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**ESG Reporting and Its Effect on Financial Performance of Oil, Gas, and Utility Companies
in the United States**

By

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Honors Thesis

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Introduction

According to the Harvard Business Review article *ESG Investing Isn't Designed to Save the Planet* (Pucker and King 2022), the term ESG investments – which stands for environmental, social, and governance investing – often confuses investors because it is unregulated. Additionally, the author continued to claim that the data is outdated and mostly unaudited. Even if data on these investments is available to investors, it can still be challenging for them to make decisions regarding ESG. Trusting compatibility and accuracy can be difficult considering that companies can choose how to produce or calculate their own ESG data. Another claim that Pucker and King made in their article was that ESG ratings cost 40 percent higher than other traditional investments. If this is the case, why would companies invest in ESG if it does not directly help them improve their performance? ESG has not been widely implemented partly because of the many back-and-forth arguments on whether it is worth the investment. Despite the current difficulties in widespread implementation of ESG investing, industries around the world continue to face the growing challenge of reducing carbon emissions.

ESG refers to the measurement of an investment's impact in terms of sustainability and ethics. The environmental impacts focus on metrics including operational carbon footprints and waste management. The social impact looks at how companies interact with the communities in which they are located. Additionally, the social aspect evaluates the relationship that companies have with their investors, consumers, and suppliers. Having a strong relationship with their stakeholders will help companies sustain in the long run. Lastly, the governance aspect of ESG evaluates a company's leadership and management. This aspect also includes factors such as executive compensation, board structures, and shareholder rights.

To combat climate change, governments have set net-zero targets for carbon emissions. Achieving these goals will require more than just local efforts; they require a coordinated plan among most countries. Governments are aware of the role of the private sector, demonstrated through their encouragement to firms to reduce carbon emissions. One way to hold companies accountable is by requiring them to disclose ESG reporting. But investors and shareholders are afraid that ESG is just a trend that might disappear in the future, making any cost tradeoffs worthless. Despite the growing movement toward ESG investments, it has not made its appearance in the news until more recently. This contributes to hesitation from investors and shareholders about the effectiveness of ESG and its potential impacts on the business landscape going forward.

Under the ESG investing umbrella, researchers have identified three common investor objectives or motivations when considering the strategy: integration, values, and impact. Key question management officials often ask themselves is where to allocate funding to maximize the outcomes. Therefore, the idea of investing in ESG has caused many arguments. Some people have claimed that allocating funding to ESG investment will result in other financial tradeoffs, possibly missing out on opportunities to invest in other areas that could yield higher benefit. The chance of getting higher benefits from other investments might seem more appealing to certain investors because ESG typically has a higher upfront cost compared to. Additionally, there are uncertainties about ESG that forces management to be skeptical (Pucker and King 2022). The Security Exchange Commission (SEC) currently does not require firms to disclose ESG matters or impose financial punishments if firms do not. Firms that have chosen to report ESG information do so voluntarily. A survey among American corporate issuers conducted by sustainability-focused nonprofit Ceres and Climate Management and Accounting Platform

company Persefoni showed that they spend an average of \$677,000 each year on climate-related disclosure activities. The approximately 39 corporate issuers across different sectors spent these funds on initiatives such as greenhouse gas analysis, climate scenario analysis, and internal climate risk management controls. Although disclosing ESG-related information can be costly, many firms are willing to spend funding to report additional information. But is ESG investment beneficial to companies? With higher demand for more transparent and sustainable business practices, would firms market themselves as sustainable to gain trust from consumers and capture more market shares? Or should firms just disclose ESG related information to satisfy the demand from stakeholders?

This paper focuses on the oil, gas, and utility firms in the United States to see whether reporting higher ESG scores will help them achieve higher financial performance, or net income. These companies are important because they supply energy to other industries, and the fluctuation in prices can cause prices of other products to change as well. Over the past year, invasion of Ukraine by Russia and resulting war has disrupted oil and energy supply for countries across the world, especially those in the European Union and United States. This disruption caused prices to significantly increase, in turn causing skyrocketing prices of products across other industries as well. Focusing on the oil, gas and utility industries also is important because of the environmental impact. According to the United States Environmental Protection Agency (EPA), the oil and gas industry annually produces approximately eight million metric tons of methane into the atmosphere. In addition to poor air quality, pollution harms public health as well as agriculture, including ruining crops by acid rains. Each year, acid rain damages approximately 5 percent to 20 percent of crops. With unregulated ESG scores, firms are only incentivized to report their scores if they are certain that there will be no negative consequences.

If these firms begin to report high ESG scores, will they gain attention and an improved reputation that expands their customer bases, resulting in higher profits. Since ESG fees are costly, firms will most likely not see a positive return in profits in the short term: The benefits of ESG investing and reporting are in the long run. Presumably with a higher ESG score, companies will gain customer loyalty and trust from stakeholders. This will allow companies a more accessible path to capital, helping firms be more profitable in the long term. Other benefits of strengthening trust of stakeholders includes access to capital with lower interest rates. With higher ESG scores, this could be a signal to stakeholders that companies will not violate any environmental statutes that could cause later financial setbacks such as costly litigation. Overall, firms with a higher ESG score are expected to perform better financially.

ESG reporting does not affect all business fields equally. According to “ESG and Stock Performance In the Oil and Gas Industry” (Arseni 2020) there is no significant relationship between stock return and ESG scores. Other research by professors Peter Oti and Mbu-Ogar Geraldine suggests that disclosing environmental information has a significant positive effect on a firm's financial performance. Although these two studies are on the same topic, their results contradict one another. Reporting higher ESG scores may not help firms achieve higher net income or capture market share in the short run, but the ability to maintain a high ESG score in the long run will not only satisfy demand from stakeholders, but also help firms to achieve improved financial performance.

Literature Review

One point to note about ESG investment data is the variation by geographic area. Some studies have yielded different results, partly due to the varying policies that may or may not require firms to report ESG data along with financial performance. Adding this disclosure to a

well-performing company could misrepresent the effectiveness of a high ESG score on performance. Many studies conducted around the world yielded different results of ESG, which have led some researchers to believe that ESG reporting has not been useful when it comes to helping investors and stakeholders make decisions. Despite differences in results, one thing the research has in common is that all the data sets being collected are from the early 2000s up to 2022.

In the studies focusing on oil and gas firms, results do not suggest a positive correlation between ESG and oil and gas firms' financial performance. This leads many people to believe in the legitimacy of ESG ratings and effectiveness. Chowdhury, Choim Ennis and Chung (2018) examine the corporate social responsibilities (CSR) activities of oil and gas companies listed on the S&P and TSX Capped Energy Index. The constituents of this index are publicly listed companies in the Toronto Stock Exchange. The authors gathered CSR-related information for these companies over the period from 2007 to 2013. Additionally, the author uses the MD&A sections of annual financial reports to collect the relevant information on company-specific CSR. Choosing annual financial reports over CSR reports is important because publishing an annual report is a regulatory requirement for a publicly traded company. In their research, Chowdhury, Choim Ennis, and Chung find that CSR is a value-enhancing initiative for oil and gas companies; socially sustainable activities are critical value drivers for oil and gas companies; and both environmentally and economically sustainable CSR activities are not value-destructive for oil and gas companies. Their findings suggest that these companies should not be reluctant in their pursuit of CSR initiatives. An important managerial implication of my findings is that oil and gas companies should plan CSR priorities. Companies that target a broad spectrum of sustainable

activities may not experience the same extent of added value. By meeting the legitimate concerns of certain stakeholders, managers can still maximize the value of shareholder wealth.

Another paper from an Australian researcher Renard Siew (2018) found that a weak positive relationship between ESG score and financial performance suggests that ESG might not be sufficient to outright prove its effectiveness in predicting companies' financial performance. The author also suggests that the idea of ESG investing has been around for decades. In 1987, the first definition of ESG was development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Balabat, Lin, and Carmichael claim that investors have been demanding ESG reports from companies as part of their selection process. As a result of the higher and new demand, companies have started to release additional reports to address shareholder concerns. This is interesting because it builds on some existing work such as Poelloe (2010), Abramson and Chung (2000), Hamilton (1993), and Angel and Rivoli (1997). The data set that the author used is from Bloomberg, KLD Research and Analytics, and the ESG scores were prepared by Corporate Analysis Enhanced Responsibility. NAME's data was collected from a list of top 300 companies listed on the Australian Securities Exchange, and each company was assessed on whether its ESG practices was tracked by CAER(EIRIS) from 2008 to 2010. The list of companies pulled from a variety of industries such as mining, general retail, industrial, media, food and beverage, energy and utilities, support services, and travel and leisure. However, the authors recognized the importance of firms investing in their employees and believe it will help firms achieve higher returns.

A 2018 paper by Yoon, Lee, and Byun (2018) provides examples of how ESG investing plays an important role in the markets of Asian countries. Focusing on corporate social responsibility in promoting market value, the results confirmed that CSR practices positively and

significantly affect a firm's market. Surprisingly for environmentally sensitive companies, the value-creating effect of CSR is lesser than firms that do not belong to environmentally sensitive industries. The data set the authors use is from the Korea Corporate Governance Service as a proxy measure. They found that the coefficient of all ESG score variables have positively significant values and the coefficient on the total ESG score is significantly positive, indicating the positive valuation effect of SCR practices in Korean firms.

Another study conducted by Gospodinov Miroslav Miroslav in 2015 displayed ESG correlation with financial performance from an operational accounting and intrinsic firm value perspective. This study focuses on E&P companies in the United Kingdom, United States, and Canada because there is a deficiency of studies analyzing a single industry or sector in these countries. Moreover, this study adds a particular value to investors and stakeholders involved in the E&P companies. Miroslav uses the Ordinary Least Squares (OLS) panel data method to test the relationship between ESG factors with financial performance correlation. In addition to the value of this study, the companies' financial data, collected through the Bloomberg Professional Service Terminal as well as the Thomson Reuters DataStream, has an empirical framework running from 2009 to 2014 that found a positive correlation between operating performance and ESG score.

Most recently, research by Mercereau, Melin, and Lugo published in 2022 suggests that improving ESG boosts investment returns. This study is different compared to the previous two studies because the authors went beyond the environmental aspect of ESG and included governance and social effects as well. They used specific variables that represented each of these elements. For example, for governance, they examined board tenure, board size, and the gender of board members. One shared aspect between this study and my study is the use of data from

Rifinitiv, whose research illustrates how improving ESG can create shareholder value. In their study, Mercereau, Melin, and Lugo included other industries such as real estate, healthcare, and information and technology. The result shows that energy and utility firms adopting two elements of E and S would add over 20 percent of market price. Their study also admits some ESG data from retail, Software Service, and media and entertainment is not as widely available.

Data and Methods

This paper examines the research and development, net income, and ESG scores available on the Wharton Research Data Service (WRDS) across 27 oil, gas, and utilities companies in the United States from 2010 to 2021. Looking at panel data from 2010 to 2021 for oil, gas, and utility companies is important because it helps identify potential patterns and trends in ESG scores. The idea of including ESG-related information in financial reporting has not caught widespread attention from investors and stakeholders in the last 10 to 15 years, but this panel of data will give us a more insight into how businesses have begun to incorporate greater corporate sustainability and responsibility into their normal business operations.

The ESG scores from WRDS are self-reported due to the lack of guidance on how to calculate these scores across the world. This results in possible selection bias, as firms with good ESG scores may have more incentive to report them if there are no clear standards or audits (Pucker and King 2022). Since firms with average or higher ESG scores compared to their competitors in their industry are mostly likely to report scores, the existing scores in the database may not represent the most accurate ESG information overestimating current efforts. Over the past few years, there has been a rise in demand for ESG rating services with greater attention on climate change. Another crucial point is that different ESG rating agencies will use different methods. Many large oil and gas companies recognize the demand from shareholders to show

more accountability and transparency, particularly considering that oil and gas companies tend to not have a great public reputation. Another reason why ESG scores may not be widely available is the financial availability of the firms. ESG ratings are a new idea and can be costly, particularly in the short term. Therefore, unless ESG rating is required, smaller companies would likely not voluntarily disclose such information. Therefore, the dataset does not capture all oil, gas, and utility companies because the companies that do not report their ESG scores have been eliminated.

ESG ratings are systematic, and rating agencies must gather data from their clients, analyze it, and assess performance. Each agency has its own way of conducting this process. Overall, there are overlapping steps that all agencies are taking: First, an agency will collect various sources of information from a client's financial reports, industry database, as well as other disclosed information. Then, agencies will use their own ESG data frames and risk management to define and evaluate the three key factors of ESG. Next, rating agencies will score these different factors. For example, they will give the companies a score on the environmental impacts, pointing out areas to improve and planning how they can change these behaviors. Lastly, agencies often compare their clients' overall rating with their competitors to see where they stand in the industry.

$$\text{Net Income}_{i(t)} \sim \alpha + \beta_1 \text{LagRD}_{i(t)} + \beta_2 \text{ESGScore}_{i(t)} + \beta_3 \Phi_t + \beta_4 \delta_i + \varepsilon_{i(t)}$$

- Net income - amount in million of dollars, sub i at time t
- Lag Research and development - amount in millions of dollars, sub i-time t
- ESG score - fraction ranges from 0 to 1, sub i at time t
- Φ_t - year fixed effect
- δ_i - firm fixed effect
- $\varepsilon_{i(t)}$ - random error term

This equation uses the *lag* value of research and development because income statements of research and development are considered as expenses. Research and development expenses represent funding that would help companies stay relevant in the market or come up with new or improved products to satisfy the demand, ultimately helping companies boost profit. As an expense on income statements, research and development lowers current period net income. Therefore, to accurately represent the relationship between research and development and net income, the lag value of research and development should be considered.

The equation above also represents net income as a dependent variable. This is because net income reflects the overall health of a company. There are other financial metrics that can give investors an understanding of the economic performance of a company. One goal of including private and public companies in the regression is that net income can be easily identified compared to other financial information that the database might not have access to. Additionally, considering research and development and ESG scores as independent variables to predict net income helps show which independent variables would have influenced the long-term viability of oil, gas, and utility firms. Also, including these metrics tells the story of companies'

initiative to stay innovative and cope with social issues that can still help firms achieve their financial objectives.

Exhibit 4 shows a summary of statistics for the above equation, including every observation. These results show fluctuation in average net income throughout the period from 2010 to 2021, and the significant year fixed effect after 2015. Taking into account that oil and gas companies are subject to fluctuations in commodity prices, oil and gas companies are still more profitable than others. The results in Exhibit 4 reflect that notion. The average net income increased up to 2013 and experienced and then saw a loss starting from 2014, which only became greater in 2015. Utility firms also experienced a reduction in net income, although they did not experience any losses. Therefore, data was subset into before and after 2015 and by type of firms to check for robustness.

The hypothesis for my regression is that the higher the ESG Score, firms in the oil, gas, and utilities industries will be helped in the long run, especially compared to other industries because of their large output of carbon emissions. Therefore, reporting higher ESG scores may help those industries to thrive and capture greater market and consumer attention, demonstrating how these investments have more than just environmental benefits. Although the environmental impacts were highlighted in this paper, the environment is only part of the focus of ESG. Oil and gas companies are often viewed as the destroyers, but ESG could shift this reputation. For example, on April 20, 2010, the oil drilling rig in the Deepwater Horizon In the Macondo Prospect in the Gulf of Mexico exploded, resulting in the death of 11 workers and the largest oil spill in the history of marine oil drilling operations. This incident is just one of many taking place in recent decades. It often takes months or even years to clean up the spills, resulting in further devastating damage to the people and the environment. Higher ESG scores could likely play a

large role in convincing increasingly environmentally conscious consumers of their values, ultimately leading to firms obtaining higher incomes. I strongly believe that there will be a positive relationship between the ESG scores as well as research and development on net income. Although the research and development may not be as significant because it can be difficult to predict whether a firm's research and development will really help them achieve further success.

Summary Statistics

Overall, average net income for oil and gas companies suggest that the industries are facing a lot of uncertainty. *Exhibit 4* shows the average net income, research and development (both in millions) and average ESG score of all firms from 2010 to 2021. Average net income reached its peak in 2012, with average earnings of \$1,167.350. The trough took place in 2015, with a loss of \$960.73. There was a dip in companies' performances from 2012 to 2015. Regarding ESG reporting, the number of firms that chose to report scores abruptly increased from seven companies to seventeen companies after 2015. On average, ESG scores have remained stable within 0.32 to 0.35 ranges; and increased after 2016 with peaks in 2021.

Exhibit 6 and *Exhibit 7* suggest that instability in the net income of oil and gas companies drove the fluctuation in average net income in *Exhibit 4*. Average net income for utilities firms, displayed in *Exhibit 6*, remained positive throughout the entire dataset. In 2015, the average net income was reduced by approximately half compared to the previous year. Similarly, the number of utility firms that report ESG scores started to increase from three to nine after 2014. Additionally, the average ESG scores have been increasing especially for the utility firms, which have been higher than the total average for oil and gas companies. But after 2015, the ESG scores of utility companies started to lead those of oil and gas companies. *Exhibit 5* shows that

there is now a wide gap in the average ESG score between oil and gas companies compared to utility companies.

Exhibit 7, which shows average net income for oil and gas companies, suggests that the industry was profitable until 2014 when oil and gas companies experienced significant losses. Between 2013 and 2014, the average net income dramatically dropped: The average net income was \$1,776.06, it abruptly dropped to a loss of \$224.94 in 2014. This magnitude was significant the next year, when the oil and gas industry faced one of its biggest losses of \$2,053.94. Another significant loss in net income took place between 2019 to 2020, when the Covid-19 pandemic and its accompanying restrictions caused entire economies to come to a halt with less demand in gas, its prices took a toll, which is reflected in the average net loss of \$2,105.27 for oil and gas companies during that year.

The overall magnitude of fluctuations in average net income in *Exhibit 4* was mainly driven by the severe reduction in average net income from the oil and gas industry. Conversely, the average ESG scores of utility companies outperformed companies in the oil and gas industry following 2015. Therefore, the average overall ESG score was driven by the ESG score of utility companies. There seems to be remarkable events that took place in the year 2015 that lead to the oil/gas and utility firms to face many changes from decreased average net income to higher ESG score, and more number of firms deciding to disclose their ESG score to the public.

Events Affecting Relevant Economics and Regulations

There were a series of events in 2015 that caused oil prices to drop significantly during the time. The decline was one of the biggest since World War II, which lasted until the collapse in 1986. That reduction in prices was caused by overproduction and weaker-than-expected demand. The United States had increased oil production while Organization of the Petroleum

Exporting Countries (OPEC) countries had increased their oil production, resulting in a surplus. One of the reasons why OPEC continued its production is to compete for more market share. Typically, when there is a trend of lower demand in oil, producers reduce their drilling activities. But in this case, the OPEC countries that produced 36 million barrels each day increased their production to 38.5 million barrels a day to compete with other producers around the world. Furthermore, the United States increased its oil production at that time because of an increase in worldwide oil prices after 2009. Due to its advances in technology, the United States was able to implement hydraulic fracturing that made it possible to extract oil from other places that were previously inaccessible. The life cycle of these oil projects would be 2.5 years to 3 years shorter than traditional projects, which usually take decades to attract. With a shorter period to extract oil, the industry was forecasted to bring investors and companies promising profits in the future.

According to the Environmental Impact Assessment (EIA) of that time period, the United States had 485 million barrels of oil in its storage in 2015. The concern was that the United States might have maxed out its capacity. Due to the limited capacity of storage, companies would have to seek places to wait for more storage to be available. One place that was being used was just parking out at sea. Companies such as Nordic American Tanker would have to pay on average 35,000 dollars per day per ship. However, its cash break even rate was 12,000 dollars per ship.

On top of excess in oil supply, United States lawmakers introduced regulations that imposed more stringent statutes toward the oil and gas industry on carbon emissions reductions and other environmental impact initiatives. On August 5th, 2015, President Barack Obama and EPA officials introduced the Clean Power Plan to reduce carbon pollution from power plants. According to their research, carbon dioxide made up 31 percent of total greenhouse gas

emissions in the United States. The goal of this plan was to reduce carbon emission 32 percent below the 2005 levels by 2030. To achieve these objectives, the Obama Administration encouraged states to enforce the statute by setting up their own standards and carbon emissions targets, depending on economic activities to enhance flexibility. Additionally, states were encouraged to subsidize highly pollutive sources of energy to those that are more sustainable, such as renewable sources of energy. Along with the Clean Power Plan at the federal level, the EPA also started to enforce methane emissions standards, which aimed to reduce methane emissions from the oil and gas industry by 35 percent to 45 percent below 2012 levels in 2025. Another noticeable and equally important piece of legislation introduced by the EPA was the Pipeline and Hazardous Materials Safety Administration (PHMSA). This requires operators to establish regular maintenance, inspections, and assessments on their pipelines to ensure that they are well enough to function properly and not cause any health problems for users.

On top of financial challenges that oil, and gas companies would have to tackle, companies have to set aside additional funding for EPA regulations. These costs include those for ongoing compliance and other up-front costs, such as investing in new equipment. For smaller oil and gas companies, additional regulations can be even more burdensome, which increases overall expenses.

Results

These results suggest that ESG scores do not have a significant impact on firms' net incomes, including oil and gas companies as well as utility companies. The data shows there has been a positive and significant relationship between net profits and research and development for

utility firms both before and after 2015. However, the relationship between research and development for oil and gas companies is insignificant before and after 2015.

Exhibit 1 shows the results of utility and oil and gas companies after 2015. The first column displays results for Model 2, which included all oil and gas and utility firms. Columns 3 and 4 are separated out by each firm. The results show that when combining all firms in the same regression, the coefficients for ESG score and research and development are insignificant. Model 3, which shows just utility firms, displays significant positive correlation between research and development and net income. ESG scores remain insignificant in Model 3 and Model 4, which just includes oil and gas companies. Contrasting the positive and significant relationship between research and development and net income in Model 3, Model 4 displays an insignificant relationship between research and development and net income. Therefore, the coefficient for research and development in Model 2 was insignificant due to the overall magnitude of oil and gas companies. Despite the ESG coefficient in Model 3 is negative 130.14 and in Model 4 its coefficient is 3119.47, the relationship between ESG and net income is insignificant. Therefore, increasing ESG scores is not correlated with higher or lower net income for all firms after 2015. In Model 3, value for research squared is 0.87, which signals that 87 percent of net income can be explained in independent variables in the regression. Overall, Model 3 is a better model compared to Model 2 and Model 4.

Exhibit 2 displays three regression models for all firms (Model 5), utility firms (Model 6) and oil and gas firms (Model 7) 2015. The regressions were like Model 2 through Model 4: ESG scores have an insignificant relationship with net income. In Model 6, the research and development show a positive and significant relationship. Compared with research and development coefficients in utility firms before 2015, research and development coefficients

after 2015 have a stronger magnitude and are more significant. Despite the coefficient changes from negative to positive in the before and after 2015 regressions, the relationship between ESG score and net income remains insignificant.

Conclusion

When examining the impact of ESG investing, research and development has a significant relationship with net income for utility firms and insignificant relationship with oil and gas companies' net income. However, the insignificant relationship does not mean that oil and gas companies should not invest in more environmentally conscious research and development. The world is moving toward a more sustainable way to conduct business, and in order to stay relevant in the market, oil and gas companies are understandably encouraged to be innovative. For example, Exxon is working to implement more carbon capture and storage (CCS), or the process of capturing carbon emissions and injecting it deep into rock formations in the ground. Exxon plans to invest \$3 billion dollars in this new plan and expects to capture more than 120 million tons of carbon. The company announced this line of business is projected to be worth \$5 billion dollars in the long term. Exxon also invested in this new plan to align its goals as a private entity with the Paris Agreement, an international agreement among governments around the world to prevent further increases in global temperature. This agreement helped cause the Exxon Board of Directors to notice the importance of investing in technologies now to give themselves another pathway to remain in the energy sector in the future.

ESG scores do have strong impacts on net income for oil and gas as well as utility companies in the United States. But as of now, there still is no clear guidance on how to accurately calculate these scores. In the future, governments and regulatory agencies worldwide will hopefully be working to create uniform guidelines and introduce more stringent regulations

or strengthen existing guidance to emphasize the importance of ESG scores in business. For example, the United States Securities and Exchange Commission proposed rules changes last year that would require companies to disclose certain climate related information, ranging from greenhouse gas emissions to other climate risks to transition plans. In order to create more transparent in disclosing information, the SEC now requires registrants to report any climate-related risks identified, especially those that are expected to have a material impact on its business and consolidated financial statements or how any identified climate-related risks have affected or may be likely to affect the registrant's strategy, business model, and outlook. Internationally, the European Union finalized the Corporate Sustainability Reporting Directive (CSRD). The CSRD, which will be phased starting January 1st, 2024, will require large EU and EU-listed companies to disclose how sustainability and related factors such as how climate change affects their operations and how their business model impacts sustainability. The new rules require firms to disclose environmental, social, and human rights and governance factors. This new proposal showed how the EU has a head start on the United States; It hopefully will create a domino effect that will push the SEC to further propose new ESG reporting regulations. Even if ESG initiatives will require companies to possibly miss out on other investments, especially considering the more stringent ESG reporting standards, having more ESG initiatives will give firms more financial leverage in the future. These investments signal to investors and other stakeholders not only a company's commitment to operate sustainably, but also shows stakeholders that companies are complying with laws and regulations and will not be likely to violate any environmental regulations.

Exhibit 1

After 2015

Coefficients:	Model 2 (All Firms)	Model 3 (Utility Firms)	Model 4 (Oil/Gas Firms)
(Intercept)	-1417.63 (1482.34)	139.22 (86.52)	-1849.53 (2706.81)
(lag)RD	-4.64 (9.24)	7.87*** (1.83)	-7.68 (21.94)
ESG Score	1264.85 (2522.43)	-130.14 (155.88)	3119.47 (4944.68)
2016	891.87 (603.51)	-0.16 (34.25)	1651.20 (1225.01)
2017	1101.71 (613.89)	-31.67 (35.40)	2114.71 (1213.28)
2018	1386.48 (680.97)	15.80 (37.17)	2596.86* (1250.81)
2019	881.76 (680.97)	14.46 (39.30)	1573.46 (1379.82)
2020	-143.07 (765.65)	15.45 (44.73)	-753.75 (1534.66)
2021	1027.69 (837.37)	40.80 (48.65)	1906.92 (1677.81)
R²	0.26	0.87	0.33
Adjusted R²	0.01	0.82	0.01

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Exhibit 2

Before 2015

Coefficients:	Model 5 (All Firms)	Model 6 (Utility Firms)	Model 7 (Oil/Gas Firms)
(Intercept)	812.51 (1437.62)	373.08*** (33.28)	1456.55 (2469.04)
(lag)RD	31.08 (44.71)	0.06* (0.77)	27.09 (37.89)
ESGScore	-1694.59 (5548.02)	-385.37 (127.56)	-4762.35 (10961.03)
2011	-110.70 (689.05)	44.33* (14.70)	15.69 (1319.07)
2012	224.11 (649.35)	42.52* (15.86)	590.68 (1174.18)
2013	173.01 (653.60)	42.30* (16.13)	549.82 (1191.50)
2014	-993.88 (738.72)	65.33* (17.41)	-1297.89 (1354.81)
R²	0.73	0.89	0.76
Adjusted R²	0.58	0.87	0.58

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Exhibit 3

Coefficients	Model 1 (All Firms)	Coefficients	Model 1 (All Firms)
(Intercept)	9.31 (1484.68)	2015	-2504.32** (847.56)
(lag)RD	7.507 (12.98)	2016	-1879.99* (843.49)
ESGScore	3842.05 (2407.24)	2017	-1782.68* (861.76)
2011	-324.40 (954.37)	2018	-1585.91 (885.60)
2012	253.241 (948.82)	2019	-2137.70* (923.38)
2013	198.27 (949.11)	2020	-3358.40** (1001.33)
2014	-1145.83 (958.82)	2021	-2319.84* (1062.51)
R^2	0.2094		
Adjusted R^2	0.01996		
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1			

Exhibit 4
Summary Statistics

Year	NI	ESG	RD	Num. Firms
2010	\$894.34	0.337	\$84.27	7
2011	\$745.75	0.381	\$92.35	7
2012	\$1,167.35	0.339	\$96.00	7
2013	\$1,130.52	0.343	\$100.54	7
2014	-\$13.40	0.388	\$123.18	7
2015	-\$906.73	0.351	\$71.79	17
2016	-\$227.63	0.322	\$77.53	21
2017	\$10.62	0.350	\$85.39	22
2018	\$323.73	0.378	\$92.80	22
2019	-\$34.56	0.411	\$100.52	18
2020	-\$931.25	0.479	\$87.83	19
2021	\$239.06	0.509	\$100.09	18

Exhibit 5

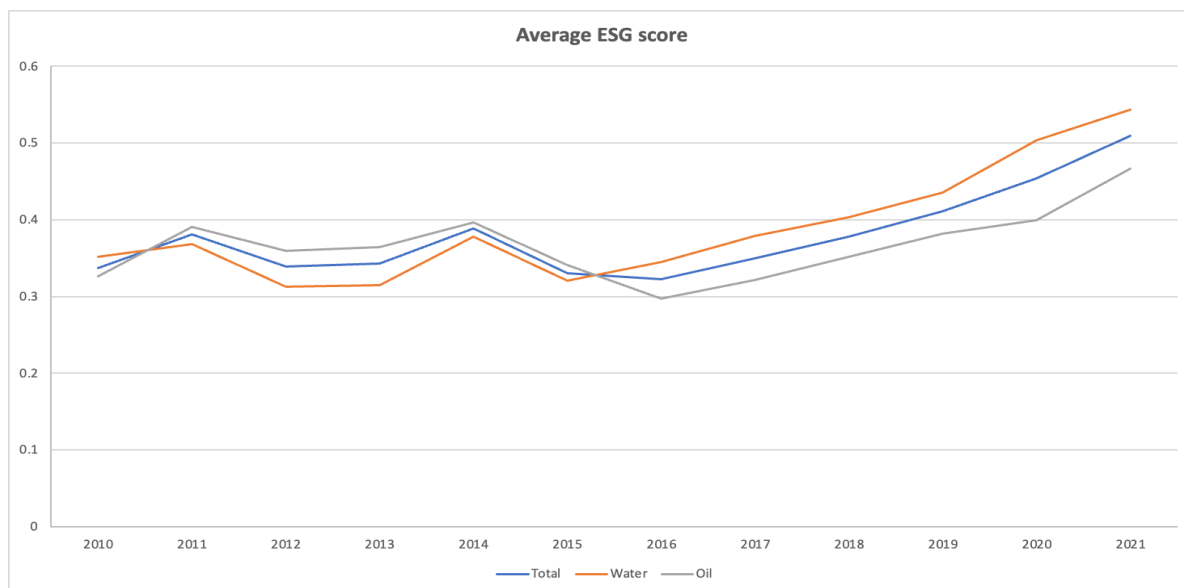


Exhibit 6

Year	NI	ESG	RD	Utilities
2010	\$212.61	0.352	\$84.27	3
2011	\$250.82	0.368	\$92.35	3
2012	\$270.54	0.313	\$96.00	3
2013	\$269.79	0.314	\$100.54	3
2014	\$268.66	0.378	\$123.18	3
2015	\$113.00	0.361	\$53.60	9
2016	\$94.24	0.345	\$54.86	11
2017	\$61.11	0.378	\$59.56	11
2018	\$115.41	0.403	\$63.17	11
2019	\$127.45	0.435	\$65.62	10
2020	\$125.37	0.503	\$65.99	10
2021	\$146.31	0.544	\$77.02	10

Exhibit 7

Year	NI	ESG	RD	Oil and Gas
2010	\$1,405.63	0.326		4
2011	\$1,116.95	0.390		4
2012	\$1,839.96	0.359		4
2013	\$1,776.06	0.364		4
2014	-\$224.94	0.396		4
2015	-\$2,053.94	0.341	\$126.37	8
2016	-\$581.68	0.297	\$145.55	10
2017	-\$39.88	0.322	\$162.89	11
2018	\$532.06	0.352	\$181.71	11
2019	-\$237.07	0.382	\$205.21	8
2020	-\$2,105.27	0.449	\$120.60	9
2021	\$355.00	0.467	\$134.69	8

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