Financial Discolsures around BlackRock's Dear CEO Letters

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1 Introduction

1.1 General Motivation

Increased investing through index funds and ETFs has lead to an substantial increase in institutional ownership within the stock market. By holding large blocks of a variety of companies on behalf of individual investors these institutional investors gain influence over firms through their accumulated voting rights. Historically, institutional owners have levered their influence through private engagement or activist campaigns (Brav et al., 2010). However, recently, BlackRock has employed a new method of broad public engagement, each year BlackRock's CEO Larry Fink writes an open letter titled "Dear CEO," in which he outlines values that he would like firms to focus on. Topics for the letters vary each year with some popular themes including environmental sustainability, improving transparency and focusing on long term purpose.

As an institution BlackRock has some of the most widespread influence holding $8.7 trillion in assets under management. BlackRock's large holdings consistently place it within the top 5 of the largest shareholders in companies along with Vangaurd, State Street and comapny CEOs. As an example, taking the three largest firms by market capitalization, as of Q1 2022 BlackRock owns 5.7% of Amazon (3rd most), 5.1% of Tesla (3rd most) and 6.5% of Twitter (5th most) (Amel-Zadeh et al., 2022). Importantly, BlackRock does utilize this influence to promote their agendas. During the June 2020 fiscal year, on votes related to the makeup of boards, BlackRock voted against company recommendations 8% of the time often for environmental or diversity reasons (Lim, 2021). Because of BlackRock's strong influence and willingness to act, it can be expected that when BlackRock speaks, firms will listen.

1.2 Research Question

This paper investigates the effectiveness of BlackRock's new approach to communication with "Dear CEO" letters and specifically document the effects found on general investor opinion around the time of the letters being published. One way in which firms respond to BlackRock's Dear CEO letters are through 8-K filings with the SEC as documented by (Pawliczek et al., 2021). These 8-K filings are for reporting unscheduled material, events, or corporate changes. Firm managers have some discretion over the timing and content of these reports, allowing them to potentially time an 8-K around a Dear CEO letter, with material such as strategic plans built around similar content as the BlackRock letter. Since some response in 8-K's has been previously documented, this paper tries to link the effect of these responses to the general public's opinion by asking, if the BlackRock and a firm

share similar goals, does this reduce uncertainty in the market? Likewise, If BlackRock and a firm disagree on their future agenda, does this increase uncertainty in the market? Other questions investigated include the persistence of communication; If a firm releases an 8-K outlining similar content to BlackRock's goals one year is the firm more likely to keep doing so?

1.3 Identification Strategy and Data Used

To study these questions, we attempt to quantify the strength of a firm's response to Black-Rock's yearly letter by scoring the similarity between that year's "Dear CEO" letter and the firms most related 8-K filed in a short window after the publication of the letter. A cosine similarity score is used to capture the similarity between texts allowing a consistent score between changing contents of letters. The cosine similarity score should be able to capture common themes between texts and score negatively when texts disagree.

For data on general investor opinion and investor uncertainty, we use a proxy for Divergence in Investor Opinion (DIVOP) in the form of Bid-Ask spread (Garfinkel, 2009). Although not the best measure for DIVOP, this measure can be easily constructed after merging market data from CRSP by company and should provide a reliable low-frequency measure of changes.

By combining similarity scores of firm responses with changes in DIVOP measures before and after publication of a response, we should be able to monitor the general effect that of a response on investor opinion. One may expect that a high similarity score leads and general agreement with BlackRock's outlined values will lead to less volatility in investor opinion, therefore a lower DIVOP. In order to test this, we will regress constructed similarity scores on the change in DIVOP scores and predict a negative coefficient. That is, an increase in similarity will imply a decrease in DIVOP. To monitor the persistence of communication, we will run a predictive regression using last year's similarity score to see if it is predictive of this year's similarity score. Under this regression, we expect to see a positive coefficent indicating that responding well to BlackRock's letter last year is predictive that a firm will continue to positively respond to BlackRock's specific messaging.

1.4 Results

Overall, our results do not indicate any significance between similarity of 8-K responses and change in DIVOP measures. We observe that, overwhelmingly, over the period between BlackRock letter publication and 8-K filing, bid-ask spreads remained unchanged. In the instances that DIVOP measures did vary, they did not vary in a predictable manner around the similarity of the 8-K response indicating that this variation was likely due to external market forces acting individually on these firms. From these results we cannot conclude that there is no impact on DIVOP, but as is the data was too noisy to capture any significant effect. One reason for this may be the use of Bid-Ask spread to measure DIVOP, as documented by Garfinkel (2009) bid-ask spread only has a 0.117 correlation to their private measure of DIVOP while still being the second best available proxy after unexplained trading volume. Because bid-ask spread is much more highly correlated to stock volatility than heterogeneity of investors beliefs, a significant result on this regression would have also implied that firms could significantly reduce their stocks volatility simply by filing an 8-K form with the SEC containing no financial information but rather, social and environmental plans.

Our results do however indicate a significant positive predictive effect on 8-K communication from year to year. These results show that when a firm commits to responding to BlackRock's letter one year, they are much more likely to respond similarly the next year. This result seem fairly intuitive as the firm's that find positive value from publicly agreeing with BlackRock are unlikely to stop responding while the firms that do not feel the need to respond in the form of an 8-K are also unlikely to change their procedure unless necessary.

More generally, when combined our results show that 8-K's may not be a popular channel for firm's to respond to BlackRock's letters. While we do find some instances of extreme scores between a BlackRock Letter and an 8-K, the vast majority of 8-K's filed in a window after a BlackRock letter are unrelated or only marginally related. If firm's were directly responding to BlackRock in a channel of public communication, there would be a significant advantage in being as clear as possible, to the point of using the exact same wording or mentioning BlackRock by name. In all the 8-K's analyzed we find no results in which BlackRock is mentioned and most 8-K's that are marked as possible responses only achieve at a maximum 40% similarity. This percentage could feasibly be obtained by chance, for example filing an 8-K detailing an environmental compliance plan on a year that BlackRock's letter focuses on such environmental issues. Based on these results, it may be that firm's are responding to BlackRock's letters in a different way, such as a scheduled 10-K report because they do not feel it is urgent to put out an agreeing statement, or it could be that firms do not find it necessary to respond at all. If it is the case that firm's do not think it is necessary to respond to BlackRock, the effectiveness of broad public communication such as these letter could be called into question, as firm's are not publicly aligning themselves to the ideals described within the letters.

1.5   Fit into current Literature

The primary area of literature this paper contributes to studies the extent that institutional investors can influence the firms in their portfolio. Past researched have answered questions such as how institutional ownership affects firm innovation, governance and performance (Aghion et al., 2013; Chung & Zhang, 2011; Cornett et al., 2007), however we focus more specifically on the question of how institutional ownership affects communication from firms. By studying firms with known institutional ownership and observing half of the conversation in the form of BlackRock's "Dear CEO" letters, the firms response alone should give us an idea if managers believe these letters are effective communication and are worth responding to. On top of this we attempt to measure how the general investors react when seeing the communication between institution and firm. One way past literature has found that firm managers respond to changes in institutional ownership is to simply increase the amount of communication and specifically the number of 8-K's filed (Abramova et al., 2020). Our results will extend this literature by looking into the contents of the communication rather than the just viewing the number of filings.

Another area of literature this paper contributes to is the study of firm communications under machine readability. With the ever increasing amount of disclosures and information available, it is important to consider how firms are able to communicate in a machine friendly way when proposed with a prompt, in this case the BlackRock letter. Previously literature utilizing textual analysis on financial documents have observed the difficulties of extracting sentiment and meaning sometimes causing a disclosure's content to be misrepresented through omitted context (Cao et al., 2020; Loughran & McDonald, 2011). To contribute to this strand of literature we will outline our methods for dealing with issues

while utilizing textual data and steps taken to improve the accuracy of our results. Finally, we also provide qualitative results to show how friendly current 8-K filings are under basic machine reading algorithms and the type of data they can provide.

2 Data

2.1 Similarity Score Construction

For this paper we construct a dataset comprised of S&P 500 companies with one observation per year over the years of 2015 to 2022. For each company in each year we construct a similarity score between that year's BlackRock "Dear CEO" letter and the most similar 8-K over a 2 month window following letter publication. BlackRock letters are available from BlackRock's website and the 8-K filings are collected using the SEC API EDGAR. We restrict the study to S&P 500 companies in order to ensure BlackRock has significant holdings in the company and to limit the size of the data. Further we only consider 8-K's filed within a 2 month window after the BlackRock letter in order to increases the likelihood that an 8-K is being filed in response to the BlackRock letter rather than being a miscellaneous filing. The most similar filing is taken over this period to account for the fact that a firm may have upwards of 30 8-K filings within this 2 month period, it is unreasonable to think a firm responds to the same letter 30 times, therefore taking the strongest similarity allows us to designate an 8-K as a response and record one observation per firm per year.

Once textual data is collected it is cleaned and pre-processed, removing artifacts from the 8-K's such as checkboxes and graphics, and irrelevant words such as pronouns, numbers, and articles. Common non-informative words are also removed through matching with a public stop word dictionary. Finally, the text is split into contextual tokens and turned into vectors based on token content. Once the text has vector representation a cosine similarity score is used to capture similarity between the texts.

$$\text{Score}(A, B) = \frac{A \cdot B}{||A||||B||}$$

In this form scores range from -1 to 1, where -1 represents texts that have exact opposite meaning and 1 representing exactly the same meaning. A score of 0 represents orthogonal information or unrelated text.

Complete summary statistics for constructed Similarity scores can be seen in figure 1 of the appendix along with a histogram of score distribution. In total, we collect 16,200 filings over 501 firms and 7 years. From these the average similarity score is 0.0223, with the greatest score being 0.564 and the greatest negative score being -0.799. The distribution of these similarity scores indicate that as expected most 8-K's filed in this time period are unrelated to the BlackRock letters as these may be required filings for compliance. After sorting 8-K's by year and company, then selecting a firms most relevent 8-K over the window our sample because 3213 observations with roughly the same distribution as before designating responses. These results are reported in Table 1.

	Bid-Ask Spread	Spread % Change	Similarity Score
count	3213.000	3213.000	3213.000
mean	0.025	0.000	0.012
std	0.012	0.003	0.132
min	-0.056	-0.097	-0.661
25%	0.017	-0.001	-0.062
50%	0.022	-0.000	0.020
75%	0.028	0.001	0.100
max	0.162	0.053	0.445

Table 1: Summary Statistics of Bid-Ask Spread and Similarity Scores

2.2 DIVOP

The second part of the data set is constructing the DIVOP measure proxied through bid-ask spread. This is achieved by merging similarity score to CRSP using company id's found within the 8-K data. For each observations the bid-ask spread of the company is calculated on the day before BlackRock's letter publication and a day after their designated response 8-K. The percent difference in these two spreads was then used to proxy for the change in DIVOP caused over this time period. We calculate bid ask spread on the day before in case BlackRock's letter on it's own has a significant impact on our measure and likewise we calculate the spread a day after in order to allow the information enough time to be incorporated in the market. Further to insure consistency between firms, we use percent change in Bid-Ask spread rather than the raw spread in order to normalize for higher share prices having larger spreads and thus larger raw changes in spreads.

Table 1 reports summary statistics for both Bid-Ask Spreads and Similarity scores after removing all 8-K's that cannot be reasonably considered responses. This leaves one 8-K per firm per year for a total of 3213 observations after losing some observations to missing market data or a company having no 8-K filings in the window in that year. We see that overall the bid ask spread does not move very much over our period with the first and third quarterlies of the data being less than a 1% change.

3 Research Design and Results

3.1 Identification Strategy

To evaluate how disclosure similarity affects a change in DIVOP we run a simple regression model, regressing the constructed similarity scores on the changes in DIVOP measures:

$$\Delta_{t-2,t}(DIVOP)_{i,t} = \alpha_{i,t} + \beta_{i,t}\text{Similarity}_{i,t} + \gamma_{FE} + u_{i,t}$$

The dependent variable, similarity, is measured as the similarity between the BlackRock letter and the firm's 8-K filed within 60 days of the letter. We expect this to have an effect of the on the change in DIVOP measure over the time period between the BlackRock letter and the firm's 8-K response. Under this regression, we hope to find a negative coefficient on the similarity score indicating that agreement in the letters and 8-K (a positive similarity) would indicate a negative change in DIVOP, or DIVOP decreasing over the period. I also include firm fixed effects in these regressions in order to control for variation within firms responses.

If we are able to find a significant negative coefficient this would help argue that Black-Rock has successfully established a broad public approach to firm communication with visible impact in the market. In addition, it would help to establish the effectiveness of firm response through filings of 8-K's. Further analysis could also be conducted to see how long any effects last in the market, what effects come from just BlackRock's filings and what effects come from the response, and what characteristics makes firms more sensitive to this information effect?

The second regression we run tests how firms past communication affect their current communication. Specifically we will run a predictive regression using last year's similarity score to estimate how it predicts this year's similarity score.

$$\text{Similarity}_{i,t} = \alpha_i + \beta_i \text{Similarity}_{i,t-1} + u_{it}$$

When running this regression we expect a positive coefficient on past similarity in order to indicate that positive past similarity is predictive of future positive similarity. That is firms that release 8-K responses to BlackRock's letter with matching content will continue to release 8-K responses with matching content. Under this specification it is interesting to note that a test for a zero coefficient will help determine whether firms are responding in some years and then not responding in others. This behavior may be indicative of firms not using 8-K's to respond to BlackRock's letters and instead support that similarity happens by chance of content.

3.2 Results

Table 2 shows regressions results between 8-K disclosure similarity and DIVOP in the market. When controlling for firm fixed effects and time fixed effects we get a coefficient of -0.0004, however it is not statistically significant. Because of lack of significance in our coefficent, we cannot draw any meaningful effect between a firm filing an 8-K response and a resulting change in DIVOP. However, considering our results, even if the coefficent had been significant, the magnitude of change in DIVOP implied by our measure of Bid-Ask spread is well under a percentage. That is for every 1% more similar a disclosure is we would only expect DIVOP to decrease by about 0.04% or at the extreme a 100% similar disclosure would only predict a 4% decrease in DIVOP.

Overall, we believe that these results could be greatly improved with a better measure of DIVOP than Bid-Ask spread, as it has been shown to be a noisy proxy for measuring DIVOP in general. If we have a sound way to measure divergence of investor opinion, then we expect to see some effect at minimum because BlackRock are themselves an investor. It should follow that with a perfect measure of investor heterogeneity that when a manager puts out a public statement agreeing with BlackRock, we should see an decrease in heterogeneity of investors from the simple fact that we know at least internal holdings of the firm and BlackRock have homogeneous views about the firm.

Table 3 shows regression results for the predictive regression on disclosure similarities. We see that we get a significant positive coefficient for the past years similarity score on this year's similarity score. This indicates to us that if a firm released a responsive 8-K in the past, they are more likely to release a responsive 8-K in the future. It is plausible to think some firms find it more worthwhile to respond to BlackRock letters while others do not view responding to be necessary. For Robustness we also check the possibility that what we are actually capturing is the effect of firms that file more 8-K's being more likely to

continue to file more 8-K's. This would lead to higher response scores by random chance over an increased number of filings, the positive results results persist through this check.

Interpreting the coefficient in table (3) we find that relative to what is expected the magnitude of the coefficient seems low. We compute a coefficient of 0.23 indicating that a fully similar disclosure (similarity of 1) only predicts next years disclosure to be about 23% more similar than a firm who's previous best disclosure was unrelated (similarity of 0). Although percentages of similarities are hard to interpret, we would expect that if firms are actively responding to BlackRock letters through 8-K disclosures then that firm should be score at least as similar as their previous year, barring actual disagreement. If this is true we should expect a coefficient greater than 1, indicating that this years similarity is on average greater than last years, instead we get that, although significant, the predictive power of last years disclosure is quite weak.

Given the presented results, evidence suggests that firms are, in general, not responding to BlackRock's letters or at least not responding through the previously documented channel of 8-K's. As an qualitative exercise to check this, we manually read the disclosures that score most similar to their corresponding Dear CEO letters and see how the contents compares. Are the highest scoring disclosures being filed for unrelated compliance reasons and while happening to be captured in our window? Or are the highest scoring disclosures responding effectively to BlackRock's letters but our similarity scoring is unable accurately score their response as similar?

The best scoring disclosure is an 8-K filed by Honeywell International Inc on January 26, 2018. An exerpt of the filing is included below,

> HONEYWELL REPORTS STRONG FOURTH QUARTER AND 2017 RESULTS, RAISES 2018 GUIDANCE TO REFLECT LOWER TAX RATE
>
> "I am confident in Honeywell's future, and our ability to continue to deliver for our shareowners and our employees. Our strong performance in 2017, together with the enactment of new U.S. tax legislation, has enabled us to increase our 401(k) match in the U.S. This is a sustained, annual benefit that will provide a more secure retirement for our employees. We believe that enhancing this benefit is extremely valuable and important to our employees over the long term," Adamczyk concluded.

For comparison BlackRock's 2018 Dear CEO letter is titled "The power of Capitalism" and focuses on sustainable capitalism and valuing stakeholders. One can see how response scores are being artificially inflated as BlackRock focuses on a very broad agenda capturing items that would commonly be talked about in an 8-K, such as tax legislation, employee benefits and environmental sustainability. Many other 8-K's that have high similarity scores suffer from the same fundamental problem that the Honeywell 8-K above does, they do not seem to be directly responding to BlackRock. Instead, they seem to be general reporting that happen to have overlap on BlackRock's more broad topics. This explanation also fits well, with the distribution of similarity score seen in the data, achieving roughly 40% similarity through publishing regular disclosures seems reasonable.

Under the assumption that 8-K's are not used for response to BlackRock letters it seems difficult to determine whether firms respond to these letters at all. Firms could be not responding, responding through a different public channel, or responding through a private

channel. If firms are not responding or responding through a private channel, this brings into question the overall effectiveness of the letters in their current state. BlackRock publishes the letters with the intent of clear, public communication of their goals, but without a firms response, investors are left guessing which described goals firms are actually working towards. On the other hand while it is possible that firms respond through a different public channel such as 10-k filings, it seems unlikely given past literature indicating that firms usually adjust their 8-K filings in response to institutional changes (Boone & White, 2015).

3.3 Robustness

Because of the lack of significant results from regression 1, we focus on ways to test robustness of thepredictive regressions. We see if we can strengthen our argument that firms are not realistically responding to BlackRock letters through use of 8-K disclosures.

The first robustness test looks at whether a high similarity score this year can be better predicted by the number of 8-K disclosures filed in that year. The idea behind this test is that if adding the number of 8-K's filed as an independent variable is significantly predictive, this should indicate that the captured similarity between the BlackRock letters and 8-K's are not the firms responding but, in part, the tendency of the firm to communicate through 8-K's, unrelated to BlackRock. Table 4 shows this regressions and we find a statistically significant positive coefficient on the number of disclosures filed, comparing magnitudes to disclosure similarity lagged, we see this effect is not trivial. On average companies file about four 8-K's in the 2 month window after BlackRock's letter, under this trend we predict the firm to have about a 6% more similar disclosure by selecting the best over these 4 filings. In comparison with an maximum recorded similarity score of about 0.5 in the data, lagged similarity is predicting, at best, a 14% increase in similarity and on average much less. These values are also reflected in the R^2 values of these Table 3 and Table 4, we see that including number of disclosures filed allows us to explain double the variation in the data, increasing R^2 from about 10% to about 20%.

The second robustness test attempts to replicate these results using 10-K filings in place of 8-K filings. In table 5 we see that the results for running the same predictive regression over 10-K data for 2020 to 2022. Over the period we find a large significant coefficient for lagged disclosure similarity on current disclosure similarity. This indicates that the similarity scores between dear CEO letters and 10-K filings are much more persistent when compared to 8-K similarity scores year by year. It is worth noting that he distribution of similarity scores for these 10-K's roughly match that of the 8-K's. This data supports that when dealing with 8-K's it is much more common for a firm to respond strongly one year then opt to not respond strongly the next. Another way to interpret this is that this behavior would be more consistent with a manager filing 8-K's throughout the year independent of BlackRock letters with some happening to fall within the observed sample rather and in other years the relevant 8-K's fall outside the sample, indicating they were not meant to be a response. Since firms are required to file 10-K's we see that the persistence may come from being required to talk on topics such as governance in each 10-K leading to consistently high scores. This does not indicate that firms are responding to these letters through 10-K filings. Instead it supports the view that the results produced from 8-K similarities scores are not unusual and are in fact lower than if companies were deliberately responding.

4 Conclusion

This paper examines the attempts at broad public engagement by BlackRock and the responses of firms through 8-K SEC disclosures after publication of a letter. Overall, we find no significant impact of the public discussions between BlackRock and Firms on the heterogeneity of investor opinion. We then explore these results to try and understand why these public discussions are ineffective at moving public opinion. We find strong evidence that these public discussions as described in the literature are not as clear as initially assumed. In fact, evidence presented in this paper supports the explanation that 8-K filings with similar content published around the time of the BlackRock letters do not represent a proposal and response discussion but rather represent two independent communications. These two communication may happen to share some content due to the nature of both texts, often focusing on themes such as sustainability and governance; however, it seems unlikely firms are directly replying to BlackRock letters through 8-K filings.

Given these results it is important to note there are still significant improvements that can be made in the methodology to study the question of how the interaction between these letters and disclosures affects firms. Despite not being direct responses, we would still expect to be able to see some form of increased homogeneity in investors when Black-Rock and a firms disclosures are focus on the same ideals. The best route to study this question further would be to utilize a cleaner and more direct measure of DIVOP. Additionally, this framework provides the ability to study questions for which there are clear and direct measures available. For example, in the future we could look at the effects of similarity scores on surprise earnings or the effects of similarity scores in repeat messaging.

Similarly to improving DIVOP measures, the data quality of the similarity scores could be increased and made more robust. Currently the similarity scores provided by a simple cosine score are susceptible to missing context and can easily generate similarity through non-informative words despite attempts to remove them before processing. A promising avenue for cleaner similarity scoring is the use of GPT models, providing the text to the transformer then asking directly for a similarity score from 0 to 1, or by asking the transformer to summarize the text's key ideas and score similarity based on the summary.

This paper also offers the more general contribution of supplying an easy to build model for scoring financial similarities in text, all based on open source packaging. Many of the preprocessing steps taken are relevant for general financial text and the steps can be applied with minimal modification to other relevant data applications.

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5 Tables

Table 2: Regression of Disclosure Similarity on DIVOP

| | Change in DIVOP | | | |
	(1)	(2)	(3)	(4)
Discolsure Similarity	0.0004	-0.0002	0.0001	-0.0004
	(0.001)	(0.0004)	(0.0005)	(0.0004)
Firm Fixed Effects	(No)	(Yes)	(No)	(Yes)
Time Fixed Effects	(No)	(No)	(Yes)	(Yes)
Observations	3,213	3,213	3,213	3,213
R^2	0.0002	0.0001	0.00004	0.0003
Adjusted R^2	-0.184	-0.002	-0.182	-0.002
F Statistic	0.408	0.195	0.098	0.883

Note: $^*p<0.1; ^{**}p<0.05; ^{***}p<0.01$

Table 3: Predictive Regression of Disclosure Similarity

| | Disclosure Similarity | |
	(1)	(2)
Disclosure Similarity Lagged	0.231***	0.231***
	(0.013)	(0.013)
Firm Fixed Effects	(Yes)	(Yes)
Time Fixed Effects	(No)	(Yes)
Observations	3,213	3,213
R^2	0.092	0.093
Adjusted R^2	0.090	0.090
F Statistic (df = 1; 3204)	325.634***	327.267***

Note: $^*p<0.1; ^{**}p<0.05; ^{***}p<0.01$

Table 4: Robustness Check for Predictive Regression

	Disclosure Similarity	
	(1)	(2)
Disclosure Similarity Lagged	0.293***	0.292***
	(0.016)	(0.015)
Number of Disclosures Filed	0.015***	0.015***
	(0.001)	(0.001)
Firm Fixed Effects	(Yes)	(Yes)
Time Fixed Effects	(No)	(Yes)
Observations	3,294	3,294
R^2	0.207	0.209
Adjusted R^2	0.205	0.206
F Statistic (df = 2; 3284)	429.499***	432.583***

Note: *p<0.1; **p<0.05; ***p<0.01

Table 5: Repeated experiment with 10-K data over 3 years

	Disclosure Similarity	
	(1)	(2)
Disclosure Similarity Lagged	0.870***	0.622***
	(0.015)	(0.025)
Number of Disclosures Filed	0.006***	0.015***
	(0.001)	(0.002)
Observations	905	905
R^2	0.812	0.467
Adjusted R^2	0.811	0.465
F Statistic	1,946.134***	394.320***

Note: *p<0.1; **p<0.05; ***p<0.01

6 Appendix

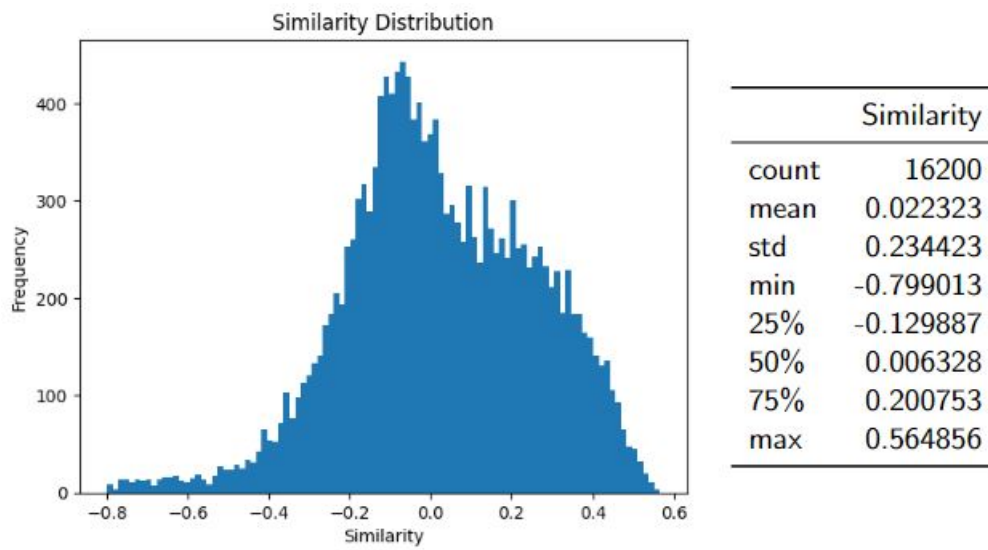Figure 1: Distribution of Similarity Scores between Dear CEO letters and 8-K's.

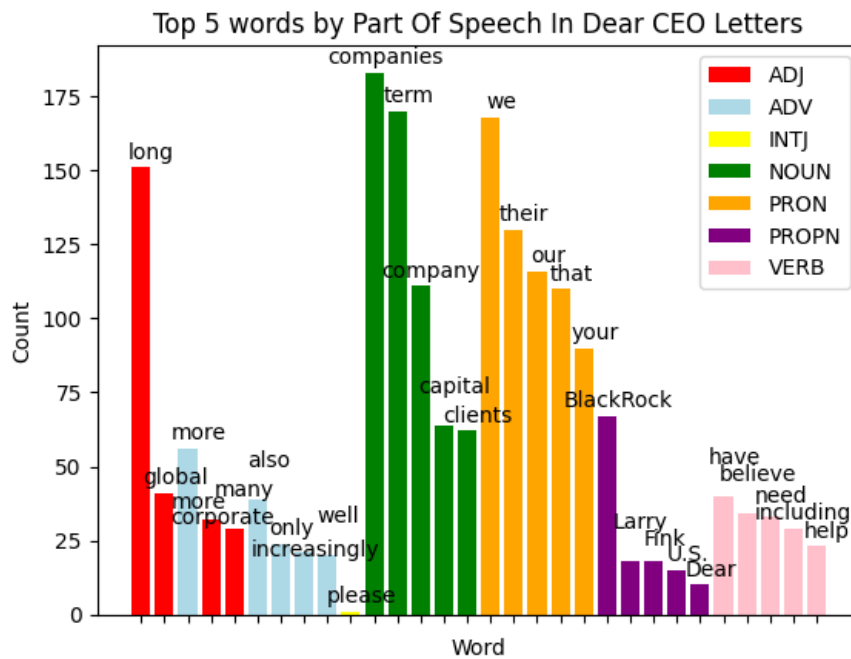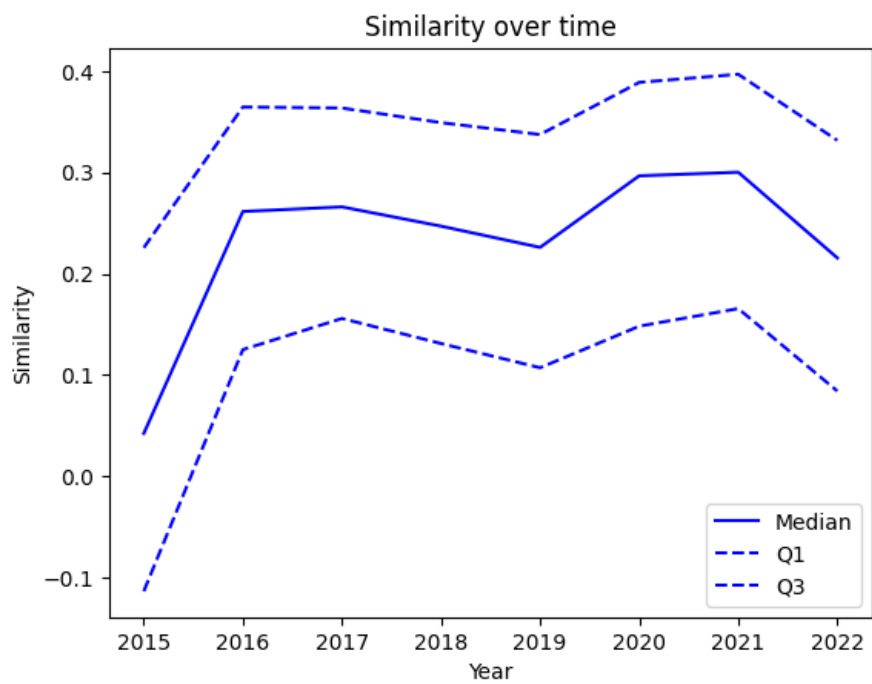Figure 2: Most Common Tokens Across All Dear CEO Letters.

Figure 3: Change in Disclosure Similarity Over Time

Figure 4: Similarity vs Change in DIVOP