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Understanding the Motives Behind Corporate Charitable Donations: A Machine Learning Approach

BY

JOO HUN LEE

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree

Of

Doctor of Philosophy

In the Robinson College of Business

Of

Georgia State University

GEORGIA STATE UNIVERSITY
ROBINSON COLLEGE OF BUSINESS
2021

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2021

ACCEPTANCE

This dissertation was prepared under the direction of the *Joo Hun "Justin" Lee* Dissertation Committee. It has been approved and accepted by all members of that committee, and it has been accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Business Administration in the J. Mack Robinson College of Business of Georgia State University.

Richard Phillips, Dean

DISSERTATION COMMITTEE

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ABSTRACT

Understanding the Motives Behind Corporate Charitable Donations: A Machine Learning Approach

BY

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07/21/2021

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To correctly understand why companies make charitable donations, I utilize text-based machine learning technique on news articles to identify underlying topics on what is intended by the firm when making charitable donations. Using topic modeling machine learning technique on article text, I identify four topics of donation, Altruism, Managerial Benefit, Community, and Publicity, and test hypotheses on different possible motives for donations that could be distinguished through topics identified. With the test, I find that cover-up motive and business reputation motive are main drivers of corporate charitable donation. Moreover, I also find that corporate charitable donation is associated with higher profit, reduced information asymmetry, and lower risk. Evidences from tests reveal that corporate charitable donation is mainly motivated by reputation management and is highly strategic with its potential target audiences.

Understanding the Motives Behind Corporate Charitable Donations: A Machine Learning Approach

Joohun “Justin” Lee

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1. Introduction

In recent years, with the rise of interest on Corporate's Social Responsibility (CSR), "Green Investment", and Environmental, Social, and Governance (ESG) dimension of public corporations, both investors and managers have begun to initiate CSR-ESG related business endeavors or revamp their existing CSR strategies to meet investor's demand.¹ In the process, charitable donation has been chosen as relatively easy, but dedicated form of strategy for expressing CSR effort. Such increased attention resulted in overall increase in the charitable donation made by the corporations and corporate-related foundation entities (Chart 1).

However, despite both prolonged practice and increased attention on company's donating behavior, little is known about why firms would be motivated to make charitable donations or what may drive the firms to make charitable donations, let alone any potential impact on the firms. While many researchers have attempt to answer the question of why firms would make charitable donations, understanding of the true motives has been difficult for two following reasons. First, the data on corporate practice of charitable donation has not been readily available, resulting in fairly small sample for any reliable statistical inference. Second, the observed practices of donation behavior by the firm have been too diverse and thus complicated for any single motivation could explain, while the outcome of these different possible motivations is simply more or less donations. While donating companies provide altruism as a reason, there are cases where the contribution had made to influence certain group, to seek publicity or to cover up some misdeeds, or for executives to possibly gain private benefit through networking made available through donation. Such

¹ In 2019, CEO's of Business Roundtable redefined the goal of corporation to be stakeholder value maximization. Meanwhile, asset under management (AUM) by ESG related delegated funds has increased from \$2 billion in 2012 to over \$14 billion in 2020, a seven-fold increase in 8 years (US SIF Foundation). Moreover, corporations have begun to add new position called "Chief Sustainability Officer" who overlooks the CSR aspect of the business, recording 35 new hires among S&P 500 firms in year 2020 alone.

complexity in practice and lack of data have altogether made the understanding motivation for corporate charitable donation difficult, leaving questions on whether it should be encouraged, prohibited, or controlled. All these questions would be difficult to answer without systematic evidence on well-defined motives of charitable donations that is founded on content-based analysis.

In this study, I provide a large-scale evidence of what motives may drive the firms to engage in charitable donation. To answer this question, I first compile a novel dataset on firm's corporate donations behaviors using online news articles from 2000 to 2020 and identify underlying topics of the stated reasons of charitable donations mentioned in news article using topic modeling machine learning technique on the textual data. As firms tend to use lengthy descriptions in delivering news on corporate donations, simple categorization based on recipients may introduce a possibility of misclassification or wrong interpretation of what motivation drives donation decision. To address this issue, I employ guided Latent Dirichlet Allocation (LDA) method that allows the detection of own semantic relationship while allowing the researcher to prespecify a certain number of topics for interpretability. With guided LDA technique, I identify four different topics within the textual data of charitable donations of the companies, Altruism, Community, Managerial Benefit, and Publicity, and find that donations with Managerial Benefit and Publicity dominate. To the best of my knowledge, this is the first empirical research that systematically analyze the contents of the news on corporation's charitable donations activities to infer underlying motives. With this approach, two major challenges in understanding the motives of donation are addressed, as using news articles as source of data solves the lack of large sample issue that other studies have failed to address, while using machine learning technique helps disentangle the complex nature of why firms may donate.

One possible issue with inferring the motivation outright from the news article text data is that the information that may be revealed through topic modeling is still a stated reason or purpose, which may not always reflect the true motivation of the firm. Therefore, to gain further understanding and infer the behind motivation of firm's charitable donations, I propose four different hypotheses on the motivation of charitable donation that may affect the donations of different topic differently. Using different measures for testing, I find that firms are motivated to use charitable donation as a tool to cover up bad reputations from its misdeeds, and sometimes for business reasons to increase awareness of the customers. I also find the donation decision to be a result of strategic decision from management but is not a result of personal fulfillment or governance failure of the company. Finally, I test to see whether the act of charitable donation has any effect on the firm-level financial outcome of the donating company. While the effect could be small, I find positive association between corporate charitable donation with higher profitability, reduced information asymmetry, and lower risk for some of the topics with the donation.

This is not the first study that examines the motivation of donations. Many existing studies also attempted to identify the possible motives of corporate charitable donations (Patten (2007), Su and He (2010), Wang and Qian (2011), El Ghouli et al. (2011), Masulis and Reza (2015), Cahan et al. (2015)). However, one common shortcoming is that in uncovering the possible motivation, these studies only examine the donation amount as the single outcome that may be determined at firm level without considering certain topics that may dominate the donations making of the company. Some of these studies have failed to find the relationship documented in this study and it could be attributed to the fact that in the process of evaluating certain motivation, the opposing effects coming from different topics of donation may have cancelled each other out, providing incorrect inferences.

The rest of the paper is as follows. I first describe how the news article data has been collected and processed for the analysis in Section 2. In Section 3, I described the process of topic modeling technique and result of topic model analysis on the data. To gain further understanding, I develop testable hypotheses using the topics of charitable donation identified in Section 4. In Section 5, I present the results of empirical tests for developed hypotheses. And finally, Section 6 concludes.

2. Data

To first understand what companies state as the motivation or reason for making charitable donation publicly, I analyze the text in the news article published online as a source of information. To obtain the news articles on the philanthropic donation of US domestic firms, I utilize Google News API library published for Python to search relevant news articles related to corporate philanthropy. The advantage of the Google News library is that it allows the user to access the same set of tools and filters as if you would use the regular Google News search page on Python. I choose Google algorithm over other media news database such as Lexis Nexis because 1) I want to encompass more diverse set of news outlet in addition to traditional ones that the general public may have more closer access to, and 2) it is technically easier to obtain the full text of the article through web scraping algorithm. The drawback to this approach is that the obtained text requires more cleaning.

To establish the dataset, I first obtain the names of public corporations that appear in Compustat database from 2000 to 2020. I first use the exchange code (EXCHG) to keep all stocks

on NYSE and NASDAQ and drop all exchange traded funds (ETF's) by searching for names associated with funds (ETF, Value, Growth, Treasury, Return, REIT, Equity Shares, etc.) using their names. I identify a total of 4,811 public company names and employ into the search by restricting the exact name to appear in the news article using Google search tool. If the name of the company is generic (e.g. Target), I use the full name (e.g. Target Corporation) instead for more accurate search. To collect the news article relevant to the corporate philanthropy and donations, I employ keywords relevant to corporate philanthropy, charitable donation, and corporate donation along with the name of the company. Double quotation around the company name with conditional searches using Boolean functions forcing these terms to be included enables more exact search.

As Google News search algorithm generates some search results that are less pertinent to the keywords, after the initial search result is obtained, I further filter out irrelevant results that does not contain any relevant description about the company I searched for. After making sure the article is about the company, I apply another round of filter for filtering any news not related to corporate charitable donation to ensure most relevant pool for data analysis. For the first round of raw search, I obtain more than 380,000 search results periods between 2000 to 2020. After the first filtering, I am left with 285,184 news articles related to the companies in the list. After filtering for charitable donations activities, I am left with 166,770 number of articles that pertain to firm's donation activities. After dropping articles that do not specify or mention any dollar amount of donation and matching with the current data on corporate charitable donation, I end up with 100,309 news articles that contain information on the amount of philanthropic donation made by the firm. To match the article with the respective company profile, I use the name matching algorithm to match the GVKEY identifier of Compustat database for firm level financial information.

In addition to the dataset from news article, I also establish another dataset of charitable donation to cross-check the amount from news article. I collect charitable donation data through Foundation Center, a database vendor which collects and digitizes the tax exemption filing forms that are submitted to Internal Revenue Service annually. This filing is available to public upon request to IRS, and Foundation Center digitizes the report for easier searching of fundraising for various parties in need. Every organization that operates with non-profit status is required to submit Form 990/990 P-F, which contains various financial information of the non-profit organization. The filing contains detailed financial information such as how much the organization has received as an income, its investment income, notable expense like salary of important officers, and how much of grant has been made to specific organizations for the given tax year. The information provided through this outlet enables me to validate some of the charitable donations from news articles.² I manually collect the digitized data from tax filing report by visiting Foundation Center's physical office location and public libraries with data terminal. The Center provides the digitized version of the data from 2003 until 2017, and the coverage is limited to companies in S&P 500 index. Due to this limit, after matching the data to Compustat data for firm-level financial information, there are 3,227 firm-year observation with 453 companies. I use this dataset mainly for robustness check.

3. Machine Learning on Topic Model: Guided Latent Dirichlet Allocation

A. Regular Latent Dirichlet Allocation

² While some matches are possible, donations reported in the news article and the donation information from tax filing do not always coincide, as the timing and format of the payment is not stated in the news article. Depending on how the contribution is made, it could be reported as different amount at different point in time.

To understand different underlying motives for making donations, I utilize the variation of Latent Dirichlet Allocation (LDA) technique called Guided LDA to determine most likely topics from what firms state as why they make charitable donations. LDA is an unsupervised Bayesian machine learning technique that infers the set of topics based on collection of words found in the documents by assuming that document follows a certain generating structure. In other words, LDA tries to answer what “latent” structure of topics would have likely generated the collection of words observed in the document of interest (refer to Appendix 1 for illustration of data structure). LDA is a powerful technique when the researcher is interested in identifying the overarching topic hidden in the collection of documents that may contain certain topic in not readily noticeable ways. One of the benefits of regular LDA technique is that there is no prescreening or training required for the algorithm to generate its own topic, nor does the researcher need any prior on what the topics should be. However, researcher should have a fairly good idea on the number of possible topics within the document, as the number of topics is one of the key inputs to the model.

While the original unsupervised LDA is efficient in detecting plausible topics that reflect the underlying ideas with a group of keywords for a given document, one drawback to unsupervised learning is that the algorithm may generate the group of words for certain topic representation that may not necessarily guarantee human interpretability. That is, the unsupervised learning of regular LDA model may not always come up with a group of words that can be recognized into broader set of idea that we can refer to as a legitimate topic that may surface from the collection of documents. Rather, what has been generated as a topic could be a jumble of words that cannot be reasonably categorized as broader topic that is pertinent to the textual data being analyzed. Therefore, with unsupervised LDA, even after the group of word for a certain topic is generated, researcher’s discretion must come in to determine what the group of word represents as

the broader topic. In addition, if the new document of interest for analysis contains words that the model's training set did not contain, the unsupervised model is not capable of assigning meaningful probabilities that may alter the topic allocation. Therefore, while LDA is highly effective in generating underlying topic of interest, analyzing new set of documents with already trained LDA model does not produce as effective result in identifying underlying topics. Another shortcoming with LDA is that the number of topics for the machine analysis has to be predetermined as an input to the model. While it is possible that the researcher may be able to predict and determine a reasonable number of topics, it is not always the case that the number of topics chosen is sufficient or not.

B. Guided Latent Dirichlet Allocation and Topic Selection

To address two shortcomings of regular LDA topic analysis technique, in this study, I employ Guided LDA (GLDA) technique devised by Jagarlamundi et al. (2012) that helps the interpretability of the topic and versatility of the model with documents with potentially diverse topic. Unlike regular or unguided LDA, GLDA trains the model with an input that predetermines the word's affiliation to specific topic for the model. This is done by providing a "guidance" matrix (commonly referred as Eta) that contains a group of word that the researcher believes each topic should identify as an input to the model. Because set of words that specifically indicate certain topic are included as part of the input to the model, the resulting topic from learning guarantees the interpretability of the topic. This matrix does not strictly impose the topic selection, but simply provides a "nudge" toward assigning certainty probability to the likelihood of word coming from certain topic for the specific group of words chosen by the researcher. For the rest of the word occurrences, the model trains the same the regular LDA, so guidance matrix does not influence the

model to alter existing semantic relationship among words present in the document. This helps identify the semantic relationships of the words among topics within the model more coherently (interpretability), while remaining flexible to incorporate any new possible words to be associated with the predetermined topic (versatility).³

The benefit of Guided LDA is that the researcher could generate relevant topics that seem coherent with the document of analytic interest. Because the researcher can assign certain words into the predetermined numbers of topics, he/she could implement theoretical understanding and foundation into the model and have reasonable expectation each topic generated from the model should represent, while also letting the model to depict what the latent structure of the semantic relationship the data has. Therefore, unlike the regular LDA where the topic generated may be irrelevant or uninterpretable with human understanding, the researcher could generate a more cohesive model that produces relevant topics of which the documents of interest may contain. However, this is not a supervised learning, as there is no pre-determined condition that the data should meet to be identified as one of the categories and the model could also determine other possible set of semantic relationship observed in the data but not specified in the guidance matrix.

The task of choosing the number of topic and deciding what dominant idea and words to include for each topic remains to be an important task, especially for GLDA. Whereas only the number of topics is important for the unguided LDA, guided LDA also requires the corpora of words that need to be included in the guidance matrix. If the researcher has predetermined theory or idea on what the topics from the textual data should be about and has well-defined sets of words describing the topic of interest, one can set up the model to fully incorporate the number of topics and the set of corpora that represents the idea appropriately. However, because there is no

³ Please refer to Toubia, Iyengar, Bunnell, and Lemaire (2019) for step-by-step description of how Guided LDA trains the model.

guarantee that the theory chosen would be the best structure that may represent the data, a measure called Coherence Score is accompanied to cross-check whether the number of topics selected for the model numerically best represents the given data. For this paper, I select the model's topic based on previous literatures on corporate charitable donations. Unlike philanthropic donations made by non-profit organizations or governments who provide social benefits at no cost, companies are profit-maximizing agent that cannot put business considerations aside even for charitable actions (Porter and Kramer (2002)). Therefore, in addition to corporate charitable donations that may pertain to altruism or contributions to communities, donations pertaining to marketing effort and publicity could also appear as a potential topic. As charitable donations serve philanthropic purpose, donation out of altruism and to community where potential stakeholders may be influenced could be one dominant idea found in the news articles. Therefore, I select Altruism and Community as potential topics that may be able to detect and classify various donations made in such natures. Also, as documented in marketing and management literatures, since the main direct way in which the firm could use charitable donation for business purpose is in the form of strategic marketing initiative that publicizes the socially responsible behavior of the firm, I select Publicity as one of the potential topics. In addition, since there are types of donations that have been engaged with expectation of gaining personal reputation and networking benefits by managers or the directors in the managing group (Benabou and Tirole (2006)), I also select Managerial Benefit as one of the possible topics that can be detected in the news article data that may help us understand the observed corporate charitable donation behavior and test the hypotheses on the behind motivations of donating behavior. In short, I choose Altruism, Community, Publicity, and Managerial Benefit as predetermined topics for training the guided LDA model in analyzing the news article data on charitable donation behaviors.

C. Implementation of Guided LDA

To implement the guided LDA to the data collected on the charitable donation, I first compile the guidance matrix that will be used as part of the input for the model analysis. While we know what the topics for the guidance matrix should be, as the corpus for charitable donations and philanthropic activities of corporations are not readily available, I compile the set of words from the news article dataset itself. To first obtain the set of words to be included for guidance matrix, I first choose the set of news article that may contain topics related to charitable donation with meaningful amount of description in the article. To introduce randomness in the selection of article, I first divide the news article in groups of 1,000 for easier manual scanning and select total of 150 articles, after manually screening them to ensure they contain enough text materials for meaningful analysis. While this is not completely randomized process, this is to ensure reduction of any bias while maintaining coherence on the set of vocabularies I include in the guidance matrix. On this initial set of news articles, I first run unsupervised LDA to discern possible set of words that could be included for each topic of choice I am interested in evaluating. After obtaining initial corpus, I add more words to ensure each topic of interest reflect the indicated topics accordingly. The list of words compiled for the guidance matrix is listed in Appendix 2. As I am interested in disentangling motives into four different main categories, I set up the matrix so that the model would produce four different topics. Because determining the number of topics in and LDA analysis is arbitrary, I attempt to establish the number of topics based on previous studies that have studied the motivations for charitable donation of the corporation. One topic of charitable donation that received continuous attention is altruism of corporation. As they elicit some facets of why corporation is making charitable donations, I believe incorporating them into four large main

topics will not only facilitate further understanding of the motivation, but also provide an opportunity to evaluate the set of possible motives that explain the observed charitable donation behavior by corporations.

After the identifying the guidance matrix, I train the guided LDA model using entire news article data available using established guidance matrix as an input to the model. Lastly, with the trained model, I apply the model to analyzing the likelihood that the text of article is from one of the four topics with respect to the company's donating activities. From this process, what results is the relative percentage of topic likelihood of each article that adds up to one. In other words, LDA ultimately assigns a certain probability that the content of an article is likely from the topics identified. To classify articles into one of the specific topics, I identify the article to be of one specific topic that has the highest relative topic percentage.

D. Results of Guided LDA model

Chart 2 shows the overall topic distribution of the news article on philanthropic donation. Contrary to general expectation, that most prevalent topic that can be detected is not altruistic dimension in the philanthropy of corporations. Instead, topic pertaining to possible managerial benefit constitutes as the most dominant motives for making philanthropic donations while publicity topic constitutes another important dimension reflected in the news article. While community related charitable donation activity does constitute as one important body of the topics, the dominance of topics that are related to corporate activity suggests that corporate charitable donations are motivated with some degree of business concerns, be it for the benefit of the managers or for the donating company.

Chart 3 presents with the top 10 keywords that have the most semantic importance within each topic. Altruism, Community, and Publicity topics determined seem to contain set of words that are relevant to the topics intended with the guidance matrix. For Managerial Benefit, as many corporate charitable donations that are made to universities and education entities are known to benefit the private network of the directors (Cai, Xu, and Yang (2017)), it seems acceptable that the topic assigned for managerial benefit shows set of words that pertains to education. Moreover, since media coverage on donations made to universities often receive name recognitions that specify the name of the executive officers or the title, the resulting cluster of words seem probable.

To test whether the number of topics used for guidance matrix is appropriate and best explains the data, I calculate coherence score⁴ of the LDA model derived. Coherence score measures the semantic similarity across different topics from the given distribution of corpus, or probabilities that a certain group of text would appear in coherent measure given the number of topics in the documents. Therefore, comparing coherence score with different number of topics in LDA method provides understanding whether having different number of topics affects the efficacy of topic representation of the overall observed word appearance frequencies that must have some latent semantic relationships. To calculate the score, LDA model is run with different number of topics and calculate the score for each estimated model. Chart 4 shows the topic coherence score for the number of topics chosen for each analysis. Higher score implies that the chosen number of topics explains the data better. Empirically, a coherence score of 0.4 means insufficient number of topics, and 0.55 is considered as realistically achievable score that best explains the data. A coherence score of 0.65 is considered ideal but higher than 0.7 suggests that

⁴ Coherence Score measure for testing whether the number of topics for LDA properly describes the data is devised by Newman, Lau, Grieser, and Baldwin (2010) in “Automatic Evaluation of Topic Coherence”, where the methodology was first devised and introduced for testing.

the model is flawed. With the current Guided LDA model, the coherence score result of 0.54 suggests that having four number of topics for the model best explains the data being analyzed. While the performance of the model deteriorates for topics more than 4, it slowly improves up to 16 number of topics and deteriorates even further past 16. Coherence score test result justifies those 4 topics are needed to better understand the latent structure of news article data on corporate charitable donations.

Summary statistics for the donations amount identified in the news article is provided in Table 1. As extensively discussed in the Data section, after applying various filters on requirements of the data, I end up with 100,309 observations that have text related to corporate's charitable donation activity with dollar amount specified that is also retrievable by the scraping algorithm. On average, the firms who publicize their charitable donation activity donate or pledge to contribute around 7.27 million dollars. With the identified topic, firms are likely to donate on managerial benefit topic with the most amount, followed by donation on publicity, community, and altruism. From this initial analysis, it is evident that the donation efforts are concentrated on managerial benefit topic and publicity topic, hinting that corporate charitable donation is generally rather focused on business related topics than showing true philanthropy.

Industry breakdown on charitable donation within the sample confirms many previous findings about the overall practice of corporate giving. Previous studies have found that the more homogenous the product is and the closer to the end customer, the higher the overall contribution is made to the public. In line with this finding, I observe higher amount of donation for companies in financial industry (homogenous products) and companies in manufacturing and business equipment (customers). In addition, other studies have reveals that what is traditionally considered as more threat to environment tend to make mending donations. Also, in line with the previous

documentation, I find higher amount of donation being made by firms in oil, gas, and coal industry, and also companies in utility industry. Overall, the sample data collected shows tendencies that are in line with what previous literatures have documented, validating the dataset.

4. Hypothesis Development

With the topics identified with guided LDA, I turn to building more formal hypotheses on why firms may be motivated to make donations specific to different topics identified in the analysis. Understanding the underlying motives of corporate charitable donation has been a topic of great interest to economic researchers, as no single motivation would sufficiently explain the transferring of financial resource without any return for a profit-maximizing agent. While many research works have been documented for the possible motives, majority of the literatures that attempt to explain the motivation have based its theoretical foundation on the argument proposed by Friedman (1970) that the sole “social responsibility of the business” is to maximize profit and thus shareholder’s value. To test this idea, economists have examined the financial outcome of making corporate charitable donations. They hypothesized that if there exists a positive relationship between the charitable donation and financial performance of the donating firm, then the financial benefit should be the main motive of charitable donation, finding alignment between the goal of the corporation and the observed practices of charitable donation by the companies. Since then, the studies on understanding the motivation of charitable donations, sometimes even including CSR, However, on the other hand, other researchers have found weak or no evidence of relationship between charitable donation and financial performance of the donating firm,

concluding that charitable donation is a result of agency issue at the firm, not motivated by profit-maximization motives (for an extensive literature survey, refer to Gautier and Pache (2015)).

While academic evaluation of the donating practice has centered around evaluating Friedman Doctrine, the explanation on motives provided by the research has not fully explained the observed practices of the charitable donations. It can easily be observed that firms do often contribute to different nations and causes that is completely unrelated to the firm's main businesses, but for pure altruism. Many U.S. public corporations donate outside of the country to help the education, living condition, an environmental condition of the developing world, and it is hard to imagine that any of the charitable donation made could generate any financial "return" in foreseeable future. Similarly, some companies engage in charitable donation as a mean of strategic marketing, crafting strategies that align the societal value with business interest.⁵ Clearly, real practice of corporate charitable donations reaches beyond profit-maximization motives and suggest other possible reasons such as altruism, marketing, or publicity-seeking drive the motivation for making donations. Therefore, any empirical testing that does not consider different additional dimensions of charitable donation but simply use the amount of donation may mis-specify the test and not provide the most accurate inference.

To address the complex nature of motivation for corporate charitable donation, I consider types of donations classified into four different categories as the main indicator that reveals certain dimension of underlying motives and make predictions on how they are affected by different possible motives of charitable donation. One underlying assumption across all formed hypotheses is that any statement publicized in news article conveys messages to specific group of stakeholders.

⁵ One example could be TOMS, a company that donates a pair of shoes for one pair bought by the customer.

Cover-up Motive

Some corporations, due to their nature of businesses, are more prone to come under greater scrutiny and draw more severe negative attention. Widely referred to as “sin” industry, companies that operate in gambling, alcohol beverages, and tobacco are known to face real financial limitations (Hong and Kacperczyk (2009)). Meanwhile, other firms may face reputation risk after their wrongdoing is found out and charged guilty in any legal dispute. In both cases, corporations would be motivated to exert effort to cover up the negative aspect of the current business or legal risk surfaced from the cases charged. While corporate charitable donation has often been one of the sought-after means of improving tainted corporate images, it has not been made clear which topic of donation is being primarily used for making improvement on the image. I hypothesize that for cover-up motives, donations related to managerial benefit or publicity will not be made, because theoretical understanding proposed by Benabou and Tirole (2006) shows that the beneficiary of any charitable behavior that achieves publicly observable gain for the donor discounts the value of such charitable act if done excessively. In other words, if what companies would gain from charitable donation is obvious in the first place, people will discount the meaning and cast serious doubt on the underlying intention. Therefore, making donations that provide managerial gain or publicity benefit would not help but destroy the very reputation that companies intended to improve, as audiences of the news already see the benefit arising from donations. Instead, firms motivated for covering up bad name would make donations targeted for altruism or community, as the possible benefit for the donor is not as obvious, delivering genuine message to the stakeholders. Therefore,

H1.a.: Firms that donate out of cover-up motives (sin industry, legal penalty) make more donations that pertain to community and publicity topics, but not managerial benefit or altruism.

Conversely, even if the donation is being made to make up for the possible bad reputation, if both parties fully understand such intent and rationally expect donations to take place, the topic of donation being made will be irrelevant in making up as long as some amount of charitable donation is made. That is, charitable donation effectively becomes a tax for operating in certain business or exhibiting certain behavior. Therefore,

H1.b.: Firms that donate out of cover-up motives (sin industry, legal penalty) make more donations in general, regardless of specific topics or audience.

To test the hypothesis, I evaluate those companies that operate in sin industry⁶ (gaming, alcohol, tobacco, weapon, and oil) and companies that received penalties from court ruling. The list of sin industry is taken from Hong and Kacperczyk (2009) and Cai et al. (2011). For the violation data, I take the comprehensive violation records of firms from violation tracking section of goodjobsfirst.org webpage. The webpage keeps track of cases of legal violation that have been escalated into formal suits that also received a final verdict with penalty amount charged to the firm. If cover-up motives exist, I expect to observe a positive relationship between charitable donations and firms that are in sin industry or firms who received a penalty. Furthermore, I expect

⁶ Alcohol firms are identified with SIC codes 2100–2199. Tobacco firms are identified with SIC codes 2080–2085. Weapon firms are SIC codes 3760–3769, 3795, 3480–3489. And oil industry firms are SIC codes 1300, 1310–1339, 1370–1382, 1389, 2900–2912, and 2990–2999. For Gaming industry, I use NAICS codes 7132, 71312, 713120, 71329, 713290, 72112, 721120.

to observe higher tendency of making donations to community purpose than altruism, as community-oriented donations will have more direct appeal in increasing reputation.

Business Reputation Motive

The increased reputation not only helps the brand building and name recognition of the company, but also positively contributes to the profitability as increased reputation creates loyal customers and reduces their price elasticity of the company's product. Increased reputation especially helps companies in more competitive industry where product differentiation is more difficult. Because engaging in socially responsible behavior such as charitable donation serves as a product-differentiation tool and is known to increase the reputation of the engaging firm (Brammer and Millington (2005)), firms that have the need to increase the customer awareness through benevolent action of the company would be motivated to increase donations with certain dimensions. Specifically, firms that are donating out of reputation increasing motives should be making more donations that include community and publicity topics. Therefore,

H2.a.: Firms that donate out of business reputation motives make more donations that pertain to community and publicity topics.

To test this empirically, I measure the need for reputation building in following ways. First, if the industry in which the firm belongs is more competitive, the need for building better reputation to earn sales would increase. Therefore, using Herfindahl-Hirschman Index (HHI) as a measure of industry competition and need for higher business reputation, I expect to observe negative association between HHI and the amount of donations made for community and publicity.

In addition, I also use the percentage market share of the of sales within two-digit SIC industry group as an alternate measure of reputation increasing needs and test the relationship with donation. For these variables, I also expect to observe negative relationship with the amount of donations made as higher marker share may indicate less needs to increase business reputation to compete for the business.

On the other hand, understanding that charitable donation could be used as reputation enhancing device, firms who may have more resource would be motivated to donate more, creating peer-pressure within the industry. In such case, the market leader in more concentrated market may be making the most donation. Therefore,

H2.b.: If all firms donate out of business reputation motives, donation out of business motives will create peer-pressure, causing the firm to donate more in all topics.

Under the premise that every manager behaves rationally, if firms are donating out of business reputation motives, I expect to see positive relationship between HH index / market shares and the amount of donation being made.

Personal Fulfillment Motives

Separation of ownership and control in modern public corporations has created incentive and governance problems between the manager and the shareholder of the company, especially with the free cash flow available inside the corporation (Berle and Means (1932), Jensen and Meckling (1976)). Because the mechanism of how decisions related to charitable donation remains unknown,

some studies on corporate charitable donation attributed the motivation for donation on managerial preference and have examined whether making of charitable donation was due to simply manager's own discretion serving personal interest. To test this idea, Masulis and Reza (2015) examine whether various managerial characteristic such as age, tenure, or ownership affects the donation decision, and find that only CEO connection and ownership are the relevant determinants. However, these institutional factors still do not explain whether the donations were motivated out of individual and personal preference or some institutional factors. While accurate measurement of individual intention or behavior is difficult, my data allows to test and draw line between whether individual preference for altruism or private benefit motivated the manger to make charitable donation decision, as the topics of donation have been identified with LDA technique. Therefore, I hypothesize that if the donation decision is made at individual level and is geared toward fulfilling personal aspiration for altruism, I expect to observe the individual managerial characteristics to be more related to donations with altruism or community topic. However, if the donation is motivated by private benefit needs or to gain individual reputation, a positive relationship should be found with individual characteristic and the donations with Managerial Benefit or Publicity topic. Likewise, if some systematic factors within the governance structure of the firm led to management decision on making charitable donation, I expect to see less inclination toward donating for altruism or community topic. Rather, I expect to observe more inclination toward managerial benefit because if the governing group made the decision as a whole, they would be inclined to seek benefit from donations being made. Therefore,

H3.a.: If the corporate charitable donation is motivated with personal altruistic reasons, individual characteristics should be associated with donations pertaining to community and altruism topics.

H3.b.: If the corporate charitable donation is motivated with personal benefit seeking reason, individual characteristics should be associated with donations pertaining to managerial benefit.

H3.c.: If the donation is motivated systematically out of firm's managerial decision, governance related firm characteristic should be associated with donations for managerial benefit.

Signaling Motives

Firms may be interested in making charitable donations because they would like to deliver signals that may reveal some positive information about intangible aspects of the business. As making donations involves a transfer of free cash that the company could operate without, the very action reveals information that the donating company is financially viable, or at least during the period when the donation is pledged for. Similarly, other researches that looked at the benefitting mechanism of CSR is more geared toward to reducing information asymmetry and therefore overall risk reduction (Jo and Na (2012), Albuquerque et al. (2018)). However, unlike other motives, predicting a hypothesis with respect to signaling motive could be dubious as it is unclear which component of charitable donation reveals the information and communicates the intangible

aspect of the business. It could well be that the action of making donation itself could serve or what the money is being donated for or the purpose. If it is former, any donation directed to address any topics identified through LDA will have as much of an effect, because it is the donation, not necessarily what it is for, that would send the respective signal about the intangible aspect of the company. Vice versa, if the target of the donation helps send out more genuine signal for the audience, then only certain type of donations made would be more effective in communicating the intangible aspect. Similar to cover-up motives, if the genuineness of the donation matters, donations made for community or altruism reason would be associated with the measures of information asymmetry. Therefore, two possible hypotheses arise.

H4.a: If the donating behavior itself is what conveys the information, firms that donate out of signaling motives make more donations that do not have any particular leanings to any of the topics.

H4.b: If the beneficiary of the donating behavior matters, firms that donate out of signaling motives make more donations that pertain to community and altruism topics, but not managerial benefit or publicity.

For the measure of information asymmetry, I use analysts' earnings forecast dispersion before the earnings announcement measured by standard deviation. For the overall level of risk for the firm, I use the cost of equity estimated from Fama-French three factor model.

5. Empirical Tests

A. Determinants of Donation

To test four different hypotheses on the motives behind corporate charitable donations, I use panel ordinary least square (OLS) regression with fixed effects at both firm and industry-year level as a default specification. Because some firm characteristics of interest may remain the same over time, depending on the variable of interesting, I specify different fixed effects only at firm and year level, or firm and industry-year level. However, to allow for the most rigorous setup for the test, I specify firm and industry-year level fixed effect regression as the default setting.

To first understand which firm level characteristic determines the charitable donation with different topics, I put various firm level financial characteristics and firm characteristics to test. As charitable donation is a free transfer of wealth, I test whether any profitability and performance related variables explain the tendency to make more donation. As pointed out in Gautier and Pache (2015), the overall financial circumstance and the available resource could be an important driver of charitable activity. Similarly, I also include the size, age, and governance characteristic of the firm that have been studied to affect donation decision (Masulis and Reza (2015)). The research question this test is trying to answer is whether other types of donation identified through topic modeling exhibits similar or different tendency in determining the amount of donation made by the firm.

Table 2 presents the result on determinants of firm level across all sample, and each sub-sample for Altruism, Managerial Benefit, Community and Publicity. Evaluating the test with full sample, firm characteristics that indicate level of financial resource within the firm, Tobin's q , investment, and cash reserve, are positively correlated with the donation level. This is reasonable as extra financial resource should be the first consideration for firms to make any type of charitable

donation. If the firm is making donation while it is struggling to perform would clearly go against the notion of serving shareholder's value.

The breakdown of the determinants for topic allows further understanding on the charitable donation behavior of the firm. The overall test result seems to indicate that financial contingency and circumstance is the de facto determinant of the donation decision. Similar to the full sample analysis, for donations on altruism and managerial motive topic, cash reserve is positively correlated, but not topics on community or publicity. Similarly, it is also interesting to notice the market leverage is negatively associated with community donation, providing additional possibility that some donations are closely tied to financial contingency of the firm, while some others are not. The result for Tobin's q seems to indicate that the financial contingency is important. Firm size seems to be the one of the significant determinants in making donations for the company, but only for specific donation topics. The bigger the firm, the more donation is made and reported for altruism and community topic. This seems in line with what we observe in the society, as bigger companies and known to make more donations to the society. It is also interesting to note that the level of entrenchment measure developed by Bebchuk et al. (2009), or E-Index does not present any pattern for different motives of donations. This may suggest that the charitable donation behavior is not a result of lax monitoring, but possibly a strategic decision made by the firm depending on the situation and purpose in mind by the management. All in all, the test result from Table 2 suggests a possibility that the motivation for donation decision is a result of complex decision making.

B. Test of Cover-up Motives

To evaluate Cover-up motive of corporate charitable donation, I use both specific type of industry that the firm belongs to (sin industry) and the amount of penalty fine arising from legal violation as the measures of cover-up motivation in making donations. As specified, if the firms are indeed making donations out of Cover-up motives to either manage their reputation for working in socially “sinful” businesses or make up for the damaged reputation through bad behaviors, one would expect to see increase in the donation concerning community and publicity. One minute difference between using sin industry as the measure of Cover-up motives versus penalty fine resulted from court decision is that firms in sin industry may not be necessarily engaged in socially unacceptable behavior, while firms that are charged with penalty have, leaving no specific audience of interest for the donation behavior. Rather, they may simply be donating to make up for the bad image their nature of business innately has.

Table 3 presents the result of OLS regression with industry-year fixed effect testing Cover-up motive. To test the motive, I first use an indicator variable whether the company operates in sin industry, along with all other variables tested in Table 2 as control variables. The result of test for sin industry is shown in Panel A. As hypothesized, firms in sin industry are motivated to make more donations than those firms that do not belong to the sin industry. The positive association exists across all different topics of donations identified through GLDA model, except for the donation on altruism topic. It is interesting to note that while most of the types of donations topics positively correlated, for sin industry, the magnitude of relationship for donation for Publicity is larger than that of Community or Managerial Benefit. This strongly suggests that firms are indeed motivated to make donations to strategically manage their images by making donations that may expose the name and presence of the company to public. In addition, this confirms the hypothesized Cover-up motivation where there exists some understanding and expectation on the

general level of charitable donation by those companies in the sin industries, suggesting donations are strategically made to mend the reputation for firms operating in sin industry.

Panel B of Table 3 tests the Cover-up Motives using different measure, amount of penalty charged by the legal decision. Similar to sin industry, the penalty charged is also positively associated with firm-level charitable donation on altruism, managerial benefit, and community related topics. The result confirms that firms indeed are motivated to make donation to cover up past misdeed that may damage the reputation and sustainability of the corporate business. In addition, it is interesting to note that firms are not focusing on donations with publicity topics, but on altruism, managerial benefit, and community. The firm's tendency to focus its donation effort on altruism and community reveals that firms are making calculated choices on donation purpose where the reversal of damaged reputation could be more effective. As studies from management science show that showing genuineness in the intention of donation is important (Godfrey (2005)), making community or altruism related donations would likely to be accepted as more genuine if company is caught violating employment contract or environment regulation that may have affected the relevant party directly. This is also in line with the proposed hypothesis that making donations whose end goal is not as obvious has more positive effect on earning reputation, instead of being discounted as ingenuine. Therefore, firms that are motivated with Cover-up would intentionally focus more on both the altruism and community related donations that would generate better repairing effect on the damaged reputation of the company.

Overall, these two tests reveal that companies are motivated to make donations based on their needs to cover up the both the bad deeds that are committed by the firm and to make up for the inseparable negative perception arising from the nature of business the firm is operating in.

C. Test of Business Reputation Motives

To examine whether firms are making charitable donation out of improving their business reputation, I employ two different measures of needs for business reputation motives. First, to measure the overall competitiveness of the industry in which the firm belongs, I use Herfindahl – Hirschman Index (HH Index) to gauge the overall needs for companies to differentiate themselves and improve the business reputation. The result of test using OLS regression is shown in Panel A of Table 4. Overall, there exists no statistically significant relationship between HH Index and the overall level of donation, confirming that not every firm is particularly motivated to make donations out of business reputation needs. However, further test shows the hypothesized negative association between the donation for community and publicity topic and the overall level of market competitiveness. The result indicates that firms may be motivated to donate out of business reputation motive, suggesting that charitable donation could serve as an alternative marketing tactics that firms may implement if the competitiveness of the industry is high.

To further test the business reputation motives hypothesis of charitable donation, I use market share of the company as an alternate measure to proxy for the firm’s need to increase business reputation. Market share is calculated by the percentage sales within two-digit SIC industry classification. Similar to the results from using HH Index, the overall donation has no particular relationship with the percentage market share. However, with each specific topic except Managerial Benefit, there exists a negative correlation between the market share and the level of donation. As hypothesized, because the firm with more market share would be less motivated to make charitable donation pertaining to publicity or community to increase awareness and reputation, the result seems to indicate more clearly that firms may be motivated to make charitable donation out of business reputation needs. The difference in the result from using HH Index as a measure of need for better reputation could be explained by the fact that whereas HH index

measures the overall industry competitiveness, the percentage market share measures more direct needs for increase in business reputation and motivation. Therefore, while firms in more competitive industry are obliged to make community related donation as part of the peer pressure within the industry, a firm with weaker sales may be more directly motivated to make charitable donations that may impact the overall publicity of the company and product more.

Overall, the test of business reputation motive shows supporting evidence that some firms are making donations out business reputation needs, however, the motivation only drives the corporate charitable donation in certain topic more than the other, specifically Community and Publicity topics. The fact that there is no overall relationship observable for the whole sample makes sense because the most probable best practice for improving name value and differentiation should be advertisement effort and marketing drive with respect to price of the product but not necessarily the image of “good” corporation whose effect may be not as direct. While there may be some firms or topic of donation that may help firm by improving its image via charitable donation (e.g. coffee industry) more than the other, it is hard to imagine that the effect could so large as to create systematic differences for the firms in general. Yet, it is evident that firms are very strategic and mindful with their charitable donation decision and make donations out of business reputation motivation.

D. Test of Personal Fulfillment Motives

Another set of motivation for making charitable donation could be personal goal and aspiration of an individual manager, namely CEO. Indeed, some studies have examined that donation decision is mainly out of individual decision and found that some investors act negatively even to the news on a personal pledge for charitable donation with the CEO’s personal wealth. To test whether charitable donations are out of CEO’s individual personal fulfilment on altruism or search of

private benefit, I test whether individual CEO characteristic such as age, gender, ownership, and tenure of the position are associated with any of the topics of donation being made by the firm. Information on both CEO characteristic and board characteristic are obtained from Institutional Shareholder Services (ISS) database. From the database, I collect information both on CEO and the structure of the board.

The result of the test is presented in Table 5 Panel A. Regression analysis on the full sample suggests that the CEO ownership and tenure are statistically significant explanatory power, each showing opposite direction. CEO ownership is negatively correlated while CEO tenure is positively correlated. The relationship between charitable donation level and CEO ownership is reasonable, as higher ownership would represent more stake in the available resource of the firm, discouraging the free transfer of the money unless good reason exists. CEO tenure is also a reasonable determinant for donation as CEO tenure seems to provide the CEO with more influence to push for charitable donation decision if desired. While CEO's individual characteristic such as age and gender does not determine the overall level of donation, when analyzed separately under different topics, different results arise. For the gender of the CEO, when female, there is less tendency to donate for community and publicity related topics. While other topics show statistically insignificant result, the overall direction suggests lower level of donation for female CEO compared to male CEO. A caution is needed in interpreting the result, as the current test does not explicitly reveal whether it is the gender, or some other unobserved factor represented by the gender. Age of CEO is another individual characteristic that provide puzzling evidence as the age is positively associated with both donations with managerial benefit and community topic but is negatively associated with the altruism. One possible interpretation of the result is that younger CEO's may be under more pressure to establish caring image and expected to have higher

awareness regarding “sustainability” and act accordingly. The result of the test partially confirms that charitable donation may be motivated out of personal fulfillment on altruistic reason, but it does not provide further clear-cut evidence that charitable donation decision is mainly driven out of individual’s altruistic needs only. Rather, the test result suggests that the combination of individual altruistic motive and other systematic characteristic at management level could motivate to donate at firm level.

To confirm whether any systematic characteristic on governance has any impact on the amount of donation being made, I test different governance characteristic variables that may shed some light on the motives of corporate charitable donation. Results are shown in Panel B of Table 6. Overall, no governance characteristic is associated with the donation, suggesting that donation decision is made more at individual manager level than systematic management level. However, from tests on individual topics, it can be confirmed that some governance related characteristics have correlations with donation. One notable governance characteristic is entrenchment index (E Index) that shows negative correlation with donations on altruism and community topic. This explains that higher the entrenchment of the management, the less likely the management is willing to freely transfer internal resources to outsiders. Another notable governance variable is CEO-chairman duality, an indicator whether the CEO of the company is also the chairman. The test result shows that CEO-chairman duality is positively associated with the amount of donation being made to Managerial Benefit topic while negatively related to altruism topic. This test result suggests that the CEO’s overall level of influence in the board room affects the donation decision, as the fraction of independent director has limited effect on the donation on managerial benefit topic only. Although no strong and consistent evidence is found to argue that the effect of governance characteristic of the donating firm is substantial on the donation decision, some

governance characteristics seem to have some influence donations on altruism and managerial benefit than community and publicity topic. All in all, test of personal level motivation shows that CEO's personal level altruism could partially motivate the firm to make donations on specific topic of interest.

E. Test of Signaling Motives

Firms may be motivated to make charitable donation because companies may want to convey soft information on certain aspect of business that cannot easily be quantified. Therefore, charitable donation by the firm may be used as a tool to convey the soft information, aiming to reduce the information asymmetry or perceived risk level of the firm. Therefore, to test the motivation for making charitable donation out of signaling motive, I use dispersion in the analysts' forecast on earnings announcement and cost of equity to proxy for the firm's need to make charitable donations out of signaling motive. Table 6 presents the result. Using yearly average of analysts' forecast dispersion as the measure for motivation of signaling, I find no statistically significant relationship on firm's signaling motivation (Panel A). No apparent relationship between forecast dispersion and donation seems reasonable as charitable donation would only be secondary effort that the company could make with respect to reducing information asymmetry on business related activities. Panel B of Table 6 presents the result of test using cost of equity as the measure for signaling motives. Unlike dispersion measure, cost of equity is positively correlated with donation for the full sample. However, no statistically significant relationship is detected on different topics of donations, suggesting that signaling motive is unlikely motive for the firm making charitable donation decision.

F. Effect of Donation on Firm-level Outcome

In evaluating what drives the corporate charitable donation decision from previous empirical tests, I find evidence that corporate's donation decision reaches beyond simple altruism and seem more like a strategic choice that the firm makes. To evaluate whether donation decision also has strategic outcome at firm level, I test whether charitable donation has any effects on firm-level financial variables in OLS regression setting with both firm and year fixed effect.

Table 7 presents the effect of publicized donation on firm's financial outcome. To first test whether the donation amount is associated with the profitability, I use Return on Asset (ROA) of the next year as the measure of profitability. I use the next year's ROA to avoid any possible correlation within the same year. The result from Panel A suggests that the charitable donation made is positively correlated with the next year's profitability, but only on the donations made to altruism topic. The fact that the statistically significant relationship is detected in only one of the topics is interesting, as previous studies that attempted to answer whether charitable donation leads any financial gain have long struggled to find convincing evidence that "doing good" would lead to financially "doing better". Some articles have found positive relationship, while other studies have found no relationship, leaving the question of financial benefit of charitable donation largely inconclusive.

The test result provides some possibility why previous studies that did not distinguish any topic had little success. As discussed, the only statistically significant relationship is the donation on altruism, while the rest topics have no relationship. This suggests that any previous studies evaluating financial benefit were unsuccessful because researchers could not identify the latent structure in the specific topic and therefore could not capture the differences in the relationship among different topics of donations. As how the philanthropic action is perceived is also important in delivering a value, a lack of consideration on topics could have resulted in mixed evidences with

only using one combined measure of charitable donation. However, one thing to note is that while there may exist a statistically significant relationship, the magnitude of the benefit is negligible that it could be ignored or seek out an alternate profit-maximizing strategy.

Panel B presents the effect of donation on the analyst forecast dispersion. As discussed, charitable donation decision may convey some signal about the firm's soft information and therefore reduce information asymmetry. The test result seems to suggest that while firms are not motivated to make donation out of signaling motive, the opposite could be true that making donation has information signaling characteristic. Indeed, donations to altruism topic is negatively associated with the analysts' forecast dispersion. While no feasible explanations may exist, it could be the case that higher exposure of philanthropic donation may deliver signals to people and of actions report in charitable donation article may be beneficial to communicating information and reducing uncertainties.

Panel C tests whether donation also affects the overall level of riskiness of the firm, measured by the cost of capital. Using fitted return from Fama French three factor model, the test suggests that charitable donation is negatively related to the proxy of perceived risk. While test on all sample seem to suggest an underlying mechanism similar to forecast dispersion, it is extremely interesting to note that the relationship between donations made on altruism topic is positively related to the perceived level of risk. This may imply that the market has discerning power to understand the cover-up motive of the donating company and react rationally and take the information into consideration.

To test for whether there exists any firm value implication, I test whether the firm value proxied by Tobin's Q has any association with the charitable donation. The test result is presented in Panel D. While most of the donations across full sample and on specific topics have positive

correlation with the firm value, donations on altruism shows negative relationship and donations on community topic has no statistically meaningful association. It is interesting to note donation made to altruism topic could be perceived as a sign of value destroying activity. Overall, corporate charitable donation seems to have positive effect on the firm-level financial outcomes.

6. Conclusion

Despite rising attention on socially responsible behavior of corporations and on sustainability of business endeavor, an understanding on why corporations would make charitable donation remains minimal, as it has been difficult to distinguish possible underlying motives with the currently available dataset and lack of information on how philanthropic behavior could be classified. To address this difficulty and provide deeper understanding on the underlying motivations behind corporate charitable donation, this paper studies the latent verbal structure in the news article of charitable donation of the firms using guided LDA topic modeling technique. From large-scale text data of charitable donation from news article, I identify four different underlying topics that reveal certain aspects that would be affected differently with different possible motives of donation. With this classification, I provide evidence that while firms may donate to support altruism, seek managerial benefit, help community, and increase its publicity by exposing the good behavior, firms are mostly focused on donation topics related to managerial benefit and publicity through donation. To the author's knowledge, this is the first study that attempts to understand corporate charitable donation using machine learning technique.

To further shed light on behind motives of firm's charitable donation decision, I test four different hypotheses on motivations of donations that could affect the identified topics of charitable

donations differently. Specifically, I test whether corporate charitable donation is made from Cover-up, Business Reputation, Personal Fulfilment, or Signaling motives. I find that firms are mainly motivated to use charitable donation as a tool to cover up bad reputations and make up its misdeeds, and for business reasons to increase awareness of the customers. While personal altruistic motivation of the CEO may motivate firm's charitable donation, governance reason alone does not motivate donations. I do not find any systematic evidence that the needs for signaling soft information as one of the possible motivations for donations. Overall, I find that the donation decision of the firm is motivated out of highly strategic decision to manage the reputation on both business and notoriety, but not a result of sole personal fulfillment or expropriation of corporate wealth as a result of governance failure. Finally, I document that the firm's charitable donation on certain topics is associated with higher profitability, reduced information asymmetry, lower risk, and higher firm value. This finding strongly suggests that the source of value in the philanthropic endeavor may arise from specific topic of donation, but not from all possible donation topics. All in all, I find that charitable donation decision is motivated out of strategic reason for well-defined group of target audience in order to gain benefit, but not out of personal whim or expropriation of corporate resources for private use.

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Chart 1. Charitable Donation made in the United States

This chart presents the amount of donations made by corporations and foundations each year in the United States. Corporation donation is donation made directly by the corporations. Foundation donations include donations made by foundations that are directly affiliated with corporations and independent foundations. The information is gathered from the annual report published by GIVINGUSA.ORG.

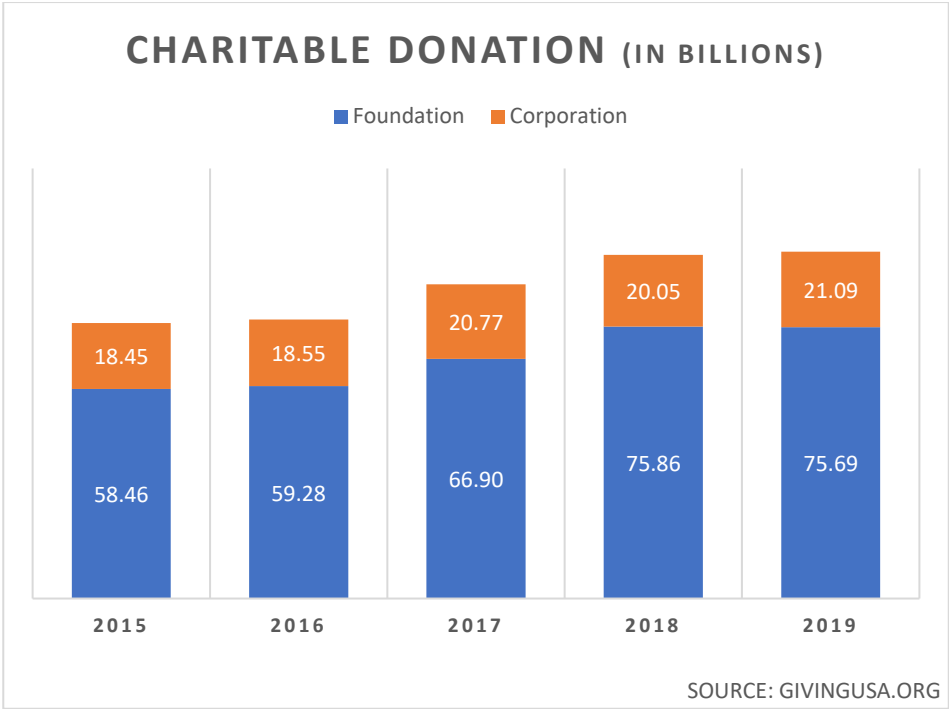


Chart 2. Distribution of Topics within News Articles

This chart presents the topic distribution of within the news article documents in the data. Four topics have been selected for the guided Latent Dirichlet Allocation analysis on the texts of articles. Simulation was configured at 5,000 with initial 100 burn-in repetitions. Altruism, Managerial Benefit, Community, and Publicity represent each topic identified from the model.

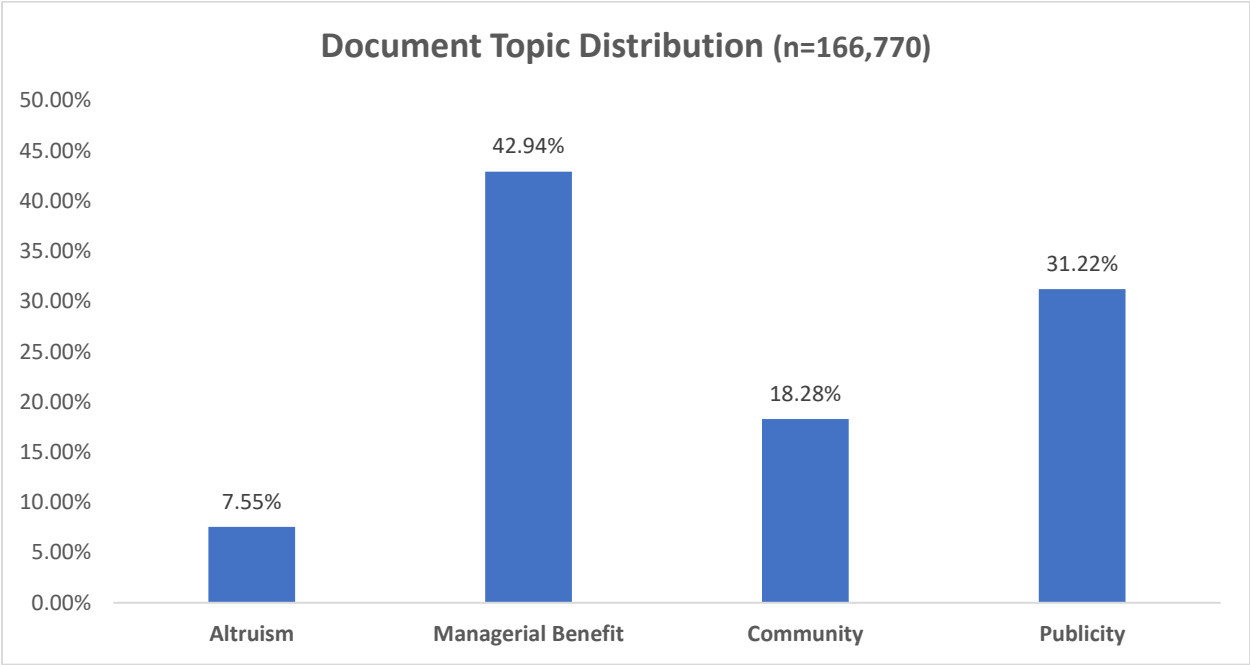


Chart 3. Top 10 Keywords for Each Topic by Importance

This chart presents the ten most important key words identified from each topic from the sample.

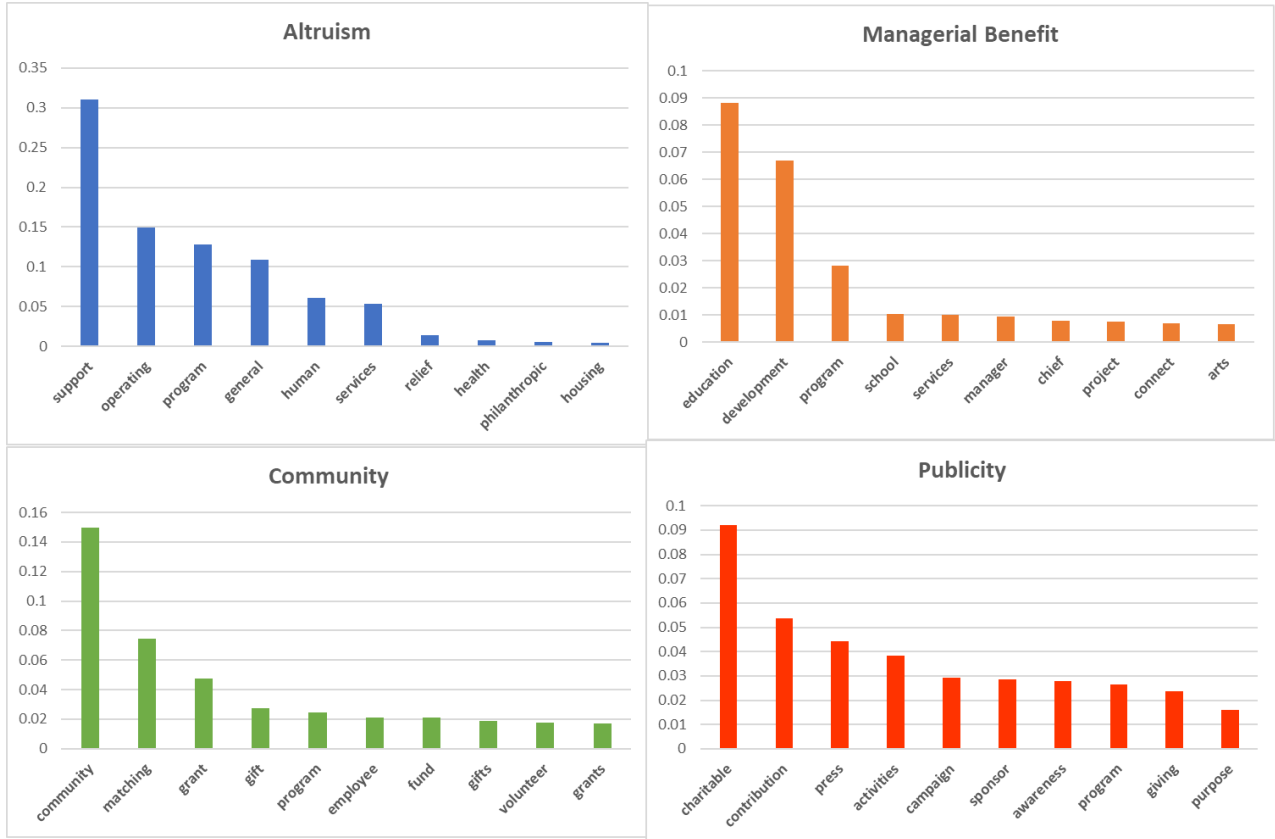


Chart 4: Topic Coherence Test

This chart presents the result of topic coherence score result evaluating the potential number of topics that best explain the observed corpus

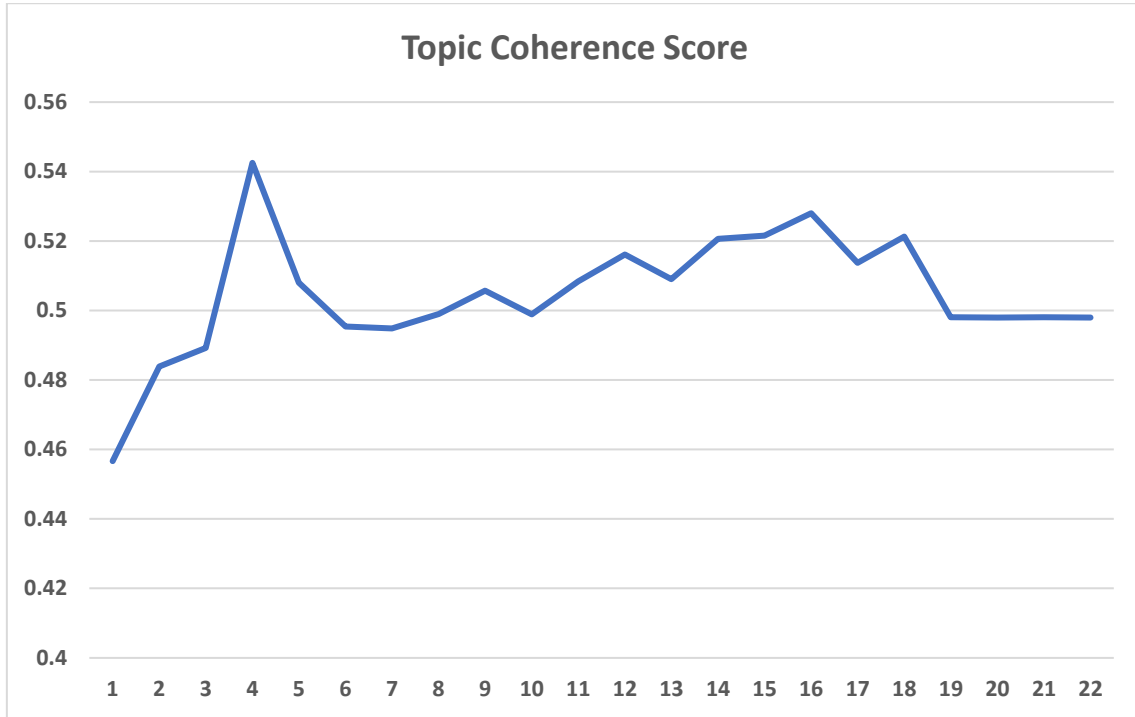


Table 1: Summary Statistics:

This table reports summary statistics of variable used in the test. Donation is the amount of charitable donation specified in the news articles data collected. Donations with each respective topics only include samples with donations identified as those topics from the LDA analysis. Panel A describes the donation with each type from news article data. Panel B is donation from tax filing data. Panel C presents the donation from news article dataset with Fama-French 12 industry classification. Panel D describes the firm-level variables. Detailed descriptions of how variables are calculated is in Appendix 3.

	(1) N	(2) Mean	(3) Std. Deviation	(4) P25	(5) P50	(6) P75
Panel A: Donation Amount collected from News Article (in millions dollar, excluding 0)						
Philanthropic Donation	100,309	7.271	698.000	0.035	0.187	0.831
Donation - Altruism	1008	0.236	0.243	0.066	0.089	0.483
Donation – Managerial Benefit	84,834	7.581	746.151	0.035	0.186	0.826
Donation – Community	1,319	2.763	15.254	0.037	0.210	0.919
Donation - Publicity	13,148	5.334	200.160	0.035	0.195	0.866
Panel B: Donation Amount from Tax Filing Data (in millions dollar)						
Total Donation (Firm-Year)	3,227	4.740	13.021	0.186	0.750	3.974
Panel C: Donation Amount in News by Fama-French 12 Industry Classifications (in millions dollar)						
Consumer Non-Durable	952	0.751	1.85	0.016	0.185	0.605
Consumer Durable	1,253	0.752	2.64	0.045	0.217	0.718
Manufacturing	5,391	1.542	15.99	0.020	0.100	0.380
Oil, Gas, and Coal	1,673	72.65	1,692.79	0.082	0.443	1.119
Chemicals and Allied Products	91	0.304	0.34	0.041	0.131	0.508
Business Equipment	23,626	4.934	17.40	0.043	0.241	1.235
Telephone and TV Transmission	1,380	0.812	2.58	0.034	0.184	0.740
Utilities	9,379	3.137	220.43	0.026	0.130	0.545
Wholesale, Retail, Services	5,112	3.756	6.02	0.041	0.307	3.557
Healthcare, Medical Equipment, Drugs	1,538	1.023	7.89	0.036	0.193	0.694
Finance	47,199	9.052	962.85	0.032	0.173	0.754
Others - Mines, Construction, Building Maintenance, Transportations, Hotels, Bus Service, Entertainment	2,721	1.779	10.12	0.044	0.300	0.906

Panel D: Firm Characteristics	(1) N	(2) Mean	(3) Std. Dev	(4) P25	(5) P50	(6) P75
<i><u>Financial Characteristic</u></i>						
Cash	102,227	0.137	0.114	0.038	0.128	0.190
Tobin's q	102,227	1.702	0.956	0.876	1.473	2.324
Investment	102,227	0.056	0.035	0.034	0.049	0.080
Log(asset)	102,227	10.788	0.825	10.769	11.211	11.211
ROA	102,227	0.133	0.077	0.070	0.123	0.174
Market Leverage	102,227	0.210	0.190	0.073	0.130	0.325
Total Dividend	102,210	0.416	0.516	0.218	0.306	0.528
Dispersion	97,650	0.050	0.102	0.018	0.036	0.053
Cost of Equity	98,043	0.089	0.193	0.025	0.098	0.167
<i><u>Firm Characteristic</u></i>						
E Index	102,227	3.314	0.822	3	3	4
Sin Industry	102,227	0.029	0.168	0	0	0
Market Share	102,227	0.101	0.123	0.015	0.054	0.149
HH Index	102,227	621.496	815.528	235	371	524
CEO Age	97,398	57.481	6.266	53	57	61
Female?	97,398	0.053	0.223	0	0	0
CEO-chairman Duality	97,398	0.529	0.499	0	1	1
%Independent Director	29,487	0.838	0.075	0.800	0.875	0.875
CEO Tenure	97,398	6.437	7.889	2	4	7
CEO Ownership	97,398	0.004	0.018	0.000	0.000	0.002
Board Size	97,398	10.766	2.570	8	11	12
Total Penalty	64,148	0.0003	0.0011	0.0000	0.0000	0.0001

Table 2: Firm Characteristic Determinants of Each Topic

This table presents the results of OLS regression regressing different corporate variables on corporate charitable donation covered in the news article. Column (1) includes all samples with donation amount available from the article. Donations with each respective topic only include samples with donations identified as those topics from the LDA analysis. Definition of financial variables is available in Appendix 1. Fixed effects are specified at firm level and industry-year level. All coefficients are standardized with standard deviation. Numbers in parenthesis are t-statistics clustered at firm level. *, **, and *** denote statistical significance level at 10%, 5%, and 1%, respectively.

	(1) Full Sample With Donation	(2) Donation - Altruism	(3) Donation – Managerial	(4) Donation- Community	(5) Donation- Publicity
Financial Characteristics					
Log(asset)	0.010 (0.33)	0.898*** (6.30)	-0.011 (-0.40)	1.077*** (5.42)	0.102 (1.36)
Market Leverage	-0.003 (-0.15)	-0.773 (-1.63)	0.001 (0.05)	-1.231*** (-4.88)	-0.038 (-0.78)
Tobin's q	0.057*** (5.23)	-0.452*** (-2.98)	0.047*** (4.33)	-0.149 (-1.45)	0.102*** (3.27)
Investment	0.034*** (3.62)	0.122 (1.42)	0.021** (2.06)	0.293*** (3.50)	0.118*** (5.27)
Cash	0.030** (2.51)	0.356*** (4.66)	0.031*** (2.83)	0.030 (0.36)	0.030 (0.84)
ROA	0.008 (0.49)	0.004 (0.03)	0.014 (0.87)	-0.572*** (-6.83)	-0.036 (-1.39)
Total Dividend	0.009 (1.56)	-0.146 (-1.18)	0.010* (1.79)	-0.115* (-1.87)	-0.013 (-0.61)
Firm Characteristics					
E Index	0.003 (0.30)	-0.438 (-1.68)	0.010 (0.88)	-0.174 (-0.88)	-0.043 (-1.38)
Constant	0.537 (1.30)	-11.248*** (-4.47)	0.807** (2.20)	-11.820*** (-4.50)	-0.567 (-0.52)
Observations	102,544	762	89,810	1,084	13,120
R-squared	0.052	0.196	0.054	0.184	0.069
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes

Table 3: Test of Cover-up Motives

This table presents the results of OLS regression tests for evaluating cover-up motives of the corporate charitable donation. Donation is the amount of donation identified from the article text. Panel A presents the results on sin industry. Sin industry refers to the firms that operate in alcohol, tobacco, oil, gaming, and weapons industry. Panel B presents the results on penalty fine charged. Penalty is a natural log amount of total fine amount in US dollar charged during each calendar year. Donations with each respective topic only include samples with donations identified as those topics from the LDA analysis. Definition of financial variables is available in Appendix 1. Fixed effects are specified at industry-year level for Panel A, and firm level and industry-year level for Panel B. All coefficients are standardized with standard deviation. Numbers in parenthesis are t-statistics clustered at firm level. *, **, and *** denote statistical significance level at 10%, 5%, and 1%, respectively.

Panel A: Sin Industry					
	(1) Full Sample	(2) Donation - Altruism	(3) Donation – Managerial	(4) Donation- Community	(5) Donation- Publicity
Sin Industry	0.085*** (12.87)	0.035 (0.94)	0.078*** (11.78)	0.107*** (4.42)	0.123*** (5.46)
Log(asset)	0.045** (2.44)	-0.030 (-0.32)	0.044** (2.44)	0.053 (0.63)	0.047** (2.21)
Market Leverage	-0.042* (-1.95)	-0.290** (-2.59)	-0.045** (-2.12)	-0.156 (-1.50)	-0.030 (-1.00)
Tobin's q	0.073** (2.47)	-0.310** (-2.50)	0.068** (2.34)	0.197 (1.29)	0.076** (2.00)
Investment	-0.039*** (-3.03)	-0.063 (-1.08)	-0.036*** (-2.86)	-0.018 (-0.24)	-0.061*** (-3.35)
Cash	-0.025 (-0.88)	0.219*** (2.90)	-0.026 (-0.89)	0.041 (0.46)	-0.007 (-0.23)
ROA	-0.011 (-0.35)	0.080 (0.81)	-0.010 (-0.34)	-0.218* (-1.97)	-0.002 (-0.05)
E Index	-0.097*** (-2.79)	-0.213** (-2.25)	-0.098*** (-2.65)	0.024 (0.41)	-0.097*** (-3.71)
Constant	0.705** (2.16)	2.932* (1.81)	0.726** (2.23)	0.101 (0.08)	0.669* (1.87)
Observations	102,591	773	89,856	1,100	13,157
R-squared	0.035	0.172	0.037	0.144	0.051
Firm FE	No	No	No	No	No
Industry-Year FE	Yes	Yes	Yes	Yes	Yes

Panel B: Penalty Charged					
	(1) Full Sample	(2) Donation - Altruism	(3) Donation – Managerial Benefit	(4) Donation- Community	(5) Donation- Publicity
Penalty	0.025 (1.49)	0.217* (1.68)	0.027* (1.65)	0.225** (2.50)	0.017 (0.63)
Log(asset)	0.015 (0.69)	-0.093 (-0.63)	0.017 (0.75)	-0.032 (-0.35)	0.008 (0.25)
Market Leverage	-0.056* (-1.75)	-0.286** (-2.30)	-0.057* (-1.84)	-0.135 (-1.61)	-0.056 (-1.21)
Tobin's q	0.036 (1.37)	-0.234 (-0.62)	0.050* (1.73)	0.152 (0.65)	-0.041 (-1.48)
Investment	-0.018 (-0.74)	0.043 (0.32)	-0.018 (-0.77)	0.142 (1.53)	-0.022 (-0.65)
Cash	-0.055* (-1.95)	-0.044 (-0.21)	-0.059** (-2.09)	-0.161 (-0.79)	-0.010 (-0.25)
ROA	0.038 (1.15)	0.001 (0.01)	0.020 (0.60)	-0.137 (-0.81)	0.148*** (2.91)
E Index	-0.135*** (-4.77)	-0.125 (-1.25)	-0.135*** (-4.36)	0.030 (0.35)	-0.123*** (-5.05)
Constant	1.203*** (3.31)	2.921 (1.23)	1.175*** (3.13)	0.125 (0.07)	1.228** (2.34)
Observations	64,422	482	56,431	679	8,263
R-squared	0.041	0.163	0.043	0.147	0.057
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes

Table 4: Test of Business Reputation Motives

This table presents the results of OLS regression tests for evaluating Business Reputation motives of the corporate charitable donation. Donation is the amount of donation identified from the article text. Panel A presents the results on HH Index. HH Index is Herfindahl-Hirschman Index for measuring two-digit SIC level market concentration. Panel B presents the results on market share. Market share is defined as the percentage of individual firm's sales scaled by the two-digit SIC industry group's total sales during each calendar year. Donations with each respective topic only include samples with donations identified as those topics from the LDA analysis. Definition of financial variables is available in Appendix 1. Fixed effects are specified at firm level and year level for Panel A, and firm level and industry-year level for Panel B. All coefficients are standardized with standard deviation. Numbers in parenthesis are t-statistics clustered at firm level. *, **, and *** denote statistical significance level at 10%, 5%, and 1%, respectively.

Panel A: HH Index	(1) Full Sample	(2) Donation - Altruism	(3) Donation – Managerial	(4) Donation- Community	(5) Donation- Publicity
HH Index	-0.046 (-0.97)	-0.574 (-1.46)	-0.053 (-1.08)	-0.547** (-2.11)	-0.036* (-1.72)
Log(asset)	-0.038** (-2.00)	-0.020 (-0.09)	-0.029 (-1.52)	0.227 (1.03)	-0.109** (-2.26)
Market Leverage	-0.031* (-1.77)	-0.139 (-0.83)	-0.039** (-2.54)	-0.154 (-1.47)	0.005 (0.10)
Tobin's q	0.015* (1.79)	-0.138 (-1.12)	0.013* (1.72)	-0.021 (-0.27)	0.016 (0.68)
Investment	-0.006 (-0.49)	0.022 (0.25)	-0.004 (-0.38)	0.051 (0.82)	-0.015 (-0.65)
Cash	0.016 (1.61)	0.182** (2.15)	0.018** (1.99)	0.104 (1.66)	0.014 (0.53)
ROA	0.009 (0.60)	0.070 (0.76)	0.009 (0.61)	-0.068 (-0.66)	0.010 (0.35)
E Index	0.003 (0.36)	-0.131 (-1.48)	0.006 (0.67)	0.021 (0.24)	-0.021 (-1.00)
Constant	1.387*** (5.27)	2.163 (0.60)	1.266*** (4.86)	-1.971 (-0.63)	2.390*** (3.65)
Observations	102,607	812	89,874	1,125	13,194
R-squared	0.047	0.132	0.048	0.103	0.051
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

Panel B: Marker Share	(1) Full Sample	(2) Donation - Altruism	(3) Donation – Managerial	(4) Donation- Community	(5) Donation- Publicity
Market Share	-0.016 (-0.92)	-1.235** (-2.72)	-0.015 (-0.71)	-0.334*** (-3.37)	-0.037*** (-4.86)
Log(asset)	-0.023*** (-3.53)	1.680*** (4.59)	-0.017** (-2.45)	0.374*** (4.31)	-0.049*** (-3.96)
Market Leverage	0.011*** (3.96)	0.173 (0.23)	0.007** (2.25)	-0.016 (-0.13)	0.032*** (4.01)
Tobin's q	0.013** (2.22)	-0.542** (-2.42)	0.013* (1.75)	-0.110 (-1.39)	0.012*** (3.64)
Investment	-0.008 (-0.68)	0.081 (0.60)	-0.008 (-0.61)	-0.266*** (-3.99)	-0.001 (-0.11)
Cash	0.016** (2.22)	0.901*** (7.25)	0.019** (2.03)	0.004 (0.14)	0.006* (1.79)
ROA	0.007 (1.23)	1.008*** (3.09)	0.009 (1.34)	0.092 (1.12)	0.000 (0.11)
E Index	0.003 (1.06)	-0.163 (-0.64)	0.005 (1.23)	-0.013 (-0.24)	-0.001 (-0.58)
Constant	0.269** (2.54)	-29.136*** (-4.59)	0.183 (1.50)	-4.465*** (-3.51)	0.644*** (3.93)
Observations	102,564	762	89,828	1,084	13,120
R-squared	0.014	0.253	0.024	0.047	0.003
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes

Table 5: Test of Personal Fulfillment Motives

This table presents the results of OLS regression tests for evaluating Personal Fulfillment motives of the corporate charitable donation. Donation is the amount of donation identified from the article text. Panel A presents the results on CEO characteristics. HH Index is Herfindahl-Hirschman Index for measuring two-digit SIC level market concentration. Panel B presents the results on management characteristics. Donations with each respective topic only include samples with donations identified as those topics from the LDA analysis. Definition of financial variables is available in Appendix 1. Fixed effects are specified at firm level and industry-year level. All coefficients are standardized with standard deviation. Numbers in parenthesis are t-statistics clustered at firm level. *, **, and *** denote statistical significance level at 10%, 5%, and 1%, respectively.

Panel A: CEO Characteristics					
	(1) Full Sample	(2) Donation - Altruism	(3) Donation – Managerial Benefit	(4) Donation- Community	(5) Donation- Publicity
CEO Age	0.006 (1.10)	-0.092** (-2.04)	0.010* (1.86)	0.114*** (3.30)	-0.011 (-0.94)
CEO Ownership	-0.018*** (-3.58)	0.212*** (3.26)	-0.023*** (-4.48)	-0.008 (-0.21)	0.030** (2.10)
CEO Tenure	0.026** (2.30)	0.169 (1.54)	0.025** (2.23)	0.023 (0.28)	0.037 (1.38)
Female?	-0.007 (-0.92)	-0.070 (-1.45)	-0.004 (-0.50)	-0.098*** (-3.34)	-0.020* (-1.80)
Log(asset)	-0.008 (-0.19)	1.169*** (6.59)	-0.039 (-1.00)	0.774*** (3.28)	0.169 (1.53)
Market Leverage	-0.032 (-1.62)	-1.024* (-1.90)	-0.025 (-1.17)	-1.415*** (-5.78)	-0.109* (-1.72)
Tobin's q	0.058*** (4.97)	-0.653*** (-3.59)	0.054*** (4.77)	-0.099 (-0.93)	0.069** (2.32)
Investment	0.027*** (3.11)	0.087 (0.98)	0.014 (1.44)	0.221** (2.08)	0.106*** (4.64)
Cash	0.034* (1.92)	0.657*** (6.99)	0.031* (1.89)	-0.004 (-0.04)	0.062 (1.57)
ROA	0.019 (1.13)	0.406** (2.39)	0.020 (1.21)	-0.562*** (-4.62)	0.019 (0.61)
E Index	-0.004 (-0.41)	-0.569*** (-3.17)	0.004 (0.39)	-0.236 (-1.37)	-0.064** (-2.23)
Constant	0.791 (1.27)	-17.466*** (-6.55)	1.191** (2.13)	-9.940*** (-2.83)	-1.610 (-0.96)
Observations	97,709	744	85,606	1,046	12,488
R-squared	0.050	0.204	0.052	0.182	0.068
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes

Panel B: Governance Characteristics					
	(1)	(2)	(3)	(4)	(5)
	Full Sample	Donation - Altruism	Donation – Managerial Benefit	Donation- Community	Donation- Publicity
Fraction of Independent Director	-0.044 (-1.33)	-0.601 (-1.31)	-0.048*** (-3.53)	0.025 (0.05)	-0.001 (-0.03)
CEO-chairman Duality	-0.005 (-0.26)	-0.594** (-2.74)	0.041*** (6.89)	-0.057 (-0.25)	0.021 (1.11)
Board Size	-0.031 (-0.57)	1.282** (2.27)	0.016 (1.00)	0.009 (0.04)	-0.009 (-0.19)
E Index	0.007 (0.22)	-0.813*** (-3.56)	0.012 (1.07)	-0.481* (-2.06)	-0.049 (-1.37)
Log(asset)	0.399*** (5.43)	1.293 (1.20)	0.006 (0.12)	0.141 (0.20)	-0.056 (-0.39)
Market Leverage	-0.119* (-1.83)	-1.724** (-2.16)	-0.052 (-1.22)	-1.461** (-2.18)	-0.012 (-0.14)
Tobin's q	-0.014 (-0.28)	1.446*** (4.09)	-0.012 (-0.49)	0.657*** (3.06)	0.012 (0.23)
Investment	-0.017 (-0.40)	1.967*** (3.63)	-0.017 (-0.69)	0.743 (1.01)	-0.066 (-0.63)
Cash	0.035 (0.52)	-0.392 (-1.33)	0.053** (2.23)	-0.606* (-1.89)	-0.008 (-0.12)
ROA	0.193*** (3.10)	-0.661*** (-6.05)	0.019 (1.19)	-0.925*** (-4.70)	0.035 (1.16)
Constant	-7.503*** (-4.68)	-43.928 (-1.19)	1.117 (1.04)	0.902 (0.05)	2.511 (0.70)
Observations	29,511	252	25,878	341	3,825
R-squared	0.040	0.233	0.035	0.189	0.049
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes

Table 6: Test of Signaling Motives

This table presents the results of OLS regression tests for evaluating Signaling Reputation motives of the corporate charitable donation. Donation is the amount of donation identified from the article text. Cost of equity is the expected return estimated from Fama-French 3 factor model. Dispersion is the standard deviation of analysts' earnings forecast for each specific year. Donations with each respective topic only include samples with donations identified as those topics from the LDA analysis. Definition of financial variables is available in Appendix 1. Fixed effects are specified at firm level and industry-year level. All coefficients are standardized with standard deviations. Numbers in parenthesis are t-statistics clustered at firm level. *, **, and *** denote statistical significance level at 10%, 5%, and 1%, respectively.

Panel A: Forecast Dispersion					
	(1) Full Sample	(2) Donation - Altruism	(3) Donation – Managerial Benefit	(4) Donation- Community	(5) Donation- Publicity
Dispersion	-0.011 (-1.02)	-0.009 (-0.24)	-0.007 (-0.72)	-0.043 (-1.11)	-0.013 (-0.56)
Log(asset)	-0.020 (-0.62)	-0.269** (-2.39)	-0.019 (-0.64)	0.108 (0.45)	-0.189*** (-3.04)
Market Leverage	-0.016 (-0.75)	-0.931** (-2.56)	-0.023 (-1.02)	-0.324 (-1.20)	0.052 (1.16)
Tobin's q	0.051*** (4.64)	-0.246* (-2.02)	0.056*** (4.11)	-0.215*** (-2.78)	-0.000 (-0.00)
Investment	0.032*** (3.19)	-0.044 (-0.31)	0.037*** (3.18)	-0.102 (-1.21)	-0.076*** (-3.55)
Cash	0.023 (1.37)	-0.219* (-1.71)	0.034* (1.78)	-0.281** (-2.07)	-0.029 (-1.08)
ROA	0.004 (0.20)	-0.252 (-0.77)	0.017 (0.64)	-0.128 (-0.73)	-0.002 (-0.07)
E Index	-0.000 (-0.00)	-0.124 (-0.70)	0.000 (0.00)	0.052 (0.35)	-0.008 (-0.42)
Constant	1.048** (1.97)	9.704*** (4.76)	0.995** (1.99)	0.367 (0.08)	3.993*** (3.91)
Observations	97,944	739	85,607	1,045	12,499
R-squared	0.049	0.185	0.050	0.171	0.060
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes

Panel B: Cost of Equity					
	(1) Full Sample	(2) Donation - Altruism	(3) Donation – Managerial Benefit	(4) Donation- Community	(5) Donation- Publicity
Cost of Equity	0.428** (2.01)	-0.014 (-0.36)	0.020 (1.08)	-0.083 (-1.16)	0.012 (0.43)
Log(asset)	0.075 (0.43)	1.127*** (7.96)	-0.008 (-0.27)	1.100*** (5.26)	0.139* (1.86)
Market Leverage	0.392 (0.91)	-1.135** (-2.33)	0.023 (1.14)	-1.374*** (-6.11)	-0.027 (-0.54)
Tobin's q	0.280*** (6.08)	-0.573*** (-4.71)	0.052*** (4.59)	-0.208** (-2.13)	0.127*** (3.97)
Investment	4.419*** (3.32)	0.081 (0.96)	0.022* (1.70)	0.236** (2.08)	0.127*** (5.03)
Cash	1.102*** (2.60)	0.342*** (4.85)	0.031*** (3.09)	-0.050 (-0.66)	0.034 (0.92)
ROA	0.105 (0.13)	-0.041 (-0.36)	0.011 (0.69)	-0.635*** (-9.05)	-0.058** (-2.55)
E Index	-0.012 (-0.25)	-0.718*** (-5.47)	0.003 (0.32)	-0.305* (-1.74)	-0.054* (-1.88)
Constant	1.921 (1.00)	-13.024*** (-4.62)	0.766* (1.88)	-11.081*** (-3.84)	-1.085 (-1.01)
Observations	98,315	733	86,112	1,038	12,590
R-squared	0.051	0.201	0.053	0.172	0.065
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes

Table 7: Effects of Publicized Donations on Firm's Financial Outcome

This table presents the results of OLS regression tests for evaluating a firm-level financial outcome of the corporate charitable donation. Results for ROA, earnings forecast dispersion, cost of equity, and Tobin's Q are presented in Panel A, B, C, and D, respectively. Donation is the amount of donation identified from the article text. ROA is return on asset that measures the profitability. Cost of equity is the expected return estimated from Fama-French 3 factor model. Dispersion is the standard deviation of analysts' earnings forecast for each specific year. Donations with each respective topic only include samples with donations identified as those topics from the LDA analysis. Definition of financial variables is available in Appendix 1. Fixed effects are specified at both firm and industry-year level. All coefficients are standardized with standard deviation. Numbers in parenthesis are t-statistics clustered at firm level. *, **, and *** denote statistical significance level at 10%, 5%, and 1%, respectively.

Panel A: Dependent Variable: ROA_{t+1}					
	(1) Full Sample	(2) Altruism	(3) Managerial	(4) Community	(5) Publicity
Donation	0.000 (1.35)	0.009** (2.50)	0.001 (1.51)	0.000 (0.26)	-0.000 (-0.69)
Log(asset)	-0.132** (-1.99)	-0.383 (-1.65)	-0.142** (-2.19)	-0.453*** (-2.86)	-0.108 (-1.27)
Tobin's q	0.370*** (5.09)	0.248* (1.83)	0.374*** (5.09)	0.135 (1.24)	0.371*** (4.90)
Market Leverage	-0.134 (-1.50)	-0.722 (-1.46)	-0.126 (-1.42)	-0.590 (-1.49)	-0.167 (-1.56)
Cash	-0.409*** (-7.57)	-0.450*** (-7.06)	-0.413*** (-7.75)	-0.494*** (-12.31)	-0.402*** (-7.31)
Investment	0.114*** (2.98)	0.300*** (6.09)	0.112*** (2.92)	0.205*** (4.74)	0.140*** (3.61)
E Index	-0.033 (-0.97)	-0.110 (-1.39)	-0.032 (-0.97)	-0.167** (-2.25)	-0.033 (-0.87)
Constant	3.382*** (3.19)	9.557*** (2.77)	3.503*** (3.35)	9.992*** (5.08)	3.079** (2.36)
Observations	102,249	760	89,555	1,082	13,085
R-squared	0.967	0.989	0.968	0.984	0.969
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry - Year FE	Yes	Yes	Yes	Yes	Yes

Panel B: Dependent Variable: Analyst Forecast Dispersion

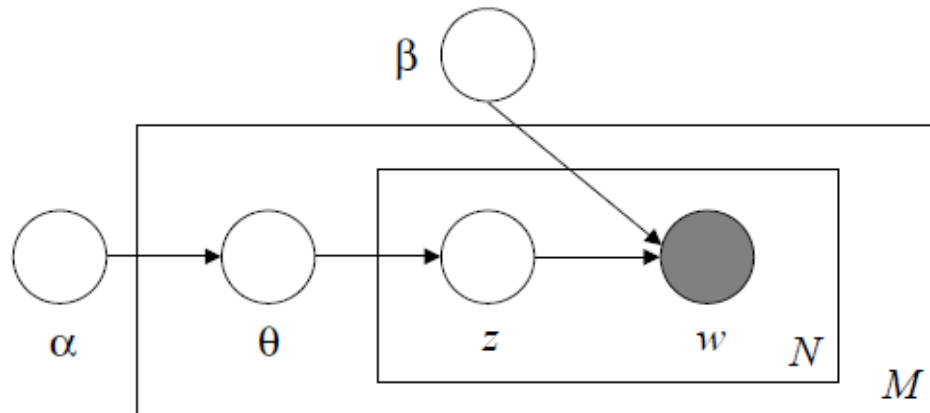
	(1) Full Sample	(2) Altruism	(3) Managerial	(4) Community	(5) Publicity
Donation	-0.001* (-1.67)	-0.054*** (-2.96)	-0.001 (-1.10)	-0.007 (-1.11)	-0.000 (-0.86)
Log(asset)	0.076 (0.52)	0.506*** (4.18)	0.072 (0.48)	-0.115 (-0.18)	0.085 (0.54)
Tobin's q	-0.036 (-0.64)	-0.023 (-0.28)	-0.032 (-0.55)	-0.072 (-0.66)	-0.042 (-1.04)
Market Leverage	-0.141 (-1.40)	0.035 (0.11)	-0.141 (-1.35)	0.397 (1.40)	-0.080 (-0.88)
Cash	-0.212*** (-3.19)	-0.210* (-1.91)	-0.219*** (-3.33)	-0.609*** (-4.35)	-0.188** (-2.56)
Investment	-0.189*** (-5.74)	-0.429*** (-6.52)	-0.187*** (-6.63)	-0.488*** (-6.92)	-0.219*** (-2.64)
ROA	-0.360*** (-3.51)	-1.099*** (-6.10)	-0.373*** (-3.73)	-1.123*** (-8.43)	-0.326*** (-3.25)
E Index	0.104** (2.02)	0.428*** (3.26)	0.101* (1.96)	0.551*** (3.20)	0.133** (2.59)
Observations	97,735	739	85,630	1,045	12,490
R-squared	0.897	0.903	0.897	0.893	0.919
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes

Panel C: Dependent Variable: Cost of Equity

	(1) Full Sample	(2) Altruism	(3) Managerial	(4) Community	(5) Publicity
Donation	-0.000* (-1.88)	0.030** (2.26)	-0.000 (-1.04)	0.000 (0.09)	-0.000 (-0.96)
Log(asset)	-0.114* (-1.68)	-0.717*** (-3.46)	-0.124* (-1.86)	0.174 (0.64)	-0.088 (-0.93)
Tobin's q	-0.164*** (-2.87)	-0.151 (-1.63)	-0.164*** (-2.83)	-0.170** (-2.62)	-0.183*** (-3.11)
Market Leverage	0.017 (0.22)	0.724 (1.33)	0.022 (0.28)	0.270 (0.83)	0.023 (0.25)
Cash	-0.350*** (-7.85)	-0.749*** (-9.74)	-0.354*** (-8.03)	-0.399*** (-3.43)	-0.342*** (-6.52)
Investment	-0.283*** (-5.80)	-0.560*** (-7.35)	-0.284*** (-5.77)	-0.461*** (-7.94)	-0.298*** (-5.94)
ROA	0.041 (1.56)	-0.326*** (-3.13)	0.040 (1.46)	-0.107 (-1.21)	0.028 (0.86)
E Index	-0.065** (-2.29)	-0.057 (-0.32)	-0.061** (-2.21)	-0.070 (-0.84)	-0.102*** (-2.78)
Observations	98,315	733	86,112	1,038	12,590
R-squared	0.949	0.950	0.948	0.945	0.953
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes

Panel D: Dependent Variable: Tobin's Q					
	(1) Full Sample	(2) Altruism	(3) Managerial	(4) Community	(5) Publicity
Donation	0.002** (2.25)	-0.009* (-1.93)	0.001* (1.85)	-0.003 (-1.10)	0.003** (2.14)
Log(asset)	-0.003 (-0.04)	0.085 (0.38)	-0.001 (-0.01)	0.027 (0.17)	0.009 (0.11)
Market Leverage	-0.241** (-2.46)	-0.903 (-1.54)	-0.239** (-2.47)	-0.914* (-1.98)	-0.265** (-2.25)
Cash	0.127*** (4.32)	0.116* (1.82)	0.127*** (4.29)	0.051 (0.66)	0.144*** (4.31)
Investment	-0.265*** (-3.38)	-0.395*** (-5.21)	-0.267*** (-3.39)	-0.337*** (-6.79)	-0.278*** (-3.93)
ROA	0.391*** (8.60)	0.344* (1.79)	0.398*** (8.72)	0.169 (1.19)	0.358*** (7.63)
E Index	-0.064 (-0.98)	-0.286 (-1.67)	-0.065 (-0.99)	-0.340** (-2.08)	-0.062 (-0.94)
Constant	1.936 (1.55)	2.884 (0.59)	1.904 (1.49)	4.357 (1.35)	1.856 (1.45)
Observations	102,227	760	89,542	1,082	13,076
R-squared	0.965	0.985	0.965	0.979	0.967
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes

Appendix 1: Graphical Representation of Latent Dirichlet Allocation



w_{ij} : specific words in a document

z_{ij} : topic for the j^{th} word in the document i

N : number of words in a given document

θ_i : overall topic distribution for document i

M : number of documents

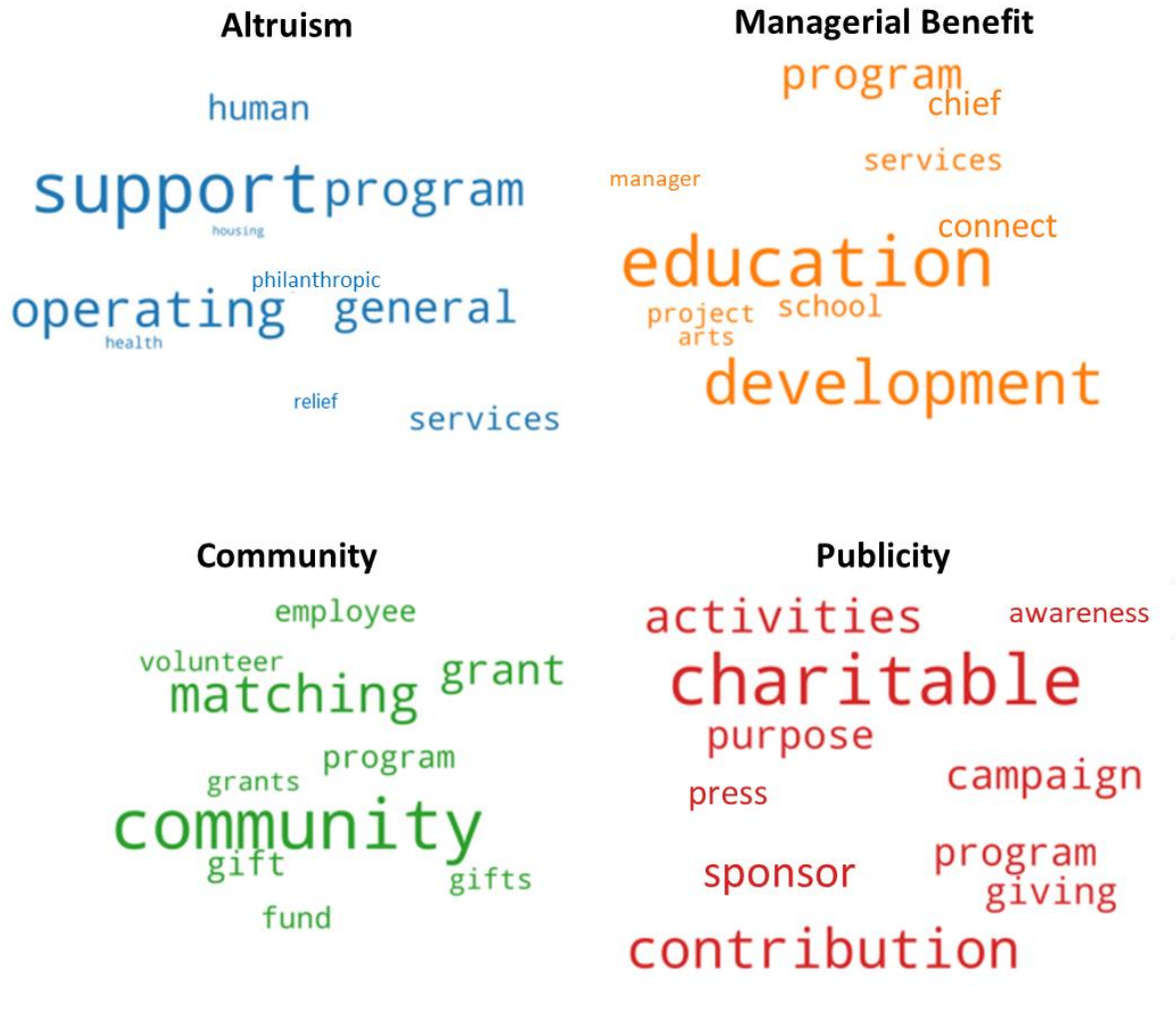
α : parameter of the Dirichlet prior on the document topic distribution

β : parameter of the Dirichlet prior on the topic word distribution

Appendix 2: Words used for Guidance Matrix

Topic	Words Included
Altruism	Food, low, income, hurricane, relief, disaster, civic, public, community, in-kind, in-kind, support, debt, emergency, equal, equity, ethics, sustainability, sustain, water, air, pollution, grantee, grassroots, nonprofit, non-profit, research, student, human, humane,
Manager Benefit	museum, ballet, art, culture, music, orchestra, sport, board infrastructure, university, education, endowment, exhibition, exhibitions, fiduciary, governance, faculty, fundraising, management, network, political, policy, institution, institutional, executive, CEO, CFO, chief, officer, officers, agency, foundation
Local / Community	employee, matching, grant, prosocial, gift, fund, volunteer, leadership, satisfaction, insider, internal, stakeholder, engagement, volunteerism, local, community, family, child, children, home, town, township, resident
Publicity	charitable, advocate, advocacy, campaign, award, prize, competition, conference, marketing, cause-related, external, stakeholder, presentation, press, media, fame, recognize, recognition, aware, awareness, sponsor, commercial

Appendix 3: Word cloud of top 10 most frequent words



Appendix 3: Variable Definitions

Variable	Definition
Donation Variables	
Donation	Logarithm of charitable donation publicized by news article released by the media in the given year scaled by the book value of total asset (AT)
Corporate level Variable	
Market Leverage	Book value of debt (DLTT+DLC) divided by the market value of total asset measured by calculating price close at annual fiscal year (PRCC_F) * Common Shares (CSHPRI) + Debt in current liability (DLC) + Long-term debt (DLTT) + Preferred stock (PSTKL) – Deferred Taxes and Investment Tax Credit (TXDITC)
Log(asset)	Natural log of total book value asset of the firm
Tobin's Q	Price close at annual fiscal year (PRCC_F) * Common Shares (CSHPRI) + Debt in current liability (DLC) + Long-term debt (DLTT) + Preferred stock (PSTKL) – Deferred Taxes and Investment Tax Credit (TXDITC) divided by the book value of total asset (AT)
Cash	Cash and cash equivalent (CHE) divided by the book value asset of the firm (AT)
Total Dividend	Dividend paid (DVT) for each fiscal year scaled by net income (NI)
Investment	Capital expenditure (CAPX) divided by the book value of total asset (AT)
ROA	Operating income after depreciation (OIADP) scaled by the book value of total asset (AT)
Cost of Equity	Fitted yearly expected return from Fama-French (1993) three factor model specification
Forecast Dispersion	Standard deviation of differences between analyst's earnings forecast and realized earnings scaled by the absolute value of the mean consensus forecast. Data is obtained from IBES.
E Index	Entrenchment index defined in Bebchuk, Cohen, and Ferrell (2009), where a score of one is added if the company has practices of classified board, limit on ability to amend bylaw, limits on ability to amend charter, poison pill, golden parachute, and super-majority.
HH Index	Herfindahl-Hirschman Index calculated by sum of square of percentage market share represented in whole number by two-digit SIC level
Market Share	Sales of the company divided by the total sum of sales within two-digit SIC level industry
CEO Age	CEO's age
CEO Ownership	Percentage ownership of common stock held scaled by total shares outstanding
CEO Tenure	The number of years the individual served as CEO
CEO-chairman duality	Indicator variable to indicate whether CEO of the company is also the chairman
Board Size	The number of directors in the board
Female?	Indicator variable for gender of the director
Fraction of Independent Directors	Percentage of independent director in the board