section provides a thorough analysis of the causes and consequences of the experienced SFDR reclassifications. First, I investigate how different fund characteristics are correlated to the decision to upgrade the SFDR category. I continue by analysing whether product upgrades are reflected in funds' ESG characteristics. In the third subsection, I examine the relationship between reclassifications and fund flows.

TABLE 5: SFDR classification changes

This table reports changes in funds' SFDR classification between July 4, 2021 and March 12, 2022. "One level up (down)" represents a classification upgrade (downgrade) either between Article 6 and Article 8 or between Article 8 and Article 9. "Two levels up (down)" shows upgrades (downgrades) between Article 6 and Article 9. Columns 3 and 4 specify one-level classification changes between the SFDR green profiles.

	N	Between Article 8 and Article 6	Between Article 8 and Article 9
No changes	19 396 (89.3%)		
One level up	2 148 (9.9%)	2060	88
One level down	63 (0.3%)	47	16
Two levels up	92 (0.4%)		
Two levels down	10 (0.005%)		

5.2.1 The determinants of SFDR reclassifications

In this subsection, I analyse the determinants of SFDR reclassifications, i.e. what drives the decision to upgrade a fund into a higher category. With the binary variable "Upgrade" as the dependent variable, I conduct the following logit regression to investigate how different fund characteristics contribute to the reclassification decision:

$$Upgrade_i = \beta_0 * Ret\_rank_i + \beta_1 * Flow\_rank_i + \beta_2 * Vol\_Ret_i + \beta_3 * Vol\_Flow_i + \beta_4 *$$

$$D\_GR45_i + \beta_5 * Num\_GR45_i + \beta_6 * D\_ESG_i + \beta_7 * Num\_ESG_i + \beta_8 * Size_i + \beta_9 * Age_i$$

The coefficients in the above equation are log odds ratios of the probabilities. As the interpretation of the coefficients in logit models differs from that of the classical linear regression model, I also apply the average marginal effects of independent variables on the probability of reclassification (i.e. "Upgrade" = 1). Flow and return performances are measured by percentile ranks of past 8-month[20] cumulative returns and flows. I also include volatilities of monthly returns and flows over the past 8 months. For sustainability-related controls, I follow Yu (2022) and construct two different types of variables for both Morningstar ESG label and Globe Rating information, one of which indicates whether a fund has either had the sustainable investment label or an above-average Globe Rating during the past 8 months, while the other states the number of months the fund was granted the ESG label or received a Globe Rating of 4 or 5 in the corresponding period. Finally, I add controls for other fund characteristics: log of assets under management and fund age in months.

[20] 8-month period is used to avoid overlapping between the cross-sections.

TABLE 6: The determinants of SFDR reclassifications

This table reports the results from a logistic regression investigating the determinants of fund reclassifications under the SFDR. The dependent variable ("Upgrade") is a binary choice indicating whether a fund has upgraded its SFDR green profile between July 2021 and March 2022. The independent variables include variables related to flow and return performances, sustainability level, and other controls, and they are estimated in March 2022. Flow and return performances contain percentile ranks of past 8-month cumulative returns and flows and their volatilities for the corresponding period. Variables controlling for sustainability level include "D_GR45" and "D_ESG" which indicate whether a fund has had either an above-average Morningstar Globe Rating (4 or 5) or the Sustainable Investment Overall classification (ESG label), and "Num_GR45" and "Num_ESG" account for the number of months a fund has held an above-average GR or the ESG label. Other controls contain fund age in months ("Age") and log of assets under management ("Size"). The regression in column (2) controls for domicile fixed effects. Z-statistics are shown in parentheses, and average marginal effects are reported in square brackets. ***, **, and * denote the statistical significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable:	
	SFDR upgrade	
	(1)	(2)
Ret_rank	-0.237***	-0.286***
	(-2.593)	(-3.046)
	[-0.0226]	[-0.0262]
Flow_rank	-0.011	0.152
	(-0.121)	(1.625)
	[-0.0011]	[0.0139]
Vol_Ret	0.155***	0.187***
	(2.763)	(3.269)
	[0.0147]	[0.0172]
Vol_Flow	0.025	-0.010
	(0.241)	(-0.089)
	[0.0024]	[-0.0009]
D_GR45	0.087	0.137
	(0.739)	(1.137)
	[0.0083]	[0.0125]
Num_GR45	-0.004	-0.008
	(-0.217)	(-0.436)
	[-0.0004]	[-0.0008]
D_ESG	2.139***	2.224***
	(22.605)	(22.289)

Table 6: Continued

	[0.2040]	[0.2039]
Num_ESG	-0.126***	-0.147***
	(-8.773)	(-9.784)
	[-0.0120]	[-0.0134]
Age	0.001***	0.001***
	(4.164)	(5.244)
	[0.0001]	[0.0001]
Size	0.011	0.015
	(0.948)	(1.196)
	[0.0011]	[0.0014]
Constant	-3.110***	-4.163***
	(-13.388)	(-13.887)
Observations	15,508	15,508
Pseudo R^2	0.08	0.13
Fixed effects (Domicile)	No	Yes

The results of the logit regression for the determinants of SFDR reclassifications are presented in table 6 (column 2 includes domicile fixed effects). Firstly, they show that poor return performance is associated with a higher probability of funds reclassifying themselves into a greener category. The average marginal effect of the percentile rank of the eight-month cumulative returns is -0.0226 (Z-value -3.046), which implies that a 10 percentage point decrease in percentile rank increases the probability of a fund upgrading its SFDR classification by 0.23 percentage points. Furthermore, the regression results indicate that a 10 percentage point increase in return volatility (monthly volatility in the past eight months) is associated with a 0.17 percentage points higher probability of reclassification (Z-value 3.269). In terms of flow performance, there does not appear to be a statistically significant effect on the likelihood of an upward reclassification.

As for the sustainability level measures, I find somewhat contradictory results. The variables related to Morningstar Globe Rating ("D_GR45" and "Num_GR45") both have insignificant effects on the likelihood of a fund being upgraded. On the other hand, the ESG label control variables seem to have statistically significant effects on the SFDR reclassifications. However, the results of whether a fund has received the ESG label at least once during the eight-month period ("D_ESG") and the number of months in which the fund had the ESG label

("Num_ESG") appear to be dissenting. While the average marginal effect for "D_ESG" is 0.2 (Z-value 22.289), the corresponding value is -0.01 for "Num_ESG".

5.2.2 Is reclassifying reflected in sustainability scores?

It is fair to assume that if a fund is upgraded from Article 6 to Article 8 or 9, or from Article 8 to Article 9, the reclassification should be reflected in the fund's ESG characteristics. If this is not the case, it is a potential sign of greenwashing behaviour. To address this question, I examine the influence of SFDR upgrades on fund sustainability scores (expressed as Morningstar Globe Ratings) in a two-period difference-in-differences setting as follows:

$$GR_{i,t} = \beta_0 * Upgrade_i + \beta_1 * Post_i + \beta_2 * Upgrade_i * Post_i + \beta_3 * Size_{i,t-1} + \beta_4 *$$

$$\text{Age}_{i,t-1} + \beta_5 * \text{Ret\_rank}_{i,t-1} + Flow\_rank_{i,t-1} + \varepsilon_i$$

The primary independent variables include the reclassification indicator dummy variable ("Upgrade"), the post-treatment variable ("Post"), and their interaction term ("Upgrade*Post"). The regression also controls for the log of assets under management, fund age in months, and percentile ranks of cumulative returns and flows (percentage of total net assets), which are all lagged by one month. Due to the limitations in data availability, the sample comprises only two periods of data, a pre-treatment period consisting of July 2021 observations and a post-treatment period sample of March 2022 observations. "Upgrade" equals one if the fund has experienced an SFDR category upgrade between the two periods. Its interaction with the "Post" variable, the difference-in-differences estimator, should capture the effect of the upgrade on sustainability scores.

I also include a control group of non-treated funds in my sample. For this purpose, I use European funds that have maintained their SFDR classification between July 2021 and March 2022. And like in section 5.1, the treated funds are paired 1:1 with their nearest neighbour funds.

TABLE 7: The relationship between SFDR reclassifications and sustainability scores

This table reports the results from a two-period difference-in-differences regression on the relationship between SFDR reclassifications and funds' sustainability scores, with Morningstar Globe Rating as the dependent variable. The first cross-section sample is from July 2021, and the post period sample from March 2022. The sample consists of 1,316 European funds that have upgraded their SFDR green profiles by one or two levels between the time periods, and a control group of 1,250 funds that have maintained their July 2021 classification. The control funds are matched by applying the 1:1 nearest neighbour matching method (the same fund is allowed to be matched multiple times). "Upgrade" is a dummy variable that equals one for reclassifying funds. The dummy variable "Post" takes the value of 1 for March 2022 observations. "Upgrade*Post" represents the interaction of these variables. The control variables include log of assets under management ("Size"), fund age in months ("Age"), and the percentile ranks of the cumulative returns ("Ret_rank") and flows ("Flow_rank"). All control variables are lagged by one month and winsorized at the 5% and 95% level. t-statistics, based on robust standard errors clustered at fund level, are reported in parentheses. ***, **, and * denote the statistical significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable:
	Morningstar Globe Rating
Upgrade	-0.020
	(-0.420)
Post	0.001
	(0.016)
Upgrade*Post	0.002
	(0.029)
Size	0.049***
	(5.753)
Age	0.0002
	(1.255)
Ret_rank	-0.089
	(-1.598)
Flow_rank	0.262***
	(5.044)
Constant	2.466***
	(15.592)
Observations	5,132
R^2	0.014
Adjusted R^2	0.013
Residual Std. Error	1.072 (df = 5124)

The regression coefficients of the difference-in-differences setting, presented in table 7, are more or less statistically insignificant. Hence, no further conclusions on the relationship

between SFDR reclassifications and independent sustainability scores can be made based on this analysis.

5.2.3 Impact of reclassifications on fund flows

As described earlier, one potential motive for reclassification could be hopes of investors allocating more capital into more sustainable funds. Asset managers with greenwashing motives may consider the vague classification rules as an opportunity to attract additional flows. Therefore, it seems worthwhile to investigate whether SFDR category updates have an impact on fund flows. An additional contribution compared to the earlier flow analysis is that in the setting in section 5.1.2, investors had no information about the fund labels before March 2021, but now they are able to observe the upgrade. Consequently, they may attribute the reclassifications to improvements in the funds' ESG characteristics and end up allocating more investments to those funds.

To investigate whether SFDR category upgrades have any kind of influence on investors' capital allocations, I stick to the difference-in-differences methodology and conduct the following regression model:

$$Flow_{i,t} = \beta_0 * Upgrade_i \ + \beta_1 * Post_i + \beta_2 * Upgrade_i * Post_i + \beta_3 * GR45_{i,t-1} + \beta_4$$

$$* ESG_{i,t-1} + \beta_5 * \text{Size}_{i,t-1} + \beta_6 * \text{Age}_{i,t-1} + \beta_7 * \text{Ret\_rank}_{i,t-1} + \varepsilon_i$$

In the above model, the dependent variable, cumulative fund flows, is regressed on the primary independent variables of interest, "Upgrade", "Post", and their interaction term ("Upgrade*Post"), a set of ESG control variables, and other fund control variables. "Upgrade" and "Post" are dummy variables indicating the treated observations (i.e. reclassifying funds) and the post-treatment period, respectively.

To control for other ESG factors potentially affecting the flows, I further add two common ESG variables: Morningstar Globe Rating and Sustainable Investment Overall (ESG label). The former is a binary variable taking the value of one for funds with an above-average Globe Rating (4 or 5) and zero otherwise, while the latter indicates whether a fund had the ESG label in pre or post periods. The regression also controls for log of assets under management, fund

age in months, and percentile ranks of cumulative returns and flows (percentage of total net assets), which are all lagged by one month.

Since the observations are obtained from the same sample as in section 5.2.2, my data consists of only two cross-sections – one from July 2021 and the other from March 2022. Again, I use 1:1 nearest neighbour matching to pair reclassifying funds with control group observations. Also in the flow analysis, the sample contains a control group formed of European funds that have maintained their SFDR classification between the cross-sections.

TABLE 8: The impact of SFDR reclassifications on fund flows

This table reports the results from a two-period difference-in-differences regression on the relationship between SFDR reclassifications and fund inflows, with 8-month cumulative fund flows (expressed in percentile ranks) as the dependent variable. The first cross-section sample is from July 2021, and the post period sample from March 2022. The sample consists of 1,800 European funds that have upgraded their SFDR green profiles by one or two levels between the time periods, and a 1:1 matched control group of funds that have maintained their July 2021 classification. "Upgrade" is a dummy variable that equals one for reclassifying funds. The dummy variable "Post" takes the value of 1 for March 2022 observations. "Upgrade*Post" represents the interaction of these variables. The regression in column (2) controls for two sustainability-related variables: above-average Morningstar Globe Rating (4 or 5), and Sustainable Investment Overall (ESG label). Other control variables are log of assets under management ("Size"), fund age in months ("Age"), and percentile rank of 8-month cumulative percentage returns in ("Ret_rank"). All control variables are lagged by one month and winsorized at the 5% and 95% level. t-statistics, based on robust standard errors clustered at fund level, are reported in parentheses. ***, **, and * denote the statistical significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable:	
	Flow	
	(1)	(2)
Upgrade	-0.013	-0.012
	(-1.316)	(-1.202)
Post	-0.004	-0.014
	(-0.455)	(-1.445)
Upgrade*Post	0.010	0.008
	(0.764)	(0.613)
GR45		0.037***
		(5.016)
ESG		0.028***
		(3.690)
Size	0.023***	0.021***
	(11.943)	(11.026)
Age	-0.0005***	-0.0005***
	(15.621)	(-15.721)
Ret_rank	0.073***	0.067***
	(6.172)	(5.646)
Constant	0.152***	0.165***
	(4.318)	(4.670)
Observations	7,124	7,124
Adjusted R^2	0.046	0.053

Table 8 shows the results of regressions on the relationship between SFDR reclassifications and fund inflows. In column (2), I have added the ESG label dummy and the above-average Globe Rating dummy to the regression. By including the sustainability-related control variables, I am able to examine how other labels are attracting flows and do they potentially dilute the ability of reclassification events to bring additional flows (if any). However, neither of the difference-in-differences estimates ("Upgrade*Post") in regressions (1) and (2) reached statistical significance. Therefore, no firm conclusions that investors would be more willing to allocate their investments to funds after they upgrade to a greener category can be drawn.

As for the other sustainability labels, I find that funds with an above-average Globe Rating receive on average 3.7 percentage points higher flows than lower-rated funds, and there is a positive effect of the same magnitude for having an ESG label. These effects are statistically significant at 1% level.

5.3 SFDR labels and removal of third-party sustainability tags – flow analysis

5.3.1 Morningstar Sustainable Investment Overall (ESG label)

In early 2019, Morningstar introduced the Sustainable Investment Overall (ESG label) framework as part of the research house's effort to assess the increased landscape of sustainable investments. In order to be defined as a "Sustainable Investment", a fund must explicitly state an investment strategy focusing on sustainability, impact or ESG factors in its prospectus or regulatory filings. The "Sustainable Investment" funds are further categorised into three distinct groupings ("2nd tier") – "ESG funds" which prominently adhere to incorporating environmental, social, and governance factors in their investment process; "Impact funds" which alongside financial returns, seek to deliver a positive impact on specific and measurable themes such as gender diversity, community development or environmental issues like low carbon; and "Environmental Sector Funds" which invest in environmentally oriented industries such as the renewable energy sector.[21]

[21] Morningstar 'Morningstar Sustainable Attributes: Framework and Definitions for "Sustainable Investment" and "Employs Exclusions" Attributes', July 31, 2020.

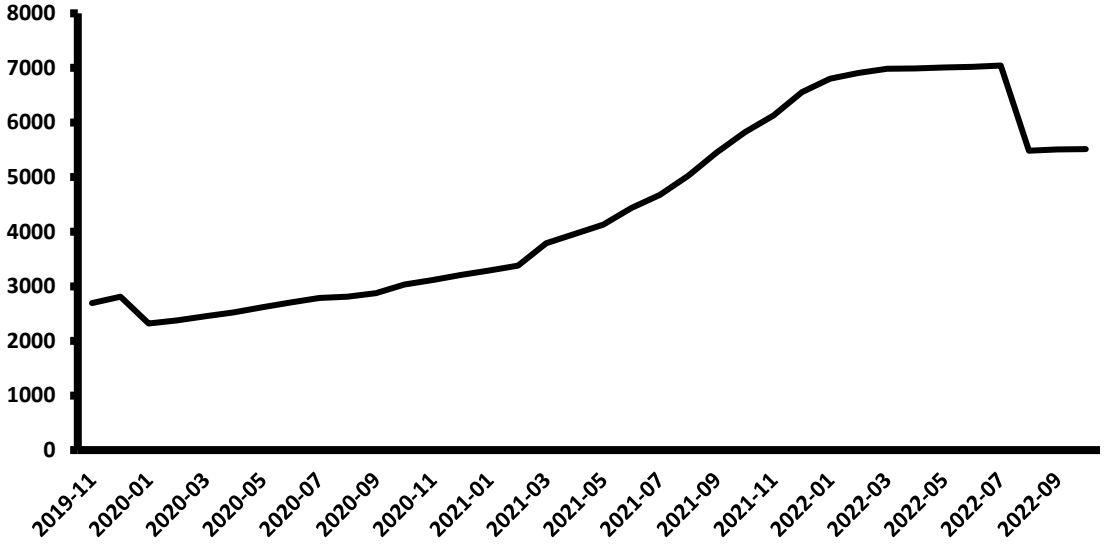
5.3.2 Morningstar review of sustainable investment funds on SFDR compliance

In its third quarter 2022 review of global sustainable fund flows, Morningstar announced that it had carried out an extensive review of European fund documents, as a result of which more than 1,500 funds were no more recognised as "Sustainable Investments" (i.e. ESG-labelled funds). The sustainable fund universe shrank from 7,044 funds at the end of July to 5,481 funds in August, which accounts for a 23 per cent decrease. However, the amount of sustainable-recognised funds still represents a 70% increase compared with the end of 2020 level of 3,196 funds. In the same period, the number of non-European domiciled funds designated with the ESG label grew from 1,312 to 1,621, demonstrating that the label removals have been purely focused on Europe.

This mass cull of the sustainable fund universe was preceded by a 180% growth between March 2021 and July 2022. According to Morningstar (SFDR funds review Q3 2022), the observed surge is largely attributable to the new ESG disclosures following the introduction of the SFDR in March, possibly indicating that many of the funds classified as light or dark green did not have the ESG label before the disclosure requirements were enforced. As discussed earlier in section 2.6, the vague definition of what constitutes an Article 8 fund and the ambiguous disclosure guidelines have raised concerns about potential greenwashing behaviour. Therefore, Morningstar also decided to revisit the disclosures and tighten their criteria for labelling funds as sustainable investments. A vast majority of the derecognised funds were self-classified as promoting environmental or social characteristics under Article 8, which bespeaks the existence of non-compliance with SFDR on a large scale.

FIGURE 1: The development of the European sustainable fund universe

This figure illustrates the development of funds recognised as sustainable according to the Morningstar Sustainable Investment Overall classification. The time period spans from November 2019 to October 2022. Data: Morningstar Direct.



5.3.3 Impact on fund flows

Considering that such an extensive reclassification was quite exceptional and limited almost exclusively to European funds, it seems evident that there is a close link between the introduction of the SFDR in March 2021 and the surge in new sustainable-recognised funds followed by a massive reduction after the review of disclosures. Furthermore, this justifiably arouses suspicion of fund managers' greenwashing behaviour – some fund managers may try to opportunistically benefit from the vague Article 8 definition and classify their products into the light green category. On the other hand, the unclear disclosure requirements have been causing confusion among asset managers, which has led to different interpretations of the classification criteria and huge divergence in the funds being labelled as Article 8. The ambiguity has probably also resulted in fund managers with solely sincere motives classifying their products against the intentions of the regulator.

Therefore, I identify all European funds that were dropped from the Morningstar "Sustainable Investment" universe in the July 2022 review and arbitrarily declare them as "non-compliant funds" i.e. funds that do not, in Morningstar's view, live up to ESG investing principles. These funds designate themselves as green products under the SFDR and claim to promote ESG characteristics, but do not meet the sustainable investment criteria set out by Morningstar.

Certainly, these dropouts do not fully constitute the universe of Article 8 and 9 funds with a missing ESG label, but as described above, the exceptional magnitude of the untagging process in a relatively short time window provides a fertile ground for my analysis.

As noted, the identified funds are not delivering on their stated environmental, social, or governance objectives. One possible motive for such behaviour could be the allurement to attract additional flows. By labelling themselves as Article 8 (or 9), these funds market themselves as sustainable products in hopes of arousing investors' interest. Therefore, it is interesting to investigate whether:

1) losing the Morningstar ESG label has a declining effect on flows
2) possessing an SFDR light (or dark) green label helps funds to maintain their flows despite the removal of the ESG label

To address these questions, I conduct the following difference-in-differences regression model:

$$Flow_{i,t} = \beta_0 * Untagged_i \ + \beta_1 * Post_i + \beta_2 * Article89_i + \beta_3 * Untagged_i * Post_i +$$

$$\beta_4 * Untagged_i * Article89_i + \beta_5 * Post_i * Article89_i + \beta_6 * Untagged_i * Post_i *$$

$$Article89_i + \beta_7 * Size_{i,t-1} + \beta_8 * \text{Age}_{i,t-1} + \beta_9 * \text{Return}_{i,t-1} + \varepsilon_i$$

In the above formula, monthly fund flows are regressed on a treatment dummy variable "Untagged" which equals one for funds that lost their Morningstar ESG label in the July 2022 review, a dummy for the post-treatment period ("Post") and their interaction term (i.e. the difference-in-differences estimator), which should isolate the effect of the label removal, by comparing treated and non-treated funds before and after treatment. Furthermore, I include an "Article89" dummy and its interaction with the treatment and post variables to analyse whether classifying as light or a dark green under the SFDR helps a fund to maintain its level of inflows after losing the ESG label. Other control variables include the log of assets under management, fund age in months and monthly return expressed in percentage points, which all are lagged by one month.

In addition to the treated funds, the sample also includes a control group. As a control group, I use funds that maintain their Morningstar "Sustainable Investment Overall" attribute in the

review. Then, each treated fund is paired with its closest comparable to construct a control group from the total universe of non-treated funds. For this purpose, I apply the 1:1 nearest-neighbour matching method, which considers fund characteristics like age, size, returns and net inflows to form pairs. The results of the regression are presented in table 9.

TABLE 9: The impact of Morningstar ESG label removals on fund flows

This table reports the results from a difference-in-differences regression on the relationship between mass removal of the Morningstar Sustainable Investment Overall attribute (ESG label) and fund flows. The time period runs from March 2021 to October 2022. The sample consists of 1,465 European funds which were no longer recognised as sustainable investments by Morningstar after the July 2022 review, and a control group of matched funds which maintained their labelling. The dependent variable is monthly fund flow, expressed in percentage points. "Untagged" is a dummy variable that equals 1 for funds that had their ESG label removed in the review. "Post" dummy takes the value of 1 for all months after July 2022. The interaction variable between "Untagged" and "Post" is the primary independent variable of interest and represents the post-review flow impact of untagged funds. "Article 89" indicates whether a fund is classified either as Article 8 or Article 9 under the SFDR. Other control variables are log of assets under management ("Size"), fund age in months ("Age"), and monthly percentage returns ("Return"). Column (2) includes additional interaction variables, of which "Untagged*Post*Article 89" represents the post-review effect on flows for untagged funds with light or dark green SFDR classification. All control variables are lagged by one month and winsorized at the 5% and 95% level. t-statistics, based on robust standard errors clustered at fund level, are reported in parentheses. ***, **, and * denote the statistical significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable:	
	Flow	
	(1)	(2)
Untagged	0.001	0.001
	(0.304)	(0.210)
Post	-0.009***	-0.012***
	(-5.499)	(-3.242)
Article89	-0.0002	-0.001
	(-0.057)	(-0.214)
Size	0.0004***	0.0004***
	(3.475)	(3.476)
Age	-0.00002***	-0.00002***
	(-3.788)	(-3.787)
Return	-0.502***	-0.502***
	(-21.678)	(-21.679)
Untagged*Post	-0.008***	-0.007*
	(-4.507)	(-1.654)
Untagged*Article 89	-0.001	-0.001
	(-0.328)	(-0.237)
Post*Article89		-0.001
		(-0.237)
Untagged*Post*Article89		0.003
		(0.789)
Constant	-0.008**	-0.007**
	(-2.519)	(-2.088)
Observations	51,678	51,678
R^2	0.098	0.098

Table 9: Continued

Adjusted R^2	0.098	0.098
Residual Std. Error	0.055 (df = 51669)	0.055 (df = 51667)

Table 9 displays the outcome of the difference-in-differences analysis investigating the impact of ESG label removals on fund flows, and further the potential cushioning effect on flow declines from having an SFDR green label. The results show that on average, funds in the "non-compliance group" (untagged funds) suffer a 0.8 percentage points decline in average flows in the post-review period (column (1)), which is significant at 1% level. Including the additional interaction terms ("Post*Article89" and "Untagged*Post*Article89") dilutes the effect to 0.7 percentage points and significance to 10% level.

The primary independent variable of the regression in column (2) is the three-way interaction between "Untagged", "Post" and "Article89". The results (estimate 0.003, t-value 0.79) do not provide statistically significant evidence that having a light or dark green SFDR classification would help maintain inflow levels after the removal of the ESG label.

6. Discussion

6.1 Discussion of the results

6.1.1 Discussion of the results in section 5.1 (Influence of the SFDR on mutual funds and investors)

Section 5.1 analyses the impact of the SFDR on sustainability levels and investor flows. It complements the analysis of Becker et al. (2022) by extending the sample size and time period as well as considering other sustainability-related variables in the flow analysis. Unlike their findings, which show a significantly higher increase in sustainability ratings for EU-based funds after the Union's regulation was first announced, my analysis does not provide any significant evidence that EU funds would score higher Globe Ratings than U.S. funds during the post-announcement period. This could imply that imposing the regulation has not had the desired effect on the affected funds' sustainability levels. However, as my results do not show statistically significant correlations, they are not incompatible with the findings of my reference paper. My setting is also different as the sample size is much larger and the analysis extends the time period by nine months. It may well be that funds made most of their intended capital

reallocations into more sustainable investments during the months immediately following the announcement and that extending the time period to also cover more recent months dilutes the effect away.

On the demand side, I investigate the impact of having a light or dark green label on investor inflows. I run separate regressions for Article 8 and Article 9 funds as well as the two categories together. Firstly, the results suggest that having an above-average Globe Rating or ESG label has a positive impact on fund flows, which is statistically significant at 1% level. But regarding the SFDR labels, I find that after the entry into force of the regulation, funds classified as Article 8 or Article 9 have attracted lower inflows compared to Article 6 funds. These findings are against the initial expectation that being categorized in the light or dark green category would attract additional flows. On the one hand, the observed outcome contradicts the prior literature (Becker et al., 2022) but, on the other hand, it supports the earlier evidence that after controlling for other ESG labels, green profiles under the SFDR do not add extra flows to funds (Yu, 2022). The negative flow impact during the post-intervention months might well be attributable to the challenging macroeconomic conditions (such as inflationary pressures, geopolitical risks and market volatility) but one possible explanation could be growing scepticism towards the green profiles – especially the light green category. Given the wide berth allowed by the SFDR definitions, investors may have reacted by reallocating their investments from Article 8 to Article 9 funds, or to other products with less confusion about ESG alignment.

According to Morningstar data (SFDR funds review Q2 2022), Article 8 funds experienced total outflows of EUR 30.3 billion in the second quarter of 2022, while Article 9 funds attracted inflows of EUR 5.9 billion. This supports the view of investors being more cautious towards light green products and sceptic about whether they are "living up to their labels".

6.1.2 Discussion of the results in section 5.2 (SFDR reclassifications)

Section 5.2 examines fund reclassifications under the SFDR, which have proliferated in recent times despite the relative novelty of the regulation. Firstly, I study what drives the decision to reclassify a fund into a greener profile by regressing a dummy variable indicating SFDR upgrade on flow and return performances, sustainability level variables and other fund characteristics. Further, I investigate how classification upgrades have affected sustainability scores and investor inflows. Presumably, if a fund upgrades its classification, it should accordingly increase its ESG alignment. If ESG-conscious investors consider upgrading funds

as more sustainable investments than before reclassification, it should be reflected in those funds' ability to attract flows.

The main findings of the analysis on determinants driving reclassification are that poor return performance is associated with a higher probability of reclassification to a greener category and that higher volatility of returns also increases the likelihood of an upgrade. Upgrading might be a tempting option for funds with inferior flow performance in an effort to attract more flows which would allow collecting more management fees. However, I do not find statistically significant evidence that lagging behind in flows would have an impact on a fund's decision on reclassification.

Further, I find some degree of dissonance between the sustainability-related variables; an above-average Globe Rating (both "D_GR45" and "Num_GR45") has a positive and statistically significant impact on the probability of upgrade, whereas the effect of the ESG label depends on whether a fund has been tagged with the label at least once during the sample period ("D_ESG") or on the number of months in which the fund had the ESG label ("Num_ESG"). The former result would imply that a fund which has received the ESG label is 20.4 percentage points more likely to upgrade its categorisation under the SFDR. This is consistent with the intuition and purpose of the SFDR – a higher sustainability level should be reflected in a fund's SFDR category choice. The latter result, in turn, can be interpreted so that a higher number of months having the ESG label decreases the likelihood of reclassification by 1.3 percentage points. This is rather counter-intuitive against the aforementioned objectives of the regulation and is liable to raise suspicion of potential greenwashing (i.e. funds with lower sustainability scores are more likely to upgrade their classification). However, the evidential value of this result remains weak as it does not receive supporting findings from other variables.

Contrary to the initial expectations, the analysis on sustainability levels does not produce statistically significant results. One potential explanation for the lack of impact of upgrade events on the funds' sustainability levels could be that reclassification decisions are based on adjusting the category to better reflect the green profile of the fund, rather than making actual adjustments in portfolios or investment objectives to become more ESG aligned. This would not be surprising, given the fairly loose definitions of the categories which are liable to generate confusion among fund managers.

An alternative explanation may be that reclassifications do not imply higher sustainability scores because funds upgrade their profiles without any actual intentions to make changes in

their investment strategy. In other words, fund managers would try to take advantage of the vague regulation rules in the hope that a greener label would attract more inflows from investors. However, the results do not allow any greenwashing accusations to be made against the fund managers as the observed outcome may also be a result of the limitations in the research setting due to data availability. These potential caveats are further discussed in section 6.3.

Regarding the impact of reclassification events on fund flows, I also fail to find significant results. However, the results suggest that possessing an above-average Globe Rating or an ESG label both have a positive and statistically significant impact on flow levels. While these findings indicate that sustainability labels can add extra flows to funds, they do not directly reflect the impacts of upgrading the label category. Studying the effects of other than SFDR reclassifications is, however, beyond the scope of this thesis.

6.1.3 Discussion of the results in section 5.3 (SFDR labels and removal of third-party sustainability tags – flow analysis)

In section 5.3, I investigate a more recent event where Morningstar executed a massive one-off cut to its sustainable investment list. Given the large number of upward reclassifications carried out by asset managers, I find it interesting that a third-party research house simultaneously strips the sustainable investment label off from more than 1,500 funds. The ESG label has also been found in this study to have a positive impact on investor inflows. Conversely, removing the label should have the opposite effect. However, if investors also treat a fund's SFDR classification as another sustainability label conveying information about its ESG integration, it might act as an attenuating factor against potential declines in flows resulting from losing the ESG label.

In line with the expectations, the results show that the removal of the ESG label has a declining impact on flows during the post-review period (as of August 2022). However, I find no evidence that a light or dark green profile would help to mitigate the outflows. This suggests that investors have taken note of the shrinkage of the Morningstar sustainable finance universe and adjusted their behaviour accordingly by withdrawing their investments from the untagged funds regardless of their SFDR green classification.

The outcome aligns with the findings in section 5.1.2 which show that self-labelling as light or dark green under the SFDR does not positively contribute to flow levels when controlling for other sustainability-related variables. Further, the analysis in section 5.1.2 evidences a positive

flow impact from possessing the Morningstar ESG label. Conversely, this implies that losing the sustainable investment status results in outflows from the fund.

6.2 Practical implications

Given the scarcity of robust evidence, I am cautious about drawing any firm conclusions from my findings. Nevertheless, I provide some practical implications for asset managers and regulators. Firstly, asset managers should be patient in upgrading their products to greener categories since the results suggest that they would not be rewarded with additional flows. In fact, being in a greener category might indeed result in increased outflows as shown in section 5.1.2. Also, in view of the recently adopted more stringent Level 2 requirements, an overly aggressive approach to product categorisation is not necessarily advisable, especially if compliance with the classification criteria in terms of ESG promotion is more or less obscure.

Secondly, regulators would be better off having more clarified and precisely defined rules in place already before the regulation becomes effective. This would mitigate possible uncertainties in interpretation as well as help the intervention achieve its desired outcome. Vague and imprecise definitions leave room for subjectivity and interpretation, allowing for a broad range of different approaches to product classification under the SFDR. Due to the delays in the regulatory timetable (i.e. the postponement of Level 2 requirements), the SFDR was in an intermediate stage from March 2021 until January 2023. During this period, end investors and investment service providers found themselves in an even greater state of confusion than the time before the regulation came effective.

6.3 Limitations of the study

As discussed in section 4.2, the Morningstar SFDR Fund type data point does not enable proper time series analysis. Therefore, I am compelled to settle for the most recent fund types available and a two-period cross-section model for the reclassification analysis. With the data at hand, I am only able to observe the current classification of a fund and compare it with the July 2021 dataset in order to detect whether it has changed between the periods. I cannot, however, determine the exact timing of the reclassification events. If a fund was upgraded to a greener profile shortly after July 2021, any potential portfolio adjustments or changes in sustainability characteristics would most likely have already taken place and thus would not be detectable in

my analysis. On the other hand, if the reclassification occurred close to March 2022, it might not be fully reflected in flow performance. Having sufficient (e.g. monthly) data on product classifications available, I would be able to run more precise analyses.

I am also aware of the possible endogeneity issues that may exist. In this context, there could be reverse causality that instead of Article 8 and Article 9 labels having a declining impact on flows, it could be as well that asset managers are more likely to put green labels on funds with inferior flow performance. Further, there could be omitted variables such as the governance styles of asset managers or management companies. For instance, some asset managers might be more cautious in assessing the classification criteria against the ESG characteristics of their products, while others might have more aggressive approaches. The applied governance styles might also be decided at company level. However, given the mainly insignificant results, I do not conduct separate testing for endogeneity.

6.4 Suggestions for further research

Beyond the European Union, there have been plans to establish disclosure regulations similar to SFDR. In May 2022, the U.S. Securities and Exchange Commission (SEC) issued a proposal to impose disclosure requirements for funds and asset managers that market themselves as having an ESG focus. As in the EU regulation, the U.S. regulator has proposed that ESG funds would be categorised into three different broad types: “Integration Funds”, “ESG-focused Funds” and “Impact Funds”. In the UK, the Financial Conduct Authority (FCA) issued proposed rules to establish a sustainability disclosure regime (SDR) in November 2022. In addition to disclosure requirements, the proposal aims to set out a sustainable investment product labelling system. These regulatory initiatives provide interesting opportunities for further research into the influence of disclosure regulations and related labelling regimes on asset managers’ and end-investors’ behaviour.

Looking forward, the SFDR Level 2 requirements have now been applicable from 1 January 2023. As discussed in section 2.5, the second phase of the regulation introduces regulatory technical standards (RTS), which require asset managers to justify their fund categorisation through a series of disclosures on environmental and social Principal Adverse Impacts (PAIs). The additional RTS drafted by the European Supervisory Authorities (ESAs) impose further disclosure requirements on the level of alignment with the EU Taxonomy. These regulatory updates provide fertile ground for further research; do more stringent requirements have an

impact on asset managers' approaches and, on the other hand, do investors treat the categories differently if they were better justified by more detailed disclosures?

7. Conclusion

This thesis is among the first studies to investigate how mutual funds and investors behave under the EU SFDR. On the supply side, I study whether the regulation has met one of its main objectives of incentivising mutual funds to increase their ESG alignment by reallocating capital into more sustainable investments. And on the demand side, I conduct a flow analysis to determine whether investors who appreciate a higher degree of ESG alignment allocate their capital accordingly.

Using difference-in-differences regressions and 1:1 nearest neighbour matching, I first compare the development of sustainability ratings of EU-based funds to U.S. funds after the regulation was first introduced in November 2019. The results show no difference between the sustainability scores of the two groups. But in the absence of statistical significance, this does not allow us to conclude that the intervention would have no impact on sustainability levels. In terms of investor flows, I stick to the difference-in-differences methodology and find that after controlling for other sustainability labels, Article 8 and Article 9 funds receive significantly lower post-SFDR flows compared to Article 6 funds. This may be an indication of growing scepticism about funds with green classifications living up to their labels. The results are also consistent with the recently observed net outflows from the light green category.

In a separate setting, I further investigate funds that have been upgraded to a greener category from their initial classification. First, I run logistic regressions to study how different fund characteristics influence reclassification decisions. The results indicate that poor return performance is associated with a higher probability of an upward reclassification, but the findings on sustainability characteristics are somewhat mixed. By comparing two cross-sections, I also examine the impact of reclassifications on funds' ESG alignment and investor behaviour. However, I find no statistically significant evidence that an upgraded classification would be reflected in higher sustainability scores or additional flows.

Finally, I also contribute to the greenwashing literature by analysing funds whose self-designated SFDR sustainability label is inconsistent with an objective third-party view of what constitutes a sustainable investment. For this purpose, I focus on a group of funds that lost their

sustainable tag after Morningstar's extensive review of legal documents. In a difference-in-differences setting, I investigate the flow performance of untagged funds and whether an SFDR green label helps to preserve flows. Regarding the first question, I find that losing the Morningstar ESG label is associated with a deterioration in flow performance. However, the results do not suggest that possessing a light or a dark green label would have any cushioning effect against fund outflows.

Despite the scarcity of robust evidence and limitations in data, this paper sheds light on the effectiveness of the new regulatory intervention and how investors have reacted to the initial stage of the SFDR. Building on my findings, I provide two discreet suggestions for practice. First, a more cautious approach to product classification is preferable, given that upgrading to a better category would not help funds to attract additional flows. Second, clarified rules and more precise definitions would mitigate possible uncertainties in interpretation as well as help the intervention achieve its desired outcome. I leave any further implications for future research once more data emerges.

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Appendix:

Table A1: Definitions of variables

Name	Definition
Size	Log of assets under management
Return	Monthly percentage fund return
Flow	Monthly percentage change of total net assets
Age	Fund age in months
Name	Whether the fund has one or more of the following words in its name: “environment”, “ESG”, “ethical”, “governance”, “green”, “impact”, “responsible”, “social”, “SRI”, “sustainable” and “sustainability”
GR45	Above-average (4-5) Morningstar Globe Rating
ESG	Morningstar Sustainable Investment Overall tag (ESG label)
Ret_rank	Percentile rank of 8-month cumulative returns
Flow_rank	Percentile rank of 8-month cumulative flows
Vol_Ret	Volatility of monthly percentage returns
Vol_Flow	Volatility of monthly percentage flows
D_GR45	Whether the fund receives an above-average Globe Rating (4 or 5) at least once
Num_GR45	# of months with above-average Globe Ratings
D_ESG	Whether the fund receives the ESG label at least once
Num_ESG	# of months with the ESG label
Article89	Whether the fund is classified as Article 8 or Article 9