

A Work Project, presented as part of the requirements for the Award of a Master's degree in  
Finance from the Nova School of Business and Economics

ESG Ratings Disagreement and Stock Returns:  
The Iberian Case

Tiago Cerqueira Pedroso

29342

Work project carried out under the supervision of:

Antonino Emanuele Rizzo

21/05/2021

**Abstract:** This paper studies the impact of ESG rating disagreement on the Iberian stock market, by studying its relationship with stock returns, trading volume and volatility. It uses ratings from four different providers for 68 Iberian companies, from 01/2007 until 07/2020. The disagreement in the Iberian market was measured and is like other studied geographies. Pooled panel regressions are used to estimate said impact. ESG rating disagreement has a negative relationship with volatility and trading volume while the relationship with stock returns is insignificant.

**Keywords:** Stock Returns, ESG Rating Disagreement, Sustainable Finance, Iberian Market

This work used infrastructure and resources funded by Fundação para a Ciência e a Tecnologia (UID/ECO/00124/2013, UID/ECO/00124/2019 and Social Sciences DataLab, Project 22209), POR Lisbon (Lisboa-01-0145-FEDER-007722 and Social Sciences DataLab, Project 22209) and POR Norte (Social Sciences 22209).

## **1. Introduction**

While the term ESG (Environmental, Social and Governance) is considered to have been coined in a report published by the United Nations Global Compact Initiative (UN Global Compact 2004), its origins can be traced to the eighteenth century, with different forms of Socially Responsible Investing, Sustainable Investing and many other designations existing since then.

However, recently, it has been evolving from a niche investment practice to a mainstream concern with an increase in interest and popularity. This rise created a need for ESG data and ratings, which lead to the creation of several companies whose job is not only to provide the aforementioned data to investment professionals and academics but also to compile this data into ratings, much like the very popular credit ratings, which compile all the ESG data of a company into an easily digestible score for the overall ESG and for each of the three pillars (E, S and G), from which is easy to infer what is the company's ESG performance.

The problem is that, unlike credit ratings, the necessary information to create them is not standardized and easily available. While for financial information governments and stock exchanges require companies to disclose it through their quarterly and annual reports and accounting standards have been developed for this information to be easily comparable, for ESG information, often called non-financial information, there is no requirement and no standards, so with its disclosure being purely voluntary, companies decide on what information they disclose and how they disclose it if they choose to disclose it at all.

There are attempts at standardizing the reporting of this type of information, like UN's PRI (Principles for Responsible Investing) and SASB (Sustainability Accounting Standards Board), but not all companies adhere and follow their practices and standards, which is expected to be this way until governments or stock exchanges start requiring companies to use them.

This creates a dependency for ratings' providers on what information companies decide to self-report. To try and combat this dependency, ratings' providers have developed in-house data creation methods, which can include company questionnaires, interviews and/or independent research done by analysts, which lets ratings' providers create their own data. But these solutions, although solving a problem for the ratings' providers, create a new one for the consumers of the ratings: differences in the input data.

This difference in the input data coupled with differences in methodology for the creation of the ratings is why the ratings end up having the disagreement that they have. However, it is important to note that the differences in methodology are assumed, as ratings' provider treat their methodology, as well as their data sources, as proprietary intellectual property, so not very much information on them is published and when it is, is mostly vague. This leads to the ratings' consumers not knowing what is being evaluated in the ratings and its weight on the final rating.

The first problem, differences in data inputs, can be solved, as previously mentioned, by creating the obligation for companies to disclose and report on ESG topics and a standard for them to follow when performing the above-mentioned disclosure and reporting.

The second problem, differences in methodology, may not even be a problem. According to researchers like Hawley (2017) or Berg, Koelbel, and Rigobon (2020), differences in methodology are acceptable and maybe even desirable, as different stakeholders have different interpretations of corporate sustainability, due to their difference in values and opinions. The real problem is in the lack of transparency about the methodologies. With the differences in values and opinions in place, both on what is good or bad ESG performance and the relative weight of ESG topics, the process of choosing a ratings' provider should be one of identifying which provider is the most similar with that consumer's opinion. However, if the methodology is not publicly available, consumers are not able to know to which values and

opinions they are adhering to and how similar, or not, they are to their own. This problem can be solved by increased transparency by the ratings' providers on their process.

Adding to this problem is the lack of coverage, as there is no obligation or standard on what companies do the ratings' providers have to cover. This means that consumers, even if they are able to find a ratings' provider that is aligned with their views, might have to also use another ratings' provider, which views might be more misaligned because a certain company or group of companies is not covered by their preferred ratings' provider.

To tackle these problems, some investment management companies have started to develop their own in-house ratings, making use of raw data being provided by ESG data providers, some of them which are also ESG ratings' providers. However, not all consumers of the ratings, with them being other investment professionals, academic researchers, journalists, policymakers, etc., have the capabilities and/or resources to develop their own ratings, so there will always be a need for ESG ratings' providers and with this need present, these problems will need to be addressed for a better consumer experience.

While these problems are not solved, and there is no timeline for it happening, ESG rating disagreement is going to be a constant presence in the investment and academic world, so it is interesting to study it.

Consequently, this paper will study the impact of ESG rating disagreement on the Iberian stock market. The study focuses on one region, as ESG has been proven to have different practices and effects in different regions (Liang and Renneboog 2016; Hawley 2017). The Iberian market was chosen, as it is the one that I am a part of, and because it is an underrepresented market in the literature, as this paper is, to the best of my knowledge, the first paper to study overall ESG in the Iberian market, as the only paper that was found during research studied only corporate governance (Cancela et al. 2020). Also of note is that, during the research for this paper, only two other papers studying the relationship between ESG rating

disagreement and stock returns were found, both focusing on the US market, which means this is still a relatively new research topic that is largely unstudied.

In this paper, a review of the current literature on ESG rating disagreement is presented and followed by a description of the data used and of the methodology employed and then by a discussion of the results obtained. Finally, the main conclusions of the study are presented, as well as some limitations of the study.

## **2. Literature Review**

The majority of early studies on ESG focused on the relationship between ESG performance and financial performance. In their meta-analysis, which combines the findings of over 2200 research papers, Friede, Busch, and Bassen (2015) show that the most popular view is that there is a positive relationship between ESG performance and financial performance, either through an increase in stock returns or a decrease in risk or both. This confirmed the views of earlier studies like Gompers, Ishii, and Metrick (2003), Derwall et al. (2005) or Edmans (2011). However, it also showed that there are studies that have shown that ESG performance has no impact on financial performance or even a negative relationship. These views can be seen on papers like Renneboog, Ter Horst, and Zhang (2008), Auer and Schuhmacher (2016) or Landi and Sciarelli (2019).

More recently, research has been focusing on studying the nature of ESG ratings, the reasons for their disagreement and the impact of the disagreement on stocks.

In their 2020 study, Li and Polychronopoulos identified seventy different ESG data and ratings' providers, which they categorized into three types: Fundamental, which gather and aggregate publicly available data and distribute it to its users; Comprehensive, which utilize a combination of objective and subjective data, both publicly available and produced in-house,

covering all ESG market segments; and Specialist, which focus on a single, specific ESG issue, like carbon scores (Carbon Disclosure Project) or gender diversity (Equileap).

Unfortunately, unlike credit ratings, ESG ratings are very polarized, with the same company having very different ratings from different ratings' providers, both on the overall rating and the E, S and G pillars. This disagreement can have several impacts on the financial world. Academic studies can have different results depending on which ratings' provider is used by the researchers. In the South Korean market, the majority of studies showed mixed results in the connection between CSR (Corporate Social Responsibility) and CFP (Corporate Financial Performance) but the first study that used MSCI data showed a conclusive positive relationship (Kim, Chung, and Park 2013), showing that past results of academic research could be biased, depending on which ESG ratings' provider was used and how well does it capture the true ESG performance of companies. Passive and active managers can also be affected by the disagreement as research has shown that both index funds and active portfolios will have their construction impacted by the manager's choice of ratings' provider (Billio et al. 2020; Li and Polychronopoulos 2020). Companies face the problem of how to improve their ESG performance, as the rating divergence gives them mixed signals on their current performance and what actions are expected and valued by the market (Berg, Koelbel, and Rigobon 2020).

Several studies have quantified this disagreement. While the actual values vary due to differences in the sample (timespan, number of ratings' providers compared, what ratings' providers are compared and in the companies used in the sample, both in geography and number), they all reach the same conclusion: correlations between ratings' providers are low and do not converge (Berg, Koelbel, and Rigobon 2020; Gibson et al. 2020; Billio et al. 2020; Widyawati 2020; Dorfleitner, Halbritter, and Nguyen 2015). Gibson et al. (2020) also found that the disagreement tends to higher for bigger companies, companies that disclose more

information, and for companies that do not have a credit rating, while more profitable companies tend to have a lower disagreement.

Due to this lack of agreement, researchers have tried to identify the problems responsible for it. In 2011, Windolph defined a list of problems that lead to ESG rating disagreement: lack of standardization, lack of transparency, which include biases like geographical, factor and selection, trade-off problems, lack of credible information, and lack of independence. Another paper added to the list delays in reporting and lack of auditing of self-reported data (Hawley 2017). Other researchers have done the same, identifying different problematic areas. Chatterji et al. (2016) found problems in five areas: theorization, commensurability, data, data gathering methods, and transparency. Kumar and Weiner (2019) named three points of difference: materiality, data acquisition and estimation, and aggregation and weighting, while Widyawati (2020) identifies three main concerns: dimensionality, reliability, and validity.

With these various problematic areas identified, Berg, Koelbel, and Rigobon (2020) decided to quantify the impacts of these sources of divergence. Their findings were that the key driver of rating divergence is measurement divergence, closely followed by scope divergence and with weights divergence having a less significant effect. While the existence of scope and weight divergence is reasonable, as the different raters may have different views on what is relevant and on their relative importance, measurement divergence is more problematic, as it implies that, even if two raters agree on the scope, the scores are not based on objective observations, which they should.

Gibson et al. (2020) decided to study the impact of these divergences, at the pillar level. Their findings show us that for the environmental ratings, disagreement has a positive relationship with stock returns, due to what they call the risk-based hypothesis, which posits that companies with higher rating disagreement are riskier, so investors need to be compensated

with higher returns. For the social and governance, they divided their analysis into the legal origin of the rating provider's country, following Liang and Renneboog (2016), and concluded that disagreement on the social pillar negatively predicts stock returns on civil law countries, while the governance pillar also negatively predicts stock returns, but on common law countries. This negative relationship confirmed their optimism-based hypothesis, which states that investors are too optimistic, believing that the highest of the ratings is the one that best captures the true performance of the company, which leads to overvaluations and lower future returns. They also found that in bull states, when the S&P 500 has high returns, the risk-based hypothesis trumps the optimism-based hypothesis, so disagreement in all three pillars has a positive relationship with future stock returns.

In a similar vein, Avramov et al. (2020) did a similar analysis regarding the disagreement in the overall ESG score. Their findings are in line with Gibson's et al. (2020) risk-based hypothesis, as they found that low disagreement leads to negative return predictability. In aggregate terms, they also found that high disagreement leads to a higher market premium and lower investor demand for stocks. They concluded that disagreement makes socially responsible investments riskier, which explains the reduced investor participation, while "green" companies with high ESG rating disagreement are less probable to benefit from a lower cost of capital.

## **2.1 Testable Hypothesis**

Following what has been presented in the above review about what is published in the current literature on the impact of ESG rating disagreement on the stock market, three hypotheses were created.

The first hypothesis is that ESG rating disagreement has a positive relationship with volatility. Higher ESG rating disagreement means that the true ESG performance of a company is more uncertain. This uncertainty should mean that stocks with higher ESG rating disagreement are more volatile.

This brings us to the second hypothesis. Hypothesizing that high ESG disagreement stocks are more volatile is the same as saying they are riskier. As the risk-return trade-off tells us, more risk should be compensated with higher returns. So, it is hypothesized that ESG rating disagreement will have a positive relationship with stock returns.

Lastly, the relationship between ESG rating disagreement and trading volume is hypothesized. Due to them being riskier, more risk-averse investors will not want to include them in their portfolios. With a reduced number of investors willing to trade these stocks, it is hypothesized that ESG rating disagreement will have a negative relationship with trading volume.

### **3. Data**

To test the hypothesis, the necessary data was collected from the Bloomberg Terminal and from a corporate partner who is active in the Iberian market. Our sample starts in January of 2007 and ends in July of 2020, which was the period where there were at least two ratings' providers with data available, and includes sixty-eight Iberian companies (seventeen Portuguese companies and fifty-one Spanish companies) which were chosen by the availability of ESG ratings, which is limited, as ratings' providers do not have a standardized coverage. This difference in coverage makes our panel unbalanced, as not every company is covered in the same period by at least two ratings' providers. There is another source of imbalance, as

there are companies that went public or were unlisted during the sample. The data is collected in monthly periods.

In terms of ESG ratings, we collected data from four ESG ratings' providers: the corporate partner, which has data starting in 2007, Sustainalytics, which has data starting in 2014, RobecoSAM, which has data starting in 2016, and Bloomberg ESG, which has data starting in 2005. Due to these differences in ESG ratings data availability, two subsamples were created: one starting in February of 2014 when Sustainalytics data starts being available, and the other starting in September of 2016 when RobecoSAM starts being available. The results from these two subsamples will not be as reliable, due to the shortened sample size, but they are still interesting to study, as they might point to a need for further research when samples starting in this period can be as reliable as our full sample.

Although, unlike the other three, Bloomberg ESG only measures the disclosure of ESG information, due to the disclosure being voluntary and not standardized, it is positively associated with good ESG performance, so ESG disclosure ratings can be used as an ESG quality rating, like the other three ratings. (Eccles, Ioannou, and Serafeim 2014; Lopez-de-Silanes, McCahery, and Pudschedl 2020).

To ensure compatibility between the data of the four ratings' providers, the ratings were adjusted to their percentile rank within which period, which gives a score between zero and one for each period (Gibson et al. 2020; Avramov et al. 2020).

Finally, two disagreement variables were created: one based on the range of the scores (difference between the best and worst score) and one based on the standard deviation of the scores (Gibson et al. 2020).

In terms of the dependent variables that will be studied, it was collected price data, which was used to compute monthly returns, monthly trading volume, and thirty-day volatility.

It was also collected data for several control variables that have been found to explain stock returns. These variables are size (Banz 1981), represented by the market capitalization of each firm; value, through book-to-market (Fama and French 1995), which was collected as market-to-book and then inverted; momentum (Jegadeesh and Titman 1993), which was computed as the cumulative returns of the previous twelve months excluding the latest one; the company's beta (Frazzini and Pedersen 2014); and volatility (Ang et al. 2006), in the form of thirty-day volatility.

#### 4. Methodology

For the testing of the hypothesis, the relationship between our study variables, stock returns, trading volume and volatility, and the ESG rating disagreement must be analysed. We use a methodology similar to the one used in Gibson et al. (2020). It consists of pooled panel regressions with clustered standard errors and with fixed effects included. In total, six different models were used, as we have three dependent variables (stock returns, trading volume and volatility) and two different variables measuring ESG rating disagreement (range and standard deviation). To better measure the impact, the independent variables are in period t while the dependent variables are one month forward, in period t+1. All six models can be summarized in one equation, for a company i in period t:

$$\begin{aligned}
 Y_{i,t+1} = & \alpha + \beta_1 ESG\ Disagreement_{i,t} + \beta_2 Size_{i,t} + \beta_3 BooktoMarket_{i,t} \\
 & + \beta_4 Profitability_{i,t} + \beta_5 Momentum_{i,t} + \beta_6 Beta_{i,t} \\
 & + \beta_7 Volatility_{i,t} + \varepsilon_{i,t}
 \end{aligned}$$

where Y is one of the three dependent variables and volatility is not included as a control variable when it is the dependent variable. The coefficient of interest is  $\beta_1$ , as it is through it

that we will be able to understand if ESG rating disagreement has an impact on the dependent variable and if that impact is positive or negative.

**5. Results**

**5.1 ESG Rating Disagreement**

Before testing the hypotheses, an analysis of the ESG rating disagreements was done, in order to check that there is ESG rating disagreement in the Iberian market and if it was in line with studies done in other geographies.

Firstly, the correlations between the four ESG ratings’ providers was done, as it is the common method in the literature to assess ESG rating disagreement. The results can be seen in table 1.

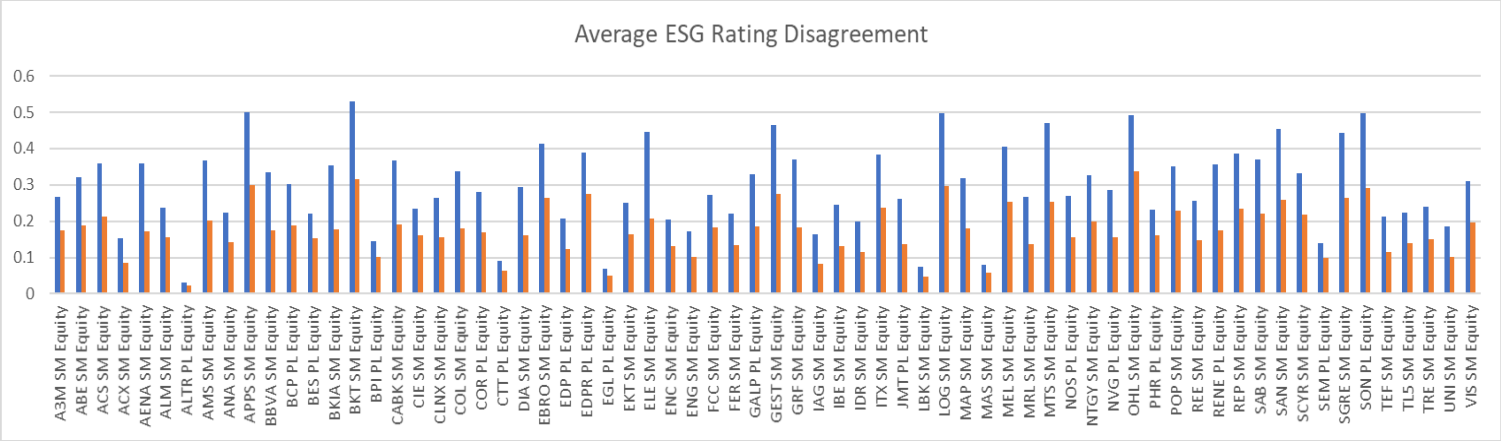
**Table 1:** Correlations between the four ESG ratings’ providers

Ratings Providers	Corporate Partner	Bloomberg ESG	RobecoSAM
Corporate Partner			
Bloomberg ESG	0.445289926		
RobecoSAM	0.563001657	0.541051439	
Sustainalytics	0.545453129	0.423876078	0.52846222

The correlations range from, approximately, 0.42 and 0.56, with the lowest being from Sustainalytics and Bloomberg ESG and highest from RobecoSAM and the corporate partner. The average is, approximately, 0.51. These results are similar to what is found in the literature, as they are centred around, approximately, the same values, having a very similar average, but our results are less spread out. As an example, Berg, Koelbel, and Rigobon (2020), in their sample, had a range from 0.38 to 0.71, with an average of 0.54.

Secondly, the previously mentioned variables that measure ESG rating disagreement were created. In figure 1, we can see the average value for ESG rating disagreement for each company in the sample.

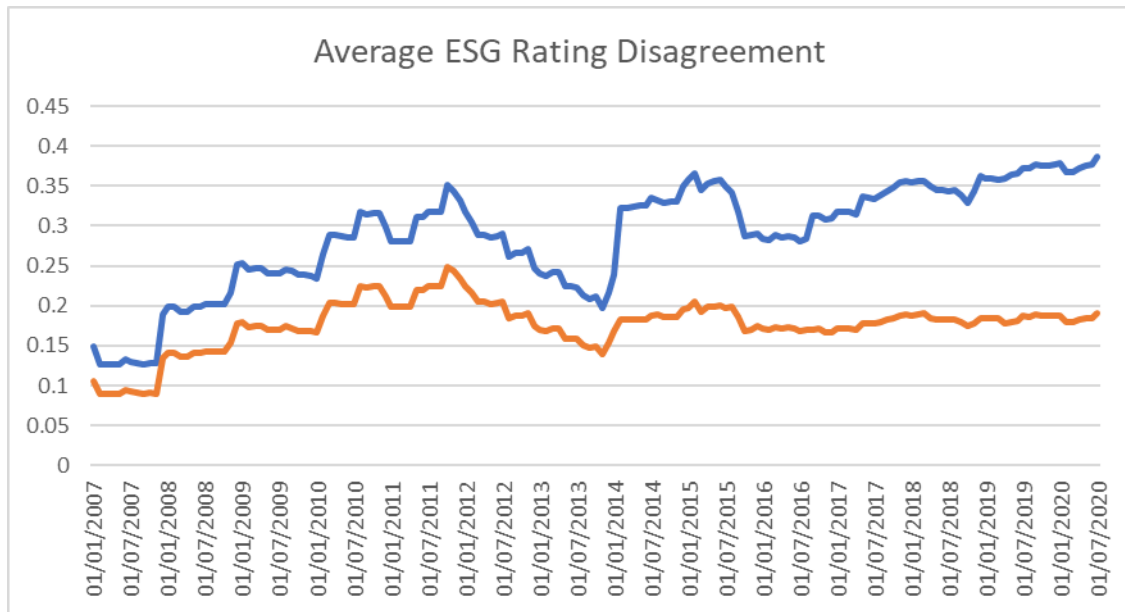
**Figure 1:** Average ESG rating disagreement for each company



As presented in figure 1, ESG rating disagreement affects all companies in our sample, albeit in different quantities, with the Spanish bank Bankinter being the most affected while the Portuguese paper and pulp company Altri is the least affected. In fact, in the total of 6686 company-month with, at least, two raters providing coverage, in only 11 of them, the value of ESG rating disagreement variables was zero, meaning that all ESG ratings’ providers gave the same rating to that company (after normalization). This means that in 99.84% of the company-month pairs there is ESG rating disagreement, so it is a persisting factor in the Iberian market.

In figure 2, we can see the evolution in time of the average value of ESG rating disagreement of all covered companies.

**Figure 2:** Evolution of average ESG rating disagreement



While the big single period shifts can be explained by the introduction of an ESG ratings' provider, as the biggest single period shift is the uptick from January 2014 to February 2014, which corresponds to when Sustainalytics data starts having available data, or by changes in coverage, either by companies starting or stopping getting covered by, at least, two providers.

Nonetheless, the overall trend is positive, which supports the persistence of ESG rating disagreement.

## 5.2 Hypotheses testing

The three hypotheses are now going to be tested by studying the relationship between stock returns, trading volume and volatility and ESG rating disagreement through pooled panel regressions.

First, the hypotheses are going to be tested in the full sample. The results for the relevant variable, the ESG rating disagreement coefficient, as mentioned in section 4, can be seen in

table 2, with the values in bold being statistically significant. The full results of the regressions can be consulted in the appendix.

**Table 2:** ESG rating disagreement coefficient for the full sample

01/2007 - 07/2020	Returns				Trading Volume				Volatility			
ESG Disagreement Range	-0.0003 (0.0069)	-0.0029 (0.0070)			<b>-1.212E+08</b> <b>(1.727E+07)</b>	<b>-1.287E+08</b> <b>(1.74E+07)</b>			<b>-2.8617</b> <b>(1.4242)</b>	<b>-3.1306</b> <b>(1.1200)</b>		
ESG Disagreement StDev			0.0015 (0.0116)	-0.0025 (0.0116)			<b>-1.597E+08</b> <b>(2.657E+07)</b>	<b>-1.659E+08</b> <b>(2.698E+07)</b>			<b>-3.9657</b> <b>(2.3445)</b>	<b>-4.1402</b> <b>(1.7618)</b>
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

For the full sample, the regression results confirm one of the hypotheses and do not confirm the other two. The most surprising result is regarding volatility. While the literature suggests a positive relationship between ESG rating disagreement and volatility, with higher disagreement stocks being riskier, our results directly contradict this stance as they show a negative relationship between these two variables.

Also surprising is the fact that the hypothesis about trading volume was confirmed, given the result of the volatility relationship. While literature suggests that there is, in fact, a negative relationship between ESG rating disagreement and investor demand, which we proxy through trading volume, it theorizes that this relationship is due to the higher risk of high ESG rating disagreement stocks. As stocks are more volatile, they will fit the risk profile of fewer investors, so there are fewer investors trading them. In actuality, the results may suggest an inverse relationship. Instead of the higher risk leading to a decrease in investor demand, it could be that a lower trading volume, caused by a “fear of the unknown”, as responsible investors are not certain of the ESG performance of high ESG disagreement companies and prefer trading low ESG rating disagreement stocks, as they can be more certain of their true performance, leads to lower volatility because the lower trading volume means that there will be fewer price shifts (Brailsford 1996). The Iberian market is a small market with a relatively low trading

volume, so if there is even less demand for this type of stocks, the trading activity may not be enough to make significant price changes, which will translate into lower volatility. The extreme example is Olimpo Real Estate (not included in our sample due to having no ESG ratings available), a company with a trading activity so low that its price has not moved since its IPO on the 24<sup>th</sup> of June of 2020, almost a year ago, which, in practice, means that the company has no volatility.

As the hypothesis for a positive relationship between the stock returns and ESG rating disagreement was a risk-based one, with ESG rating disagreement having a negative relationship with volatility, it would be reasonable to expect that the relationship would in fact be negative. Actually, what we observe is that the coefficient is not statistically significant, so it is not possible to confirm any form of relationship, positive or negative, between ESG rating disagreement and stock returns. This is a reasonable result, because, due to its smaller market nature, it may be more difficult for less relevant variables, which ESG rating disagreement was for a long time, especially at the beginning of our sample, to get priced in, as there is less overall information and activity on the topic.

### **5.3 Limitations and Further Testing**

As previously mentioned, types of Socially Responsible Investment have been mentioned since the eighteenth century and it has been an established practice, although niche, since, at least, the 1920s. However, in the twenty-first century, it has seen a rise in relevancy and mainstream popularity. This means that the majority of investors have only started to pay attention and including ESG issues in their analysis, valuations, and models in the more recent times, so it is expected that the real relationships between ESG rating disagreement and the stock market, for which we are evaluating stock returns, trading volume and volatility, are only

now being observable, as before they were not a part of the decision-making process of most investors, so they would not get priced in. This means that in the full sample, it is possible that the earlier years when ESG was not a consideration can bias the results, because at the beginning of the sample, while it existed, ESG rating disagreement was a non-factor. Adding to this is the fact that at the beginning of the sample, only a eleven companies had, at least, two ESG ratings, while, by the end of the sample, sixty-three companies have enough coverage to compute ESG rating disagreement.

Another reason to believe that this dilution of the impact is possible is the fact that as ESG is still in an early adoption stage, its effects may take longer to be priced in. To put it into perspective, the first Portuguese signatory of the PRI with investments in listed equity signed in 2018, while in Spain, adoption started earlier. Also relevant to note is that, up until recently, the majority of investment managers were reliant on only one ESG ratings' provider being their only source of ESG data and ratings to include in their decision-making process and ESG product creation (Huber and Cornstock 2017). This indicates that even though ESG issues started being considered, investors may have not been aware that ESG rating disagreement was something to take into consideration.

For this reason, coupled with the introduction of additional ESG ratings' providers, the hypotheses are also going to be tested in the two subsamples that were created. However, as previously mentioned, the results will not be as reliable, due to the shortened sample size, as the time-period in the first subsample is less than half of the main one and the second subsample is even shorter.

The results for the relevant variables in the first (02/2014 – 07/2020) and second subsample, the ESG rating disagreement, as mentioned in section 4, can be seen in tables 3 and 4, with the values in bold being statistically significant.

**Table 3:** ESG rating disagreement coefficient for the first subsample

09/2016 - 07/2020	Returns				Trading Volume				Volatility			
ESG Disagreement Range	0.0099 (0.0121)	0.0048 (0.012)			5.417E+06 (2.536E+07)	-1.381E+07 (2.327E+07)			-0.2846 (2.0591)	-2.4844 (1.8614)		
ESG Disagreement StDev			0.0142 (0.0254)	0.0032 (0.0252)			2.899E+07 (5.217E+07)	-1.584E+07 (4.571E+07)			2.6496 (0.4938)	-2.1531 (3.5804)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

**Table 4:** ESG rating disagreement coefficient and its p-value for the second subsample

02/2014 - 07/2020	Returns				Trading Volume				Volatility			
ESG Disagreement Range	-0.0049 (0.0092)	-0.0094 (0.0093)			-2.902E+07 (2.338E+07)	-4.179E+07 (2.194E+07)			-2.0527 (1.5065)	<b>-4.6461</b> <b>(1.3842)</b>		
ESG Disagreement StDev			-0.0105 (0.0182)	-0.0189 (0.0185)			-7.715E+06 (4.075E+07)	-3.013E+07 (3.785E+07)			-2.1305 (2.75)	<b>-6.95</b> <b>(2.5917)</b>
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Unfortunately, as predicted, the sample sizes were too short for any meaningful conclusions, as most coefficients were statistically insignificant, even for the control variables, which have been extensively researched and do have an impact. The only exceptions are the regressions on volatility, in which all the control variables are statistically significant, so it is possible to infer insights out of these results. In these regressions, it is possible to observe that, while ESG rating disagreement still has a negative relationship with volatility, that is statistically significant, after controls, in the first subsample, the relationship loses its significance in the second subsample. This may indicate that the negative relationship obtained in the full sample may be biased because of the aforementioned problems that the full sample might have.

Another interesting change is the fact that the sign of the coefficients from the regressions on stock returns changed from negative to positive. While they are not statistically significant, so it is not possible to infer that the relationship exists and is positive or negative, the fact that the sign changes is an indicator that, in a further study, with a bigger sample in a period where ESG is mainstream, different results could be observed.

## 6. Conclusion

This paper proposed to study the impact of ESG rating disagreement, a new topic with increasing research interest, on the Iberian stock market, through the relationships of ESG rating disagreement with stock returns, trading volume and volatility. These relationships are mostly unstudied, so this paper tried to create a steppingstone that helps both academics and investment professionals better understand them.

ESG ratings' data from four different ESG ratings' providers for a sample of 68 Iberian companies ranging from 01/2007 and 07/2020 was used (two additional subsamples were created due to two providers only having available data mid sample).

Firstly, we verified that the Iberian market falls in line with other more studied markets in terms of overall ESG rating disagreement, with the ESG ratings' providers correlations ranging from 0.42 and 0.56, with an average of 0.51.

The formulated hypotheses of ESG rating disagreement having a positive relationship with stock returns and volatility and a negative relationship with trading volume were then tested.

In the results, we observe that ESG rating disagreement shows a negative relationship with both trading volume and volatility, while the relationship with stock returns is not statistically significant. It was theorized that the negative relationship with trading volume is due to socially responsible investors preferring to trade low ESG disagreement stocks, as they can be sure of those companies ESG performance. Consequently, the lower trading volume implies that there will be fewer price shifts on the high ESG rating disagreement stocks, which explains the lower volatility.

This study is also not without its limitations. The impact of ESG rating disagreement may be diluted in these larger samples, as at the beginning of the twenty-first century, ESG was

still relatively niche with no mainstream popularity, and when ESG starts being integrated into the decision-making process, investors started by only using one ESG ratings' provider, so even if they were including ESG issues in their analysis, valuations, and models, they may have not been aware of ESG rating disagreement.

It is important to note that the explanations for the relationships have been based on the current literature and experience in the Iberian market, so further research is needed to better understand what is causing these relationships, especially as this is still a relatively new research topic and new papers are constantly being published, improving the academic community's understanding of these topics.

While this study included ratings from four of the most popular ESG ratings' providers, there are still other popular providers, like Refinitiv ESG, Vigeo Eiris, RepRisk and Inrate. Unfortunately, there was no availability for these ratings in the databases that I could access. If possible, further studies should include these providers for a more precise measure of ESG rating disagreement. This study also showed that the impact of ESG rating disagreement has changed throughout time, with investors becoming more aware and sophisticated in ESG issues. A few years down the line, when there is data available to form a longer sample in periods that this newfound awareness and sophistication is present.

It is also of note that the results of this study are unique to the Iberian market, so, while they can be a starting point for hypothesizing the impact of ESG rating disagreement in other geographies, similar studies should be made for those geographies, as ESG behaves differently from region to region.

Finally, this study has shown that ESG rating disagreement is present in the Iberian market and it does have impacts on the stock market, so the recommendation for practitioners, both academics and investment professionals is to consider the disagreement and include data from different providers in their studies or analysis. For government policymakers, regulators

and for the stock exchanges, the recommendation is for them to push for standardized mandatory ESG reporting, as it is the only way for ESG data and ratings to be uniform. For ESG ratings' providers, it is recommended that they be more transparent regarding their methodologies and data sources. While I understand that these are proprietary, I believe that more transparency is possible without them revealing trade secrets and losing their perceived competitive advantage. I also want to encourage for more widespread coverage, as ESG topics, and sustainability as a whole, are increasingly more relevant and with more companies covered, it is possible for academics to better research these topics and for investment professionals to make better, more informed decisions.

## References

- Ang, Andrew, Robert J Hodrick, Yuhang Xing, and Xiaoyan Zhang. 2006. “The Cross-Section of Volatility and Expected Returns.” *The Journal of Finance* 61 (1): 259–99.
- Auer, Benjamin R., and Frank Schuhmacher. 2016. “Do Socially (Ir)Responsible Investments Pay? New Evidence from International ESG Data.” *Quarterly Review of Economics and Finance* 59: 51–62. <https://doi.org/10.1016/j.qref.2015.07.002>.
- Avramov, Doron, Si Cheng, Abraham Lioui, and Andrea Tarelli. 2020. “Investment and Asset Pricing with ESG Disagreement.” *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3711218>.
- Banz, Rolf W. 1981. “The Relationship between Return and Market Value of Common Stocks.” *Journal of Financial Economics* 9: 3–18.
- Berg, Florian, Julian F. Koelbel, and Roberto Rigobon. 2020. “Aggregate Confusion: The Divergence of ESG Ratings.” 5822–19. *MIT Sloan School Working Papers*. <https://doi.org/10.2139/ssrn.3438533>.
- Billio, Monica, Michele Costola, Iva Hristova, Carmelo Latino, and Loriana Pelizzon. 2020. “Inside the ESG Ratings: (Dis)Agreement and Performance.” 284. *SAFE Working Paper*. Sustainable Architecture for Finance in Europe. <https://doi.org/10.2139/ssrn.3764493>.
- Brailsford, Timothy J. 1996. “The Empirical Relationship between Trading Volume, Returns and Volatility.” *Accounting and Finance* 36 (1): 89–111. <https://doi.org/10.1111/j.1467-629X.1996.tb00300.x>.
- Cancela, Beatriz Lopes, Maria Elisabete Duarte Neves, Lúcia Lima Rodrigues, and António Carlos Gomes Dias. 2020. “The Influence of Corporate Governance on Corporate Sustainability: New Evidence Using Panel Data in the Iberian Macroeconomic Environment.” *International Journal of Accounting and Information Management* 28 (4):

- 785–806. <https://doi.org/10.1108/IJAIM-05-2020-0068>.
- Chatterji, Aaron K., Rodolphe Durand, David I. Levine, and Samuel Touboul. 2016. “Do Ratings of Firms Converge? Implications for Managers, Investors and Strategy Researchers.” *Strategic Management Journal* 37 (8): 1597–1614. <https://doi.org/10.1002/smj.2407>.
- Derwall, Jeroen, Nadja Guenster, Rob Bauer, and Kees Koedijk. 2005. “The Eco-Efficiency Premium Puzzle.” *Financial Analysts Journal* 61 (2): 51–63. <https://doi.org/10.2469/faj.v61.n2.2716>.
- Dorfleitner, Gregor, Gerhard Halbritter, and Mai Nguyen. 2015. “Measuring the Level and Risk of Corporate Responsibility - An Empirical Comparison of Different ESG Rating Approaches.” *Journal of Asset Management* 16 (7): 450–66. <https://doi.org/10.1057/jam.2015.31>.
- Eccles, Robert G., Ioannis Ioannou, and George Serafeim. 2014. “The Impact of Corporate Sustainability on Organizational Processes.” 17950. *Nber Working Paper Series*. National Bureau of Economic Research. <https://doi.org/10.1007/s13398-014-0173-7.2>.
- Edmans, Alex. 2011. “Does the Stock Market Value Intangibles? Employee Satisfaction and Equity Prices.” *Journal of Financial Economics* 101 (3): 621–40.
- Fama, Eugene F., and Kenneth R. French. 1995. “Size and Book-to-Market Factors in Earnings and Returns.” *The Journal of Finance* 50 (1): 131–55. <https://doi.org/10.1111/j.1540-6261.1995.tb05169.x>.
- Frazzini, Andrea, and Lasse Heje Pedersen. 2014. “Betting against Beta.” *Journal of Financial Economics* 111 (1): 1–25. <https://doi.org/10.1016/j.jfineco.2013.10.005>.
- Friede, Gunnar, Timo Busch, and Alexander Bassen. 2015. “ESG and Financial Performance: Aggregated Evidence from More than 2000 Empirical Studies.” *Journal of Sustainable Finance and Investment* 5 (4): 210–33. <https://doi.org/10.1080/20430795.2015.1118917>.

- Gibson, Rajna, Philipp Krueger, Nadine Riand, and Peter Steffen Schmidt. 2020. "ESG Rating Disagreement and Stock Returns." 651/2020. *ECGI Working Paper Series in Finance*. ECGI Working Paper Series in Finance. <https://doi.org/10.2139/ssrn.3433728>.
- Gompers, Paul, Joy Ishii, and Andrew Metrick. 2003. "Corporate Governance and Equity Prices." *The Quarterly Journal of Economics* 118 (1): 107–56. <https://doi.org/10.4324/9780203940136>.
- Hawley, Jim. 2017. "ESG Ratings and Rankings - All over the Map. What Does It Mean?" *TruValue Labs*. <https://truvaluelabs.com/wp-content/uploads/2017/12/ESG-Ratings-and-Rankings-All-Over-the-Map.pdf>.
- Huber, Betty Moy, and Michael Cornstock. 2017. "ESG Reports and Ratings: What They Are, Why They Matter?" [https://www.davispolk.com/sites/default/files/2017-07-12\\_esg\\_reports\\_ratings\\_what\\_they\\_are\\_why\\_they\\_matter\\_0.pdf](https://www.davispolk.com/sites/default/files/2017-07-12_esg_reports_ratings_what_they_are_why_they_matter_0.pdf).
- Jegadeesh, Narasimhan, and Sheridan Titman. 1993. "Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency." *The Journal of Finance* 48 (1): 65–91. <https://doi.org/10.1111/j.1540-6261.1993.tb04702.x>.
- Kim, Jinwook, Sunggon Chung, and Cheongkyu Park. 2013. "Corporate Social Responsibility and Financial Performance: The Impact of the MSCI ESG Ratings on Korean Firms." *Journal of the Korea Academia-Industrial Cooperation Society* 14 (11): 5586–93. <https://doi.org/10.5762/kais.2013.14.11.5586>.
- Kumar, Rakhi, and Ali Weiner. 2019. "The ESG Data Challenge." *State Street Global Advisors*.
- Landi, Giovanni, and Mauro Sciarelli. 2019. "Towards a More Ethical Market: The Impact of ESG Rating on Corporate Financial Performance." *Social Responsibility Journal* 15 (1): 11–27. <https://doi.org/10.1108/SRJ-11-2017-0254>.
- Li, Feifei, and Ari Polychronopoulos. 2020. "What a Difference an ESG Ratings Provider Makes!" <https://www.researchaffiliates.com/documents/770-what-a-difference-an-esg->

ratings-provider-makes.pdf.

- Liang, Hao, and Luc Renneboog. 2016. "On the Foundations of Corporate Social Responsibility." *Journal of Finance* 72 (2): 852–910. <https://doi.org/10.1111/jofi.12487>.
- Lopez-de-Silanes, Florencio, Joseph A. McCahery, and Paul C. Pudschedl. 2020. "ESG Performance and Disclosure: A Cross-Country Analysis." *Singapore Journal of Legal Studies* 2020 (December): 217–41. <https://doi.org/10.2139/ssrn.3506084>.
- Renneboog, Luc, Jenke Ter Horst, and Chendi Zhang. 2008. "The Price of Ethics and Stakeholder Governance: The Performance of Socially Responsible Mutual Funds." *Journal of Corporate Finance* 14 (3): 302–22. <https://doi.org/10.1016/j.jcorpfin.2008.03.009>.
- UN Global Compact. 2004. "Who Cares Wins: Connecting Financial Markets to a Changing World." <http://documents1.worldbank.org/curated/en/280911488968799581/pdf/113237-WP-WhoCaresWins-2004.pdf>.
- Widyawati, Luluk. 2020. "Measurement Concerns and Agreement of Environmental Social Governance Ratings." *Accounting and Finance*. <https://doi.org/10.1111/acfi.12638>.
- Windolph, Sarah Elena. 2011. "Assessing Corporate Sustainability Through Ratings: Challenges and Their Causes." *Journal of Environmental Sustainability* 1 (1): Article 5. <https://doi.org/10.14448/jes.01.0005>.

## Appendix

**Table A1:** Regression of ESG disagreement range on stock returns (Full Sample – No Controls)

Parameter Estimates						
Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI	
const	-0.0033	0.0024	-1.3683	0.1713	-0.0079	0.0014
Disagreement Range	-0.0003	0.0069	-0.0497	0.9603	-0.0139	0.0132

**Table A2:** Regression of ESG disagreement range on stock returns (Full Sample – Controls)

Parameter Estimates						
Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI	
const	0.0078	0.0109	0.7224	0.4701	-0.0134	0.0291
Size	-4.192e-07	1.984e-07	-2.1125	0.0347	-8.082e-07	-3.02e-08
Momentum	0.0003	0.0080	0.0384	0.9694	-0.0153	0.0159
Book/Market	-0.0030	0.0114	-0.2645	0.7914	-0.0255	0.0194
Disagreement Range	-0.0029	0.0070	-0.4166	0.6770	-0.0167	0.0108
Volatility Control	-0.0003	0.0002	-1.3298	0.1836	-0.0008	0.0001
Beta	0.0074	0.0039	1.9021	0.0572	-0.0002	0.0150

**Table A3:** Regression of ESG disagreement range on trading volume (Full Sample – No Controls)

Parameter Estimates						
Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI	
const	2.445e+08	6.167e+06	39.642	0.0000	2.324e+08	2.566e+08
Disagreement Range	-1.212e+08	1.727e+07	-7.0207	0.0000	-1.551e+08	-8.738e+07

**Table A4:** Regression of ESG disagreement range on trading volume (Full Sample – Controls)

Parameter Estimates						
Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI	
const	1.138e+08	1.898e+07	5.9931	0.0000	7.656e+07	1.51e+08
Size	689.67	743.76	0.9273	0.3538	-768.34	2147.7
Momentum	2.406e+07	1.354e+07	1.7764	0.0757	-2.492e+06	5.061e+07
Book/Market	5.081e+07	1.138e+07	4.4650	0.0000	2.85e+07	7.312e+07
Disagreement Range	-1.287e+08	1.74e+07	-7.3946	0.0000	-1.628e+08	-9.456e+07
Volatility Control	1.199e+06	2.884e+05	4.1570	0.0000	6.336e+05	1.764e+06
Beta	4.913e+07	8.177e+06	6.0082	0.0000	3.31e+07	6.516e+07

**Table A5:** Regression of ESG disagreement range on volatility (Full Sample – No Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	32.451	0.5404	60.044	0.0000	31.391	33.510
Disagreement Range	-2.8617	1.4242	-2.0094	0.0445	-5.6536	-0.0698

**Table A6:** Regression of ESG disagreement range on volatility (Full Sample – With Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	28.864	3.0990	9.3140	0.0000	22.789	34.939
Size	-0.0001	6.975e-05	-1.8412	0.0656	-0.0003	8.312e-06
Momentum	-11.322	2.7709	-4.0860	0.0000	-16.754	-5.8901
Book/Market	-2.5421	3.3456	-0.7598	0.4474	-9.1007	4.0164
Disagreement Range	-3.1306	1.1200	-2.7952	0.0052	-5.3262	-0.9350
Beta	7.4278	1.0349	7.1775	0.0000	5.3991	9.4566

**Table A7:** Regression of ESG disagreement standard deviation on stock returns (Full Sample – No Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	-0.0036	0.0023	-1.5555	0.1199	-0.0082	0.0009
Disagreement StDev	0.0015	0.0116	0.1342	0.8933	-0.0211	0.0242

**Table A8:** Regression of ESG disagreement standard deviation on stock returns (Full Sample – With Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	0.0073	0.0110	0.6661	0.5054	-0.0143	0.0290
Size	-4.147e-07	1.997e-07	-2.0769	0.0378	-8.061e-07	-2.328e-08
Momentum	0.0003	0.0080	0.0393	0.9687	-0.0153	0.0160
Book/Market	-0.0031	0.0114	-0.2687	0.7882	-0.0255	0.0193
Disagreement StDev	-0.0025	0.0116	-0.2163	0.8288	-0.0252	0.0202
Volatility Control	-0.0003	0.0002	-1.3272	0.1845	-0.0008	0.0001
Beta	0.0074	0.0039	1.8989	0.0576	-0.0002	0.0151

**Table A9:** Regression of ESG disagreement standard deviation on trading volume (Full Sample – No Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	2.361e+08	5.703e+06	41.406	0.0000	2.249e+08	2.473e+08
Disagreement StDev	-1.597e+08	2.657e+07	-6.0119	0.0000	-2.118e+08	-1.077e+08

**Table A10:** Regression of ESG disagreement standard deviation on trading volume (Full Sample – With Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	1.038e+08	1.893e+07	5.4805	0.0000	6.664e+07	1.409e+08
Size	757.73	747.39	1.0138	0.3107	-707.40	2222.9
Momentum	2.463e+07	1.352e+07	1.8216	0.0686	-1.876e+06	5.113e+07
Book/Market	4.971e+07	1.126e+07	4.4150	0.0000	2.764e+07	7.179e+07
Disagreement StDev	-1.659e+08	2.698e+07	-6.1492	0.0000	-2.188e+08	-1.13e+08
Volatility Control	1.223e+06	2.893e+05	4.2273	0.0000	6.557e+05	1.79e+06
Beta	4.885e+07	8.167e+06	5.9810	0.0000	3.284e+07	6.486e+07

**Table A11:** Regression of ESG disagreement standard deviation on volatility (Full Sample – No Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	32.288	0.5239	61.629	0.0000	31.261	33.315
Disagreement StDev	-3.9657	2.3445	-1.6915	0.0908	-8.5618	0.6304

**Table A12:** Regression of ESG disagreement standard deviation on volatility (Full Sample – With Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	28.657	3.1526	9.0899	0.0000	22.477	34.837
Size	-0.0001	6.994e-05	-1.8165	0.0693	-0.0003	1.006e-05
Momentum	-11.314	2.7682	-4.0871	0.0000	-16.741	-5.8873
Book/Market	-2.5680	3.3378	-0.7694	0.4417	-9.1112	3.9753
Disagreement StDev	-4.1402	1.7618	-2.3500	0.0188	-7.5939	-0.6865
Beta	7.4247	1.0351	7.1726	0.0000	5.3955	9.4540

**Table A13:** Regression of ESG disagreement range on stock returns (First Subsample – No Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	-0.0028	0.0033	-0.8420	0.3998	-0.0093	0.0037
Disagreement Range	-0.0049	0.0092	-0.5325	0.5944	-0.0229	0.0131

**Table A14:** Regression of ESG disagreement range on stock returns (First Subsample – Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	-0.0167	0.0092	-1.8285	0.0676	-0.0347	0.0012
Size	-3.486e-08	2.795e-07	-0.1247	0.9008	-5.828e-07	5.131e-07
Momentum	0.0029	0.0064	0.4534	0.6503	-0.0097	0.0156
Book/Market	0.0136	0.0059	2.2889	0.0221	0.0019	0.0252
Disagreement Range	-0.0094	0.0093	-1.0067	0.3142	-0.0277	0.0089
Volatility Control	-0.0002	0.0002	-0.9652	0.3345	-0.0005	0.0002
Beta	0.0105	0.0039	2.6926	0.0071	0.0029	0.0182

**Table A15:** Regression of ESG disagreement range on trading volume (First Subsample – No Controls)

Parameter Estimates						
Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI	
const	1.785e+08	8.437e+06	21.154	0.0000	1.619e+08	1.95e+08
Disagreement Range	-2.902e+07	2.338e+07	-1.2413	0.2146	-7.486e+07	1.682e+07

**Table A16:** Regression of ESG disagreement range on trading volume (First Subsample – Controls)

Parameter Estimates						
Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI	
const	7.332e+07	3.1e+07	2.3653	0.0181	1.255e+07	1.341e+08
Size	2457.1	1679.8	1.4628	0.1436	-836.17	5750.3
Momentum	-1.507e+07	1.521e+07	-0.9904	0.3220	-4.49e+07	1.476e+07
Book/Market	6.754e+07	1.783e+07	3.7875	0.0002	3.258e+07	1.025e+08
Disagreement Range	-4.179e+07	2.194e+07	-1.9047	0.0569	-8.481e+07	1.227e+06
Volatility Control	3.908e+05	3.287e+05	1.1887	0.2346	-2.537e+05	1.035e+06
Beta	1.704e+07	7.521e+06	2.2650	0.0236	2.29e+06	3.178e+07

**Table A17:** Regression of ESG disagreement range on volatility (First Subsample – No Controls)

Parameter Estimates						
Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI	
const	30.432	0.5784	52.619	0.0000	29.299	31.566
Disagreement Range	-2.0527	1.5065	-1.3626	0.1731	-5.0062	0.9008

**Table A18:** Regression of ESG disagreement range on volatility (First Subsample – With Controls)

Parameter Estimates						
Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI	
const	26.948	1.5290	17.624	0.0000	23.950	29.946
Size	-0.0002	4.396e-05	-5.3214	0.0000	-0.0003	-0.0001
Momentum	-4.8729	1.2126	-4.0187	0.0001	-7.2502	-2.4956
Book/Market	4.1322	1.3680	3.0206	0.0025	1.4501	6.8142
Disagreement Range	-4.6461	1.3842	-3.3564	0.0008	-7.3599	-1.9322
Beta	4.2106	0.8499	4.9544	0.0000	2.5444	5.8768

**Table A19:** Regression of ESG disagreement standard deviation on stock returns (First Subsample – No Controls)

Parameter Estimates						
Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI	
const	-0.0025	0.0034	-0.7379	0.4606	-0.0093	0.0042
Disagreement StDev	-0.0105	0.0182	-0.5767	0.5642	-0.0461	0.0251

**Table A20:** Regression of ESG disagreement standard deviation on stock returns (First Subsample – With Controls)

Parameter Estimates						
Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI	
const	-0.0165	0.0094	-1.7535	0.0796	-0.0349	0.0019
Size	-3.954e-08	2.802e-07	-0.1411	0.8878	-5.889e-07	5.099e-07
Momentum	0.0030	0.0064	0.4612	0.6447	-0.0097	0.0156
Book/Market	0.0136	0.0059	2.2956	0.0218	0.0020	0.0252
Disagreement StDev	-0.0189	0.0185	-1.0199	0.3078	-0.0552	0.0174
Volatility Control	-0.0002	0.0002	-0.9614	0.3364	-0.0005	0.0002
Beta	0.0105	0.0039	2.6817	0.0074	0.0028	0.0182

**Table A21:** Regression of ESG disagreement standard deviation on trading volume (First Subsample – No Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	1.7e+08	7.769e+06	21.886	0.0000	1.548e+08	1.853e+08
Disagreement StDev	-7.715e+06	4.075e+07	-0.1894	0.8498	-8.76e+07	7.217e+07

**Table A22:** Regression of ESG disagreement standard deviation on trading volume (First Subsample – With Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	6.297e+07	3.136e+07	2.0080	0.0447	1.487e+06	1.245e+08
Size	2563.8	1688.6	1.5183	0.1290	-746.88	5874.4
Momentum	-1.524e+07	1.523e+07	-1.0011	0.3168	-4.51e+07	1.461e+07
Book/Market	6.666e+07	1.779e+07	3.7479	0.0002	3.179e+07	1.015e+08
Disagreement StDev	-3.013e+07	3.785e+07	-0.7961	0.4260	-1.043e+08	4.407e+07
Volatility Control	4.112e+05	3.288e+05	1.2507	0.2111	-2.334e+05	1.056e+06
Beta	1.748e+07	7.514e+06	2.3267	0.0200	2.751e+06	3.221e+07

**Table A23:** Regression of ESG disagreement standard deviation on volatility (First Subsample – No Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	30.122	0.5597	53.817	0.0000	29.025	31.219
Disagreement StDev	-2.1305	2.7500	-0.7747	0.4385	-7.5220	3.2610

**Table A24:** Regression of ESG disagreement standard deviation on volatility (First Subsample – With Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	26.595	1.5001	17.728	0.0000	23.654	29.536
Size	-0.0002	4.348e-05	-5.3078	0.0000	-0.0003	-0.0001
Momentum	-4.8720	1.2132	-4.0157	0.0001	-7.2506	-2.4933
Book/Market	4.1064	1.3739	2.9888	0.0028	1.4127	6.8000
Disagreement StDev	-6.9500	2.5917	-2.6816	0.0074	-12.031	-1.8688
Beta	4.2296	0.8532	4.9576	0.0000	2.5569	5.9023

**Table A25:** Regression of ESG disagreement range on stock returns (Second Subsample – No Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	-0.0074	0.0045	-1.6417	0.1008	-0.0162	0.0014
Disagreement Range	0.0099	0.0121	0.8166	0.4142	-0.0139	0.0337

**Table A26:** Regression of ESG disagreement range on stock returns (Second Subsample – Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	-0.0194	0.0110	-1.7643	0.0778	-0.0410	0.0022
Size	3.28e-07	3.97e-07	0.8263	0.4087	-4.503e-07	1.106e-06
Momentum	-0.0060	0.0081	-0.7319	0.4643	-0.0219	0.0100
Book/Market	0.0121	0.0069	1.7444	0.0812	-0.0015	0.0257
Disagreement Range	0.0048	0.0120	0.3998	0.6893	-0.0187	0.0283
Volatility Control	-0.0002	0.0002	-1.1497	0.2504	-0.0006	0.0002
Beta	0.0077	0.0064	1.1944	0.2324	-0.0049	0.0203

**Table A27:** Regression of ESG disagreement range on trading volume (Second Subsample – No Controls)

Parameter Estimates						
Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI	
const	1.38e+08	9.358e+06	14.746	0.0000	1.196e+08	1.563e+08
Disagreement Range	5.417e+06	2.536e+07	0.2136	0.8309	-4.432e+07	5.515e+07

**Table A28:** Regression of ESG disagreement range on trading volume (Second Subsample – Controls)

Parameter Estimates						
Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI	
const	4.213e+07	3.17e+07	1.3291	0.1839	-2.003e+07	1.043e+08
Size	1969.7	1748.1	1.1267	0.2600	-1458.2	5397.5
Momentum	9.69e+06	1.651e+07	0.5869	0.5573	-2.269e+07	4.207e+07
Book/Market	5.009e+07	2.299e+07	2.1793	0.0294	5.022e+06	9.516e+07
Disagreement Range	-1.381e+07	2.327e+07	-0.5935	0.5529	-5.944e+07	3.182e+07
Volatility Control	1.056e+06	3.693e+05	2.8598	0.0043	3.32e+05	1.78e+06
Beta	1.288e+07	1.115e+07	1.1556	0.2479	-8.976e+06	3.474e+07

**Table A29:** Regression of ESG disagreement range on volatility (Second Subsample – No Controls)

Parameter Estimates						
Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI	
const	28.659	0.7917	36.197	0.0000	27.106	30.211
Disagreement Range	-0.2846	2.0591	-0.1382	0.8901	-4.3221	3.7529

**Table A30:** Regression of ESG disagreement range on volatility (Second Subsample – With Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	23.578	1.5346	15.364	0.0000	20.569	26.587
Size	-0.0003	5.234e-05	-5.0165	0.0000	-0.0004	-0.0002
Momentum	-3.4937	1.1784	-2.9648	0.0031	-5.8043	-1.1831
Book/Market	3.5885	1.3301	2.6980	0.0070	0.9805	6.1966
Disagreement Range	-2.4844	1.8614	-1.3347	0.1821	-6.1342	1.1655
Beta	6.3136	1.3051	4.8376	0.0000	3.7545	8.8727

**Table A31:** Regression of ESG disagreement standard deviation on stock returns (Second Subsample – No Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	-0.0065	0.0048	-1.3527	0.1763	-0.0159	0.0029
Disagreement StDev	0.0142	0.0254	0.5570	0.5776	-0.0357	0.0640

**Table A32:** Regression of ESG disagreement standard deviation on stock returns (Second Subsample – With Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	-0.0183	0.0112	-1.6431	0.1005	-0.0402	0.0035
Size	3.234e-07	3.969e-07	0.8146	0.4154	-4.55e-07	1.102e-06
Momentum	-0.0058	0.0081	-0.7147	0.4748	-0.0217	0.0101
Book/Market	0.0122	0.0069	1.7616	0.0783	-0.0014	0.0259
Disagreement StDev	0.0032	0.0252	0.1280	0.8982	-0.0462	0.0526
Volatility Control	-0.0002	0.0002	-1.1570	0.2474	-0.0006	0.0002
Beta	0.0077	0.0064	1.2018	0.2296	-0.0049	0.0203

**Table A33:** Regression of ESG disagreement standard deviation on trading volume (Second Subsample – No Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	1.346e+08	9.793e+06	13.749	0.0000	1.154e+08	1.538e+08
Disagreement StDev	2.899e+07	5.217e+07	0.5557	0.5785	-7.331e+07	1.313e+08

**Table A34:** Regression of ESG disagreement standard deviation on trading volume (Second Subsample – With Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	4.022e+07	3.228e+07	1.2462	0.2128	-2.307e+07	1.035e+08
Size	1978.3	1751.2	1.1297	0.2587	-1455.5	5412.2
Momentum	9.369e+06	1.652e+07	0.5673	0.5706	-2.302e+07	4.175e+07
Book/Market	4.988e+07	2.293e+07	2.1756	0.0297	4.924e+06	9.484e+07
Disagreement StDev	-1.584e+07	4.571e+07	-0.3466	0.7289	-1.055e+08	7.379e+07
Volatility Control	1.059e+06	3.694e+05	2.8678	0.0042	3.35e+05	1.784e+06
Beta	1.278e+07	1.11e+07	1.1517	0.2496	-8.979e+06	3.454e+07

**Table A35:** Regression of ESG disagreement standard deviation on volatility (Second Subsample – No Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	28.079	0.7696	36.485	0.0000	26.570	29.589
Disagreement StDev	2.6496	3.8720	0.6843	0.4938	-4.9427	10.242

**Table A36:** Regression of ESG disagreement standard deviation on volatility (Second Subsample – With Controls)

Parameter Estimates						
	Parameter	Std. Err.	T-stat	P-value	Lower CI	Upper CI
const	23.125	1.5175	15.240	0.0000	20.150	26.101
Size	-0.0003	5.218e-05	-4.9948	0.0000	-0.0004	-0.0002
Momentum	-3.5629	1.1814	-3.0158	0.0026	-5.8794	-1.2464
Book/Market	3.5393	1.3428	2.6357	0.0084	0.9063	6.1723
Disagreement StDev	-2.1531	3.5804	-0.6014	0.5477	-9.1738	4.8675
Beta	6.2997	1.3033	4.8336	0.0000	3.7441	8.8553