Implications and Uses of Environmental, Social, and Corporate Governance (ESG) Scores

Jill Shapiro
Senior Honors Project
April 22, 2019
“Society is demanding that companies, both public and private, serve a social purpose. To prosper over time, every company must not only deliver financial performance, but also show how it makes a positive contribution to society. Companies must benefit all of their stakeholders, including shareholders, employees, customers, and the communities in which they operate.”

– Larry Fink, CEO of BlackRock
# Table of Contents

Acknowledgements .................................................................................................................. 4

Abstract .................................................................................................................................... 5

Introduction ............................................................................................................................... 7

Methodology .............................................................................................................................. 16

Findings ..................................................................................................................................... 18

Conclusions ............................................................................................................................... 34

Discussion and Recommendations .......................................................................................... 37

Appendix 1: Bibliography ......................................................................................................... 41

Appendix 2: Literature Review ................................................................................................. 44

Appendix 3: Wells Fargo ........................................................................................................... 51

Appendix 4: Companies of Focus within the Large Pharmaceuticals Industry ....................... 53
Acknowledgements

There have been many people who were influential in my process of writing this thesis. I would like to extend a special thank you to a few people who really pushed and helped me to finish this project. I’d like to first thank Professor Grace Zimmerman for her continued confidence in my abilities and advice throughout the project, Professor Aldo Musacchio for his constant guidance, and Professor Hagit Weihs for providing me with support throughout the process. I’d also like to thank all of the professors who were willing to speak to me about my topic, help me throughout the year, and provide feedback. This was an invaluable experience and it would not have been possible without the support and encouragement of all of the professors who took time out of their busy schedules to help me, and for that I am forever grateful. Additionally, thank you to my friends and family, without all of you I would not have been able to complete this project.
Abstract

As Larry Fink, CEO of BlackRock, said in his letter to CEOs, society is demanding that companies focus on their social impact. This is a strong departure from the current thought that a company’s sole responsibility is to increase returns for shareholders. This idea shaped the thinking for this paper, in which the intent is to understand how ESG, environmental, social, and corporate governance, scores can be more effectively used and to examine ESG score trends and relationships as they exist within specific industries. The goal is to be able to provide a deeper analysis on this topic, so that investors are able to better understand how they move in relation to each other and external events and to draw conclusions as to whether or not investors should be using ESG factors as part of their investment strategies. ESG investing is a new idea and therefore finding a data set is very difficult. In fact, the lack of standardized reporting is at the heart of the dilemma facing the CSR, corporate social responsibility, and ESG movements. To better understand this project, it is important to understand what both of these terms mean. ESG are the central factors used to measure the sustainability and ethical impact of an investment made by a company or business. While CSR is a self-regulating business model forcing companies to be socially accountable to itself, its stakeholders, and the public, meaning it is enhancing society and the environment instead of contributing negatively to it.

Based on the research I have done and my understanding of the studies that have already been performed, I believe that this topic will prove itself to be important from an academic and a practical standpoint. People are taking ESG scores at face value and treating these indices as the new norm, but do not actually understand them. As a result of this research, people will understand the underlying components and how they move in relation to each other. This is particularly important from a practical standpoint in that if people plan to use ESG factors in investment decisions, it is important that they understand how they move in order to make an informed decision.

This paper presents many insights and findings that fall within three categories, the impact of shocks on an industry, convergences and divergences within an industry, and the factors impacting the overall ESG score. As a result of this research, I was able to draw three main conclusions. I was able to
find that ESG scores are updated with a lag. Additionally, there is no specific factor that forces industries to converge or diverge. Lastly, the weightings that ESG rating agencies use do not always reflect the relevance of that factor for an industry. Based on these conclusions, it is clear that ESG scores are unpredictable and should not be taken at face value.
**Introduction**

There has been a recent shift in investment strategies in which asset managers choose companies based on environmental, social, and corporate governance criteria (ESG). Consequently, there have been a recent inflow of rating agencies that are specifically focused on creating indices to track how different companies are performing in these three dimensions. Unfortunately, few questions have been answered about the underlying methodology used by these rating agencies or the impact the ratings are having on the companies or the industry as a whole. These concerns include, but are not limited to, how the ESG indices are compiled, how the scoring differs across industries, how companies are reacting to these new ratings. The goal of this project is to provide these answers.

Although incorporating ESG scores into investment decisions is a relatively new trend, there has been a lot of research done on how ESG scores can be correlated to returns. There is still large debate on whether or not ESG investing leads to higher or lower returns. However, based on my research and the studies that I have found, it seems there is proof at this point that ESG investing will lead to higher returns in the long-term. It was definitely tempting to do further research into the correlation between ESG indices and returns, but there is already so much research out there that I thought it would be more beneficial for investors and academics to have research that focuses on how these indices actually work and whether these scores should be used as an investment criteria as a result of the lack of pre-existing research. This question allows for an interesting and complex discussion to occur in order for me to fully understand the intricacies and issues that stem from the ESG rating agencies lack of desire to present a transparent and easily understandable score.

The key issue of this thesis is that researchers and investors are taking ESG scores at face value, without taking the time to delve deeper into what they mean or how they move in relation to other companies within their industries. Based on previous research, it is my understanding that ESG scores should be looked at on an industry basis, which is what I will do for this project. By examining two industries, large pharmaceuticals and major banking, I am able to draw implications that will allow investors to better understand how these indices work for any industry.
This research will be useful from the academic and practical perspectives. Active investors need to understand these underlying forces to come up with an investment strategy that has a basis other than just the raw score at a specific time. Additionally, investors care about contagion and how industries move when a shock hits the industry. Lastly, the impact of the lack of transparency from rating agencies needs to be reduced in some way, therefore my research will help investors work against these issues. Academics care about this research because most previous work has taken ESG indicators at face value, but it will be beneficial for them to understand how these indices move and can be disaggregated to tell a more complete story about a company and an industry.

As a result of my research, the issues that come with a lack of transparency from ESG rating agencies are illuminated. Investors have little information as it relates to the methodology for rating a company’s ESG performance and therefore are taking these scores at face value. While there is a push for increased transparency, rating agencies are opposed to it, as their methodology is proprietary and confidential. Therefore, there does not seem to be clear evidence that rating agencies will become more transparent in the near future. In order to shed some light on the ways in which ESG scores work, I will look at historical trends in ESG scores, which will help me uncover the impact of shocks to an industry, convergences and divergences in an industry, and the factors that impact the overall score.

In the following sections, I will present information on where the data comes from. Followed by the methodology section, which includes how I will use this data to perform different tests on my hypotheses. I then include the findings of these tests broken down into the three broader topics that I examined. Finally, I will provide conclusions on the significance of these tests, which allows me to make a recommendation on the usefulness of these indices for investment purposes.

There are three main conclusions that come from my research. The first comes from the section of my findings that looks at the impact of shocks on the industry. As a result of the tests I ran, we are able to understand that because rating agencies update ESG scores with a lag, shocks are unpredictable and not particularly useful for people to be able to determine movements in other company’s ESG scores. I also found that based on the tests I ran in the convergences and divergences within an industry section that
these types of movements cannot be linked to a specific company setting a high standard for all other companies in the industry to strive for, again making it difficult for investors to predict ESG score movements within an industry as the movements can’t be linked to a specific aspect of an industry. The last major conclusion is based on the section where I tested which factor had the greatest impact on the overall score. As a result of the tests that I ran, it became clear that the weightings the rating agency uses may not fully reflect the relevance of that factor for an industry and therefore overall ESG scores should be questioned and not used at face value.
Bloomberg provides ESG scores from two different companies, Sustainalytics and RobecoSAM. Sustainalytics is one of two ESG research firms, and it is the only independent ESG research firm. Whereas, RobecoSAM is an investment company in Switzerland that focuses on economic, environmental, and social criteria in its investment strategy. The goal of this project is to understand the implications and uses of scores, therefore an independent source would be the best place to draw conclusions from. For this reason, I chose to analyze the ESG ratings provided by Sustainalytics because of its independence, as this made it less likely that there would be a strong bias within the ratings.

In order to understand the implications of using ESG ratings for investment decisions I have to properly analyze the data and understand how the ESG scores are measured. Unfortunately, most ESG rating companies do not publish their rating methodologies. “This lack of transparency is explained in large part by the proprietary, and confidential, nature of these ratings.” (Stubbs). Consequently, given that a representative from Sustainalytics came to Brandeis and explained how the scores were measured, and I was able to obtain the materials used in this presentation, it made more sense to use the Sustainalytics data as opposed to RobecoSAM’s where I did not know how the scores were calculated.

In determining its scores, Sustainalytics takes a vast quantity of ESG and corporate governance information and makes sense of it to help clients make more informed investment decisions. Sustainalytics provides the ESG ratings for Bloomberg, which is where I got the data for this project. For this reason, it was important for me to understand the methodology Sustainalytics used to determine each company’s ESG ratings. The key principles in measuring ESG are materiality, comparability, risk-based, forward-looking and transparency. Sustainalytics’s rating philosophy is “To rate companies’ performance in managing ESG-related risks so they can be easily compared to peers and within investors’ portfolios” (Smith).

Each company has an ESG score as well as scores for each of the individual ESG factors. These ratings are comparable over time and can be translated to relative percentiles, ranks and letter grades easily. It also provides peer comparison, industry rank, and position against market cap peers in the
relative performance section. Sustainalytics performs company controversy assessments based on 10 topic areas that are scored 1 to 5. Incidents, when relevant news is identified, are assessed on impact and risk. They are sourced, dated, and geographically pinned and linked to one of 25 event types. Sustainalytics collects and processes public news from thousands of global sources. Sustainalytics also provides historical 3-year trend data, which allows investors to understand growth areas for the individual company and compare it over time.

The analytical process occurs in seven steps that allows analysts to arrive at an ESG rating. First, they look at exposure analysis, then they identify key ESG issues, next is the materiality assessment. The materiality assessment is one of the most important factors for investors. It is done on an industry-specific basis and each of the key issues are mapped along two axes, business and sustainability impact. Both of these are equally important to look at. Next, they look at indicators and weights, each of the assessment units is evaluated by standardized criteria, and then weighted based on the relevance of the indicator. They then perform a controversy assessment, which analyzes the key impacts, the quality of the company’s management, and the risks of the company. Finally, they arrive at an ESG rating, which is the sum of the indicator weighted scores. Lastly, Sustainalytics provides an analyst view that explains how each company is managing the most relevant ESG issues.

Sustainalytics monitors the news daily and provides annual reviews of the ratings, including controversial events that require ESG index revisions. I am particularly interested in those because I want to understand how a public relations scandal related to environmental, social and governance issues affects a firm and its industry peers. Sustainalytics claims to have quality controls embedded within the research process and to have an internal peer review process prior to publishing rating reports and making changes to ratings. There are flags for unusual changes and checks for quantitative indicators such as, outliers, logical relationships, and unusual patterns. More importantly for this thesis, there is an Events Oversight Committee (EOC) that consists of senior executives and research directors who review and sign off on all significant controversy downgrades or upgrades. External complaints are tracked and addressed in a timely manner (Smith).
ESG scores are meant to be examined in comparison to competitor groups. As such, I created nine models on Excel using the Bloomberg add-in for various industry groups, based on NASDAQ competitor lists. I chose nine industries that are known to have ESG concerns. I then filtered out the companies for which Sustainalytics did not have ESG ratings. This would allow me to understand how much data I had, and which industries would be best to examine. Below is a chart that shows the nine industries that I looked at and the number of observations that had Sustainalytics ESG ratings within each industry.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Number of Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerospace</td>
<td>3</td>
</tr>
<tr>
<td>Beverages</td>
<td>9</td>
</tr>
<tr>
<td>Farming, Seeding, Milling Industry (including Tobacco Companies)</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Machinery and Components</td>
<td>25</td>
</tr>
<tr>
<td>Integrated Oils Industry</td>
<td>12</td>
</tr>
<tr>
<td>Large Pharmaceuticals</td>
<td>33</td>
</tr>
<tr>
<td>Major Banking</td>
<td>24</td>
</tr>
<tr>
<td>Natural Gas Distribution</td>
<td>9</td>
</tr>
<tr>
<td>Packaged Foods</td>
<td>11</td>
</tr>
</tbody>
</table>

From the exercise I summarize in Figure 1, I decided to focus on two industries that have large coverage and that will allow me to analyze whether there is convergence in the ratings and also how a big shock to one company will affect its peers. It was important for me to choose industries with a significant number of observations as well as interesting movement and trends within the scores. Once I understood how many observations I had for each sector as well as what historical ESG score trends looked like for the companies within each sector I decided to continue with the large pharmaceutical industry and the major banking industry.

The Large Pharmaceuticals Industry has the largest number of observations in comparison to the other industry groups. This industry is open to many ESG risk factors, ranging from price gouging to animal testing. As a result, the industry is highly scrutinized. Additionally, pharmaceuticals are an interesting industry to look at in terms of ESG as there is wide heterogeneity in ESG indicators cross-
sectionally and there have been many changes over the past five years, which is the period of time I will be examining. There are clear times that show convergences and divergences as well as specific companies including, Novo Nordisk A/S and Johnson & Johnson that are gold standards for the industry. Diving deeper into the large pharmaceuticals industry will be helpful in depicting how these convergences and divergences can be seen in other industries that investors may choose.

The Major Banking Industry is another important sector to examine further. Again, this industry was chosen partially because of the sheer number of observations, but also because there are some important implications that can be drawn from the industry. This is one of the first industries to be criticized for the gender gap, as there is a clear lack of female representation within the industry. Therefore, the industry as a whole needed to pay more attention to its ESG risks. There are many studies that show that gender diversity in the workplace is beneficial, but the culture at banks led to many women being overlooked, especially at the executive level. Some of the most important findings can be found by looking at the Wells Fargo & Company scandal that led to a large shock in the industry. I want to see how other banks reacted to the Wells Fargo governance scandal (where they explicitly defrauded customers by selling them products like insurance and credit cards without their consent or knowledge) and whether such a big scandal is an eye opener that led to banks, Sustainalytics and Wells Fargo to correct course.

The ESG scores are measured on a daily basis over a five-year period of time, February 28, 2014 through January 31, 2019, or 1,285 data points per company. This provides a significant number of data points and will allow me to see the specific dates for which convergences, divergences, spikes, or plummets occur for companies and industries as a whole. If monthly or yearly averages were used instead, some of the most telling and interesting implications would be overlooked.

Before diving deeper into specific implications, there are some more general observations that can be made. The first issue relates to the idea that it is important to understand that ESG scores need to be examined on an industry basis. Otherwise investors may choose not to invest in companies that do not have as high a score as other companies, but when compared to its industry, it is doing significantly better. This will allow investors to build a more diversified portfolio, while still incorporating ESG
criteria into the investment strategy. By looking at the most recent data in the banking industry, it is easy
to spot that there is no bank within the competitor group that has above a score of 85 and the industry
average score is 39.7684. This is the exact reason that it is important to not just take the scores at face
value. UBS, the company with a social score of 85 as of 1/31/19, is doing a significantly better job in the
social dimension than its competitors, however when compared with companies outside of the industry, a
score of 85 would potentially lead to lost investments as the mean in other industries is higher and the top
performers outperform UBS as well. Most investors take the scores at face value, therefore when looking
to invest in companies with high social impacts they will choose the companies with the highest social
scores without the knowledge of how these companies compare with competitors.

Another important implication that can be drawn stems from the concept that ESG is really a mix
of two different ideas. ESG scores can be disaggregated into three component scores. The environmental
dimension measures a company’s impact on the natural environment. The social criteria examines how a
company treats people, referring to both employees and the surrounding community. Lastly, the
governance factor focuses on a corporation’s policies. Based on these differing focuses, it is clear that the
environmental and social dimensions are focused on doing good for society, while the governance
component is focused on management and protecting stakeholders from the abuses of managers
(Serafeim). When examining the historical scores for Novo Nordisk, Celgene, and Mylan, from the large
pharmaceuticals industry this idea can be seen. Celgene outperforms Mylan in all areas, except for in
2016 when Mylan outperforms Celgene in terms of corporate governance. Having good management does
not mean that management cares about ESG issues, and this can be seen directly from this example. For
this reason, it is important to understand the factors most important to the investor. If the investment
strategy is to choose companies that have good management and satisfied employees, but that are not
necessarily sustainable, then the governance score should be emphasized more. On the other hand, if the
investor cares about making sustainable investments, then the governance score should still be factored in
because a company with poor management is less likely to follow through with its promise of sustainable
endeavors. In order for a company to succeed, it takes a great team, happy customers, and high returns
(Norton, “The 100 Most Sustainable U.S. Companies”). If a company emphasizes the sustainable component into its strategy and succeeds in having a good team to follow the strategy that the company and management believes in, then the employees are more likely to believe in and incorporate these environmental and social factors than a company with a lower governance score.
Methodology

I will be analyzing daily ESG score data provided by Sustainalytics from February 28, 2014 through January 31, 2019. I will analyze this data with the goal of better understanding three topic areas. These areas relate to, impacts of shocks on an industry, convergences and divergences within an industry, and how the specific components of the ESG index impact the overall score. I will be testing each of these implications looking at the large pharmaceuticals and major banking industries. These two industries will allow me to draw conclusions that can then be applied to other industries. Based on these findings and the literature review (Appendix 2), I will be able to answer my research question, “How do ESG scores really work and is it worth investing using ESG as a criterion?”

In order to test the impacts of shocks on an industry, I have set up two tests. The first looks at the coefficient of variation over the five-year period comparing the differences between when the company responsible for the shock is included in contrast to when that company is not included. I calculated the coefficient of variation by dividing the daily standard deviation of the sample by the daily average. This will allow for a deeper understanding of whether after a public scandal, the industry converges or diverges as a result. The second test will look at the stock price of the company that caused the shock in comparison to its overall ESG score. By normalizing the stock price and the ESG score, I will be able to draw conclusions on which of these responds to the shock faster. As a result of these two tests, we will be able to understand whether the shock was a wake-up call for the industry, investors, or the rating agency. Based on the assumption that investors are putting a strong emphasis on a company’s ESG impact, then it would make sense that after a major scandal the company that is being criticized should see its stock price going down, as well as a downgrade in its ESG score. As a result of this increased scrutiny of the industry, there should be industry-wide convergence at a high score. This would provide evidence that the other companies in the industry are focusing on their ESG impact as well, so their scores are going up.

The next implication that will be examined is the convergences and divergences within an industry. Again, I will be examining the coefficient of variation over time, but this time looking at a comparison between the two industries based on the percent change of the coefficient of variation over
time as of the end of the month. This will allow for a deeper understanding of whether industries are more or less likely to converge when a clear superstar firm exists within the industry. Additionally, I will test this implication with box plots to further exemplify the convergences and divergences over time within an industry. Based off of these tests, it would make sense that an industry with a clear superstar firm would face a greater level of convergence. Companies are more likely to strive to converge to a top score and be like the company that has set the precedent for the industry than they are to decide to not emphasize their positive ESG impacts.

The final implication that will be tested is which factor has the greatest impact on the overall score. By running a multivariate regression, we can understand the weights of each of the factors and whether there is evidence of additional measures that the rating agency includes in coming to the overall score. While rating agencies do not provide any clarity into the rating process, this is a way to back into their model to understand the weights that are assigned per industry. It would be expected that for the major banking industry, the governance factor would have the greatest weight because there have been many instances of criticism of the banking industry for issues that would impact the governance score. Most notably, the Wells Fargo scandal that is considered throughout this research project has clear governance implications. As for the large pharmaceuticals industry, the social factor should hold the greatest weight. The majority of the risk in this industry comes from price gouging, animal testing, and other social issues (and environmental issues), therefore the social score should be emphasized in this industry.
Findings

By looking at daily ESG scores from Sustainalytics over a five-year period for companies within specific industries a few implications can be drawn, which will be discussed and analyzed further. These findings can be divided into three sections relating to the impacts of shocks within an industry, convergences and divergences within an industry, and factors impacting the overall score. ESG scores are meant to be looked at in comparison to other companies within the same industry. They are relative measures and the weighting of specific factors vary depending on the industry and how important that factor is to the specific industry one is examining. As such, the analysis of these uses and implications are done on two industries, large pharmaceuticals and major banking. In the following three case studies, two industries will be used to support and provide evidence for these three implications. These types of movements can be made explicitly clear in the industries that will be examined and can be directly related to other industries that investors would like to incorporate into their investment strategies.

Impact of Shocks to the Industry:

Companies that face public scandals, often face ESG score plummets as a result. The issue with these plummets is that it is impossible to anticipate. ESG scores are done retroactively, based on the information that rating agencies are able to accumulate from the companies. Therefore, investors make the assumption that these measures are fairly static, and a sensible investment criterion for a value investor. However, these shocks can be incredibly time sensitive, which complicates the value investor’s mentality. Investors looking at ESG scores for investment criteria need to pay attention to the day-to-day changes in scores, even though the decisions are made on a long-term basis.

The situation at Wells Fargo can be looked at to better understand how a plummet can shock the rest of the industry. Wells Fargo has faced scandal after scandal that led to a downgrade in its ESG score, particularly within its governance score. Before looking at the industry shocks that came as a result of the scandals, it is important to understand what exactly happened at Wells Fargo.
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/8/16</td>
<td>Fake account scandal breaks open - WF fined $185M and fired 5,300 employees.</td>
</tr>
<tr>
<td>9/14/16</td>
<td>DOJ issued subpoenas.</td>
</tr>
<tr>
<td>9/27/16</td>
<td>CEO gives up much of his 2016 salary; first major executive leaves the company; head of division that created fake accounts steps down and forfeits some of her salary.</td>
</tr>
<tr>
<td>9/28/16</td>
<td>WF accused of illegally repossessing service members' cars.</td>
</tr>
<tr>
<td>9/29/16</td>
<td>WF promises to abandon unrealistic sales goals.</td>
</tr>
<tr>
<td>10/5/16</td>
<td>CA attorney general begins investigating possible identity fraud related to fake accounts.</td>
</tr>
<tr>
<td>10/12/16</td>
<td>CEO steps down and leaves company effective immediately.</td>
</tr>
<tr>
<td>11/3/16</td>
<td>SEC probe revealed – investigation related to the creation of as many as 2M fake accounts.</td>
</tr>
<tr>
<td>12/13/16</td>
<td>WF punished for failing to comply with certain provisions of the Dodd-Frank act.</td>
</tr>
<tr>
<td>1/23/17</td>
<td>WF acknowledges potential worker retaliation against workers who tried to disclose the fake account scandal.</td>
</tr>
<tr>
<td>2/20/17</td>
<td>Four senior bank employees, who worked or used to work in the division involved with the fake account scandal, the community banking division, are fired.</td>
</tr>
<tr>
<td>3/27/17</td>
<td>WF accused of &quot;egregious,&quot; &quot;discriminatory and illegal&quot; practices leading to a downgraded community lending rating, stems from factors beyond the fake account scandal; WF settles class action suit - deal promises $110M for wronged customers.</td>
</tr>
<tr>
<td>4/10/17</td>
<td>Former executives are asked for money back.</td>
</tr>
<tr>
<td>4/21/17</td>
<td>Settlement cost goes up to $142M.</td>
</tr>
<tr>
<td>6/14/17</td>
<td>WF accused of modifying mortgages without authorization from the customers.</td>
</tr>
<tr>
<td>7/27/17</td>
<td>WF admits it charged at least 570,000 customers for auto insurance they did not need.</td>
</tr>
<tr>
<td>8/4/17</td>
<td>WF sued for allegedly overcharging small businesses for credit card transactions by using a &quot;deceptive&quot; 63-page document meant to confuse them.</td>
</tr>
<tr>
<td>8/31/17</td>
<td>WF finds another 1.4M fake accounts.</td>
</tr>
<tr>
<td>10/3/17</td>
<td>WF admits to wrongly fining mortgage clients for missing a deadline, even though the delay was WF's fault - company pledges to refund the customers.</td>
</tr>
<tr>
<td>10/16/17</td>
<td>WF sold dangerous investments it did not understand - regulators order WF to pay back $3.4M to brokerage customers.</td>
</tr>
<tr>
<td>11/13/17</td>
<td>WF admits it illegally repossessed more service members' cars.</td>
</tr>
<tr>
<td>2/2/18</td>
<td>Federal Reserve punishes WF - bank is not allowed to grow its assets until it fixes its issues; bank overhauls its board of directors.</td>
</tr>
<tr>
<td>2/23/18</td>
<td>WF accused of &quot;long-standing pattern and practice&quot; of illegal lending in minority and low-income communities that reduced home values, limited tax revenue, and increased foreclosures by the City of Sacramento.</td>
</tr>
<tr>
<td>4/20/18</td>
<td>Consumer Financial Protection Bureau and the Office of the Comptroller of the Currency announce WF will be fined $1B for the car insurance and mortgage abuses.</td>
</tr>
</tbody>
</table>

As a result of these events, Wells Fargo’s governance score plummeted the effects of which can be seen starting on November 28, 2016 (Appendix 3). Because of Sustainalytics extensive review process for any changes in scores, it often takes a couple of months to be able to see the effects of events on an ESG score. However, the impact is not only seen for Wells Fargo, it has also impacted the rest of the
industry. To prove that this shock impacts the rest of the industry and to further understand what the impact looks like, I ran two tests. The first test looks at the coefficient of variation over time both including Wells Fargo and not including Wells Fargo, the events of the Wells Fargo scandal are tracked along the same graph. If the Wells Fargo shock was an eye opener for other banks, we would expect them to improve their ESG standards and thus we would hopefully see convergence in the industry, meaning a lower coefficient of variation. Finding divergence would signal that the rest of the industry did not adjust their practices after the Wells Fargo scandal. On the other hand, if there is more divergence after the Wells Fargo scandal, it could also be the case that Sustainalytics actually reacted and started to change rating standards for other banks.

In Figure 3, we can see that at the time when the scandal went public, all of the other banks’ governance scores began to converge slightly and then diverge. Just prior to the scandal, the entire industry was strongly converging. For two months after the scandal broke open, the industry continued to
converge, after which time the industry saw a long period of divergence. A significant portion of the divergence can be explained by Wells Fargo’s plummet, but even with the exclusion of Wells Fargo the industry as a whole was diverging. This goes against the hypothesis that the companies would converge in a time of increased scrutiny within the industry.

Based on Figure 3, we are able to draw additional implications. Most notably, the position of the coefficient of variation line with respect to the position of the coefficient of variation line that does not include Wells Fargo, allows for an understanding of what is impacting the divergence or convergence. Prior to the scandal, the coefficient of variation without Wells Fargo was above the coefficient of variation that includes Wells Fargo. This means that prior to the scandal, Wells Fargo had been somewhat responsible for the convergence within the industry. However, directly after the scandal, this flipped so that the coefficient of variation line without Wells Fargo was below the one that included Wells Fargo, which provides evidence that Wells Fargo was a major factor in creating divergence within this industry.

The final implication that can be drawn based off of Figure 3 has to do with the gaps between the two lines. The increases and decreases in the gap are directly related to the amount that the scandal is impacting the industry’s convergences and divergences. When both coefficients of variation are indicating divergence, and the coefficient of variation that includes Wells Fargo is above the coefficient of variation without Wells Fargo, then the implication is that the scandal is responsible for much of the divergence in the industry. This is the case from December 2016 until April 2018, but the magnitude of the impact changes throughout this period. The gap is particularly large after Wells Fargo was punished for not complying with certain provisions of the Dodd-Frank Act, this large gap lasted until four senior bankers who were involved in the scandal were fired. The gap became large again when Wells Fargo admitted to charging at least 570,000 customers for auto insurance that they did not need. This gap remained large until after Wells Fargo was fined $1B by the Consumer Financial Protection Bureau and the Office of the Comptroller of the Currency for the car insurance and mortgage abuses. When the gap increases, it means that the Wells Fargo is pulling the entire industry to diverge further.
These findings show that a scandal has a larger effect on the industry when the company is being punished or fined than when it is simply being scrutinized. However, a company can learn from its mistakes and change course. In the Wells Fargo example, this meant firing senior bankers who were involved with the scandal. However, this did not allow for Wells Fargo’s ESG score to go back to what it originally was as they were still being penalized for their other actions.

In Figure 4, I show the next test. There I examine Wells Fargo’s standardized stock price in comparison to its standardized ESG score over the 20-month scandal, September 8, 2016 to April 20, 2018, that Wells Fargo endured. To standardize both the stock price and the ESG scores, I set the September 8 price and score as 100, in order to compare the movements after that date. This will allow for an understanding of how the stock price was impacted in relation to the ESG score, which provides information on whether or not investment decisions change based on ESG scandals. Additionally, I will be able to draw conclusions regarding response time to scandals.

**Figure 4**
Wells Fargo’s Standardized ESG Score as Compared to its Standardized Stock Price
In Figure 4, it is clear that Wells Fargo’s stock price was impacted for the first two months following the public hearing about the fake account scandal. The response time in the stock price was immediate. However, the impact did not last very long. After the initial price decline, the stock price went back up, meaning that it did not suffer from the scandal. Conversely, in terms of the ESG score, it took two months for the fake account scandal to impact the ESG scores. However, the impact was long-lasting, as the downgrade lasted throughout the scandal and it never really recovered to its original level.

A further implication can be drawn from the movement over time of each of the standardized lines in Figure 4. The stock price fluctuated over the period and saw times with higher and lower prices. Whereas, the ESG score remained at a fairly consistent low score after the scandal. This can be seen based on the standardized value hovering around 70, besides March 2017, when it was slightly upgraded. Interestingly, the ESG score was slightly upgraded in February 2018, when the Federal Reserve punished Wells Fargo and the board of directors was overhauled. This provides further evidence that ESG scores are greatly impacted by punishments, fines, and direct action. In this case, once Wells Fargo was punished and it got rid of its board of directors, its ESG score was able to increase, although it has not yet recovered to its original level.

I ran the same two tests for the large pharmaceuticals industry. Mylan is a pharmaceutical company that most recently faced scandals surrounding its steep price increase for its sales of the EpiPen (Kozarich). For people with allergies, an EpiPen is a matter of life or death. Mylan took advantage of this and drastically raised the price of a two-pack from $100 to over $600 by May 2016 (Kozarich). After these changes, Mylan’s ESG score dropped significantly, particularly its social score, and has only recently began to increase again. To further understand how this plummet shocked the rest of the industry, the same two tests that were used in the major banking industry are performed again. A few implications are able to be seen for this industry as well.
After May 2016, when Mylan’s price reached $600, the industry saw a quick period of divergence followed by a steep two-month period of convergence. This convergence lasted until right around the time of Mylan’s hearing, after which there was almost a year of divergence, finally followed by a year and a half period of convergence. As opposed to the major banking industry, the large pharmaceutical industry is not impacted as clearly. This indicates that the size and publicity of the scandal has a strong impact on whether or not the rest of the industry will be impacted. In comparison to the Wells Fargo fake account scandal, the Mylan price gouging was a much smaller scale problem that received a lot less publicity. As a result, there was not as large of a shock to the rest of the industry.

Additionally, the position of the coefficient of variation line that includes Mylan in relation to the coefficient of variation line without it shows that initially, the Mylan scandal did not have a large impact on the industry’s convergence, as the two are pretty much equal. However, after the hearing, the
The coefficient of variation without Mylan was below the coefficient of variation that included Mylan, something that would imply that in reality, the hearing was what caused the shock to the industry and caused this divergence, not the price hike itself. Interestingly, in June 2017, Mylan began focusing more on its ESG impact as well as its ESG disclosure (“Mylan Worldwide”). At this time, the industry began to converge. The coefficient of variation without Mylan was still below the coefficient of variation that included Mylan, which means that again, Mylan sped up the convergence that resulted.

The second test looked at Mylan’s standardized stock price as compared with its standardized ESG score, from the time of the price hike. This will provide evidence on how the ESG score and the stock price are related, and which is impacted first.

![Mylan’s Standardized ESG Score as Compared to its Standardized Stock Price](image)

Similar to the major banking industry, after the hearing the stock price immediately went down, whereas it took longer for the ESG score to be downgraded. However, different from the major banking industry, after the initial shock, Mylan’s stock price never reached higher than it was prior to the scandal for the rest of the period examined. This goes against the idea that a smaller scandal has less of an impact, but it does agree with the hypothesis that a scandal results in a lower stock price. Additionally, the impact
of this scandal did not only occur for Mylan’s stock price, but the entire health care industry was punished as well.

Further implications can be seen in the movement of the standardized data. In terms of fluctuations, both Wells Fargo and Mylan’s stock prices fluctuate after their respective scandals broke open. However, Mylan’s stock price after the date of the hearing never exceeds the initial price over the rest of the relevant period, while after two months of Wells Fargo’s scandal, its stock price had already exceeded the price when its scandal broke open. Additionally, the ESG score plummeted quickly and remained at a consistently low level until August 2017, when the rating agency began to recognize Mylan’s increased ESG efforts. In September 2018, Mylan’s ESG score finally surpasses its score when the hikes and the hearing occurred. This can be linked to its May press release announcing a new 2017 Global Social Responsibility Progress Report, which shows that the company was truly taking its ESG impact into account and disclosing it to the public as it suggested it would (“Mylan Reports”).

**Convergence and Divergence within an Industry:**

Convergences and divergences do not just occur when a shock hits an industry. There are instances of industries converging or diverging as a result of increased focus by companies on ESG factors. Understanding these movements can be useful in determining industries that are highly focused on its ESG impact. The heterogeneity of the large pharmaceutical industry allows interesting implications to be understood.

Novo Nordisk A/S has been the gold standard for years and continues to remain at the top in terms of ESG integration and ESG scores. Novo Nordisk has focused on creating shared value and takes the environmental, social, and financial impact into account when making all business decisions. As one of the initial companies to fully embrace the idea that a healthy economy, environment, and society are integral in creating long-term business success, Novo Nordisk makes sure to be transparent about all business decisions and includes all financial, social, and environmental performance results in one integrated annual report (“Triple Bottom Line”). Novo Nordisk does not just preach these ideals on its
website and then not follow through. The Sustainalytics ESG scores make it clear that Novo Nordisk deserves its place at the top with a score of almost 100 for the entire 5-year period (Appendix 4).

With a role model like Novo Nordisk, Celgene, a company that was initially in the middle of the pack in terms of ESG scores, was trending upwards until the middle of 2018 when the companies score began to drop, which potentially can be linked to its pending acquisition by Bristol-Myers Squibb Company. Based on the Sustainalytics 2014 Pharmaceutical Sector Report, Celgene Corporation was noted as the biggest laggard, as a result of both its performance and market cap (Goedhart). In just five years, Celgene increased its score by 30 points. This is the type of company that investors should look for as it clearly focused on its ESG impact and made a valiant effort to make changes that bring it closer to the gold standard set by Novo Nordisk. This type of convergence had a positive impact on the industry as well as society as a whole (Appendix 4).

However, Mylan has taken the opposite approach of Celgene and has not paid attention to its ESG scores. Instead of focusing on ways to improve its score, Mylan allowed its score to plummet and diverge from the industry, as was discussed in the previous section.

By looking at these three companies within the pharmaceuticals industry, it is clear that even within a specific industry ESG scores do not move in a specific pattern. Some companies will choose to emphasize their ESG efforts, others will attempt to put a larger focus on increasing their ESG practices, while a third group will not care about their ESG impact at all. Looking at the broader industry as a whole, over the past 5-year period, the industry has seen some level of convergence. The box plot below looks at the data from the last day of each quarter to understand whether the industry is converging or diverging over time.
While the median, in Figure 7, hovers around 50 throughout the 5-year period, the first and third quartile do move up and down, which provides evidence of convergences and divergences throughout. The industry begins to converge in the second quarter of 2014 from the top towards the median as opposed to the bottom increasing. This goes against the hypothesis that having a top performing firm, in terms of ESG, will result in the entire industry converging to a higher score, as the only evidence of convergence indicates that the industry is converging at a lower score.

To contrast the large pharmaceuticals industry, the major banking industry does not have a superstar firm that we would anticipate would cause a convergence at a high level. The box plot below shows the convergences and divergences that occur in the major banking industry.
This again goes against the idea that a top performing firm leads to a greater level of convergence at a higher level. The major banking industry does not have a top performing firm, but shows a lot more convergence during this time. Although it is not at a high level, there is much more evidence of convergence within this industry.

To further compare these two industries, the next test looks at the percent change in the overall ESG score coefficient of variation over the 5-year period based off of the last day of each month.
This graph shows that on average the major banking industry fluctuates much more than the large pharmaceuticals industry in terms of both convergences and divergences. Each positive spike on this graph represents an increase in an industry’s divergence, while the negative spikes represents an increase in an industry’s convergence. Based on this graph, it is clear that the large pharmaceutical industry is much more stable in terms of its overall ESG score as opposed to the major banking industry, which experiences much greater fluctuations, both in terms of its convergences and divergences. This provides further evidence against the hypothesis that a superstar firm leads to greater industry-wide convergence.

**Factors Impacting the Overall Scores:**

As a result of the lack of transparency in the rating agency’s methodology, investors cannot fully understand the implications of the scores. This lack of transparency makes it so investors are unable to
choose to invest in companies because they are doing a particularly good job with the aspect that the investor cares most about. For example, if someone is looking to invest in companies that are focused on gender equality and therefore have a high percentage of female executives, it is nearly impossible to understand that information from ESG scores given the limitations that exist from this lack of transparency. One way to mitigate the impact of the lack of transparency is to understand at the very least which factor score has the greatest impact on the overall ESG score. By running a multivariate linear regression using the daily industry average of the overall score as the dependent variable and the daily industry average for each of the factor scores as the independent variables, one can gain more clarity on the weights of each of the factors in calculating the overall score. The following charts for the large pharmaceutical and major banking industry coefficients help depict which factors are most important for Sustainalytics.

<table>
<thead>
<tr>
<th>Figure 10</th>
<th>Large Pharmaceuticals Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>Unstandardized Coefficients</td>
</tr>
<tr>
<td></td>
<td>B</td>
</tr>
<tr>
<td>1 Social Average</td>
<td>.645</td>
</tr>
<tr>
<td>Environment Average</td>
<td>.038</td>
</tr>
<tr>
<td>Governance Average</td>
<td>.309</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Figure 11</th>
<th>Major Banking Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>Unstandardized Coefficients</td>
</tr>
<tr>
<td></td>
<td>B</td>
</tr>
<tr>
<td>1 Social Average</td>
<td>.249</td>
</tr>
<tr>
<td>Environment Average</td>
<td>.407</td>
</tr>
<tr>
<td>Governance Average</td>
<td>.348</td>
</tr>
</tbody>
</table>

The unstandardized coefficient B of Figure 10 and Figure 11 can be used to determine how much the dependent variable moves in response to each independent variable when the other independent variables are held constant.
variables are being controlled. Based on the unstandardized coefficient B, the large pharmaceuticals industry is most impacted by the social factor score, while the major banking industry is most influenced by the environmental factor score. In terms of the standardized beta coefficient, which compares the strength of each individual independent variable based on normalized measures to the dependent variable, the same relative weights are seen. Sustainalytics weights its scores based on the relevance of indicators, which means that Sustainalytics has determined that social factors are most relevant in the large pharmaceutical industry and that environmental factors are most relevant in the major banking industry.

These weights help explain why the Wells Fargo scandal was not as noticeable as would have been anticipated when looking at the historical trend of the overall ESG score (Appendix 3). The Wells Fargo scandal was a corporate governance issue, but the banking industry’s scores are most influenced by the environmental score, which lessened the impact of the scandal when looking at the overall ESG score trends and the overall coefficient of variation.

Still, one has to wonder why Sustainalytics would put such a large weight on the environmental factor. Banks are much more susceptible to governance issues than they are to environmental issues. As a result of the number of locations that a bank operates resulting in potential environmental impacts of normal operations, which include high energy usage and significant paper waste, it is reasonable for the environmental factor to hold some weight in the overall ESG score calculation. However, it should not hold a greater weight than the governance factor, especially not less than a decade after a financial crisis in which banks clearly took on risks that shareholders did not expect them to take.

As for the large pharmaceuticals industry, as was hypothesized, the social factor has the greatest influence. The weight is over 50%, so any company that faces scrutiny for a social issue will see a strong decrease in its ESG score. This is why the Mylan scandal is so clearly seen in looking at the overall ESG score trend (Appendix 4).

Interestingly, the industries actually respond in a corresponding manner to the weights that Sustainalytics applies to the respective relevances. As has been noted, the Wells Fargo scandal fell within the governance score, which is not the criteria that holds the most weight in the overall score. Therefore,
it does not reply as quickly to the scandal. However, when looking at the large pharmaceuticals industry, Mylan replied much faster and began to put a larger focus on its ESG impact. This mirrors the fact that for Sustainalytics, the social score holds the greatest weight and therefore Mylan responded faster.
Conclusions

As a result of the findings from the previous section, some major conclusions can be drawn that are influential in understanding how ESG scores work. By looking at both historical ESG scores and stock price analysis, profound implications can be drawn to build on this understanding. The first implication that was tested looked at how plummets in a company’s ESG scores would shock the rest of the industry. As a result of this deeper examination into plummets within the large pharmaceuticals and major banking industry, it becomes clear that ESG scores are not useful for anticipating shocks to the industry. Even if it were useful to anticipate the plummets, the scores do not help investors understand what implications these shocks will have in the stock market. Both scandals were highly publicly scrutinized, the Wells Fargo scandal more so than the Mylan one, but the ways that the individual industries responded and their individual stock prices were impacted were very different.

Additionally, this analysis allows for conclusions to be drawn as to whether the resulting shock was a wake-up call for the companies in the industry, the rating agency, or the investors. It is important to understand who is being impacted by these shocks to be more capable of understanding these implications. For major banking, the companies within the industry are most influenced. This can be seen in Figure 3, which had the coefficient of variation over time both including and not including Wells Fargo. Had there been evidence of the rating agency scrutinizing the industry more, there would be increased divergence with the coefficient of variation without Wells Fargo line being higher than the one that included Wells Fargo. However, this was not the case, indicating that the companies themselves were the ones being influenced. Similarly, the large pharmaceuticals industry’s coefficient of variation over time that included Mylan was consistently above the coefficient of variation without Mylan during the period between the hearing and Mylan’s increased ESG emphasis. This means that the companies within the industry are responsible for the divergence not the rating agencies. In terms of investors, there was no impact in the major banking industry, which is made clear by the fact that after the initial shock the standardized stock price was above where it had been when the scandal was publicized. This shows that as much as investors want to incorporate ESG factors into investment strategies, they are also looking for
high returns and therefore may not actually take scandals into account when making investment decisions. Conversely, in the large pharmaceuticals industry, Mylan’s stock price did decrease over the period as did the rest of the industry’s. Therefore, it is clear that the investors are impacted within this industry as investors are less likely to invest in companies that have a social scandal as well as in the respective industry. These conclusions provide further support that the response to shocks are different by industry. While these examples provided a wake-up call for the companies in the industry, the stock market and investors replied in different ways. This makes it difficult for investors to be confident in their investment strategies when an already unpredictable shock hits.

The next finding looked at convergences and divergences within an industry. When analyzing an industry based on ESG scores, it is important to understand which specific companies are doing well, in addition to whether the industry as a whole is doing well. The convergences and divergences help pick out the leaders and laggards. While looking at the score that the industry is converging at will allow an investor to understand whether the industry as a whole is doing well or not. The analysis of this section went against the initial hypothesis that industries with gold standard firms would experience convergences at a high score. By proving this hypothesis wrong, there is stronger evidence to support the unpredictable nature of these ESG scores. With the exception of events that cause shocks to an industry, which was discussed previously, these findings made the reasoning for convergences and divergences in an industry unclear. If investors are unable to link convergences or divergences to specific features within an industry, it becomes more difficult to integrate ESG factors into investment strategies.

The final area that I analyzed looked into which factor had the greatest impact on the overall score. In order for an investor to fully understand the implications of the ESG score, it is important to understand which component has the greatest effect on the overall score. For Sustainalytics data, understanding the relative weight of each factor, allows an investor to know what factors are the most relevant for that industry. By running a multivariate regression, the impact of the lack of transparency should be mitigated because an investor will at least understand from the broadest of terms what factors are most relevant to an industry. This also allows investors looking to invest in a specific issue to at least
choose industries where those factors are most relevant. For example, if an investor is focused on product liability, a social factor, then at the very least, with the lack of information that is currently disclosed by rating agencies, an investor can choose to invest in industries where the social score has the highest weight because this shows that the social factors are most relevant for that industry. While this does not mean that the investor is necessarily choosing a company that does a good job in the product liability component, it at least gives the investor a better chance of investing in the component he or she cares most about. This type of investor may choose to invest in large pharmaceuticals because Sustainalytics puts the largest weight on the social factor in determining its overall rating.

However, based on the multivariate regression that provided the weightings that Sustainalytics used in its model, the ideal that was just mentioned, may not be possible. According to the model, the major banking industry is most greatly impacted by the environmental score, which according to Sustainalytics rating methodology would mean that the environmental factors are most relevant to the major banking industry. This does not make sense as most scandals that the major banking industry faces relate to governance issues. As a result of these findings, it is clear that by backing into the model used for weighting by Sustainalytics, some of the overall ESG scores may not be weighted properly. These misaligned weightings could result in investors choosing industries that seem to have a specific factor that is most relevant, when in reality that is not the case.
**Discussion and Recommendations**

As a result of this research, it is clear that without increased transparency into the ESG rating agency’s methodology, investors will continue to struggle to make informed investments. This is one of the reasons that investors are taking the scores at face value. However, there are still techniques that can be employed by investors to combat this issue. In particular, looking at historical trends in ESG scores for companies as compared with the rest of their industry will be one of the best ways to allow for a diversified portfolio that also incorporates companies looking to make a positive impact on society. The issue still stands that without the increased transparency, investors are still unaware of what specific issues companies are focused on and how they are impacting society as a whole. It is very clear when a company does something negative to society as these instances are highly scrutinized by the news; however, companies that are having a positive or even neutral impact on society are rarely discussed. If rating agencies were to disclose the measurements that are used in calculating a company’s ESG score, investors would be able to pick and choose the issues that are most important to them and invest on that basis. For example, some investors are focused on environmental issues related to pollutants, but do not care as much about water usage. These people may choose to invest in very different companies than someone with a different focus, but without this more granular data, it is very difficult to make these specific decisions when looking at the environmental score in its entirety. Additionally, the lack of transparency allows for an unknown level of bias in the ratings. For an investor to make a knowledgeable decision, they at least need to understand what qualitative and subjective factors were taken into account in determining a company’s ESG score. This research will prove to be valuable for academic and practical use. Based on this new understanding of how ESG scores move, it would make sense for a value investor to incorporate ESG criteria into investment decisions. However, the scores are measured retroactively, and are very time sensitive, therefore it is very difficult for value investors to incorporate these measures. For this reason, I recommend that investors use ESG scores as representative measures, but because they are so sensitive to unpredictable shocks and convergences or divergences, it does not make sense to use it as a primary investment strategy.
Although people would really like to see impact and ESG investing become a primary investment strategy, at this point there are too many flaws with the measurements that it does not make sense for these scores to be the ultimate decision-making factor. This is an up and coming area of research and therefore there are still many issues that need to be worked out. Until rating agencies begin to provide more information on their rating metrics, it would be too risky to base investments off of factors that an investor does not fully understand. Additionally, the trends are looking backward, and investors need to anticipate the future. The metrics are not easy to predict, as there are so many instances of major plummets as a result of a scandal that leads to a shock in the rest of the industry. These are some of the many reasons that it is not sensible for investors to use ESG scores as a primary investment criterion.

Going forward, research should be completed on the implications of ESG integration as a means of checking a box as opposed to full ESG integration and belief in the benefits. Many states are beginning to mandate companies to incorporate certain factors, such as California requiring that all companies based there must have at least one woman on board. The theory behind this is that a more diverse board performs better and is less susceptible to groupthink (Norton, “The 100 Most Sustainable U.S. Companies”). If companies were to come to this decision on their own that would be one thing, as it could be integrated into their culture. However, it would seem that the companies that are only doing this to follow the law will not see the benefits of a more diverse board. These women will likely be tokenized, and their ideas will be ignored. It would seem that mandates would be counterproductive and potentially cause a greater rift between genders where the men on board will think that the woman was only awarded the seat because the company was required to, as opposed to because she deserved the seat. Another example would be when a company is required to have independent board members, and instead adds friends to the board so that they are not technically insiders, but are easily controlled by the insiders. In both examples, a company has the choice to fully embrace the potential benefits of the mandate and integrate it into the corporate culture or the company is able to just do the bare minimum in order to meet the mandate. It would be interesting to look deeper into this idea in order to understand how much ESG integration is required for a company to see the related benefits.
Another area that could be researched further is what will actually cause ESG integration for companies. There are efforts from many different realms, but which have the greatest influence (Norton, “The 100 Most Sustainable U.S. Companies”). In my opinion, the government mandates have the potential to lead to blind compliance, whereas money managers and customers will lead to further integration into the corporate culture. If money managers threaten to stop investing in companies that are not involved with ESG integration, companies will realize that they need to figure out how to incorporate more ESG conscious practices and integrate it as part of the company culture, in order to maintain investments that help these companies survive. Whereas, the government would be fine with blind compliance, money managers would look to rating agencies or come up with their own measurements to understand the level of integration, which is why it would seem that they would have a much larger influence. Additionally, if customers stop buying products from companies that do not implement sustainable practices, then the company will be forced to integrate ESG factors so as not to lose customers and therefore sales. While this is all speculation, this is an important area for further research because in order for ESG to have the full level of benefit that it could, it is imperative to understand who will need to continue the push to get more companies to integrate these practices into their corporate culture. ESG integration must come from the top level of management otherwise no one will take it seriously. However, once management believes in the vision, it is important to look at how the ideas actually filter down to lower levels that would be interacting with these changes on a daily basis. The view is nice from the C-Suite, but implementation happens at lower levels, therefore the cause needs to be understood by these lower levels to make sure they feel the same type of passion in integrating these ideals into the company as the C-Suite does. Therefore, this study would have to look at what external forces would have the greatest impact on top management, and then how to engage the entire company into integrating these ESG related changes.

While those areas of research were outside of the scope of this project, they are important questions that need to be considered in the future in order to understand ESG scores better. ESG is such a new area of academic research, therefore there is a lot of work left to consider. However, the research that
I completed will provide both academics and investors with a better understanding of how these indices actually work. Additionally, it will prove that as much as people want to be able to incorporate ESG scores into investment decisions, this idea is still in its infancy and there are so many flaws that make it too risky to be used as a primary investment strategy. However, this does not mean that ESG scores should be ignored in investments. I strongly feel that rather than being a primary factor, these scores should be considered as a representative metric and be incorporated as a part of an investment strategy.
Appendix 1: Bibliography


Norton, Leslie P. “The 100 Most Sustainable U.S. Companies.” Barron's, Barrons, 8 Feb. 2019,


## Appendix 2: Literature Review

### Reference | Notes
--- | ---

**Theme 1: Previous Studies**
- This is such a new area of research, therefore the only studies that have been conducted are on the biggest, broadest questions. There is no research that starts to really delve deeper into the uses and implications of ESG scores.

| Serafeim, George, and Adam Seessel. "Does Sustainable Investing Lead to Lower Returns?" *Barron's* 98.26 (2018): S4-S5. ProQuest. Web. 25 Nov. 2018. | i. A study showed that over 18 years, companies that developed organizational processes to manage, measure, drive, and communicate performance on ESG issues outperformed a control group with very similar profitability, size, capital structure, and market valuation multiples.

| Rublin, Lauren R. "ESG Roundtable: Great for the World, Good for Investors." *Barron's* 98.26 (2018): S6-S11. ProQuest. Web. 25 Nov. 2018. | i. A study analyzed 2,000 stocks over 22 years and showed that firms improving performance on material ESG issues had much higher risk-adjusted returns. Examples of the ESG issues included, the environmental impact in the power sector, workplace safety for mining, and employee inclusiveness for IT.

| Kim, Crystal. "Getting Started in Sustainable Investing." *Barron's* 98.26 (2018): S12-S3. ProQuest. Web. 25 Nov. 2018. | i. Jeremy Grantham, founder and CEO of GMO, looked at total returns over multiple periods for the S&P 500 index, plus a broad-based stock portfolio that did not include one sector or another. Based on returns from 1989 through September 2017, his findings showed that there is little danger in eliminating any sector for any reason. The difference between the worst-performing portfolio (absent health-care issues) and the best performing portfolio (absent financial shares) was 0.5% in total.


ii. A questionnaire was sent to 251 fund managers and their teams. The questions were aimed at understanding the level of ESG integration and the method of integration.

iii. Findings:
- The issue of socially responsible investing, SRI, includes managers who do not label themselves as socially responsible.
- ESG investors would rather company level analysis as opposed to analysis at an industry level.
- “Conventional fund managers have adopted features of responsible investing in their investment process.”
- ESG investing resembles fundamental investing in many ways.
e. The location of the fund manager has a direct impact on their attitude towards responsible investing. US-based managers are more skeptical about the benefits, while European managers are more optimistic.

iv. Another study is discussed that was run by Chugh and Meador, which showed that “Analysts emphasize the long-run economic and financial performance of a company, in particular the long-term growth rate of earnings and long-term return on equity.”

| Stubbs, Wendy, and Paul Rogers. “Lifting the Veil on Environment-Social-Governance Rating Methods.” Social Responsibility Journal, vol. 9, no. 4, 30 Sept. 2013, pp. 622–640., doi:10.1108/srj-03-2012-0035. | i. As the investment industry recognizes the idea that ESG factors have an impact on financial performance and investment returns, even though they are not included on the profit and loss statements, criticisms are arising about the lack of transparency in the methodology of rating agencies. The goal of this study was to look into the “Issues of subjectivity, transparency and uniformity of ESG ratings by exploring the methods used to assess ethics performance by an Australian rating agency.”

| | ii. Findings:
| | a. “A level of subjectivity is inevitable in ESG ratings and the call for uniformity may inhibit innovation, but these issues can be addressed by increased transparency of the rating method.”
| | b. Generally accepted standards would need to be developed in order to increase objectivity.
| | c. Uniformity is not achievable in this competitive ESG rating market. If uniformity were pursued, it could stifle innovation.
| | d. Full transparency is not possible as the rating agency's methodology is part of its IP. However, transparency would address criticisms related to objectivity and uniformity, as stakeholders would understand the level of bias and subjectivity as compared to other rating agencies. |

| **Theme 2:** Investment Bank’s Support of Increased CSR Efforts (Larry Fink) |
| Otter, Jack. "The Value of Virtue." Barron's 98.26 (2018) ProQuest. Web. 25 Nov. 2018. | i. The CEO of BlackRock, Larry Fink, believes that over the next decade, ESG stocks may produce high returns. He is bringing this idea to Wall Street. In his annual letter to CEOs, he urged them to take a long-term view of their business and show how their companies are making a positive contribution to society. This idea is a strong departure from the view that a company’s sole responsibility is to increase profits for shareholders. |

| Norton, Leslie P. "In Defense of 'Social Purpose'," Barron's 98.26 (2018): S14-9. ProQuest. Web. 25 Nov. 2018. | i. Larry Fink’s argument is focused on the bottom line and is supported by academic research. Analysts who are focused on ESG ratings warned investors about Equifax, Valeant Pharmaceuticals International, and Volkswagen before these stocks blew up. These companies fell short on multiple sustainability criteria. As more investors push ESG factors, companies will begin to adopt a “broader focus on successfully executing a profitable long-term strategy.” There are so many instances of governance problems or environmental issues having a large impact on a company and its stock price. |

| **Theme 3:** Reasons Influencing Increased CSR/ESG Efforts |
| Otter, Jack. "The Value of Virtue." Barron's 98.26 (2018) ProQuest. Web. 25 Nov. 2018. | i. Society is willing to listen to Fink’s new ideas. With the #MeToo movement, climate change, and income inequality, people are looking for companies to deal with the issues that the government was once responsible for. |

| Rublin, Lauren R. "ESG Roundtable: Great for the World, |
| i. As customers and employees are increasingly expecting increased CSR/ESG efforts, companies are putting a larger emphasis on meeting this demand. This comes as a direct result of millennials and women having a larger share of |
wealth than they previously had. By 2025, 75% of the US workforce will be made up of millennials, who are more value-driven, and want to see their investments aligned with their values and beliefs. Additionally, more wealth is being transitioned to women, who are generating their own savings through successful careers. Some studies show that 90% of women and millennials want to incorporate ESG factors into their investment portfolios.


i. Following President Trump’s election, his policies on the environment and other key issues have helped fuel a surge of money into funds, which invest according to ESG principles. Since Trump’s election, inflows to the 275 ESG mutual funds and exchange traded funds are three times the pace of the prior 12 months. ESG investing has become easier with the “increasing regulation of the environment, globalization of supply chains, and mounting pressures from governments and investors for companies to report on climate-related risks.”

ii. Millennials are showing strong interest in ESG investing and are pushing companies and investment firms to act. They are adding to the growth of investments such as the “green bond” market. The #MeToo movement has been pushing a cultural shift that aligns with market dynamics. Some studies have shown that companies with higher female representation on their corporate boards realize better financial results.

iii. The government is not paying attention to important issues, therefore people are choosing to address them through the investment process. ESG groups are profiting from Trump’s policies. These types of investments are an “endowment for their kids” and it is therefore important to stick with companies making progress on ESG issues that are important to investors.


i. The demand for these types of investments come from women and millennials. The annual growth rate of assets under an ESG mandate compounded at 23% from 2014-2016, when the industry average was about 5%. People born from 1981-1996 will soon control a lot of investible dollars that will flow into ESG strategies. Younger investors are identifying jarring divides between portfolios and their beliefs.

ii. Growth in ESG assets coincided with a long bull market. As a result, people are now wondering what will happen at the next economic downturn. ESG funds held up better than peer funds when the S&P 500 dropped more than 7% in February. Higher ESG scores tend to be a good measure of quality. Chris McKnett, head of ESG at State Street Global Advisors, explained that ESG stocks get penalized less when investors get defensive, which is why they say ESG is a good investment in times of a bad market.


i. The growth in SRI comes as a result of women, millennials and divestment. 76% and 69% of women and millennials, respectively, believe that ESG is an important factor in investing. In terms of returns, 40% of women and 23% of men are looking for a balance between rate of return and impact when making an investment.

Theme 4: ESG Investing Leads to Higher Returns


i. George Serafeim, a professor at Harvard University, suggests that sustainable investments will lead to higher returns. He explains that sustainable companies are more adaptable to a changing world and therefore over the long term will outperform. Sustainable investing is not just screening out or excluding sin stocks without any rationale, instead it is about integrating ESG focused companies. These companies are positioned for long-term success and management understands the short-term risks and understands how to create long-term opportunities.
### Theme 5: ESG Investing Leads to Lower Returns

| Serafeim, George, and Adam Seessel. "Does Sustainable Investing Lead to Lower Returns?" Barron's 98.26 (2018): S4-5. ProQuest. Web. 25 Nov. 2018. | i. Adam Seessel, a hedge fund manager, believes the ESG investing is bound to lead to lower returns. He explains that limiting the stocks one can choose from, will also limit returns. Additionally, he feels that the criteria needed to give companies ESG scores is impossible to standardize. |

### Theme 6: How ESG Investing Has Evolved

| Serafeim, George, and Adam Seessel. "Does Sustainable Investing Lead to Lower Returns?" Barron's 98.26 (2018): S4-5. ProQuest. Web. 25 Nov. 2018. | i. With increased access to ESG data, investors are able to understand a company’s strategy, corporate purpose, and management quality. ESG factors are highly industry specific, so it is important to understand the context of ESG scores. For example, a retail company focuses on management of a productive workforce, whereas consumer packaged goods companies are reformulating products to provide healthier food and beverage choices. As a result, the Sustainability Accounting Standards Board (SASB) identifies ESG issues by industry. |

| Rublin, Lauren R. "ESG Roundtable: Great for the World, Good for Investors." Barron's 98.26 (2018): S6-S11. ProQuest. Web. 25 Nov. 2018. | i. In the past, ESG used to be focused on screening out sin stocks, investors are now looking to see what they would like to include in investments, which includes good environmental practices, strong workplaces, high levels of transparency, and incentives. Investors are realizing that you cannot just look at the financial information of a company, but that you also need to look at a company’s culture and the impact of environmental and social factors on its business. ESG investing should not be separate from ordinary investing. It is the non-financial factors that help generate the alpha of the business. ii. When Fink told CEOs to have a social purpose, that was the tipping point, where eventually ESG will be a mainstream idea and not thought of as a separate type of investment from traditional investing. iii. ESG investing is definitely being promoted more than previously. Many mutual funds are considering ESG issues in their process by putting it directly in their prospectuses. These funds are not suggesting that they will only invest in top-performing ESG companies, but that it will be included as a part of the investment strategy. |

### Theme 7: Benefits of ESG Investing

| Rublin, Lauren R. "ESG Roundtable: Great for the World, Good for Investors." Barron's 98.26 (2018): S6-S11. ProQuest. Web. 25 Nov. 2018. | i. More people are choosing to apply an ESG lens when investing because investors are realizing the dangers of separating ESG issues from business fundamentals. ESG analysis allows investors to make value aligned, impact and sustainable investments. ESG analysis provides insight into broader sustainability issues in investing and can extend into fixed-income investing. ii. ESG investing can offer downside protection to investors because of its focus on corporate ethics, workplace issues, diversity, and market share gains through innovation. ESG analysis allows for a more complete investment analysis of a company because it includes considerations that might otherwise be overlooked. |
**Theme 8: Sustainable Investing Styles**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Otter, Jack. &quot;The Value of Virtue.&quot; Barron's 98.26 (2018) ProQuest. Web. 25 Nov. 2018.</td>
<td>i. The idea is to use ESG factors as a lens to examine a company and decide if its expected return will be high enough to make investors’ portfolios.</td>
</tr>
</tbody>
</table>
  ii. Exclusionary is when investors refuse to invest in companies that they view are not serving a social purpose or that have a negative impact on the environment.  
  iii. Best-in-Class or Integrated is when investors choose companies whose policies they believe need improvement, rather than avoiding entire sectors because this can be too limiting and hurt performance. It is important to consider what companies you want to support, people often choose companies with resilient supply chains and educational initiatives.  
  iv. Undercover is when firms do not explicitly incorporate ESG into stock-picking, but it is still present. Some investment companies will push certain criteria, but not others. For example, Ariel Investments pushes board diversity at companies, but it does not press to reduce water and electricity usage. Those who choose this method understand that ESG factors will drive long-term success of companies.  
  v. Focused or Thematic is a strategy that is issue-specific, such as low-carbon, clean-water, or renewable energy. This is good for investors who are particularly focused on one issue or who do not want to overwhelm their portfolio with sustainable investments.  
  vi. Impact investing generally aims for a narrow, measurable outcome, in addition to generating a return. Some investment managers, including Larry Fink, predict that someday all investing will be sustainable. Value-based approach to investing might help protect investors from selling at the bottom price. Clients who favor ESG investments tend to stick with their investments, even when the market is not doing well. |
| "How Jeremy Grantham is Taking on Climate Change." Barron's 98.26 (2018) ProQuest. Web. 25 Nov. 2018. | i. Jeremy Grantham is a value investor and a force in increasing awareness of climate change. Climate change will have a terrible effect on food supplies. The population is growing and there is a decrease in arable land, which means that the population cannot be fed. For these reasons, he is trying to get portfolio companies to go greener.  
  ii. Grantham suggests that the emphasis should be placed on the environmental factor. This ideally will get corporations to begin taking a more long-term view. |
| Why SRI? N.p.: Trillium Asset Management, n.d. PPT. | i. The use of both financial analysis and ESG information is called sustainable and responsible impact investing (SRI). |

**Theme 9: High ESG Scores Means Good Management**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norton, Leslie P. &quot;In Defense of 'Social Purpose'.&quot; Barron's 98.26 (2018): S14-9. ProQuest. Web. 25 Nov. 2018.</td>
<td>i. Companies that handled ESG issues well usually had excellent management. ESG risk management should be a tool that every manager is looking at as a reference point. At every level of a company, employees should understand its role in the world and community. Purpose unifies employees, helps companies see their customers’ needs more clearly, and drives long-term decision making.</td>
</tr>
<tr>
<td>Theme 10: Issues Facing the ESG World</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------</td>
<td></td>
</tr>
<tr>
<td>i. One of the biggest problems is that the development of ESG funds was a marketing goal as opposed to investment logic. There are signs that this will change, but if it does not, ESG investing could enter a severe cycle of underperformance and illegitimacy. In order for ESG investing to succeed, investors need “To understand the materiality of ESG issues, identify high-quality data, deeply engage with how ESG issues are reshaping business strategies, and model the impact of ESG catalysts on future revenues, costs, and cost of capital.”</td>
<td></td>
</tr>
<tr>
<td>ii. ESG is really a mix of two very different ideas. There is the idea that companies should be doing good for society through the social and environmental factors, but also there is the governance side of ESG, which is the area that investors are more focused on.</td>
<td></td>
</tr>
<tr>
<td>ii. It is impossible to decide what to classify as a socially responsible investment because what some may think is a sin, another may not take issue with. As a result of this idea, it is impossible to standardize ESG funds. Instead, the government should be responsible for shaping the world through wise, judicious actions.</td>
<td></td>
</tr>
<tr>
<td>i. The concern at this point is the quality of the data, it is impossible to know which funds offer methodical ESG integration and which are coming to the market because investors like the idea of these funds. Although there is more data available than previously, the data is imperfect. This is the next challenge that needs to be worked on.</td>
<td></td>
</tr>
<tr>
<td>i. The Department of Labor recently issued guidelines that suggested fiduciaries “must not too readily treat ESG factors as economically relevant.” Before pension plans are able to add ESG factors into their investment plans, they will need to prove that these factors add investment benefits as compared to traditional funds, which may make it harder for plan administrators to include ESG funds as default options for investors. This conflicts with the way investors are looking at ESG as a relevant economic factor.</td>
<td></td>
</tr>
<tr>
<td>i. US capitalism is so focused on the short-term, especially at the corporate level. Corporations are not paid to give up today’s profits in favor of longer-term profits.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theme 11: Reasons that Transparency is Necessary for ESG Investing</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Lack of transparency comes from the fact that the rating agencies feel this information is proprietary and confidential.</td>
</tr>
<tr>
<td>ii. “ Disclosure can reduce asymmetry between companies and their stakeholders.”</td>
</tr>
<tr>
<td>iii. A major criticism of the rating agencies is the lack of objectivity, uniformity and transparency in how the ESG performance ratings are calculated. Relevant data, standards, and weightings vary across rating agencies resulting in extremely different ratings depending on which methodology was employed. Greater transparency would result in less bias as there would be an understanding of how the scores were calculated.</td>
</tr>
</tbody>
</table>
**Theme 12: Purpose and Criticisms of ESG Rating Agencies**

<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>i.</strong> Purpose: “Provide accurate information to investors that makes transparent the extent to which firms’ behaviors are socially responsible.”</td>
</tr>
<tr>
<td><strong>ii.</strong> Criticisms:</td>
</tr>
<tr>
<td>a. ESG ratings agencies have been criticized for their lack of objectivity due to a reliance on analyst interpretation.</td>
</tr>
<tr>
<td>b. Reliance on qualitative/subjective measures make it difficult to reproduce the metrics.</td>
</tr>
</tbody>
</table>
Appendix 3: Wells Fargo

Historical Overall ESG Scores for Wells Fargo

Historical Social Scores for Wells Fargo
**Appendix 4:** Companies of Focus within the Large Pharmaceuticals Industry

1. **Historical Overall ESG Scores for Companies of Focus within the Large Pharmaceuticals Industry**

2. **Historical Social Scores for Companies of Focus within the Large Pharmaceuticals Industry**