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Do Markets react to Government and Stock Exchange- Disclosed ESG regulations and policies through Banks and Public Firms

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Abstract:
This paper studies how financial markets react to ESG-related policies proposed by governments or relevant regulatory authorities by examining abnormal returns of public firms and banks. With ESG being a growing field ever since increased attention has been paid to social and environmental issues specifically, assessing the way markets perceive enforcements to adopt these practices is a valuable way to gain insight into whether they will eventually include them in their business models or not. The study uses data from Yahoo Finance and looks at 6 different regulations to assess this market reaction by developing python models to calculate the respective abnormal returns. The results show how these reactions can be generally positive or negative, and are heavily dependent on the specific regulation, the region, as well as the institution analyzed – public firms or banks. The broader implications of this paper lie in its expandability and the way further studies can be conducted with more firms and regulations to see more distinct factors emerge.

Keywords:
Finance, Markets, ESG, Public Firms, Banks, CSR

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I. Introduction

Conducted The idea of ESG has been in circulation since the awareness of companies and their role in society, as well as their relationship with stakeholders. Standing for Environmental, Social, and Governance, the concept encapsulates all aspects of operations within and aims to address various deficiencies, while also holding companies and corporations accountable to issues going beyond the companies' scope. With a greater awareness by companies of their environmental impact, as well as growing global attention to internal, corporate, societal and governance issues, profound understanding on the effects of ESG to companies, namely public ones, is at the forefront of growing research. As a result of this growing consideration of ESG practices for day-to-day business operations, firms, governments, and banks have started to implement and become more conscious by keeping these ideals in mind. However, growing questions on the real impact and positive effect of adhering to ESG ideals has been met with considerable voice, as companies at the end of the day need to make a profit to stay afloat. Many voice their concerns that stimulating ESG practices require short-term sacrifices as they can sometimes come at a cost of extra outflow of cash and costly investments. In addition, markets have not become completely accustomed to certain government-led regulations on ensuring certain ESG commitments from firms. Whether it be for ESG disclosures, to keeping ESG metrics into consideration for investments and future projects, as well as various others, the markets' perception for some of these regulations can sometimes be unfavorable. However, there are various factors that all affect the way firms and banks start to implement and enforce ESG within their institutions, and the role of governments plays a key role in it all.

Although, while a lot of firms have been transitioning into incorporating ESG into their day-to-day operations, there have been a wide array of opinions and perspectives on ESG. According to an article by Casey Herman, US ESG Leader, Partner, PwC US, nearly 83% of the public, meaning consumers, believe that transparency and efforts
by the company in promoting and acting with ESG standards in mind is important. Additionally, 86% of employees feel they would prefer to work or support companies that take into consideration and act upon the same global or social issues as they do. This pattern has also been recognized by businesses, where the article mentioned that 91% of companies believe they have a responsibility to act on ESG issues. However, this could be in part due to the fact that 76% of customers and consumers also cited that they would leave any organization and cut ties, should they harm the environment or treat their employees poorly. In an article written by (Pucker and King, 2022), they highlight the other side of the argument that despite the increasing awareness around ESG, it will not significantly mitigate our social and environmental challenges. It claims that according to estimates, the world will need $3.5 trillion annually for the next 30 years to reverse the detrimental harm of climate change. However, paradoxically, the world just doesn't have the urgent change in perspective needed to finance this mitigation process and these supposed trillions needed are simply not there at the moment. The current ESG investing mentioned in the article is primarily to assure returns for shareholders – the end goal which is synonymous to any common type of investing. Various claim that in the grand scheme, the marketing materials make it seem as if grand social and environmental aspirations are being made and are sought to be acted upon. In contrast, the fine print truly reveals the ulterior motive, which is to secure shareholder profits. Henry Fernandez, CEO of the leading ESG ratings provider MSCI himself, talks about the assurance of institutions to transition into low carbon and more sustainable businesses, and then later mentions how manifestations of this would most likely be associated with a negative impact on the value of an investment. Another notable aspect of the opposing argument is that ESG ratings given to companies are based on unregulated scores, meaning the fundamental reason behind them is not standardized. This causes ironic scenarios to occur, where gas and oil companies, as well as other fossil-fuel emitting companies
can have higher scores than some electric-car companies.

Furthermore, data underlying some of the ratings can sometimes be incomplete, dated, and oftentimes unaudited. There are numerous ongoing efforts to standardize and regulate the basis of these ESG ratings;

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until then, it seems that many executives and businesses remain skeptical of them.

Another thought of ideas in this field has been that of Corporate Social Responsibility (CSR), and the way companies need to be themselves, their stakeholders and shareholders, and the general public. With the world also becoming more aware and seeing the disastrous effects of phenomena such as climate change and global warming, a stern look to company's responsible for the exacerbation and proliferation in these emissions has led to adoption of this idea. By practicing and performing the principles associated with CSR, companies can be more conscious of the kind of impact they are having in their own organization, but also the public regards such as environmental, social, and governance. Firms also use these facets of ESG and CSR as a way of enhancing public brand image and building trust between shareholders and stakeholders.

This paper intends to analyze market reactions on government and regulator-disclosed ESG policies and regulations by looking at various banks and public firms to gain insight into the general perception on various ESG- related enforcements by governments and regulators. Looking at not only public firms but also banks' aims to account for a big majority of the market and observes not only the role of lending institutions (banks) and their view on ESG, but also public firms and corporations, who make up a great deal of the market and also have the capability in incorporation of ESG and seeing it as a detriment or ally to their operations. By looking at government-enforced regulations and ones issued by stock-market exchanges, it provides a better sense of a market-wide reaction as all institutions within the economy are affected and are mandated to abide by. The paper investigates a range of market reactions from government-issued ones through the Securities and Exchange Commission (SEC), to stock market exchange NASDAQ, and even various international agreements such as the Paris Agreement. Covering major economic hubs such as the US and Europe, the paper aims to address whether the general market is in favor of each individual policies' objectives in terms of ESG and the differences in perspective between public firms and banks.

II. Literature Review

With key players of implementing ESG practices around the world being banks and firms, understanding the adverse or positive effects of these enactments should be looked at carefully. My research paper contributes into looking at the effects of ESG-related regulations set by governments, on banks and determining if these reactions are supportive or opposed. The paper looking at ESG and financial performance for banks (Batae et al. 2020) talks about these institutions using specific financial metrics and indicators such as Return on Asset (ROA) and Return on equity (ROE). The paper is unique in its use of statistical comparison of variables that measure ESG and financial performance of banks based on three different classes: geographic regions in Europe, functional currency, and cluster analysis on GDP and population of specific European countries. It highlights the wide range of variables that affect company performance and ESG adoption. The study collected data from another study, the World Bank, and EuroVoc for 108 different European banks and conducted a cluster analysis on the macroeconomics variables of the study (the GDP per capita and population). My paper is related to this paper as it gains insight into the market's reaction to the stock price of banks when relevant ESG regulations are introduced to all firms. With banks holding such a prominent role in the distribution and flow of cash, stakeholders' perspective on their value, especially in alignment with adhering to newly introduced ESG policies is vital in understanding ways to improve this situation. In another paper, (Buallay 2018) expands on Batae et al. through the use of metrics such as ROA and ROE. The paper discusses the possibility of a relationship between sustainability reporting and financial performance. It mentions how sustainability reporting has become more widespread within companies as a result of shareholders' and stakeholders' demanding more transparency on environment, social, and governance (ESG) issues. The purpose of the paper was to investigate the relationship between ESG and bank's ROA, ROE, and market performance, and like the previous one, wanted to investigate whether ESG truly did have a positive effect on corporate performance. They found that there is a positive relationship between ESG and performance, and that ESG actually has a positive impact on performance. However, they also found that when looked at individually, the relationship between ESG disclosures

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and performance varies. So, unlike the first study where they primarily found positive relationships between ESG practices and financial performance, the second discovered some discrepancies in the positive influence of these adopting practices on banks' success. My paper is closely related to both these as it essentially includes banks as a specific lens to focus ESG implementation through. However, my paper is different from these two studies as it primarily targets the market's reaction, as opposed to financial performance, of banks when ESG related policies are introduced by nation-specific governments.

My paper also contributes to the literature on ESG and financial performance for public firms. As firms in the market can contribute immensely to the adoption of these practices, inherently galvanizing market-wide positive reactions to these operations, more firms will start to adopt them as well. (Lucia et al. 2020) discusses the potential correlation between good ESG application and improved financial performance for firms, specifically public companies. Like previous literature, the study focused on financial indicators such as Return on Equity (ROE) and Return on Assets (ROA) and their accuracy in Europe based on ESG and other economic metrics. The second goal was to assess whether ESG initiatives affect the financial performance of public European enterprises. Thirdly, they wanted to focus on how the findings from the first two goals contribute to the advancements of corporate social responsibility policies and practices in public firms in Europe. Using methods of machine learning and logistic regression models, they found that ESG accurately predicts ROA and ROE, and that there exists a positive relationship between ESG practices and financial performance. Furthermore, the study also found that the relationship became more evident when companies invested in environmental innovation, employment productivity and diversity and equal opportunity policies.

My paper contributes to this as along with banks, it analyzes the effects of ESG policies on firms' stock price and the market's reaction to announcements of these regulations. Along with this paper, (Huang 2019) acknowledges the longstanding and increasing interest between firms and their conduction of ESG activity. The study aims to find the relationship between ESG performance and corporate financial performance (CPF) and enables a review of a multitude of other papers to find the weight of empirical evidence showing a positive, significantly significant link between the two. The relationship suggests and furthers what other papers on this subject have also found between this connection. My paper contributes to this in a slightly different way by looking at the reaction of public firms to various government led ESG regulations, as opposed to assessing the relationship between ESG implementation and financial performance.

Thirdly, my paper contributes to the literature of country governance on ESG and financial performance. Since governments have the ability to catalyze the process of firms and banks enforcing ESG within their operations, assessing their influence is vital to understanding its worldwide adoption. For example, the study by (Mooneeapen et al. 2022) looks at the impact of government involvement and the characteristics of certain governments involved with either enforcing or avoiding ESG practices. A country's characteristics and proactive nature behind their intentions with promoting ESG are dependent on each nation and examining this connection with effectiveness of application is crucial. The study assessed the governance landscape based on three different characteristics: democracy, political stability, and regulatory quality. The study also focused individually on each of the characteristics of governance on ESG performance of companies and how the profitability of the companies are related. They were able to find that ESG performance for companies is greater in countries with a lower level of democracy and political stability. Corporate governance performance is higher in countries with higher regulatory quality as well. In addition, the study did find significant variation in the results for the three ESG pillars. The implications of the study show how governments can improve ESG performance for companies by enhancing the regulatory environment and enforcing policies. But, it also concludes that in countries with inadequate ineffective government landscape, companies proactively seek to improve their ESG performance as well. While my paper does not characterize the governance in which the policies are administered, the concept of involving governance into the discussion of implementing ESG practices and their reaction around the markets is key in discussion of its future implications. Developing on this idea, (Singhania and Saini 2021) analyzed different ESG

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framework disclosures between developed and developing countries. They noticed that a country's social and governance disclosures were enforced using either mandatory or voluntary codes, but which were not the sole reasons for increasing the country's overall ESG level. They realized that other policies by the government are required in order to facilitate this growth, including sustainability reporting and integrated reporting practices. Similar to the previous paper, while my paper does not focus on the individual governance types, it does highlight various policies and regulations that governments have used to stimulate ESG practices, and looks at the market's reaction at them through different firms and banks.

Lastly, my paper primarily contributes to the literature on analyzing market reactions to ESG disclosures or regulations. Since all financial markets around the world are not completely settled with the ideas and customs of ESG, analyzing different reactions to different regulations or disclosures, oftentimes announced by various governments, provides an insight to the present-day perspective of these institutions and their receptiveness to mostly unaware practices. (Wang et al. 2022) studied the stock market's reaction to various mandatory ESG policies and disclosures. In particular, they looked at the stock market's reaction to the ESG disclosure simplification act of 202. This specific regulation mandates public firms to disclose standardized ESG metrics. The study found a significantly negative reaction of nearly -1.1% by the market and was documented across all firms analyzed. Carbon intensive firms and industries, who are more vulnerable to the negative market reactions, were affected immensely. Additionally, the negative market reactions also reduce the value among firms with already high ESG scores. Another paper, (Serafeim and Yoon 2022) go into a more broad topic by analyzing which type of ESG news do firms react more notably to. Their study found that prices react more to financially-related ESG news that has more media coverage, addresses more social capital issues, and that the news is positive. Using prediction models, they separated different types of ESG news into expected and unexpected and discovered that markets react more to unexpected news. The study concluded that investors are motivated by financial rather than non- monetary incentives shown by the way they react more to news that affect their inherent fundamentals. My paper contributes to these two studies as the primary focus is looking at the market's reaction to news circulating ESG. Looking at banks and public enterprises, my paper adds on to these papers as it utilizes a culmination of various regulations, looking at firms in all kinds of industries and analyzes the effects of these ESG news releases, whether adverse or positive.

III. Methodology

This paper discusses the market's reaction to various ESG disclosures and regulations through institutions such as public firms and banks. Since these institutions play such a large role in the market and control much of a country's economy, assessing reactions to a phenomenon as proliferating as ESG would provide highly valuable insights into the willingness of banks to adopt these practices, as well as an insight into the vision of each firms' operations for the present and future. It is assumed that markets tend to behave similarly; however, industries can and do operate distinctly in comparison to one another. Since a variety of industries are present within markets, the study accounts for each one, including primary, secondary, tertiary, quaternary, quinary. Each industry represents essential goods and services all vital to a well-functioning society and economy, which enables the study to account for disclosure reactions from a wide range of public enterprises and financial institutions.

The study involves a quantitative approach in determining the answer to the question at hand, and utilizes a variety of data sets and processes to gather all the necessary values needed to analyze and, ultimately, ascertain an answer. The fundamental metric used in the study to evaluate the reaction of markets will be each corporation's abnormal return, which will permit us to analyze how positively or adversely each chosen firm has reacted. The culmination of these firms will act as the whole market, allowing us to then gauge the general perception of these policies in terms of ESG. In order to calculate this abnormal return, the market efficient pricing model will be used to calculate expected return (R_E) and the realized return (R_A) will be measured by analyzing historical price data using Yahoo finance. The Yahoo Finance database was used for ease in accessing historical financial data for all banks and firms mentioned in the study.

Market Model (MM): $R_E = \alpha + ß\ (R_M)$

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The abnormal return metric and the method of determining the market reactions in the study derives from the efficient market hypothesis. The idea is that the stock price is a reflection of all the information surrounding the stock, meaning that consistent alpha, or abnormal return, is impossible as the stock price will eventually absorb any new information. However, because the study only focuses on a short period after the disclosure, it is a key metric for the analysis. Public domain information, technical analysis, or even private information is all included and highlighted by the stock price and the hypothesis relates to the paper in that the abnormal return being calculated through the ESG regulations will not last long as it will eventually get accounted for. The hypothesis also mentions that all share prices are fair and it is not possible to sell undervalued or overvalued stocks for inflated prices. The data collection started by identifying 6 different policies and regulations set by governmental organizations, stock market exchanges, and other regulators. These policies had to cover a broad range of markets and regions to ensure a general perspective could be witnessed, as well as trends between various institutions and compare their respective reactions. Additionally, identifying these trends would aid in further expanding the reach of the study and discussing the wider implications in terms of future enforcement and adoption by corporations. In the end, the 6 policies were chosen covering regions like the US and Europe and target markets by looking at banks and public firms through the lenses of all three components of ESG, environmental, social, and governance. After that, the beta value (ß), which is the volatility of the stock and how it compares to the market it is in, needed to be calculated. It is a value between 1 and -1, with a value closer to 1 meaning the stock fluctuates very similarly to the market it is being compared with. Using a python- coded program on Jupyter Notebook, where *yfinance* and *pandas* files needed to be imported and downloaded, and the beta date, specific stock ticker, and market ticker needed to be entered for each individual company under each regulation. The program took data from Yahoo Finance directly as it was the chosen database, and using the *yfinance* module calculated the beta value by finding the linear regression between the daily returns of the stock and the respective market it is in. The beta value can also be calculated using the following formula:

$$\beta_i = \frac{Cov(r_i, r_m)}{Var(r_m)}$$

The beta value calculated for each firm used in the paper would be the 5 year daily returns and the date range would be a 5 year historical price window, one month prior to the event date of the regulation or policy being looked at. For example, an event date of June 7, 2023 would have a beta date range of May 7, 2017 - May 7, 2022. This would allow for greater precision when determining the beta value and subsequent values needed for the required analysis.

After, a secondary program using python on Jupyter Notebook is used to calculate the alpha value (α) and market return (R_M) during the designated period for each policy. The alpha value is a measure of a stock's return based on the associated level of risk, the beta value, and the market return during the defined period. It is used to understand how well a stock has performed compared to the amount predicted by the market model. The program, like the one for calculating beta, used the y*finance* and *pandas* module, along with *numpy* and the *statsmodel* Application programming interface (API). This program was executed for each of the firms under the different regulations. The program calculated the value by finding the y-intercept of the regression between the returns of the stock and market used for each firm. The stock ticker, market ticker, and date range needed to be inputted into the program. Additionally, the alpha value can be calculated using the following formula:

$$\alpha = r_a - (rf + \beta(r_m - rf))$$

Along with this, the market return is calculated by looking at the historical closing prices of the market (index which was usually the S&P 500 for US-based firms) and determining the return of the period date.

Next, the Expected Return of the stock is calculated using a third program coded with python, on Jupyter Notebook. Like other programs needed for the data collection, this one utilizes the *yfinance* and *datetime* modules to obtain data from the Yahoo Finance database, as well the beta value, alpha value, market ticker, and period range to calculate this expected return for the stock. The expected return is the expected return based on the market efficiency model which uses the alpha,

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beta, and market return values to calculate the stocks return for a specific period.

Finally, the last program culminates with all the collected values to calculate the abnormal return. This value was chosen as the indicator for assessing markets' reactions and see whether the market reacts positively, through the chosen firms for each regulation, or adversely. This program once again uses the *yfinance* and *datetime* modules and takes in the stock ticker, the desired start and end date, as well as the calculated expected return for the stock. With this, it outputs the abnormal return, which is actually a cumulative abnormal return as it, by subtracting the realized return calculated one, two and three days after the event, by the expected return.

$$Abnormal\ Return\ \ i = R\ \ rt - (\ \alpha\ \ i + (\ \beta\ \ i\ * R\ \ mt\ ))$$

For the data analysis, the paper aims to identify any trends or patterns emerging, and to distinguish the market's reactions to certain regulations over others. By examining the data, more specifically the abnormal returns for each stock, we can analyze the difference between banks and firms, as well as any differentiating values amongst the regions. The data will be displayed in the form of a table and graph, to visualize, as well as have all the precise numerical values to look at.

Figure. 1.1 - Example of a program outputting the closing price graph between index (S&P 500) and stock (Comcast Corporation) to calculate the beta value and later on, alpha value.

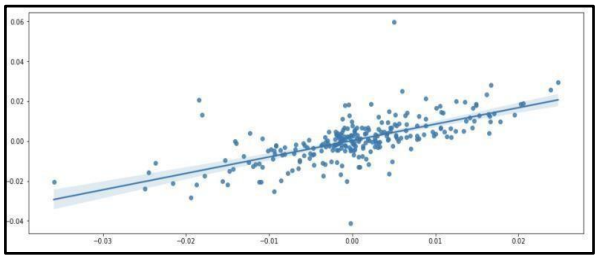
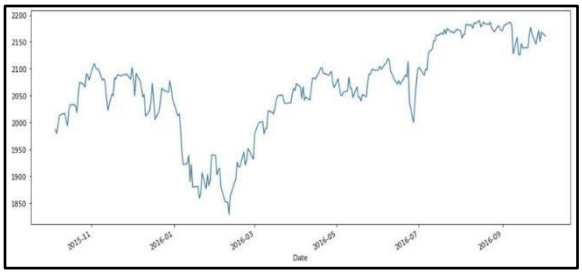


Figure. 1.2 - Example of closing price graph output by program calculating the beta value over desired date range.



IV. Data

Figure. 1.3 - Table and graph of calculated, numerical values on the SEC regulation, including the beta value, alpha, expected return, and abnormal return for the five selected firms in each industry

SEC Proposed Rule Requiring Enhanced Disclosure by Certain Investment Advisers and Investment Companies on ESG Investment Practices (May 25, 2022)				
	Beta (ß)	Alpha (α)	Normal Return	Abnormal Return
Chevron (CVX)	1.10445276	0.000137708	0.01057563119	0.00578602
Proctor and Gamble (PG)	0.5885478	0.0003355919	0.005897818	0.018274124
JP Morgan (JPM)	1.1540199	-3.97E-05	0.0109097264	0.02076289
Pfizer (PFE)	0.621676	0.000256017	0.0061313306	-0.002407672
Comcast Corporation (CMCSA)	0.8826253	-0.00012288	0.0082186	0.002307632

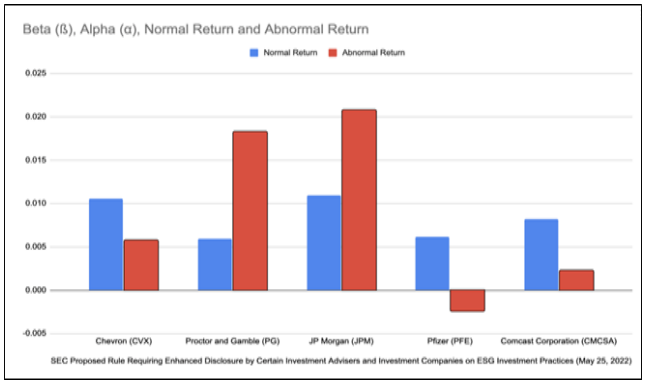


Figure. 1.4 - Table and graph of calculated, numerical values on the SEC climate action regulation, including the beta value, alpha, expected return, and abnormal return for the five selected firms in each industry.

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SEC's climate disclosure proposal (March 21, 2022)				
	Beta (ß)	Alpha (α)	Normal Return	Abnormal Return
Chevron (CVX)	1.155166	-0.000103939	0.012954188	-0.005544
Proctor and Gamble (PG)	0.59034	0.0002995319	0.0069728023	-0.00630919
JP Morgan (JPM)	1.16403529	4.64E-05	0.01320482	-0.0122739
Pfizer (PFE)	0.62694756	0.0002446328	0.007331719	-0.044238858
Comcast Corporation (CMCSA)	0.888253	-0.00011237	0.00992854	-0.0131427

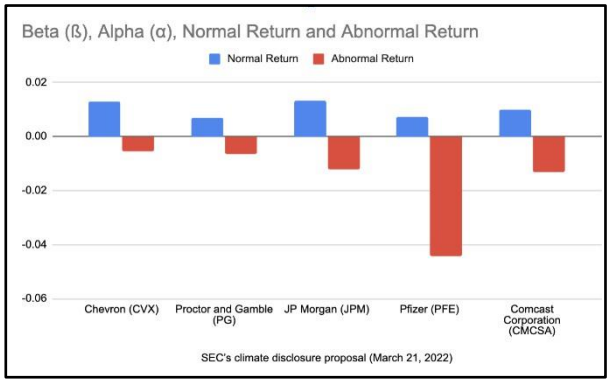
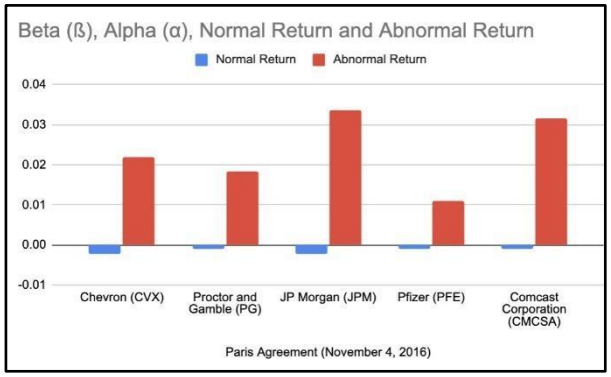


Figure. 1.5 - Table and graph of calculated, numerical values on the Paris Agreement, including the beta value, alpha, expected return, and abnormal return for the five selected firms in each industry.

Paris Agreement (November 4, 2016)				
	Beta (ß)	Alpha (α)	Normal Return	Abnormal Return
Chevron (CVX)	1.0918005	-0.000279652	-0.00209873	0.02185421
Proctor and Gamble (PG)	0.59849677	0.00010103238	-0.00089614	0.018291329
JP Morgan (JPM)	1.39632486	9.52E-05	-0.0022313	0.0335179827
Pfizer (PFE)	0.781111299	0.00027772	-0.001023713	0.010997245
Comcast Corporation (CMCSA)	0.9371483	0.00053163	-0.00102978	0.031692516

Figure. 1.6 - Table and graph of calculated, numerical values on the NASDAQ Board policy, including the beta value, alpha, expected return, and abnormal return for the five selected firms.



NASDAQ'S Board Diversity Rule (August 6, 2021)				
	Beta (ß)	Alpha (α)	Normal Return	Abnormal Return
Chevron (CVX)	1.19647799	-0.000376897	0.003642043	-0.0170087
Proctor and Gamble (PG)	0.621257	0.000159595	0.00224638	0.005107479
JP Morgan (JPM)	1.18381427	2.70E-04	0.0042463	-0.02034676
Pfizer (PFE)	0.68939675	-8.03E-05	0.002235383	-0.00325349
NVIDIA (NVDA)	1.56326319	0.0017145699	0.006965532	-0.0454103
Tesla (TSLA)	1.33624845	0.002031618	0.00652004	-0.016784
Microsoft (MSFT)	1.19052478	0.000777426	0.004776369	-0.005640518
Apple (AAPL)	1.192093	0.000863898	0.004868108	0.00372214
Amazon (AMZN)	0.92892169	0.0008004236	0.0039206486	0.0112245629

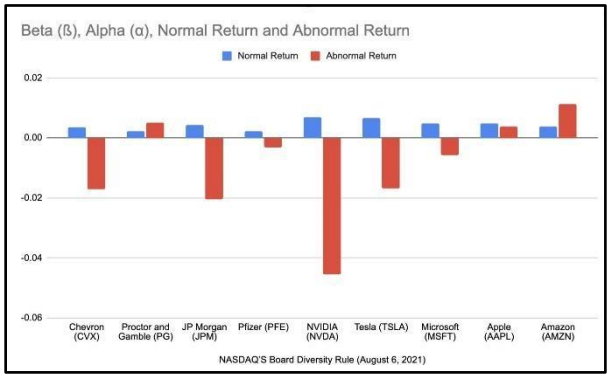


Figure. 1.7 - Table and graph of calculated, numerical values on the EU Fossil Fuels regulations, including the beta value, alpha, expected return, and abnormal return for the five selected firms in each industry.

EU lawmakers approve effective 2035 ban on new fossil fuel cars (February 14, 2023)				
	Beta (ß)	Alpha (α)	Normal Return	Abnormal Return
BMW (BMWYY)	0.95220199	-5.70E-05	-0.000323997	-0.00753327
Mercedes-Benz Group AG (MBGYY)	1.256728399	-0.0001245049	-0.0004769	-0.0000756
Volkswagen AG (VWAGY)	1.1396016	-1.33E-04	-0.00045223	-0.01497629
Renault SA (RNLSY)	1.3753419	-7.10E-04	-0.00109543	-0.0221888889
Porsche Automobil Holding SE (POAHY)	1.14199013	-0.00035558	-0.00067581	-0.007727
Ferrari NV (RACE)	0.97427	0.00039997	0.00012677	0.007650898

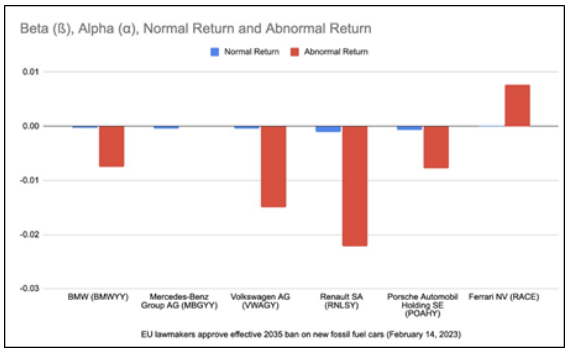


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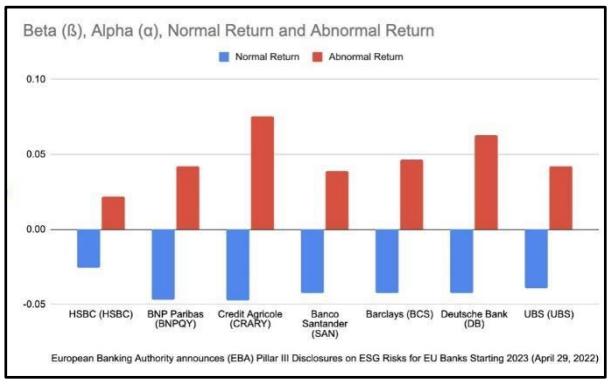
Figure. 1.8 - Table and graph of calculated, numerical values on the European Banking Authority enforcement, including the beta value, alpha, expected return, and abnormal return for the five selected firms in each industry.

European Banking Authority announces (EBA) Pillar III Disclosures on ESG Risks for EU Banks Starting 2023 (April 29, 2022)				
	Beta (ß)	Alpha (α)	Normal Return	Abnormal Return
HSBC (HSBC)	0.702808397	-9.41E-05	-0.0255951997	0.02172546
BNP Paribas (BNPQY)	1.284021947	-0.0003867198	-0.0469768	0.04234177
Credit Agricole (CRARY)	1.296608	-3.85E-04	-0.047432247	0.0756276016
Banco Santander (SAN)	1.159239586	-4.35E-04	-0.04249719	0.03902487
Barclays (BCS)	1.153223629	-0.000383933	-0.0422280839	0.0462549439
Deutsche Bank (DB)	1.1622799	-0.000483897	-0.04265665	0.0628996382
UBS (UBS)	1.08173406	-1.47E-06	-0.039251658	0.0422208



V. Results

Based on the data collected, one can see a very varied set of abnormal return values all dependent on the specific industry, as well as financial institutions being considered (banks or public firms). When looking at both the SEC regulations on climate and ESG investments, we can see very different reactions by the markets where one has predominantly positive reactions as can be seen from the primarily positive abnormal returns. While on the other hand, the other reaction is completely negative, with all companies having a negative abnormal return value. A difference between banks and public firms also can not be seen within the first two as there was almost no difference in reactions. Perhaps this can be explained because the regulation that has almost all positive abnormal returns enforces ESG data as a whole, it would encompass aspects from environmental, social, and governance. However, the second SEC regulation that indicates specifically a climate action disclosure could have a more negative reaction as climate, as a whole, tends to be more difficult for corporations to incorporate as it generally means reducing fossil fuel emissions - something which isn't immediately feasible for a vast majority of firms. For the Paris Agreement, we looked at the same five firms and analyzed the same abnormal returns. For this agreement, the market reactions seemed very positive at the time as all five of the firms had a positive abnormal return. There are definitely a multitude of reasons for this; however, one possible reason could be that this agreement occurred well before ESG had started to rise in prominence amidst worsening environmental and social conditions. The agreement, taking place in 2016, saw various world leaders come together to discuss mitigation tactics in order to slow down the worsening effects of climate change, including the US, which could be the reason for optimistic reactions from the market. As it was almost a world-wide disclosure that affected several major markets, the positive abnormal returns could have been a resulting factor as with the scale being so far-reaching, it could have meant that this positive reaction was inevitable.

When looking at the NASDAQ board diversity policy, we examined more than just the initial set of 5 companies to look at not only the effects of companies listed under NASDAQ, but also their spill- over effects into other companies listed under other stock exchanges. For this, there was more fluctuation as 3 companies experienced positive abnormal returns, Procter & Gamble, Apple, and Amazon, while the majority experienced negative returns. The spill-over had a negative effect on all the non-NASDAQ listed companies except for one, and all the NASDAQ listed companies with an exception of 2. With the policy trying to enforce diversity, which deals with the governance portion of ESG, it could be that these companies would react better with the market as a result being their board members already represent diverse-enough standards to meet the policy's requirements. Whereas the companies that experienced negative abnormal returns might be struggling to act in accordance with this specific part of the ESG standards, meaning the market would perceive them to lack important criteria for their stock to be worth as high as it is.

Next, when delving deeper into the EU fossil fuels mitigation regulation for vehicles, we looked at various European automakers and noticed all the carmakers with

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an exception of one, Ferrari, had experienced negative abnormal returns, highlighting the severely negative market reaction. However, this is quite self-explanatory as with lower fossil fuel emitting vehicles being a relatively emerging concept, especially within Europe, the mandation of these vehicles through enforcement would be associated with adverse responses and reactions from manufacturers, who have been producing fossil- fuel cars as their primary good for years. However, if data were presented on other regions and their markets' reaction to any sort of emission-reduction policy, we can likely believe that their companies and markets would have similarly adverse reactions to said policies as all around the world, electric vehicles or other energy-based transportation systems have not yet become the norm.

Lastly, the European Banking Authority's (EBA) announcement for mandatory ESG disclosures for all European banks had a positive abnormal return for all the banks used, which were most of the top European banks in terms of revenue. ESG has slowly started becoming a top priority for various banks around the world, especially firms in Europe. In this case, the positive abnormal returns for all the banks could be seen as stakeholders in European markets wanting more ESG enforcement and transparency from financial institutions and the announcement from the EBA can be seen as reinforcement for shareholders and stakeholders that their company is being aided by some sort of regulation to align their operations in being more environmentally and socially aware. Analyzing this specific case, it could also imply that banks themselves are self-initiating some of these efforts to assess more ESG datasets and keep it in account in their operations, prior to the announcement by the EBA, leading to the majority of positive abnormal returns from the top banks. However, as a whole, most of the abnormal returns from the firms analyzed do not suggest extreme reactions from the markets to these regulations or policies. Looking at the vast majority of them, the values are not very large, meaning firms did not see drastic differences between the expected and realized returns as a result of the news released on each of the event dates.

VI. Conclusion

Empirical results of this paper suggest that reactions of financial markets to ESG-related policies can be described at best mixed, that they are event-specific or case-dependent. Market reactions to policies are greatly dependent on a variety of factors, such as type of policy, market region, and financial institution examined, such as public firms or banks. With ESG being such a prominent and ever-growing aspect of our lives and economy around the world, understanding the market's reaction towards various regulations and the difference in reaction between banks and public firms is vital in one day sanctioning complete transparency and open ESG disclosures amongst all corporations, as well as more conscious and mindful operations towards pressing social and environmental issues.

When delving more into banks in particular, they tended to have more drastic reactions to government and other ESG-related disclosures. The abnormal return value, whether positive or negative, usually was larger than a majority of the other reactions from the sample of companies examined for each regulation. This could be because they drive a majority of the expansion in the market through financing and monetary distribution, meaning their involvement, or their lack of, is considerably important and is a substantial representation of the whole market's perspective on particular policies and regulations. Especially when looking at the announcement from the EBA, the banks examined all seemed to have a very similar reaction, which could be a good indicator of the general attitude of ESG in the region, and how proactive banks have become in addressing and adopting its practices, even prior to mandates being made to enforce them.

On the other side, public firms tended to be very dependent on the type of policy in question, the region, as well as the industry being examined for each regulation. Whether it was minor differences, such particular part of ESG, such as climate, as opposed to general ESG disclosures as a whole, or any spill-over effects occurring between markets in the region, to even it was a global agreement that spanned multiple international markets, their reactions greatly varied and primarily showed patterns within the specific regulation.

The broader implications of this paper lies in the fact that ESG becomes more prominent and discussed within the business world. As mentioned before, the position of ESG has increasingly become more noticed and talked

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about, resulting in a greater focus of literature and research examining its effects and other effects on institutions. This paper contributes to this literature by discussing the market reactions to various ESG regulations, distinguishing any potentially emerging patterns based on region, type of policy, and even difference between public firms and banks. Further studies can expand on this by possibly studying more firms for a wider variety of regulation enforcements, as well as highlight more trends and distinct reactions by markets.

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