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Retail investors' perspective on ESG investments

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No. 234

Retail investors' perspective
on
ESG Investments

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Abstract

Retail investors are an essential group in shaping the effects of ESG investing and ESG assets under management are growing at an exponential rate. This study of retail investors' demand generates first evidence on their ESG-relevant decisions. In general, ESG was regarded as a highly interesting topic by retail investors, indicating that its role in financial decisions will further increase in the future. In practice, the portfolio of companies chosen to represent ESG values varies substantially across different funds. We found that, for most retail investors, ESG values have a meaningful relationship with each other. Nevertheless, there is no general agreement on how to fulfil these values. Only few relationships between specific ESG values and measures of achieving ESG values (MAVs) were determined. Moreover, no relationships were found between MAVs and indirect ESG values. Nevertheless, some MAVs had reliable relationships with each other and could be ranked according to controversiality, indicating that MAVs could be clustered for optimal representation of retail investor preference groups. Most retail clients prefer a financially optimal investment, but a meaningful group would accept lower performance to support their values. This confirms additional non-financial utility of investment decisions: Association or dissociation with certain ESG values.

Key words: ESG, ESG funds, retail investors, ESG investment, measures achieving values, ESG survey

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1. Introduction

Since the financial crisis of 2007/2008, the financial sector has been a particular concern in terms of ethical values and the role it plays in the world economy.¹ However, through the integration of environmental, social, and governance (ESG) values in financial analyses, investors have found the potential to consistently reduce portfolio risk without reducing returns, while simultaneously contributing ethical values.^{2, 3} These findings have enthused even the largest financial corporations to include ESG values in their models, both in terms of equity and credit analyses.^{4, 5} On the one hand, this development pressures companies to abide by ESG values to gain cheaper access to capital. On the other hand, investors are now given the opportunity to grow their wealth and simultaneously contribute meaningfully to society according to their values.

Despite the benefits it entails, the term ESG has not been defined in terms of universally accepted standards.⁶ Often, it is defined as a novel term similar to socially responsible investing (SRI) and corporate social responsibility (CSR)⁷ or as a set of additional non-financial goals of a company.⁸ Given the absence of a generally accepted definition, the specific meaning of ESG is highly subjective and thus, variable across investment funds. Therefore, investment funds are using vastly different ESG definitions, but all can label themselves as ESG funds. A further consequence is the concern of ‘greenwashing’, where a fund establishes symbolic ESG strategies to justify positions that are often associated with non-ESG values.⁹ Moreover, even with the best of intentions, at what point can an investment fund correctly be regarded and labelled as an ESG investment? While there is no established definition for ESG and its measurement, a definitive answer to this question will remain absent.

The development of ESG is driven by the macro-trend of sustainability.¹⁰ Complemented by newest regulatory developments¹¹, the assets under management (AUM) of ESG funds are growing exponentially, estimated to reach between 33% and 50% of global AUM by 2025.^{12, 13} While the repercussions of ESG have been substantially analysed from the perspectives of most stakeholders, there are few publications on retail investors’ preferences in terms of ESG investing.¹⁴ Moreover, no studies have examined how retail investors prefer ESG funds to be

¹ See van Hoorn, 2014, p. 253

² See Kaiser, 2020, p. 50

³ See Riding, 2020b

⁴ See Temple-West, 2020

⁵ See Nauman, 2019

⁶ See Eccles/Stroehle, 2018, p. 1

⁷ See Gutsche/Zwergel, 2020, p.112

⁸ See van Duuren et al., 2015, p. 525

⁹ See Yu et al., 2020, p. 1

¹⁰ See Zumente/Bistrova, 2021, p. 132

¹¹ See Hirtenstein, 2021

¹² See Bloomberg, 2021

¹³ See Riding, 2020a

¹⁴ See Gutsche/Zwergel, 2020, p. 113

structured. While they are not the largest players in financial markets, they do account for around 26% of equity market capitalization in Germany.¹⁵

Both from an academic and political perspective, understanding the behaviour of retail investors with respect to ESG investing is key, since they will shape the purpose and effect of ESG investing in tandem with institutional investors.¹⁶ Therefore, the goal of this survey was to gain an initial understanding of the retail investors' perspective on ESG funds.

In this survey from 2021, the perspective of retail investors on ESG values is analysed. However, the most interesting part of an investment decision is not understanding the values of the client, but his opinion on means to achieve values (MAVs). The final step is to explore performance sensitivity e.g., whether investors are willing to accept a lower return pursuing their ESG values.

First, the paper describes the survey and the methodology. Once an understanding of the survey is established, the results are presented and discussed in-depth. The paper closes with concluding remarks and proposals for further research.

2. Methodology

To gain an understanding of retail investors' opinions, an explorative survey was designed covering different topics of ESG investing. First, the preferred values are identified. Second, retail investors' opinions on means to achieve ESG values are explored. Finally, the necessary return to invest in an ESG fund instead of a non-ESG-fund is analysed. To obtain information on the first and second objectives, the survey asked for the respondents' opinion on various ESG values and MAVs, including e.g., carbon footprints, environmental effects of nuclear power, and the social effects of a female-quota. To gain information toward the third objective, the survey investigated the respondents' performance sensitivity with respect to ESG funds under different circumstances, e.g., whether they preferred ESG or non-ESG under different performance scenarios. Finally, questions on socio-economic status were integrated to gauge the respondents' level of education, experience in personal financial management, and age. In total, the survey consisted of 84 questions (Appendix A), whereas special focus was given to brevity and understandability.¹⁷

The sample size of 404 respondents represents 12.4 million retail investors in Germany on a 95% confidence level. The survey was conducted from 13.04.2021 to 19.04.2021 in Germany, the largest fund market in Europe¹⁸, online by Qualtrics (a company specialized in online data collection¹⁹). The final datasets consisted of 119 variables for each respondent.

Upon receipt of raw data, non-interpretable datapoints were removed in the cleaning process (data retention rate of around 96%). Data was removed strictly based on predetermined, for-

¹⁵ See BVI Deutscher Fondsverband, 2020

¹⁶ See Gutsche/Zwergel, 2020, p. 112

¹⁷ Please refer to Appendix A: Questionnaire (Translated from German to English) to see the survey in detail.

¹⁸ See BVI Deutscher Fondsverband, 2020

¹⁹ See Qualtrics, 2021

mal rules: 1.) answers had to be interpretable, 2.) more than 80% of questions had to be answered, 3.) respondents had to be based in Germany and 4.) had a minimum portfolio size of 5,000 Euro, and 5.) the questionnaire had to be completed within a reasonable timeframe, defined as the mean plus two standard deviations.

The final dataset consisted of 389 respondents with 98 variables. While the majority of these features were the answers to the 84 survey questions, 14 additional features entailed respondent data such as completion time, latitude and longitude.

Most questions yielded ordinal data using the 5-point Likert scale.²⁰ Therefore, all correlations were analysed using Spearman's rank-order correlation. To validate the correlation results, corresponding p-values were calculated and adjusted for false discovery rate according to the Benjamini-Hochberg procedure.²¹ Further methods such as univariate logistic regression and Mann-Whitney-U tests were used. If applicable, these are indicated in the text.

3. Results

The dataset yielded a multitude of results, presenting the most impactful in this working paper.

3.1 Descriptive statistics

In terms of gender, the survey dataset is similar to the German market according to Deutsches Aktieninstitut (DAI). 37.5% of the respondents were female and 62.0% male (Figure 1). DAI found 36.3% female and 63.7% male retail investors.²² The sample was positively skewed toward younger retail investors, exhibiting the majority of respondents to be 30 to 40 years of age.

²⁰ Bradburn et al., 2004, pp. 126 – 129

²¹ See Benjamini/Hochberg, 1995

²² See Deutsches Aktieninstitut, 2020, p. 16

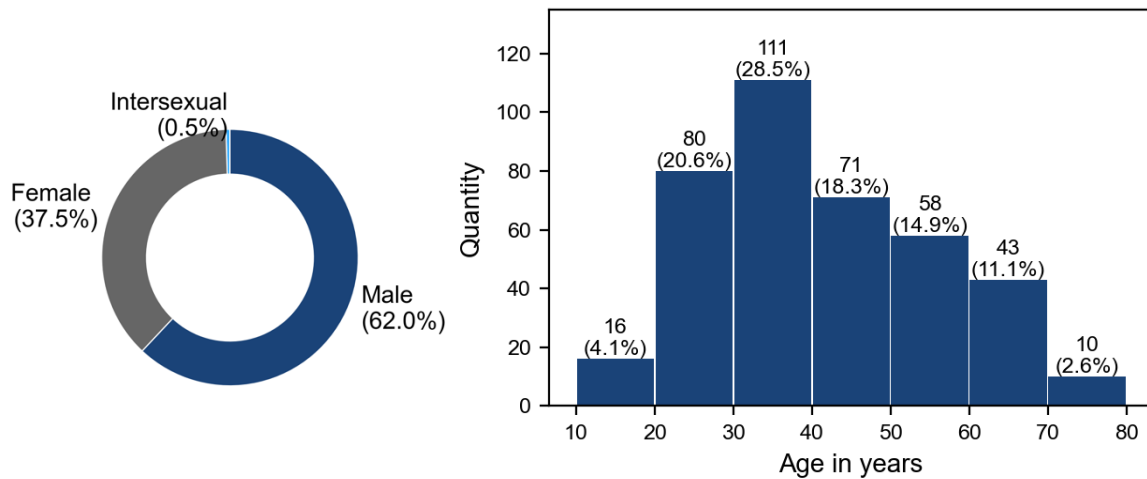


Figure 1: Respondents' gender and age

Left: Pie chart presenting proportions of *respondent genders* (male, female and diverse),
Right: Histogram of *respondents' age* in the range of 10 to 80 years and a bin size of 10 years.

According to the population density the respondents were spread evenly throughout Germany, roughly weighted by population density (Figure 2).

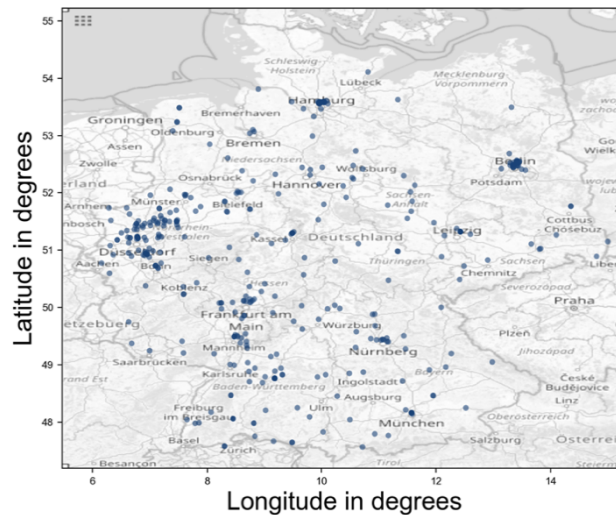


Figure 2: Approximate respondent locations

Map of Germany with *approximate respondent locations* signified by blue dots.

In terms of education, 69% of respondents had at least earned a high school degree²³ and 95% of all respondents earned a secondary school degree²⁴ (Figure 3). In the segment of further education, 42% of respondents completed an apprenticeship and 54% gained a university degree or equivalent.²⁵ Compared to the average education level of the total German population, the respondents were generally more educated, both in terms of school and higher education.^{26, 27} Specific statistics of the level of education of German retail investors were not available to the authors.

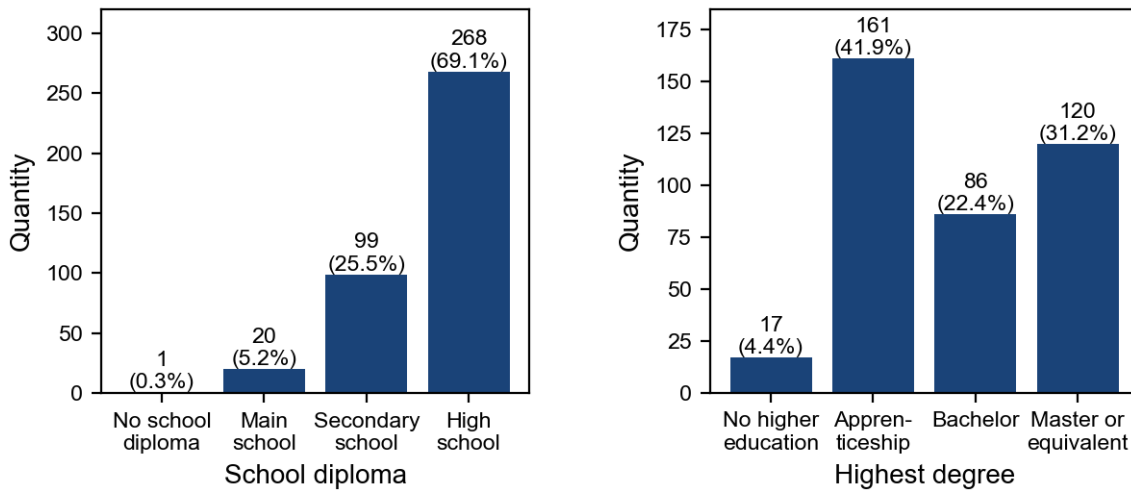


Figure 3: Bar charts of respondents' education

Left: Respondents' *school education*, represented by their achieved diploma.

Right: Respondents' *post school education*, represented by their highest achieved degree.

²³ High school degree is regarded as equivalent to the German 'Abitur' degree

²⁴ Secondary school degree is regarded as equivalent to the German 'Realabschluss/ Mittlere Reife' degree

²⁵ The German 'Meister' Degree, the highest degree of an apprenticeship craft or trade, is seen as equivalent to a university master's degree

²⁶ See Statista, 2021b

²⁷ See Statista, 2021a

With regard to the respondents' portfolio size, our data showed a peak in the 30 to 55 thousand Euro-category, exhibiting an almost even spread across other categories (Figure 4). Specific statistics of retail investors' portfolio size in Germany were not available.

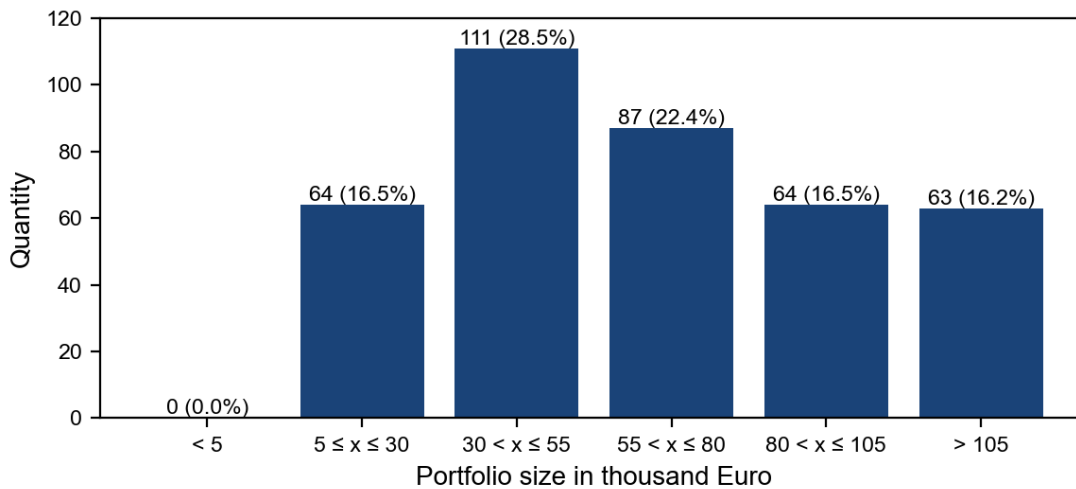


Figure 4: Portfolio size

Bar chart of respondents' *portfolio size* in the range of less than 5,000 Euro to over 105,000 Euro with a bin size of 25,000 Euro.

Finally, the survey questioned three proxies in order to measure investment literacy: 1.) amount of lifetime trades executed, 2.) minutes spent on research before an investment, and 3.) exit strategies planned (all Figure 5). In general, the respondents showed high investment literacy. Although most respondents had made less than 20 trades in their life, the majority spent at least 30 minutes researching their investments and often planned an exit strategy.

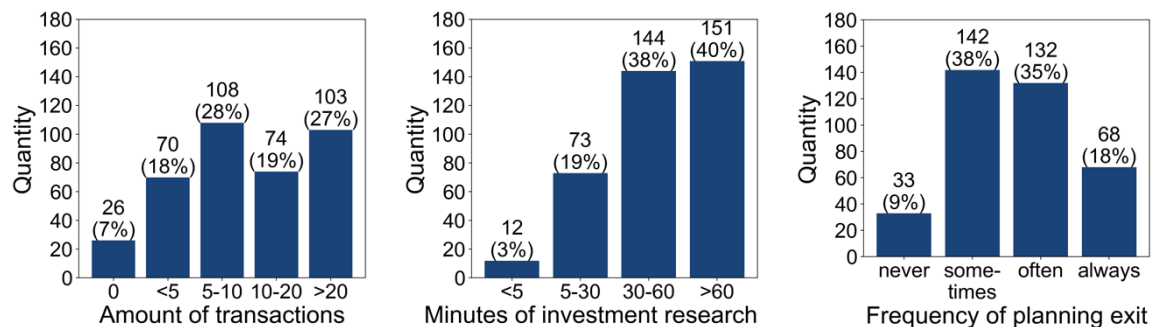


Figure 5: Bar charts of proxies for investment literacy

Left: Number of transactions respondents performed, ranging from 0 to over 20 with bin sizes 5 and 10 to reflect the marginal learning effect. Middle: Minutes of research conducted by respondents on average, in steps less than 5 minutes, 5-30 minutes, 30-60 minutes and over 60 minutes. Right: Average frequency respondents plan an exit strategy before a transaction, in categories 'never', 'sometimes', 'often' and 'always'.

3.2 ESG Values of retail investors

For an initial measure of retail investor values, respondents were asked to distribute 15 points across the three categories environment, social, and governance. Environmental category was generally prioritized over the social and governance categories (Figure 6). Social and governance categories were regarded as similarly important.

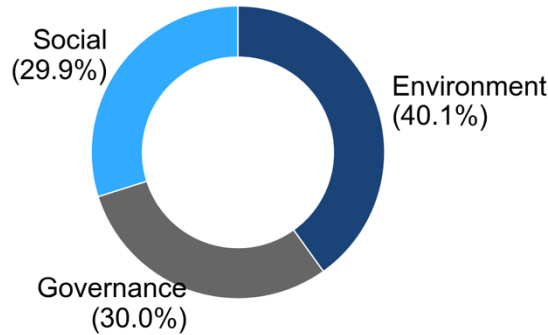


Figure 6: Relative importance of categories *environment, social and governance*

Pie chart for the assessment, respondents were asked to distribute 15 points across these categories. Average points were calculated for each category and set in proportion.

Furthermore, questions concerning individual ESG values were mapped across the categories *environment, social or governance*. Thus, the implicit results on the relative importance of general ESG values were aggregated and compared to the explicit results. Explicit and implicit importance differs significantly in all categories (Figure 7, Mann-Whitney U test, $p < 0.001$).

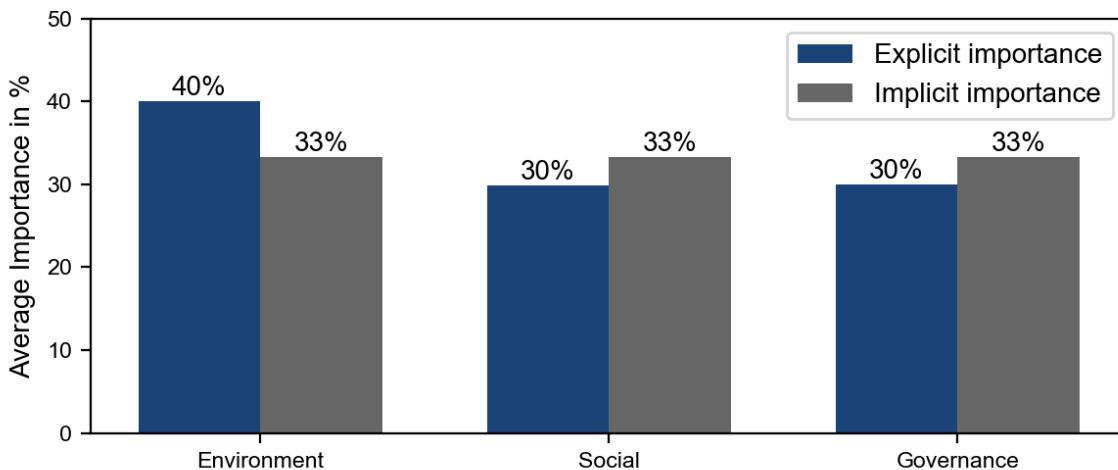


Figure 7: Difference in implicit and explicit importance general ESG categories

Bar chart of relative importance of ESG categories *environment, social and governance*. Blue bars represent explicit importance from direct question (Q2) and orange bars implicit importance, derived from the portfolio of questions (Q6 – Q29).

When respondents were explicitly asked to assess the importance of three categories, the highest importance was attributed to the environment. This could be a result of the presence of influential environmental topics such as energy crisis, global warming, and food shortages.²⁸ Interestingly, the importance shifts when considering the catalogue of 24 questions on specific ESG values, in which respondents had to gauge their opinion of the importance of various topics. Condensing the respondents' answers to implicit evaluations, respondents found all three categories were equally relevant. A Mann-Whitney U test shows that respondents may have thought that the environment is more important to them. However, if implicitly asked, all three ESG values were of equal importance.

3.3 Relationships between ESG and Means to Achieve ESG Values (MAVs)

Most survey questions were focused on assessing ESG values and MAVs, which were then analysed for correlation (Figure 8). In general, ESG values (Q6 – Q29) showed several significant correlations, although specific governance values (Q23 – Q29) exhibited fewer significant correlations with environment and social values. ESG values were seldomly significantly correlated with MAVs (Q40 – Q74). Since significant correlations among the various MAVs were heterogeneous, a generalized assessment is inappropriate.

In total, there were 532 significant correlations, excluding self- and redundant correlations. Thus, for the sake of brevity, only most pronounced results with regard to their impact will be discussed.

²⁸ See Islam et al., 2020, pp. 146 – 147

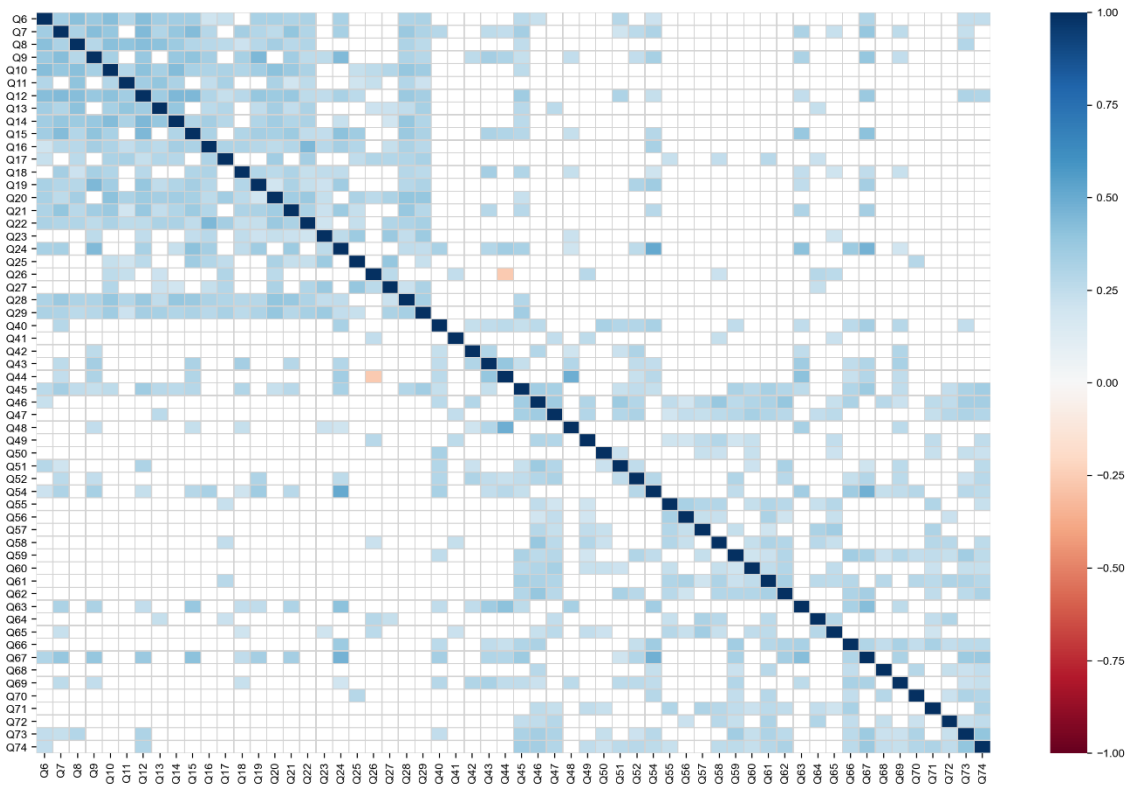


Figure 8: Correlation heatmap of ESG values and MAVs

Significant (adj. p-value ≤ 0.05 , Benjamini-Hochberg procedure) with Spearman correlations $R > |0.2|$ are shown in colour.

The analysis confirms a coherent relationship between ESG values. This is not surprising as it was possible to answer all ESG value questions with the highest possible score. Remarkably, one could observe few significant correlations between ESG values and MAVs. Reviewing the most insightful correlations, the demand for companies to transparently present a female quota correlated strongly with the implementation of quotas for other social groups. This is an unsurprising result. Contrarily, it is surprising that electric cars, wind energy and hydrogen fuel generally did not correlate significantly with environmental values. The only negative correlation was determined between the importance of an annual report that truly represents the financial situation of a company and the environmental effect of water privatization.

In general, we could not find a close relationship between ESG values and MAVs. The correlation of ESG values to MAVs is shown in Figure 9, including both explicit (Q2_1, Q2_2 and Q2_3) and implicit (Ind_E, Ind_S, Ind_G) survey results.

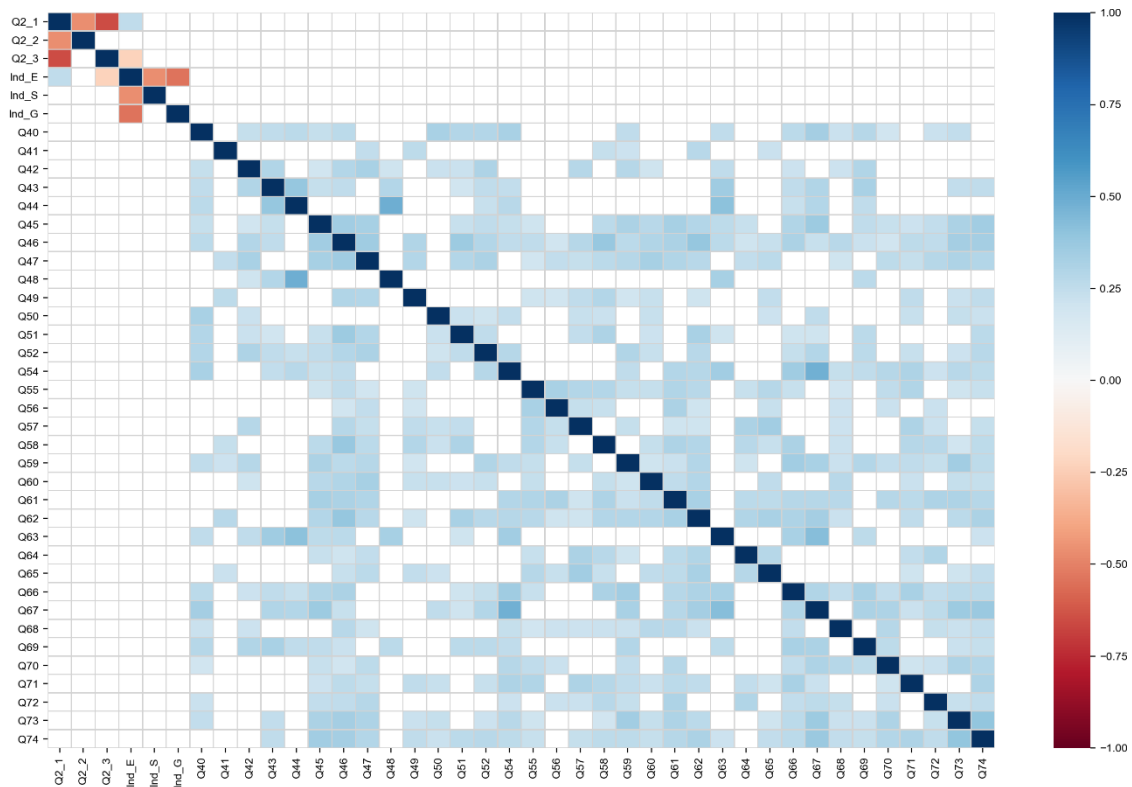


Figure 9: Correlation heatmap of implicit and explicit ESG values and MAVs

Significant (adj. p-value ≤ 0.05 , Benjamini-Hochberg procedure) with Spearman correlations $R > |0.2|$ are shown in colour.

The few significant correlations indicate a generally weak relationship between respondents' ESG values and MAVs. Even when correlating general ESG values, no significant correlations could be determined. Therefore, while respondents may have had similar ESG values, there was no consensus of how to best represent their values in an ESG fund.

Examining specific correlations in detail, those respondents with environmental priorities had a more controversial opinion on nuclear power, with a larger proportion of 'very negative' as well as 'very positive' answers (Figure 10). In other words, among the respondents who regarded the environment as 'very important', nuclear power was even more controversial than for the total sample.

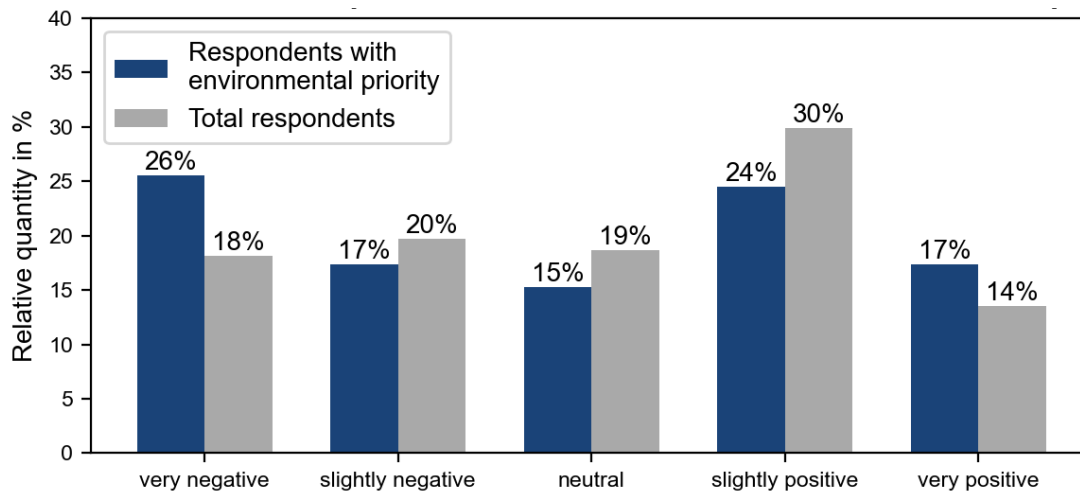


Figure 10: Respondents' opinion on the environmental effects of nuclear power

Bar chart with blue bars represent respondents who regarded environment as very important, determined by the median of ESG values in the environment category. Grey bars represent the total sample.

Moreover, in comparison to all respondents, those who regarded the environment as very important also had a more controversial opinion on water privatization, having had a larger proportion of 'very negative' as well as 'very positive' opinions (Figure 11).

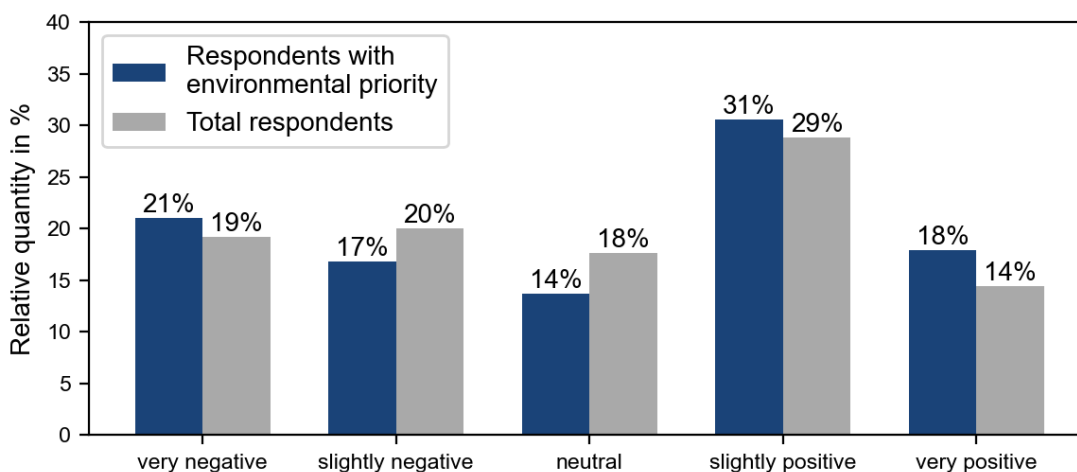


Figure 11: Respondents' opinion on the environmental effects of water privatization

Bar chart with blue bars represent respondents who regarded environment as very important, determined by the median of ESG values in the environment category. Grey bars represent the total sample

According to the dataset, privatization of water (Q44) and nuclear power (Q48) were the most controversial MAVs (Figure 12, appendix B). Further controversial topics were unisex toilets (Q63), hiring quota for certain social groups (Q67) and a female quota for hiring purposes (Q54). In contrast, other MAVs, such as flexible work hours (Q65), the reuse of materials for production (Q49) and free health offerings by employers (Q64), were generally agreeable (appendix C).



Figure 12: Bar chart of the controversiality of MAVs

Stacked horizontal bar chart of MAV questions (Q40 – Q74) ordered by controversiality (descending from most to least controversial; controversiality is algorithmically defined as $n_{\text{very_negative}} \times n_{\text{very_positive}} - (n_{\text{very_negative}} + n_{\text{very_positive}}) \times 10$). Bars represent respondents’ opinion of the effects of MAVs, given by a 5-point Likert scale from very negative to very positive, signified by divergent colour map red-white-blue.

This signifies that it is impossible to develop a single ESG fund that appeals to all retail investors, as their individual sets of ESG values differ considerably due to some MAVs being controversial, especially nuclear power and water privatization. These topics were even more controversial amongst respondents who found the environment to be ‘very important’. The results appear counterintuitive. Still, they demonstrate that identical ESG values may lead to opposing MAVs.

Considering controversial MAVs, the classic approach of the sales industry would be to divide the retail investors according to their preference groups and ‘conquer’ each group with a compatible fund.²⁹ However, such an approach would require a large amount of funds with slightly differing sets of MAVs. This goes against the grain of the profitability of a fund. Still, the heatmaps show that most MAVs were significantly positively correlated with each other. This indicates a possibility to combine certain clusters of MAVs, requiring fewer ESG funds and simultaneously catching most retail investors’ ESG values.

²⁹ See Jullien, 2011, pp. 186 – 187

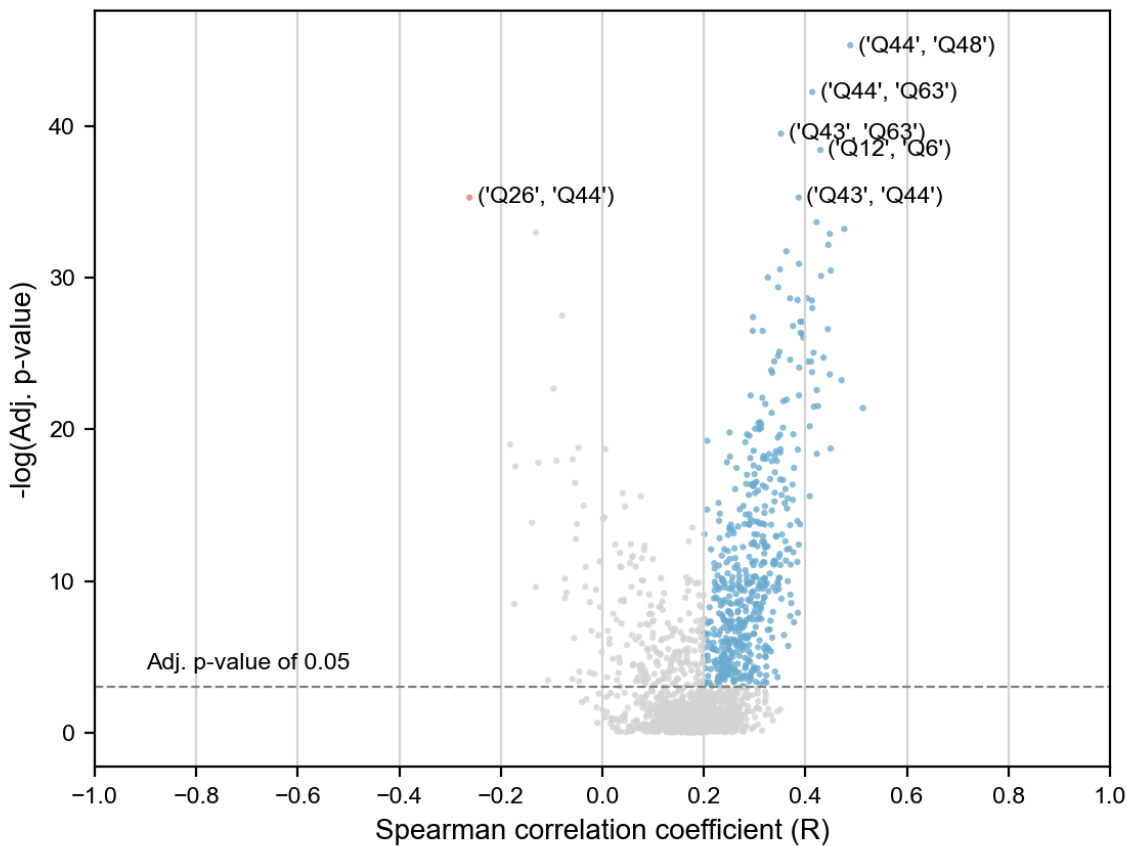


Figure 13: Volcano plot of ESG values and MAVs

Each dot represents a correlation and adj. p-value of paired data. Significant (adj. p-value ≤ 0.05 , Benjamini-Hochberg procedure) with correlations $R > |0.2|$ are shown in colour. The dashed grey line represents the threshold of significance (adj. p-value = 0.05, Benjamini-Hochberg procedure).

The volcano plot analyses those correlations with the lowest probability of randomly paired occurrences (Figure 13). In this dataset, the only significant negative correlation ($R = -0.26$, adj. p-value = $5e^{-16}$) was determined between the importance of an annual report that truly represents the financial situation of a company (Q26) and the environmental effect of water privatization (Q44). Regarding the top ranking five positive correlations with regard to adj. p-value, the privatization of water sources (Q44) occurred in three of those: 1.) with the use of nuclear power (Q48, $R = 0.49$, adj. p-value = $2e^{-20}$), 2.) with the view on use of unisex toilets (Q63, $R = 0.41$, adj. p-value = $5e^{-19}$), and 3.) the environmental effect of tax-free corporate foundations (Q43, $R = 0.39$, adj. p-value = $5e^{-16}$). Moreover, a positive correlation was determined between the effect of unisex toilets (Q63) and the environmental effect of tax-free corporate foundations (Q43, $R = 0.35$, adj. p-value = $7e^{-18}$). Finally, the importance of sustainable packaging (Q12) and low carbon emissions (Q6, $R = 0.43$, adj. p-value = $2e^{-17}$).

MAVs with common ground should be analysed in more detail. Correlations with lowest probabilities of randomly paired occurrences could be used as indications for which MAVs should be clustered into certain funds. These relationships could be crucial to targeting the various interest-groups of retail investors. Such groups could set the basis for the definition of different ESG funds and subsequent sales target groups.

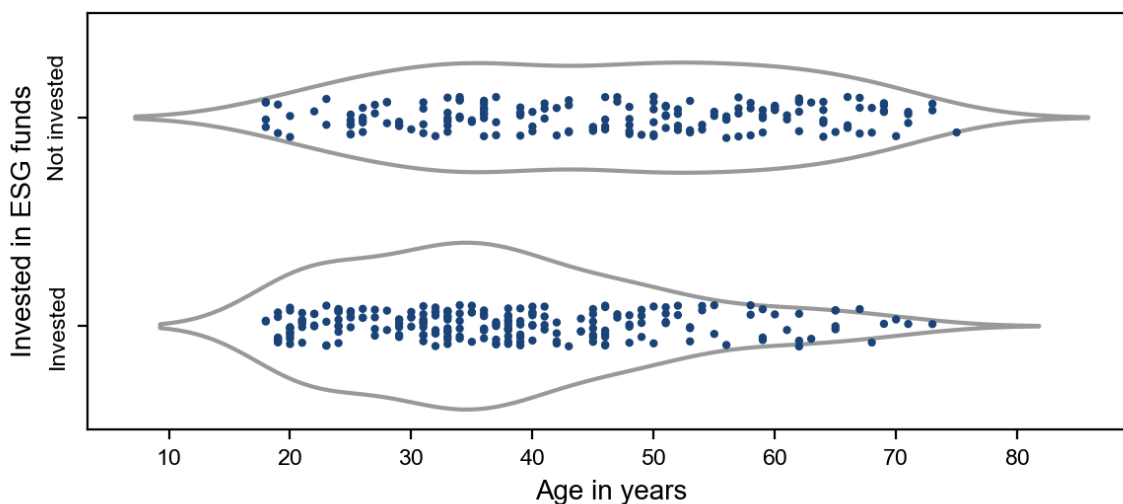


Figure 14: The relationship of age and owning an ESG fund

Scattered strip- and violin plots comparing the individual's age and existing position in an ESG fund (Spearman correlation $R = -0.28$, adj. p-value < 0.001 , Benjamini-Hochberg procedure).

There was a moderate negative relationship between age and whether a respondent already owned an ESG fund. Respondents that were not invested in ESG funds were evenly distributed across age (Figure 14). Those who were invested in ESG funds were largely below 38 years of age (median age of the dataset). Among the respondents under 38 years of age, around 67% had previously invested in ESG funds. Contrarily, of the respondents over 38 years of age, around 48% had invested in ESG funds. Using a univariate logistic regression model, we found that respondents below the age of 38 were 2.2 times more likely to have already invested in ESG funds than respondents over 38.

As young people are more likely to invest in an ESG fund, their importance in Germany will further increase. It is likely that there will be additional demand for funds that represent individuals' ESG preferences. Considering the possible controversial views on MAVs and ESG values, this is not a trivial process. However, due to considerable advances in automation and the rising demand for investments that reflect personal values, this could become a highly attractive segment.

3.4 Indications of retail investor performance sensitivity

Next, we investigated retail investors' preferences and opinions with regard to investment choices of ESG versus non-ESG funds, as well as their performance sensitivity. First, the re-

spondents' investment preference, all other aspects being equal, such as performance, risk, and price (Figure 15), was sampled. Under these circumstances, 53.9% of respondents preferred to invest in ESG funds, 30.4% of respondents were neutral in preference and 15.7% preferred to invest in non-ESG funds.

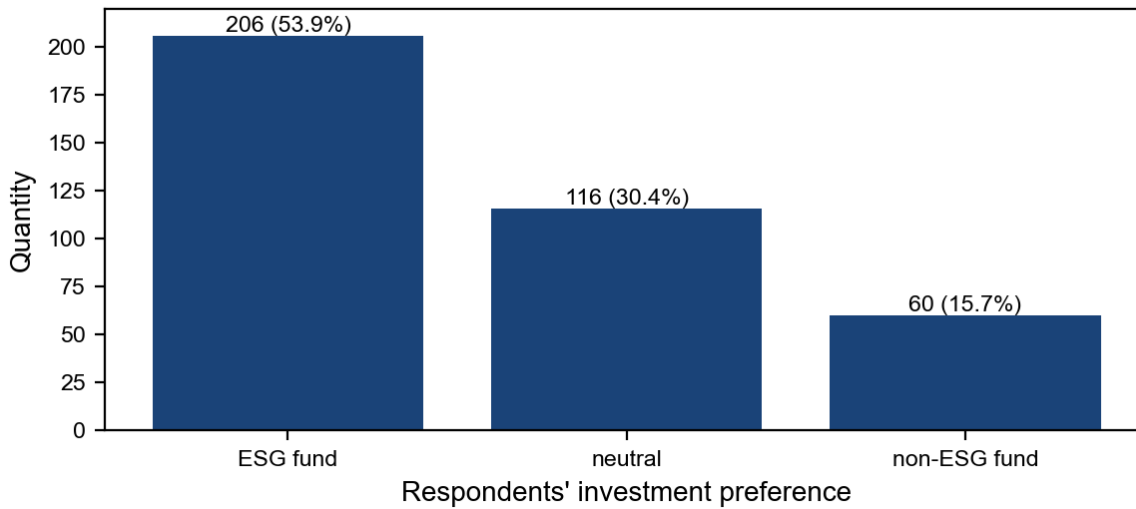


Figure 15: Investment preference if all other fund characteristics are equal

Bar chart of the respondent's *investment preferences between ESG and non-ESG funds* under the condition that all other aspects of funds are equal.

Considering the expected performance of ESG funds in comparison to non-ESG funds (Figure 16), 26.8% of respondents assumed that ESG funds would yield a lower return, 41.8% had a neutral opinion; and 31.4% believed ESG funds would yield a higher return.

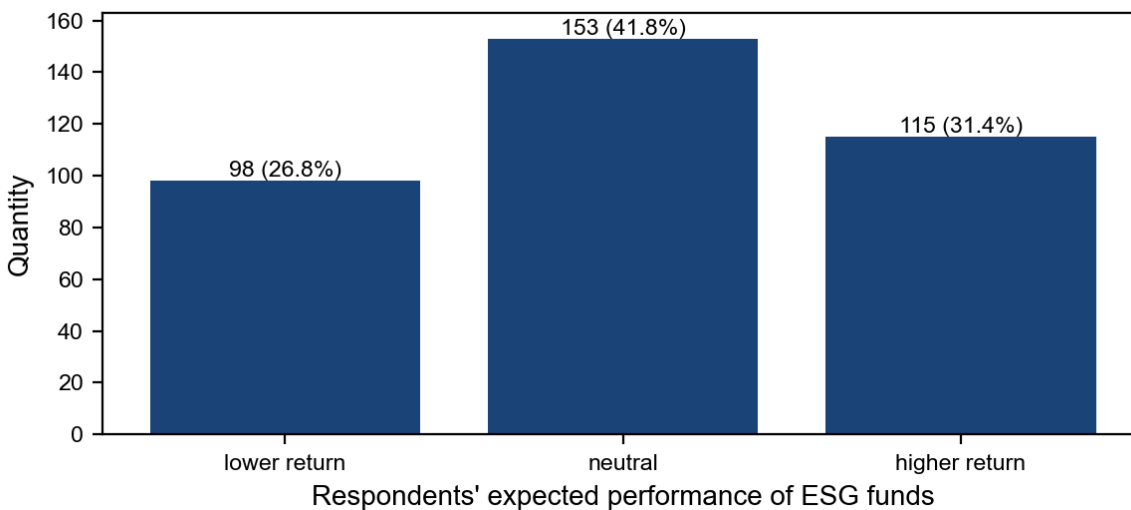


Figure 16: Expected return of ESG funds in comparison to non-ESG funds

A bar chart of *expected performance between ESG and non-ESG funds*.

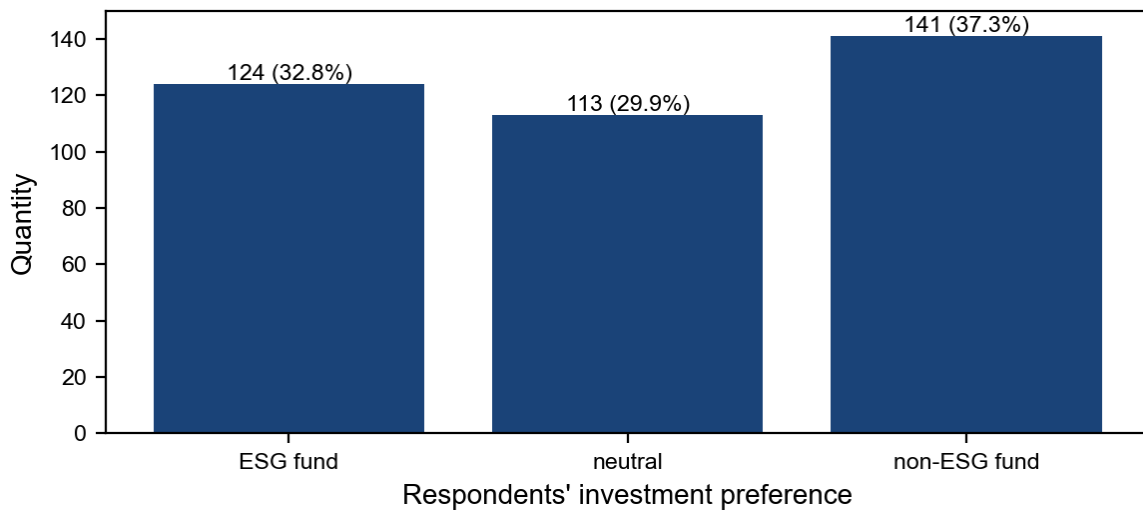


Figure 17: Investment preference if non-ESG funds perform better

A bar chart of an individual's *investment preference between ESG and non-ESG funds* under the condition that non-ESG funds perform better.

Q82 evaluated which fund was preferred if a non-ESG fund performed better than an ESG fund (Figure 17). 32.8% of respondents opted to invest in the ESG fund, 37.3% opted to invest in the non-ESG fund and 29.9% of respondents had no preference. This shows the willingness to sacrifice performance in exchange for ESG values, indicating that around a third of the retail investors would be willing to accept a financial disadvantage to follow their ESG values.

The final question of performance sensitivity was only given to 141 respondents who opted for better performing non-ESG funds. They were asked how much higher the returns of ESG funds needed to be to prefer the ESG alternative. Those respondents who preferred non-ESG funds would have liked a substantial increase in returns before changing their mind (Figure 18). The median additional return requirement was 2% to 3%. Surprisingly an outperformance of 4% would be necessary to catch the lion share (83.2%) of retail investors for ESG funds.

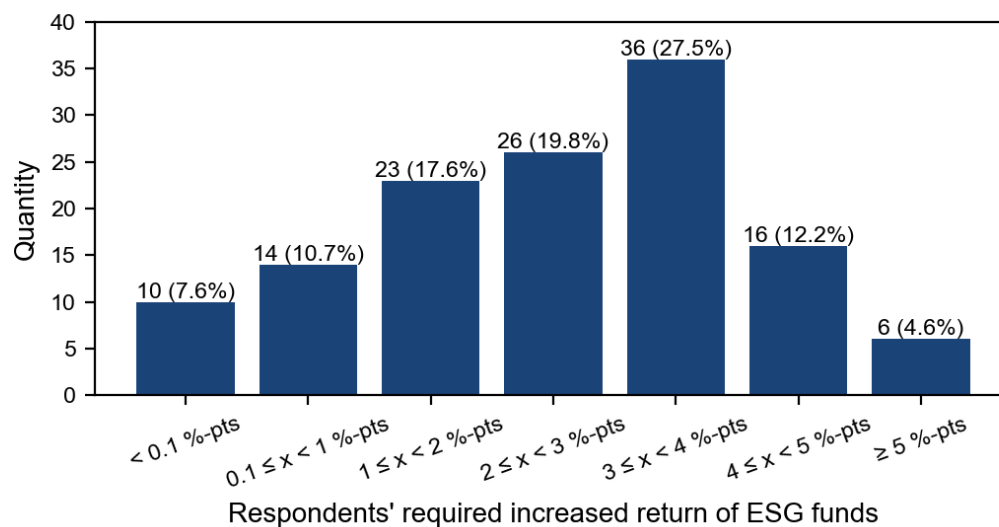


Figure 18: Increase returns required for preference of ESG funds

Bar chart of an *individual's* required increased returns before ESG funds are preferred. Only those respondents who preferred non-ESG funds in the previous question (Q82) were presented with this question.

The results of performance sensitivity serve as indications of true retail investor behaviour. Without respondents personally experiencing the cost and volatility of investment decisions, results of performance sensitivity must be assessed with reasonable scepticism. Still, the results could serve to better understand investment behaviour.

This paper confirms that a substantial segment of German retail investors prefers ESG funds to non-ESG funds³⁰. Still, even if the performance would be equal, only 53.9% of respondents chose to invest in ESG funds. Even with 30.4% of respondents having a neutral preference, those with a clear decision for ESG funds barely constitute half of the group. The logic for this decision could be explained by a general distrust of ESG funds, perhaps founded by the notion of greenwashing.³¹

In contrast to research consensus³², 26.8% believed ESG funds would yield lower returns than non-ESG funds and 41.8% had a neutral opinion. Therefore, 68.6% of respondents might be convinced to prefer ESG funds with evidence to show that ESG funds actually yield higher returns and show indications of being more resilient in a financial crisis^{33, 34}. The logic that ESG funds may yield lower returns could originate from the supermarket experience, where sustainability results in a price premium.^{35, 36} However, in the context of investments, this logic is flawed. Companies that are conscious of topics such as the use of material (environment) and employer productivity (social) allocate them more efficiently. Moreover, truthful disclosure (governance) allows for a transparent status of companies' issues and is a founda-

³⁰ See Gutsche/Zwergel, 2020, p. 145

³¹ See Yu et al., 2020, pp. 1 – 2

³² See van Duuren et al., 2015, p. 526

³³ See Broadstock et al., 2021, p. 10

³⁴ See Kaiser/Welters, 2019, p. 553

³⁵ See de-Magistris/Gracia, 2016, pp. 102 – 103

³⁶ See Roheim et al., 2011, pp. 666 – 667

tion of the problem-solving process. Moreover, ESG funds might be less risky as its firms are less exposed to ESG related risks. Therefore, it is likely that investments benefit from ESG implementation due to the better information and better risk-return relationships.³⁷

If a non-ESG fund performs better than an ESG fund, it is financially preferable to invest in the non-ESG fund. Still, 32.8% of respondents opted to invest in the ESG fund and were willing to earn less returns. This further confirms existing evidence that such investments have a subjective utility that outweighs the marginal financial benefit.³⁸ This benefit is possibly a result of investing in causes that correspond to their own values or simply the act of generally contributing to ESG values.

Still, 37.3% opted for the economically optimal investment in non-ESG funds with a higher performance. Moreover, these respondents demanded a substantial increase in returns before they would consider changing their view an outperformance of 4% would be necessary to convince them to switch.

3.5 Evaluation of the response burden

To estimate the response burden, the survey questioned the respondents' interest in the topic of ESG and the number of questions the respondents felt they had answered upon survey completion. The majority (81%) of respondents found the topic at least slightly interesting (Figure 19). On average, the number of answered questions was estimated to be 43, almost half of the actual number of questions. Finally, the average time required to answer the survey was 11 minutes. The brief amount of time required to complete the survey and produce logically sound answers is an indicator to a low response burden.³⁹

³⁷ See Hübel/Scholz, 2019, p. 67

³⁸ See Gutsche/Zwergel, 2020, pp. 112

³⁹ See Yan et al., 2020, pp. 206 – 207

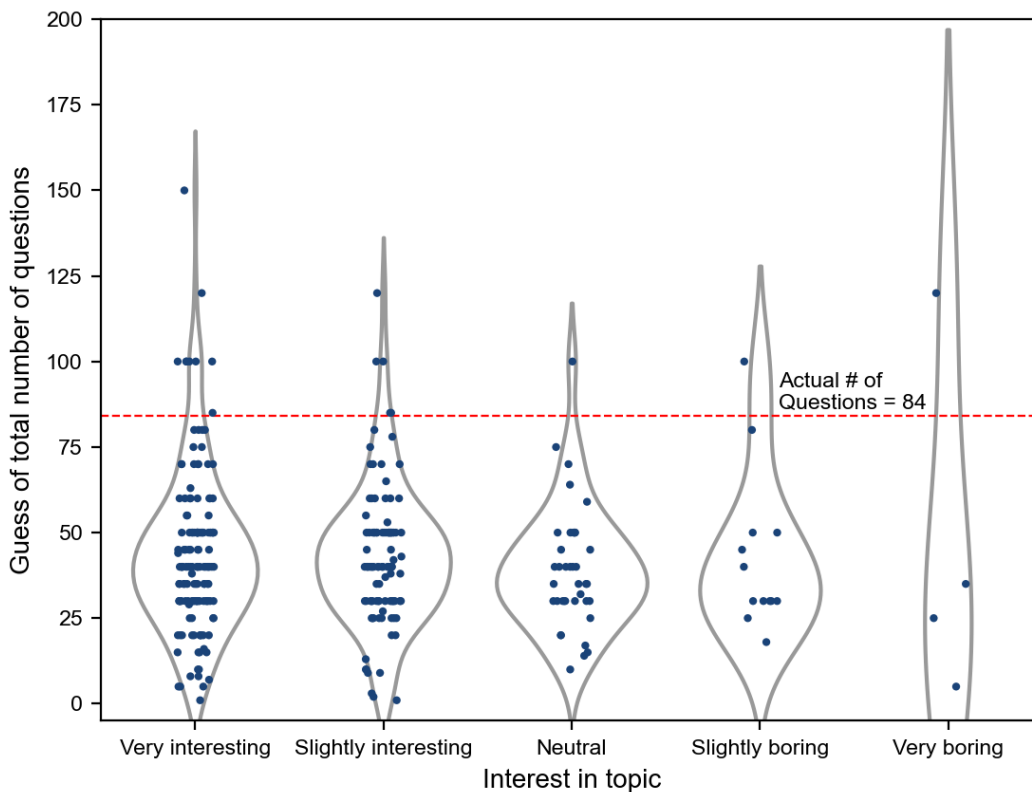


Figure 19: Survey response burden

Assessment of *Survey response burden*, using scatter- and violin plots comparing the individuals' estimation of total number of questions asked with their respective interest in the topic ESG. The dashed red line indicates the actual number of questions asked and serves as a threshold above which the questionnaire was perceived as more exhaustive. Bottom left of the figure indicates a low response burden and the upper right a high response burden.

3.6 Strengths and limitations

We believe that the survey is based on a high-quality dataset. Still, participants were younger in comparison to the total of German retail investors. A possible reason is the self-conduct of the study via internet. A dataset that has a higher weight toward younger investors may not necessarily be a negative trait, but it must be considered. On the one hand, extrapolating the results from the sample to senior investors might be misleading. On the other hand, the young retail investors of today will grow into the largest group of investors tomorrow, giving the results a certain forecasting quality. Having a slightly pronounced weight of younger investors could lead to more precise measurements of what values future investors perceive as important.

Three proxies were employed to determine investment literacy: Number of trades, minutes of research and how often an exit strategy is planned before investment. The respondents showed surprisingly good investment practices. However, it is questionable whether the respondents' research and exit strategies truly are as detailed as those of an investment professional. Still, that respondents apply at least rudimentary forms of research and exit strategies demonstrates an underlying interest in their investment strategies.

4. Conclusion

Retail investors are an essential group in shaping the effect of ESG investing.⁴⁰ As ESG assets under management are growing at an exponential rate,^{41, 42} this study of retail investors' demand generates first evidence on the ESG-relevant decisions. This leads to a better understanding of product spawn in which retail investors find the best choice to follow their personal values.

In general, ESG was regarded as a highly interesting topic by retail investors, indicating that its role in financial decisions will further increase in the future. In practice, the meaning of ESG values vary substantially across different funds.⁴³ Our survey leads to an initial understanding of retail investors' decision base.⁴⁴ We found that most ESG values had a meaningful relationship with each other. However, the study shows that there is no general agreement on the way how to achieve these. Only few relationships between specific ESG values and measures of achieving values (MAVs) were determined. Moreover, no relationships were found between MAVs and indirect ESG values. Still, some MAVs had reliable relationships with each other and could be ranked according to controversiality, indicating that MAVs could be clustered for optimal representation of retail investor preference groups. Most retail clients prefer a financially optimal investment, but a meaningful group would accept lower performance to support their values. This confirms additional non-financial utility of investment decisions: Association or dissociation with certain ESG values.⁴⁵

The findings have implications for both research and practice. On the one hand, the analysis of retail investors gives an indication of how ESG could be defined from the retail investor perspective.⁴⁶ On the other hand, the findings determine that funds should be structured according to retail investors' MAVs instead of ESG values. Moreover, the newly discovered understanding of retail investors' perspective might help to clarify the relationship to institutional investors views and decisions.⁴⁷

Various new questions for future research have been identified. First, the findings require external validation through additional surveys e.g., by targeting further retail investors in Germany or by extending research to the U.S. or other large capital markets. Second, one could expand on a specific group of findings, such as studying further MAVs. Third, one could formulate groups of different MAVs and different retail investors using statistic modelling and machine learning techniques, determining how many funds are required to serve the optimal majority of retail investors' preferences and target groups of respective funds. Fourth, the findings concerning retail investors' performance sensitivity merely represent indications, as they do not simulate the true experience of being invested. One could develop robust findings through simulating real-world investment decisions in a gamified survey with varying re-

⁴⁰ See Gutsche/Zwergel, 2020, p. 112

⁴¹ See Bloomberg, 2021

⁴² See Riding, 2020a

⁴³ See Eccles/Stroehle, 2018, pp. 1 – 3

⁴⁴ See Gutsche/Zwergel, 2020, p. 112

⁴⁵ See Dorfleitner/Nguyen, 2016, p.21

⁴⁶ See Eccles/Stroehle, 2018, p. 1

⁴⁷ See Gutsche/Zwergel, 2020, p. 112

numeration based of fund performance. Irrespective of the methods chosen, further research on this topic will be essential for market participants to adjust to the rise of ESG in an evidence-based manner.

5. Appendix A: Questionnaire (Translated from German to English)

Retail investors are an essential group in shaping the effect of ESG investing.⁴⁸ As ESG assets under management are growing at an exponential rate,^{49, 50} this study of retail investors' demand generates first

Welcome! Thank you for your assistance with our research. No personal information will be collected in this survey. Your responses will remain anonymous. Some questions may seem a bit controversial. Please answer honestly - we will not rate your answers!

Our goal is to analyze as honest an opinion as possible. Thank you for your trust and support.

The following questions relate to sustainable and ethical issues. We would like to find out how important these are to you.

Q2_1, Q2_2, Q2_3. Which sustainable or ethical issues are important to you when investing in a company? Please distribute 15 points among the following three criteria. The more points, the more important the topic is to you

- Environment
- Society
- Transparency (Governance)

Q6. When investing in a fund share, how important are low CO2 emissions to you?

- a) very unimportant
- b) rather unimportant
- c) neutral
- d) rather important
- e) very important
- f) No estimation

⁴⁸ See Gutsche/Zwergel, 2020, p. 112

⁴⁹ See Bloomberg, 2021

⁵⁰ See Riding, 2020a

- Q7. When investing in a fund unit, how important is financial support for company external ecological projects to you?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation
- Q8. When investing in a fund share, how important is the sustainable use of water to you?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation
- Q9. When investing in a fund share, how important is the integration of green space on corporate campuses to you?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation
- Q10. When investing in a fund share, how important is sustainable sourcing of raw materials to you?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation

- Q11. When investing in a fund share, how important is proper toxics and waste disposal to you?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation
- Q12. When investing in a fund share, how important are sustainable product packaging to you?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation
- Q13. When investing in a fund share, how important is the proper disposal of e-waste to you?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation

- Q14. When investing in a fund share, how important is the use of a closed economic circle to you, for example by recycling old equipment?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation
- Q15. When investing in a fund unit, how important are sustainable office buildings to you?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation
- Q16. When investing in a fund unit, how important is employee development to you?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation
- Q17. When investing in a fund share, how important is it to you to define and regularly review safety standards?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation

- Q18. When investing in a fund share, how important is it to you to implement a diversity strategy?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation
- Q19. When investing in a fund unit, how important is the use of regional products to you?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation
- Q20. When investing in a fund share, how important is clarification of controversial sourcing of products to you?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation
- Q21. When investing in a fund unit, how important is the promotion of social projects and organizations to you?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation

- Q22. When investing in a fund share, how important is promoting employee health to you?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation
- Q23. When investing in a fund share, how important is information about a company's management structures to you?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation
- Q24. When investing in a fund share, how important is the representation of women to you?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation
- Q25. When investing in a fund share, how important is the transparency of information provided by the board members to you?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation

- Q26. When investing in a fund share, how important is an honest and accurate representation of the financial situation to you?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation
- Q27. When investing in a fund share, how important is it to you to explain tax levies in different locations around the world?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation
- Q28. When investing in a fund unit, how important is it to you that companies act according to their own sustainable and ethical criteria?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation

Q29. When investing in a fund share, how important is the explanation of business ethics to you?

- a) very unimportant
- b) rather unimportant
- c) neutral
- d) rather important
- e) very important
- f) No estimation

Q30. When investing in a fund unit, what additional sustainable or ethical criteria do you pay particular attention to? (previous criteria excluded)

Please enter your answers here:

In the following, we would like to find out to what extent you are familiar with sustainable and ethical funds. These are also referred to as 'ESG funds' or 'sustainable funds'.

Q31. Have you already invested in sustainable or ethical fund shares?

- a) yes
- b) no

Q33. On average, how strongly are your personal values represented in buyable sustainable and ethical funds?

- a) not represented at all
- b) represent a little
- c) largely represented
- d) rather exceeded
- e) much surpassed
- f) completely exceeded
- g) No estimation

- Q34. How often do you research sustainable and ethical funds to see how well they fit with your values?
- a) never
 - b) rare
 - c) less
 - d) more often
 - e) almost always
 - f) always
 - g) No estimation
- Q35. Are sustainable and ethical ratings of institutions important to you?
- a) very unimportant
 - b) rather unimportant
 - c) neutral
 - d) rather important
 - e) very important
 - f) No estimation
- Q36. Which rating agencies do you use to assess sustainability and ethics?
- a) Morningstar
 - b) MSCI
 - c) Bloomberg
 - d) Corporate Knights Global
 - e) Dow Jones Sustainability Index (DJSI)
 - f) Institutional Shareholders Services (ISS)
 - g) other sources (please fill in): _____

Q37. If you had to choose just one agency to assess sustainability and ethics, which one would you pick?

- a) Morningstar
- b) MSCI
- c) Bloomberg
- d) Corporate Knights Global
- e) Dow Jones Sustainability Index (DJSI)
- f) Institutional Shareholders Services (ISS)
- g) one of my given sources

Q38. How many sustainability ethics ratings do you use to assess whether a fund is sustainable or ethical?

- a) Please enter the number of ratings here: _____
- b) Do not want to share

The following questions relate to sustainable and ethical measures. We would like to know how positively or negatively you assess these.

Q40. How do you think the use of electric cars affects the environment?

- a) Very negative
- b) rather negative
- c) neutral
- d) rather positive
- e) very positive
- f) No estimation

Q41. How do you think the use of hydrogen as a fuel affects the environment?

- a) Very negative
- b) rather negative
- c) neutral
- d) rather positive
- e) very positive
- f) No estimation

- Q42. How do you think the use of biogas as a fuel affects the environment?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q43. How do you evaluate the impact of corporate foundations on the environment, where companies can position funds tax-free?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q44. How do you think privatization of water sources affects the environment?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q45. What do you think is the environmental impact of tax subsidies for sustainable office buildings?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation

- Q46. How do you rate your confidence in a certification that proves the sustainable sourcing of required raw materials?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q47. How do you think the use of recyclable but more expensive packaging affects the environment?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q48. How do you assess the impact of nuclear power plants on the environment?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q49. How do you rate the reuse of previously used materials for manufacturing in terms of the environment?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation

- Q50. How do you assess the use of wind turbines in terms of the environment?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q51. How would you rate your confidence in 100% green power certification?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q52. How do you feel about including a paper guide to proper trash disposal in terms of the environment?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q54. How do you rate the implementation of a women's quota?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation

- Q55. How do you rate support measures for single parents?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q56. What is your assessment of the adequate provision of company kindergartens?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q57. How do you rate the establishment of home offices in companies?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q58. How would you rate German companies assuming responsibility for regular checks on their suppliers' compliance with the UN Convention on the Rights of the Child?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation

- Q59. How do you rate regular monitoring of suppliers' production conditions at the expense of German companies?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q60. How would you evaluate a company's decision to source regional products instead of cheaper or higher quality products?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q61. What do you think about a legal obligation for companies to bear the costs of providing barrier-free access to the workplace?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q62. How do you rate the establishment of a corporate foundation for social commitment?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation

- Q63. What do you think about the expansion of WCs to include unisex toilets?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q64. How would you rate a free workplace health offering?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q65. What do you think about flexible working hours?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q66. How do you assess the recognition of gender identities on the part of companies?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation

- Q67. How do you evaluate the implementation of a hiring quota for certain social groups?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q68. How do you rate the publication of an industry wage comparison on the part of companies?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q69. How do you evaluate statements from companies on controversial issues?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q70. How do you assess a comparison of sales and taxes paid in the various locations worldwide?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation

- Q71. How would you rate the provision of a gender wage comparison for the same job and experience?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q72. How do you evaluate the control of barrier-free access in the company?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q73. How do you rate the auditing of sustainability and ethics by neutral third-party companies?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation
- Q74. How do you rate the establishment of anonymous and neutral hotlines for sustainable, ethical and social issues?
- a) Very negative
 - b) rather negative
 - c) neutral
 - d) rather positive
 - e) very positive
 - f) No estimation

Q76. How many sustainability ethics ratings do you use to assess whether a fund is sustainable or ethical?

- Please enter your answers here: _____

Before we get to the last block of questions, we have a few questions about what price trends you expect from sustainable and ethical fund shares.

Q78. How do you rate the establishment of anonymous and neutral hotlines for sustainable, ethical and social issues?

- a) I would rather buy a sustainable, ethical fund share
- b) neutral
- c) Yes, I am replacing my traditional fund shares with sustainable, ethical fund shares
- d) No assessment

Q79. What is your assessment: Do fund shares with sustainable, ethical criteria achieve a higher or lower return than conventional fund shares?

- a) Funds with sustainable, ethical criteria achieve a lower return
- b) neutral
- c) Funds with sustainable, ethical criteria achieve a higher return
- d) No assessment

Q80. You notice that a fast-growing fund share in your portfolio is not screened according to sustainable, ethical criteria. Do you replace your conventional fund shares with sustainable, ethical fund shares?

- a) No, I keep my traditional fund shares
- b) neutral
- c) Yes, I am replacing my traditional fund shares with sustainable, ethical fund shares
- d) No assessment

- Q81. There is no variant with sustainable, ethical criteria for your desired fund. Would you rather not buy the fund share at all or buy a fund share without sustainable, ethical criteria?
- a) I would rather not buy a fund share
 - b) neutral
 - c) I would rather buy a fund share without sustainable, ethical criteria
 - d) No assessment
- Q82. The return on a conventional fund share is higher than the return on a sustainable, ethical fund share. In which fund share would you rather invest?
- a) I would rather invest in a sustainable, ethical fund share
 - b) neutral
 - c) I would rather invest in a traditional fund share
 - d) No assessment
- Q83. Conditional on answering Q82 with c):
How much more return would a sustainable, ethical fund share have to generate compared to a conventional fund share for you to prefer the sustainable, ethical fund share?
- a) < 0.1 % point
 - b) 0.1 - 0.99 % points
 - c) 1 - 1.99 % points
 - d) 2 - 2.99 % points
 - e) 3 - 3.99 % points
 - f) 4 - 4.99 % points
 - g) > 5 % points
 - h) No estimation

Finally, we would like to hear more from you. Of course, your answers will remain anonymous. The more questions you answer, the more you help my research. Thank you very much and have a nice day!

- Q87. How often have you bought or sold stocks, bonds, ETFs, mutual funds and the like in your life so far?
- a) never before
 - b) less than 5 transactions
 - c) 5 to 10 transactions
 - d) 10 - 20 transactions
 - e) more than 20 transactions
 - f) I do not want to share
- Q88. How much time do you use to research before making an investment?
- a) less than 5 minutes
 - b) 5 to 30 minutes
 - c) 30 - 60 minutes
 - d) More than 60 minutes
 - e) I do not want to share
- Q89. Before buying a stock, bond, ETF and the like, how often do you plan under what conditions you will sell?
- a) never
 - b) sometimes
 - c) often
 - d) always
 - e) I do not want to share
- Q90. What is your highest school degree?
- a) No degree
 - b) Secondary school
 - c) Realschule
 - d) Abitur / university entrance qualification
 - e) I do not want to share

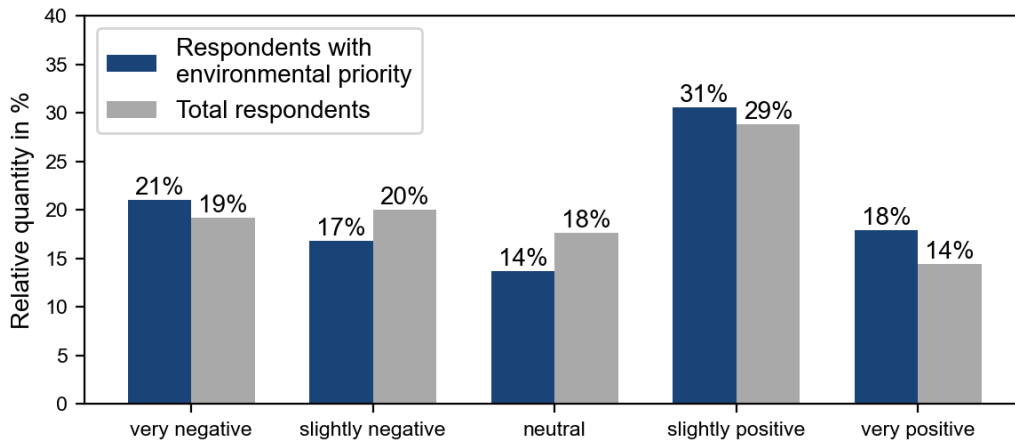
- Q91. What is your highest advanced education?
- a) No further education
 - b) Training
 - c) Bachelor
 - d) Master/Diploma/Master
 - e) I do not want to share
- Q92. How old are you?
- Please enter the number of years here: _____
- Q93. How large is your portfolio?
- a) less than 5.000 EUR
 - b) 5.000 - 30.000 EUR
 - c) 30,001 to 55,000 EUR
 - d) 55,001 to 80,000 EUR
 - e) 80,001 to 105,000 EUR
 - f) more than EUR 105,000
 - g) I do not want to share
- Q94. How interesting did you find the topics addressed in the questionnaire?
- a) very boring
 - b) rather boring
 - c) neutral
 - d) rather interesting
 - e) very interesting
 - f) I do not want to share
- Q95. Please estimate the number of questions you have to answer.
- a) Please enter a number here: _____
 - b) Do not want to share

Q96. With which gender do you identify?

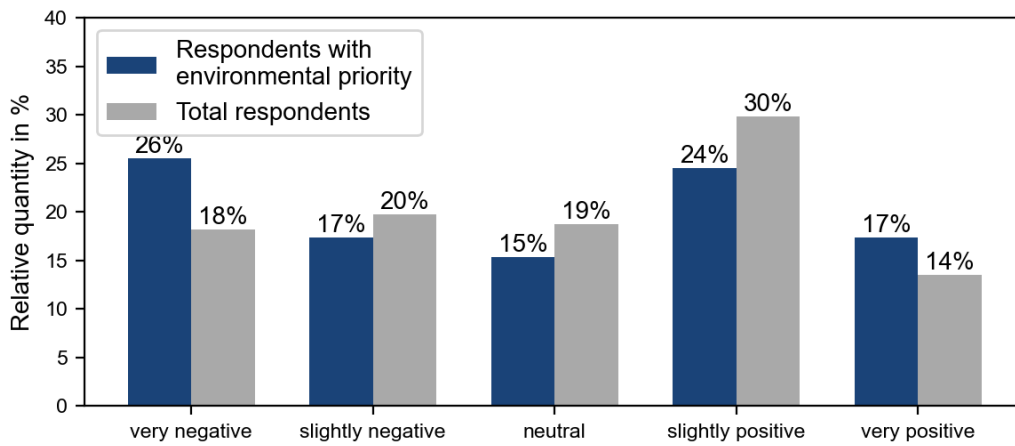
- a) Female
- b) Male
- c) Divers
- d) I do not want to share

6. Appendix B: Five most controversial MAVs

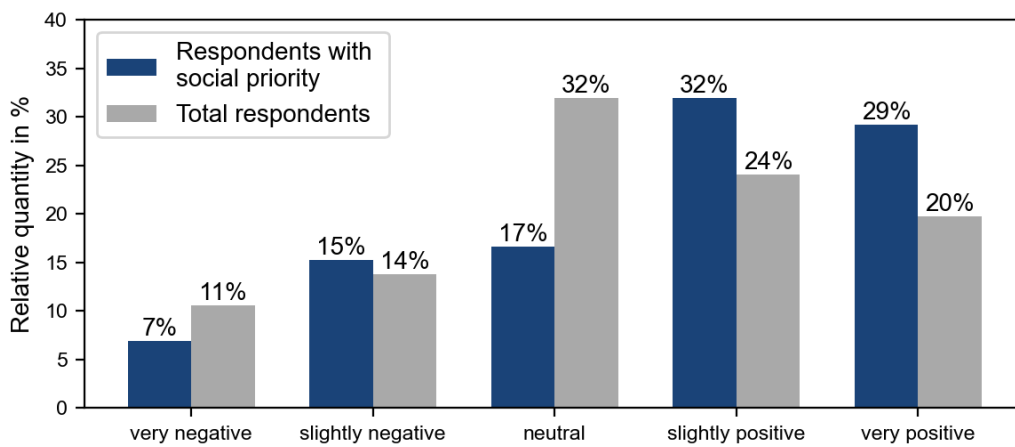
Q44: Opinion on the environmental effects of water privatisation



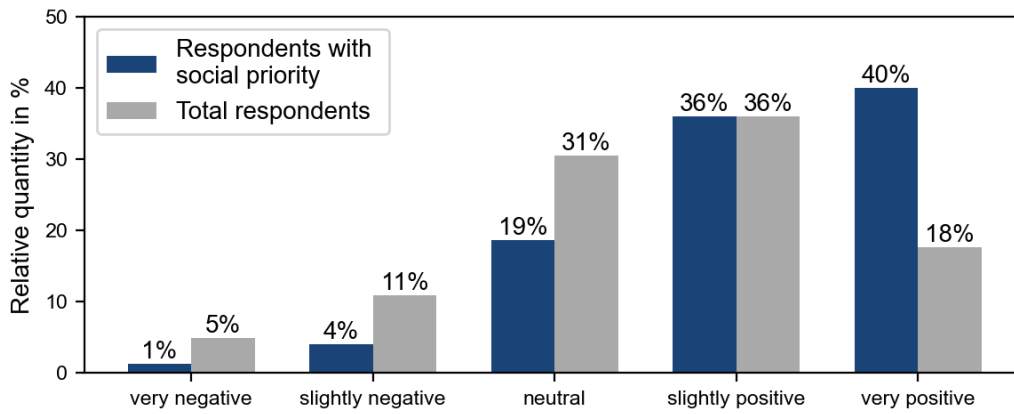
Q48: Opinion on the environmental effects of nuclear power



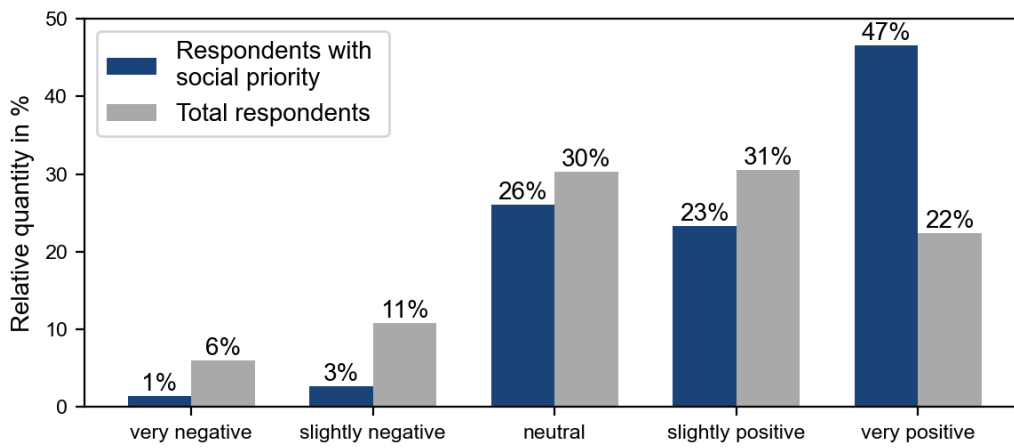
Q63: Opinion on the social effects of unisex toilets



Q67: Opinion on the social effects of a hiring quota for certain social groups

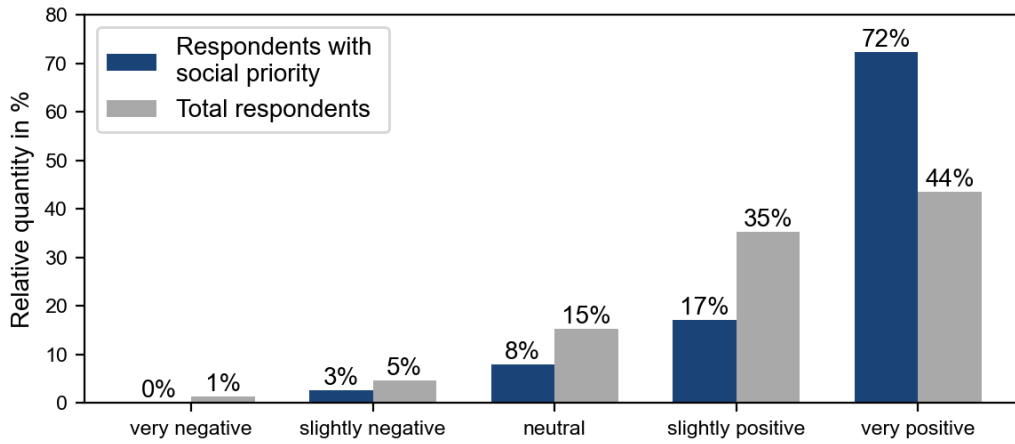


Q54: Opinion on the social effects of a women's quota

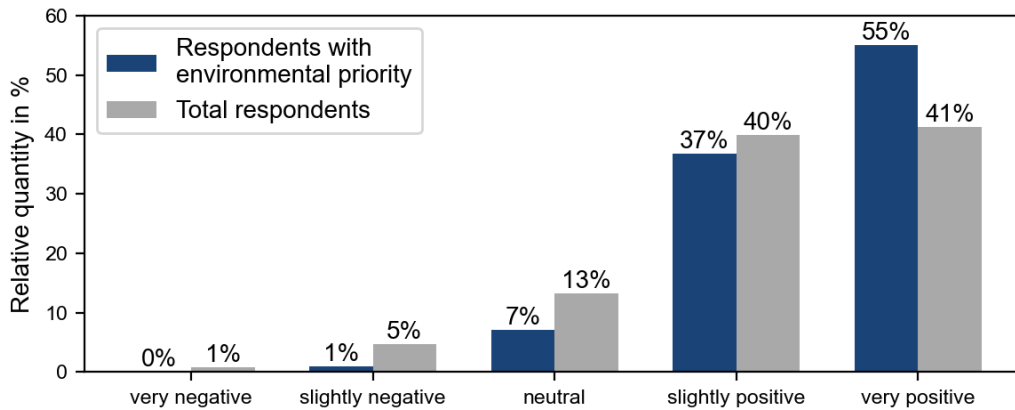


7. Appendix C: Five least controversial MAVs

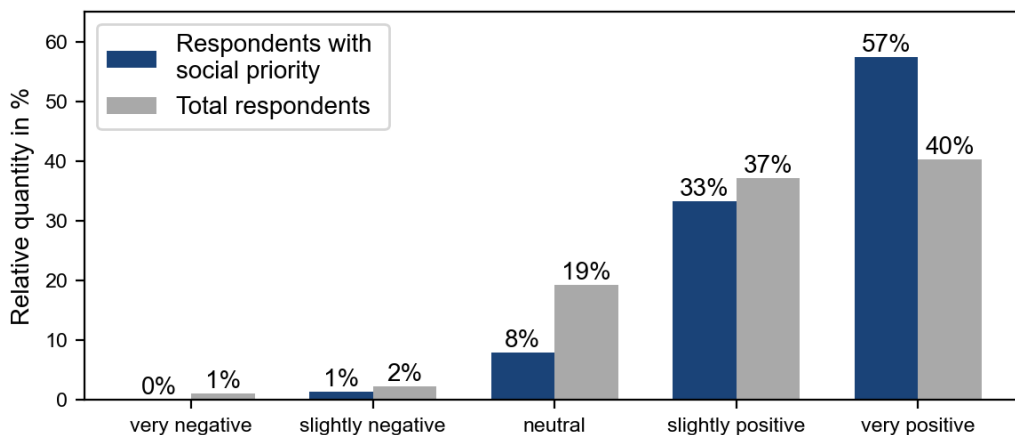
Q65: Opinion on the social effects of flexible work hours



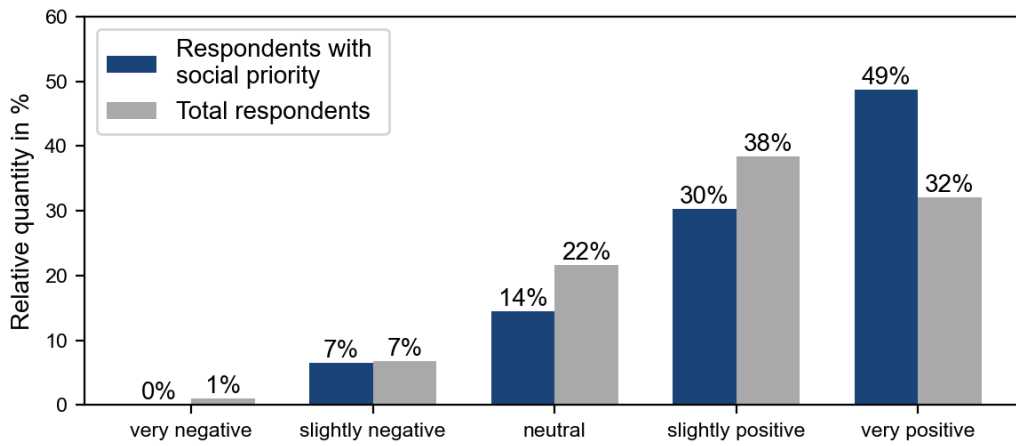
Q49: Opinion on the environmental effects of the reuse of materials for production



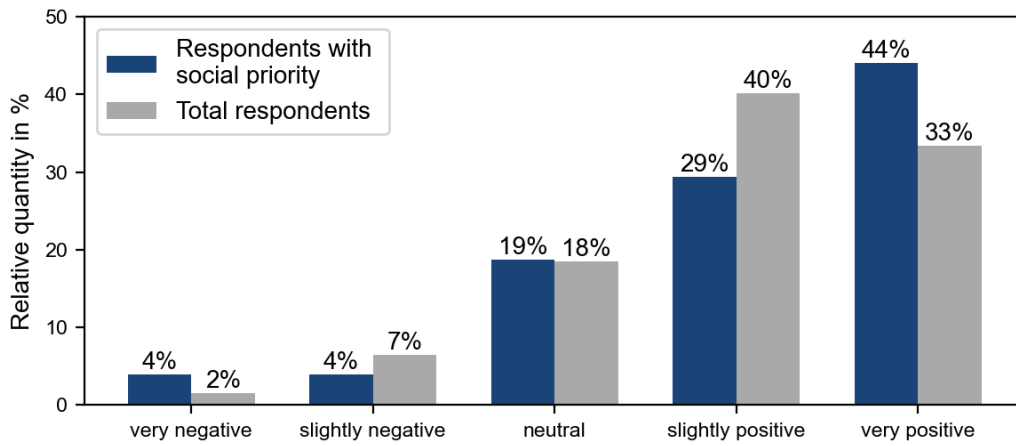
Q64: Opinion on the social effects of employer health benefits



Q58: Opinion on the social effects of childrens labor



Q57: Opinion on the social effects of home office



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