Rich and Responsible:
Is ESG a Luxury Good?

We study whether investors perceive responsible investments (i.e., investments in assets with environmental or social benefits) as luxury goods. We look at windfall wealth due to inheritance from parental death to obtain plausibly exogenous variations in wealth. We show that windfall wealth increases the likelihood of holding responsible mutual funds and green stocks. Our findings indicate that both supply factors (e.g., bank advice) and demand factors (e.g., preferences) play a role in shaping allocations to responsible investments. Notably, beneficiaries with a history of charitable donations exhibit a stronger response, emphasising the influence of a 'warm glow' effect on portfolio compilation.

Written by

Steffen Andersen
Danmarks Nationalbank

sta@nationalbanken.dk
+45 3363 6135

Dmitry Chebotarev
Kelley School of Business,
Indiana University

Fatima Zahra Filali-Adib
Copenhagen Business School

Kasper Meisner Nielsen
Copenhagen Business School

Keywords

Rich and Responsible: Is ESG a Luxury Good?[*]

Steffen Andersen
Danmarks Nationalbank
sta@nationalbanken.dk

Dmitry Chebotarev
Kelley School of Business, Indiana University
dmchebot@iu.edu

Fatima Zahra Filali-Adib
Copenhagen Business School
fzfa.fi@cbs.dk

Kasper Meisner Nielsen
Copenhagen Business School
kmn.fi@cbs.dk

January 30, 2024

Abstract

We study whether investors perceive responsible investments (i.e., investments in assets with environmental or social benefits) as luxury goods. We exploit windfall wealth due to inheritance from parental death to obtain plausibly exogenous variations in wealth. We show that windfall wealth increases the likelihood of holding responsible mutual funds and green stocks. Our findings indicate that both supply factors (e.g., bank advice) and demand factors (e.g., preferences) play a role in shaping allocations to responsible investments. Notably, beneficiaries with a history of charitable donations exhibit a stronger response, emphasising the influence of a 'warm glow' effect on portfolio compilation.

The growth of socially responsible investments is one of the strongest trends in financial markets in the 21st century. At the beginning of 2023, mutual funds that considered the global environmental, social, and governance characteristics of assets had $2.5 trillion in assets under management (Bioy et al., 2023). That growth has sparked an ongoing discussion about the costs and benefits of socially responsible investment among academics and policy makers (Goldstein et al., 2022; Pastor, Stambaugh, and Taylor, 2021; Pedersen, Fitzgibbons, and Pomorski, 2021; and Giglio et al., 2023). In this debate, a central question remains: What motivates investors to allocate their wealth to socially responsible assets?

From a theoretical point of view, the demand for socially responsible investments is likely to be influenced by both pecuniary and non-pecuniary benefits, suggesting a potential trade-off that investors face when they make portfolio decisions. Several studies provide survey evidence of investors being motivated by ethical (or green) values, financial returns and accepting the holding of responsible investments, even if they expect returns to be lower on a risk-adjusted basis (Bauer and Smeets, 2015; Riedl and Smeets, 2017; Briere and Ramelli, 2020; Bauer, Ruof, and Smeets, 2021, Degryse et al., 2023; and Giglio et al., 2023). Investor willingness to sacrifice financial returns raises the question of whether investors perceive responsible investing as a luxury good. A luxury good is a type of good or service that exhibits a high-income elasticity of demand. Thus, if responsible investments are a luxury good, then investor demand for responsible investments should increase disproportionally with wealth.

In this study, we start by documenting that the rise of socially responsible investments by retail investors in Denmark is concentrated among wealthy investors. The fraction of investors who hold socially responsible mutual funds has increased from 0.8% in 2011 to 13.3% in 2021, and the fraction of investors with green stocks in their portfolios has increased from 8.7% to 15.9%. These increases are primarily driven by wealthy investors. In 2021, 26.3% of investors in the top decile of financial wealth held socially responsible mutual funds, and 27% of investors held green stocks, collectively making up 6.7% of the value of the portfolio of wealthy investors.

The observation that the rise of socially responsible investing is primarily driven by wealthy individuals motivate us to examine whether investors perceive socially responsible assets as a luxury good. While the cross-sectional evidence shows a strong correlation between wealth and investments in responsible assets, that correlation is likely to be confounded by other individual traits like education and financial literacy: wealthy individuals are better-educated, are more likely to be financially literate, and are more likely to hold responsible mutual funds and green stocks.

2

To provide causal evidence that the demand for responsible investments increases with wealth, we rely on a subsample of investors who received windfall wealth from inheritance due to the death of their last living parent. The key identifying assumption is that inheritances are random relative to the timing of the investment decision. In further analysis, we relate the change in the propensity of individuals to invest in responsible assets around inheritances to the size of windfall wealth. The specification allow us to adjust for 1) unobserved time-invariant heterogeneity through the inclusion of individual fixed effects; 2) macroeconomic conditions, as well as the supply of responsible assets, through the inclusion of year fixed effects; and 3) geography-based peer effects through the inclusion of municipality fixed effect. A key advantage of our identification strategy is that it provides a within-person estimate of the effect of unanticipated windfalls on the demand for responsible assets.

We find that allocation to sustainable assets increases with inherited wealth, consistent with sustainable investments being perceived as a luxury good. The effect is driven by an increased propensity to invest in sustainable mutual funds and green stocks as well as an increased portfolio weight on sustainable funds and green stocks. The marginal effect of inheriting one million kroner (134,200 euros) on the propensity to invest in socially responsible mutual funds is 1.6 percentage points, an economically significant effect relative to the unconditional pre-inheritance mean of beneficiaries across the entire sample of 1.4%. For green stock, the marginal effect of one million kroner is 1.5 percentage points, relative to a pre-inheritance mean of 9.9%.

Although the propensity to invest positively responds to windfall wealth (extensive margin effect), this finding does not imply that responsible investments are being perceived as a luxury good by the current holders (i.e., intensive margin effect). To provide an intensive margin test, we regress the portfolio weight of responsible investments on inherited wealth. If responsible investments are a luxury good, we expect a positive effect of windfall wealth on the portfolio weight of responsible investments. The marginal effect of inherited wealth on the portfolio weight of responsible assets is positive and statistically significant: Investors increase the portfolio weight by 0.34 percentage points per million kroner of inherited wealth, of which 0.21 percentage points is allocated to mutual funds and 0.13 percentage points to green (minus brown) energy stocks. These effects are economically significant given an unconditional pre-inheritance mean portfolio weight of 2.1% on responsible assets, of which 0.25% is allocated to mutual funds and 1.6% to green (minus brown) stocks for all beneficiaries. Overall, these findings suggest that the demand for sustainable investments is sensitive to fluctuations in individuals' wealth.

A plausible interpretation of our results is that responsible investments might result from passive inheritance of responsible assets held by the deceased parents rather than by active decisions to purchase responsible assets after receiving windfall wealth. In additional tests, we therefore exclude beneficiaries whose parents held responsible assets before their demise. For the subsample in which an active decision is the only potential channel, we find a positive and statistically significant effect of inherited wealth on investments in responsible assets. In terms of magnitude, the marginal effects of inherited wealth are slightly smaller than the estimates from the baseline specification, suggesting that both passive and active decisions play a role in shaping the portfolios after an inheritance.

Several potential channels could explain why wealth affects sustainable investments. Firstly, investors might want more responsible assets if, in so doing, they receive an emotional reward (warm glow). Consistent with this channel, prior literature documents suggest that social preferences play an important role in ESG investing (Riedl and Smeets, 2017; Giglio et al., 2023). Secondly, beneficiaries may decide to diversify their portfolios across more asset classes, resulting in investments in responsible assets. Thirdly, wealthy investors might choose to invest in actively managed mutual funds that tend to be more expensive. Since ESG funds are typically active and charge higher fees (Baker, Egan, and Sarkar, 2022), a preference for actively managed or more expensive mutual funds post-inheritance could explain our results.[1] Finally, banks might advise wealthy clients to purchase responsible assets, driving beneficiaries with larger windfall wealth to purchase responsible assets more often than beneficiaries who inherit less.

To shed light on the potential channels, we first analyse whether the increase in allocations can be attributed to a warm glow effect.[2] In the seminal work of Andreoni (1989; 1990), warm glow effects arise if individuals derive utility from engaging in pro-social behaviour or giving to others. The warm glow effect occurs if individuals experience a sense of pleasure and satisfaction from "doing good" for altruistic or selfish reasons, irrespective of the impact of their generosity. The warm glow effect implies that greater sensitivity of investment in sustainable assets can be expected to be seen from inherited wealth for individuals with a revealed preference for charitable giving. To test whether warm glow contributes to the demand for responsible investments, we exploit our institutional setting: Charitable giving is deductible from taxable income, and the tax benefit is

---

[1] An important caveat to this channel is that retail investors must hold the belief that actively managed or more expensive mutual funds lead to higher returns net of fees.

[2] We refer to the warm glow effect as the effect that arises because individuals might derive benefit from investing in responsible assets, irrespective of the fact that the supply of responsible assets in the short-term is fixed and therefore does not affect real outcomes. For a detailed explanation of the difference between altruism and warm glow see Crumpler and Grossman (2008).

substantial given the high personal tax rates in Denmark. Tax deductibility reduces the cost of donations by 27% to 30% depending on municipal tax rate and possible membership of the state church.[3] We find that individuals who made charitable donations before inheriting are more likely to invest in responsible assets after they receive windfall wealth. In terms of magnitude, the marginal effect of windfall wealth is about 50% larger for individuals who have made charitable donations. We find even larger differences of the marginal effect of windfall wealth on the portfolio weight on responsible mutual funds and the portfolio weight on green (minus brown) stocks. Investors who have made charitable donations have a 1.7 to 2.2 times larger marginal effect of windfall wealth on the portfolio weight on responsible assets. Collectively, these findings suggest that warm glow is an important channel that motivates wealthy investors to hold responsible assets in their portfolios.

An alternative channel that can explain why the allocation to responsible assets is growing with wealth is diversification. We note that wealthy investors tend to hold more diversified portfolios. In additional tests, we look for the number of unique funds (or stocks) in our main regression and still find a positive and statistically significant effect of inherited wealth on investments in responsible assets. That indicates that given the number of unique funds (or stocks) in the portfolio is held constant, beneficiaries with large inheritances are more likely to invest responsibly. We conclude that diversification is not driving our results.

After inheriting, beneficiaries might be more willing to invest in actively managed or more expensive mutual funds. Consequently, they would be more interested in ESG funds, as they are typically actively managed and charge higher fees (Baker, Egan, and Sarkar, 2022). To examine this channel, we analyse the average or maximum fee paid by beneficiaries on inherited wealth. We find that inherited wealth has no significant effect on mutual fund fees, using both the average and maximum fees on funds the beneficiary holds. The pursuit of actively managed or more expensive mutual funds does not therefore appear to explain the effect of windfall wealth on responsible investments. A related concern is whether beneficiaries are more willing to take risks after inheriting. Prior literature provides little evidence to suggest that investment in socially responsible assets is systematically related to risk, but portfolio allocations might change in response to overall risk taking. However, prior literature does show that individuals seem to follow a rule of thumb and keep their risky asset share constant after inheritances (Andersen, Hanspal, and Nielsen, 2021), consistent with relative risk aversion either being constant or slightly

---

[3] Donations to charity, religious communities, and research qualify for the tax subsidy, subject to a cap of kr 17,000 per year (regulated by a price index) that applies to all causes except research.

decreasing (see Calvet et al., 2007; Brunnermeier and Nagel, 2008; Chiaporri and Paiella, 2011; and Calvet and Sodini, 2014). If individuals follow a simple rule of thumb and keep their risky asset shares constant, increased risk-taking cannot explain why beneficiaries with large inheritances begin to invest in responsible assets.

The strong impact of wealth on the allocation to responsible investments raises the question of whether the effect is driven by demand, supply, or both? Demand effects for responsible investments might arise if investors perceive such investments as luxury goods. Supply effects for responsible assets might arise if banks and financial institutions specifically target wealthy investors when marketing such assets to their clients. Our focus on both the allocation to responsible mutual funds and to green stocks is helpful in providing evidence that at least a portion of the increased allocation to responsible investments is driven by a demand effect. Banks and financial institutions have a clear incentive to advise investors to buy responsible mutual funds with high fees, but they have little incentive to advise clients to buy green stocks.

To further examine the role of demand and supply effects, we run additional tests in which we show that our results are robust to the inclusion of bank branch-year fixed effects. The main advantage of this specification is that it allows us to analyse the within-branch variation in the propensity to invest in socially responsible funds each year while controlling for bank advising, or general marketing campaigns. However, the possibility remains that individuals with large inheritances are more likely to receive personalised financial advice. To understand whether the increased allocation to responsible investments is driven by personalised advice to wealthy clients, we show results depending on whether the investor has his/her brokerage account with a large, small, or online bank. While large banks typically are more likely to provide financial advice to wealthy individuals than small banks are, online banks do not provide financial advice to their clients regardless of their wealth. We find that the effect of windfall wealth on responsible mutual funds is present for customers of large, small, and online banks, and that windfall wealth increases investments in green stocks of comparable magnitudes for investors at large, small, and online banks. We conclude that despite affecting investors' portfolio decisions, financial advice is not a key driver of our main results.

To ascertain that the estimated effect is not confounded by the anticipation of inheritance, we also restrict the sample to covering only inheritances due to sudden death. By focusing on the sample of sudden deaths, we confirm that windfalls are, to a large degree, unanticipated, and individuals, ceteris paribus, should be more willing to change their portfolios if they receive an unexpected windfall. The disadvantage of using sudden deaths is that we obtain a smaller sample,

6

which makes estimating the effect of inherited wealth on responsible investments with precision more difficult. Consistent with the results from the main specification, we find that unanticipated windfalls due to sudden death increase the likelihood of investing in socially responsible mutual funds and green stocks. We find no statistically significant effect on portfolio weight of ESG funds in the subsample of sudden death, suggesting that the effect is mainly driven by the extensive margin. Overall, we obtain results that are quantitatively similar to the main specification, suggesting that beneficiaries by and large do not anticipate the demise of their parents.

In additional tests, we examine how the effect of windfall wealth varies with individual characteristics. We find surprisingly little evidence to suggest that different types of investors have different perceptions about whether responsible investments are a luxury good. We find marginal effects of comparable magnitude for male and female; young and old individuals; individuals with low and with high levels of education; and individuals living in urban areas and those living in more rural locations. This finding bolsters our interpretation of the wealth effects as a test of investors' perceptions of responsible investments as a luxury good. Irrespective of individual traits, we observe increased demand for responsible investments when wealth increases on average.

Our results reflect several distinct literatures on household finance and asset pricing. Firstly, our study's main contribution is to the growing amount of literature on the determinants of the allocation of wealth by retail investors to socially responsible investments. Prior studies showed that the increased allocation to sustainable investments is driven by investors with green or ethical values (Bauer and Smeets, 2015; Riedl and Smeets, 2017; Briere and Ramelli, 2020; Bauer, Ruof, and Smeets, 2021, Degryse et al., 2023; and Giglio et al., 2023), high financial literacy (Anderson and Robinson, 2022; Degryse et al., 2023), and investors with high subjective beliefs about returns to responsible investments (Giglio et al., 2023). In comparison to these studies, we provide evidence of the portfolio allocation to responsible investments by individuals across time. We find that the growth in sustainable investments is driven by wealthy investors. Using windfall wealth resulting from unexpected inheritances, we furthermore provide evidence that allocations to responsible investments by investors increases disproportionally with wealth, consistent with investors perceiving sustainable investments as a luxury good. We also find that the increase in allocation to responsible investments is higher among individuals with past charitable donations, possibly due to a warm glow effect.

Our study is also related to recent research proving that investors are willing to pay for sustainable investments. For instance, Baker, Egan, and Sarkar (2022) show that ESG funds are 20 basis points more expensive than other mutual funds. Other studies relying on surveys

document a positive willingness to pay for socially responsible investments (Bauer, Ruof, and Smeets, 2021) or in experimental settings (Humphrey et al., 2021; and Heeb et al., 2023). Surveys of investors find that the average retail investor expects a lower return on sustainable investments compared to traditional asset classes (Riedl and Smeets, 2017; Giglio et al., 2023). In comparison to these studies, we provide evidence consistent with a higher willingness to pay for sustainable investors among wealthy investors, consistent with sustainable investments being perceived as a luxury good.

Finally, our study is informative for the asset pricing literature on the risk-return trade-off of sustainable investments. Prior research finds conflicting evidence on the financial attractiveness of sustainable investments. Some studies provide evidence of higher returns (Friede, Busch, and Bassen, 2015; Khan, Serafeim, and Yoon, 2016; and Whelan et al., 2021), while other studies provide evidence of lower returns (Hong and Kacperczyk, 2009; Barber, Morse, and Yasuda, 2021; and Bolton and Kacperczyk, 2021). Asset pricing tests based on the examination of returns of high and low-SRI firms during "good" and "bad" times also arrive at contradictory results (Lins, Servaes, and Tamayo, 2017; Pástor and Vorsatz, 2020; and Bansal, Wu, and Yaron, 2022). Lastly, Hartzmark and Sussman (2019) and Gantchev, Giannetti, and Li (2024) explored trade-offs between sustainability, investor flows, and mutual fund performance. In comparison to these studies, we use individual holdings to document the effect of personal wealth on allocations to sustainable assets, suggesting that financial returns are not the only motivation for doing so.

Our study is configured as follows. Section I describes the construction and sources of our data as well as the classification of sustainable investments. In Section II, we document that the rise of responsible investing is concentrated among wealthy investors. We then examine the effect of inherited wealth on the allocation of wealth to responsible investments (Section III) and explore the mechanisms that can explain the increasing allocation to sustainable investments (Section IV). In Section V, we study how the effect varies dependent on different observable characteristics of beneficiaries in our sample. Section VI addresses potential concerns about the anticipation of inheritances by using the subsample of inheritances due to sudden deaths. We then draw a conclusion. An online appendix provides additional evidence and alternative specifications.

I.   Data and descriptive statistics

We construct a dataset of individual investors with detailed information about demographics, income, wealth, charitable donations and portfolio holdings. The dataset draws on four different sources made available from Statistics Denmark, as explained below.

Portfolio holdings are from the official records at the Danish Tax Authorities (SKAT). SKAT receives this information directly from financial institutions and brokers. Portfolio holdings are observed at the end of the year. More importantly, the records include personal identification numbers, equivalent to the Social Security number in the United States, as well as ISIN codes (international stock identification number), allowing us to observe whether individuals hold securities that are classified as socially responsible. As a result, we have reliable data for the entire Danish population on individual holdings of socially responsible investments from 2011 to 2021, including direct investments through stocks and indirect investments through mutual funds.

Data on income, wealth, and donations is derived from the official records of the Danish Tax Authorities (SKAT). This dataset contains personal income and wealth information, sorted by CPR number, about the Danish population. SKAT receives this information directly from the relevant sources: Employers supply statements of wages paid to their employees. Financial institutions similarly supply information to SKAT on customers' deposits, on interest paid or received, and on dividends received. Charities report donations to SKAT if donors provide their Social Security numbers at the time of the donation.[4] We obtain access to personal income and wealth data from 2011 to 2021 through Statistics Denmark.

Educational records are from the Danish Ministry of Education. All completed (formal and informal) education is registered on a yearly basis for each individual and made available through Statistics Denmark. We use this data to measure an individual's education level.

Individual and family data are from the official Danish Civil Registration System. These records include the personal identification number (CPR), name, gender, date of birth, names, and CPR numbers of nuclear family members (parents, siblings, and children), and marital history (number of marriages, divorces, and bereavements). In addition to providing control variables, such as age, gender, and marital status, this data enables us to identify the legal parents of all individuals. The sample contains the entire Danish population and provides unique identification across individuals and households over time.

---

[4] Donors can opt to donate anonymously, in which case their donation is ineligible for the tax deduction and remains unobserved in our dataset.

Causes of deaths are from The Danish Cause-of-Death Register at the Danish National Board of Health (Sundhedsstyrelsen). In this dataset, the cause of death is classified according to the international guidelines specified by the World Health Organization's (WHO) International Classification of Diseases (ICD-10) system. The sources of this data are the official death certificates issued immediately after the death of every Danish citizen. A death certificate details the cause of death based on post-mortem examination reports, information on social and psychiatric history provided by family members and associates, and other corroborating information, such as suicide notes. In Denmark, the death certificate and the post-mortem examination report are both completed by a doctor and therefore convey a medically qualified opinion on the cause of death. Sundhedsstyrelsen compiles this data for statistical purposes and makes it available for medical and social science research through Statistics Denmark. We obtain the cause of death for all Danish citizens who passed away from January 1, 2012, through December 31, 2020. We use this dataset to identify a sample of individuals who died suddenly and unexpectedly and use the data from the Danish Civil Registration System (see above) to link the deceased to their beneficiaries.

We supplement the administrative register data with information about mutual funds and stocks from relevant sources. [5] We use Morningstar to retrieve mutual fund names and characteristics (such as fees), and use data from MSCI to obtain industry codes on stocks.

A. Classification of socially responsible mutual funds

To provide comprehensive evidence of the rise of responsible investing by wealthy investors, we follow prior studies classifying socially responsible funds or ESG funds based on their names (Lapanan, 2018; Hellström, Lapanan, and Olsson, 2020; Curtis, Fisch, and Robertson, 2021; Geczy et al., 2021; Michaely, Ordonez-Calafi, and Rubio, 2023; and Li, Naaraayanan, and Sachdeva, 2023). Specifically, we rely on the list of keywords used by Michaely, Ordonez-Calafi, and Rubio (2023) to classify environmental and socially responsible funds. These keywords or text strings include (sorted by frequency in names of US mutual funds) "*sustain*", "*social*", "*ESG*", "*PAX*", "*responsib*", "*clean*", "*impact*", "*SRI*", "*environm*" and "*green*". We have translated these keywords to Danish, for use in addition to typical Danish ESG keywords, as retail investors in Denmark primarily invest in mutual fund families that are local (in fact, 89.5% of mutual fund holdings in 2021 were Danish

---

ISINs).[6] To ensure that we correctly classify funds at the time of holding, we use historical fund names. We identify a total of 565 unique socially responsible mutual funds during our sample period, increasing from 37 unique funds (2.6% of all mutual funds) in 2011 to 491 unique funds (10.6% of all mutual funds) in 2021. We further note that while the number of unique mutual funds held by Danish investors tripled from 1,421 in 2011 to 4,643 in 2021, the number of unique socially responsible mutual funds increased by a factor of 13–from 37 to 491–over the same period. Interestingly, the majority of socially responsible funds were new, as only 66 out of 565 unique socially responsible funds were classified as such after a name change.

B. Classification of socially responsible stocks

To obtain a more complete overview of the rise of socially responsible investing, we further classify the stock holdings of individuals. We focus on stocks in the energy sector because of the intuitive contrast between socially responsible production methods (wind and solar), and socially irresponsible production methods (fossil fuels like coal, gas, and oil). In keeping with the literature on socially responsible mutual funds, we use the name of the stock as the primary source for our classification. Specifically, we classify stocks in the energy sector (SIC codes 13, 29, 351, 492, and 493) where the name includes keywords like "*green*", "*solar*", or "*wind*" as socially responsible or "green" stocks, while we classify stocks in the energy sector where the name includes keywords like "*coal*", "*gas*" or "*oil*" as socially irresponsible or "brown" stocks. For all firms held, we manually check that classification based on names corresponds to the underlying activity of the firm.[7] In total, we identify 105 unique "green" stocks, increasing from 34 unique stocks in 2011 to 76 unique stocks in 2021. We also classify 75 stocks as "brown," increasing from 46 unique stocks in 2011 to 66 unique stocks in 2021.

II.   The rise of responsible investors

To examine the rise of responsible investing among retail investors, we focus on the adult population aged 21 and below 75 participating in the stock market.

The top panel of figure I shows the fraction of retail investors that hold socially responsible mutual funds in their portfolio over the sample period. The panel shows that the fraction of retail

---

[6] Appendix table A1 lists the keywords we used to classify ESG focused funds. We mapped English keywords to Danish, as about 90% of fund holdings in our sample were invested in Danish funds and thus have fund names in Danish.

[7] We looked at firms' websites to identify their main activities.

investors with socially responsible mutual funds increased from 0.8% in 2011 to 13.3% in 2021. More notably, the increase in the holding of socially responsible mutual funds accelerated toward the end of the sample period, increasing from 2.4% in 2019 to 13.3% in 2021. The bottom panel of figure I shows the average portfolio weight retail investors assign to socially responsible mutual funds (as a proportion of their overall risky assets portfolio). The portfolio weight increased from 0.2% in 2011 to 3.3% in 2021. Online appendix figure A1 further shows that the increase in the holdings of socially responsible mutual funds is not driven by increased shares of mutual funds in investors' portfolios. Once we condition the sample on investors holding mutual funds, we observe a stronger time trend in the holdings of socially responsible mutual funds from 2.4% in 2011 to 25.8% in 2021, suggesting that the rise of socially responsible investments is driven by the intensive margin, rather than the extensive margin, of funds holders.

Figure II shows a similar, albeit more gradual, development for the holding of green stocks and brown stocks. In 2011, 4.6% of the retail investors held brown stocks, while 8.7% held green stocks, leading to a 4.1 percentage points difference in the propensity to hold green vs. brown stocks. By 2021, the fraction of retail investors holding brown and green stocks increased to 6.9% and 15.9%, respectively, equivalent to a 9 percentage points difference in the propensity to hold green vs. brown stocks. Over the sample period, the holding of green versus brown stocks thus increased from a margin of 4.1% to 9% in favour of green stocks. In terms of portfolio weights, the increased holding of green versus brown stocks results in the portfolio weight on green stocks increasing from 2.4% to 3.3%, while the portfolio weight on brown stocks varied around 1.3% during the sample period.

To further our understanding of the rise of responsible investing, figure III plots the evolution of socially responsible investing from 2011 to 2021 across the distribution of financial wealth. We focus on wealth because prior studies document that wealthy investors are more likely to hold socially responsible investments (Hellström, Lapanan, and Olsson, 2020; Anderson and Robinson, 2022; and Christiansen et al., 2023). The top figures show holdings of socially responsible mutual funds, brown stocks, and green stocks across deciles of financial wealth in 2011 and 2021. The fraction of investors in financial wealth decile 1 that held socially responsible mutual funds increased from 0.1% in 2011 to 4.3% in 2021. In contrast, the fraction of investors in the top decile increased from 2.5% to 26.3% over the same period. The middle figure shows a smaller increase in the fraction of investors holding brown stocks for all deciles of financial wealth, while the figure to the right shows a larger increase in the fraction of investors who hold green stocks for households across the distribution of financial wealth. Collectively, the top figures show that

the increasing investments in socially responsible mutual funds and green stocks are concentrated among wealthy investors.

The bottom figures show the average portfolio weight on socially responsible mutual funds, brown stocks, and green stocks across deciles of financial wealth in 2011 and 2021. The portfolio weight allocated to mutual funds has increased more for wealthy individuals than for less wealthy individuals. Among wealthy individuals, the portfolio weight allocated to brown stocks has declined, while it has increased slightly for individuals with low financial wealth. Last but not least, we see that wealthy individuals have increased their portfolio weight on green stocks from 2011 to 2021, while the portfolio weight has remained relatively unchanged for less wealthy individuals. In summary, figure III shows that the increased allocation to responsible investments is concentrated among wealthy investors.

To further our understanding of why wealthy investors have increased their allocation to socially responsible mutual funds and stocks, table I shows descriptive statistics from across the distribution of financial wealth. For ease of presentation, we report the average characteristics of individuals in the $1^{st}, 3^{rd}, 5^{th}, 7^{th}$, and 10th decile of financial wealth. As expected, individuals with high financial wealth have higher personal income, are older, and have more years of education than do individuals with low financial wealth. Individuals with high financial wealth also invest more in risky assets and are, as suggested by figure III, more likely to hold socially responsible investments.

To formally examine whether wealth drives socially responsible investments, we regress five measures of exposure to socially responsible investments on individual characteristics, as well as individual fixed effects, year fixed effects, and municipality fixed effects. The first two measures, *investment in ESG fund* and *investment in green stocks*, are indicators for holding socially responsible mutual funds and green stocks respectively. The three remaining measures are the *portfolio weight on ESG funds* (portfolio weight on socially responsible funds), the *portfolio weight on green stocks,* and the *portfolio weight on green minus brown stocks*. Table II presents the results.

Across the five specifications in table II, we note that wealthy individuals are more likely to invest in socially responsible assets.[8] Having one million (Kr.) of financial wealth increases the propensity to invest in ESG funds (green stocks) by 1.7 (1.6) percentage points. These effects are economically as well as statistically significant. Table II also shows that the weights of socially responsible investment are also sensitive to investor wealth. An additional kr. 1 million

---

[8] Appendix table A2 shows that these effects are not driven by windfall gains resulting from inheritances that we used in the following section.

increases the weight of ESG funds and green (minus brown) stocks by 9 bp and 30 bp respectively, which compares to the respective average unconditional means of 25 bp and 160 bp. Albeit small in absolute magnitude, the effects of financial wealth on portfolio weights of sustainable assets are statistically and economically significant.

As shown above, the descriptive statistics and the basic regressions suggest that wealthy investors are more likely to invest in socially responsible stocks and mutual funds. The correlations also highlight the importance of our identification strategy: Responsible investing is more likely among individuals who are educated and wealthy; as such, testing whether socially responsible investments are perceived as luxury goods and identifying the channels driving the demand for responsible assets, such as the warm glow effect, is inherently difficult. We overcome this challenge by exploiting exogenous variation in wealth due to unexpected inheritances to perform a within-person test of whether responsible investing is perceived as a luxury good.

III.   Inherited wealth and responsible investments

To more carefully examine whether responsible investments are perceived as a luxury good, we identify beneficiaries who received inheritances due to the deaths of their last living parents. Our key identifying assumption is that the timing of the death is random relative to the timing of investment decisions.

To construct the sample of inheritances, we follow Andersen and Nielsen (2011, 2012) and identify the beneficiaries of individuals who expired between 2012 and 2020. We focus on estates in which all the beneficiaries are children of the deceased, because the Danish inheritance law by default divides the net wealth of the estate equally among the children in such cases. In total, we identify around 87,000 beneficiaries who received windfall wealth due to the death of their last living parent between 2012 and 2020. Table III provides descriptive statistics on inherited wealth and the individual and portfolio characteristics of the 72,659 beneficiaries with positive financial wealth in the year before the death of their parent.

Table III shows large heterogeneity in the size of inherited wealth. Beneficiaries in the 1st quartile of inherited wealth on average inherited kr. 17,000 (EUR 2,200), whereas beneficiaries in the[4th] quartile on average inherited kr. 1.75 million (EUR 235,000). In terms of magnitude relative to income and wealth prior to the death, inheritances were insignificant for beneficiaries in the 1st quartile and economically significant for beneficiaries in the 4th quartile. Figure IV shows the distribution of inherited wealth to income and inherited wealth to financial wealth across quartiles

of inherited wealth. As expected, beneficiaries in the first quartile received an economically insignificant inheritance relative to their income and financial wealth. However, substantial variation exists in the top quartile of inherited wealth. The median beneficiary in the top quartile inherited wealth equivalent to 3 times their annual earnings before tax and more than 3 times their pre-inheritance level of financial wealth. In addition, a substantial right tail exists where beneficiaries experience a 5-fold to 8-fold increase in their financial wealth.

Table III also shows portfolio characteristics of the beneficiaries prior to the death of their last living parent. Market value of risky assets and the risky assets share increases with inherited wealth, leading to a higher likelihood of investing in socially responsible mutual funds, and a higher likelihood of investing in brown and green stocks. These differences highlight the importance of estimating the effect of inherited wealth on socially responsible investments using an econometric specification that adjusts for time-invariant individual heterogeneity in the propensity to invest in specific assets.

Our main econometric specification is as follows:

$$y_{ijt} = \alpha_i + \alpha_j + \alpha_t + \beta \cdot Inherit\ wealth_i \cdot Post\ inherit_{it} + \delta \cdot Post\ inherit_{it} + \varepsilon_{ijt}$$

, where y_{ijt} measures responsible investments of individual i living in municipality j at time t.

The specification includes individual fixed effects (α_i) to allow for unobserved individual time-invariant heterogeneity; municipality fixed effects (α_j) to adjust for time-invariant location effect or local peer effects; and year fixed effects (α_t) to adjust for general propensity to invest in socially responsible assets at a specific time. The coefficient of interest is β, which captures the effect of inherited wealth on the propensity to invest in responsible assets, and δ, which captures the differential propensity to invest in socially responsible assets after receiving an inheritance. If socially responsible investments are perceived as a luxury good, we expect $\beta > 0$.

Table IV presents results on the effect of inherited wealth on socially responsible investments from year -1 (i.e., directly preceding the inheritance) to year +1 (i.e., right after the inheritance), where year 0 is the year of the death of the last living parent. [9] Again, we measure socially responsible investments using five dependent variables. The first two are indicators taking the value of 100 for individuals who invest in responsible mutual funds (*investment in ESG fund*) and *investment in green stocks* respectively. The other three measures are the *portfolio weight on ESG funds*, the *portfolio weight on green stocks*, and the *portfolio weight on green minus brown stocks*. All portfolio weights are

---

[9] Appendix table A3 provides the same analysis for the change in holdings from year -1 to year +3 relative to the death of the last living parent.

measured in percentage points (0 to 100 percent). Across the five specifications, we generally find a positive effect of inherited wealth on socially responsible investments, as well as a positive effect on investments after inheritances. In specification 1, the marginal effect of inheriting kr. 1 million on the propensity to invest in ESG funds is 1.6 percentage points, an economically significant effect given an unconditional mean for beneficiaries of 1.4%.

To further ascertain that the positive effect of inherited wealth on investments in ESG funds is not an indication of the time trends documented in figures I to III, figure V plots the estimated effect of inheritances in event time for the 1st and 4th quartiles of inherited wealth. The year of inheritance is year 0, whereas year -1 denotes the year before inheriting, and year 1 denotes the year after inheriting. We plot the estimated coefficients for the propensity to invest in ESG funds (Panel A), and the propensity to invest in green stocks (Panel B) and the 95% confidence intervals. We note that the estimated difference in the propensity to invest in ESG funds has no differential pre-trend, but increases significantly after inheriting (years 0 and 1). In panel B of figure V, we also observe parallel trends before inheriting, and a significant increase in the difference in the propensity to invest in green stocks after inheriting (years 0 and 1). We conclude that the evidence in table IV is not an indication of time trends or pre-trends in the propensity to invest in ESG funds or green stocks.

In specification 2 of table IV, we find an effect of larger magnitude on the propensity to invest in green stocks. An inheritance of one million (kr.) increases the propensity to invest in green stocks by 1.55 percentage points relative to an unconditional mean of 9.9%. In specifications 3 to 5, we find results of comparable magnitude, although not all effects are statistically significant at conventional levels. Inherited wealth has a positive effect on the portfolio weight on ESG funds, green stocks, and green minus brown stocks. Similarly, beneficiaries increase their portfolio allocation to socially responsible ESG funds and green minus brown stocks after they inherit. Collectively, table IV provides evidence of a positive effect of windfall wealth on socially responsible investments.

One immediate concern with the results in table IV is that the effect of windfall wealth on responsible investment could result from passive inheritance of responsible investments, rather than from an active decision to invest responsibly after receiving windfall wealth. To ensure that the estimated effect of inherited wealth on responsible investments is a result of an active decision,

we exclude beneficiaries from the sample if their deceased parent held responsible assets in their portfolio and estimate the main specification. Table V presents the results.[10]

Table V shows a positive and statistically significant effect of windfall wealth on investments in socially responsible funds and investments in green stocks. In terms of magnitude, the estimated coefficients are of slightly smaller magnitude than the coefficients in table V. An inheritance of kr. 1 million increases the propensity to invest in responsible funds by 1.45 percentage points, which is economically significant given the conditional propensity of beneficiaries to invest in socially responsible funds of 1.4%. In column 2, we also find a positive and statistically significant effect of windfall wealth on the propensity to hold green stocks. The marginal effect of a 0.98 percentage points greater propensity to invest in green stocks is large relative to an unconditional mean of 9.9%. When we analyse the effect of inherited wealth on portfolio weights of socially responsible funds and stocks, the results are mixed. In specification 3, we find a positive and statistically significant effect of inherited wealth and the fraction of the portfolio allocated to ESG funds. However, in column 4 the effect of inherited wealth on the portfolio weight of green stocks is negative. This finding indicates that while more investors allocate funds to green stocks, the average investor decreases the portfolio weight allocated to green stocks. In column 5, we find no effect of windfall wealth on the portfolio weight in green minus brown stocks. In summary, table V shows that while part of the positive effect of windfall wealth can be attributed to the inheritance of socially responsible assets, investors still actively increase their investments in socially responsible mutual funds and green stocks after their inheritance.

IV.   Mechanisms

Investors appear to treat ESGs as luxury goods: investment in responsible financial instruments (both mutual funds and green stocks) increases disproportionally with wealth. To further our understanding of the channels through which wealth affects responsible investments, we look at four factors that could explain our results. We start by considering the role of the warm glow effect by focusing on investors whose utility is more affected by prosocial behaviour. We continue by analysing whether the increased allocation to sustainable assets is a by-product of a diversification motive. Next, we examine whether investors who inherit more develop a stronger interest in ESG funds because, post-inheritance, they can afford to pay higher fund fees. We

---

[10] Appendix table A4 provides the results for the active change in holdings from year -1 to year +3 relative to the death of the last living parent.

conclude this section by studying whether the results can be attributed to banks advising wealthier clients to purchase responsible assets.

A. Warm Glow

One potential channel for the effect of inherited wealth on socially responsible investments is the warm glow effect. The warm glow effect arises if individuals experience a sense of pleasure and satisfaction from giving to others (Andreoni, 1989; 1990), whether for altruistic or selfish reasons, without regard to the actual impact of their generosity. In our setting, a warm glow effect might arise if individuals derive benefit from their socially responsible investments, either because they enjoy giving to a good cause or because they like to be associated with doing good.

To examine the role of warm glow, we divide our sample into two based on charitable giving in the past. Under Danish tax law, charitable donations are tax deductible. If donations are made to a charity (e.g., Red Cross) or a religious community, tax deductibility is subject to a cap of kr. 17,000 per year (regulated by a price index), whereas tax deductibility has no limit if donations are given to research (e.g., The Danish Cancer Society). Tax deductibility reduces the cost of charitable donations between 27% and 30% depending on the local income tax rate at municipality level and possible membership of the church. Based on data from the Danish tax authorities, we observe whether a given individual made charitable donations. Out of 71,793 beneficiaries in our sample, 20% had donated within the three-year period preceding the inheritance, whereas 80% had not.

Both theoretical arguments (Andreoni, 1988; 1989) and empirical evidence (e.g., Crumpler and Grossman, 2008) suggest a connection between warm glow and charitable giving. We speculate that the preference for charitable giving revealed information about the individual's susceptibility to the warm glow effect, which will also reveal itself in investment decisions. If socially responsible investments are motivated by a warm glow effect, we expect individuals who made charitable donations in the past to have a higher sensitivity from windfall wealth to socially responsible investments.[11] If socially responsible investments are perceived as a luxury good for other reasons, we would expect windfall wealth to be positively related to responsible investments among individuals with no charitable donations in the past. Table VI presents the results.

Panel A of table VI shows the effect of windfall wealth for individuals with charitable donations within three years before inheritance, whereas panel B shows the effect of windfall

---

[11] A related question, the effect of windfall wealth on charitable giving, is discussed in appendix B.

wealth for individuals without charitable donations during the same period.[12] Consistent with a warm glow effect, we note that the effect of windfall wealth on socially responsible investments is larger among individuals with charitable donations in the past. An inheritance of kr. 1 million leads to a 2.1 percentage points greater propensity to invest in socially responsible funds and a 2.0 percentage points greater propensity to invest in green stocks for individuals exhibiting prior warm glow behaviour. In specifications 3 and 5, we find a positive and statistically significant effect of inherited wealth on the portfolio weight allocated to socially responsible funds and brown minus green stocks, respectively. In terms of magnitude, these results contrast with the results in panel

B. Coefficients on inherited wealth are significantly smaller than the estimated coefficient in panel A. Nevertheless, we note that windfall wealth is positively related to socially responsible investment in three out of five specifications, suggesting that even individuals who did not donate in the previous three years might also view such investment as a luxury good.

In summary, table VI shows evidence of two potential channels for the effect of inherited wealth on socially responsible investments. Firstly, we find evidence consistent with a warm glow effect. Individuals who made charitable contributions in the past are also more likely to invest inherited wealth in socially responsible assets. Secondly, individuals without a recent charitable contribution still responded to windfall wealth and invested in socially responsible assets, albeit by a smaller magnitude.

B. Diversification

Another possible reason why investors with higher inheritances invest more in responsible assets is diversification. If wealthier investors are more likely to increase the size of their portfolios and generally aim at diversifying their portfolio risk, it is possible that investors mechanically increase their probability of holding a sustainable fund or a green stock through diversification. Sustainable investments might thus arise as a by-product of diversification, rather than resulting from an active decision to allocate more wealth to responsible assets. To address whether our results derive from a decision to diversify the portfolio, we introduce adjustments for the size of the portfolio (i.e., number of unique mutual funds and number of unique stocks) and hence

---

[12] Our dataset enables us to comprehensively observe all charitable donations for each individual in our sample up to a maximum horizon of three years. Expanding this horizon would result in certain observations having a longer period of donation history preceding the inheritance event, potentially introducing discrepancies and bias into the sample. Table A5 in the appendix shows the results for a split in which individuals in panel A donate at least once prior to the inheritance within our history of observation, and the rest (panel B) do not donate over the same horizon.

diversification across assets. Although the number of funds and the probability of holding a fund of a fixed category are highly correlated, by adjusting for the number of mutual funds (and stocks) in our tests, the specification holds the size of the portfolio constant, and examines whether investors who inherit more are more likely to invest in responsible assets. Table VII presents results.

Table VII documents that windfall wealth is positively associated with responsible investments when holding constant the size of the portfolio. Whereas the estimated coefficients on inherited wealth are lower compared to the results in table IV, the coefficients of interest in columns 1, 2, 3, and 5 remain economically and statistically significant. We note that although some of the investment in sustainable assets could be attributed to wealthier beneficiaries deciding to diversify their portfolios and, by chance therefore, investing in responsible assets, the results in table VII imply that windfall wealth from inheritances induces traders to actively choose responsible investments over other types of investments. Moreover, results in appendix table A6 emphasise that the choice of responsible investing is present even when we separately adjust for the number of active and passive funds held. We conclude that our main findings, showing an increase in the allocation to responsible investments with wealth, do not primarily result from diversification.

C. Fund fees

Another potential channel for our result is that investors might decide to invest in actively managed mutual funds with higher fees. It therefore remains a possibility that inheritances relax financial constraints and allow investors to invest in more expensive funds. Prior research proves that ESG funds tend to come with a higher fee than other types of funds (Baker, Egan, and Sarkar, 2022). In table VII, we therefore test whether inherited wealth is associated with the purchase of funds with higher fees. We note that the sample in table VIII is significantly reduced because it contains only beneficiaries who hold mutual funds with fee data in Morningstar.[13] The estimates in column 1 show that a larger inheritance does not correspond to a higher average weighted fee paid by the investor on all mutual funds in her portfolio. However, since our main results are strongest on the extensive margin, it is plausible that investors acquire expensive funds without significantly impacting their average weighted fee. To explore this prospect further, we test the impact of inheritance on the maximum fee paid by the investor across all held funds in column 2. We find that the coefficient of inherited wealth on the maximum fee is positive and statistically significant. However, the estimated effect of 3 basis points-higher

---

[13] In Europe, the disclosure of mutual fund fees is not subject to the same mandatory reporting requirements as it is in the United States. As a result, the coverage of fee data on European mutual funds by Morningstar is limited.

fees per million kroner of inheritance is economically insignificant. We therefore conclude that investors who receive large windfall wealth do not choose to invest in more expensive funds.

D. Bank advice

So far, we have examined whether changes in investor demand for sustainable investments is induced by pro-social preferences and warm glow. Alternatively, beneficiaries may receive investment advice from banks that observe the change in their clients' wealth status. As more and more banks offer sustainable funds to their customers and heavily advertise them on their websites, a plausible channel for our results is that financial institutions or specific bank branches increase their marketing of responsible funds or, alternatively, market them more strongly to their wealthier customers. While this channel is presumably less important in explaining the effect for stocks, we test this hypothesis in two different setups: firstly, by adjusting for bank branch-year fixed effects, and secondly by splitting the analysis between online and traditional banks of different sizes.

In this first test, to address the bank advice channel, we introduce bank branch-year fixed effects to our main specification. The main advantage of using bank branch fixed effect is that it allows us to analyse within-branch variation in the propensity to invest in socially responsible funds. Bank branch-year fixed effects allow us to adjust for the supply of responsible funds, general marketing campaigns, or advice to clients on buying responsible assets. It does not, however, address the possibility that wealthier clients within a given bank branch might be more likely to receive advice than less-wealthy clients. Table IX presents results.

From table IX, we note that the introduction of bank branch-year fixed effects has a small and economically insignificant effect on the estimated coefficient. The evidence from table IV is therefore not an indication of increased supply of ESG funds across banks or general marketing of responsible assets: Individuals are more likely to invest in responsible funds and stocks after inheritance, and the effect increases with windfall wealth.

As mentioned above, one important caveat with the test in table IX is its omission of the possibility that wealthy clients are more likely to receive personalised financial advice from their banks. Such advice might be representative of the average mix of funds offered by the bank. One way to observe the bank advice channel is to compare the results for several groups of banks that differ by the degree of financial advice and/or the mix of funds that they offer. We observe three groups of banks: large, small, and online banks. Large banks are typically parts of

bigger financial groups, marketing group funds to their clients, while smaller banks often provide access to a wide variety of independent funds. In contrast, online banks give access to a fund menu, but do not provide financial advice to clients regardless of their wealth. Panels A, B, and C of table X show the effect of windfall wealth for clients of large, small, and online banks respectively. An increase in the probability of investing in ESG funds is present in all three subsamples. Investors who inherit more wealth are more likely to buy an ESG fund even in the absence of bank advisors. Additionally, the increase in probability of investing in green energy stocks is very similar across all three samples, suggesting that all three types of banks provide similar access to stocks. This result is not surprising, as traditional banks provide relatively little financial advice about stock investing, preferring to sell mutual funds to their clients. However, portfolio weights on ESG funds and green (minus brown) stocks are not significant in online accounts. This result could be due to either the sample size or the possibility that the effects in online banks only arise from the extensive margin. Overall, we conclude that while different degrees of advice and marketing efforts across banks can play a role, as suggested by the difference in coefficients between the different bank categories, bank advice is not the main channel that drives our results.

We conclude that the evidence in table X suggests that increased investment in responsible assets may be potentially (partially) explained by the mixture of funds offered by the bank together with increased access to financial advice. However, this mechanism alone does not fully explain the more-than-proportional increase in investor demand for responsible assets after an inheritance.

V.   Heterogeneity and the effect of inherited wealth on responsible investing

In this section we explore whether there is heterogeneity in the allocation of inherited wealth by investors to socially responsible investments. In particular, we consider the following individual characteristics: gender, age, education, location and timing of the inheritance. Table XI presents results for various subsamples.

Panel A of table XI shows the estimated effect of windfall wealth for men and women. Across the five specifications, we note that the gender differences in response to windfall wealth are relatively small. Female beneficiaries are more likely to invest in socially responsible funds, while male beneficiaries are more likely to invest in green stocks. Female beneficiaries tend to allocate a larger proportion of their portfolios to socially responsible investments, although the difference is relatively modest. For age, we split the sample at the median age and find that older people are

more likely to invest in ESG funds after inheriting a larger amount of money and to increase their portfolio weight of green minus brown stocks, while other specifications display similar results across age groups. Panel C shows a slightly larger sensitivity of socially responsible investments to inherited wealth for individuals with an above median level of education. Panel D shows a tendency for investors in large cities to invest in socially responsible mutual funds, while individuals living outside the ten largest cities are more likely to invest in green stocks. Finally, panel E shows a time split for inheritances before and after 2016. While, as expected, there is a stronger effect in the likelihood to invest responsibly after 2016, the overall wealth effect on impact investing is also present in the earlier part of our sample.

Collectively, little evidence exists to suggest that different types of investors have different perceptions about responsible investments as a luxury good, which bolsters our interpretation of the wealth effects as a test of investor perception. Irrespective of individual traits, we observe increased demand for responsible investments when wealth increases on average.

VI. Alternative specifications

The prior analysis performs a test of the effect of inherited wealth on socially responsible investments. The key identifying assumption is that the timing of inheritances is random relative to the timing of the investment decision. One potential concern arises if individuals can anticipate the size of their inheritance, or alternatively, anticipate the death due to declining health of their last living parent.

To address this potential concern, we identify a sample of inheritance cases that arise due to the sudden death of the last living parent. The main advantage of sudden death is that the timing of the inheritance is truly exogenous to the investment decision. The use of unexpected inheritance helps to ensure that the impact of inherited wealth does not arise due to beneficiaries anticipating their inheritance. Table XII presents results for the subsample of beneficiaries who inherit due to the sudden and unexpected death of their last living parent.

Table XII provides evidence of a positive effect of inherited wealth on investment in socially responsible mutual funds and investment in green stocks. The effect of inherited wealth on the portfolio weight assigned to green minus brown stocks (column 5) is also statistically and economically significant, suggesting that the inheritance effect holds on the extensive as well as intensive margin. However, the coefficient in specification 3 indicates that, conditional on

23

investor security choices, the average portfolio weight on ESG funds is not significantly affected by unexpected inherited wealth.

Around 10% of all ESG funds in 2021 are identified as such due to name changes in our sample. Although this fraction is small, it could create a bias in our results if name changes are more concentrated in funds that are held by wealthier investors. We repeat our main test on funds that have never been reclassified during the sample period. The results in table A7 in the appendix show that there is no significant change in the magnitude of the effect of inherited wealth on the likelihood of investing in ESG funds or the fraction of the portfolio invested by beneficiaries.

Our empirical specifications throughout the study pool investors together, irrespective of whether they hold mutual funds, stocks, or both. In appendix table A8 we repeat our main tests considering investors holding mutual funds and investors holding stocks separately, and computing portfolio weights respective to the asset class. Columns (1) and (3) focus on existing fund investors prior to inheritance while the rest of the table focuses on existing stock investors. Our main results remain unchanged. Therefore, the influence of wealth on responsible investment does not stem from wealthier investors increasing their fund holdings.

VII.   Concluding remarks

In this study, we examined the rise of responsible investing among wealthy retail investors in Denmark as well as potential channels behind it. Firstly, we documented that responsible investing has increased significantly during the last decade, especially in recent years from 2019 to 2021. The rise in responsible investments is concentrated among wealthy investors. Almost 13% of investors in the top decile of financial wealth hold socially responsible mutual funds, and one out of four holds green stocks.

The large effect of wealth on the propensity to hold sustainable investments motivates a more careful analysis in which we identified the within-person sensitivity of responsible investing to wealth. We relied on a sample of individuals who received windfall wealth due to the death of their last living parent and found a positive and statistically significant effect of inherited wealth on responsible investing. Therefore, our results suggest that investors regard responsible investing as a luxury good.

Our results can be explained through several mechanisms, and we investigated four distinct channels. We borrowed the concept of warm glow from the charitable donations literature, where

individuals can exhibit different preferences toward "doing good." Consistent with this hypothesis, we observed that beneficiaries who made donations before inheritance tended to invest more in responsible assets as the size of their inheritance increased. We showed that the increase in responsible investing is not a by-product of a decision to diversify the portfolio. Adjusting for the size of the portfolio, we found that windfall wealth has a positive and statistically significant effect on responsible investing. While some evidence appears of investors diversifying their holdings across more asset classes after inheritance, that diversification does not solely drive the growth of allocations to responsible assets. We also showed that the increase in responsible investing is not driven by a general decision of wealthy investors to increase their allocations to active mutual funds or funds with high fees. Finally, we found evidence to suggest that increased supply of responsible assets or bank advice plays a role, but is not the main channel driving the effect of windfall wealth on responsible investing.

Overall, our study found that investors are more likely to hold responsible assets in their portfolios after receiving windfall wealth. After windfalls, they also allocate a larger fraction of their portfolios to responsible assets, consistent with responsible investing being a luxury good. Exploring different channels, our study found that investors with a history of charitable giving exhibit a strong response sensitivity to windfall wealth of responsible investing, which emphasises the influence of a 'warm glow' effect on the demand for sustainable assets.

REFERENCES

Andersen, Steffen, Tobin Hanspal, and Kasper Meisner Nielsen. 2021. Once bitten, twice shy: The power of personal experiences in risk taking. *Journal of Financial Economics* 132 (3), 97–117.

Andersen, Steffen, and Kasper Meisner Nielsen. 2011. Participation constraints in the stock market: Evidence from unexpected inheritance due to sudden death. *Review of Financial Studies* 24 (5), 1667–1697.

Andersen, Steffen, and Kasper Meisner Nielsen. 2012. Ability or finances as constraints on entrepreneurship? Evidence from survival rates in a natural experiment. *Review of Financial Studies* 25 (12), 3684–3710.

Anderson, Anders, and David T. Robinson. 2022. Financial literacy in the age of green investment. *Review of Finance* 26 (6), 1551–1584.

Andreoni, James. 1988. Privately provided public goods in a large economy: The limits of altruism. *Journal of Public Economics* 35(1), 57–73.

Andreoni, James. 1989. Giving with impure altruism: Applications to charity and Ricardian equivalence. *Journal of Political Economy* 97 (6), 1447–1458.

Andreoni, James. 1990. Impure altruism and donations to public goods: A theory of warm-glow giving. *The Economic Journal* 100 (401), 464–477.

Andreoni, James. 1993. An experimental test of the public-goods crowding-out hypothesis. *The American Economic Review* 83 (5), 1317–1327.

Auten, Gerald E., Holger Sieg, and Charles T. Clotfelter. 2002. Charitable giving, income, and taxes: An analysis of panel data. *American Economic Review* 92 (1), 371–382.

Baker, Malcom, Mark L. Egan, and Suproteem K. Sarkar. 2022. How do investors value ESG? NBER Working Paper.

Bansal, Ravi, Di Wu, and Amir Yaron. 2022. Socially responsible investing in good and bad times. *The Review of Financial Studies 35*(4), 2067–2099.

Barber, Brad M., Adair Morse, and Ayako Yasuda. 2021. Impact investing. *Journal of Financial Economics* 139 (1), 162–185.

Bauer, Rob, Tobias Ruof, and Paul Smeets. 2021. Get real! Individuals prefer more sustainable investments. *The Review of Financial Studies* 34 (8), 3976–4043.

Bauer, Rob, and Paul Smeets. 2015. Social identification and investment decisions. *Journal of Economic Behavior & Organization* 117 (C), 121–134.

Bioy, Hortense, Boya Wang, Andy Pettit, Alyssa Stankiewicz, Abdulai Mohamed, Erica Hall, Hiroaki Sato, Andy S Jung, and Hunter Beaudoin. 2023. Global sustainable fund flows: Q4 2022 in review. Technical Report, Morningstar.

Bolton, Patrick, and Marcin Kacperczyk. 2021. Do investors care about carbon risk? *Journal of Financial Economics* 142 (2), 517–549.

Briere, Marie, and Stefano Ramelli. 2020. Personal values, responsible investing and stock allocation. Working paper.

Brunnermeier, Markus K., and Stefan Nagel. 2008. Do wealth fluctuations generate time-varying risk aversion? Micro-evidence on individuals' asset allocation. *American Economic Review* 98 (3), 713–736.

Calvet, Laurant E., John Y. Campbell, and Paolo Sodini. 2007. Down or out: Assessing the welfare costs of household investment mistakes. *Journal of Political Economy* 115 (5), 707–747.

Calvet, Laurant E., John Y. Campbell, and Paolo Sodini. 2009. Fight or flight? Portfolio rebalancing by individual investors. *The Quarterly Journal of Economics* 124 (1), 301–348.

Calvet, Laurant E., and Paolo Sodini. 2014. Twin picks: Disentangling the determinants of risk taking in household portfolios. *Journal of Finance* 119 (2), 867–906.

Chiaporri, Pierre-André, and Monica Paiella. 2011. Relative risk aversion is constant: Evidence from panel data. *Journal of the European Economic Association* 9 (6), 1021–1052.

Christiansen, Charlotte, Thomas Jansson, Malene Kallestrup-Lamb, and Vicke Alexander Norén. 2023. Households' investments in socially responsible mutual funds. *The Quarterly Review of Economics and Finance* 87, 46–67.

Crumpler, Heidi, and Philip J. Grossman. 2008. An experimental test of warm glow giving. *Journal of Public Economics* 92 (5-6), 1011–1021.

Curtis, Quinn, Jill Fisch, and Adriana Z. Robertson. 2021. Do ESG mutual funds deliver on their promises? *Michigan Law Review* 120, 393.

Degryse, Hans, Albera Di Giuli, Naciye Sekerci, and Francesco Stradi. 2023. Sustainable investments: One for the money, two for the show. Working paper.

27

Friede, Gunnar, Timo Busch, and Alexander Bassen. 2015. ESG and financial performance: Aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment* 5 (4), 210–233.

Gantchev, Nickolay, Mariassunta Giannetti, and Rachel Li. 2023. Sustainability or performance? Ratings and fund managers' incentives. Working paper.

Geczy, Christopher, Jessica S. Jeffers, David K. Musto, and Anne M. Tucker. 2021. Contracts with (social) benefits: The implementation of impact investing. *Journal of Financial Economics* 142 (2), 697–718.

Giglio, Stefano, Matteo Maggiori, Johannes Stroebel, Zhenhao Tan, Stephen Utkus, and Xiao Xu. 2023. Four facts about ESG beliefs and investor portfolios. Working paper.

Grinblatt, Mark, and Matti Keloharju. 2001. How distance, language, and culture influence stockholdings and trades. *Journal of Finance* 56 (3), 1053–1073.

Goldstein, Itay, Alexandr Kopytov, Lin Shen, and Haotian Xiang. 2022. On ESG investing: Heterogeneous preferences, information, and asset prices. Working paper.

Hartzmark, Samuel M., and Abigail B. Sussman. 2019. Do investors value sustainability? A natural experiment examining ranking and fund flows. *The Journal of Finance* 74 (6), 2789–2837.

Heeb, Florian, Julian F. Kölbel, Falko Paetzold, and Stefan Zeisberger. 2023. Do investors care about impact? *Review of Financial Studies* 36 (5), 1737–1787.

Hellström, Jörgen, Nicha Lapanan, and Rickard Olsson. 2020. Socially responsible investments among parents and adult children. *European Economic Review* 121, 103328.

Hong, Harrison, and Marcin Kacperczyk. 2009. The price of sin: The effects of social norms on markets. *Journal of Financial Economics* 93 (1), 15–36.

Humphrey, Jacquelyn, Shimon Kogan, Jacob Sagi, and Laura Starks. 2021. The asymmetry in responsible investing preferences. Working paper.

Hvide, Hans K., and Per Östberg. 2015. Social interaction at work. *Journal Financial Economics* 17(3), 628–652.

Kaustia, Markku, and Samuli Knüpfer. 2012. Peer performance and stock market entry. *Journal of Financial Economics* 104 (2), 321–338.

Khan, Mozaffar, George Serafeim, and Aaron Yoon. 2016. Corporate sustainability: First evidence on materiality. *The Accounting Review* 91(6), 1697–1724.

Knüpfer, Samuli, Elias Rantapuska, and E. H. Sarvimäki. 2017. Formative experiences and portfolio choice: Evidence from the Finnish great depression. *The Journal of Finance* 72 (1), 133–166.

Lapanan, Nicha. 2018. Individual investors and socially responsible mutual funds. *The Quarterly Review of Economics and Finance* 70 (C), 214–226.

Li, Tao, S. Lakshmi Naaraayanan, and Kunal Sachdeva. 2023. Conflicting objectives of ESG funds: Evidence from proxy voting. Working paper.

Lins, Karl V., Henri Servaes, and Ane Tamayo. 2017. Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis. *The Journal of Finance* 72 (4), 1785–1824.

Michaely, Roni, Guillem Ordonez-Calafi, and Silvina Rubio. 2023. Mutual funds' strategic voting on environmental and social issues. Working paper.

Pástor, Ľuboš, Robert F. Stambaugh, and Lucian A. Taylor. 2021. Sustainable investing in equilibrium. *Journal of Financial Economics* 142 (2), 550–571.

Pástor, Ľuboš, and M. Blair Vorsatz. 2020. Mutual fund performance and flows during the COVID-19 crisis. *The Review of Asset Pricing Studies* 10 (4), 791–833.

Pedersen, Lasse Heje, Shaun Fitzgibbons, and Lukasz Pomorski. 2021. Responsible investing: The ESG-efficient frontier. *Journal of Financial Economics* 142 (2), 572–597.

Riedl, Arno, and Paul Smeets. 2017. Why do investors hold socially responsible mutual funds? *The Journal of Finance* 72 (6), 2505–2550.

Whelan, Tensie, Ulrich Atz, Tracy Van Holt, and Casey Clark. 2021. ESG and financial performance: Uncovering the relationship by aggregating evidence from 1,000 plus studies published between 2015-2020. Working paper.

Figure I. Investments in socially responsible mutual funds by retail investors, 2011-2021

This figure shows investment in socially responsible mutual funds among retail investors from 2011 to 2021. The top panel shows the fraction of retail investors who hold a socially responsible mutual fund in their portfolios. The bottom panel shows the average portfolio weight allocated to socially responsible mutual funds among retail investors. Portfolio weights are calculated relative to the holding of risky assets (stocks and mutual funds).

A. Holding of socially responsible mutual funds

B. Portfolio weight on socially responsible mutual funds

30
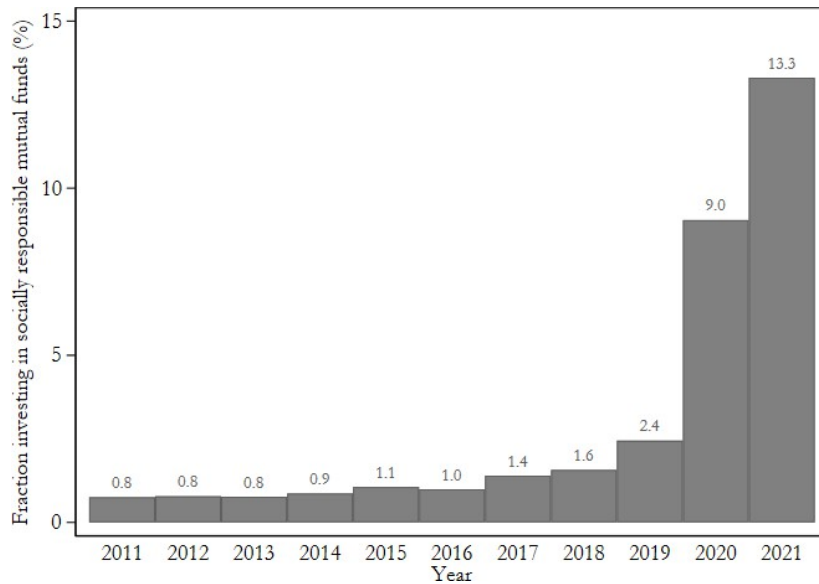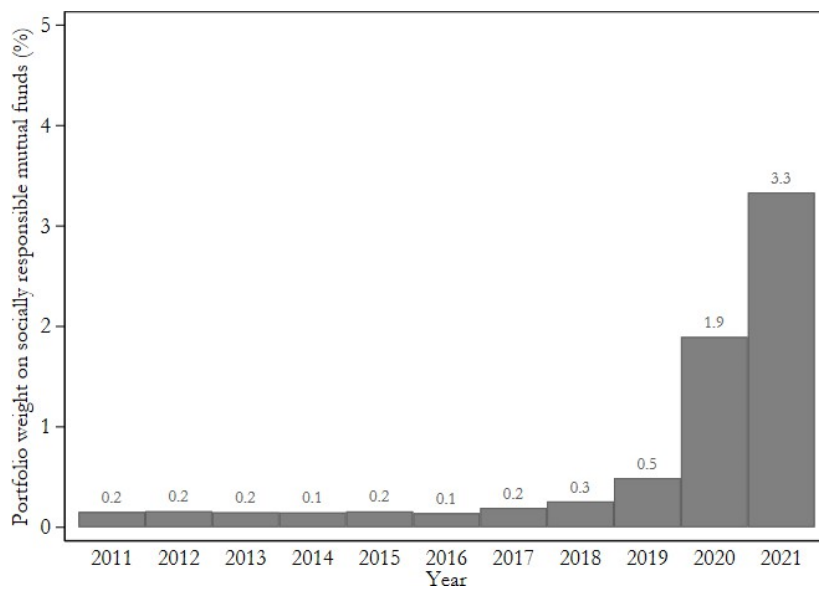
Figure II. Investments in brown and green stocks by retail investors, 2011-2021

This figure shows investments in green and brown stocks among retail investors from 2011 to 2021. The top panel shows the fraction of retail investors who hold green and brown stocks in their portfolios. The bottom panel shows the average portfolio weight allocated to green and brown stocks among retail investors. Portfolio weights are calculated relative to the holding of risky assets (stocks and mutual funds).

A. Holding of brown and green stocks

B. Portfolio weight on brown and green stocks

31
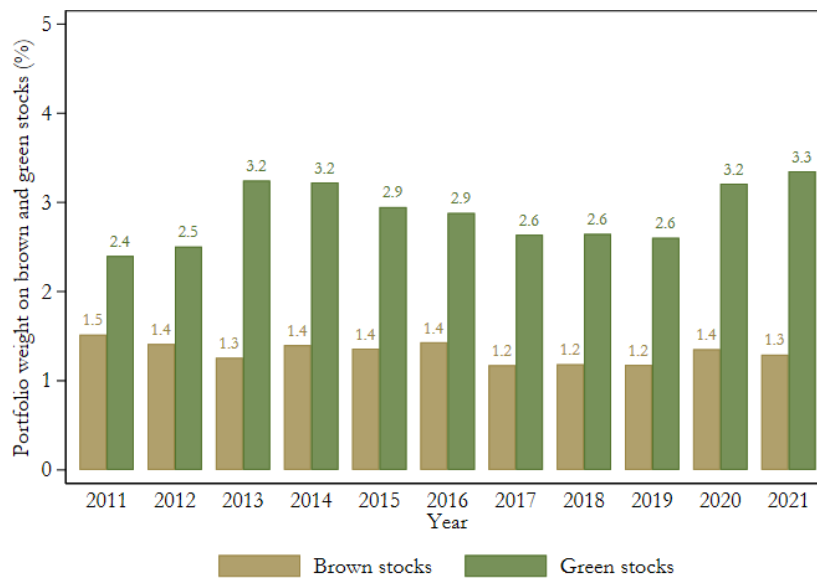
Figure III. Financial wealth and socially responsible investments in 2011 vs. 2021

This figure shows investment in socially responsible assets among retail investors in 2011 and 2021 binned into financial wealth deciles. The top panel shows the fraction of retail investors who hold socially responsible mutual funds, brown stocks, or green stocks in their portfolios in 2011 versus 2021 by financial wealth deciles. The bottom panel shows the average portfolio weight allocated to socially responsible mutual funds, brown stocks, or green stocks among retail investors in 2011 versus 2021 by financial wealth deciles. Portfolio weights are calculated relative to the holding of risky assets (stocks and mutual funds).

A. Holding of socially responsible mutual funds, brown stocks, and green stocks by financial wealth deciles
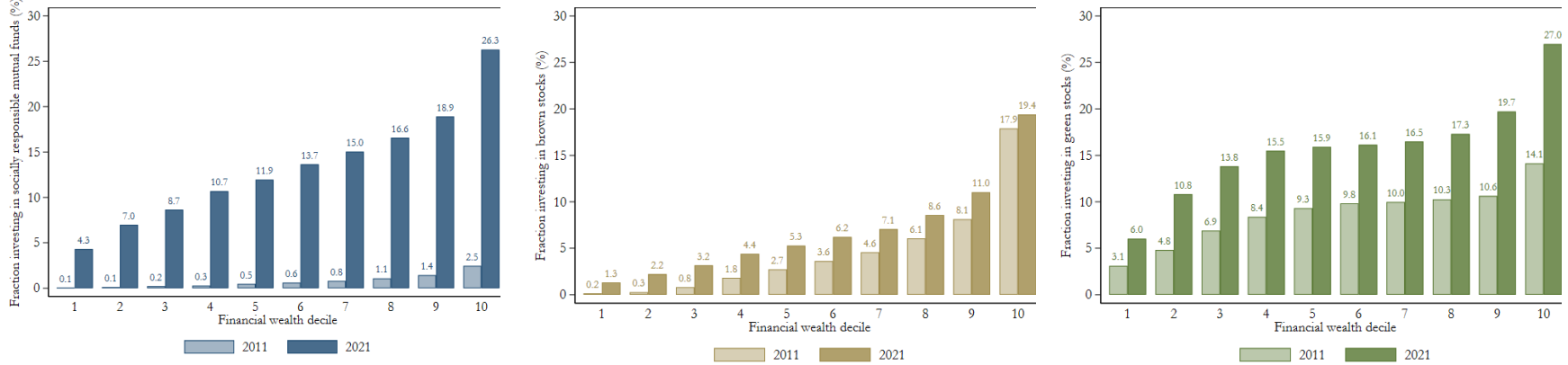
B. Portfolio weight on socially responsible mutual funds, brown stocks, and green stocks by financial wealth deciles
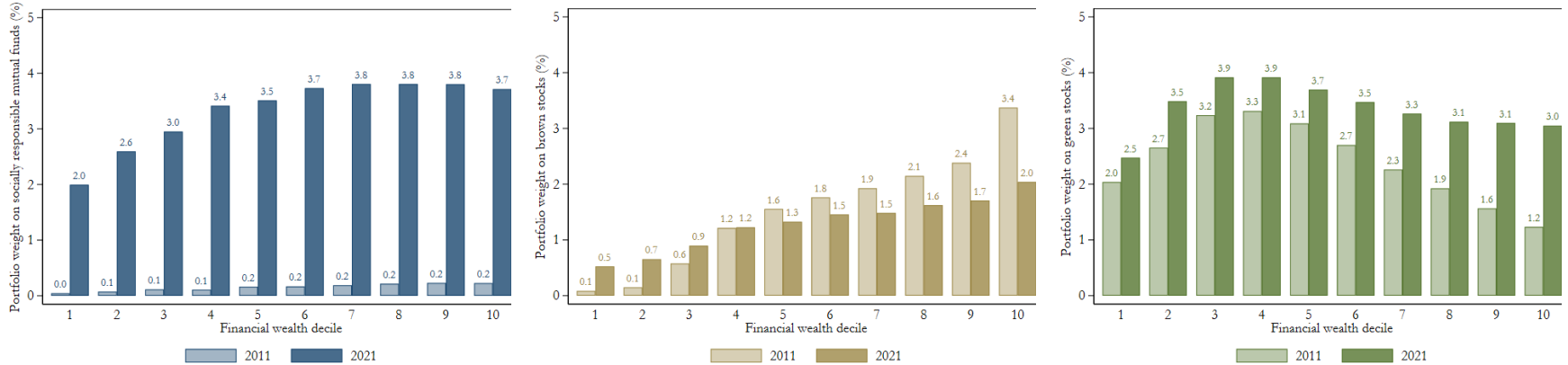
Figure IV. Size and distribution of inheritances

This figure shows the distribution of inherited wealth relative to income (top figure) and financial wealth (bottom figure). To comply with our data agreement with Statistics Denmark, which prohibits reporting any statistics that are not based on at least 10 observations, we sort observations in each quartile based on the ratio of inherited wealth to income and to financial wealth, respectively. We then calculate the average value of every 20 observations and plot the distribution of the average ratios across the quartiles of inherited wealth. An inherited wealth to income (financial wealth) ratio of 2 implies that an individual's inherited wealth is two times his/her annual income before tax (financial wealth) in the year before the year of the inheritance. Inherited wealth is measured after inheritance taxes.

33
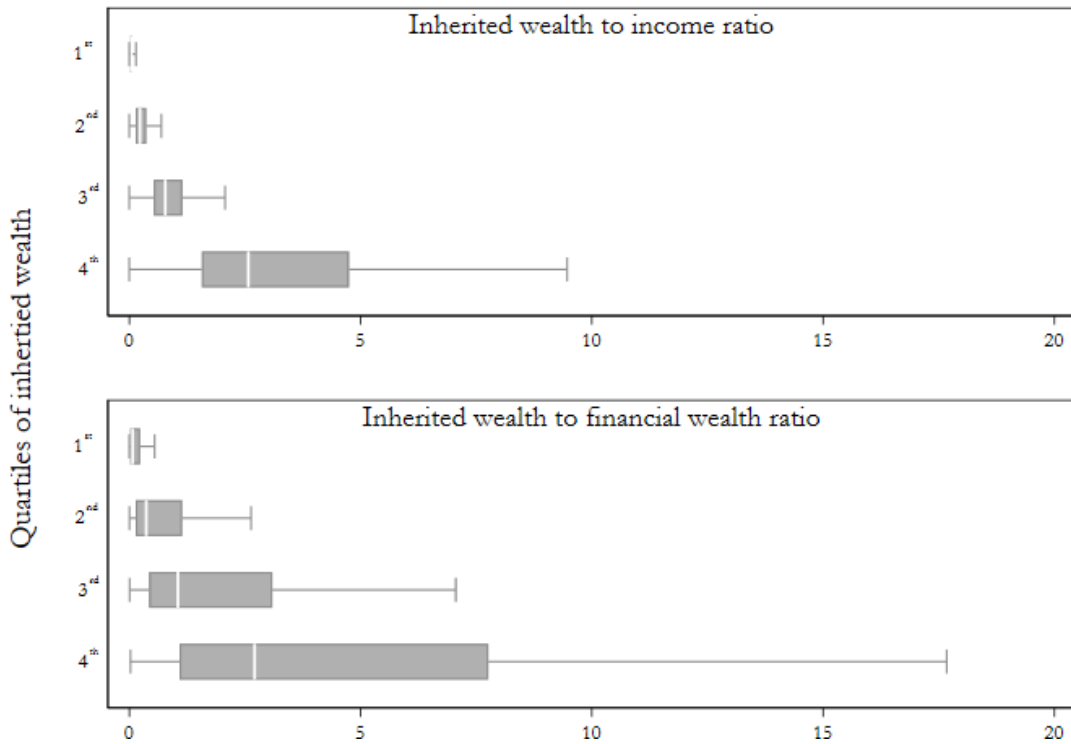
Figure V. Investment in socially responsible funds around inheritances

This figure plots estimates of the propensity to invest in socially responsible funds (and 95% confidence intervals) in event time relative to the year of inheritance. We compare investments in socially responsible funds and green stocks for individuals with small inheritances (1st quartile of inherited wealth) to investments in socially responsible funds and green stocks for individuals with large inheritances (4th quartile of inherited wealth). Year 0 is the year of inheritance.

A. Investment in ESG funds
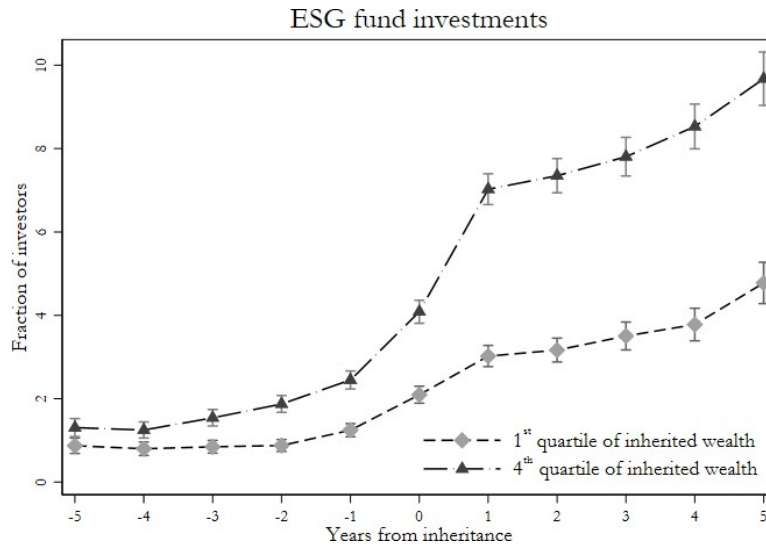
B. Investment in green stocks

34
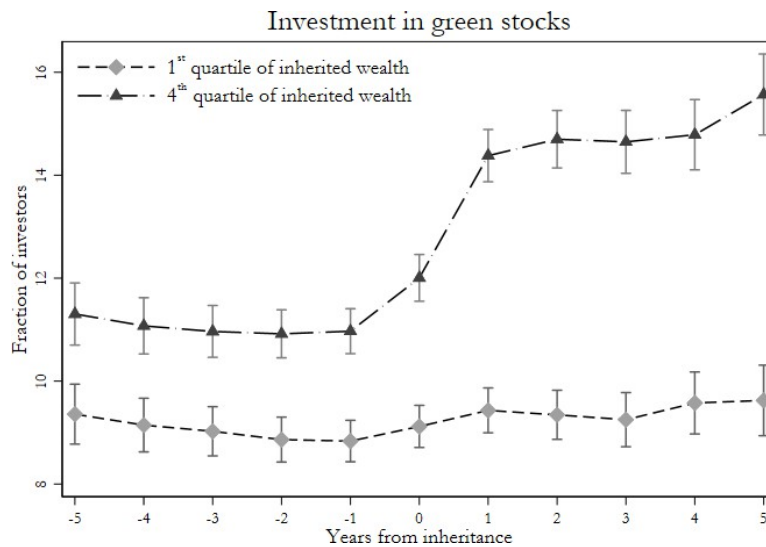
Table I. Individual and portfolio characteristics in 2021

This table provides descriptive statistics for the sample of investors in 2021. Panels A and B show the average individual and portfolio characteristics respectively across the distribution of financial wealth. Financial wealth is the value of holdings of cash, bonds, stocks, and mutual funds.

	All	Financial wealth decile					Difference
		1	3	5	7	10	(10) − (1)
Panel A: Individual characteristics							
Income (kr. 1,000)	484.1	352.5	423	453.5	471.6	821.1	468.7***
	(707.7)	(265.2)	(259.6)	(312.7)	(341.2)	(1955.2)	(6.0)
Financial wealth (kr. 1,000)	806.1	23.7	114.3	261.7	538.9	4409.4	4385.7***
	(1996.5)	(11.3)	(16.0)	(27.8)	(57.4)	(4897.6)	(14.9)
Age (years)	50.7	41.7	44.8	49.5	54.5	59.3	17.5***
	(15.8)	(15.8)	(16.0)	(15.7)	(14.2)	(11.1)	(0.1)
Gender (percent male)	55.7	58.4	55.3	54.1	53.6	61.2	2.8***
	(49.7)	(49.3)	(49.7)	(49.8)	(49.9)	(48.7)	(0.2)
Married (percent)	53	41.3	49	54.9	58.1	55.9	14.6***
	(49.9)	(49.2)	(50.0)	(49.8)	(49.3)	(49.7)	(0.2)
Education (years)	14.8	14.2	14.8	14.9	14.8	15.3	1.2***
	(2.5)	(2.4)	(2.4)	(2.5)	(2.6)	(2.6)	(0.0)
Panel B: Portfolio characteristics							
Market value of risky assets (kr. 1,000)	350.9	4.1	20.8	46.5	94.6	2829.8	2825.7***
	(39224.9)	(7.0)	(29.0)	(67.1)	(144.5)	(124012.3)	(378.3)
Risky asset share (percent)	41.9	23.1	28.7	36.4	46.2	74.3	51.3***
	(118.1)	(25.9)	(27.4)	(29.8)	(31.7)	(359.5)	(1.1)
Investment in ESG funds (percent)	13.3	4.3	8.7	11.9	15	26.3	22.0***
	(34.0)	(20.3)	(28.1)	(32.4)	(35.7)	(44.0)	(0.1)
Portfolio weight in ESG funds (percent)	3.3	2	3	3.5	3.8	3.7	1.7***
	(12.6)	(11.8)	(13.0)	(13.2)	(12.8)	(10.9)	(0.0)
Investment in brown stocks (percent)	6.9	1.3	3.2	5.3	7.1	19.4	18.1***
	(25.3)	(11.4)	(17.5)	(22.4)	(25.6)	(39.5)	(0.1)
Portfolio weight on brown stocks (percent)	1.3	0.5	0.9	1.3	1.5	2	1.5***
	(7.8)	(6.3)	(7.3)	(8.2)	(8.2)	(7.8)	(0.0)
Investment in green stocks (percent)	15.9	6	13.8	15.9	16.5	27	20.9***
	(36.5)	(23.8)	(34.5)	(36.6)	(37.1)	(44.4)	(0.2)
Portfolio weight on green stocks (percent)	3.3	2.5	3.9	3.7	3.3	3	0.6***
	(12.6)	(12.7)	(14.2)	(13.2)	(12.1)	(10.0)	(0.0)
N	1,074,888	1,074,888	1,074,888	1,074,888	1,074,888	1,074,888	

Table II. Socially responsible investments

This table examines the determinants of socially responsible investments. The dependent variables in the five specifications are as follow: (1) *investment in ESG funds* is an indicator for investments in socially responsible mutual funds; (2) *investment in green stocks* is an indicator for investments in green energy stocks; (3) *portfolio weight on ESG funds* is the fraction of investments in stocks and mutual funds allocated to socially responsible mutual funds; (4) *portfolio weight on green stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks; and (5) *portfolio weight on green minus brown stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks minus the fraction allocated to brown energy stocks. All the dependent variables are measured in percentage points (i.e., range from 0 to 100). Section I provides details about the classification of socially responsible mutual funds and the classification of green and brown energy stocks. *Income* is personal income. *Financial wealth* is the value of cash, bonds, stocks and mutual funds. All specifications include individual fixed effects, year fixed effects, and municipality fixed effects. Standard errors are clustered at the municipality-year level and reported in parentheses.

Dependent variable	Investment in ESG funds	Investment in green stocks	Portfolio weight on ESG funds	Portfolio weight on green stocks	Portfolio weight on green minus brown stocks
	(1)	(2)	(3)	(4)	(5)
Financial wealth (kr. million)	1.655***	1.620***	0.090***	0.108***	0.301***
	(0.07)	(0.04)	(0.01)	(0.01)	(0.02)
Income (kr. million)	-0.097***	-0.147***	0.009	-0.042***	-0.058***
	(0.03)	(0.04)	(0.01)	(0.01)	(0.02)
Individual fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes
N	10,241,901	10,241,901	10,241,890	10,241,890	10,241,890
Adjusted R²	0.355	0.680	0.377	0.683	0.663

Table III. Individual and portfolio characteristics of beneficiaries

This table provides descriptive statistics for beneficiaries one year prior to inheritances across the entire sample of demises between 2012-2020 binned into inherited wealth quartile. Panels A and B show averages and standard deviations (in parentheses) for individual and portfolio characteristics as well as differences between the highest and lowest quartiles.

| | Inherited wealth quartile | | | | |
	1	2	3	4	(4) – (1)
Panel A: Individual characteristics					
Inherited wealth (kr. 1,000)	17.1	101.4	330.7	1757.3	1740.2***
	(10.9)	(42.3)	(100.7)	(6875.9)	(51.2)
Income (kr. 1,000)	440.3	459.5	471.5	536.2	95.9***
	(437.1)	(500.1)	(508.5)	(692.0)	(6.1)
Financial wealth (kr. 1,000)	468.9	566.2	661.6	1039.2	570.4***
	(1095.0)	(1248.4)	(1442.2)	(2164.2)	(18.0)
Age (years)	53.2	53.9	53.4	53.5	0.3***
	(8.1)	(8.1)	(8.2)	(8.1)	(0.1)
Gender (percent male)	55.5	57.3	56.7	56.6	1.1**
	(49.7)	(49.5)	(49.6)	(49.6)	(0.5)
Married (percent)	63.2	64	62.1	61.1	-2.1***
	(48.2)	(48.0)	(48.5)	(48.8)	(0.5)
Education (years)	14	14.4	14.7	15.2	1.2***
	(2.4)	(2.4)	(2.3)	(2.4)	(0.0)
Number of siblings	2.8	2.6	2.3	1.9	-0.9***
	(1.3)	(1.2)	(1.0)	(0.8)	(0.0)
Panel B: Portfolio characteristics					
Market value of risky assets (kr. 1,000)	108.1	123.6	147.3	273.4	165.3***
	(871.9)	(1393.6)	(1451.5)	(1809.4)	(14.9)
Risky asset share (percent)	33.6	34.5	35.1	39.0	5.4***
	(31.8)	(31.6)	(31.6)	(32.3)	(0.3)
Investment in ESG funds (percent)	1.0	1.2	1.4	2.0	1.0***
	(10.2)	(11.1)	(11.8)	(14.2)	(0.1)
Portfolio weight in ESG funds (percent)	0.2	0.2	0.3	0.3	0.1***
	(3.0)	(3.3)	(3.5)	(3.8)	(0.0)
Investment in brown stocks (percent)	4.1	4.5	5.5	8.2	4.1***
	(19.8)	(20.8)	(22.8)	(27.4)	(0.3)
Portfolio weight on brown stocks (percent)	1.1	1.1	1.2	1.8	0.7***
	(7.8)	(7.9)	(8.2)	(9.7)	(0.1)
Investment in green stocks (percent)	8.9	9.5	10.1	10.9	2.0***
	(28.5)	(29.3)	(30.1)	(31.2)	(0.3)
Portfolio weight on green stocks (percent)	3	3	2.9	2.7	-0.3***
	(13.9)	(13.7)	(13.0)	(12.4)	(0.1)
N	18,002	18,158	18,206	18,293	

Table IV. Inherited wealth and socially responsible investments

This table examines the effect of inherited wealth on socially responsible investments. The sample includes individuals who inherited due to the death of their last living parent. For each individual, we included the year before and after inheritance. *Inherited wealth* is the value of the inheritance (equal to zero before the inheritance). The dependent variables in the five specifications are as follow: (1) *investment in ESG funds* is an indicator for investments in socially responsible mutual funds; (2) *investment in green stocks* is an indicator for investments in green energy stocks; (3) *portfolio weight on ESG funds* is the fraction of investments in stocks and mutual funds allocated to socially responsible mutual funds; (4) *portfolio weight on green stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks; and (5) *portfolio weight on green minus brown stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks minus the fraction allocated to brown energy stocks. All the dependent variables are measured in percentage points (i.e., range from 0 to 100). Section I provides details about the classification of socially responsible mutual funds and the classification of green and brown energy stocks. *After inheritance* is an indicator equal to one in the year after inheritance. All specifications include individual fixed effects, year fixed effects, and municipality fixed effects. Standard errors are clustered at the municipality-year level and reported in parentheses.

Dependent variable	Investment in ESG funds	Investment in green stocks	Portfolio weight on ESG funds	Portfolio weight on green stocks	Portfolio weight on green minus brown stocks
	(1)	(2)	(3)	(4)	(5)
Inherited wealth (kr. million)	1.594***	1.547***	0.209***	-0.017	0.131**
	(0.18)	(0.15)	(0.04)	(0.05)	(0.06)
After inheritance	4.376***	0.948***	0.762***	0.128*	0.165*
	(0.31)	(0.23)	(0.06)	(0.07)	(0.08)
Individual fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes
N	145,318	145,318	145,314	145,314	145,314
Adjusted R²	0.348	0.746	0.360	0.768	0.739

38

Table V. Inherited wealth and active investments in socially responsible assets

This table examines the effect of inherited wealth on socially responsible investments. The sample includes individuals who inherited due to the death of their last living parent. To identify active investment decisions, the sample excludes individuals if the deceased parent held socially responsible mutual funds (columns 1 and 3), or green stocks (columns 2 and 4), or green or brown stocks (column 5) in their portfolio. For each individual, we include the year before and after inheritance. *Inherited wealth* is the value of the inheritance (equal to zero before the inheritance). The dependent variables in the five specifications are as follow: (1) *investment in ESG funds* is an indicator for investments in socially responsible mutual funds; (2) *investment in green stocks* is an indicator for investments in green energy stocks; (3) *portfolio weight on ESG funds* is the fraction of investments in stocks and mutual funds allocated to socially responsible mutual funds; (4) *portfolio weight on green stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks; and (5) *portfolio weight on green minus brown stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks minus the fraction allocated to brown energy stocks. All the dependent variables are measured in percentage points (i.e., range from 0 to 100). Section I provides details about the classification of socially responsible mutual funds and the classification of green and brown energy stocks. *After inheritance* is an indicator equal to one in the year after inheritance. All specifications include individual fixed effects, year fixed effects, and municipality fixed effects. Standard errors are clustered at the municipality-year level and reported in parentheses.

Dependent variable	Investment in ESG funds	Investment in green stocks	Portfolio weight on ESG funds	Portfolio weight on green stocks	Portfolio weight on green minus brown stocks
	(1)	(2)	(3)	(4)	(5)
Inherited wealth (kr. million)	1.453***	0.983***	0.205***	-0.090**	0.038
	(0.18)	(0.14)	(0.04)	(0.04)	(0.06)
After inheritance	4.414***	0.956***	0.767***	0.125*	0.181**
	(0.31)	(0.22)	(0.06)	(0.06)	(0.08)
Individual fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes
N	144,370	142,638	144,366	142,634	140,372
Adjusted R²	0.348	0.755	0.359	0.775	0.746

Table VI. Warm glow, inherited wealth, and socially responsible investments

This table examines the effect of warm glow and inherited wealth on socially responsible investments. In panel A, the sample includes individuals who have donated within the three-year period preceding an inheritance received on the death of their last living parent. In panel B, the sample includes individuals who did not make a charitable donation three years before they inherit due to the death of their last living parent. For each individual, we include the year before and after inheritance. *Inherited wealth* is the value of the inheritance (equal to zero before the inheritance). The dependent variables in the five specifications are as follow: (1) *investment in ESG funds* is an indicator for investments in socially responsible mutual funds; (2) *investment in green stocks* is an indicator for investments in green energy stocks; (3) *portfolio weight on ESG funds* is the fraction of investments in stocks and mutual funds allocated to socially responsible mutual funds; (4) *portfolio weight on green stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks; and (5) *portfolio weight on green minus brown stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks minus the fraction allocated to brown energy stocks. All the dependent variables are measured in percentage points (i.e., range from 0 to 100). Section I provides details about the classification of socially responsible mutual funds and the classification of green and brown energy stocks. *After inheritance* is an indicator equal to one in the year after inheritance. All specifications include individual fixed effects, year fixed effects, and municipality fixed effects. Standard errors are clustered at the municipality-year level and reported in parentheses.

Panel A. Individuals making charitable donations before inheritance

Dependent variable	Investment in ESG funds	Investment in green stocks	Portfolio weight on ESG funds	Portfolio weight on green stocks	Portfolio weight on green minus brown stocks
	(1)	(2)	(3)	(4)	(5)
Inherited wealth (kr. million)	2.065***	2.009***	0.295***	0.033	0.218**
	(0.28)	(0.28)	(0.08)	(0.08)	(0.11)
After inheritance	4.926***	1.437***	0.934***	0.312**	0.421***
	(0.38)	(0.38)	(0.09)	(0.14)	(0.16)
Individual fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes
N	33,582	33,582	33,582	33,582	33,582
Adjusted R²	0.397	0.753	0.442	0.757	0.727

Panel B. Individuals without charitable donations before inheritance

Dependent variable	Investment in ESG funds	Investment in green stocks	Portfolio weight on ESG funds	Portfolio weight on green stocks	Portfolio weight on green minus brown stocks
	(1)	(2)	(3)	(4)	(5)
Inherited wealth (kr. million)	1.389***	1.355***	0.171***	-0.037	0.098
	(0.19)	(0.17)	(0.04)	(0.05)	(0.07)
After inheritance	4.184***	0.791***	0.695***	0.073	0.086

	(0.35)	(0.24)	(0.07)	(0.08)	(0.09)
Individual fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes
N	111,736	111,736	111,732	111,732	111,732
Adjusted R²	0.323	0.743	0.308	0.771	0.742

41

Table VII. Main results adjusted for number of funds/stocks

This table examines whether the main results for wealth on responsible investing can be explained by investor diversification across multiple funds/stocks after inheritance. Similar to table IV, the sample includes individuals who inherit due to the death of their last living parent. For each individual, we include the year before and after inheritance. *Inherited wealth* is the value of the inheritance (equal to zero before the inheritance). The dependent variables in the five specifications are as follow: (1) *investment in ESG funds* is an indicator for investments in socially responsible mutual funds; (2) *investment in green stocks* is an indicator for investments in green energy stocks; (3) *portfolio weight on ESG funds* is the fraction of investments in stocks and mutual funds allocated to socially responsible mutual funds; (4) *portfolio weight on green stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks; and (5) *portfolio weight on green minus brown stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks minus the fraction allocated to brown energy stocks. All the dependent variables are measured in percentage points (i.e., range from 0 to 100). Section I provides details about the classification of socially responsible mutual funds and the classification of green and brown energy stocks. *After inheritance* is an indicator equal to one in the year after inheritance. Number of funds is the number of different funds the investor holds, and number of stocks is the total number of different stocks within the beneficiaries' portfolios. All specifications include individual fixed effects, year fixed effects, and municipality fixed effects. Standard errors are clustered at the municipality-year level and reported in parentheses.

Dependent variable	Investment in ESG funds	Investment in green stocks	Portfolio weight on ESG funds	Portfolio weight on green stocks	Portfolio weight on green minus brown stocks
	(1)	(2)	(3)	(4)	(5)
Inherited wealth (kr. million)	0.587***	0.321**	0.082**	-0.053	0.140**
	(0.14)	(0.13)	(0.04)	(0.05)	(0.06)
After inheritance	4.312***	0.138	0.754***	0.104	0.171**
	(0.29)	(0.18)	(0.06)	(0.07)	(0.08)
Number of funds	1.928***		0.244***		
	(0.14)		(0.02)		
Number of stocks		2.190***		0.064***	-0.016
		(0.10)		(0.01)	(0.02)
Individual fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes
N	145,318	145,318	145,314	145,314	145,314
Adjusted R²	0.384	0.771	0.367	0.768	0.739

Table VIII. Inherited wealth and mutual fund fees

This table examines the effect of inherited wealth on mutual fund fees paid by investors. The sample includes individuals who inherit due to the death of their last living parent and hold mutual funds. For each individual, we include the year before and after inheritance. *Inherited wealth* is the value of the inheritance (equal to zero before the inheritance). The dependent variables in the five specifications are as follow: (1) *average fee* is the net mutual fund fee weighted by the investor's portfolio holdings; and (2) *max fee* is the highest fee across all mutual funds held by investor *i in* year *t*. *After inheritance* is an indicator equal to one in the year after inheritance. All specifications include individual fixed effects, year fixed effects, and municipality fixed effects. Standard errors are clustered at the municipality-year level and reported in parentheses.

Dependent variable	Average fee	Max fee
	(1)	(2)
Inherited wealth (kr. million)	-0.003	0.029***
	(0.00)	(0.00)
After inheritance	-0.135***	-0.234***
	(0.01)	(0.01)
Individual fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Municipality fixed effects	Yes	Yes
N	40,248	40,258
Adjusted R²	0.735	0.667

Table IX. Adjustment for supply of responsible assets at the bank branch-year level

This table examines the effect of inherited wealth on socially responsible investments in a specification with bank branch-year fixed effects. The sample includes individuals who inherited due to the death of their last living parent. For each individual, we include the year before and after inheritance. *Inherited wealth* is the value of the inheritance (equal to zero before the inheritance). The dependent variables in the five specifications are as follow: (1) *investment in ESG funds* is an indicator for investments in socially responsible mutual funds; (2) *investment in green stocks* is an indicator for investments in green energy stocks; (3) *portfolio weight on ESG funds* is the fraction of investments in stocks and mutual funds allocated to socially responsible mutual funds; (4) *portfolio weight on green stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks; and (5) *portfolio weight on green minus brown stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks minus the fraction allocated to brown energy stocks. All the dependent variables are measured in percentage points (i.e., range from 0 to 100). Section I provides details about the classification of socially responsible mutual funds and the classification of green and brown energy stocks. *After inheritance* is an indicator equal to one in the year after inheritance. All specifications include individual fixed effects, year fixed effects, and municipality fixed effects. Standard errors are reported in parentheses.

Dependent variable	Investment in ESG funds	Investment in green stocks	Portfolio weight on ESG funds	Portfolio weight on green stocks	Portfolio weight on green minus brown stocks
	(1)	(2)	(3)	(4)	(5)
Inherited wealth (kr. million)	1.575***	1.446***	0.214***	-0.032	0.087
	(0.18)	(0.15)	(0.04)	(0.05)	(0.06)
After inheritance	2.815	14.515*	0.394	0.388	0.452
	(2.70)	(8.62)	(0.45)	(0.36)	(0.37)
Individual fixed effects	Yes	Yes	Yes	Yes	Yes
Bank branch-year fixed effects	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes
N	143,686	143,686	143,682	143,682	143,682
Adjusted R²	0.401	0.751	0.401	0.775	0.744

Table X. Banks' effect on responsible investing

This table examines the effect of inherited wealth on responsible investing by analysing individuals with brokerage accounts at different groups of banks. Panel A focuses on large banks, panel B on small banks, and panel C on online banks. The sample includes individuals who inherited due to the death of their last living parent. For each individual, we include the year before and after inheritance. *Inherited wealth* is the value of the inheritance (equal to zero before the inheritance). The dependent variables in the five specifications are as follow: (1) *investment in ESG funds* is an indicator for investments in socially responsible mutual funds; (2) *investment in green stocks* is an indicator for investments in green energy stocks; (3) *portfolio weight on ESG funds* is the fraction of investments in stocks and mutual funds allocated to socially responsible mutual funds; (4) *portfolio weight on green stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks; and (5) *portfolio weight on green minus brown stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks minus the fraction allocated to brown energy stocks. All the dependent variables are measured in percentage points (i.e., range from 0 to 100). Section I provides details about the classification of socially responsible mutual funds and the classification of green and brown energy stocks. *After inheritance* is an indicator equal to one in the year after inheritance. All specifications include individual fixed effects, year fixed effects, and municipality fixed effects. Standard errors are clustered at the municipality-year level and reported in parentheses.

Panel A: Large Banks

Dependent variable	Investment in ESG funds	Investment in green stocks	Portfolio weight on ESG funds	Portfolio weight on green stocks	Portfolio weight on green minus brown stocks
	(1)	(2)	(3)	(4)	(5)
Inherited wealth (kr. million)	1.431***	1.349***	0.192***	0.024	0.141**
	(0.19)	(0.17)	(0.05)	(0.05)	(0.06)
After inheritance	1.741***	1.269***	0.341***	0.152***	0.134**
	(0.14)	(0.16)	(0.03)	(0.06)	(0.07)
Individual fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes
N	93,942	93,942	93,942	93,942	93,942
Adjusted R²	0.393	0.749	0.313	0.775	0.745

Electronic copy available at: https://ssrn.com/abstract=4615424

Panel B: Small Banks

Dependent variable	Investment in ESG funds	Investment in green stocks	Portfolio weight on ESG funds	Portfolio weight on green stocks	Portfolio weight on green minus brown stocks
	(1)	(2)	(3)	(4)	(5)
Inherited wealth (kr. million)	2.232***	1.688***	0.276***	-0.043	0.106
	(0.35)	(0.30)	(0.07)	(0.09)	(0.11)
After inheritance	2.411***	0.398*	0.489***	0.153*	0.061
	(0.25)	(0.20)	(0.06)	(0.09)	(0.11)
Individual fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes
N	43,752	43,752	43,748	43,748	43,748
Adjusted R²	0.311	0.776	0.445	0.806	0.787

Panel C: Online Brokers

Dependent variable	Investment in ESG funds	Investment in green stocks	Portfolio weight on ESG funds	Portfolio weight on green stocks	Portfolio weight on green minus brown stocks
	(1)	(2)	(3)	(4)	(5)
Inherited wealth (kr. million)	1.222**	1.726*	0.045	0.055	0.447
	(0.52)	(0.95)	(0.09)	(0.34)	(0.45)
After inheritance	1.659***	2.021**	0.408***	0.209	0.370
	(0.34)	(0.81)	(0.09)	(0.31)	(0.44)
Individual fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes
N	5,584	5,584	5,584	5,584	5,584
Adjusted R²	0.314	0.646	0.334	0.675	0.610

Table XI. The effect of inherited wealth on investment in socially responsible assets by individual characteristics

This table provides an overview of the effect of inherited wealth on socially responsible assets by the following individual characteristics: a) gender, b) age, c) education, d) location, and e) time period. Each line presents the estimated coefficient of inherited wealth from our main specification for individuals with a given characteristic. For each individual, the sample includes one year before and one year after inheriting. The dependent variables in the five specifications are as follow: (1) *investment in ESG funds* is an indicator for investments in socially responsible mutual funds; (2) *investment in green stocks* is an indicator for investments in green energy stocks; (3) *portfolio weight on ESG funds* is the fraction of investments in stocks and mutual funds allocated to socially responsible mutual funds; (4) *portfolio weight on green stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks; and (5) *portfolio weight on green minus brown stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks minus the fraction allocated to brown energy stocks. All the dependent variables are measured in percentage points (i.e., range from 0 to 100). Section I provides details about the classification of socially responsible mutual funds and the classification of green and brown energy stocks. All specifications include individual fixed effects, year fixed effects, and municipality fixed effects. Standard errors are clustered at the municipality-year level and reported in parentheses.

Dependent variable	Investment in ESG funds	Investment in green stocks	Portfolio weight on ESG funds	Portfolio weight on green stocks	Portfolio weight on green minus brown stocks
	(1)	(2)	(3)	(4)	(5)
A. Gender					
- Male	1.463***	1.597***	0.203***	-0.058	0.120
	(0.21)	(0.21)	(0.05)	(0.07)	(0.08)
- Female	1.766***	1.492***	0.221***	0.025	0.131
	(0.21)	(0.20)	(0.05)	(0.06)	(0.08)
B. Age					
- Age below median	1.353***	1.624***	0.183***	-0.044	0.126
	(0.30)	(0.27)	(0.06)	(0.09)	(0.12)
- Age above median	1.823***	1.504***	0.222***	0.012	0.174**
	(0.21)	(0.20)	(0.05)	(0.05)	(0.07)
C. Education					
- Short	1.332***	1.563***	0.141***	0.022	0.091
	(0.21)	(0.20)	(0.04)	(0.08)	(0.09)
- Long	1.628***	1.427***	0.229***	-0.048	0.132*
	(0.21)	(0.18)	(0.05)	(0.05)	(0.07)
D. Location					
- Copenhagen	1.743*	1.318**	0.247*	0.142	0.446**
	(0.85)	(0.49)	(0.12)	(0.15)	(0.17)
- Top 5 cities	1.584***	1.075***	0.167**	0.008	0.174
	(0.51)	(0.33)	(0.08)	(0.10)	(0.13)
- Top 10 cities	1.705***	1.116***	0.197***	0.024	0.145
	(0.43)	(0.28)	(0.07)	(0.09)	(0.12)
- Outside Top 10 cities	1.512***	1.726***	0.206***	-0.029	0.133*
	(0.18)	(0.18)	(0.05)	(0.05)	(0.07)

47

E. Time					
- Before 2016	0.360***	1.216***	0.038***	-0.034	0.142
	(0.09)	(0.17)	(0.01)	(0.07)	(0.09)
- After 2016	2.867***	1.898***	0.387***	-0.004	0.112*
	(0.29)	(0.23)	(0.07)	(0.05)	(0.07)

Table XII. Unexpected inheritances due to sudden death and investments in socially responsible assets

This table examines the effect of inherited wealth on socially responsible investments. The sample includes individuals who inherited due to the sudden death of their last living parent. For each individual, we include the year before and after inheritance. *Inherited wealth* is the value of the inheritance (equal to zero before the inheritance). The dependent variables in the five specifications are as follow: (1) *investment in ESG funds* is an indicator for investments in socially responsible mutual funds; (2) *investment in green stocks* is an indicator for investments in green energy stocks; (3) *portfolio weight on ESG funds* is the fraction of investments in stocks and mutual funds allocated to socially responsible mutual funds; (4) *portfolio weight on green stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks; and (5) *portfolio weight on green minus brown stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks minus the fraction allocated to brown energy stocks. All the dependent variables are measured in percentage points (i.e., range from 0 to 100). Section I provides details about the classification of socially responsible mutual funds and the classification of green and brown energy stocks. *After inheritance* is an indicator equal to one in the year after inheritance. All specifications include individual fixed effects, year fixed effects, and municipality fixed effects. Standard errors are clustered at the municipality-year level and reported in parentheses.

Dependent variable	Investment in ESG funds	Investment in green stocks	Portfolio weight on ESG funds	Portfolio weight on green stocks	Portfolio weight on green minus brown stocks
	(1)	(2)	(3)	(4)	(5)
Inherited wealth (kr. million)	1.105***	1.379***	0.083	0.024	0.287**
	(0.30)	(0.33)	(0.06)	(0.10)	(0.15)
After inheritance	5.069***	1.442***	0.906***	0.109	0.056
	(0.57)	(0.46)	(0.14)	(0.14)	(0.17)
Individual fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes
N	22,522	22,522	22,522	22,522	22,522
Adjusted R²	0.337	0.770	0.288	0.789	0.764

Figure AI. Investments in socially responsible mutual funds by retail investors who hold mutual funds, 2011-2021

This figure shows investment in socially responsible mutual funds from 2011 to 2021 among retail investors who hold mutual funds. The top panel shows the fraction of retail investors who hold a socially responsible mutual fund in their portfolio. The bottom panel shows the average portfolio weight allocated to socially responsible mutual funds among retail investors. Portfolio weights are calculated relative to the holding of mutual funds only.

A. Holding of socially responsible mutual funds

B. Portfolio weight on socially responsible mutual funds

50
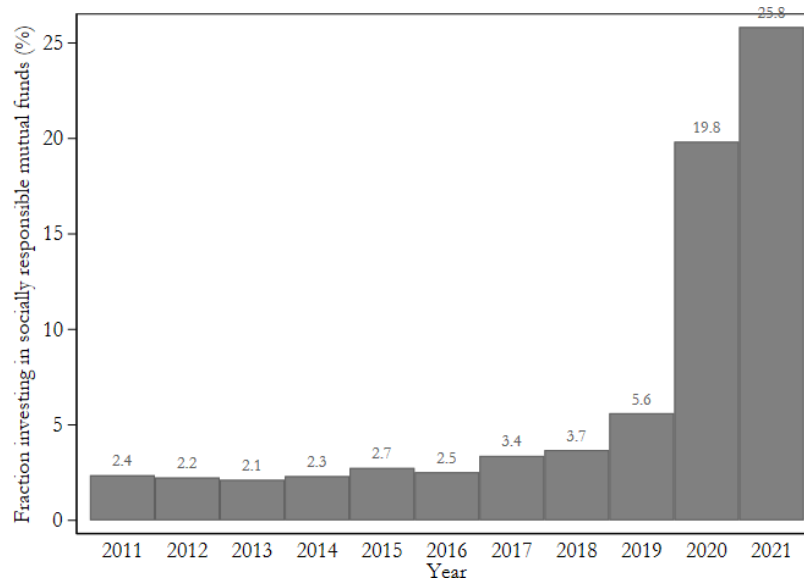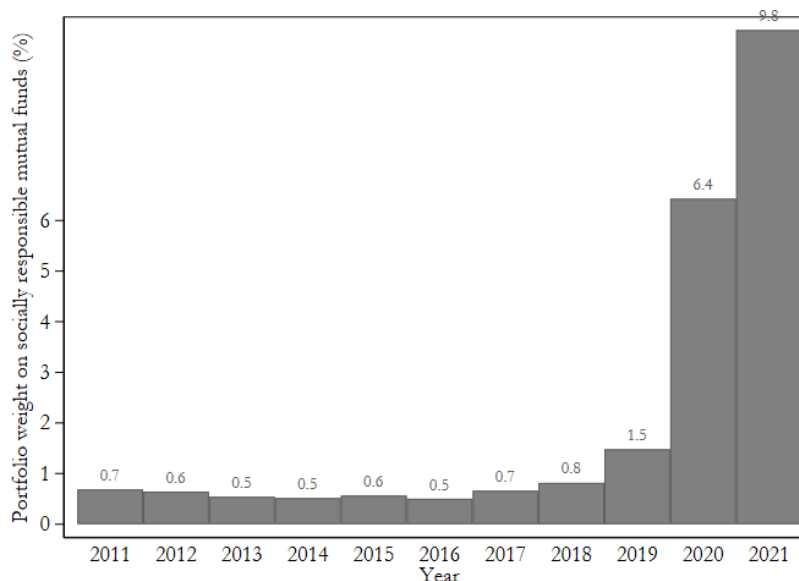
Figure A2. Investments in brown and green stocks by retail investors who hold stocks, 2011-2021

This figure shows investment in brown and green stocks among retail investors holding stocks from 2011 to 2021. The top panel shows the fraction of retail investors who hold a brown or a green stock in their portfolio. The bottom panel shows the average portfolio weight allocated to green and brown stocks among retail investors. Portfolio weights are calculated relative to the holding of stocks only.

A. Holding of brown or green stocks
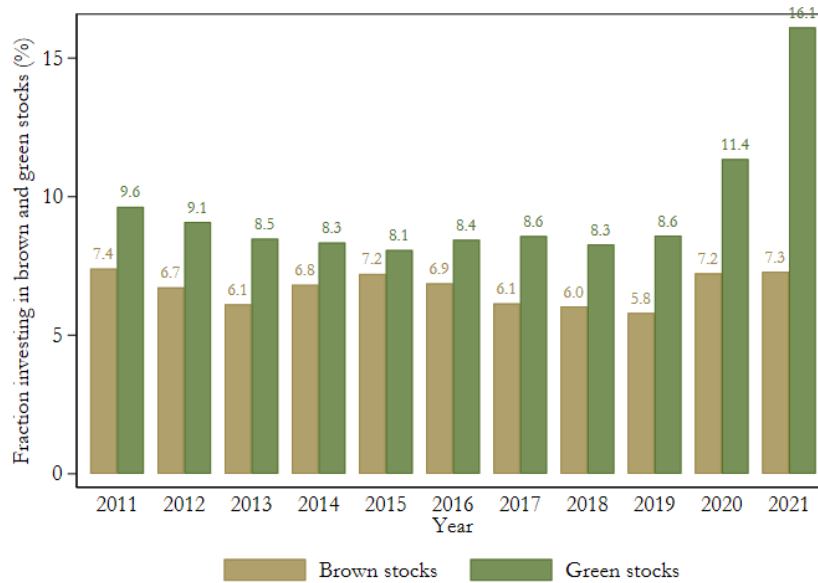
B. Portfolio weight on brown and green stocks
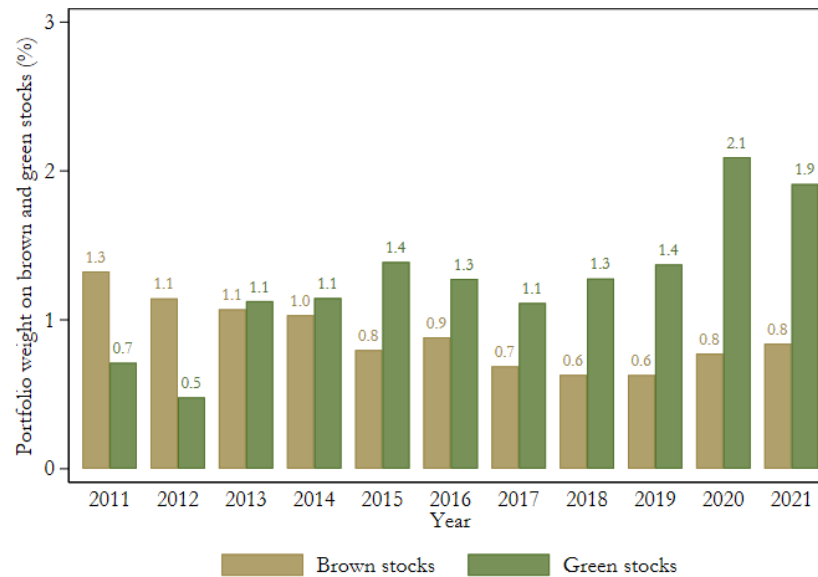
Table A1. ESG fund classification

This table presents all the keywords we use to determine ESG funds. The English list is similar to Michaely, Ordonez-Calafi, and Rubio (2023).

English Keyword
responsib
social (except social media)
sustain (except sustainable dividend), sust
esg
clean
green (except evergreen)
environm
alternative energy
equality
wind energy
solar
climate
better worl
sri
low carbon
ecology (or " eco ")
gender
ethical
impact
water
renewable
brighter future
Danish Keywords
bæred, redygtig
grønne
klima, milj
etik, etisk
nordea + stars

Table A2. Socially responsible investments: robustness

This table examines the determinants of socially responsible investments. The sample consists of individuals who did not receive inheritance from their last living parent during the period of the study. The dependent variables in the five specifications are as follow: (1) *investment in ESG funds* is an indicator for investments in socially responsible mutual funds; (2) *investment in green stocks* is an indicator for investments in green energy stocks; (3) *portfolio weight on ESG funds* is the fraction of investments in stocks and mutual funds allocated to socially responsible mutual funds; (4) *portfolio weight on green stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks; and (5) *portfolio weight on green minus brown stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks minus the fraction allocated to brown energy stocks. All the dependent variables are measured in percentage points (i.e., range from 0 to 100). Section I provides details about the classification of socially responsible mutual funds and the classification of green and brown energy stocks. *Income* is personal income. *Financial wealth* is the value of cash, bonds, stocks, and mutual funds. All specifications include individual fixed effects, year fixed effects, and municipality fixed effects. Standard errors are clustered at the municipality-year level and reported in parentheses.

Dependent variable	Investment in ESG funds	Investment in green stocks	Portfolio weight on ESG funds	Portfolio weight on green stocks	Portfolio weight on green minus brown stocks
	(1)	(2)	(3)	(4)	(5)
Financial wealth (kr. million)	1.568***	1.533***	0.081***	0.102***	0.291***
	(0.06)	(0.03)	(0.00)	(0.01)	(0.02)
Income (kr. million)	-0.096***	-0.149***	0.010*	-0.042***	-0.059***
	(0.03)	(0.04)	(0.01)	(0.01)	(0.02)
Individual fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes
N	10,136,282	10,136,282	10,136,272	10,136,272	10,136,272
Adjusted R²	0.355	0.680	0.377	0.683	0.663

Table A3. Inherited wealth and investments in socially responsible mutual funds and stocks after 3 years

This table examines the effect of inherited wealth on socially responsible investments. The sample includes individuals who inherited due to the death of their last living parent. For each individual, we included two observations: one in the year before inheritance and one in year three after inheritance. *Inherited wealth* is the value of the inheritance (equal to zero before the inheritance). The dependent variables in the five specifications are as follow: (1) *investment in ESG funds* is an indicator for investments in socially responsible mutual funds; (2) *investment in green stocks* is an indicator for investments in green energy stocks; (3) *portfolio weight on ESG funds* is the fraction of investments in stocks and mutual funds allocated to socially responsible mutual funds; (4) *portfolio weight on green stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks; and (5) *portfolio weight on green minus brown stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks minus the fraction allocated to brown energy stocks. All the dependent variables are measured in percentage points (i.e., range from 0 to 100). Section I provides details about the classification of socially responsible mutual funds and the classification of green and brown energy stocks. *After inheritance* is an indicator equal to one in the year after inheritance. All specifications include individual fixed effects, year fixed effects, and municipality fixed effects. Standard errors are clustered at the municipality-year level and reported in parentheses.

Dependent variable	Investment in ESG funds	Investment in green stocks	Portfolio weight on ESG funds	Portfolio weight on green stocks	Portfolio weight on green minus brown stocks
	(1)	(2)	(3)	(4)	(5)
Inherited wealth (kr. million)	2.113***	2.034***	0.144***	-0.035	0.290***
	(0.20)	(0.19)	(0.03)	(0.06)	(0.09)
After inheritance	8.341***	0.328	1.471***	0.028	0.038
	(0.49)	(0.35)	(0.11)	(0.12)	(0.16)
Individual fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes
N	99,610	99,610	99,602	99,602	99,602
Adjusted R²	0.209	0.666	0.187	0.667	0.632

Table A4. Inherited wealth and active investments in socially responsible mutual funds and stocks after 3 years

This table examines the effect of inherited wealth on socially responsible investments. To identify active investment decisions, the sample excludes individuals if the deceased parent held socially responsible mutual funds or green stocks in their portfolio. The sample includes individuals who inherited due to the death of their last living parent. For each individual, we include two observations: one in the year before inheritance and one in year three after inheritance. *Inherited wealth* is the value of the inheritance (equal to zero before the inheritance). The dependent variables in the five specifications are as follow: (1) *investment in ESG funds* is an indicator for investments in socially responsible mutual funds; (2) *investment in green stocks* is an indicator for investments in green energy stocks; (3) *portfolio weight on ESG funds* is the fraction of investments in stocks and mutual funds allocated to socially responsible mutual funds; (4) *portfolio weight on green stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks; and (5) *portfolio weight on green minus brown stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks minus the fraction allocated to brown energy stocks. All the dependent variables are measured in percentage points (i.e., range from 0 to 100). Section I provides details about the classification of socially responsible mutual funds and the classification of green and brown energy stocks. *After inheritance* is an indicator equal to one in the year after inheritance. All specifications include individual fixed effects, year fixed effects, and municipality fixed effects. Standard errors are clustered at the municipality-year level and reported in parentheses.

Dependent variable	Investment in ESG funds	Investment in green stocks	Portfolio weight on ESG funds	Portfolio weight on green stocks	Portfolio weight on green minus brown stocks
	(1)	(2)	(3)	(4)	(5)
Inherited wealth (kr. million)	2.058***	1.592***	0.138***	-0.060	0.164**
	(0.21)	(0.18)	(0.03)	(0.05)	(0.08)
After inheritance	8.365***	0.427	1.475***	0.106	0.145
	(0.49)	(0.33)	(0.11)	(0.11)	(0.15)
Individual fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes
N	99,160	97,816	99,152	97,808	96,116
Adjusted R²	0.208	0.673	0.186	0.672	0.640

Table A5. Warm glow, inherited wealth, and socially responsible investments: robustness

This table examines the effect of warm glow and inherited wealth on socially responsible investments. In panel A, the sample includes individuals who made a charitable donation at any point in time before they inherit due to the death of their last living parent. In panel B, the sample includes individuals who did not make a charitable donation before they inherit due to the death of their last living parent. For each individual, we include the year before and after inheritance. *Inherited wealth* is the value of the inheritance (equal to zero before the inheritance). The dependent variables in the five specifications are as follow: (1) *investment in ESG funds* is an indicator for investments in socially responsible mutual funds; (2) *investment in green stocks* is an indicator for investments in green energy stocks; (3) *portfolio weight on ESG funds* is the fraction of investments in stocks and mutual funds allocated to socially responsible mutual funds; (4) *portfolio weight on green stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks; and (5) *portfolio weight on green minus brown stocks* is the fraction of investments in stocks and mutual funds allocated to green energy stocks minus the fraction allocated to brown energy stocks. All the dependent variables are measured in percentage points (i.e., range from 0 to 100). Section I provides details about the classification of socially responsible mutual funds and the classification of green and brown energy stocks. *After inheritance* is an indicator equal to one in the year after inheritance. All specifications include individual fixed effects, year fixed effects, and municipality fixed effects. Standard errors are clustered at the municipality-year level and reported in parentheses.

Panel A. Individuals making charitable donations before inheritance

Dependent variable	Investment in ESG funds	Investment in green stocks	Portfolio weight on ESG funds	Portfolio weight on green stocks	Portfolio weight on green minus brown stocks
	(1)	(2)	(3)	(4)	(5)
Inherited wealth (kr. million)	2.278***	1.876***	0.323***	-0.038	0.141
	(0.29)	(0.28)	(0.08)	(0.08)	(0.11)
After inheritance	5.024***	1.425***	0.960***	0.362***	0.445***
	(0.37)	(0.40)	(0.09)	(0.13)	(0.15)
Individual fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes
N	36,998	36,998	36,996	36,996	36,996
Adjusted R²	0.381	0.749	0.415	0.760	0.728

Panel B. Individuals without charitable donations before inheritance

Dependent variable	Investment in ESG funds	Investment in green stocks	Portfolio weight on ESG funds	Portfolio weight on green stocks	Portfolio weight on green minus brown stocks
	(1)	(2)	(3)	(4)	(5)
Inherited wealth (kr. million)	0.482***	1.393***	0.088***	-0.003	0.135*
	(0.11)	(0.17)	(0.03)	(0.06)	(0.07)

56

After inheritance	2.460***	0.755***	0.281***	0.048	0.067
	(0.28)	(0.23)	(0.03)	(0.08)	(0.10)
Individual fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes
N	108,392	108,392	108,390	108,390	108,390
Adjusted R²	0.180	0.744	0.148	0.770	0.740

Table A6. Main results adjusted for number of active/passive funds

This tables examines whether the main results on wealth on investing in ESG funds can be explained by investors' diversification across active funds after inheritance. Similar to table IV, the sample includes individuals who inherit due to the death of their last living parent. For each individual, we include the year before and after inheritance. *Inherited wealth* is the value of the inheritance (equal to zero before the inheritance). The dependent variables in the two specifications are as follows: (1) *investment in ESG funds* is an indicator for investments in socially responsible mutual funds, and (2) *portfolio weight on ESG funds* is the fraction of investments in stocks and mutual funds allocated to socially responsible mutual funds. All the dependent variables are measured in percentage points (i.e., range from 0 to 100). Section I provides details about the classification of socially responsible mutual funds. *After inheritance* is an indicator equal to one in the year after inheritance. Number of active (passive) funds is the number of different active (passive) funds the investor holds. All specifications include individual fixed effects, year fixed effects, and municipality fixed effects. Standard errors are clustered at the municipality-year level and reported in parentheses.

Dependent variable	Investment in ESG fund	Portfolio weight on ESG funds
	(1)	(2)
Inherited wealth (kr. million)	0.621***	0.085**
	(0.14)	(0.04)
After inheritance	4.125***	0.737***
	(0.29)	(0.06)
Number of active funds	1.490***	0.205***
	(0.13)	(0.02)
Number of passive funds	4.108***	0.441***
	(0.31)	(0.05)
Individual fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Municipality fixed effects	Yes	Yes
N	145,318	145,314
Adjusted R²	0.391	0.368

Table A7. Results on ESG funds ignoring name changes

This table examines the effect of inherited wealth on socially responsible funds when we exclude ESG funds that were reclassified during the sample. The sample includes individuals who inherited due to the death of their last living parent. For each individual, we include the year before and after inheritance. *Inherited wealth* is the value of the inheritance (equal to zero before the inheritance). The dependent variables in the five specifications are as follow: (1) *investment in ESG funds* is an indicator for investments in socially responsible mutual funds; and (2) *portfolio weight on ESG funds* is the fraction of investments in stocks and mutual funds allocated to socially responsible mutual funds. All the dependent variables are measured in percentage points (i.e., range from 0 to 100). Section I provides details about the classification of socially responsible mutual funds. *After inheritance* is an indicator equal to one in the year after inheritance. All specifications include individual fixed effects, year fixed effects, and municipality fixed effects. Standard errors are clustered at the municipality-year level and reported in parentheses.

Dependent variable	Investment in ESG funds	Portfolio weight on ESG funds
	(1)	(2)
Inherited wealth (kr. million)	1.280***	0.247***
	(0.14)	(0.04)
After inheritance	3.612***	0.901***
	(0.30)	(0.08)
Individual fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Municipality fixed effects	Yes	Yes
N	145,142	145,142
Adjusted R²	0.300	0.279

59

Table A8. Inherited wealth and investments in socially responsible assets for funds and stocks investors separately

This table examines the effect of inherited wealth on socially responsible investments. The sample includes individuals who inherited due to the death of their last living parent. We differentiate between investors in funds and stocks. For each individual, we include two observations: one in the year before inheritance and one in year three after inheritance. *Inherited wealth* is the value of the inheritance (equal to zero before the inheritance). The dependent variables in the five specifications are as follow: (1) *investment in ESG funds* is an indicator for investments in socially responsible mutual funds among funds investors; (2) *investment in green stocks* is an indicator for investments in green energy stocks among stocks investors; (3) *portfolio weight on ESG funds* is the fraction of investments in mutual funds allocated to socially responsible mutual funds; (4) *portfolio weight on green stocks* is the fraction of investments in stocks allocated to green energy stocks; and (5) *portfolio weight on green minus brown stocks* is the fraction of investments in stocks allocated to green energy stocks minus the fraction allocated to brown energy stocks. All the dependent variables are measured in percentage points (i.e., range from 0 to 100). Section I provides details about the classification of socially responsible mutual funds and the classification of green and brown energy stocks. *After inheritance* is an indicator equal to one in the year after inheritance. All specifications include individual fixed effects, year fixed effects, and municipality fixed effects. Standard errors are clustered at the municipality-year level and reported in parentheses.

Dependent variable	Investment in ESG funds	Investment in green stocks	Portfolio weight on ESG funds	Portfolio weight on green stocks	Portfolio weight on green minus brown stocks
	(1)	(2)	(3)	(4)	(5)
Inherited wealth (Kr. million)	1.540***	1.677***	0.124**	-0.026	0.176**
	(0.29)	(0.17)	(0.06)	(0.06)	(0.07)
After inheritance	9.509***	0.924***	1.629***	0.130	0.185*
	(0.70)	(0.27)	(0.15)	(0.08)	(0.10)
Individual fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes
N	53,918	118,274	53,914	118,274	118,274
Adjusted R²	0.403	0.761	0.420	0.774	0.746

Appendix B. Wealth and donations to charity

In Section IV, we use the expressed preferences of individuals for charitable donations and establish that investors who are more prone to the warm glow effect (i.e., past donors) are more strongly influenced by windfall wealth on their holdings of responsible mutual funds and stocks. Although our analysis neither requires nor assumes that charitable donations themselves are a luxury good, we examine whether responsible investments and donations are changing in the same direction in response to windfall wealth. Our hypothesis is that charitable giving increases with inheritance. Alternatively, if responsible investment and donations to charity are substitutes, it is possible that an increase in responsible assets share is accompanied by a decrease in donations.

We start by estimating the effect of the inherited amount on the size of an average charitable donation for the sample of beneficiaries holding financial assets, using the same econometric specification and data as in table IV. Results are presented in column 1 of table B1. An additional kr. 1 million in inheritance increases the average charitable donation by kr. 54, which is 10% of the average pre-inheritance donation in the sample (kr. 534).

Unlike portfolio weights and holdings, charitable donations are a flow variable, which has zeros for the majority of person-year observations. We therefore use the sum of donations for three years before the inheritance (that is, years -3 to -1) and for three years after the inheritance (that is, years 1 to 3) in column 2. An additional kr. 1 million of inheritance increases the 3-year donation by kr. 192, which is 14% of the median (kr. 1328). These estimates correspond to elasticities of 5.6% to 8%, which are below 29%, the elasticity of donations to transitory income shocks obtained by Auten, Sieg, and Clotfelter (2002), using data from the IRS panel of tax returns of 1980 to 1992. Our estimates, together with the modest size of the average donation, are consistent with public goods provided by the government crowding out private charitable donations (e.g., Andreoni, 1993). Free healthcare and education, relatively high taxes, and the general efficiency of the public sector in Denmark may explain the low average level of charitable giving.

Finally, in columns 3 and 4, we estimate the effect of the inheritance amount on the probability of donating in year +1 compared to year -1 (column 3) and in years +1 to +3 compared to years -3 to -1 (column 4). We find that the 1-year probability of donation increases by 0.63% for every kr. 1 million inherited, while the probability to donate over a horizon of 3 years increases by 1%. This finding is economically significant as the average pre-inheritance donation probabilities are 19.7% and 22.9%, respectively.

Overall, we conclude that individuals increase their charitable donations, as well as their likelihood of donating after receiving windfall wealth from inheritance.

Table B1. Inherited wealth and donations to charity

This table examines the effect of inherited wealth on donations to charity. The sample includes individuals who inherited due to the death of their last living parent. For each individual, we include two observations: one in the year before inheritance and one in year three after inheritance. *Inherited wealth* is the value of the inheritance (equal to zero before the inheritance). The dependent variables in the four specifications are as follow: (1) *Amount donated* is the amount donated to charity one year before or one year after the inheritance;

(2) *Donated to charity over a 3-year horizon* is the amount donated to charity over a three-year horizon preceding or following the inheritance; (3) *Donate to charity* is an indicator for donations to charity over a 1-year horizon (one year prior to the inheritance or one year after the inheritance); and (4) *Donate to charity over a 3-year horizon* is an indicator for donations to charity over a three-year horizon preceding or following the inheritance. *After inheritance* is an indicator equal to one in the year after inheritance. All specifications include individual fixed effects, year fixed effects, and municipality fixed effects. Standard errors are clustered at the municipality-year level and reported in parentheses.

Dependent variable	Amount donated	Amount donated over a 3-year horizon	Donate to charity	Donate to charity over a 3-year horizon
	(1)	(2)	(3)	(4)
Inherited wealth (kr. million)	54.058***	192.032***	0.654***	1.038***
	(10.82)	(53.01)	(0.13)	(0.17)
After inheritance	68.337***	34.348	1.387***	1.016***
	(15.44)	(44.19)	(0.22)	(0.30)
Individual fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes
N	145,318	145,318	145,318	145,318
Adjusted R²	0.925	0.649	0.773	0.680

Publications

NEWS

News may be a news article or an appetiser offering quick insight into one of Danmarks Nationalbank's more extensive publications. The series is targeted at people who need an easy overview and like a clear angle.

STATISTICAL NEWS

Statistical news focuses on the latest figures and trends in Danmarks Nationalbank's statistics. Statistical news is targeted at people who want quick insight into current financial data.

REPORT

Reports consist of recurring reports on Danmarks Nationalbank's areas of work and activities. Here you will find Danmarks Nationalbank's annual report, among other documents. Reports are targeted at people who need a status and update on the past period.

ANALYSIS

Analyses focus on current issues of particular relevance to Danmarks Nationalbank's objectives. The analyses may also contain Danmarks Nationalbank's recommendations. They include our projections for the Danish economy and our assessment of financial stability. Analyses are targeted at people with a broad interest in economic and financial matters.

ECONOMIC MEMO

Economic Memos provide insight into the analysis work being performed by Danmarks Nationalbank's employees. For example, Economic Memos contain background analyses and method descriptions. Economic Memos are primarily targeted at people who already have a knowledge of economic and financial analyses.

WORKING PAPER

Working Papers present research work by both Danmarks Nationalbank's employees and our partners. Working Papers are primarily targeted at professionals and people with an interest in central banking research as well as economics and finance in a broader sense.

DANMARKS
NATIONALBANK