

ESG MARKETING'S IMPACT ON FINANCIAL PERFORMANCE: AN EVENT STUDY
ANALYSING THE EFFECT OF ALPHABET'S ESG CAMPAIGNS ON STOCK
PERFORMANCE

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OUTLINE

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ABSTRACT

This dissertation expands on the literature of three burgeoning marketing factors – known collectively as “ESG”, or “Environmental, Social, and Governance” – and seeks to analyse whether greater prevalence of these factors in modern businesses (namely, Alphabet Inc.) positively or adversely impacts financial performance.

These factors allow investors to judge investments on risks and opportunities beyond purely financial considerations. ESG’s growth in relevance coincides with increased considerations of employee diversity, social responsibility, and sustainability, at the consumer, stakeholder, and investor levels. The appetite for firms to not only make these three aspects more prevalent in their marketing, but further integrate them into their brands and operational strategies has only increased during the COVID-19 pandemic.

Building on the highly varied and growing literature surrounding ESG, this dissertation seeks to examine ESG marketing campaigns and strategies and focuses on how they impact firms financially. To do this, an event study contained herein will analyse six campaigns from San Francisco-based tech giant Alphabet, each pertaining to a different ESG factor. The study will test to find any correlation between the six ESG marketing campaigns and stock performance. The six Alphabet ESG marketing campaigns outlined include: a September 2020 “Carbon Free” white paper; a June 2020 “Our commitments to racial equity” blog post; an October 2020 “Progress on our racial equity commitments” CEO statement and its June 2021 follow-up, “Our racial equity commitments, one year on”; an April 2019 “An update to

workplace commitments” progress statement; and a September 2020 “Building on our workplace commitments” progress report.

The results of the event study demonstrated there was no statistically significant relationship between the sample ESG marketing events and stock performance. This result would suggest a need to reconsider the allocation of resources to these campaigns if they do not yield long-term financial benefits. This result raises questions around Alphabet’s (and other firms’) motivations for engaging in ESG marketing strategies. Brand development and purpose-driven marketing are certainly major goals for firms; however, it’s important to examine the results of marketing spend, especially when we see a marked increase in spend on contentious topics like environmentalism, racial justice, and workplace ethics. This motivation opens the door to new avenues of much-needed research on ESG. As these topics have solidified themselves into the fundamental operational and marketing strategies of firms, this research, and future studies are needed to increase our understanding of this contemporarily prevalent topic.

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INTRODUCTION

“ESG” stands for “Environmental”, “Social”, and “Governance”. In finance, the acronym outlines three concepts – often grouped together – that measure the societal and sustainability impact of an investment in a company. “Environmental” (E) covers a company’s energy use, pollution levels, natural resource usage, and environmental risks the company may encounter. “Social” (S) includes the business relationships between stakeholders and employees. These include charitable actions, consistent values in all aspects of the business, as well as health and safety conditions for employees. Finally, “Governance” (G) considers the company’s board members and how transparent the company is towards its stockholders.

Historically, the beginnings of analysing business behaviours through the ESG framework and responsible investing are linked to the disinvestment of South African businesses during the apartheid regime in the 1970s. American board member of General Motors, Reverend Leon Sullivan, created the Sullivan Principles, a code of conduct for business practicing in South Africa (Sullivan Foundation, 1999). The Sullivan Principles lead to widespread disinvestment in South African businesses found to breach the ethical principles upheld in by the Sullivan Principles and the start of more ethical investments.

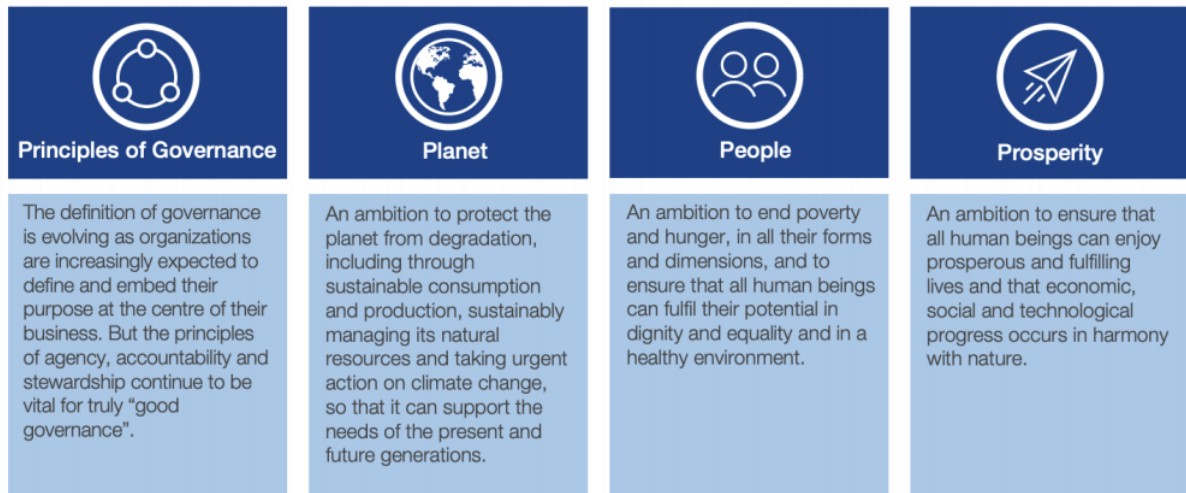
Years later, in 2001, the launch of the FTSE4Good Index Series began to consider social, ethical, or environmental (SSE) issues for UK pension funds (Atkins, 2020). This expanded to include environmental criteria in 2002, human rights criteria in 2003, and supply chain and labour criteria in 2005. The FTSE4Good then solidified their practices in 2006 with the United Nation’s Principles for Responsible Investment (PRI) report (ibid.). This report created a blueprint for ESG principles for

investors and supported an “international network of investor signatories in incorporating these factors into their investment and ownership decisions” (UN PRI, 2021). The report is regularly updated and guided by their 2019 to 2021 strategy blueprint (UN PRI, 2017). From 2006 to 2019, the number of signatories increased from 63 investment companies to 2,450, with total investments covered increasing from \$6.5 trillion to over \$80 trillion (Atkins, 2020).

At Davos 2020 the World Economic Forum (WEF) and the International Business Council (IBC), along with the Big Four accounting firms – Deloitte, PwC, KPMG and Ernst & Young – established a set of standardised measures to accelerate ESG investing and create a more regulated ecosystem. These measures make up the Davos Manifesto 2020: The Universal Purpose of a Company in the Fourth Industrial Revolution and are underpinned by the Four Pillars: principles of governance (led by Deloitte), planet (led by PwC), people (led by KPMG), and prosperity (led by EY) (Figure 1) (Atkins, 2020).

Figure 1: The Four Pillars, World Economic Forum

The Four Pillars



(World Economic Forum, 2020)

ESG considerations have been integrated into the fabric of the major financial institutions. This has led to companies developing ESG frameworks, or standardised approaches to disclose ESG metrics (Atkins, 2020). There are a variety of frameworks that focus on different topics and metrics based on varying industry standards and requirements. While these frameworks are effective for investors, the lack of standardisation between them has led to a vast ecosystem of varied ESG standards.

To make up for these different frameworks, third party rating agencies – such as Bloomberg – create ESG ratings which measure the effectiveness of these companies in their environmental, social, and governance motivations to aide investors. These rating systems act as tools for investors to judge the risk involved with the investment and firm (ibid.)

MOTIVATIONS BEHIND ESG'S GROWTH

As scores and reports rating these companies have become more and more popular, investors expect their invested companies to commit strongly to the ESG criteria they set forth. This macrotrend is seeing directors and board members applying ESG criteria to satisfy the appetite of investors.

Research from PwC investigated the rising interest in ESG investment among institutional investors. Their 2020 report on the subject interviewed a sample of 300 investors, ranging from pension funds and insurance companies. They found that investors would start buying ESG funds over conventional funds by 2022 (PwC, 2020). This substantial move from investors signals them as the key drivers of this macrotrend in ESG investment increase.

Further, their research considered the impact of the coronavirus pandemic on asset management firms, and how it has only increased the interest in ESG investment as they search for different industries performing well during the crisis. As a result, ESG funds rose steadily during the pandemic. In the UK, active ESG funds saw an inflow of a record £392 million in September 2020 (Wainwright & Morrison, 2020). PwC's research predicts that in a best-case scenario, European assets will consist of up to 57% ESG investments by 2025, three times the amount seen in today's market (PwC, 2020). Investor interest in ESG funds stems not only from a desire to boost reputation, but also in finding the best long-term returns.

With investors as the fundamental drivers behind this macrotrend, in tune, business to business (B2B) marketing strategies are being employed to help firms disseminate and sell to these investors. Key tactics of B2B marketing strategy favours a more logic-driven approach, with in-depth data and promotions (Kotler,

2004). These features are seen in the ESG marketing campaigns analysed in this dissertation – as such, they are favourably set up to work with their target audience.

Whilst institutional investors are the driving force behind the macrotrend of ESG investments, and the main consumers of ESG marketing, it is important to consider business-to-consumer (B2C) motivations as well. There is a growing appetite amongst consumers for brands that promote a stronger stance on environmental and social issues; the topics ESG encompasses. Like investors, consumers are pushing firms to re-examine their sustainability and social responsibility strategies, which in turn become an integral part in brand identity.

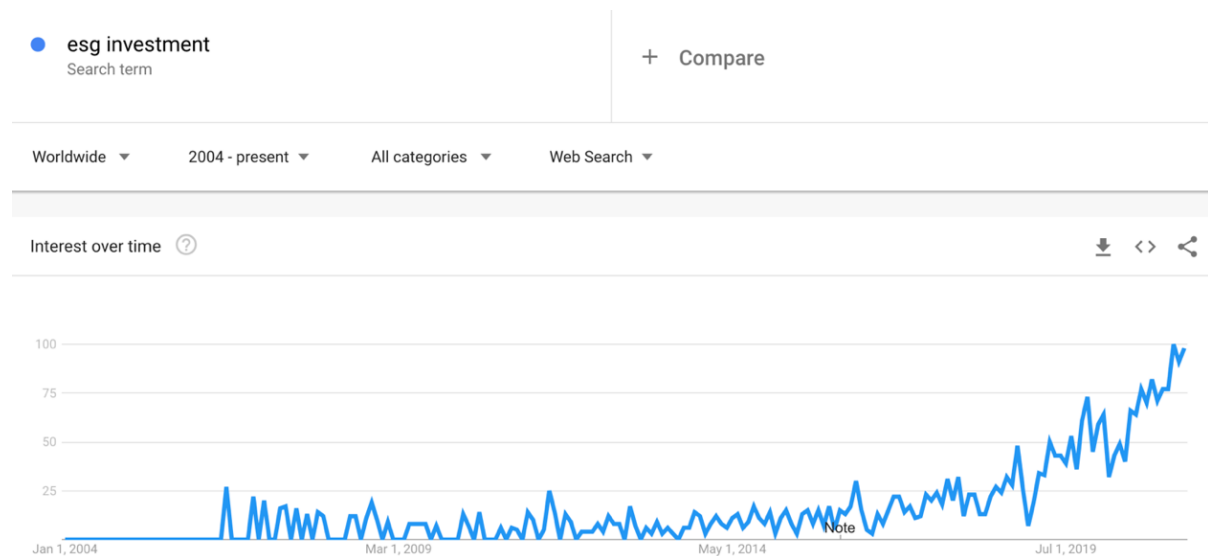
Further supporting this among the both the B2B and B2C motivations, Adeline Diab, Head of ESG and Thematic Investing, EMEA Bloomberg Intelligence has cited that “ESG is not about charitable actions or projects that can be featured in glossy reports anymore. ESG needs to be linked to the fundamental nature of companies operations and purpose” (Bloomberg, 2021 & Chater, 2021).

With pressure mounting from investors, stakeholders and even consumers, ESG has come to the forefront of business operations and plays an active role in firms’ marketing strategies. A businesses’ ESG goals are increasingly integrated into its marketing material, and even its brand identity. A key piece of literature by Vlad and Luca (2020) establishes the connection between ESG and marketing and develops a model to measure the impact of ESG marketing on consumer’s choices and patterns.

With this accelerating interest, there has been a commensurate increase in ESG-oriented content and marketing from firms. Google Trends indicates an increase in searches of “ESG, ESG investing and ESG investment funds” from 2006

(Figure 2). The amount of marketing on ESG, sustainability and responsible investments has increased enormously, especially in 2019, with 82% of companies increasing spending on green marketing (Minton, et al., 2012).

Figure 2: Google Trends – ESG Investment Keyword



A NEED FOR MORE MARKETING RESEARCH

While ESG's impact on financial performance has been heavily covered by previous literature (Friede, et. al, 2015) (Velte, 2017) (Zhao, et.al., 2018) (Landi & Sciarelli, 2019) (Nirino, et.al., 2021), there is a significant gap in the current research: specifically on the impact that ESG marketing has on a firm's financial performance. This dissertation seeks to expand the analysis of ESG's impact on financial importance by examining it through the lens of ESG marketing content, strategy, and brand integration.

To test this, an event study is used to examine the financial impact on stock values during an implementation of ESG marketing strategy. The event study

methodology analyses the performance of stock returns, to reflect the firm's financial performance. The methodology quantifies the event (in this case the ESG marketing strategy's implementation) and searches for economic impact and abnormal returns. These are found by subtracting the returns that would be seen if the analysed event had not occurred, or normal returns from the actual returns of the stocks.

This dissertation will use the ESG marketing strategy of Alphabet, Google's parent company, as its model to test the effects of ESG marketing strategies on financial return. Alphabet was selected as the case study for this dissertation for its transparency in their marketing collateral and branding that promotes their ESG goals. Alphabet is traded as Nasdaq Class A, GOOGL. Further, Alphabet's ESG marketing strategies have become intertwined with their core brand, and effectively shared with their audiences through a variety of methods.

This dissertation seeks to establish a connection between ESG marketing strategies and financial performance. In this, it will find whether the way in which brands adapt their marketing and communications strategies to better fit the changing desires of their partners, investors, consumers, and stakeholders has a positive – or negative – impact on share performance.

LITERATURE REVIEW

LITERATURE ON ESG AND MARKETING

Vlad & Luca (2020) is the central piece of literature used by this dissertation. Titled, “ESG Marketing Model: A New Paradigm to Understand the Impact”, the article establishes the research connection and relevancy of ESG and marketing strategy for this study. It supports the need for more research on this subject and points to the increasing relevance of ESG marketing.

Vlad and Luca’s article aims to provide a model to understand the impact of ESG marketing on consumers and their behaviours and habits. The authors emphasise the importance of an evolving consumer base with increasing desires for more eco-friendly and socially responsible products and firms. This in turn has led to an increase in ESG and green marketing strategies.

The authors build upon the model presented by Juwaheer, Pudaruth and Noyaux (2012) which analyses the impact of green marketing on consumer purchasing patterns. Like Vlad and Luca, this dissertation focuses on green marketing (environmental) and does not consider the social and corporate governance variables of ESG.

This dissertation introduces an event study to expand on Vlad & Luca’s model by analysing the financial impact of their ESG marketing strategy model. While the authors fail to include financial implications in their analysis on ESG marketing strategy, their model and research provides the theoretical grounding for this dissertation.

Continuing to support the connection between ESG and marketing is Vasilieva, et al. (2017). The article focuses on sustainability disclosure reporting (SR)

as a communication and marketing tool used to create a positive image for companies by promoting their corporate social responsibility and seeking to improve their innovation development strategy for ESG factors. Further, their research analyses the benefits of sustainability reports as a marketing tool with case studies taken from Ukrainian companies. Like their article, this dissertation also considers sustainability reports as a marketing tool; however, it expands to consider social and corporate governance content to better encompass the three aspects of ESG.

Vasilieva's article touches upon the financial impact of ESG marketing, which this dissertation also researches. The article studies how ESG disclosure reports are used to attract financing to fund innovation within companies. The authors conclude by highlighting four factors that influenced level of reporting perception by Ukrainian companies – economic, managerial, methodical, and social.

Besides the article by Vasilieva, the literature on ESG marketing and financial performance is sparse compared to the literature which focuses solely on green marketing and financial performance. While exceedingly useful for the research of this dissertation, these articles fail to encompass all three aspects of ESG by only engaging with the sustainability marketing goals of companies. While the articles do not encompass the core of ESG, they still prove immensely important for this dissertation's research, with a multitude of articles covering a range of industries and countries. Further, these articles supporting the connection of green marketing strategy and financial performance still prove useful for this dissertation by demonstrating the relationship between these topics.

Of these articles researching this subject, Hasan & Ali (2014) is important for this research by supporting how consumer behaviours and desires have changed to

include considerations around sustainability. This, in turn, has led to firms including more green marketing strategies. The importance of this cannot be overstated: the evolution of the modern consumer is a major influence on the marketing strategies which are designed to keep financial performance positive. The authors centre their research on Malaysian firms. They concluded that although, in Malaysia, green marketing has encountered various setbacks, it still has a positive impact on companies' financial performance. For this dissertation, we can use the findings of Hasan and Ali to begin to establish our hypotheses for the research and tests.

Eneizan and Wahab (2016) performed a similar study. They analysed the role of the "green marketing mix" as a marketing strategy on firms' performance, in both financial and non-financial metrics. Their conceptual model demonstrates a relationship between green marketing strategies – made up of green products, prices, promotions, distribution, people, processes, and physical evidence – with firm performance, both financially and non-financially. Their conclusions found that firms that adopt green marketing strategies see better performance.

Eneizan and Wahab's article is important for this dissertation as it further establishes a relation between one aspect of ESG marketing strategies and a firm's financial performance. However, again, it leaves a gap for the other two important factors: social and governance.

Moving away from research on ESG and green marketing, there is substantial literature on the financial impact that ESG performance has. Fatemi, et al. (2018) is the first of a handful of articles that covers, with their focus being on ESG disclosure, or the ways in which a company shares information on their ESG policies and actions. They concluded that strong ESG disclosure increases firm value while

weaker disclosure decreases it. Whilst not overtly discussing ESG disclosure as a marketing tool, the methods to which ESG policies and actions are shared overlap with the marketing strategies of firms. This research is further supported by Yu, et al. (2018) in their article, “ESG Transparency and Firm Value”. These articles are important for this dissertation as they highlight a gap in the current research on ESG and marketing specifically.

LITERATURE ON MARKETING AND EVENT STUDY METHODOLOGY

The methodology of this dissertation, an event study, is primarily used in financial studies. However, to support its use for this dissertation, there are a handful of articles that use this methodology in marketing research. Sorescu, Warren and Ertekin (2017) provide a substantial guide on event study methodology for marketing research. The article establishes the two theoretical assumptions that must be made for event studies: firstly, that stock prices reflect all publicly available information, and secondly, that stock prices instantly change to reflect new information when it becomes available. Using these two assumptions, the authors identified more than 40 event studies published between 2000 and 2015 in leading marketing journals to provide an overview of the methodology for the field of marketing. They also identified how for the field of marketing; these event studies covered announcements made by companies. The most-studied events in marketing research are corporate announcements directly issued by firms. These announcements act as part of an overarching campaign, which are an integral part of firms’ ongoing ESG strategies, as argued by Adeline Diab at Bloomberg, “linked to the fundamental nature of companies operations and purpose” (Bloomberg, 2021).

The article suggests the research demonstrates a positive event study for marketing actions that are expected to be beneficial to a firm's performance. The opposite is true for events that have a negative impact on performance and, it follows, negative investor reaction.

Building on the literature on event study's use for marketing research, Delattre (2007) establishes how marketing decisions impact significantly on financial markets and firms' financial performance. Delattre argues for the usefulness of event studies for marketing research and provides methods on how they should be adapted. From using event studies, he concludes that marketing strategies have a significant impact on value creation or value destruction. Delattre's in-depth discussion on possible expected returns models to use is also immensely useful.

Vital to this dissertation is Delattre's theoretical grounding in his article. He cites Grar (1997) who establishes that "information that is made public in the market is liable to affect the value of one or more firms at the same time" (1997). Grar further states that the event for the event study can be either general or specific, periodic, occasional, or external or internal. This article provides theoretical significance of event study as a viable method for this study.

LITERATURE ON ESG AND EVENT STUDY METHODOLOGY

Beyond being used for marketing research, event studies have also been used to study ESG itself within an economics and finance research lens. While the literature on this subject varies greatly and covers a handful of variables, the following articles boost the importance of this dissertation as it acts as a much-needed addition to build up the body of research on the burgeoning subject of ESG.

Beginning with Halldórsdóttir (2020), she analysed the effect of ESG on stock prices in the United States S&P 500 Market Index with a focus on the period during the start of COVID-19 pandemic, from 10 February to 27 March 2020. An advantage of Halldórsdóttir's article is its relevance, providing a window into behaviours prevalent during the COVID-19 crisis. She hypothesised that firms with higher ESG rankings would perform better in this period of economic downturn versus those with lower ESG rankings. Her findings showed there was only one statistically significant event window, between high and low ESG ranking firms. She found that low-ranking ESG outperformed the higher-ranking ESG. This study is useful to this dissertation as its limitations cite potential limits for this research. This includes not having robustness checks and using other agencies to check rankings and scores of the identified companies.

In the same vein, Mitsuyama & Shimizutani (2015) use an event study to analyse ESG disclosing policy in Japan. The authors gathered evidence on the attractiveness to investors and resulting stock prices towards ESG-oriented firms before and after their announcement of their "ESG Brand". Whilst their research is deeply rooted in economics, their discussions of "ESG Brand" touches upon a fundamental aspect of marketing and communications, thus proving to be a useful piece of literature for this dissertation. Their findings suggest there is little evidence of a positive and significant stock price reaction to brand announcement surrounding the event day.

Lacking from this article is an explanation on how the companies were selected or if there were any relations between those with a positive or negative significance. The common factor among them was their presence on the Tokyo

Stock Exchange, however they varied by sector and industry. ESG standards and methods for rankings vary greatly among industries, something this article does not consider, and is important for this dissertation to take note of.

Like Mitsuyama and Shimizutani, Blancard and Petit (2019) use an event study to analyse ESG's impact on financial performance. However, their focus is on ESG news and the resulting stock market reaction. To accomplish this, they use event studies with the event dates being news stories on environmental, social and governance issues from specified firm. They found that negative events and news created a drop in market value, while firms with positive news had insignificant changes.

Finally, Kupir and Adrian (2020) is perhaps the most straightforward research presented that analyses ESG and stock prices. They seek to add to this varying array of literature on the subject and to provide clarity to it. They performed an impressive event study with a sample size of 484 companies all coming from the S&P 500 Index. While they concluded there is no correlation between ESG and stock prices, their research is still vitally useful for this dissertation by highlighting the variety of results found within the literature.

Examining the previous literature, the varying facets of work that prove vital to this dissertation all bolster the need for this research. The contemporary nature of ESG literature demonstrates that the subject is contentious, at best. The importance of this research covers a multitude of reasons as outlined by this literature review: firstly, for marketing research, to further the relationship between ESG and marketing; secondly, for event study as a useful tool for marketing research; and thirdly, for ESG's growing impact on businesses.

METHODOLOGY

RESEARCH QUESTION

The relationship between ESG and marketing strategy is growing. Established by the literature review, there is a clear need for more research to better understand the relationship between ESG marketing strategies and firms' performance. This research, in turn, can be used to create more effective brand strategies and marketing decisions that incorporate ESG factors, as companies look to stay on top of this growing trend.

To ground this research, this dissertation seeks to ascertain whether there is a significant relationship between ESG marketing strategies and financial performance. ESG marketing strategies are defined as marketing announcements and campaigns that articulate ESG factors from a brand's perspective. Firm financial performance will be determined via daily stock return performance.

To test this question, the firm of choice is Alphabet, multinational conglomerate and parent company of Google. They were chosen in part because of their plentiful archive of ESG marketing announcement and campaigns, making the selection of events clear and reliable. Alphabet seeks to be transparent on ESG topics, with blogs and a website dedicated to sustainability, diversity, data, privacy and security, supply chain concerns, and workplace commitments.

In addition, Alphabet is a top technology firm that has set ESG topics as part of their key branding. In their "The Keyword" blog and on their own Google Sustainability website, ESG topics take centre stage. This includes content on the diversity of their workplace regarding both race and gender, and leadership position

filled by diverse group of employees. This material also covers modern day slavery, and how Alphabet and Google take steps to monitor and eliminate the issue.

Further, Alphabet was selected to test this dissertation's research question because of their growing investments in ESG. In May of 2021, Consumer News and Business Channel (CNBC) reported that Alphabet "was the most widely held stock for the largest ESG funds" (Domm, 2021).

HYPOTHESES

The previous literature on ESG suggests it as a contentious subject. In addition, there is little literature specifically on the relationship between ESG marketing strategy and financial performance. Therefore, this dissertation will use an exploratory, nondirectional hypothesis to test its research question.

Thus, this dissertation hypothesises that ESG marketing strategy explored through marketing content (independent variable) influences financial performance (dependent variable), as observed in stock market performance. The hypothesis and null hypothesis are as follows:

H₁: There is a relationship between ESG marketing strategy implementation and financial performance via stock returns.

H₀: There is no significant relationship between ESG marketing strategy implementation and financial performance via stock returns.

This hypothesis suggest that investors react to ESG marketing materials, thus altering stock performances. The null hypothesis will confirm there is no relation between marketing material (as defined by events in sample) and stock performance.

STEPS OF EVENT STUDY METHODOLOGY

To test hypothesis an event study will be conducted. An event study will allow for data gathering of stock prices for each event, and then offer a concise method of analysis of not only each event individually, but also together as a sample.

THEORETICAL GROUNDING

Regarding theory, event studies are centred on the financial market efficiency concept. This means that stock prices are expected to react to the announcement of an event (Delattre, 2007). Therefore, an event study allows for the events and market efficiency to be tested since the influence of the information from the event influences stock prices. In addition, “the absence of the significant stock price movements can also indicate either that the event conveys no new information or that the market is not efficient” (Dumontier and Martinez, 2001).

As cited in Delattre (2007), event studies are used in conjunction with signalling theory. Signalling theory shows how economists can use signals to counter the effects of the event or phenomenon. For this dissertation, certain marketing events act as signals for investors, which in turn affects stock value. With signalling theory in mind, any significant increase or decrease in stock prices supports the hypothesis that the event either influenced positively or negatively the stock results. Translating this to the purpose of this dissertation, signalling theory supports why Alphabet’s ESG marketing strategy might insight a reaction in investors, thus leading to a change in financial (stock) performance.

Step 1 – Inventory of Events

Event study methodology can be organised into eight stages, as outlined by Delattre (2007). The first step includes gathering an inventory of events. These events include all possible announcements that could be included in the event study. The goal of this first step of the event study methodology is to gather all possible events and then select the key ones for study.

Tabled in Appendix 1, an inventory of possible events includes marketing announcements or campaign content created and released by Alphabet from 2006 to 2021. They cover subjects beyond the environmental aspect of ESG; they also include the tech giant's social and corporate governance content. Sustainability campaigns were the oldest of the campaigns, dating as far back as 2006, while social campaigns date to 2012, and 2017 for governance campaigns. Alphabet's clarity in their announcements, as well as their thorough archive made them the ideal choice of firm to apply this dissertation's research question.

For their sustainability campaigns, the events included annual Google Environmental Reports. These reports cover all the key goals and progress reports Google made in that calendar year. A key marketing campaign began in September 2020, when Alphabet released a white paper announcing their goal of a carbon-free future by 2030. In 2007, Google was carbon-neutral, however this campaign begins the company's goal to be carbon-free by 2030. This campaign is the focal point of the Google Sustainability group within the firm.

On social campaigns, these included Alphabet's reports against modern slavery as well as their announcements on responsible AI innovation. Of key interest for this dissertation are the company's marketing campaign on their commitments to

racial equity. First shared in 2020, there were two updates to the material, six months and one year after the initial event.

Lastly, their governance campaigns were addressed via a multitude of diversity reports on the company, released starting in 2018. Key marketing announcements of particular interest include the campaigns on their workplace commitments, made in 2019 and 2020.

Of the inventoried events, key events of interest include connected announcements that either announce changes within the company or provide progress to the campaign. For this dissertation, the progress of the specific campaigns could provide insight on how these marketing materials evolve and if they impact stock performance over time.

Step 2 – Identification of Announcement Dates

As listed in Appendix 1, the possible events for this study cover all three aspects of ESG. Identification of the announcement dates for this study were pinpointed via posting dates or by dates shared on the reports archive.

As previously mentioned, the selection of Alphabet for this study was partly decided by the transparency of the event dates. Brown and Warner (1980) cite that the event announcement dates act as the most important step of the event study methodology. Having accurate dates supplied directly via Alphabet's archive of campaigns and announcements provides sound support when progressing forward with this study.

Further, it should be noted that the dates chosen for the events are the first public announcement rather than following news articles or press releases. This is

because the market's true reaction is noted on the day of the announcement, which will provide the truest consequences of the event.

Step 3 – Data Cleaning and Selecting the Final Sample

After compiling a comprehensive list of events in Appendix 1, it was found that plenty of reports shared ESG-targeted marketing material. For the final selection of events, while the annual reports are commonly associated with ESG marketing – with its long-form content organisation and ability to share a substantial amount of information and research –there is existing research on the effect of reports on financial performance, as established in the literature review.

A key standout from the complete list of events was the presence of events categorised as statements, which marked the start or update for a specific sustainability, social or governance campaign and posted on Alphabet's "The Keyword" blog. These statements are of particular interest because of the blog is leveraged as a digital marketing tool. Launched in 2016, The Keyword aggregates all news, statements, updates, and in-house Google content. The Keyword is described by Alphabet as providing "a central, official source of news about who we are, what we do, and what we value" (The Keyword, 2021). Its use by third party organisations has been described as for "the discerning Google connoisseur", or perhaps in the interest of this dissertation, an interested investor (Schroeder, 2016).

From all the events identified in Appendix 1, Table 1 below highlights the six selected for the events of this study. The selected events make up the central role of the marketing and brand strategy of Alphabet as they disseminate content covering ESG topics. Of these events, there is one categorised as environmental, three

covering social topics and two outlining governance. They are all announcements of a campaign rather than reports.

The decision to use statements and announcements was twofold. Firstly, as previously mentioned, there is substantial literature on the effect of reports. Secondly, it was felt that announcements, written in a shorter format and posted directly to The Keyword blog, had the potential to be more accessible and reach a wider investor and consumer base. When compared to an annual report, these selected marketing and communications materials perhaps have a more effective influence on audiences.

Table 1: Final Sample of Events

Topic (ESG)	Name of Event	Type of Media	Notes	Date
Environmental	24/7 by 2030: Realising a Carbon-Free Future	White paper	Carbon-free campaign	14 Sept 2020
Social	Our commitments to racial equity	Blog post	Shared on The Keyword	17 June 2020
Social	Progress on our racial equity commitments	CEO Statement	By Sundar Pichai	22 Oct 2020

Social	Our racial equity commitments, one year on	CEO Statement	By Sundar Pichai	17 June 2021
Governance	An update to workplace commitments	Progress Report/ Statement	By Melonie Parker, Chief Diversity Officer	25 April 2019
Governance	Building on our workplace commitments	Progress Report/ Statement	By Eileen Naughton, VP of People Operations	25 Sept 2020

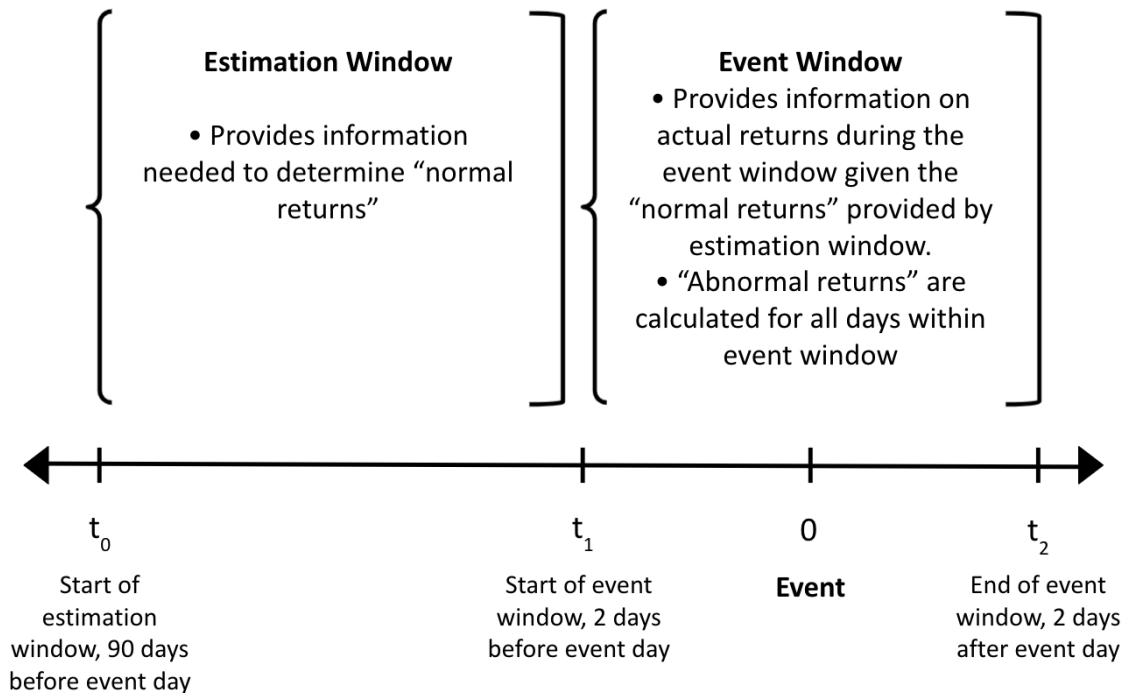
Step 4 – Choosing an Event Window

The next step in the event study methodology involves deciding an appropriate event window to which this research tests whether the final sample of events caused any abnormal returns to stocks. The efficient market hypothesis explains why abnormal returns occur during the event window. Developed by Eugene Fama (1970), he stated that announcement will instantaneously affect stock prices. Knowing this, creating an event window can allow for a comparison between the days before and after to pinpoint any effects the event caused.

For this study, the event window will be the most common found in other marketing event studies, a 5-day event window (Benninga, 2008). During these five days, this study tests whether the events cause any abnormal returns. The event window is illustrated by Figure 3 (Event Study Timeline). The event window will start

at t_1 , or two days before the event, and ends on t_2 , two days after the event. This translates to: $t_1 = -2$ and $t_2 = 2$.

Figure 3: Event Study Timeline



Adapted from Benninga (2008)

During these five days, the event study will test whether the event caused any abnormal returns. This is determined by comparing the returns from the event window to that during the estimation window, t_0 , which provides the necessary information needed to find normal returns. It should be noted that any abnormal returns on t_1 , or the day before the event, suggests insider trading. The estimation window for this study is set at 90 days before the event, translating to $t_0 = -90$.

Further, a five-day event window has been selected because of the speed at which information is disseminated and shared today. The advent of technology

allows for the rapid communication of marketing content. Thus, this short event window considers this quick sharing of information and speed to which it influences investors.

Stage 5 – Choosing a Model for Determining Abnormal Return

After establishing the sample events and determining an event window, the next step in setting up the event study methodology is choosing a model for determining abnormal return. At its core, abnormal return is the gap between the observed return of stock values and the expected return – or if the event had not occurred. The basic equation for abnormal returns for stock i and time t (AR_{it}) is as follows:

$$AR_{it} = R_{it} - ER_{it}$$

This equation reads that abnormal returns are found by subtracting from the observed return for stock (R_{it}) the expected return if the event had not happened (ER_{it}).

Observed return (R_{it}) will be measured on the day's closing prices and determined by equation:

$$R_{it} = \ln \frac{(P_t + D_t)}{P_{t-1}}$$

To find the observed returns the equation, P_t is the closing price of the stock for the session t , P_{t-1} is the closing price of the stock from the previous session and D_t is the net dividend of the stock for time t .

To determine the expected return, or the return that would have been observed had the event not occurred, this dissertation will employ the market model.

The model used:

$$E(R_{it}) = \alpha + \beta_i R_{mt}$$

where the expected returns of stock i during time t equals the stock price of the market m during time t (R_{mt}). The market returns are determined by finding the market stock prices of the S&P 500 (SPX) during the estimation and event window. The SPX returns are found using the same method as with Alphabet (GOOGL) observed returns.

The market returns model is described as the most common model used. Further, the method is robust and incorporates specific and systematic risks, which in the case of this sample, will account for multiple factors (Brown and Weinstein, 1985).

Stage 6 – Gathering Data

To begin testing the research question, data collection of the stock prices for each of the six identified events over their estimation and event windows begins. Event day -91 is also included to calculate the stock returns. Table 2 outlines the dates for each of the six events.

Table 2: Dates* for Each Event

Event	Start Date	Event Day	End Date	Event Day
1) Environmental	6 May 2020	-91	17 Sept 2020	2
2) Social 1	6 Feb 2020	-91	19 June 2020	2
3) Social 2	15 June 2020	-91	26 Oct 2020	2
4) Social 3	5 Feb 2021	-91	21 June 2021	2
5) Governance 1	12 Dec 2018	-91	29 April 2019	2
6) Governance 2	18 May 2020	-91	29 Sept 2020	2

*Note: Days counted include actively trading days (excludes weekends and bank holidays)

Data within these given times were gathered using the Bloomberg Terminals. Alphabet's stock prices were found using ticker GOOGL and S&P 500 was found using ticker SPX. The resulting stock prices were in US Dollars, and the final stock price on the day were used (Adj. Close). Appendices 2 to 7 outlines the data collection's findings for each event.

Using the final daily stock price, the observed daily stock returns were determined for both GOOGL and SPX for all six events using the equation:

$$R_{it} = \ln \frac{(P_t + D_t)}{P_{t-1}}$$

RESULTS

Stage 7 – Processing the data

After gathering the observed returns for both GOOGL and market values of the S&P 500 Index, processing the data began. To calculate the expected returns, the four components of the market model were calculated. These include intercept (alpha) and slope (beta) determined using the dependent variable (y) of GOOGL observed returns and independent variable (x) of SPX returns. The standard error (STEYX), or measure of the amount of error predictions of observed returns using the market returns, was found using the same variables. R-squared, or how much the model explains the variation of the variability of GOOGL stock, was also determined for each event.

Table 3 – Key Values for Data Processing

Event	Intercept (α)	Slope (β)	R-Squared	Standard Error
1) Environmental	-0.000286	0.9846059	57.634%	0.0113168
2) Social 1	0.0005228	0.9060346	84.236%	0.0134131
3) Social 2	-0.000712	1.295042	64.8887%	0.0108245
4) Social 3	0.00052974	1.3067572	52.543%	0.0103491
5) Governance 1	0.000576	1.1768767	66.065%	0.0090304
6) Governance 2	-0.0007214	1.055002	58.493%	0.0113427

Expected returns were calculated using the market model using equation:

$$E(R_{it}) = \alpha + \beta_i R_{mt}$$

From there, abnormal returns (AR) were calculated using equation:

$$AR_{it} = r_{it} - (\alpha + \beta_i R_{mt})$$

The findings of these are in Appendices 2 to 7.

To find cumulative abnormal return (CAR), the sum of abnormal returns during the event window, was calculated by adding up the sums from day t_1 to t_2 and found in Table 4. CAR can demonstrate how widely an event window was affected overall by an event.

Table 4 – Cumulative Abnormal Returns

Event	CAR
1) Environmental	-2.94%
2) Social 1	-1.09%
3) Social 2	4.90%
4) Social 3	0.15%
5) Governance 1	1.65%
6) Governance 2	-0.03%

Event 1

Starting with Event 1, the start of Alphabet's campaign to be carbon-free by 2030, the abnormal returns saw a spike on the event day. There was a 1.26% higher observed return on this day compared to the expected stock return. Interestingly, the day before the event day, there was a drop in the abnormal returns, as the observed values were lower than expected. Thus, it could be inferred that the sustainability

announcement did slightly, positively impact the returns. However, the following two days also brought in negative abnormal returns. As a result of the largely negative abnormal returns on all days except the event day, the cumulative abnormal return for the event window was negative, at -2.94%. This CAR was the lowest out of all six events, suggesting that overall, returns during the event window were lower than expected.

Event 2

Event 2, the start of the social campaign on racial equality, was like event 1 in that most days in the event window, except the event day, saw negative abnormal returns. The event day saw a 0.694% increase in observed returns. However, the following day saw the largest drop in abnormal returns out of all the days at -1.37%. This implies that while the event start could have increased the returns on the event day, its effect was only short lived. The CAR saw an overall negative event window, with a cumulative sum of -1.09%, with returns underperforming during this period.

Event 3

Alphabet's continuation of their social campaign surrounding racial equality saw lower abnormal returns when compared to the start of the campaign in event 2, at 0.670%. However, while the event day saw the smallest abnormal return during the three identified days in the social campaign, event 3 had the greatest positive impact during the overall event window. The cumulative returns for Event 3 were 4.90% higher than the expected results. Perhaps because this event was simply a

small update on the social campaign, reiterating their goals, it did not have the same impact as compared to the start of the campaign.

Event 4

The final event included in the social campaign on racial equality is the most recent interaction of the campaign. This event day had the highest event day abnormal returns out of the three analysed in the social campaign, with returns at 0.808%. This event might have had the biggest impact out of the three because it contained the most concrete examples of Alphabet's steps engaging with racial equality. This included evidence on donations made to charities and historically black colleges and universities in the United States. Such detailed and concrete evidence included in this announcement of the campaign would show investors positive evidence.

Continually, the CAR on the day and days after the announcement were pushed the value into the positives after a largely negative start to the event window. The total CAR for this event totalled 0.153%.

Event 5

The campaign that had the lowest impact on stock prices was the corporate governance campaign. Perhaps because of their internal focus, there was less of a response from investors in the stock market. The announcement of the governance campaign performed better out of the two analysed within the governance campaign. It saw the event day with an increase of 0.564%. Unlike the other events, the positive returns continued over the course of the event days and days following it, suggesting

that while the initial response from investors was not the strongest, rather it was sustained over a longer period. The CAR also illustrates this with the second highest value out of the 6 events at 1.65%.

Event 6

The final event in the sample saw the lowest values produced over the study, with all but one (the first day of the event window) of the abnormal returns being positive. On the event day, there was a -0.063% decrease in the abnormal returns. Further, the largely negative abnormal returns over the course of the event window created the lowest CAR value at -0.028%. This final event suggests that this governance campaign was not effective at influencing a positive reaction in the stock prices.

Sample

After processing the data for the individual events, this study moved toward analysing the data of the full sample. Appendix 8 congregates all the abnormal returns for all six events. It then calculated the average abnormal return (AAR) for the sample. This tells the average difference between the observed and expected returns for each of the event days. Keeping particular attention to the event window, the abnormal return for the event day (Day 0), was 0.656%. Moving farther from the event day, the average decreased to -0.0116% on event day 1 and -0.119% on event day 2. This suggests the largest impact on the abnormal return for the sample was on the event day itself. The biggest impact was on the event day, followed by

smaller returns for the following days. This further suggests that any effects of the campaign were incredibly short-term, lasting only one day.

The cumulative average abnormal return (CAAR) for the sample was also calculated and found to be 0.441%. This signifies that during the overall event window, for all the events, the combined averages had a positive increase on the abnormal returns. From these results, overall, the abnormal returns for the sample did have a positive impact on the observed stock prices when compared to the expected. Whether these results were statistically significant was determined in the final stage of the event study methodology.

Stage 8 – Significance testing

The final step in the event study methodology, and most important to the findings of this dissertation, is the significance testing.

INDIVIDUAL EVENTS

For each individual event, the significance test analyses if the abnormal returns are statistically and significantly different from 0, meaning the abnormal returns indicate that the event day (independent variable) had a real effect on the final daily price of Alphabet stock (dependent variable).

For each of the six individual events, to test significance, an abnormal return t-test was run. The equation to run this t-test is as follows for each day in the event window, for each event:

$$t - \text{statistics of Abnormal Returns} = \frac{\text{Abnormal Return}}{\text{Standard Error}}$$

Looking at each of the event days, Table 5 outlines the t-test values and resulting significance.

Table 5 – Abnormal T-test Results and Significance

Event	T-statistics of AR on Event Day	Significance
1) Environmental	1.111	No
2) Social 1	0.517	No
3) Social 2	0.645	No
4) Social 3	0.781	No
5) Governance 1	0.625	No
6) Governance 2	-0.055	No

Looking at all six events, all absolute values of the t-statistics tests were less than 1.96, $|t| < 1.96$, therefore, all the abnormal returns are statistically insignificant at the 5% level.

While none of the abnormal returns t-tests for the event days are statistically significant, there was one event that had a significant t-test value during the event window. Event 3, the start of the Alphabet's social campaign, had a significant t-test for event day -1, with a value of 2.408. This signifies that on this day, there was a significantly positive impact on the stock prices for Alphabet. It should be noted that other events that occurred on this date could have influenced this increase as well. However, research could not find a significant product launch, notable marketing

event or positive public relations event that could have influenced this statistically significant result on this date.

Sample

Analysing the sample size of all six events in Appendix 8, the statistical significance testing uses the cumulative average abnormal return (CAAR) of all the events. The t-test significance of CAAR follows the equation:

$$t - \text{statistics of CAAR} = \frac{CAAR}{St. Dev. (No. of days in window^{1/2})}$$

The resulting t-test for the cumulative average of all six events and their abnormal returns in the event window is -0.489. The absolute value of this t-test is less than 1.96, ($|t| < 1.96$), therefore statistically insignificant at the 5% level.

ANALYSIS & IMPLICATIONS

Given that the significance t-test of the abnormal returns for all events (both individual events and sample) are statistically insignificant, this dissertation can conclude that we can reject the hypothesis and accept that the null hypothesis of our research. Therefore, for the sample offered, there is no significant influence of ESG marketing material on financial performance as analysed through the stock return. While processing the data, without considering significance testing, does provide some insight on a small, short-term effect of the announcements and stages in the campaigns, the t-testing proved these to be insignificant. Analysing both the significance testing and the processed data, we can break down the most successful of the six types of events. The environmental campaign (Event 1) had the highest significance in testing values and saw the greatest increase in abnormal returns on the event day. This was followed by the performance of the social campaign, and finally the governance campaign. From these results, it can be inferred that marketing content on sustainability proves more effective when compared to those that target social and governance factors.

This conclusion must also consider the type of campaign and content it contained. Did Alphabet, in this campaign, become the first of the big tech companies to announce a commitment to becoming carbon-free by 2030? Perhaps being a leader in creating these types of campaigns makes them more impactful to investors. This would suggest that marketers should compare the content and delivery of their campaigns with those of their competitors. This should be done to consider the potential impact of their campaigns if they are “followers” of a trend. This idea is supported by Michael Porter’s theory on positioning, with market leaders,

followers, challengers, and niches (Porter, 1985). Future research can be performed to test this theory in conjunction with ESG marketing strategies and their impact on financial performance.

MANAGERIAL IMPLICATIONS

Given that the t-test of the sample is also statistically insignificant, we must ask what it can tell us about Alphabet and their ESG marketing campaigns. It can be argued that because these events are insignificant, therefore, the funds, research, manpower and hours to create the material and plan these campaigns is an ineffective use of resources. Alternatives for these resources, both financial and human, could go towards researching better tactics to bolster their ESG marketing strategy. This could be imagined as more interactive digital campaigns or different methods of disseminating the information provided in The Keyword blog. A/B testing could be employed to test different methods of marketing content that demonstrates Alphabet's ESG-friendly credentials. They could consider how to better convey their message to investors through more direct, better-optimised ESG campaigns.

The insignificance of results this research found also begs the question, if this marketing spend has no meaningful financial result, why is Alphabet spending the resources to run these campaigns? Looking beyond financial motivations, how do consumer perceptions (both B2C and B2B) and purpose-led marketing play into a ESG marketing strategy? Is the heavily shared content simply to sell a halo effect to consumers and increase positive perceptions of the brand? Is this ESG marketing strategy done as a tool for corporate social responsibility and for the Google brand

itself? Beyond financial considerations, is ESG-heavy marketing content designed to boost impressions something a brand should even create?

Further, the conclusions of this marketing strategy predicated upon ESG topics can be summarised in both the short- and long-term. If Alphabet is focused on long-term financial gain, i.e., increased stock prices and attracting investors, their current strategy can hardly be described as effective, as demonstrated by this research. Resources should be allocated to finding how to more effectively market ESG topics, to find better campaign structures and messaging that prove for more effective financial influences. While there is some immediate influence for certain events, such as the sustainable carbon-free campaign, the improvements only are sustained for a day, thus proving narrow in scope.

However, this current strategy might accomplish more on the long-term in terms of brand fit and brand strategy. Marketing more material to bolster the image and positive impressions of the Alphabet and Google brands might be main goal of this strategy. While there needs to be more research on this, it is important to consider this as a major motivation for Alphabet.

THEORETICAL IMPLICATIONS

Beyond managerial recommendations for Alphabet (and other firms marketing and engaging with ESG) this dissertation provides theoretical implications for academics. As discussed in the literature review, ESG is a burgeoning topic in academia. The rise of this phenomenon has led to a variety of studies researching the best way to optimise ESG, from various perspectives. With so many different studies performed, it creates a vast ecosystem of results, only demonstrating ESG

as a highly debated and varying subject. This dissertation and its results add to this ecosystem, especially supporting the theories set forth by Blancard and Petit (2019) and Kupir and Adrian (2020). Both studies' drew similar conclusions to this dissertation; in that, there was nothing to support a correlation between positive ESG events and stock prices. However, expanding this dissertation could see testing Blancard and Petit's other theory, that negative events did have significantly negative effects on stock prices.

LIMITATIONS

This research encountered a handful of limitations. Firstly, the event study methodology does not account for all possible occurrences on the event day that could have influenced, positively or negatively, the stock prices. This is a major limitation to the event study methodology.

Secondly, the choice of abnormal returns model; in that, there were variety of potential abnormal returns models to apply. These included the mean-adjusted model, market-adjusted model, and control portfolio model. Whilst the model used, the market model, is the most used for event studies, it does come with drawbacks, such as possible biases in the estimation of parameters for event-day clustering (Hachette, 1994). Using another model, such as the control portfolio model, would have allowed stocks with similar characteristics to be compared, which could have proved useful for this research. Further, the mean-adjusted model would also have been a viable option, especially given the events. This model would have eliminated the need to find the stock market index.

Further limitations of this study include the choice of firm. The decision to use Alphabet came from the ability to access reliable data (namely, dates) pertaining to their ESG announcements and marketing campaigns. However, during the initial research, there were a handful of other tech firms, such as Apple, who provided similar data. Furthermore, when narrowing the scope of this research to big tech firms, it eliminated a variety of different industries who are highly active with their ESG marketing strategies, i.e., finance and petroleum.

Even within the tech industry, a limitation not explored is an analysis on the effects of the leaders of ESG marketing techniques. Were there greater effects

witnessed with earlier ESG campaigns before it become a growing trend? Of the big tech companies, who was the first to employ ESG marketing techniques like those we see today, like those explored in this research? These questions and more should be the launch point for further study.

The final limitation of this dissertation comes with its final decision of events. As seen with the list of possible events in Appendix 1, there are numerous options this dissertation could have included in its final sample for study.

DIRECTIONS FOR FUTURE RESEARCH

Future research could include a different sample. Rather than analysing multiple events from one single firm, future research could instead study a single campaign from several different firms with a common theme; for example, the LGBTQ+ campaigns within a variety of firms in a specific industry, say, finance. Analysis over event type, rather than firm, could research the types of events that have the strongest impact. This type of sample could provide research on the most effective of the three aspects of ESG.

Another avenue for further research could include comparing different industries with one another, whilst including more events or analysing a simple type of event for different firms. There could be a historical research on the impact of ESG marketing over time, by comparing the influence of early ESG marketing campaigns with more contemporary campaigns.

If this research were to be performed again, events categorised as “Product Campaigns” in Appendix 1 would be selected as the final sample. These events connected Alphabet’s products, such as Google Search, Google Maps, Emojis and Android products with ESG-related campaigns. This research would analyse whether connecting Alphabet’s ESG goals with their products resonates with investors. The importance of expanding the literature on ESG and marketing opens numerous new paths of study.

Beyond the event study methodology and analysis of financial performance via stock market prices, the next point of future research is the long-term, purpose-driven motivation. Future research on tracking consumer brand perceptions and overall brand fit could prove useful in determining this as the main motivator for firms

to produce more ESG material. Determining the motivations behind brand strategy could then allow for better recommendations on the types of campaigns that prove most effective in building perceptions and bolstering brand reputation around ESG factors.

CONCLUSION

This dissertation set out to establish a relationship between ESG marketing campaigns and financial performance. Financial performance was analysed via stock market prices, transformed into daily stock returns. Given the limited literature on this relationship, the hypotheses of this dissertation took an explanatory approach.

After selecting Alphabet as the firm of choice, a list of events was established, each announcing of key date during a campaign that pertained to one of the three ESG topics. These dates were compiled (Appendix 1), and from there a final selection of six events selected. Of these six events, one was categorised as a sustainability, three as social campaigns, and two as corporate governance marketing campaigns.

From there, these events and their dates were assigned event days. It marked the five days within the event window: two days before, the event day, and two days after. An estimation window of 90 days was also established. The daily stock prices for both the estimation window and event window were found for Alphabet (GOOGL) and the S&P 500 Index (SPX) to establish the market index for the market model to find abnormal returns (Appendix 2 to 8).

After finding the observed daily returns for each event, the expected results were determined using the market model. The abnormal returns were found by subtracting the expected returns from the observed returns. These abnormal returns from the event window were used to determine the t-test results to provide the statistical significance testing. The results of the t-tests had an absolute value less than 1.96, determining that all six events were statistically insignificant.

Further testing of all six events as a sample saw all six events' abnormal returns congregated to determine the average abnormal returns (Appendix 8). The cumulative average abnormal returns (CAAR) were determined for the event window. Using these values, the final t-test to test the significance of the sample was run. The results of this found a t-statistics of the CAAR was 0.489. Being less than 1.96, there is no statistical significance at the 5% level for the sample.

Given that all the t-tests results were insignificant, the null hypothesis is confirmed, thus stating that there is no relation between Alphabet's ESG marketing campaigns and financial stock market performance. While for the first five of the six events saw an insignificant increase in abnormal returns on the event day, overall, the following results of abnormal returns was not statistically significant.

With these findings, the resulting recommendations for Alphabet, and other firms who heavily participate in ESG marketing, raises more questions than answers. In terms of analysing on the short-term, while there might be a small increase in stock prices on the day of the announcement, overall, the financial impact of ESG marketing material cannot be determined. Thus, why is Alphabet funding such extensive campaigns covering these topics? It also raises questions of the long-term effectiveness of ESG marketing and encourages exploration of the motivations behind it. In short, if financial gains are not the primary goal of ESG marketing strategies, then what is? Purpose-oriented marketing, brand development and customer (both B2B and B2C) perceptions stand out as the point of future research.

The relationship between ESG and marketing offer academics a wealth of potential discovery. Not yet explored as an important point for marketing research, this dissertation's findings prove that more study needs to be conducted on this

subject. With more research, there can be enhanced performance from firms who participate in ESG marketing, and better align with their goals for pursuing this, whether it be financial or purpose-driven. Ultimately, this dissertation demonstrates that Alphabet's current strategy does not accomplish significant, long-term financial increases. However, it might succeed in building brand identity and follows their goals surrounding brand fit.

APPENDIX 1: LIST OF POSSIBLE EVENTS FOR EVENT STUDY

Environmental

Company	Date	Name of Event /Hyperlink	Type of Media	Notes
Alphabet	17-Oct-06	Corporate solar is coming	Campaign	
Alphabet	27-Nov-06	Update: Global Warming Speakout	Article	
Alphabet	20-Dec-10	Going Green at Google in 2010	Campaign	
Alphabet	29-Sep-14	Google's commitment to sustainability	Campaign	
Alphabet	24-Nov-15	Creating new pathways for buying renewable energy	Article	
Alphabet	14-Apr-16	How technology can help us become more sustainable	Article on products	
Alphabet	03-Dec-16	Environmental Report: 2016	Report	Earliest report in their archive
Alphabet	20-Sep-17	Why we should develop "circular cities" and how Google tech can help	Article	
Alphabet	06-Oct-17	Environmental Report: 2017 Progress Update	Report	Announced 10 October 2017
Alphabet	10-Oct-17	Why building on an environmentally responsible cloud matters	Article	
Alphabet	01-Feb-18	Capturing value from waste in upstate New York	Project	Part of Environment Project series
Alphabet	03-Mar-18	Once is Never Enough - Circular Economy	Project	Part of Environment Project series
Alphabet	23-Apr-18	Measuring our impact in data centre communities	Campaign	
Alphabet	10-Oct-18	The Internet is 24x7. Carbon-free energy should be too.	Campaign	
Alphabet	25-Oct-18	Reimagining the Google Supply Chain	Campaign	
Alphabet	10-Dec-18	The journey toward a circular economy	Campaign	
Alphabet	07-Sep-18	Environmental Report 2018	Report	
Alphabet	22-Apr-19	Steps toward a more sustainable future	Article	
Alphabet	22-Apr-19	Our commitments to the environment, today and every day	Campaign	
Alphabet	05-Jun-19	100 percent renewable energy for the second year in a row	Campaign	
Alphabet	18-Jun-19	A circular Google in a sustainable world	Campaign	circular economy campaign
Alphabet	08-Aug-19	An environmental nonprofit takes on AI "sprint week"	Article	
Alphabet	12-Sep-19	2602 uses of AI for social good and what we learned from them		
Alphabet	03-Aug-20	Alphabet issues sustainability bonds to support environmental initiatives	Campaign	
Alphabet	14-Sep-20	Cities: where climate action can have the impact	Article	
Alphabet	14-Sep-20	24/7 by 2030: Realising a Carbon-Free Future	White paper	carbon free announcement
Alphabet	23-Sep-20	Environmental Report 2019	Report	
Alphabet	16-Sep-20	Supporting a greener future in Europe	Campaign	EMEA sustainability campaign
Alphabet	02-Oct-20	How we're supporting climate action in European cities	Campaign	EMEA sustainability campaign
Alphabet	22-Apr-21	A whale of a tale about responsibility and AI	Article	AI campaign
Alphabet	22-Apr-21	3 Ways to find and support eco-friendly places on Maps	Article	Product integration with sustainability campaign

Company	Date	Name of Event /Hyperlink	Type of Media	Notes
Alphabet	08-May-12	Accelerating diversity in entrepreneurship with NewMe	Campaign	
Alphabet	18-May-12	A look inside our diversity report 2011	Report	
Alphabet	29-Jun-12	Celebrating Pride 2012	Campaign	
Alphabet	07-May-13	Voice of women in technology	Article	
Alphabet	28-May-14	Getting to work on diversity at Google	Campaign	
Alphabet	25-Sep-14	You don't know what you know: how unconscious minds undermine the workplace	Article	
Alphabet	05-May-15	Doing more on diversity	Campaign	
Alphabet	18-Jun-15	Join our global Pride celebration: #AndProud	Campaign	
Alphabet	26-Feb-16	Strengthening our commitment to racial justice	Campaign	
Alphabet	20-Jun-16	Focusing on diversity	Campaign	
Alphabet	14-Jul-16	Promoting gender equality through emoji	Product Campaign	
Alphabet	11-Apr-17	Our focus on pay equity	Campaign	
Alphabet	29-Jun-17	Making progress on diversity and inclusion	Campaign	
Alphabet	17-May-18	Start making your business more accessible via Primer	Product Campaign	
Alphabet	25-Sep-18	With the help of Google Search, one woman finds her way	Product Campaign	
Alphabet	12-Sep-19	2602 uses of AI for social good and what we learned from them	Campaign	
Alphabet	22-Sep-19	9 ways we're changing habits, so we can make more inclusive marketing at Google	Campaign	
Alphabet	03-Dec-19	How I'm making Maps better for wheelchair users like me	Product Campaign	
Alphabet	24-Jan-20	Most Searched: A celebration of Black history makers	Product Campaign	
Alphabet	25-Jan-20	Supporting future history makers with NAACP	Outreach Campaign	
Alphabet	13-Feb-20	One Man's Mission to add civil-rights history in Google Maps	Product Campaign	
Alphabet	25-Feb-20	How we help Black-owned businesses grow their digital skills	Article	
Alphabet	03-Jun-20	Standing with the Black community	CEO Statement	
Alphabet	15-Jun-20	Honouring Pride: In Solidarity	Campaign	
Alphabet	17-Jun-20	Our commitments to racial equity	Article	on The Keyword
Alphabet	27-Jun-20	2019 Statement Against Modern Slavery	Report	
Alphabet	24-Sep-20	Hacking for a virtual world	Article	
Alphabet	22-Oct-20	Progress on our racial equity commitments	CEO Statement	follow up to 17 June 2020 ; by Sundar Pichai
Alphabet	16-Nov-20	How we're supporting the transgender community	Campaign	
Alphabet	19-Nov-20	A call to advance women entrepreneurs	Campaign	
Alphabet	30-Apr-21	This new emoji has been years in the making	Product Campaign	
Alphabet	13-May-21	Investing in Black-led startups and investment firms	Campaign	
Alphabet	02-Jun-21	Supporting an inclusive recovery this Pride Month	Article	
Alphabet	17-Jun-21	All In: Our inclusive marketing toolkit	Campaign	
Alphabet	17-Jun-21	Our racial equity commitments, one year later	CEO Statement	Follow yo ti 17 June & 22 October 2020; by Sundar Pichai
Alphabet	25-Jun-21	2020 Statement Against Modern Slavery	Report	
Alphabet	30-Jun-21	Progress in Responsible AI innovation	Campaign	Blog post - The Keyword
Alphabet	30-Jun-21	2021 Diversity Annual Report	Report	

Governance

Company	Date	Name of Event /Hyperlink	Type of Media	Notes
Alphabet	03-Mar-17	Googler Alexandria Garcia-Verdin and her "tribe of women"	Article	
Alphabet	09-Mar-17	The SheWorld: Jen Holland and her career expedition	Article	
Alphabet	08-Apr-17	A note to our employees	CEO Statement	
Alphabet	27-Sep-17	Googler Adriana Jara doesn't accept "fine": she changes things for the better	Article	
Alphabet	11-Oct-17	Celebrating Coming Out Day: Portraits of LGBTQ+ Googlers	Campaign	
Alphabet	25-May-18	We are many and one: Googlers mark AAPJ Heritage Month	Article	
Alphabet	30-Jun-18	Empowering female founders in tech: the future is inclusive	Campaign	
Alphabet	30-Aug-18	Throwing it back: Google Leaders share their first summer jobs	Article	
Alphabet	08-Nov-18	A note to our employees	CEO Statement	By Sundar Pichai on The Keyword
Alphabet	26-Feb-19	In help to make Google more inclusive, I had to understand my journey	Article	
Alphabet	25-Apr-19	An update to workplace commitments	Progress Report/Statement	Follow up to "A note to our employees"; by Melonie Parker - Chief Diversity Officer
Alphabet	05-May-19	Meet the Googler in charge of all things I/O	Article	
Alphabet	17-Jun-19	Meet David Feinberg: head of Google Health	Article	
Alphabet	24-Sep-19	Neha Palmer keeps Google's data centres clean	Article	
Alphabet	17-Jan-20	Campus London calling: apply for Women Founders residency	Campaign	
Alphabet	24-Feb-20	Upholding the legacy of Black entrepreneurship in Atlanta	Article	
Alphabet	13-May-20	Dr. Karen DeSalvo on "putting information first" during COVID19	Article	
Alphabet	14-May-20	One Founder's Mission to Make Healthcare More Accessible	Article	
Alphabet	24-Aug-20	CEO Hana Hassan refuses to be ignored	Article	
Alphabet	09-Sep-20	Google for Startups: supporting underrepresented leaders	Article	
Alphabet	25-Sep-20	Building on our workplace commitments	Progress Report/Statement	by Eileen Naughton, VP of People Operations
Alphabet	30-Sep-20	Founded: A new podcast focuses on women who lead	Campaign	
Alphabet	15-Oct-20	An inside look at Hispanic Heritage Month at Google	Article	
Alphabet	05-Nov-20	Women aren't safe online. Merve Isler wants to change that	Article	
Alphabet	18-Mar-21	Why Monica Gómez left her role as CEO to work at Google	Article	
Alphabet	31-Mar-21	Google women celebrate being the "first..."	Campaign	
Alphabet	30-Jun-21	2021 Diversity Annual Report	Report	
Alphabet	21-Jul-21	Corporate Governance Guidelines	Report	

APPENDIX 2: EVENT 1 DATA COLLECTION AND PROCESSING

GOOGL		Prices in USD							
Intercept	-0.0002859								
Slope	0.98460585								
R-squared	0.57637407								
Standard									
Error	0.01131681								
		SPX							
		Market			SPX	GOOGL	GOOGL		
Calendar		Closing	Event	GOOGL	MARKET	Expected	Abnormal		
Date	Adj Close	Price	Time	RETURN	RETURN	Returns	Return	CAR	AR T-Test
06/05/2020	1345.43005	2848.42	-91						
07/05/2020	1369.28003	2881.19	-90	0.017726655	0.0115	0.011041579	0.006685076		0.590721133

08/05/2020	1384.33997	2929.80	-89	0.010998435	0.01687	0.016325838	-0.005327404	-0.470751558
11/05/2020	1403.58997	2930.32	-88	0.013905544	0.00018	-0.000111186	0.01401673	1.238576575
				-				
12/05/2020	1375.18005	2870.12	-87	0.020240891	-0.0205	-0.020513517	0.000272626	0.024090328
				-				
13/05/2020	1348.32996	2820	-86	0.019524787	-0.0175	-0.017479802	-0.002044986	-0.180703441
14/05/2020	1356.85999	2852.5	-85	0.006326366	0.01152	0.011061468	-0.004735101	-0.41841327
15/05/2020	1373.06006	2863.7	-84	0.011939385	0.00393	0.003579997	0.008359388	0.738670343
18/05/2020	1385.18005	2953.91	-83	0.008826996	0.0315	0.03073033	-0.021903335	-1.935469812
				-				
19/05/2020	1374.40002	2922.94	-82	0.007782403	-0.0105	-0.010608951	0.002826547	0.249765466
20/05/2020	1409.16003	2971.61	-81	0.025291043	0.01665	0.016108774	0.009182269	0.811383472
				-				
21/05/2020	1406.75	2948.51	-80	0.001710263	-0.0078	-0.007939837	0.006229574	0.550471074

22/05/2020	1413.23999	2955.45	-79	0.004613464	0.00235	0.002031557	0.002581906	0.228147994
26/05/2020	1421.37	2991.77	-78	0.005752742	0.01229	0.011814039	-0.006061297	-0.535601456
				-				
27/05/2020	1420.28003	3036.13	-77	0.000766842	0.01483	0.014313148	-0.01507999	-1.332530699
				-				
28/05/2020	1418.23999	3029.73	-76	0.001436364	-0.0021	-0.002361437	0.000925073	0.081743294
29/05/2020	1433.52002	3044.31	-75	0.010773938	0.00481	0.004452288	0.00632165	0.55860729
01/06/2020	1434.87	3055.73	-74	0.00094172	0.00375	0.003407573	-0.002465852	-0.217892985
02/06/2020	1442.31006	3080.82	-73	0.005185183	0.00821	0.007798465	-0.002613282	-0.230920475
				-				
03/06/2020	1439.25	3122.87	-72	0.002121637	0.01365	0.013152909	-0.015274547	-1.349722503
				-				
04/06/2020	1414.30005	3112.35	-71	0.017335384	-0.0034	-0.003602778	-0.013732606	-1.213470174
05/06/2020	1440.02002	3193.93	-70	0.018185654	0.02621	0.025522258	-0.007336604	-0.648292872

08/06/2020	1448.04004	3232.39	-69	0.00556938	0.01204	0.011570281	-0.006000901	-0.530264576
09/06/2020	1452.07996	3207.18	-68	0.002789921	-0.0078	-0.007965061	0.010754982	0.950354961
10/06/2020	1464.69995	3190.14	-67	0.008690978	-0.0053	-0.005517229	0.014208207	1.255496278
				-				
11/06/2020	1401.90002	3002.1	-66	0.042875626	-0.0589	-0.058322667	0.015447042	1.364964878
12/06/2020	1412.92004	3041.31	-65	0.007860775	0.01306	0.012573856	-0.004713082	-0.416467526
15/06/2020	1420.73999	3066.59	-64	0.005534599	0.00831	0.007898308	-0.002363709	-0.208867151
16/06/2020	1446.46997	3124.74	-63	0.018110267	0.01896	0.01838458	-0.000274313	-0.024239399
17/06/2020	1452.54004	3113.49	-62	0.00419647	-0.0036	-0.003830816	0.008027286	0.709324431
				-				
18/06/2020	1434.12	3115.34	-61	0.012681264	0.00059	0.000299101	-0.012980365	-1.146999107
				-				
19/06/2020	1424.64002	3097.74	-60	0.006610312	-0.0056	-0.005848435	-0.000761876	-0.067322565
22/06/2020	1450.66003	3117.86	-59	0.018264276	0.0065	0.006109132	0.012155145	1.074079183

23/06/2020	1463.97998	3131.29	-58	0.00918199	0.00431	0.003955192	0.005226798	0.461861629
				-				
24/06/2020	1432.69995	3050.33	-57	0.021366432	-0.0259	-0.025743081	0.004376649	0.386738891
25/06/2020	1441.09998	3083.76	-56	0.005863073	0.01096	0.010504818	-0.004641745	-0.410163868
26/06/2020	1362.54004	3009.05	-55	-0.05451387	-0.0242	-0.024139905	-0.030373965	-2.683969937
29/06/2020	1397.17004	3053.24	-54	0.025415771	0.01469	0.014173684	0.011242086	0.993397545
30/06/2020	1418.05005	3100.29	-53	0.014944498	0.01541	0.014886698	5.78003E-05	0.005107473
01/07/2020	1442	3115.86	-52	0.016889355	0.00502	0.004658859	0.012230496	1.080737504
02/07/2020	1469.93005	3130.01	-51	0.019368969	0.00454	0.004185433	0.015183537	1.341680479
06/07/2020	1499.65002	3179.72	-50	0.020218629	0.01588	0.015351312	0.004867316	0.430096333
				-				
07/07/2020	1489.92004	3145.32	-49	0.006488167	-0.0108	-0.01093796	0.004449793	0.393202248
08/07/2020	1503.59998	3169.94	-48	0.009181655	0.00783	0.007421064	0.001760591	0.155573118
09/07/2020	1518.66003	3152.05	-47	0.010016	-0.0056	-0.005842701	0.015858702	1.401340871

10/07/2020	1539.01001	3185.04	-46	0.013399955	0.01047	0.010019146	0.003380809	0.298742348
				-				
13/07/2020	1512.22998	3155.22	-45	0.017400816	-0.0094	-0.009504332	-0.007896484	-0.697766184
14/07/2020	1520.85999	3197.52	-44	0.005706807	0.01341	0.012914036	-0.007207228	-0.636860683
				-				
15/07/2020	1516.88001	3226.56	-43	0.002616927	0.00908	0.008656288	-0.011273215	-0.996148224
16/07/2020	1514.92004	3215.57	-42	-0.0012921	-0.0034	-0.003639611	0.00234751	0.20743578
17/07/2020	1516.84998	3224.73	-41	0.00127395	0.00285	0.002518847	-0.001244897	-0.110004297
20/07/2020	1563.83997	3251.84	-40	0.030978667	0.00841	0.007991548	0.022987119	2.031237481
				-				
21/07/2020	1555.92004	3257.3	-39	0.005064407	0.00168	0.001367262	-0.006431669	-0.568328999
22/07/2020	1564.84998	3276.02	-38	0.005739326	0.00575	0.005372679	0.000366646	0.032398406
				-				
23/07/2020	1516.75	3235.66	-37	0.030737756	-0.0123	-0.012416114	-0.018321641	-1.618976479

				-					
24/07/2020	1508.20996	3215.63	-36	0.005630486	-0.0062	-0.006381035	0.00075055		0.066321698
27/07/2020	1529.43005	3239.41	-35	0.014069721	0.0074	0.006995347	0.007074373		0.625121067
				-					
28/07/2020	1503.65002	3218.44	-34	0.016855972	-0.0065	-0.006659689	-0.010196283		-0.900986006
29/07/2020	1523.51001	3258.44	-33	0.013207851	0.01243	0.011951117	0.001256734		0.11105029
30/07/2020	1538.37	3246.22	-32	0.009753782	-0.0038	-0.003978469	0.013732251		1.21343888
				-					
31/07/2020	1487.94995	3271.12	-31	0.032774979	0.00767	0.007266439	-0.040041418		-3.538226343
				-					
03/08/2020	1482.76001	3294.61	-30	0.003487981	0.00718	0.006784541	-0.010272522		-0.907722752
				-					
04/08/2020	1473.30005	3306.51	-29	0.006379968	0.00361	0.003270417	-0.009650385		-0.852748139
05/08/2020	1479.08997	3327.77	-28	0.003929897	0.00643	0.006044819	-0.002114923		-0.186883379

06/08/2020	1504.94995	3349.16	-27	0.017483713	0.00643	0.006042838	0.011440875	1.010963339
				-				
07/08/2020	1498.37	3351.28	-26	0.004372209	0.00063	0.00033731	-0.004709519	-0.416152702
10/08/2020	1496.81995	3360.47	-25	-0.00103449	0.00274	0.002414081	-0.003448571	-0.304730112
11/08/2020	1480.54004	3333.69	-24	-0.01087633	-0.008	-0.008132386	-0.002743944	-0.24246629
12/08/2020	1507.23999	3380.35	-23	0.018033927	0.014	0.013495098	0.004538829	0.401069829
13/08/2020	1516.65002	3373.43	-22	0.006243222	-0.002	-0.002301552	0.008544774	0.755051782
				-				
14/08/2020	1504.63001	3372.85	-21	0.007925374	-0.0002	-0.000455225	-0.007470149	-0.660093441
17/08/2020	1516.23999	3381.99	-20	0.007716173	0.00271	0.002382218	0.005333955	0.47133044
18/08/2020	1555.78003	3389.78	-19	0.026077692	0.0023	0.001981979	0.024095713	2.129197468
				-				
19/08/2020	1544.60999	3374.85	-18	0.007179707	-0.0044	-0.004622554	-0.002557153	-0.225960666
20/08/2020	1576.25	3385.51	-17	0.020484145	0.00316	0.002824094	0.017660051	1.560515625

				-					
21/08/2020	1575.56995	3397.16	-16	0.000431438	0.00344	0.003102222	-0.00353366	-0.31224892	
24/08/2020	1585.15002	3431.28	-15	0.006080389	0.01004	0.009603129	-0.00352274	-0.311284006	
25/08/2020	1605.84998	3443.62	-14	0.013058671	0.0036	0.003255023	0.009803648	0.866291105	
26/08/2020	1644.13001	3478.73	-13	0.023837861	0.0102	0.009752772	0.014085089	1.244617077	
				-					
27/08/2020	1628.52002	3484.55	-12	0.009494374	0.00167	0.001361329	-0.010855703	-0.959255111	
28/08/2020	1639.43005	3508.01	-11	0.006699355	0.00673	0.006342994	0.000356361	0.031489545	
				-					
31/08/2020	1629.53003	3500.31	-10	0.006038699	-0.0022	-0.002447127	-0.003591572	-0.317366258	
01/09/2020	1655.07996	3526.65	-9	0.015679323	0.00753	0.007123266	0.008556057	0.756048783	
02/09/2020	1717.39002	3580.84	-8	0.037647764	0.01537	0.014843373	0.022804391	2.015090896	
				-					
03/09/2020	1629.51001	3455.06	-7	0.051170674	-0.0351	-0.034871044	-0.01629963	-1.440303126	

				-						
04/09/2020	1581.20996	3426.96	-6	0.029640842	-0.0081	-0.008293739	-0.021347103			-1.886318888
				-						
08/09/2020	1523.59998	3331.84	-5	0.036434115	-0.0278	-0.027615033	-0.008819081			-0.779290726
09/09/2020	1547.22998	3398.96	-4	0.015509323	0.02015	0.019548969	-0.004039646			-0.356959961
				-						
10/09/2020	1526.05005	3339.19	-3	0.013688935	-0.0176	-0.017600028	0.003911093			0.345600438
				-						
11/09/2020	1515.76001	3340.97	-2	0.006742924	0.00053	0.000238917	-0.006981841	0.0069818		-0.616944504
				-						
14/09/2020	1508.82996	3383.54	-1	0.004571999	0.01274	0.012259719	-0.016831718	0.0238136		-1.48732069
15/09/2020	1535.12	3401.2	0	0.017424123	0.00522	0.004853097	0.012571026	0.0112425		1.110828156

				-					-	
16/09/2020	1512.08997	3385.49	1	0.015002103	-0.0046	-0.004833793	-0.01016831	0.0214108	-0.898514197	
				-					-	
17/09/2020	1487.04004	3357.01	2	0.016566426	-0.0084	-0.008568811	-0.007997616	0.0294085	-0.706702606	

APPENDIX 3: EVENT 2 DATA COLLECTION AND PROCESSING

GOOGL		Prices in USD								
Intercept	0.00052284									
Slope	0.90603465									
R-squared	0.84236089									
Standard										
Error	0.01341315									
			SPX							
			Market		SPX		GOOGL		GOOGL	
Calendar			Closing	Event	GOOGL	MARKET	Expected	Abnormal		
Date	Close Price	Adj Close	Price	Time	RETURN	RETURN	Returns	Return	CAR	AR T-Test
06/02/2020	1475.96997	1475.96997	3345.78	-91						
07/02/2020	1479.10999	1479.10999	3327.71	-90	0.00212742	-0.0054008	-0.0043705	0.00649793		0.484444676

10/02/2020	1508.66003	1508.66003	3352.09	-89	0.01997826	0.00732636	0.007160775	0.01281749	0.955591549
11/02/2020	1510.06006	1510.06006	3357.75	-88	0.00092799	0.0016885	0.002052677	-0.0011247	-0.083849464
12/02/2020	1518.63001	1518.63001	3379.45	-87	0.00567524	0.00646266	0.006378234	-0.000703	-0.052411167
13/02/2020	1513.39002	1513.39002	3373.94	-86	-0.0034505	-0.0016304	-0.0009544	-0.0024961	-0.186091552
14/02/2020	1518.72998	1518.72998	3380.16	-85	0.00352848	0.00184354	0.002193152	0.00133533	0.099553614
18/02/2020	1519.43994	1519.43994	3370.29	-84	0.00046747	-0.00292	-0.00212276	0.00259023	0.19311162
19/02/2020	1524.87	1524.87	3386.15	-83	0.00357372	0.00470583	0.004786481	-0.0012128	-0.090415789
20/02/2020	1516.98999	1516.98999	3373.23	-82	-0.0051677	-0.0038155	-0.00293417	-0.0022335	-0.166514408
21/02/2020	1483.45996	1483.45996	3337.75	-81	-0.022103	-0.0105181	-0.00900693	-0.0130961	-0.976360631
24/02/2020	1419.85999	1419.85999	3225.89	-80	-0.0428727	-0.0335136	-0.02984164	-0.0130311	-0.971516284
25/02/2020	1386.31995	1386.31995	3128.21	-79	-0.0236221	-0.03028	-0.0269119	0.00328983	0.245269042
26/02/2020	1390.46997	1390.46997	3116.39	-78	0.00299355	-0.0037785	-0.00290063	0.00589418	0.43943344
27/02/2020	1314.94995	1314.94995	2978.76	-77	-0.0543126	-0.0441633	-0.03949062	-0.014822	-1.105032675
28/02/2020	1339.25	1339.25	2954.22	-76	0.01847983	-0.0082383	-0.00694137	0.0254212	1.895245107
02/03/2020	1386.31995	1386.31995	3090.23	-75	0.0351465	0.04603923	0.042235972	-0.0070895	-0.528546804
03/03/2020	1337.71997	1337.71997	3003.37	-74	-0.0350568	-0.0281079	-0.02494393	-0.0101129	-0.75395406

04/03/2020	1381.59998	1381.59998	3130.12	-73	0.03280209	0.04220259	0.03875985	-0.0059578	-0.444173536
05/03/2020	1314.76001	1314.76001	3023.94	-72	-0.0483787	-0.033922	-0.03021169	-0.018167	-1.354415988
06/03/2020	1295.73999	1295.73999	2972.37	-71	-0.0144665	-0.0170539	-0.01492859	0.00046206	0.034448327
09/03/2020	1215.79004	1215.79004	2746.56	-70	-0.0617022	-0.0759697	-0.06830832	0.00660617	0.492514437
10/03/2020	1275.17004	1275.17004	2882.23	-69	0.04884067	0.04939634	0.045277631	0.00356304	0.265638152
11/03/2020	1210.90002	1210.90002	2741.38	-68	-0.0504011	-0.0488684	-0.04375363	-0.0066475	-0.495596075
12/03/2020	1111.55005	1111.55005	2480.64	-67	-0.0820464	-0.0951127	-0.08565255	0.00360616	0.26885233
13/03/2020	1214.27002	1214.27002	2711.02	-66	0.09241147	0.09287119	0.084667359	0.00774411	0.577352117
16/03/2020	1073	1073	2386.13	-65	-0.1163415	-0.1198405	-0.10805681	-0.0082847	-0.617656095
17/03/2020	1118.06006	1118.06006	2529.19	-64	0.04199446	0.05995482	0.054843985	-0.0128495	-0.957979752
18/03/2020	1091.18994	1091.18994	2398.1	-63	-0.0240328	-0.0518308	-0.04643768	0.02240488	1.670367206
19/03/2020	1111.67004	1111.67004	2409.39	-62	0.0187686	0.00470789	0.004788354	0.01398024	1.042279127
20/03/2020	1068.20996	1068.20996	2304.92	-61	-0.0390944	-0.0433595	-0.03876239	-0.000332	-0.024753174
23/03/2020	1054.13001	1054.13001	2237.4	-60	-0.0131809	-0.0292939	-0.02601841	0.01283752	0.957085208
24/03/2020	1130.01001	1130.01001	2447.33	-59	0.07198354	0.09382766	0.085533947	-0.0135504	-1.010233666
25/03/2020	1101.62	1101.62	2475.56	-58	-0.0251237	0.01153502	0.010973967	-0.0360977	-2.69121439

26/03/2020	1162.92004	1162.92004	2630.07	-57	0.05564537	0.06241416	0.057072231	-0.0014269	-0.106378045
27/03/2020	1110.26001	1110.26001	2541.47	-56	-0.0452826	-0.0336873	-0.02999904	-0.0152836	-1.139445995
30/03/2020	1146.31006	1146.31006	2626.65	-55	0.03246992	0.03351604	0.030889529	0.00158039	0.117823727
31/03/2020	1161.94995	1161.94995	2584.59	-54	0.01364368	-0.0160128	-0.01398531	0.02762899	2.059844082
01/04/2020	1102.09998	1102.09998	2470.5	-53	-0.0515082	-0.0441424	-0.0394717	-0.0120365	-0.897367281
02/04/2020	1117.03003	1117.03003	2526.9	-52	0.01354691	0.02282939	0.021207054	-0.0076601	-0.571092051
03/04/2020	1092.69995	1092.69995	2488.65	-51	-0.021781	-0.0151371	-0.01319192	-0.0085891	-0.640351028
06/04/2020	1183.18994	1183.18994	2663.68	-50	0.08281321	0.0703313	0.064245437	0.01856777	1.38429659
07/04/2020	1182.56006	1182.56006	2659.41	-49	-0.0005324	-0.001603	-0.00092958	0.00039722	0.02961397
08/04/2020	1207	1207	2749.98	-48	0.02066698	0.03405643	0.031379141	-0.0107122	-0.798631776
09/04/2020	1206.56995	1206.56995	2789.82	-47	-0.0003563	0.01448738	0.013648906	-0.0140052	-1.044140249
13/04/2020	1210.41003	1210.41003	2761.63	-46	0.00318265	-0.0101046	-0.00863227	0.01181492	0.880846473
14/04/2020	1265.22998	1265.22998	2846.06	-45	0.04529039	0.03057252	0.028222605	0.01706779	1.272467161
15/04/2020	1257.30005	1257.30005	2783.36	-44	-0.0062676	-0.0220305	-0.01943752	0.01316994	0.981867863
16/04/2020	1257.43005	1257.43005	2799.55	-43	0.0001034	0.00581671	0.00579298	-0.0056896	-0.424179415
17/04/2020	1279	1279	2874.56	-42	0.01715399	0.02679359	0.024798762	-0.0076448	-0.569946002

20/04/2020	1261.15002	1261.15002	2823.16	-41	-0.0139562	-0.017881	-0.01567796	0.00172177	0.128364158
21/04/2020	1212.16003	1212.16003	2736.56	-40	-0.0388455	-0.0306748	-0.02726963	-0.0115759	-0.863023093
22/04/2020	1258.41003	1258.41003	2799.31	-39	0.03815503	0.02293025	0.021298438	0.01685659	1.256721558
23/04/2020	1271.17004	1271.17004	2797.8	-38	0.01013979	-0.0005394	3.4107E-05	0.01010568	0.75341611
24/04/2020	1276.59998	1276.59998	2836.74	-37	0.0042716	0.01391808	0.0131331	-0.0088615	-0.660657751
27/04/2020	1270.85999	1270.85999	2878.48	-36	-0.0044963	0.01471407	0.013854299	-0.0183506	-1.368106389
28/04/2020	1232.58997	1232.58997	2863.39	-35	-0.0301135	-0.0052424	-0.00422691	-0.0258866	-1.92994024
29/04/2020	1342.18005	1342.18005	2939.51	-34	0.08891042	0.02658387	0.02460875	0.06430167	4.793928842
30/04/2020	1346.69995	1346.69995	2912.43	-33	0.00336758	-0.0092124	-0.00782393	0.01119151	0.834368858
01/05/2020	1317.31995	1317.31995	2830.71	-32	-0.0218163	-0.028059	-0.02489963	0.00308333	0.229873769
04/05/2020	1322.90002	1322.90002	2842.74	-31	0.00423593	0.00424982	0.004373321	-0.0001374	-0.010242819
05/05/2020	1349.02002	1349.02002	2868.44	-30	0.0197445	0.00904057	0.008713912	0.01103059	0.822371244
06/05/2020	1345.43005	1345.43005	2848.42	-29	-0.0026612	-0.0069794	-0.00580074	0.00313958	0.234067123
07/05/2020	1369.28003	1369.28003	2881.19	-28	0.01772666	0.01150462	0.010946427	0.00678023	0.50549132
08/05/2020	1384.33997	1384.33997	2929.8	-27	0.01099843	0.0168715	0.015809004	-0.0048106	-0.358645828
11/05/2020	1403.58997	1403.58997	2930.32	-26	0.01390554	0.00017749	0.000683648	0.0132219	0.985741596

12/05/2020	1375.18005	1375.18005	2870.12	-25	-0.0202409	-0.0205438	-0.01809058	-0.0021503	-0.160313423
13/05/2020	1348.32996	1348.32996	2820	-24	-0.0195248	-0.0174627	-0.01529896	-0.0042258	-0.315051303
14/05/2020	1356.85999	1356.85999	2852.5	-23	0.00632637	0.01152482	0.010964728	-0.0046384	-0.345807136
15/05/2020	1373.06006	1373.06006	2863.7	-22	0.01193939	0.00392638	0.004080276	0.00785911	0.585925895
18/05/2020	1385.18005	1385.18005	2953.91	-21	0.008827	0.0315012	0.029064022	-0.020237	-1.508745724
19/05/2020	1374.40002	1374.40002	2922.94	-20	-0.0077824	-0.0104844	-0.0089764	0.001194	0.08901679
20/05/2020	1409.16003	1409.16003	2971.61	-19	0.02529104	0.01665104	0.015609261	0.00968178	0.721812913
21/05/2020	1406.75	1406.75	2948.51	-18	-0.0017103	-0.0077736	-0.00652028	0.00481002	0.358604639
22/05/2020	1413.23999	1413.23999	2955.45	-17	0.00461346	0.00235373	0.002655401	0.00195806	0.145980862
26/05/2020	1421.37	1421.37	2991.77	-16	0.00575274	0.01228916	0.011657244	-0.0059045	-0.440202658
27/05/2020	1420.28003	1420.28003	3036.13	-15	-0.0007668	0.01482734	0.013956926	-0.0147238	-1.097711719
28/05/2020	1418.23999	1418.23999	3029.73	-14	-0.0014364	-0.0021079	-0.00138703	-4.933E-05	-0.003677756
29/05/2020	1433.52002	1433.52002	3044.31	-13	0.01077394	0.00481231	0.004882959	0.00589098	0.439194475
01/06/2020	1434.87	1434.87	3055.73	-12	0.00094172	0.00375126	0.003921611	-0.0029799	-0.222161954
02/06/2020	1442.31006	1442.31006	3080.82	-11	0.00518518	0.0082108	0.007962112	-0.0027769	-0.207030371
03/06/2020	1439.25	1439.25	3122.87	-10	-0.0021216	0.01364896	0.012889273	-0.0150109	-1.119119298

04/06/2020	1414.30005	1414.30005	3112.35	-9	-0.0173354	-0.0033687	-0.00252932	-0.0148061		-1.103847486
05/06/2020	1440.02002	1440.02002	3193.93	-8	0.01818565	0.0262117	0.024271552	-0.0060859		-0.453726385
08/06/2020	1448.04004	1448.04004	3232.39	-7	0.00556938	0.01204159	0.011432938	-0.0058636		-0.437150085
09/06/2020	1452.07996	1452.07996	3207.18	-6	0.00278992	-0.0077992	-0.00654349	0.00933341		0.6958406
10/06/2020	1464.69995	1464.69995	3190.14	-5	0.00869098	-0.0053131	-0.00429099	0.01298197		0.967854417
11/06/2020	1401.90002	1401.90002	3002.1	-4	-0.0428756	-0.0589441	-0.05288258	0.01000695		0.746055531
12/06/2020	1412.92004	1412.92004	3041.31	-3	0.00786077	0.01306086	0.012356428	-0.0044957		-0.335167745
15/06/2020	1420.73999	1420.73999	3066.59	-2	0.0055346	0.00831221	0.008053987	-0.0025194	-0.002519388	-0.187829762
16/06/2020	1446.46997	1446.46997	3124.74	-1	0.01811027	0.01896243	0.017703458	0.00040681	-0.002112579	0.030329138
17/06/2020	1452.54004	1452.54004	3113.49	0	0.00419647	-0.0036003	-0.00273916	0.00693563	0.004823048	0.51707685
18/06/2020	1434.12	1434.12	3115.34	1	-0.0126813	0.00059419	0.001061194	-0.0137425	-0.00891941	-1.024551493
19/06/2020	1424.64002	1424.64002	3097.74	2	-0.0066103	-0.0056495	-0.00459577	-0.0020145	-0.010933951	-0.150191524

APPENDIX 4: EVENT 3 DATA COLLECTION AND PROCESSING

GOOGL		Prices in USD								
Intercept	-0.0007118									
Slope	1.29502404									
R-squared	0.64886674									
Standard										
Error	0.01082454									
		SPX								
		Market		SPX		GOOGL		GOOGL		
Calendar		Closing	Event	GOOGL	MARKET	Expected	Abnormal			
Date	Adj Close	Volume	Price	Time	RETURN	RETURN	Return	Return	CAR	AR T-Test
15/06/2020	1420.73999	1523400	3066.59	-91						
16/06/2020	1446.46997	1532400	3124.74	-90	0.01811027	0.01896243	0.023844988	-0.0057347		-0.529788912
17/06/2020	1452.54004	1530500	3113.49	-89	0.00419647	-0.0036003	-0.00537429	0.00957076		0.884172541

18/06/2020	1434.12	1743100	3115.34	-88	-0.0126813	0.00059419	5.7673E-05	-0.0127389	-1.176857265
19/06/2020	1424.64002	2639200	3097.74	-87	-0.0066103	-0.0056495	-0.00802801	0.0014177	0.130970481
22/06/2020	1450.66003	1472100	3117.86	-86	0.01826428	0.00649506	0.00769944	0.01056484	0.976007955
23/06/2020	1463.97998	1887600	3131.29	-85	0.00918199	0.00430744	0.004866425	0.00431557	0.3986835
24/06/2020	1432.69995	1579600	3050.33	-84	-0.0213664	-0.0258552	-0.03419487	0.01282844	1.185125341
25/06/2020	1441.09998	1197900	3083.76	-83	0.00586307	0.01095947	0.013480962	-0.0076179	-0.70376099
26/06/2020	1362.54004	4882000	3009.05	-82	-0.0545139	-0.0242269	-0.03208626	-0.0224276	-2.071923265
29/06/2020	1397.17004	2253700	3053.24	-81	0.02541577	0.0146857	0.018306517	0.00710925	0.656771988
30/06/2020	1418.05005	2014300	3100.29	-80	0.0149445	0.01540986	0.019244323	-0.0042998	-0.397229414
01/07/2020	1442	2109100	3115.86	-79	0.01688936	0.00502211	0.005791939	0.01109742	1.025209164
02/07/2020	1469.93005	2860900	3130.01	-78	0.01936897	0.00454128	0.005169254	0.01419972	1.311807861
06/07/2020	1499.65002	2235600	3179.72	-77	0.02021863	0.01588174	0.019855418	0.00036321	0.033554425
07/07/2020	1489.92004	2118200	3145.32	-76	-0.0064882	-0.0108186	-0.01472211	0.00823395	0.760674159
08/07/2020	1503.59998	1588300	3169.94	-75	0.00918166	0.0078275	0.009424988	-0.0002433	-0.022479781
09/07/2020	1518.66003	2091800	3152.05	-74	0.010016	-0.0056436	-0.00802046	0.01803647	1.666257152
10/07/2020	1539.01001	1795900	3185.04	-73	0.01339995	0.0104662	0.012842171	0.00055778	0.051529578

13/07/2020	1512.22998	2147700	3155.22	-72	-0.0174008	-0.0093625	-0.0128365	-0.0045643	-0.42166345
14/07/2020	1520.85999	1905400	3197.52	-71	0.00570681	0.01340636	0.016649737	-0.0109429	-1.010937251
15/07/2020	1516.88001	1551300	3226.56	-70	-0.0026169	0.00908204	0.011049643	-0.0136666	-1.262554491
16/07/2020	1514.92004	1324200	3215.57	-69	-0.0012921	-0.0034061	-0.0051228	0.0038307	0.353890568
17/07/2020	1516.84998	1713200	3224.73	-68	0.00127395	0.00284864	0.002977241	-0.0017033	-0.157354653
20/07/2020	1563.83997	1508300	3251.84	-67	0.03097867	0.00840691	0.010175329	0.02080334	1.921868267
21/07/2020	1555.92004	1374300	3257.3	-66	-0.0050644	0.00167905	0.001462594	-0.006527	-0.602981886
22/07/2020	1564.84998	1224100	3276.02	-65	0.00573933	0.00574709	0.006730806	-0.0009915	-0.091595586
23/07/2020	1516.75	1695500	3235.66	-64	-0.0307378	-0.0123198	-0.01666629	-0.0140715	-1.299960031
24/07/2020	1508.20996	1495100	3215.63	-63	-0.0056305	-0.0061904	-0.00872852	0.00309803	0.286204783
27/07/2020	1529.43005	1356200	3239.41	-62	0.01406972	0.00739513	0.008865055	0.00520467	0.480821024
28/07/2020	1503.65002	1545500	3218.44	-61	-0.016856	-0.0064734	-0.00909503	-0.0077609	-0.716977106
29/07/2020	1523.51001	1133800	3258.44	-60	0.01320785	0.01242838	0.015383237	-0.0021754	-0.200968001
30/07/2020	1538.37	1802100	3246.22	-59	0.00975378	-0.0037503	-0.00556849	0.01532228	1.415513026
31/07/2020	1487.94995	4573400	3271.12	-58	-0.032775	0.00767046	0.009221614	-0.0419966	-3.879758188
03/08/2020	1482.76001	2274100	3294.61	-57	-0.003488	0.00718103	0.008587787	-0.0120758	-1.115591879

04/08/2020	1473.30005	1860600	3306.51	-56	-0.00638	0.00361196	0.00396576	-0.0103457	-0.95576612
05/08/2020	1479.08997	1456700	3327.77	-55	0.0039299	0.00642974	0.007614853	-0.003685	-0.34042613
06/08/2020	1504.94995	1665300	3349.16	-54	0.01748371	0.00642773	0.007612247	0.00987147	0.911952633
07/08/2020	1498.37	1385900	3351.28	-53	-0.0043722	0.00063299	0.000107928	-0.0044801	-0.413887091
10/08/2020	1496.81995	1027300	3360.47	-52	-0.0010345	0.00274224	0.002839446	-0.0038739	-0.357884622
11/08/2020	1480.54004	1554900	3333.69	-51	-0.0108763	-0.0079691	-0.01103202	0.00015569	0.014383265
12/08/2020	1507.23999	1125600	3380.35	-50	0.01803393	0.0139965	0.017413992	0.00061994	0.057271303
13/08/2020	1516.65002	1119400	3373.43	-49	0.00624322	-0.0020471	-0.00336289	0.00960611	0.887438638
14/08/2020	1504.63001	1097100	3372.85	-48	-0.0079254	-0.0001719	-0.00093447	-0.0069909	-0.645838407
17/08/2020	1516.23999	999500	3381.99	-47	0.00771617	0.00270987	0.002797537	0.00491864	0.454396783
18/08/2020	1555.78003	1418900	3389.78	-46	0.02607769	0.00230338	0.002271114	0.02380658	2.199315661
19/08/2020	1544.60999	1523600	3374.85	-45	-0.0071797	-0.0044044	-0.00641564	-0.0007641	-0.07058656
20/08/2020	1576.25	1319100	3385.51	-44	0.02048415	0.00315866	0.003378724	0.01710542	1.580244808
21/08/2020	1575.56995	1741900	3397.16	-43	-0.0004314	0.00344114	0.003744538	-0.004176	-0.385787906
24/08/2020	1585.15002	1281900	3431.28	-42	0.00608039	0.01004368	0.012294996	-0.0062146	-0.574122129
25/08/2020	1605.84998	1257500	3443.62	-41	0.01305867	0.00359633	0.003945513	0.00911316	0.841898035

26/08/2020	1644.13001	2609400	3478.73	-40	0.02383786	0.01019567	0.012491817	0.01134604	1.048178045
27/08/2020	1628.52002	1567500	3484.55	-39	-0.0094944	0.00167302	0.001454791	-0.0109492	-1.011513319
28/08/2020	1639.43005	1120900	3508.01	-38	0.00669936	0.00673258	0.008007033	-0.0013077	-0.12080681
31/08/2020	1629.53003	1321100	3500.31	-37	-0.0060387	-0.002195	-0.00355436	-0.0024843	-0.229509664
01/09/2020	1655.07996	1132600	3526.65	-36	0.01567932	0.00752505	0.009033302	0.00664602	0.613977221
02/09/2020	1717.39002	2476100	3580.84	-35	0.03764776	0.01536586	0.019187339	0.01846042	1.705423672
03/09/2020	1629.51001	3186300	3455.06	-34	-0.0511707	-0.0351258	-0.04620062	-0.0049701	-0.459147167
04/09/2020	1581.20996	2792500	3426.96	-33	-0.0296408	-0.008133	-0.01124424	-0.0183966	-1.699527122
08/09/2020	1523.59998	2701600	3331.84	-32	-0.0364341	-0.0277564	-0.03665699	0.00022288	0.020590121
09/09/2020	1547.22998	1962100	3398.96	-31	0.01550932	0.02014502	0.025376476	-0.0098672	-0.911554143
10/09/2020	1526.05005	1651200	3339.19	-30	-0.0136889	-0.0175848	-0.02348454	0.00979561	0.904944489
11/09/2020	1515.76001	1535300	3340.97	-29	-0.0067429	0.00053306	-2.1486E-05	-0.0067214	-0.620944528
14/09/2020	1508.82996	2133000	3383.54	-28	-0.004572	0.01274181	0.015789133	-0.0203611	-1.881016149
15/09/2020	1535.12	1152100	3401.2	-27	0.01742412	0.00521939	0.006047414	0.01137671	1.051010944
16/09/2020	1512.08997	1106400	3385.49	-26	-0.0150021	-0.004619	-0.00669348	-0.0083086	-0.767573242
17/09/2020	1487.04004	2000400	3357.01	-25	-0.0165664	-0.0084124	-0.01160604	-0.0049604	-0.458253925

18/09/2020	1451.08997	3152800	3319.47	-24	-0.0241756	-0.0111826	-0.01519351	-0.0089821	-0.829788622
21/09/2020	1430.14002	2845400	3281.06	-23	-0.0144374	-0.0115711	-0.0156967	0.00125931	0.116338451
22/09/2020	1459.81995	1697500	3315.57	-22	0.02075316	0.01051794	0.012909173	0.00784399	0.724649047
23/09/2020	1409.39002	1886300	3236.92	-21	-0.0345453	-0.0237214	-0.03143161	-0.0031137	-0.287651563
24/09/2020	1422.85999	1727600	3246.59	-20	0.0095573	0.00298741	0.003156949	0.00640036	0.591282038
25/09/2020	1439.06006	1516300	3298.46	-19	0.01138557	0.01597676	0.019978477	-0.0085929	-0.793835726
28/09/2020	1458.66003	1539200	3351.6	-18	0.01361998	0.01611055	0.020151732	-0.0065317	-0.603420458
29/09/2020	1466.02002	1590800	3335.47	-17	0.00504572	-0.0048126	-0.00694428	0.01199	1.107668438
30/09/2020	1465.59998	2046200	3363	-16	-0.0002865	0.00825371	0.009976937	-0.0102635	-0.94816571
01/10/2020	1487.90002	1644200	3380.8	-15	0.01521564	0.00529289	0.006142609	0.00907304	0.838191441
02/10/2020	1455.59998	1561100	3348.44	-14	-0.0217085	-0.0095717	-0.0131074	-0.0086011	-0.794591294
05/10/2020	1482.82996	1080100	3408.63	-13	0.01870705	0.01797553	0.022566934	-0.0038599	-0.356586587
06/10/2020	1451.02002	1304800	3360.95	-12	-0.0214522	-0.013988	-0.01882664	-0.0026255	-0.242554182
07/10/2020	1459.14002	1805400	3419.45	-11	0.00559606	0.01740579	0.021829105	-0.016233	-1.499652336
08/10/2020	1483.43005	1303800	3446.83	-10	0.01664682	0.00800714	0.009657618	0.0069892	0.645681161
09/10/2020	1510.44995	1648300	3477.13	-9	0.01821447	0.00879069	0.010672334	0.00754214	0.696763085

12/10/2020	1564.58997	2767200	3534.22	-8	0.03584363	0.01641871	0.020550813	0.01529282		1.412791931
13/10/2020	1567.06995	1953600	3511.93	-7	0.00158507	-0.0063069	-0.00887941	0.01046448		0.966736779
14/10/2020	1563.43994	1658700	3488.67	-6	-0.0023164	-0.0066231	-0.00928894	0.00697251		0.644139336
15/10/2020	1555.46997	1560500	3483.34	-5	-0.0050977	-0.0015278	-0.00269036	-0.0024074		-0.222398143
16/10/2020	1567.69995	1709700	3483.81	-4	0.00786256	0.00013493	-0.00053708	0.00839964		0.775981609
19/10/2020	1529.94995	1486700	3426.92	-3	-0.0240799	-0.0163298	-0.02185933	-0.0022205		-0.205138944
20/10/2020	1551.07996	2083500	3443.12	-2	0.01381091	0.00472728	0.005410122	0.00840079	0.00840079	0.77608763
21/10/2020	1585.98999	3016100	3435.56	-1	0.02250692	-0.0021957	-0.00355528	0.0260622	0.03446299	2.407695982
22/10/2020	1606.66003	1525600	3453.49	0	0.0130329	0.00521895	0.006046844	0.00698605	0.04144904	0.645390322
23/10/2020	1632.97998	1527400	3465.39	1	0.01638178	0.00344579	0.003750565	0.01263121	0.05408025	1.166905307
26/10/2020	1584.29004	1791300	3400.97	2	-0.0298166	-0.0185895	-0.02478571	-0.0050309	0.04904935	-0.464768448

APPENDIX 5: EVENT 4 DATA COLLECTION AND PROCESSING

GOOGL	Prices in USD
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	0.0005297
Intercept	4
Slope	1.3067572
	0.5254347
R-squared	3
Standard	0.0103490
Error	6

SPX

Market

SPX

GOOGL

GOOGL

Closing

Event

GOOGL

MARKET

Expected

Abnormal

Date

Adj Close

Price

Time

RETURN

RETURN

Return

Return

CAR

AR T-Test

		2088.8300							
05/02/2021	8	3886.83	-91						
		2084.5200			0.0073993	0.0101988			
08/02/2021	2	3915.59	-90	-0.0020634	5	9	-0.01226228		-1.184868584
		2075.3898							
09/02/2021	9	3911.23	-89	-0.00438	-0.0011135	-0.0009253	-0.00345464		-0.333811804
		2086.4799		0.0053436		7.8703E-	0.00526491		
10/02/2021	8	3909.88	-88	2	-0.0003452	05	3		0.508733503
				0.0010879	0.0016624	0.0027021			
11/02/2021	2088.75	3916.38	-87	7	6	7	-0.0016142		-0.155975716
		2095.0300			0.0047109	0.0066858			
12/02/2021	3	3934.83	-86	0.0030066	8	5	-0.00367926		-0.355516116
		2110.6999		0.0074795					
16/02/2021	5	3932.59	-85	7	-0.0005693	-0.0002142	0.00769373		0.743423119

		2118.6201			0.0037523			0.0001110	
17/02/2021	2	3931.33	-84	9	-0.0003204	6		0.00364133	0.351851262
		2105.8100							
18/02/2021	6	3913.97	-83		-0.0060464	-0.0044158	-0.0052406	-0.00080577	-0.077859195
		2088.8100							
19/02/2021	6	3906.71	-82		-0.0080729	-0.0018549	-0.0018942	-0.00617875	-0.597034896
		2054.2600							
22/02/2021	1	3876.5	-81		-0.0165405	-0.0077328	-0.0095752	-0.00696533	-0.673039686
		2060.1201			0.0028526	0.0012562	0.0021714	0.00068125	
23/02/2021	2	3881.37	-80	6	9	1	4		0.065827665
		2083.8100				0.0113516	0.0153636		
24/02/2021	6	3925.43	-79		0.0114993	6	1	-0.00386431	-0.373396997
		2015.9499							
25/02/2021	5	3829.34	-78		-0.0325654	-0.0244788	-0.0314582	-0.00110723	-0.106988814

		2021.9100			0.0029564			0.00863403	
26/02/2021	3	3811.15	-77	6	-0.0047502	-0.0056776	4		0.834281995
		2069.6599			0.0236162	0.0237907	0.0316184		
01/03/2021	1	3901.82	-76	2	2	4		-0.00800221	-0.77323104
		2064.4799						0.00752716	
02/03/2021	8	3870.29	-75	-0.0025028	-0.0080808	-0.01003	5		0.727328367
		2011.4100							
03/03/2021	3	3819.72	-74	-0.0257062	-0.0130662	-0.0165446	-0.00916159		-0.885258382
		2033.9300			0.0111961			0.02819943	
04/03/2021	5	3768.47	-73	4	-0.0134172	-0.0170033	4		2.724830541
		2097.0700			0.0310433	0.0194959	0.0260062	0.00503710	
05/03/2021	7	3841.94	-72	6	8	5	6		0.486721105
08/03/2021	2007.5	3821.35	-71	-0.042712	-0.0053593	-0.0064735	-0.03623848		-3.501620756

		2040.3599			0.0163686	0.0141546	0.0190264		
09/03/2021	9	3875.44	-70	1	8	8	-0.00265787		-0.256822137
		2036.1899				0.0060302	0.0084098		
10/03/2021	4	3898.81	-69	-0.0020438	8	6	-0.01045364		-1.010105063
		2100.5400			0.0316031	0.0103954	0.0141141	0.01748907	
11/03/2021	4	3939.34	-68	9	8	1	9		1.68991966
							0.0018566		
12/03/2021	2050	3943.34	-67	-0.0240605	0.0010154	2	-0.02591712		-2.504297143
		2054.4399			0.0021658	0.0064919	0.0090131		
15/03/2021	4	3968.94	-66	2	6	6	-0.00684733		-0.661638081
		2083.8898			0.0143347		0.01585624		
16/03/2021	9	3962.71	-65	8	-0.0015697	-0.0015215	2		1.532143316
		2082.2199				0.0028793	0.0042923		
17/03/2021	7	3974.12	-64	-0.0008013	4	4	-0.00509369		-0.492189011

		2021.3399							
18/03/2021	7	3915.46	-63	-0.029238	-0.0147605	-0.0187586	-0.01047938		-1.01259254
		2026.9599		0.0027803			0.00303822		
19/03/2021	6	3913.1	-62	3	-0.0006027	-0.0002579	2		0.293574663
		2030.6899		0.0018401	0.0070251	0.0097098			
22/03/2021	4	3940.59	-61	8	2	7	-0.00786969		-0.760425222
		2041.3299		0.0052396			0.01468151		
23/03/2021	6	3910.52	-60	1	-0.0076308	-0.0094419	4		1.418632671
		2032.5300					0.00230381		
24/03/2021	3	3889.14	-59	-0.0043109	-0.0054673	-0.0066147	6		0.222611138
		2032.4599			0.0052402	0.0073774			
25/03/2021	6	3909.52	-58	-3.447E-05	3	6	-0.00741193		-0.716193454
		2024.7299					0.0222626		
26/03/2021	8	3974.54	-57	-0.0038033	0.0166312	8	-0.02606594		-2.518677564

		2045.7900			0.0104014			0.01100597	
29/03/2021	4	3971.09	-56	2	-0.000868	-0.0006046	1		1.06347546
		2046.4699			0.0003323			0.00392912	
30/03/2021	7	3958.55	-55	6	-0.0031578	-0.0035968	2		0.379659785
		2062.5200			0.0036225	0.0052635	0.00257927		
31/03/2021	2	3972.89	-54	0.0078428	4	2	6		0.249228032
		2129.7800			0.0118251	0.0159823	0.01662826		
01/04/2021	3	4019.87	-53	0.0326106	4	4	1		1.606741214
		2218.9599			0.0418728	0.0144382	0.0193970		
05/04/2021	6	4077.91	-52	4	8	7	0.02247577		2.171769348
		2209.2600							
06/04/2021	1	4073.94	-51	-0.0043714	-0.0009735	-0.0007424	-0.00362896		-0.350656083
		2239.0300			0.0134751	0.0014752	0.0024575	0.01101759	
07/04/2021	3	4079.95	-50	1	3	1	8		1.064598934

		2250.4299			0.0050914	0.0042206	0.0060450		
08/04/2021	3	4097.17	-49	5	4	9	-0.00095365	-0.092148244	
		2270.6699			0.0089938	0.0077199	0.0106178		
09/04/2021	2	4128.8	-48	3	6	6	-0.00162403	-0.156925134	
		2244.6201					0.0002733		
12/04/2021	2	4127.99	-47	-0.0114723	-0.0001962	8	-0.01174568	-1.134951341	
		2254.4299			0.0043703	0.0032945	0.0048349		
13/04/2021	3	4141.59	-46	7	8	6	-0.00046459	-0.04489237	
		2241.9099							
14/04/2021	1	4124.66	-45	-0.0055535	-0.0040878	-0.004812	-0.0007415	-0.071648793	
				0.0193317	0.0110942	0.0150272	0.00430453		
15/04/2021	2285.25	4170.42	-44	7	5	3	9	0.415935306	
					0.0036087				
16/04/2021	2282.75	4185.47	-43	-0.001094	5	0.0052455	-0.00633947	-0.612565264	

		2289.7600			0.0030708			0.00947536	
19/04/2021	1	4163.26	-42	6	-0.0053065	-0.0064045	4		0.915577348
		2279.0100						0.00366447	
20/04/2021	1	4134.94	-41	-0.0046948	-0.0068024	-0.0083593	7		0.354087898
					0.0093060				
21/04/2021		2278.3501	4173.42	-40	-0.0002896	6	0.0126905	-0.01298006	-1.254226521
		2252.5200						0.00016918	
22/04/2021	2	4134.98	-39	-0.0113372	-0.0092107	-0.0115064	2		0.016347606
		2299.9299			0.0109287	0.0148109	0.00623658		
23/04/2021	3	4180.17	-38	0.0210475	1	1	4		0.602623272
		2309.9299		0.0043479	0.0017822	0.0028586	0.00148928		
26/04/2021	3	4187.62	-37	6	2	8	1		0.143904975
		2290.9799							
27/04/2021	8	4186.72	-36	-0.0082037	-0.0002149	0.0002489	-0.00845259		-0.816749302

		2359.0400			0.0297078			0.03028299	
28/04/2021	4	4183.18	-35	4	-0.0008455	-0.0005752	7		2.926159292
		2392.7600			0.0142939			0.0093670	
29/04/2021	1	4211.47	-34	4	0.0067628		8	0.00492686	0.476068365
30/04/2021		2353.5	4181.17	-33	-0.0164078	-0.0071946	-0.0088719	-0.00753593	-0.72817565
		2343.0800				0.0027480		0.0041207	
03/05/2021	8	4192.66	-32	-0.0044274	3		6	-0.00854817	-0.825985442
		2306.8300							
04/05/2021	8	4164.66	-31	-0.0154711	-0.0066783	-0.0081972	-0.00727387		-0.702852837
		2314.7700			0.0034419	0.0007035			
05/05/2021	2	4167.59	-30	3	4	0.0014491	0.00199283		0.192561458
					0.0097547	0.0081653	0.0111999		
06/05/2021		2337.3501	4201.62	-29	8	9	3	-0.00144514	-0.139640086

		2351.9299			0.0062377	0.0073733	0.0101649		
07/05/2021	3	4232.6	-28	6	5	2	-0.00392715		-0.379469704
10/05/2021		2291.75	4188.43	-27	-0.0255875	-0.0104357	-0.0131071	-0.01248033	-1.205938511
		2270.0600						0.00134057	
11/05/2021	6	4152.1	-26	-0.0094644	-0.0086739	-0.0108049	4		0.129535792
12/05/2021		2200.25	4063.04	-25	-0.0307525	-0.0214494	-0.0274994	-0.00325312	-0.314339523
		2229.0400			0.0130848	0.0121731			
13/05/2021	4	4112.5	-24	9	5	0.0164371	-0.0033522		-0.323913645
		2278.3798			0.0221350	0.0149179	0.0200238	0.00211115	
14/05/2021	8	4173.85	-23	2	3	6	9		0.203995299
		2288.9199			0.0046261			0.00740251	
17/05/2021	2	4163.29	-22	1	-0.00253	-0.0027764	4		0.715283725
		2262.4699							
18/05/2021	7	4127.83	-21	-0.0115556	-0.0085173	-0.0106003	-0.00095534		-0.092312157

				0.0039912			0.00730783	
19/05/2021	2271.5	4115.68	-20	3	-0.0029434	-0.0033166	8	0.706135466
	2306.9499			0.0156064	0.0105547	0.0143222	0.00128415	
20/05/2021	5	4159.12	-19	1	6	5	9	0.124084587
	2294.1298							
21/05/2021	8	4155.86	-18	-0.0055572	-0.0007838	-0.0004945	-0.00506263	-0.489187602
	2361.0400			0.0291658	0.0099113	0.0134814	0.01568439	
24/05/2021	4	4197.05	-17	1	1	1	6	1.515538319
	2362.8701			0.0007751			0.00302262	
25/05/2021	2	4188.13	-16	2	-0.0021253	-0.0022475	6	0.292067712
	2380.3100			0.0073808	0.0018767	0.0029821	0.00439865	
26/05/2021	6	4195.99	-15	3	3	8	3	0.425029228
	2362.6799					0.0020526		
27/05/2021	3	4200.88	-14	-0.0074067	0.0011654	4	-0.00945929	-0.914023859

					0.0007688	0.0015344		
28/05/2021	2356.8501	4204.11	-13	-0.0024675	9	9	-0.00400196	-0.386697727
	2381.1799			0.0103230			0.01043670	
01/06/2021	3	4202.04	-12	3	-0.0004924	-0.0001137	2	1.008468615
	2370.5900				0.0014469	0.0024205		
02/06/2021	9	4208.12	-11	-0.0044473	2	1	-0.00686782	-0.663617866
	2347.5800							
03/06/2021	8	4192.85	-10	-0.0097064	-0.0036287	-0.0042121	-0.00549436	-0.530904577
	2393.5700			0.0195903	0.0088340	0.0120737	0.00751663	
04/06/2021	7	4229.89	-9	8	9	5	2	0.72631067
	2402.3000			0.0036472			0.00415862	
07/06/2021	5	4226.52	-8	6	-0.0007967	-0.0005114	8	0.401836353
	2398.4399				0.0001750	0.0007585		
08/06/2021	4	4227.26	-7	-0.0016068	8	4	-0.00236538	-0.22855942

		2407.9399			0.0039609			0.00581452	
09/06/2021	4	4219.55	-6	1	-0.0018239	-0.0018536	9		0.561841254
		2435.1298			0.0112917	0.0046521	0.0066089	0.00468280	
10/06/2021	8	4239.18	-5	9	5	8	6		0.45248612
		2430.1999			0.0019484	0.0030759			
11/06/2021	5	4247.44	-4	-0.0020245	9	5	-0.00510045		-0.492842005
		2448.9099			0.0076989	0.0018152	0.0029017	0.00479715	
14/06/2021	1	4255.15	-3	4	1	8	6		0.463535423
		2428.3898							
15/06/2021	9	4246.59	-2	-0.0083792	-0.0020117	-0.002099	-0.00628021	-0.00628	-0.60683891
		2415.4499					0.00118533		
16/06/2021	5	4223.7	-1	-0.0053286	-0.0053902	-0.0065139	9	-0.00509	0.114535936
		2434.8701			0.0080399		0.00807950	0.00298	
17/06/2021	2	4221.86	0	8	-0.0004356	-3.953E-05	7	5	0.780699662

		2402.2199						0.00321145	0.00619	
18/06/2021	7	4166.45	1	-0.0134094	-0.0131245	-0.0166209	4	6	0.310313582	
				0.0141660	0.0140023	0.0188273			0.00153	
21/06/2021	2436.25	4224.79	2	8	3	9	-0.00466131	5	-0.450409133	

APPENDIX 6: EVENT 5 DATA COLLECTION AND PROCESSING

GOOGL	Prices in USD
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	0.0005760
Intercept	5
Slope	1.1768767
	0.6606471
R-squared	4
Standard	0.0090303
Error	6

SPX

Market

SPX

GOOGL

GOOGL

Calendar

Closing

Event

GOOGL

MARKET

Expected

Abnormal

Date

Adj Close

Price

Time

RETURN

RETURN

Return

Return

CAR

AR T-Test

		1073.7299							
12/12/2018	8	2651.07	-91						
		1073.5400		-	-	0.0003407	-		-
13/12/2018	4	2650.54	-90	0.0001769	0.0001999	7	0.00051767		0.057325129
		1051.7099		-	-	-	0.00155195		
14/12/2018	6	2599.95	-89	0.0203347	0.0190867	0.0218866	1		0.171859259
		1025.6500		-	-	-	-		-
17/12/2018	2	2545.94	-88	0.0247786	0.0207735	0.0238718	0.00090686		0.100423796
		1043.4100		0.0173158	8.6412E-	0.0006777	0.01663811		
18/12/2018	3	2546.16	-87	6	05	4	3		1.842464291
		1035.4599		-	-	-	0.00992351		
19/12/2018	6	2506.96	-86	0.0076193	0.0153957	0.0175428	3		1.098905776
		1023.5800		-	-	-	0.00651264		
20/12/2018	2	2467.42	-85	0.0114731	0.0157721	0.0179858	9		0.721194995

				-	-	-	-	
21/12/2018	991.25	2416.62	-84	0.0315852	0.0205883	0.0236539	0.00793139	-0.87830251
	984.66998			-	-	-	0.02469362	
24/12/2018	3	2351.1	-83	0.0066381	0.0271122	0.0313317	4	2.734512028
	1047.8499			0.0641636	0.0495938	0.0589418	0.00522177	
26/12/2018	8	2467.7	-82	2	1	4	8	0.578247007
	1052.9000			0.0048194	0.0085626	0.0106532	-	-
27/12/2018	2	2488.83	-81	4	3	1	0.00583377	0.646017466
	1046.6800			-	-	-	-	-
28/12/2018	5	2485.74	-80	0.0059075	0.0012415	0.0008851	0.00502237	0.556164575
	1044.9599			-	0.0084924		-	-
31/12/2018	6	2506.85	-79	0.0016434	4	0.0105706	0.01221398	1.352547006
	1054.6800			0.0093018	0.0012685	0.0020689	0.00723293	
02/01/2019	5	2510.03	-78	8	2	5	6	0.800957761

		1025.4699		-	-	-		0.00086382	
03/01/2019	7	2447.89	-77	0.0276957	0.0247567	0.0285595	5		0.09565792
		1078.0699		0.0512935	0.0343356	0.0409849	0.01030860		
04/01/2019	5	2531.94	-76	3	9	3	4		1.141549862
		1075.9200		-	0.0070104	0.0088264	-		-
07/01/2019	4	2549.69	-75	0.0019942	3	7	0.01082068		1.198255825
				0.0087831		0.0119862	-		-
08/01/2019	1085.37	2574.41	-74	4	0.0096953	2	0.00320308		0.354701516
		1081.6500		-	0.0040980	0.0053989			
09/01/2019	2	2584.96	-73	0.0034274	3	2	-0.0088263		-0.97740264
		1078.8299		-	0.0045184		-		-
10/01/2019	6	2596.64	-72	0.0026072	5	0.0058937	0.00850089		0.941368188
		1064.4699		-	-	0.0004038	-		-
11/01/2019	7	2596.26	-71	0.0133107	0.0001463	2	0.01371452		1.518713112

		1051.5100			-	-	-	-
14/01/2019	1	2582.61	-70	-0.012175	0.0052576	0.0056115	0.00656358	0.726835167
		1086.5100		0.0332854	0.0107217	0.0131941	0.02009128	
15/01/2019	1	2610.3	-69	7	1	8	4	2.22486009
		1089.5100		0.0027611	0.0022219	0.0031910		-
16/01/2019	1	2616.1	-68	3	7	3	-0.0004299	0.047605557
				0.0088204	0.0075914	0.0095102	-	-
17/01/2019	1099.12	2635.96	-67	7	5	5	0.00068979	0.076385396
		1107.3000		0.0074423	0.0131830	0.0160908	-	-
18/01/2019	5	2670.71	-66	7	5	8	0.00864851	0.957714988
		1078.6300		-	-	-	-	-
22/01/2019	1	2632.9	-65	0.0258918	0.0141573	0.0160853	0.00980652	1.085950061
		1084.4100		0.0053586	0.0022028	0.0031685	0.00219009	
23/01/2019	3	2638.7	-64	8	9	8	3	0.242525584

				-	0.0013756	0.0021950	-	-
24/01/2019	1084	2642.33	-63	0.0003781	8	5	0.00257317	0.284946423
	1101.5100			0.0161531	0.0084887	0.0105662		
25/01/2019	1	2664.76	-62	5	2	3	0.00558692	0.618682003
	1079.8599			-	-	-	-	
28/01/2019	9	2643.85	-61	0.0196549	0.0078469	0.0086587	0.01099612	-1.2176838
	1070.0600			-	-	-	-	-
29/01/2019	6	2640	-60	0.0090752	0.0014562	0.0011377	0.00793745	0.878974118
	1097.9899			0.0261012	0.0155492	0.0188755	0.00722568	
30/01/2019	9	2681.05	-59	7	4	9	5	0.800154789
	1125.8900			0.0254100	0.0085973		0.01471598	
31/01/2019	2	2704.1	-58	9	8	0.0106941	8	1.629612862
				-	0.0008986	0.0016336	-	
01/02/2019	1118.62	2706.53	-57	0.0064571	4	3	0.00809076	-0.8959515

		1141.4200					0.0085508	0.01183149	
04/02/2019	4	2724.87	-56	0.0203823	0.0067762	1	5		1.310191098
				0.0091552	0.0047084	0.0061173	0.00303786		
05/02/2019	1151.87	2737.7	-55	2	8	5	9		0.336406223
		1122.8900		-	-	-	-		-
06/02/2019	2	2731.61	-54	0.0251591	0.0022245	0.0020419	0.02311716		2.559938701
		1105.9100		-	-	-	-		-
07/02/2019	3	2706.05	-53	0.0151217	0.0093571	0.0104361	0.00468555		0.518866545
		1102.3800			0.0006762	0.0013719	-		-
08/02/2019	1	2707.88	-52	-0.003192	6	3	0.00456389		0.505394516
				-	0.0007090		-		
11/02/2019	1102.12	2709.8	-51	0.0002359	4	0.0014105	0.00164637		-0.18231454
		1127.5799			0.0128902	0.0157462	0.00735461		
12/02/2019	6	2744.73	-50	0.0231009	5	8	4		0.814432104

		1128.6300			0.0009312	0.0030239		-	-
13/02/2019	1	2753.03	-49	4	8	0.0041349	0.00320366		0.354765003
		1129.1999			0.0005049	-	-	0.00304957	
14/02/2019	5	2745.73	-48	9	0.0026516	0.0025446	5		0.337702548
		1119.6300			0.0108787	0.0133789	-		-
15/02/2019	1	2775.6	-47	-0.008475	1	5	0.02185393		2.420050982
		1126.5100			0.0061448	0.0014987	0.0023399		
19/02/2019	1	2779.76	-46	9	8	2	0.00380497		0.421353115
		1120.5899			-	0.0017771	0.0026675	-	-
20/02/2019	7	2784.7	-45	0.0052552	3	1	0.00792272		0.877342938
		1104.2099			-	-	-		-
21/02/2019	6	2774.88	-44	0.0146173	0.0035264	0.0035741	-0.0110432		1.222897295
		1116.5600			0.0111845	0.0064110	0.0081211	0.00306344	
22/02/2019	6	2792.67	-43	6	9	1	7		0.339238717

		1117.3299			0.0006895		0.0020257	-	-
25/02/2019	6	2796.11	-42	3	0.0012318	2	0.00133619		0.147966973
		1122.0100			0.0041886	-	-	0.00454274	
26/02/2019	1	2793.9	-41	1	0.0007904	0.0003541	1		0.503052114
		1122.8900			0.0007843			0.00084853	
27/02/2019	2	2792.38	-40	1	-0.000544	-6.422E-05	3		0.09396454
		1126.5500			0.0032594	-	-	0.00600874	
28/02/2019	5	2784.49	-39	8	0.0028255	0.0027493	8		0.665394228
		1148.5200			0.0195019	0.0068953	0.0086910	0.01081098	
01/03/2019	2	2803.69	-38	9	4	1	2		1.19718189
		1153.4200			0.0042663	-	-		
04/03/2019	4	2792.81	-37	8	0.0038806	0.0039909	0.00825732		0.914395651
		1169.1899			0.0136722	-	-	0.01442785	
05/03/2019	4	2789.65	-36	9	0.0011315	0.0007556	3		1.597705516

		1164.9399			-			0.00346703	
06/03/2019	4	2771.45	-35	-0.003635	0.0065241	-0.007102	6		0.383931181
		1150.8499			-	-			-
07/03/2019	8	2748.93	-34	-0.012095	0.0081257	0.0089869	-0.0031081		0.344183833
		1149.9699		-	-	-		0.00116808	
08/03/2019	7	2743.07	-33	0.0007647	0.0021317	0.0019327	8		0.12935127
		1179.2600			0.0254702	0.0146660	0.0178361	0.00763408	
11/03/2019	1	2783.3	-32	6	5	8	4		0.845379945
					0.0152553	0.0029533	0.0040517	0.01120356	
12/03/2019	1197.25	2791.52	-31	2	3	5	9		1.240656032
		1199.0600			0.0015118	0.0069496	0.0087548	-	-
13/03/2019	6	2810.92	-30	5	2	9		0.00724305	0.802077339
		1192.5300				-	-		-
14/03/2019	3	2808.48	-29	-0.005446	-0.000868	0.0004455	0.00500043		0.553735062

		1190.3000					0.0064426	-	
15/03/2019	5	2822.48	-28	-0.00187	0.0049849	6	0.00831262		-0.92051957
		1188.5500					0.0037059	0.0049375	-
18/03/2019	5	2832.94	-27	0.0014702	6	1	0.00640772		0.709575917
		1202.4599		0.0117032	-		0.0004223	0.01128092	
19/03/2019	6	2832.57	-26	6	0.0001306	4	1		1.249221794
		1226.4300		0.0199342	-	-		0.02282326	
20/03/2019	5	2824.23	-25	1	0.0029443	0.0028891	9		2.527393503
		1236.1300		0.0079090	0.0108525	0.0133481	-		
21/03/2019	1	2854.88	-24	9	2	2	0.00543903		-0.60230465
		1207.6500		-	-	-			-
22/03/2019	2	2800.71	-23	0.0230396	0.0189745	0.0217546	-0.001285		0.142297924
		1197.3800		-	-	-			-
25/03/2019	1	2798.36	-22	0.0085041	0.0008391	0.0004114	-0.0080927		0.896165784

		1189.8399		-	0.0071827	0.0090292	-	-
26/03/2019	7	2818.46	-21	0.0062971	8	9	0.01532641	1.697209229
		1178.0100		-	-	-	-	-
27/03/2019	1	2805.37	-20	0.0099425	0.0046444	0.0048898	0.00505266	0.559519559
		1172.2700		-	0.0035895		-	-
28/03/2019	2	2815.44	-19	0.0048726	4	0.0048005	0.00967312	1.071177332
		1176.8900		0.0039410	0.0067342	0.0085014	-	-
29/03/2019	2	2834.4	-18	7	9	8	0.00456041	0.505009264
		1198.9799		0.0187697	0.0115685	0.0141908	0.00457893	
01/04/2019	8	2867.19	-17	8	9	5	1	0.507059697
		1205.5400		0.0054713	1.7439E-	0.0005965	0.00487479	
02/04/2019	4	2867.24	-16	7	05	7	5	0.53982297
		1210.8100			0.0021484	0.0031044	0.00126704	
03/04/2019	6	2873.4	-15	0.0043715	1	6	2	0.140309176

		1219.4499		0.0071356	0.0020846	0.0030294	0.00410621	
04/04/2019	5	2879.39	-14	3	4	1	9	0.454712697
		1211.4499		-		0.0060325	-	-
05/04/2019	5	2892.74	-13	0.0065603	0.0046364	2	0.01259285	1.394502005
		1208.2800		-	0.0010474	0.0018087		-
08/04/2019	3	2895.77	-12	0.0026166	5	7	-0.0044254	0.490058346
		1202.6899		-	-	-	0.00193813	
09/04/2019	4	2878.2	-11	0.0046265	0.0060675	0.0065646	3	0.21462412
		1206.4499		0.0031263	0.0034778	0.0046690	-	-
10/04/2019	5	2888.21	-10	3	7	7	0.00154274	0.170838937
		1209.5899		0.0026026	3.8086E-	0.0006208	0.00198181	
11/04/2019	7	2888.32	-9	9	05	7	9	0.219461824
		1222.7299			0.0066093	0.0083544	0.00250872	
12/04/2019	8	2907.41	-8	0.0108632	8	7	5	0.277810113

		1226.5300			0.0031078	-	-		0.00327254	
15/04/2019	3	2905.58	-7	4	0.0006294	0.0001647	8		0.362394076	
		1231.9100			0.0043863	0.0005093	0.0011755	0.00321085		
16/04/2019	3	2907.06	-6	6	6	1	4		0.355562214	
		1240.1400			0.0066806	-	-	0.00878057		
17/04/2019	2	2900.45	-5	7	0.0022738	0.0020999	1		0.972339191	
		1241.4699			0.0010724	0.0015790	0.0024344	-	-	
18/04/2019	7	2905.03	-4	2	7	1	0.00136199		0.150823429	
		1253.7600			0.0098995	0.0010120	0.0017670	0.00813249		
22/04/2019	1	2907.97	-3	9	4	9	4		0.900572676	
		1270.5899			0.0134235	0.0088412	0.0109810	0.00244251	0.0024425	
23/04/2019	7	2933.68	-2	9	2	7	3	1	0.270477993	
		1260.0500			-	-	-	-	-	
24/04/2019	5	2927.25	-1		0.0082953	0.0021918	0.0020034	0.00629188	0.0038494	0.696747524

		1267.3399			0.0057854	-	0.0001418	0.00564357	0.0017942	
25/04/2019	7	2926.17	0	2	0.0003689	4	5	1	0.624955834	
		1277.4200			0.0079537	0.0046853	0.0060900	0.00186365	0.0036578	
26/04/2019	4	2939.88	1	3	1	8	3	6	0.206376444	
		1296.1999			0.0147014	0.0010714	0.0018370	0.01286439	0.0165222	
29/04/2019	5	2943.03	2	3	7	4	5	6	1.424571928	

APPENDIX 7: EVENT 6 DATA COLLECTION AND PROCESSING

GOOGL		Prices in USD							
Intercept	-0.0007214								
Slope	1.055002159								
R-squared	0.584928410								
Standard									
Error	0.011327051								
		SPX							
		Market		SPX		GOOGL		GOOGL	
Calendar		Closing	Event	GOOGL	MARKET	Expected	Abnormal		
Date	Adj Close	Price	Time	RETURNS	RETURN	Return	Return	CAR	AR t-test
18/05/2020	1385.180054	2953.91	-91						

						-		
19/05/2020	1374.400024	2922.94	-90	-0.0078	-0.0104844	0.008931851	0.001149448	0.101478104
20/05/2020	1409.160034	2971.61	-89	0.02529	0.01665104	0.026682105	-0.001391062	-0.122808838
						-		
21/05/2020	1406.75	2948.51	-88	-0.0017	-0.0077736	0.001804331	0.000094068	0.008304734
22/05/2020	1413.23999	2955.45	-87	0.00461	0.00235373	0.004867214	-0.000253750	-0.022402165
26/05/2020	1421.369995	2991.77	-86	0.00575	0.01228916	0.006069155	-0.000316413	-0.027934299
						-		
27/05/2020	1420.280029	3036.13	-85	-0.0008	0.01482734	0.000809020	0.000042178	0.003723649
						-		
28/05/2020	1418.23999	3029.73	-84	-0.0014	-0.0021079	0.001515367	0.000079003	0.00697473
29/05/2020	1433.52002	3044.31	-83	0.01077	0.00481231	0.011366528	-0.000592590	-0.052316341
01/06/2020	1434.869995	3055.73	-82	0.00094	0.00375126	0.000993517	-0.000051797	-0.004572828
02/06/2020	1442.310059	3080.82	-81	0.00519	0.0082108	0.005470380	-0.000285196	-0.025178335

						-		
03/06/2020	1439.25	3122.87	-80	-0.0021	0.01364896	0.002238332	0.000116695	0.010302297
						-		
04/06/2020	1414.300049	3112.35	-79	-0.0173	-0.0033687	0.018288867	0.000953484	0.084177562
05/06/2020	1440.02002	3193.93	-78	0.01819	0.0262117	0.019185904	-0.001000250	-0.088306323
08/06/2020	1448.040039	3232.39	-77	0.00557	0.01204159	0.005875708	-0.000306328	-0.027043927
09/06/2020	1452.079956	3207.18	-76	0.00279	-0.0077992	0.002943372	-0.000153452	-0.013547363
10/06/2020	1464.699951	3190.14	-75	0.00869	-0.0053131	0.009169001	-0.000478023	-0.042201854
						-		
11/06/2020	1401.900024	3002.1	-74	-0.0429	-0.0589441	0.045233878	0.002358252	0.208196466
12/06/2020	1412.920044	3041.31	-73	0.00786	0.01306086	0.008293134	-0.000432360	-0.038170533
15/06/2020	1420.73999	3066.59	-72	0.00553	0.00831221	0.005839014	-0.000304415	-0.026875036
16/06/2020	1446.469971	3124.74	-71	0.01811	0.01896243	0.019106371	-0.000996104	-0.08794026
17/06/2020	1452.540039	3113.49	-70	0.0042	-0.0036003	0.004427285	-0.000230815	-0.020377318

						-		
18/06/2020	1434.119995	3115.34	-69	-0.0127	0.00059419	0.013378761	0.000697497	0.061577979
						-		
19/06/2020	1424.640015	3097.74	-68	-0.0066	-0.0056495	0.006973893	0.000363581	0.032098506
22/06/2020	1450.660034	3117.86	-67	0.01826	0.00649506	0.019268851	-0.001004575	-0.0886881
23/06/2020	1463.97998	3131.29	-66	0.00918	0.00430744	0.009687019	-0.000505029	-0.044586122
						-		
24/06/2020	1432.699951	3050.33	-65	-0.0214	-0.0258552	0.022541632	0.001175200	0.103751621
25/06/2020	1441.099976	3083.76	-64	0.00586	0.01095947	0.006185555	-0.000322482	-0.028470049
						-		
26/06/2020	1362.540039	3009.05	-63	-0.0545	-0.0242269	0.057512251	0.002998381	0.264709726
29/06/2020	1397.170044	3053.24	-62	0.02542	0.0146857	0.026813693	-0.001397922	-0.123414493
30/06/2020	1418.050049	3100.29	-61	0.01494	0.01540986	0.015766478	-0.000821980	-0.072567843
01/07/2020	1442	3115.86	-60	0.01689	0.00502211	0.017818306	-0.000928951	-0.082011726

02/07/2020	1469.930054	3130.01	-59	0.01937	0.00454128	0.020434305	-0.001065335	-0.094052295
06/07/2020	1499.650024	3179.72	-58	0.02022	0.01588174	0.021330697	-0.001112068	-0.09817809
						-		
07/07/2020	1489.920044	3145.32	-57	-0.0065	-0.0108186	0.006845030	0.000356863	0.031505394
08/07/2020	1503.599976	3169.94	-56	0.00918	0.0078275	0.009686666	-0.000505011	-0.044584496
09/07/2020	1518.660034	3152.05	-55	0.01002	-0.0056436	0.010566902	-0.000550902	-0.048635929
10/07/2020	1539.01001	3185.04	-54	0.0134	0.0104662	0.014136981	-0.000737026	-0.065067814
						-		
13/07/2020	1512.22998	3155.22	-53	-0.0174	-0.0093625	0.018357898	0.000957082	0.084495289
14/07/2020	1520.859985	3197.52	-52	0.00571	0.01340636	0.006020694	-0.000313887	-0.027711248
						-		
15/07/2020	1516.880005	3226.56	-51	-0.0026	0.00908204	0.002760864	0.000143937	0.012707337
						-		
16/07/2020	1514.920044	3215.57	-50	-0.0013	-0.0034061	0.001363169	0.000071068	0.006274211

17/07/2020	1516.849976	3224.73	-49	0.00127	0.00284864	0.001344020	-0.000070070	-0.006186075
20/07/2020	1563.839966	3251.84	-48	0.03098	0.00840691	0.032682560	-0.001703894	-0.150426935
						-		
21/07/2020	1555.920044	3257.3	-47	-0.0051	0.00167905	0.005342960	0.000278553	0.024591866
22/07/2020	1564.849976	3276.02	-46	0.00574	0.00574709	0.006055001	-0.000315675	-0.027869152
						-		
23/07/2020	1516.75	3235.66	-45	-0.0307	-0.0123198	0.032428398	0.001690643	0.149257112
						-		
24/07/2020	1508.209961	3215.63	-44	-0.0056	-0.0061904	0.005940174	0.000309689	0.027340644
27/07/2020	1529.430054	3239.41	-43	0.01407	0.00739513	0.014843586	-0.000773865	-0.068320079
						-		
28/07/2020	1503.650024	3218.44	-42	-0.0169	-0.0064734	0.017783087	0.000927115	0.081849622
29/07/2020	1523.51001	3258.44	-41	0.01321	0.01242838	0.013934312	-0.000726460	-0.064134993
30/07/2020	1538.369995	3246.22	-40	0.00975	-0.0037503	0.010290261	-0.000536479	-0.047362644

						-		
31/07/2020	1487.949951	3271.12	-39	-0.0328	0.00767046	0.034577673	0.001802695	0.159149509
						-		
03/08/2020	1482.76001	3294.61	-38	-0.0035	0.00718103	0.003679827	0.000191846	0.016937019
						-		
04/08/2020	1473.300049	3306.51	-37	-0.0064	0.00361196	0.006730880	0.000350912	0.030979996
05/08/2020	1479.089966	3327.77	-36	0.00393	0.00642974	0.004146050	-0.000216153	-0.019082884
06/08/2020	1504.949951	3349.16	-35	0.01748	0.00642773	0.018445355	-0.000961642	-0.084897824
						-		
07/08/2020	1498.369995	3351.28	-34	-0.0044	0.00063299	0.004612690	0.000240481	0.021230676
						-		
10/08/2020	1496.819946	3360.47	-33	-0.001	0.00274224	0.001091389	0.000056899	0.005023301
						-		
11/08/2020	1480.540039	3333.69	-32	-0.0109	-0.0079691	0.011474551	0.000598222	0.052813535

12/08/2020	1507.23999	3380.35	-31	0.01803	0.0139965	0.019025832	-0.000991905	-0.087569564
13/08/2020	1516.650024	3373.43	-30	0.00624	-0.0020471	0.006586613	-0.000343391	-0.030315984
						-		
14/08/2020	1504.630005	3372.85	-29	-0.0079	-0.0001719	0.008361287	0.000435913	0.038484217
17/08/2020	1516.23999	3381.99	-28	0.00772	0.00270987	0.008140579	-0.000424406	-0.037468372
18/08/2020	1555.780029	3389.78	-27	0.02608	0.00230338	0.027512021	-0.001434329	-0.126628665
						-		
19/08/2020	1544.609985	3374.85	-26	-0.0072	-0.0044044	0.007574606	0.000394899	0.034863387
20/08/2020	1576.25	3385.51	-25	0.02048	0.00315866	0.021610817	-0.001126672	-0.099467391
						-		
21/08/2020	1575.569946	3397.16	-24	-0.0004	0.00344114	0.000455168	0.000023730	0.002094986
24/08/2020	1585.150024	3431.28	-23	0.00608	0.01004368	0.006414823	-0.000334435	-0.029525295
25/08/2020	1605.849976	3443.62	-22	0.01306	0.00359633	0.013776926	-0.000718255	-0.063410598
26/08/2020	1644.130005	3478.73	-21	0.02384	0.01019567	0.025148995	-0.001311134	-0.115752444

						-		
27/08/2020	1628.52002	3484.55	-20	-0.0095	0.00167302	0.010016585	0.000522211	0.046103003
28/08/2020	1639.430054	3508.01	-19	0.0067	0.00673258	0.007067834	-0.000368479	-0.032530885
						-		
31/08/2020	1629.530029	3500.31	-18	-0.006	-0.002195	0.006370841	0.000332141	0.029322857
01/09/2020	1655.079956	3526.65	-17	0.01568	0.00752505	0.016541719	-0.000862397	-0.076136021
02/09/2020	1717.390015	3580.84	-16	0.03765	0.01536586	0.039718472	-0.002070708	-0.182810891
						-		
03/09/2020	1629.51001	3455.06	-15	-0.0512	-0.0351258	0.053985172	0.002814498	0.248475757
						-		
04/09/2020	1581.209961	3426.96	-14	-0.0296	-0.008133	0.031271152	0.001630310	0.143930694
						-		
08/09/2020	1523.599976	3331.84	-13	-0.0364	-0.0277564	0.038438070	0.002003955	0.176917626
09/09/2020	1547.22998	3398.96	-12	0.01551	0.02014502	0.016362369	-0.000853046	-0.075310533

						-			
10/09/2020	1526.050049	3339.19	-11	-0.0137	-0.0175848	0.014441856	0.000752921		0.066471052
						-			
11/09/2020	1515.76001	3340.97	-10	-0.0067	0.00053306	0.007113799	0.000370875		0.032742446
						-			
14/09/2020	1508.829956	3383.54	-9	-0.0046	0.01274181	0.004823469	0.000251470		0.022200822
15/09/2020	1535.119995	3401.2	-8	0.01742	0.00521939	0.018382488	-0.000958364		-0.084608465
						-			
16/09/2020	1512.089966	3385.49	-7	-0.015	-0.004619	0.015827252	0.000825148		0.072847565
						-			
17/09/2020	1487.040039	3357.01	-6	-0.0166	-0.0084124	0.017477616	0.000911189		0.08044364
						-			
18/09/2020	1451.089966	3319.47	-5	-0.0242	-0.0111826	0.025505302	0.001329710		0.117392404

						-			
21/09/2020	1430.140015	3281.06	-4	-0.0144	-0.0115711	0.015231477	0.000794088		0.070105413
22/09/2020	1459.819946	3315.57	-3	0.02075	0.01051794	0.021894633	-0.001141469		-0.100773702
						-			
23/09/2020	1409.390015	3236.92	-2	-0.0345	-0.0237214	0.036445376	0.001900067	0.0019000666	0.167745919
24/09/2020	1422.859985	3246.59	-1	0.00956	0.00298741	0.010082977	-0.000525672	0.0013743942	-0.046408584
25/09/2020	1439.060059	3298.46	0	0.01139	0.01597676	0.012011802	-0.000626231	0.0007481632	-0.055286324
								-	
28/09/2020	1458.660034	3351.6	1	0.01362	0.01611055	0.014369113	-0.000749129	0.0000009654	-0.066136237
								-	
29/09/2020	1466.02002	3335.47	2	0.00505	-0.0048126	0.005323243	-0.000277525	0.0002784907	-0.024501111

APPENDIX 8: AVERAGE ABNORMAL RETURN & CUMULATIVE AVERAGE ABNORMAL RETURN

Standard
 Deviation 0.00403819
 no. of days in
 window 5
 t-stat of CAAR 0.488860462
 Significance No

Event Time	(1) Environmental Event	(2) Social Event 1	(3) Social Event 2	(4) Social Event 3	(5) Governance 1	(6) Governance 2	Average Abnormal Returns (AAR)	CAAR
-90	0.006685076	0.006497927	0.005734721	0.01226228	-0.000517666	0.000428049	-0.000817268	
-89	-0.005327404	0.012817489	0.00957076	0.00345464	0.001551951	-0.001391062	0.002294516	

			-				
-88	0.01401673	-0.001124685	0.012738937	0.00526491	-0.000906863	9.40681E-05	0.000767538
-87	0.000272626	-0.000702999	0.001417695	-0.0016142	0.016638113	-0.00025375	0.002626247
				-			
-86	-0.002044986	-0.002496073	0.010564836	0.00367926	0.009923513	-0.000316413	0.001991937
-85	-0.004735101	0.001335327	0.004315565	0.00769373	0.006512649	4.2178E-05	0.002527391
-84	0.008359388	0.002590234	0.012828435	0.00364133	-0.007931386	7.90031E-05	0.003261167
			-	-			
-83	-0.021903335	-0.00121276	0.007617888	0.00080577	0.024693624	-0.00059259	-0.001239786
			-	-			
-82	0.002826547	-0.002233482	0.022427614	0.00617875	0.005221778	-5.17967E-05	-0.00380722
				-			
-81	0.009182269	-0.013096068	0.007109254	0.00696533	-0.005833769	-0.000285196	-0.00164814
			-				
-80	0.006229574	-0.01303109	0.004299825	0.00068125	-0.005022365	0.000116695	-0.002554293

				-			
-79	0.002581906	0.003289829	0.011097416	0.00386431	-0.012213984	0.000953484	0.000307391
				-			
-78	-0.006061297	0.005894185	0.014199715	0.00110723	0.007232936	-0.00100025	0.003193009
-77	-0.01507999	-0.014821964	0.000363211	0.00863403	0.000863825	-0.000306328	-0.003391202
				-			
-76	0.000925073	0.025421199	0.008233947	0.00800221	0.010308604	-0.000153452	0.006122193
			-				
-75	0.00632165	-0.007089475	0.000243333	0.00752716	-0.01082068	-0.000478023	-0.000797116
				-			
-74	-0.002465852	-0.010112896	0.018036465	0.00916159	-0.003203082	0.002358252	-0.000758117
-73	-0.002613282	-0.005957764	0.000557784	0.02819943	-0.008826296	-0.00043236	0.001821253
			-				
-72	-0.015274547	-0.018166979	0.004564312	0.00503711	-0.008500892	-0.000304415	-0.00696234
				-			
-71	-0.013732606	0.00046206	-0.01094293	0.03623848	-0.013714524	-0.000996104	-0.012527097

				-			
-70	-0.007336604	0.006606168	-0.01366657	0.00265787	-0.006563582	-0.000230815	-0.003974878
				-			
-69	-0.006000901	0.003563043	0.003830702	0.01045364	0.020091284	0.000697497	0.001954665
			-				
-68	0.010754982	-0.006647502	0.001703292	0.01748908	-0.000429895	0.000363581	0.003304492
				-			
-67	0.014208207	0.003606156	0.020803338	0.02591712	-0.000689788	-0.001004575	0.00183437
			-	-			
-66	0.015447042	0.007744108	0.006527001	0.00684733	-0.00864851	-0.000505029	0.000110546
-65	-0.004713082	-0.008284711	-0.00099148	0.01585624	-0.009806518	0.0011752	-0.001127392
			-	-			
-64	-0.002363709	-0.012849522	0.014071468	0.00509369	0.002190093	-0.000322482	-0.005418463
				-			
-63	-0.000274313	0.022404879	0.003098035	0.01047938	-0.002573168	0.002998381	0.002529072
-62	0.008027286	0.013980242	0.005204666	0.00303822	0.00558692	-0.001397922	0.005739902

			-	-			
-61	-0.012980365	-0.000332018	0.007760947	0.00786969	-0.010996121	-0.00082198	-0.006793519
			-				
-60	-0.000761876	0.012837523	0.002175386	0.01468151	-0.007937451	-0.000928951	0.002619229
-59	0.012155145	-0.013550412	0.015322276	0.00230382	0.007225685	-0.001065335	0.003731862
			-	-			
-58	0.005226798	-0.036097651	0.041996593	0.00741193	0.014715988	-0.001112068	-0.011112576
			-	-			
-57	0.004376649	-0.001426864	0.012075768	0.02606594	-0.008090763	0.000356863	-0.007154305
			-				
-56	-0.004641745	-0.015283555	0.010345727	0.01100597	0.011831495	-0.000505011	-0.001323095
			-				
-55	-0.030373965	0.001580387	0.003684956	0.00392912	0.003037869	-0.000550902	-0.004343741
-54	0.011242086	0.027628989	0.009871467	0.00257928	-0.023117164	-0.000737026	0.004577938
			-				
-53	5.78003E-05	-0.012036518	0.004480137	0.01662826	-0.004685551	0.000957082	-0.000593177

			-				
-52	0.012230496	-0.007660141	0.003873936	0.02247577	-0.004563894	-0.000313887	0.003049068
				-			
-51	0.015183537	-0.008589122	0.000155692	0.00362896	-0.001646366	0.000143937	0.000269786
-50	0.004867316	0.018567772	0.000619935	0.0110176	0.007354614	7.10683E-05	0.007083051
				-			
-49	0.004449793	0.000397216	0.009606114	0.00095365	-0.003203655	-7.007E-05	0.001704292
			-	-			
-48	0.001760591	-0.010712164	0.006990903	0.00162403	0.003049575	-0.001703894	-0.00270347
				-			
-47	0.015858702	-0.014005205	0.004918636	0.01174568	-0.021853928	0.000278553	-0.00442482
				-			
-46	0.003380809	0.011814922	0.023806578	0.00046459	0.00380497	-0.000315675	0.007004502
			-				
-45	-0.007896484	0.017067788	0.000764067	-0.0007415	-0.007922721	0.001690643	0.000238943
-44	-0.007207228	0.013169937	0.017105421	0.00430454	-0.011043201	0.000309689	0.002773193

			-	-			
-43	-0.011273215	-0.00568958	0.004175976	0.00633947	0.003063447	-0.000773865	-0.004198111
			-				
-42	0.00234751	-0.007644769	0.006214607	0.00947536	-0.001336195	0.000927115	-0.000407597
-41	-0.001244897	0.001721767	0.009113158	0.00366448	0.004542741	-0.00072646	0.002845131
				-			
-40	0.022987119	-0.011575855	0.011346044	0.01298006	0.000848533	-0.000536479	0.00168155
			-				
-39	-0.006431669	0.01685659	0.010949165	0.00016918	0.006008748	0.001802695	0.00124273
			-				
-38	0.000366646	0.01010568	0.001307678	0.00623658	0.010810982	0.000191846	0.004400677
			-				
-37	-0.018321641	-0.008861499	0.002484336	0.00148928	0.00825732	0.000350912	-0.00326166
				-			
-36	0.00075055	-0.018350611	0.00664602	0.00845259	0.014427853	-0.000216153	-0.000865821
-35	0.007074373	-0.02588657	0.018460425	0.030283	0.003467036	-0.000961642	0.005406103

			-				
-34	-0.010196283	0.064301667	0.004970056	0.00492686	-0.003108103	0.000240481	0.008532427
			-	-			
-33	0.001256734	0.011191511	0.018396597	0.00753593	0.001168088	5.68992E-05	-0.002043216
				-			
-32	0.013732251	0.00308333	0.000222879	0.00854817	0.007634084	0.000598222	0.002787099
			-	-			
-31	-0.040041418	-0.000137388	0.009867153	0.00727387	0.011203569	-0.000991905	-0.00785136
-30	-0.010272522	0.011030585	0.009795607	0.00199283	-0.007243046	-0.000343391	0.000826677
			-	-			
-29	-0.009650385	0.003139576	0.006721438	0.00144514	-0.005000426	0.000435913	-0.003206984
			-	-			
-28	-0.002114923	0.006780229	0.020361132	0.00392715	-0.008312622	-0.000424406	-0.004726668
				-			
-27	0.011440875	-0.004810569	0.011376709	0.01248033	-0.006407725	-0.001434329	-0.000385895

			-				
-26	-0.004709519	0.013221896	0.008308626	0.00134057	0.011280921	0.000394899	0.002203357
			-	-			
-25	-0.003448571	-0.002150307	0.004960387	0.00325312	0.022823269	-0.001126672	0.001314035
			-				
-24	-0.002743944	-0.004225829	0.008982079	-0.0033522	-0.005439027	2.373E-05	-0.004119892
-23	0.004538829	-0.004638362	0.00125931	0.00211116	-0.001285001	-0.000334435	0.00027525
-22	0.008544774	0.007859109	0.007843992	0.00740251	-0.008092698	-0.000718255	0.003806573
			-	-			
-21	-0.007470149	-0.020237026	0.003113696	0.00095534	-0.015326408	-0.001311134	-0.008068959
-20	0.005333955	0.001193995	0.006400355	0.00730784	-0.005052662	0.000522211	0.002617615
			-				
-19	0.024095713	0.009681782	0.008592906	0.00128416	-0.009673115	-0.000368479	0.002737859
			-	-			
-18	-0.002557153	0.004810016	0.006531748	0.00506263	-0.004560415	0.000332141	-0.002261632
-17	0.017660051	0.001958063	0.01199	0.0156844	0.004578931	-0.000862397	0.008501507

			-				
-16	-0.00353366	-0.005904502	0.010263457	0.00302263	0.004874795	-0.002070708	-0.002312484
-15	-0.00352274	-0.014723767	0.009073036	0.00439865	0.001267042	0.002814498	-0.000115547
			-	-			
-14	0.009803648	-4.93303E-05	0.008601084	0.00945929	0.004106219	0.00163031	-0.000428254
			-	-			
-13	0.014085089	0.00589098	0.003859885	0.00400196	-0.012592853	0.002003955	0.000254221
			-				
-12	-0.010855703	-0.002979891	0.002625537	0.0104367	-0.004425403	-0.000853046	-0.001883813
			-	-			
-11	0.000356361	-0.002776929	0.016233045	0.00686782	0.001938133	0.000752921	-0.003805063
				-			
-10	-0.003591572	-0.01501091	0.006989201	0.00549436	-0.001542737	0.000370875	-0.003046584
-9	0.008556057	-0.014806067	0.007542139	0.00751663	0.001981819	0.00025147	0.001840342
-8	0.022804391	-0.006085898	0.015292821	0.00415863	0.002508725	-0.000958364	0.006286717

				-				
-7	-0.01629963	-0.005863558	0.01046448	0.00236538	0.003272548	0.000825148	-0.001661064	
-6	-0.021347103	0.009333411	0.006972511	0.00581453	0.003210854	0.000911189	0.000815899	
			-					
-5	-0.008819081	0.012981972	0.002407357	0.00468281	0.008780571	0.00132971	0.002758103	
				-				
-4	-0.004039646	0.010006952	0.008399643	0.00510045	-0.00136199	0.000794088	0.001449766	
			-					
-3	0.003911093	-0.004495654	0.002220534	0.00479716	0.008132494	-0.001141469	0.001497181	
				-				
-2	-0.006981841	-0.002519388	0.008400791	0.00628021	0.002442513	0.001900067	-0.000506345	-0.0005063
-1	-0.016831718	0.000406809	0.026062199	0.00118534	-0.00629188	-0.000525672	0.000667513	0.00016117
0	0.012571026	0.006935627	0.006986053	0.00807951	0.005643575	-0.000626231	0.00659826	0.00675943
1	-0.01016831	-0.013742459	0.012631212	0.00321145	0.001863653	-0.000749129	-0.00115893	0.0056005
			-	-				
2	-0.007997616	-0.002014541	0.005030904	0.00466131	0.012864395	-0.000277525	-0.00118625	0.00441425

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