Vaccine Approval Effect on Firms in Socially Responsible and Conventional Funds During the Covid-19 Pandemic

by

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ABSTRACT

This research investigates the effects of vaccine approval on socially responsible and conventional funds in the United States and Canada. The study analyzes the daily total returns of the constituents of the Jantzi Social Index, TSX composite, MSCI KLD 400 Social Index, and S&P 500 from January 03, 2018, to December 30, 2022. The findings suggest that regardless of the model used, companies included in socially responsible indexes exhibit a slightly stronger positive response to vaccine approval announcements compared to companies in conventional indexes. The positive impact on returns was notably stronger for earlier announcements. Although Canadian firms occasionally showed a slightly stronger positive reaction than their U.S. counterparts, no discernible difference was observed between the reactions of companies in the two countries. The study also employs an alternative approach to the conventional event study procedure, capturing the impact of vaccine announcements through dummy variables. To ensure robustness of the findings, non-parametric tests were conducted alongside our standard event study. They produce results that are consistent with our original tests.

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CHAPTER ONE. INTRODUCTION

In January 2020, the world was shocked to learn that the Huanan Seafood Wholesale Market in Wuhan temporarily closed amid fears of the resurgence of the 2002–2004 SARS (Severe Acute Respiratory Syndrome Coronavirus or SARS-CoV-1) outbreak.[1] This shocking event led to the emergence of Covid-19 disease, which went on to be one of the deadliest health crises of our generation. As some will agree, the Covid-19 pandemic ignited the greatest disruptions in recent times, with a lot of businesses and individuals forced to re-invent how they make a living.

While there is a plethora of studies on the impact of the Covid-19 pandemic and how it affects different aspects of our lives, this study does not intend to look at the pandemic exclusively as a health crisis but rather to study how financial market participants reacted. More specifically, the focus of this paper is to study how vaccine approvals affected the stock market and a selected group of socially responsible and conventional funds in Canada and the United States.

On this note, we study the impact of vaccine rollouts on the constituent securities of the Jantzi Social Index (JSI), S&P/TSX Composite Index (TSX), MSCI KLD 400 Social Index (KLD) and the S&P 500 Composite Index (S&P 500). In terms of portfolio creation, the MSCI KLD 400 Social Index firms are selected from the MSCI USA IMI Index,[2] which represents a collection of large-, mid-, and small-cap firms with high MSCI ESG ratings and has been largely used in the finance literature (Chatterji et al., 2009; Gibson Brandon et al., 2021; Lins et al., 2017). The index uses two methods

[1] https://www.cdc.gov/
[2] https://www.msci.com/documents/10199/3c4c8412-5d81-4aa9-a9c8-4490f9f5e04a

to determine eligibility. The first is a value-based system where MSCI ESG Business Involvement Screening Research is used to identify and exclude companies incompatible with certain values, for example, those that deal in alcohol, gambling, firearms, adult entertainment, etc. The second uses MSCI ESG Ratings Eligibility where ratings are used to identify companies that have demonstrated the ability to manage their ESG opportunities and risks. To be eligible for inclusion on the index, firms need to maintain a rating of BB, while firms already on the list need to maintain a rating of B to remain there.

For Canada, socially responsible firms that make up the Jantzi Social Index were screened from the S&P/TSX Composite Index in Canada. Developed by Sustainalytics, the JSI was created by examining the historical performance of firms in social areas such as corporate governance, employee relations, human rights, etc. Like its U.S. counterpart, the index excludes firms with involvement in nuclear power, tobacco, firearms, weapons, etc.

Socially responsible investment (SRI) funds have been documented to provide a shield against the market during an economic downturn (Lins et al., 2017; Nofsinger & Varma, 2014) in the crisis periods under consideration. Some studies show that Covid-19 has a negative impact on the mean of stocks in Canada, the USA, Australia, China, etc. (Apergis et al., 2022; Baig et al., 2021; Ho et al., 2022; Rahman et al., 2021). Also, some researchers consider corporate social responsibility (CSR) as a route to sustainability (Cornett et al., 2016; Gyves & O'Higgins, 2008; Jiao, 2010). These studies take the position that a firm's investment in CSR shields or benefits them during periods of crisis as they are value-enhancing activities and align with what stakeholders and the environment seek. Bae et al. (2021) examine 1,750 U.S. firms during the Covid-19 period and find that the relation between stock return and CSR is more positive when

CSR aligns with the firm's environment. They argue that the pandemic is arguably the perfect external event to encourage firms to increase attention to social and environmental activities and conclude that CSR is a value-enhancing factor, especially in bad economic periods.

On a sovereign level, Ho et al. (2022) study the impact of approval of four Covid-19 vaccines in China on listed firms in the Chinese stock market. Their empirical result shows that the market in general positively reacted to the public health announcement of vaccine approval while noting that reaction differs based on firm characteristics such as Age, sector, and size.

This research makes several contributions. To the best of my knowledge, this is the first paper to specifically juxtapose the impact of the vaccine approval on SRI in the United States and Canada. As an extension of Ho et al. (2022), my data is more complete as our event window covers more firm-year observations. Parametric and non-parametric tests holistically appraise the impact of vaccine approval in the presence or absence of assumptions of normal return distributions. I also follow an approach similar to the GLS model (Espahbodi et al., 2002; Schipper & Thompson, 1983) and compare the result of this approach to that of the conventional approach to event studies.

The rest of the paper is organized as follows: chapter two reviews relevant literature, chapter three discusses the data and methodology, chapter four summarizes the research questions, and chapter five shows the empirical results. I conclude the study in chapter six.

CHAPTER TWO. LITERATURE REVIEW

2.1 An Overview of ESG Investing

As investors' choices continue to change over time, environmental, social, and governance (ESG) investing and sustainable finance have become popular as shareholders require that part of their assets have some ESG exposures and commitments. This makes ESG very popular in finance and portfolio management. The process of incorporating ESG in asset allocation ensures that investment decisions are made in line with ESG considerations, which leads to aligning investment decisions with projects or companies that propagate sustainable activities.

According to Bloomberg, "Global ESG assets are on track to exceed $53 trillion by 2025, representing more than a third of the $140.5 trillion in projected total assets under management."[3] More so, the United Nations Principle of Responsible Investments (UNPRI) signatory recorded success in 2022 in terms of the number of signatories. These signatories are financial institutions that commit to aligning their investments to sustainability-linked assets. According to UNPRI:[4]

> *We added 140 global organisations as new PRI signatories, including 14 asset owners, in the last quarter of 2022. The PRI now has 5,319 signatories, representing US$121trn of AUM. New signatories include ZENKYOREN (National Mutual Insurance Federation of Agricultural Cooperatives) in Japan, Korea Investment Corporation, and Netherlands-based Aegon N.V.*

[3] https://www.bloomberg.com/professional/blog/esg-assets-may-hit-53-trillion-by-2025-a-third-of-global-aum/
[4] https://www.unpri.org/signatories/signatory-resources/quarterly-signatory-update

On an individual level, according to Morgan Stanley's **2021 Sustainable Signals,**[5] a biennial opinion poll and survey on U.S. investors, finds that despite the Covid-19 pandemic, sustainable investing continues to gain momentum and that 85% (up from 75% in 2017) of individual investors have expressed an interest in sustainable investing. Further, there is an increase in sustainable investing from millennials as 95% (up by 9% from 2017) declare their continued support. This shows that millennials look out for ESG metrics when making investment decisions.

With the increased interest in ESG investing, research and resources continue to flow towards studying or pricing SRIs. It is difficult to consistently make a case for why firms should invest in SRIs. While some researchers argue that SRIs increase firm value (Fatemi & Fooladi, 2013; Friede et al., 2015; Goss & Roberts, 2011; Statman, 2006; Wong et al., 2021), others show that they increase firm value to an extent but the value fades as time progresses (Barnea & Rubin, 1010; Gibson Brandon et al., 2021; Nofsinger & Varma, 2014). Still others conclude that SRIs have a negative effect on firm value (Auer & Schuhmacher, 2016; Cornell, 2021; Hartzmark & Sussman, 2019). These three arguments are important, and the subsequent paragraphs elaborate on them. Note that this research uses ESG and SRI interchangeably.

[5]https://www.morganstanley.com/pub/content/dam/msdotcom/infographics/sustainable-investing/Sustainable_Signals_Individual_Investor_White_Paper_Final.pdf

2.2 Performance of Socially Responsible Investments

2.2.1 Socially Responsible Investments and Positive Firm Performance

SRIs have been touted as the best investment class to hold during periods of economic downturn, serving as a form of insurance and risk management process for some investors and researchers. A comprehensive review by Friede et al. (2015) of over 2,000 studies finds a non-negative relationship between ESG funds and corporate financial performance. They observe that over 90% of the papers reviewed prove that ESG funds provide positive firm value compared to conventional funds and this result maintains some level of consistency. They conclude that it is optimal to invest in ESG as this provides rewards in the long run, especially in North America and Emerging Markets. Fatemi and Fooladi (2013) state that firms need to jettison the narrow definition of what value means and take into consideration the overall ESG cost before accepting or rejecting a project, noting that firms that fail to develop a proper sustainable valuation model will lag in their sectors. When compared with S&P 500, Statman (2006) finds that SRI Indexes performed better than S&P500 in the boom of the late 1990s. Wong et al. (2021) state that merely pursuing an ESG agenda or certification improves a firm's bottom line. Their study of Malaysian firms finds that investment in ESG certification lowers a firm's cost of capital and significantly improves Tobin's Q. Goss and Roberts (2011) corroborate the impact ESG has on the cost of capital and improved firm value. Their study of the relation between CSR and bank loans finds that a lag in ESG results in a higher cost of capital for conventional firms than socially responsible firms.

2.2.2 Socially Responsible Investments and Negative Firm Performance

On the other hand, some researchers claim that investing in SRIs does not improve financial performance. Cornell (2021) finds that investors allocating resources to SRIs or companies with high ESG scores, with the sole aim of improving performance, were highly disappointed as these funds tend to have higher prices and low returns. Another study by Auer and Schuhmacher (2016) on the U.S., Europe and Asia-Pacific regions used data from Sustainalytics. Firstly, the research compares high- or low-rated ESG portfolios outperform typical conventional passive benchmarks and on the other hand, it compares the performance of SRIs with other SRIs. Results show that irrespective of the industry or geographical location, high ESG firms did not consistently outperform low ESG firms. More importantly, investors tend to pay a premium in certain industries for investing in ESG stocks and end up getting lower risk-adjusted returns than passive benchmarks. Hartzmark and Sussman's (2019) analysis of thousands of mutual funds notes that having high sustainability scores increases net inflow compared to having a low sustainability score but concludes that despite this discrepancy in the flow of funds, the highly rated funds did not produce superior returns to funds with lower ratings. This points to the irrelevance of placing a premium on ESG funds when the sole purpose is to beat the market or expect higher expected returns.

2.2.3 Socially Responsible Investments and Inconsistent Performance

While reviewing different papers, we have seen that depending on the data or variable in consideration, or even the period under study, SRIs can have different performances and results.

SRI inconsistency in performance is worth noting and studying, and it proves that even though researchers establish that SRIs might have a neutral or negative performance during periods of economic stability, they provide some level of insurance or abnormal return during periods of economic uncertainty. The inconsistency in performance can be attributed to several factors. Gibson Brandon et al. (2021) studies ESG rating disagreements and how they affect stock returns. Examining firms in the S&P 500 Composite index, they report that firms subject to high ESG disagreement (especially the environmental dimension) amongst vendors, tend to have high performance. They also report that the environmental dimension is the only dimension being priced by investors that like ESGs. Nofsinger and Varma (2014) explore the attributes of the discrepancy in performance to the screening methodology used to group or screen ESG assets. They find that funds that use positive screening (only firms that performed well based on some ESG criterion) experience pronounced abnormal returns during periods of economic crisis. Therefore, they assume that the results from SRIs are not consistent and, depending on the foci of the research, are expected to have varying results and outputs. Finally, Barnea and Rubin (2010) point out that there is a positive relationship between firm investment in CSR and performance but after these costs increase to a certain point, they start to decline and turn negative, corroborating the inconsistency in the performance of SRIs.

2.3 ESG and Economic Downturn

In a stable economy, ESG and corporate financial performance lack consistency because they do not account for any superior returns, but Nofsinger and Varma (2014) find that during periods of economic instability, socially responsible mutual funds outperform conventional mutual funds.

The general assumption is that investors see the dampening of downside risk by the ESG funds as reflective of the fact that ESG funds and firms have a stable corporate structure and capacity to withstand economic pressures or shocks. SRI funds already have some level of trust priced in their prices.

Compared with other economic crises, the Covid-19-induced economic downturn is one of a kind in this century. Countries rallied around to ensure the continuity of economic activities. The survival strategies involved implementing unprecedented fiscal and monetary policies to keep countries up and running. Specifically, in Australia, the emergence of Covid-19 had a negative impact on the stock market, but when the government quickly reacted with various stimulus packages, the market changed direction (Rahman et al., 2021). Separately, Baig et al.'s (2021) study on the microstructure of U.S. equities confirms that the onset of the pandemic and the subsequent increase in cases and death degraded liquidity and stability in the market.

By studying two specific economic crises—the technology bubble burst between March 2000 and October 2002 and the global financial crisis from October 2007 to March 2009—Nofsinger and Varma (2014) conclude that SRIs dampen downside risks during economic downturns. The study spans more than a decade, and the paper highlights that screening of funds is of critical importance. The performance of the funds studied showed that depending on the screening methodology, ESG returns are quite different. Funds that are formed by selecting best in class firms from each industry, rather than using exclusion method show mostly positive abnormal returns. Overall, socially responsible funds display abnormal returns within the range of 1.16–1.70% during periods of economic crisis.

Singh (2020) strengthens the above hypothesis through a close study of the long-short portfolio of defensive stocks and stocks from Europe, Australasia, and the Far East (EAFE) during the early days of the pandemic. He confirms there was a return spillover effect of ESG stocks as they outperformed the market and that investors paid more attention to firm fundamentals and idiosyncratic characteristics, which project higher competitiveness and stability.

While conventional assets still account for a huge portion of assets in the capital market, Ferriani and Natoli (2021) state that investors generally consider SRIs as having higher performance and consider ESG factors when making investment decisions. Using data from just fifteen weeks, they analyse the large capital portfolio of Morningstar Equity mutual fund for the first quarter of 2020 and late 2019. The sample is divided into five weeks each of Pre-crash, Crash and Recovery. While environmental sentiments persist in the ESG framework, this study shows that funds with low ESG risk attracted positive inflows during the Covid-19 crisis compared with funds with high ESG risk. Hartzmark and Sussman (2019) further reinforce this by asserting that investors do care about sustainability and that funds with low sustainability scores experience net outflows of $12 billion in comparison with funds with high sustainability scores, which led to an inflow to the tune of $24 billion. The research did not find evidence of the outperformance of ESG funds but rather a focus on the signalling effect of ESG funds as a measure of future performance and other non-monetary benefits.

By focusing on the environmental arm of ESG, Silva and Cortez's (2016) conditional model analysis, incorporating time-varying performance and risk measures on U.S. and European stocks, found that during periods of crisis, green funds do not penalize investors because they offer some shielding against downside risks when the market is paying extra attention to risks.

A lot has been said about ESG and performance during periods of economic crisis, but one study changed the course of this research and opened doors for further analysis of the impact that ESG plays in portfolio performance attribution. Demers et al. (2021) discover that the widely publicized superior performance of ESG portfolios do not hold up when controlling for some factors. They conclude that once industry, accounting, and market-based determinants such as institutional ownership, investor horizon, momentum, etc., are controlled for, returns do not show any level of abnormality or superiority during periods of economic crises (with a focus on Covid-19). The following excerpt is from the conclusion of their study:

> *The firm's stock of investments in internally generated intangible assets is highly economically significant in explaining returns during each of the Q1 2020 market crisis and full year 2020 periods, suggesting that the flexibility that derives from a large stock of innovative assets is more important than the firm's social capital to share price resilience during this global pandemic. (Demers et al., 2021, p. 458)*

2.4 Economic Policy and Market Reaction

No economy can function effectively for a long time without the government introducing policies to keep the financial system up and running. However, how financial markets react to these policies can often be left to chance and can differ among countries, states or otherwise. The efficient market hypothesis highlights that the share price encapsulates all available information in the market. Hence asset prices should move in tandem to reflect the economic policies of the government during the Covid-19 pandemic. Rahman et al. (2021) point out that during the early days of the pandemic in Australia, the government rolled out two key economic policies and the market reacted differently to each. Of the two stimulus packages, investors reacted positively to only the 'Jobkeeper' policy, which was to keep Australians employed and support affected

businesses. This policy signalled more hope and confidence to investors and the market responded positively as it led to an improvement in market performance.

As stated earlier, it is only normal for governments to encourage development or increased activities in the economy during periods of economic downturn, and one way to do this is through economic policies. In the recent past, the market did not react positively to some of these policies. The contagion or spillover effect of some policies (especially from large markets like the United States) can affect the global financial market and further increase systemic risks. To put this into perspective, after the 2008 financial crisis, the quantitative easing monetary policy implemented by the U.S. government contributed immensely to the surge in global financial distress. During that crisis, from quantitative easing alone, the spillover effect (systemic risk transfer) from the U.S. amounted to 40–50% of the global financial market risk origin (Yang & Zhou, 2017). Separately, after just 45 days, Liz Truss, the shortest-serving prime minister in the history of Britain resigned.[6] Her highly controversial economic policy, the "mini-budget", sent the pound sterling into a free fall (its lowest in over 35 years and on par with the USD), crashing the foreign exchange market to the extent that it needed a bailout from the government.[7] This confirms that economic policies can send a performing economy downhill and vice-versa. This study uses the approval of Covid-19 vaccines to benchmark government policy intended to alleviate the pains and fears of market participants.

[6] https://www.bbc.com/news/uk-politics-63332037
[7] https://www.cbc.ca/news/business/british-pound-falling-1.6595735

CHAPTER THREE. RESEARCH QUESTION

Fama's (1970) study on the efficient market hypothesis specifies that the stock market captures all information in the market almost immediately and makes it difficult for speculators to outperform the market. However, some researchers and many practitioners suggest there is at least a slight chance that investors might not be able to act rationally and might over- or under-react to market information because of several human cognitive biases (e.g., Corredor et al., 2014). Therefore, it is uncertain whether the market reacts positively, negatively, or shows no reaction at all to the vaccine approval announcements in the United States and Canada, making it a prospective research question. Therefore, this research will use different event study methodologies to observe the e3.3ffects of the vaccine on some selected SRIs and conventional funds.

3.1 Test One: The Reaction of Socially Responsible Investments to the Announcement of Vaccine Approval

Ferriani and Natoli (2021), Nofsinger and Varma (2014) and Silva and Cortez (2016) conclude that socially responsible funds offer some shielding, capture high capital inflows, and offer abnormal or superior returns during periods of economic crisis. By using Event Study methodology, this research tests the reaction of the Jantzi Social index and the MSCI KLD Social index constituent securities' reaction to the announcement of both the Emergency Use Authorization and the Full Approval of the Pfizer and Moderna vaccines in the United States and Canada.

3.2 Test Two: The Reaction of Conventional Investments on the Announcement of Vaccine Approval

The paper also tests the reaction of the TSX and S&P 500 constituent securities to the announcement of the Emergency Use Authorization and Full Approval of both the Pfizer and Moderna vaccines in the United States and Canada using event study methodology.

3.3 Test Three: The U.S. and Canadian Markets Reaction to the News of Vaccine Approval

Previous research has critically tested whether the U.S. and Canadian markets are integrated or segmented. While some researchers claim integration (Errunza et al., 1992; Faff & Mittoo, 2003), others (Doukas & Switzer, 2000; King & Segal, 2008) conclude that segmentation is present. This research studies the reaction to see if both markets move in tandem or otherwise upon the announcement of the vaccine approvals.

CHAPTER FOUR. DATA AND METHODOLOGY

Total returns for firms in the MSCI KLD 400 Social Index, Jantzi Social Index (JSI), Standard and Poor's 500 (S&P 500) and Toronto Stock Exchange (TSX) are all obtained from Datastream. To be included in the samples, firms must have complete data during the study period January 2018 to December 2022. Samples with incomplete data are eliminated.

Data are divided into two categories of socially responsible stocks (KLD 400 and JSI Stocks) and conventional stocks (TSX composite and S&P 500). To separate the impact of vaccine approvals on SRI and conventional funds, the Canadian conventional portfolio is created by removing all 49 constituent firms in the JSI index from the TSX composite, resulting in a total of 173 stocks in the TSX after deleting incomplete data. It is worth noting that, originally, the JSI index consisted of 50 stocks but, in 2021, Seven Generations Energy was acquired by ARC Resources Ltd, leaving the sample with 49 firms.[8] Similarly, common stocks in the KLD social index and the S&P 500 index are removed from the S&P 500 to create two portfolios of purely socially responsible and conventional stocks. After the modification and deletion of incomplete data, the KLD had 396 firms and the S&P 500 had 227 firms.

The continuously compounded daily total index returns are computed as the difference between two consecutive daily index returns.

Table 1 shows the event dates which represents the dates for the Emergency Use Authorization (EUA) and the Full Approval of Covid vaccines in the United States and Canada.

[8] https://www.cbc.ca/news/canada/calgary/arc-seven-generations-merger-vote-1.5970989

The vaccine announcement dates are the days that either the FDA or Health Canada approves in writing on their websites for each vaccine. This information is sourced from the U.S. Food & Drug Administration (FDA) website for the United States and Health Canada's website for Canada. Moderna and Pfizer are the focus of this study as they make up a large percentage of vaccines administered in both countries. Although Oxford AstraZeneca was approved and administered in Canada, for comparability it was removed from the sample because it was not approved for vaccination against Covid-19 in the United States. On November 9, 2022, the Financial Times[9] reported that AstraZeneca dropped its application for approval to the U.S. because global demand for vaccines was declining and it was no longer profitable to pursue it. Johnson & Johnson is also not considered in this study for the sake of brevity.

Daily total returns are calculated as the ratio of the difference between the closing total return of firm *i* at the end of day *t* and the previous day's closing price.

Following Brown and Warner (1985), Patell (1976) and Tehranian et al. (1987), abnormal returns and cumulative abnormal returns are calculated using the Market Model. To run the Market Model, we use both in-sample and out-sample regressions to reflect different estimation periods.

In-sample Analysis: The range of estimation period is the entire sample comprising 1,303 trading days from January 3, 2018, to December 31, 2022, which comprises both the pre-and post-Covid-19 period as well as the vaccine approval periods under study.

We calculate abnormal return as,

[9] https://www.ft.com/content/85bec048-f0b8-4170-927a-5461cd02070a

$$AR_{it} = R_{it} - (\hat{a}_{1i} + \hat{b}_{1i}R_{mt}) \quad (1)$$

where R_{it} is the rate of return of firm *i* on day *t,* R_{mt} is the rate of return of the market on day *t* $\hat{a}_{1i}\ and\ \hat{b}_{1i}$ are the estimates of coefficients of the Market Model regression for firm *i,* AR_{it} is the abnormal return of firm *i* on day *t.*

We also measure abnormal returns for each company based on a modified Market Model that includes dummy variables that consider a possible change of intercept (D_a) and slope (D_{rm}) during the Covid period of January 3, 2020, to December 31, 2021.

$$AR_{it} = R_{it} - (\hat{a}_{2i} + \hat{a}_{2i}D_a + \hat{b}_{2i}R_{mt} + \hat{b}_{2i}D_{rm}R_{mt}) \quad (2)$$

where, D_a and D_{rm} take the value 1 during the Covid period and zero otherwise.

Out-sample Analysis and Test: The range of the estimation period is from January 3, 2018, to October 30, 2020. Except for the range of the estimation period, Models 3 and 4 are the same as Models 1 and 2, respectively.

$$AR_{it} = R_{it} - (\hat{a}_{3i} + \hat{b}_{3i}R_{mt}) \quad (3)$$

$$AR_{it} = R_{it} - (\hat{a}_{4i} + \hat{a}_{4i}D_a + \hat{b}_{4i}R_{mt} + \hat{b}_{4i}D_{rm}R_{mt}) \quad (4)$$

All variables are defined as in Models 1 and 2 above.

The average abnormal return for day t is defined as:

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{it} \quad (5)$$

Where N is the number of securities.

The Cumulative Average Abnormal Return for event days (T_1 to T_2) is:

$$CAAR_t = \sum_{t=T_1}^{T_2} AAR_t \tag{6}$$

In the absence of any impact from the event (absence of abnormal return), the expected values of both AAR_t and $CAAR_t$ are zero.

4.1 Parametric Test

Following Cornett and Tehranian (1994), Patell (1976), and Tehranian et al. (1987), the Average Abnormal return is adjusted assuming cross-sectional independence to estimate the Average Standardized Abnormal Returns (ASAR). To do that, first, we standardize the abnormal return for each stock as follows:

$$SAR_{it} = \sum_{i=1}^{N} \frac{AR_{it}}{S_{it}}. \tag{7}$$

Where,

$$S_{it} = \left[s_i^2 \left(1 + \frac{1}{D_i} + (R_{mt} - \bar{R}_m)^2 / \sum_{k=1}^{D_i} (R_{mk} - \bar{R}_m)^2 \right) \right]^{1/2} \tag{8}$$

Where,

s_i^2 is the residual variance of firm *i* from the Market Model regression,

D_i the number of observations during the estimation period,

R_{mt} the rate of return of the market for day *t*,

$\bar{R}_m$ mean of the market during the estimation period,

R_{mk} rate of return of the market for the day k of the estimation window.

Then we obtain $ASAR_t$ by averaging SAR_{it} over all firms for each time *t.*

$$ASAR_t = \frac{1}{N}\sum_{i=1}^{N} SAR_{it} \quad (9)$$

Given the "cross-sectional independence" assumption, the $ASAR_t$ approaches a normal distribution with mean zero and variance of 1/N i.e., N ~ (0, 1/N). This means that the statistic Z_t is a normal distribution with mean zero and variance 1, N ~ (0, 1).

$$z_t = \sqrt{N}\, x\, ASAR_t \quad (10)$$

Average Standardized Cumulative Abnormal Return for event day T_1 to Event Day T_2 would then be:

$$ASCAR_{T_1}^{T_2} = \sum_{t=T_1}^{T_2} ASAR_t \quad (11)$$

And under the assumption of serial independence, the test statistics for the Average Cumulative Standardized Abnormal Returns from the day T_1 to T_2 is the following unit normal distribution statistic:

$$z = \frac{\sqrt{N}}{\sqrt{T_2 - T_1 + 1}} \sum_{t=T_1}^{T_2} ASAR_t \qquad (12)$$

Examining the impact of several merger-related regulatory changes in the securities laws on the market value of acquiring firms, Schipper and Thompson (1983) take a different approach to event studies. Taking the position that testing the impact of common events (where the news affects many firms at the same time) should be examined differently, they deviate from the commonly used procedure of estimating cumulative abnormal return. They use generalized least squares (GLS) estimation via regressions that use dummy variables to capture events' impacts. A similar approach is taken by Espahbodi et al. (2002), to examine the impact of regulation announcements on accounting for stock-based compensations on security prices.

In the spirit of these studies, we also try to capture the impact of vaccine announcements on the performance of constituents of the four indexes subject to this study using dummy variables for each event.

Equation (13) examines the impact of each announcement on the level of expected return (intercept of the market model)

$$R_{jt} = \hat{a}_j + \hat{b}_j R_{mt} + \hat{\partial}_1 D_1 + \hat{\partial}_2 D_2 + \hat{\partial}_3 D_3 + \hat{\partial}_4 D_4 + \hat{\partial}_5 D_5 + \hat{\partial}_6 D_6 + \hat{\partial}_7 D_7 \qquad (13)$$

Where

R_{jt} is the total return of firm *j* in JSI, KLD, TSX or S&P 500 at time *t*, R_{mt} is the return of the TSX or S&P500 composite index, D_1- D_7 are dummies representing the seven announcement periods and equals 1 for *t* = -5 to *t* = +5 and zero otherwise.

4.2 Non-Parametric Test (Binomial Test)

Fama (1976) pointed out that daily stock returns move away from normality more often than monthly data. Cowan (1992) acknowledges that the non-parametric tests do not statistically rely on strict assumptions of the normality of the return distributions and, as such, are very competitive and offer outstanding power properties. To examine whether our results are the artefact of normality assumption or not, in this research we also employ nonparametric tests that do not depend on normality assumption, as a form of robustness check. We perform a one-tail binomial test to investigate whether the number of positive Abnormal Returns is significantly larger than the number of negative Abnormal returns or not for each [-5 to +5] day.

CHAPTER FIVE. EMPIRICAL RESULTS

5.1 Interim Order Approval of Pfizer Vaccine in Canada (Event 1)

Table 2 presents the reaction of firms in JSI, TSX, KLD and S&P 500 to Interim Approval of the Pfizer vaccine in Canada. Each panel presents the impact of the announcement on constituents of one of the indexes, using different models, in each of its four sections. In each section, the first column represents the Average Abnormal Returns, the second column is the Average Standardized Abnormal Returns, the third, fourth and fifth columns present the p-values of the Average Standardized Cumulative Abnormal Returns (ASCARs), the cross-sectional number of positive and negative Average Standardized Abnormal Returns for each day, and the p-value from the one-tail binomial tests, respectively. The structure of Tables 3–8 is exactly the same as Table 2.

While there are several ASCARs results in the tables, this section pays close attention to the [0 to +1] and [-1 to +1] to diminish the possibility of other events confounding the vaccine approval dates.

As shown in Panel 2.1, relative to the interim approval order of the Pfizer vaccine in Canada, JSI reacts positively to the announcement and the ASCARs for [0 to +1] and [-1 to +1] are statistically significant at the 1% level for all models, except Model 2, where the significance level is 5% (prob. Value of 0.0156) for [-1 to +1]. This indicates that, on average, the constituents of JSI react positively to the announcement of the interim order of the approval of Pfizer vaccines. The binomial test is significant at day 0 with 5% significance in Models 2 and 4 (p-values 0.0432) and 10% in Models 1 and 3 with p-values of 0.0766. This means that at day 0, the number of positive

abnormal returns is significantly larger than negative firms with abnormal returns. However, while binomial tests show stronger positive reactions on day 4, the number of firms with positive AAR was significantly less than the number of firms with negative AAR on day 5 for all models.

As shown by the columns of ASAR in Panel 2.2, which are significant for days 1 through 4 for all models (mostly at 1% level), the reaction of the portfolio of conventional firms in TSX to the approval announcement comes with a delay. As a result, average standardized cumulative abnormal returns for [0 to +1] and [-1 to +1] are not statistically significant. Binomial tests for TSX constituents show that the number of firms with positive AAR is significantly lower than firms with negative AAR on day 0 for all models (mainly at a 5% level). However, on days 2, 3, and 5, the number of firms with positive AAR is significantly higher.

As shown in Panel 2.3, similar to the JSI, the portfolio of constituents of the KLD Index react positively to the announcement and the ASCARs for [0 to +1] and [-1 to +1]. For all models, ASCARs for these two intervals are statistically significant at the 1% level. The KLD non-parametric test is significant at the 1% level at day 0, which supports the positive reaction of its constituents to the announcement of Pfizer in Canada using normality assumptions of our parametric tests.

Unlike the case of TSX constituents, the portfolio of constituents of the S&P 500 index, shows an immediate reaction to the approval announcement (significantly positive reaction at time zero at the 1% level for all models). As a result, the ASCARs for [0 to +1] and [-1 to +1] in Panel 2.4 are statistically significant for all models (mostly at the 1% level). Just as in KLD, Binomial tests indicate that the S&P 500 constituents' average number of positive ARs is significantly larger than negative ARs on day 0 at the 1% level.

5.2 Emergency Use Authorization of Pfizer Vaccine in the U.S.A (Event 2)

There is only a two-day difference between Event 2 and Event 1. Therefore, on one hand, one could expect a diluted impact on day zero because the surprise had come two days earlier. On the other hand, because this announcement was for the USA, with a much bigger influence on world markets, it could be expected that the impact of Event 1 is reinforced. Panel 3.1 shows that ASAR for JSI constituents are statistically significant on days -2 and -1 at 1% and 5% levels, respectively. These are indeed days 0 and 1 with respect to Event 1. At the same time, because the announcement was made for a much bigger economy, the ASCAR does show a significant level on day 2. As a result, for all models, ASAR is significantly positive for [-1 to +1], [0 to 2], and [-5 to +5] days. The binomial tests capture the delay of the JSI in reacting to the announcement as it is not statistically significant for days 0 and 1 and is significant for day 2 (at the 1% level for models 1 and 3 and 5% level for models 2 and 4).

Panel 3.2 shows that, unlike the JSI constituent stocks, the ASCARs for the TSX constituent stocks respond quickly and positively to the announcement as shown in the column of ASAR in Panel 3.2, which are significant from days 0 through 2, mostly at the 1% significance level (for all Models). As a result, the ASCAR for [0 to +1] and [-1 to +1] is statistically significant at 1%. The non-parametric tests align with the parametric test as the TSX is largely significant for days 0 through 2, mostly at the 1% level.

Similar to JSI, KLD and S&P 500 react positively to the announcement with a delay as shown in ASAR of Panels 3.3 and 3.4, where both parametric and non-parametric tests show positive reactions on day 2 at a 1% significant level for all four models.

This reflects on the ASCARs of [0 to +1] and [-1 to +1], which are all insignificant. It indicates that on average the constituents of the S&P 500 show no immediate reaction to the announcement of the Pfizer vaccine in the U.S. because the impact of the Canadian announcement was already incorporated in the returns on day 0 of Event 1, which is the same as day -2 of Event 2, where both parametric and non-parametric tests show positive reactions at the 1% level for all models.

5.3 Emergency Use Authorization of Moderna Vaccine in the USA (Event 3)

Similar to Events 1 and 2, Events 3 and 4 are in close proximity and near Events 1 and 2. Event 3 is a week after Event 2 and five days before Event 4. This makes it difficult to make an accurate judgment on the impact of each event because the influence of an earlier event could potentially dilute the impact of the later event.

Panel 4.1 shows that at the early announcement of the Moderna vaccine, the JSI reaction comes with an extended delay as the days 0 to 2 ASAR are statistically insignificant, but on day 3 it is statistically significant at 1% for all models. This also explains why ASCARs of [0 to +1] and [-1 to +1] are not statistically significant. The non-parametric tests also reflect the delay in response of the JSI as the day 0 binomial test is not significant and day 3 tests are significant across all Models.

Similar to JSI, Panel 4.2 shows that the TSX responds to the announcement with a delay. The ASCAR is statistically insignificant on days 0 to 2 and is significant at 1% on day 3 across all models. Also, similar to the JSI, the non-parametric tests across all models are not significant for days 0 to 2 and significant at the 1% level on day 3.

Panels 4.3 and 4.4 show similar delays in reactions to the announcement for the KLD and S&P 500 constituents as their ASARs are not statistically significant for days 0 to 2 and significant on

day 3 at 1% for all models. The KLD and S&P 500 non-parametric tests reveal the same pattern as they are only significant on day 3.

5.4 Interim Order Approval of Moderna Vaccine in Canada (Event 4)

At this time, it is very difficult to make a correct decision regarding Event 4 because of the time that has elapsed and also the possibility of confounding events that might have happened during the period between Events 1, 2 and 3. However, as shown in panels 5.1 and 5.2, ASAR is significantly positive on the announcement day at a 1% level across all models. As a result, cumulative abnormal returns for days [0 to +1] and [0 to 2] are statistically significant for all models at the 5% level. The non-parametric tests for JSI and TSX are statistically significant at day 0, which explains the immediate reaction and the positive statistical significance. This indicates that, on average, the constituents of JSI and TSX have a positive reaction to the announcement of the interim approval of Moderna vaccines.

Panel 5.3 shows that the KLD follows suit with the JSI as it shows an immediate positive reaction to the announcement of Moderna vaccines with 1% significance at the [0 to +1], [-1 to +1] and [0 to +2] interval across all models. Similar to JSI, the non-parametric test is statistically significant on day 0 at 1%.

Panel 5.4 shows that, similar to TSX constituents, the S&P500 constituents have an immediate positive reaction to the announcement as shown on the [0 to +1] interval, which is statistically significant for all models at a 5% level, except Model 4 where the significance is 1% (with a p-value of 0.0041). Similar to KLD, the S&P 500 non-parametric test for S&P 500 is significant on day 0 at 1%.

5.5 Full Approval of Pfizer Vaccine in the USA (Event 5)

Panel 6.1 shows that full approval of the Pfizer vaccine in the U.S., which happened nine months after the first interim vaccine approval, had a weak impact (and inconsistent across models) on JSI constituents. While this might be attributable to several reasons, a key point to remember is that at this time, a large percentage of Canadian and U.S. residents would have been fully vaccinated and thus the announcement could not spark strong reactions. As shown in the ASAR column, only Models 1 and 3 have positive ASAR at day 0, which translates to positive [0 to +1] and [-1 to +1] ASCAR at 5%. For Models 2 and 4, ASCAR is not significant; even though Model 4 has a significant ASAR on day 0, it is not enough to drive significance on the [0 to +1] and [-1 to +1] days. The non-parametric tests are largely insignificant as well.

The positive ASAR for TSX in Panel 6.2 across all models only translated to a positive [0 to +1] and [-1 to +1] ASCAR at 5% in Model 2 and 1% in Model 4. The binomial test is only significant in Model 4 on day 0 at 10% (p-value of 0.0642) and insignificant in other models.

The reaction of KLD on Panel 6.3 comes with a delay in Models 1 and 3, and immediately in Models 2 and 4 (at 1% significance). This however is not sufficient to drive a positive ASCAR. Non-parametric test on day 0 is insignificant across all models.

The S&P 500 ASAR is insignificant on day 0 in Panel 6.4 across all models. This insignificance also translates to the ASCARs experiencing a delay in reaction and resulting in all models not yielding a positive significance. KLD and S&P 500 non-parametric tests display the same pattern as they are only significant on days 1 and 2.

5.6 Same-day Full Approval of the Pfizer and Moderna Vaccines in Canada (Event 6)

This announcement comes three weeks after Event 5, and thus it is expected that the market would have absorbed the announcement made in the U.S. and most Canadians are fully vaccinated at this point. Panel 7.1 shows that JSI has no immediate reaction to the same-day announcement of the Pfizer and Moderna Vaccines in Canada from day 0 through day 3 in all models. This is evident in the negative and insignificant [0 to +1] and [-1 to +1] intervals. In the same light, the non-parametric test is insignificant on days 0 and 1.

Similarly, the TSX constituents in Panel 7.2 show no immediate reaction to the announcement and are insignificant at the [0 to +1] and [-1 to +1] intervals. The non-parametric test is statistically significant on day 0 at 10%.

Panels 7.3 and 7.4 are similar to JSI; the KLD and S&P 500 have no immediate reaction to the announcement and are insignificant at [0 to +1] and [-1 to +1] ASCARs for all models. The binomial tests are largely insignificant at all levels and are in alignment with the observed parametric tests.

On average, none of the constituents of either the JSI, KLD, TSX or S&P 500 has an immediate and promising reaction to the same-day announcement of the Pfizer and Moderna vaccines in Canada using our parametric tests.

5.7 Full Approval of Moderna Vaccine in the USA (Event 7)

The final event was announced more than four months after the Event 6 and the announcement is also from a larger economy such as the U.S. Hence, Panel 8.1 shows that JSI constituents in all models have a delayed reaction to the announcement of the full approval of Moderna vaccine in

the U.S. on days 0 and 1 based on the ASAR columns. The binomial tests are also insignificant on days 0 and 1 across all models.

TSX Panel 8.2 shows that the TSX constituents largely show delay in reaction to the announcement across all models except Model 4 where it is statistically significant at the 5% level (with a p-value of 0.0237) on [0 to +1] and 1% level in the [-1 to +1] interval. The binomial test on day 0 in model 4 is statistically significant at 5% and is consistent with the parametric tests.

Panels 8.3 and 8.4 move in the same direction with the JSI and TSX as the KLD and S&P 500 delays in reaction. The ASAR columns for KLD and S&P 500 show a delay in reaction from day 0 to 2 which is insignificant, except on day 3 where it is statistically significant in Models 1 and 3. As a result of this delay, the average standardized cumulative abnormal returns for [0 to +1] and [-1 to +1] are not significant. Binomial tests confirm the results from tests based on normality assumptions as both S&P 500 and KLD are statistically insignificant on days 0 through 2.

5.8 Comparing Event Study Regression with Dummy Coefficients Regression

Another aim of this research is to examine the vaccine approval announcements using a different approach that has been documented to be appropriate for events like the Covid-19 for example the Generalized Least Square regression employed by Espahbodi et al. (2002), Schipper and Thompson (1983). Their regression captures the impacts of events like ours that affect many firms at the same time. Following the spirit of their work, we use market model regressions with an intercept dummy that aims to capture the impact of announcements on the constituent securities of JSI, KLD, TSX and S&P 500 as shown in Equation (13). We then judge the impact based on the significance level of the average intercept dummy for each index.

This section compares the dummy regression with the [-5 to +5] average standardized cumulative abnormal returns of Model 1 from our normal regressions. The event study method shows that in Panels 2.1, 2.3 and 2.4, the JSI, KLD and S&P 500 are significant at 1% (p-value 0.0014), 5% (p-value 0.0167) and 10% (p-value 0.0561), respectively. In the same way, the dummy regression result shows a similar direction. Here, the JSI, KLD and S&P 500 are positive and significant at 5% (p-value 0.0431), 10% (p-value of 0.0872) and 1% (with p-value 0.0027), respectively. The TSX is not significant in either method for Event 1.

In Event 2, unlike the event study method, the dummy coefficients show that only TSX is statistically significant at 5% (p-value 0.0178). However, the event study approach shows that JSI and KLD respond positively at the [-5 to +5] interval at 10% (p-value 0.0311) and 1% (p-value 0.0054), while TSX and S&P 500 are not significant.

In Event 3, none of the event study results for the [-5 to +5] is significant, while dummy variables for JSI and S&P 500 are negative and statistically significant at the 5% level (p-value 0.0220 and 0.0180, respectively)

Event 4 reports that only the KLD constituents have a negative and statistical significance at the 5% level (p-value 0.0142) for the dummy regression. Similar to Event 3, our conventional event study shows no significance in Event 4.

Event 5 shows that when using regression with dummy variables, the KLD and S&P 500 constituents react negatively with statistical significance at 1% (p-value 0.0000). On the contrary, the Model 1 [-5 to +5] ASCAR of JSI, TSX, KLD and S&P 500 do not react and are statistically insignificant.

Event 6 shows that using regression with dummy variables, the KLD and S&P 500 constituents have a positive reaction to the same-day Pfizer and Moderna vaccine announcement, and they are statistically significant at 1% (p-value of 0.0000) and 5% (with a p-value of 0.0378), respectively. The [-5 to +5] in the event study method retains its insignificance across the JSI, KLD, TSX and S&P 500 constituents.

Event 7 shows that only the KLD is negative and statistically significant at 1% (p-value 0.0003) in the dummy regression, while our conventional event study shows that JSI is significant at 5% level (p-value 0.0273) and KLD, TSX and S&P 500 are insignificant.

Overall, the above comparison shows that the approach to capture the impact of announcements with dummy variables produces results that, by and large, are similar to those of conventional event studies but the former approach often shows a much stronger significance level than the event study approach.

CHAPTER SIX. CONCLUSIONS

This research examines the impact of vaccine approval announcements on selected socially responsible and conventional funds in Canada and the United States. Furthermore, the research compares the outcomes from using regular event study methodology with an approach similar to that of Espahbodi et al.'s (2002) and Schipper and Thompson's (1983) generalized least square methodology to capture the impact of announcements by using dummy variables for events that affect many firms at the same time.

The result shows that firms that fall into the socially responsible category experience slightly stronger positive returns than firms that fall into the conventional category. The positive reactions are more substantial in the early announcements (emergency approvals of Pfizer and Moderna). This is because by the time these vaccines were fully approved, many people in Canada and the United States were fully vaccinated and the full approval announcements were not crucial.

Firms in Canada show slightly stronger positive reactions to the early announcements than their U.S. counterparts, but there is not enough evidence to determine whether the difference in return between firms in the two countries is discernible.

Results of our non-parametric tests for examining reactions to the vaccine announcements are consistent with the earlier results based on observing cumulative abnormal returns. Our alternative approach for capturing the impact of announcements via regressions with dummy variables shows similar results to those of the conventional event study method. Firms' reaction

to the announcement of vaccine approvals are in tandem most of the time, but the alternative method shows a higher significance level on some occasions.

Finally, we attribute occasional negative reaction to the announcements made later in 2021 to the fact that many people in the U.S. and Canada were already vaccinated and that the returns were affected by other negative news on those days.

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APPENDIX.A

Table 1. Event Dates (Vaccine Approval Dates in the United States and Canada)

Panel A - US	**EUA/IO**	**Full Approval**	**Company**	**Vaccine**
	11-Dec-20	23-Aug-21	Pfizer	BioNTech – Comirnaty
	18-Dec-20	31-Jan-22	Moderna	Spikevax, Novavax-NUVAXOVID
Panel B - Canada				
	9-Dec-20	16-Sep-21	Pfizer	BioNTech - Comirnaty
	23-Dec-20	16-Sep-21	Moderna	Spikevax

Table 1. shows the vaccine approval dates for Canada and the U.S. Panel A columns 1 and 2 show the Emergency Use Authorization and full approval dates for the Pfizer and Moderna vaccines for the United States respectively. Panel B columns 1 and 2 show the Interim Order and full approval dates for the Pfizer and Moderna vaccines in Canada, respectively.

Table 2: Interim Approval Announcement of The Pfizer Vaccine in Canada

Panel 2.1 JSI Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 49 socially responsible investments in Canada (Jantzi Social Index) for five days before and five days after the Interim approval announcement of the Pfizer vaccine in Canada. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 1	JSI Model 1					JSI Model 2					JSI Model 3					JSI Model 4				
Days	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**
-5	0.0014	-0.0007	0.5019	23/26	0.3875	0.0020	-0.0482	0.6320	24/25	0.5000	0.0017	0.0513	0.3598	28/21	0.1265	0.0028	0.0026	0.49280	25/24	0.3875
-4	0.0080	0.5431***	0.0001	31/18**	0.0228	0.0083	0.5079***	0.0002	31/18**	0.0228	0.0083	0.5941***	0.0000	31/18**	0.0228	0.0090	0.5566***	0.00005	30/19**	0.0432
-3	0.0107	0.4708***	0.0005	26/23	0.2839	0.0117	0.4009***	0.0025	26/23	0.2839	0.0111	0.5508***	0.0001	27/22	0.1957	0.0130	0.4886***	0.00031	27/22	0.1957
-2	-0.0014	-0.1329	0.8238	16/33	0.0111	-0.0009	-0.179	0.8949	14/35	0.0021	-0.0011	-0.1119	0.7832	16/33	0.0111	-0.0001	-0.1603	0.86906	16/33	0.0111
-1	-0.0006	-0.0591	0.6603	23/26	0.3875	-0.0001	-0.1045	0.7678	22/27	0.2839	-0.0003	-0.0137	0.5382	26/23	0.2839	0.0008	-0.0605	0.66398	22/27	0.2839
0	0.0018	0.3765***	0.0042	29/20*	0.0766	0.0011	0.3919***	0.0030	30/19**	0.0432	0.0019	0.3964***	0.0028	29/20*	0.0766	0.0009	0.3925***	0.00300	30/19**	0.0432
1	0.0084	0.2800**	0.0250	26/23	0.2839	0.0087	0.2455**	0.0428	25/24	0.3875	0.0087	0.3143**	0.0139	27/22	0.1957	0.0093	0.2759**	0.02672	26/23	0.2839
2	0.0014	0.1451	0.1549	25/24	0.3875	0.0010	0.1443	0.1562	25/24	0.3875	0.0015	0.1574	0.1353	25/24	0.3875	0.0010	0.1421	0.15994	25/24	0.3875
3	0.0017	0.0510	0.3605	26/23	0.2839	0.0003	0.0971	0.2483	23/26	0.3875	0.0016	0.0706	0.3107	26/23	0.2839	-0.0005	0.0888	0.26704	24/25	0.5000
4	0.0051	0.2757**	0.0268	33/16***	0.0051	0.0061	0.2068	0.0739	30/19**	0.0432	0.0055	0.3065**	0.0159	33/16***	0.0051	0.0074	0.2442**	0.04369	32/17**	0.0111
5	-0.0103	-0.5302	0.9999	14/35	0.0021	-0.0098	-0.5757	1.0000	13/36	0.0432	-0.0100	-0.4875	0.9997	15/34	0.0051	-0.0090	-0.5370	0.99991	13/36	0.0008
		ASCAR	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**		
0 to +1		0.6565***	0.00058				0.6374***	0.0008				0.7107***	0.0002				0.6684***	0.00047		
-1 to + 1		0.5974***	0.00788				0.5329**	0.0156				0.697***	0.0024				0.6090***	0.0070		
0 to + 2		0.8016***	0.0006				0.7817***	0.0008				0.8681***	0.0002				0.8105***	0.00053		
-5 to + 5		1.4193***	0.00137				1.0870**	0.0109				1.8284***	0.0001				1.4336***	0.00124		
-10 to + 10		0.7768	0.1177				0.2270	0.3644				1.4912**	0.0114				0.7927	0.1130		

Panel 2.2: TSX Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 173 conventional investments in Canada (TSX Index) for five days before and five days after the Interim approval announcement of the Pfizer vaccine in Canada. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 1	TSX Model 1					TSX Model 2					TSX Model 3					TSX Model 4				
Days	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b**
-5	0.0007	-0.1056	0.9176	73/100	0.0240	0.0012	-0.0834	0.8636	72/101	0.0166	0.0020	-0.1015	0.9090	74/99	0.0340	-0.0548	-0.0548	0.7645	75/98	0.0472
-4	-0.0037	-0.0070	0.5365	84/89	0.3805	-0.0035	0.0007	0.4962	84/89	0.3805	-0.0030	-0.0058	0.5303	81/92	0.2235	0.0188	0.0188	0.4024	84/89	0.3805
-3	0.0040	0.0998	0.0946	83/90	0.3241	0.0051	0.1410**	0.0319	86/87	0.5000	0.0065	0.0997	0.0949	83/90	0.3241	0.1841	0.1841***	0.0077	87/86	0.4396
-2	0.0028	-0.0517	0.7519	68/105	0.0031	0.0032	-0.0312	0.6594	68/105	0.0031	0.0040	-0.0339	0.6723	69/104	0.0049	0.0072	0.0072	0.4621	72/101	0.0166
-1	-0.0037	-0.1767	0.9899	58/115	0.0000	-0.0033	-0.1611**	0.9829	58/115	0.0000	-0.0025	-0.1603	0.9825	56/117	0.0000	-0.1217	-0.1217	0.9453	62/111	0.0001
0	-0.0049	-0.1104	0.9268	72/101	0.0166	-0.0059	-0.1513	0.9767	68/105	0.0031	-0.0066	-0.1128	0.9310	71/102	0.0113	-0.1807	-0.1807	0.9913	68/105	0.0031
1	0.0068	0.2291***	0.0013	93/80	0.1436	0.0070	0.2391***	0.0008	95/78*	0.0856	0.0075	0.2243***	0.0016	91/82	0.2235	0.2487	0.2487***	0.0005	91/82	0.2235
2	0.0028	0.1553**	0.0205	97/76**	0.0472	0.0022	0.1346**	0.0383	98/75**	0.0340	0.0018	0.1521**	0.0227	98/75**	0.0340	0.1156	0.1156	0.0642	90/83	0.2715
3	0.0031	0.2753***	0.0001	110/63***	0.0001	0.0013	0.2066***	0.0033	101/72**	0.0113	-0.0002	0.2689***	0.0002	112/61***	0.0000	0.1394	0.1394**	0.0334	99/74**	0.0240
4	0.0071	0.2121***	0.0026	101/72	0.0113	0.0081	0.2611***	0.0003	102/71***	0.0075	0.0095	0.2053***	0.0035	103/70***	0.0049	0.2986	0.2986***	0.0000	106/67***	0.0012
5	-0.0041	-0.2674	0.9998	59/114	0.0000	-0.0036	-0.2451	0.9994	60/113	0.0000	-0.0029	-0.2705	0.9998	58/115	0.0000	-0.2211	-0.2211	0.9982	63/110	0.0002
		ASCAR	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**		
0 to +1		0.1186	0.1349				0.0878	0.2072				0.1115	0.14978				0.0680	0.2635		
-1 to + 1		-0.0580	0.6703				-0.0733	0.7111				-0.0487	0.6444				-0.0537	0.6583		
0 to + 2		0.2740**	0.0187				0.2224	0.0456				0.2636**	0.0226				0.1836	0.0816		
-5 to + 5		0.2529	0.1580				0.3110	0.1087				0.2655	0.1462				0.4341**	0.0426		
-10 to + 10		0.4014	0.1246				0.4336	0.1067				0.4566	0.0950				0.6032**	0.0417		

Panel 2.3: KLD Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 396 socially responsible investments in the U.S.A (KLD Social Index) for five days before and five days after the Interim approval announcement of the Pfizer vaccine in Canada. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 1	KLD Model 1					KLD Model 2					KLD Model 3					KLD Model 4				
Days	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|
-5	-0.0009	-0.1434	0.9978	169/227	0.0021	-0.0009	-0.1358	0.99656	172/224	0.0052	-0.0008	-0.1350	0.9964	174/222	0.0091	-0.0007	-0.1249	0.9935	175/221	0.0119
-4	0.0054	0.2291***	0.0000	253/143***	0.0000	0.0053	0.2328***	0.00000	255/141***	0.00000	0.0055	0.2212***	0.0000	257/139***	0.0000	0.0055	0.2238***	0.0000	256/140***	0.0000
-3	0.0077	0.3672***	0.0000	264/132***	0.0000	0.0079	0.3805***	0.00000	263/133***	0.00000	0.0077	0.3588***	0.0000	263/133***	0.0000	0.0081	0.3855***	0.0000	260/136***	0.0000
-2	-0.0034	-0.1948	0.9999	147/249	0.0000	-0.0035	-0.1962	0.99995	148/248	0.00000	-0.0033	-0.1869	0.9999	152/244	0.0000	-0.0034	-0.1928	0.9999	149/247	0.0000
-1	0.0019	0.0987**	0.0247	206/190	0.1965	0.0020	0.103**	0.02019	208/188	0.14565	0.0020	0.0996**	0.0237	210/186	0.1045	0.0021	0.1076**	0.0161	210/186	0.1045
0	0.0045	0.2955***	0.0000	250/146***	0.0000	0.0043	0.2904***	0.00000	253/143	0.00000	0.0047	0.2955***	0.0000	257/139***	0.0000	0.0043	0.2756***	0.0000	253/143***	0.0000
1	0.0009	-0.0282	0.7127	187/209	0.1456	0.0009	-0.0301	0.72527	188/208	0.16984	0.0010	-0.0128	0.6005	190/206	0.2255	0.0010	-0.0174	0.6357	186/210	0.1239
2	-0.0035	-0.1302	0.9952	174/222	0.0091	-0.0035	-0.1310	0.99542	172/224	0.00519	-0.0034	-0.1202	0.9916	174/222	0.0091	-0.0034	-0.1227	0.9927	176/220	0.0154
3	-0.0023	-0.1070	0.9834	175/221	0.0119	-0.0025	-0.1110	0.98642	173/223	0.00690	-0.0022	-0.1026	0.9794	173/223	0.0069	-0.0024	-0.1137	0.9882	175/221	0.0119
4	0.0040	0.1837***	0.0001	231/165***	0.0004	0.0043	0.2002***	0.00003	231/165***	0.00038	0.0040	0.166***	0.0005	227/169***	0.0015	0.0046	0.2044***	0.0000	232/164***	0.0003
5	-0.0037	-0.2161***	1.0000	140/256	0.0000	-0.0037	-0.2141	0.99999	140/256	0.00000	-0.0036	-0.2109	1.0000	141/255	0.0000	-0.0036	-0.2052	1.0000	139/257	0.0000
		ASCAR	p-values				ASCAR	p-values				ASCAR	p-values				ASCAR	p-values		
0 to +1		0.2673***	0.0001				0.2603***	0.0001				0.2827***	0.0000				0.0285***	0.0001		
-1 to + 1		0.3660***	0.0000				0.3633***	0.0000				0.3824***	0.0000				0.3658***	0.0000		
0 to + 2		0.1371	0.05757				0.1294	0.0686				-1.4731	0.9296				0.1355	0.0598		
-5 to + 5		0.3544**	0.01673				0.3887***	0.0098				0.3728**	0.0127				0.4201***	0.0059		
-10 to + 10		-0.0356	0.56142				0.0118	0.4796				0.0594	0.3983				0.1180	0.3042		

Panel 2.4: S&P 500 Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 227 conventional investments in the U.S.A (S&P 500 Index) for five days before and five days after the Interim approval announcement of the Pfizer vaccine in Canada. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 1	SP500 Model 1					SP500 Model 2					SP500 Model 3					SP500 Model 4				
Days	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|
-5	0.0019	0.0282	0.3357	122/105	0.1161	0.0020	0.0391	0.2778	122/105	0.1161	0.0020	0.0327	0.3111	119/108	0.2129	0.0023	0.0893	0.0893	122/105	0.1161
-4	0.0060	0.2208***	0.0004	129/98**	0.0168	0.0061	0.2328***	0.0002	131/96***	0.0084	0.0062	0.2142***	0.0006	133/94***	0.0040	0.0064	0.2736***	0.0000	134/93***	0.0027
-3	0.0075	0.3184***	0.0000	145/82***	0.0000	0.0076	0.3344***	0.0000	146/81***	0.0000	0.0074	0.3088***	0.0000	143/84***	0.0000	0.0080	0.3944***	0.0000	151/76***	0.0000
-2	-0.0020	-0.1169	0.9609	101/126	0.0556	-0.0019	-0.107	0.9466	99/128	0.0316	-0.0018	-0.1043	0.9420	99/128	0.0316	-0.0017	-0.1158	0.9595	102/125	0.0721
-1	-0.0003	-0.0562	0.8016	102/125	0.0721	-0.0002	-0.0476	0.7636	102/125	0.0721	-0.0002	-0.0383	0.7179	103/124	0.0922	-0.0001	-0.0125	0.5749	105/122	0.1441
0	0.0043	0.2679***	0.0000	140/87***	0.0002	0.0045	0.2779***	0.0000	141/86***	0.0001	0.0048	0.2874***	0.0000	140/87***	0.0002	0.0046	0.2657***	0.0000	141/86***	0.0001
1	0.0030	0.022	0.3702	108/119	0.2534	0.0031	0.0375	0.2862	107/120	0.2129	0.0033	0.0499	0.2261	110/117	0.3452	0.0034	0.0931	0.0803	112/115	0.4472
2	-0.0034	-0.1254	0.9706	98/129	0.0232	-0.0032	-0.1135	0.9564	101/126	0.0556	-0.0031	-0.1108	0.9524	99/128	0.0316	-0.0030	-0.1258	0.9710	101/126	0.0556
3	-0.0030	-0.1548	0.9901	86/141	0.0002	-0.0029	-0.1428	0.9843	86/141	0.0002	-0.0027	-0.1329	0.9774	87/140	0.0003	-0.0027	-0.1732	0.9955	88/139	0.0005
4	0.0045	0.2186***	0.0005	142/85***	0.0001	0.0046	0.2394***	0.0002	140/87***	0.0002	0.0042	0.1883***	0.0023	139/88***	0.0003	0.0051	0.2628***	0.0000	143/84***	0.0000
5	-0.0045	-0.2729	1.0000	84/143	0.0001	-0.0043	-0.2583	1.0000	81/146	0.0000	-0.0043	-0.2613	1.0000	84/143	0.0001	-0.0040	-0.2736	1.0000	84/143	0.0001
		ASCAR	p-values				ASCAR	p-values				ASCAR	p-values				ASCAR	p-values		
0 to +1		0.2899***	0.0010				0.3154*	0.0004				0.3373***	0.0002				0.3589***	0.0001		
-1 to + 1		0.2336**	0.0211				0.2677***	0.0099				0.2990***	0.0046				0.3463***	0.0013		
0 to + 2		0.1644	0.0763				0.2019**	0.0396				0.2265**	0.0244				0.2331**	0.0213		
-5 to + 5		0.3496*	0.0561				0.4918**	0.0127				0.4336**	0.0244				0.6779***	0.0010		
-10 to + 10		-0.7041	0.9897				-0.4716	0.9395				-0.4876	0.9455				-0.2024	0.7471		

Table 3. Emergency Use Approval announcement of the Pfizer vaccine in the U.S.A

Panel 3.1: JSI Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 49 socially responsible investments in Canada (Jantzi Social Index) for five days before and five days after the Emergency Use Approval announcement of the Pfizer vaccine in the U.S.A. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 2	JSI Model 1					JSI Model 2					JSI Model 3					JSI Model 4				
Days	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|
-5	0.0107	0.4708***	0.00049	26/23	0.2839	0.0117	0.4009***	0.0025	26/23	0.2839	0.0111	0.5508***	0.0001	27/22	0.1957	0.0130	0.4886***	0.0003	27/22	0.1957
-4	-0.0014	-0.1329	0.82389	16/33	0.0111	-0.0009	-0.179	0.8949	14/35	0.0021	-0.0011	-0.1119	0.7832	16/33	0.0111	-0.0001	-0.1603	0.8691	16/33	0.0111
-3	-0.0006	-0.0591	0.66045	23/26	0.3875	-0.0001	-0.1045	0.7678	22/27	0.2839	-0.0003	-0.0137	0.5382	26/23	0.2839	0.0008	-0.0605	0.6640	22/27	0.2839
-2	0.0018	0.3765***	0.00420	29/20*	0.0766	0.0011	0.3919***	0.0030	30/19**	0.0432	0.0019	0.3964***	0.0028	29/20*	0.0766	0.0009	0.3925***	0.0030	30/19*	0.0432
-1	0.0084	0.2800**	0.02500	26/23	0.2839	0.0087	0.2455**	0.0428	25/24	0.3875	0.0087	0.3143**	0.0139	27/22	0.1957	0.0093	0.2759**	0.0267	26/23	0.2839
0	0.0014	0.1451	0.15489	25/24	0.3875	0.0010	0.1443	0.1562	25/24	0.3875	0.0015	0.1574	0.1353	25/24	0.3875	0.0010	0.1421	0.1599	25/24	0.3875
1	0.0017	0.051	0.36055	26/23	0.2839	0.0003	0.0971	0.2483	23/26	0.3875	0.0016	0.0706	0.3107	26/23	0.2839	-0.0005	0.0888	0.2670	0.9600	0.5000
2	0.0051	0.2757**	0.02681	33/16***	0.0051	-0.0061	0.2068*	0.0739	30/19**	0.0432	-0.0055	0.3065**	0.0159	33/16***	0.0051	-0.0074	0.2442**	0.0437	32/17**	0.0111
3	-0.0103	-0.5302	0.99990	14/35	0.0021	-0.0098	-0.5757***	1.0000	13/36	0.0008	-0.0100	-0.4875	0.9997	15/34	0.0051	-0.0090	-0.537	0.9999	13/36	0.0008
4	0.0018	0.0037	0.48967	21/28	0.1957	-0.0025	-0.0518	0.6416	19/30	0.0766	-0.0021	0.0449	0.3765	21/28	0.1957	-0.0035	-0.0087	0.5242	20/29	0.1265
5	-0.0014	-0.0028	0.49218	26/23	0.2839	-0.0025	-0.0327	0.4095	26/23	0.2839	-0.0015	-0.0214	0.5595	26/23	0.2839	-0.0030	-0.0161	0.5449	25/24	0.3875
		ASCAR	p-values				ASCAR	p-values				ASCAR	p-values				ASCAR	p-values		
0 to +1		0.1961	0.1659				0.2414	0.11606				0.2280	0.1296				0.2309	0.1265		
-1 to + 1		0.4761**	0.0272				0.4869**	0.0245				0.5423**	0.0142				0.5068**	0.0203		
0 to + 2		0.4718**	0.02828				0.4482**	0.0350				0.5345**	0.0154				0.4751**	0.0274		
-5 to + 5		0.8834**	0.0311				0.6081*	0.0997				1.2065***	0.0054				0.8496**	0.0365		
-10 to + 10		0.7634	0.1218				0.2306	0.3623				1.4676**	0.0125				0.7814	0.1163		

Panel 3.2: TSX Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 173 conventional investments in Canada (TSX Index) for five days before and five days after the Emergency Use Approval announcement of the Pfizer vaccine in the U.S.A. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 2	TSX Model 1					TSX Model 2					TSX Model 3					TSX Model 4				
Days	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|
-5	0.0040	0.0998	0.0946	83/90	0.3241	0.0051	0.141**	0.0319	86/57	0.5000	0.0065	0.0997	0.0949	83/90	0.3241	0.1841	0.1841***	0.0077	87/86	0.4396
-4	0.0028	-0.0517	0.7519	68/105	0.0031	0.0032	-0.0312	0.6594	68/105	0.0031	0.0040	-0.0339	0.6723	69/104	0.0049	0.0072	0.0072	0.4621	72/101	0.0166
-3	-0.0037	-0.1767	0.9899	58/115	0.0000	-0.0033	-0.1611	0.9829	58/115	0.0000	-0.0025	-0.1603	0.9825	56/117	0.0000	-0.1217	-0.1217	0.9453	62/111	0.0001
-2	-0.0049	-0.1104*	0.9268	72/101	0.0166	-0.0059	-0.1513	0.9767	68/105	0.0031	-0.0066	-0.1128	0.9310	71/102	0.0113	-0.1807	-0.1807	0.9913	68/105	0.0031
-1	0.0068	0.2291***	0.0013	93/80	0.1436	0.0070	0.2391***	0.0008	95/78*	0.0856	0.0075	0.2243***	0.0016	91/82	0.2235	0.2487	0.2487***	0.0005	91/82	0.2235
0	0.0028	0.1553**	0.0205	97/76**	0.0472	0.0022	0.1346**	0.0383	98/75**	0.0340	0.0018	0.1521**	0.0227	98/75**	0.0340	0.1156	0.1156	0.0642	90/83	0.2715
1	0.0031	0.2753***	0.0001	110/63***	0.0001	0.0013	0.2066***	0.0033	101/72**	0.0113	-0.0002	0.2689***	0.0002	112/61***	0.0000	0.1394	0.1394**	0.0334	99/74**	0.0240
2	0.0071	0.2121***	0.0026	101/72**	0.0113	0.0081	0.2611***	0.0003	102/71***	0.0075	0.0095	0.2053***	0.0035	103/70***	0.0049	0.2986	0.2986***	0.0000	106/67***	0.0012
3	-0.0041	-0.2674	0.9998	59/114	0.0000	-0.0036	-0.2451	0.9994	60/113	0.0000	-0.0029	-0.2705	0.9998	58/115	0.0000	-0.2211	-0.2211	0.9982	63/110	0.0002
4	0.0040	0.0052	0.4725	76/97	0.0642	0.0047	0.0389	0.3046	77/96	0.0856	0.0056	0.0109	0.4429	75/98	0.0472	0.0758	0.0758	0.1592	80/93	0.1808
5	-0.0016	-0.1355	0.9627	69/104	0.0049	-0.0030	-0.1879	0.9933	60/113	0.0000	-0.0041	-0.1274	0.9530	67/106	0.0019	-0.2257	-0.2257	0.9985	59/114	0.0000
		ASCAR	p-values				ASCAR	p-values				ASCAR	p-values				ASCAR	p-values		
0 to +1		0.4306***	0.0000				0.3412***	0.0008				0.4210***	0.0000				0.2550***	0.0089		
-1 to + 1		0.6597***	0.0000				0.5803***	0.0000				0.6453***	0.0000				0.5037***	0.0001		
0 to + 2		0.6427***	0.0000				0.6023***	0.0000				0.6263***	0.0000				0.5536***	0.0000		
-5 to + 5		0.2351	0.1755				0.2446	0.1661				0.2564	0.1546				0.3202	0.1021		
-10 to + 10		0.2362	0.2489				0.2478	0.2385				0.3012	0.1936				0.4161	0.1162		

Panel 3.3: KLD Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 396 socially responsible investments in the U.S.A (KLD Social Index) for five days before and five days after the Emergency Use Approval announcement of the Pfizer vaccine in the U.S.A. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 2	KLD Model 1					KLD Model 2					KLD Model 3					KLD Model 4				
Days	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|
-5	0.0077	0.3672***	0.00000	264/132	0.0000	0.0079	0.3805***	0.0000	263/133***	0.0000	0.0077	0.3588***	0.0000	263/133***	0.0000	0.0081	0.3855***	0.0000	260/136***	0.0000
-4	-0.0034	-0.1948	0.99995	147/249	0.0000	-0.0035	-0.1962	1.0000	148/248	0.0000	-0.0033	-0.1869	0.9999	152/244	0.0000	-0.0034	-0.1928	0.9999	149/247	0.0000
-3	0.0019	0.0987**	0.02475	206/190	0.1965	0.0020	0.103**	0.0202	208/188	0.1456	0.0020	0.0996**	0.0237	210/186	0.1045	0.0021	0.1076**	0.0161	210/186	0.1045
-2	0.0045	0.2955***	0.00000	250/146***	0.0000	0.0043	0.2904***	0.0000	253/143***	0.0000	0.0047	0.2955***	0.0000	257/139***	0.0000	0.0043	0.2756***	0.0000	253/143***	0.0000
-1	0.0009	-0.0282	0.71267	187/209	0.1456	0.0009	-0.0301	0.7253	188/208	0.1698	0.0010	-0.0128	0.6005	190/206	0.2255	0.0010	-0.0174	0.6357	186/210	0.1239
0	-0.0035	-0.1302	0.99521	174/222	0.0091	-0.0035	-0.131	0.9954	172/224	0.0052	-0.0034	-0.1202	0.9916	174/222	0.0091	-0.0034	-0.1227	0.9927	176/220	0.0154
1	-0.0023	-0.107	0.98336	175/221	0.0119	-0.0025	-0.111	0.9864	173/223	0.0069	-0.0022	-0.1026	0.9794	173/223	0.0069	-0.0024	-0.1137	0.9882	175/221	0.0119
2	0.0040	0.1837***	0.00013	231/165***	0.0004	0.0043	0.2002***	0.0000	231/165***	0.0004	0.0040	0.166***	0.0005	227/169***	0.0015	0.0046	0.2044***	0.0000	232/164***	0.0003
3	-0.0037	-0.2161	0.99999	140/256	0.0000	-0.0037	-0.2141	1.0000	140/256	0.0000	-0.0036	-0.2109	1.0000	141/255	0.0000	-0.0036	-0.2052	1.0000	139/257	0.0000
4	0.0024	0.1374***	0.00312	218/178**	0.0197	0.0025	0.1442***	0.0021	222/174***	0.0069	0.0024	0.137***	0.0032	218/178**	0.0197	0.0027	0.1534***	0.0011	222/174***	0.0069
5	0.0000	0.0187	0.35495	202/194	0.3255	-0.0001	0.0133	0.3953	201/195	0.3625	0.0001	0.0343	0.2474	200/196	0.4008	-0.0001	0.0201	0.3447	199/197	0.4401
		ASCAR	p-values				ASCAR	p-values				ASCAR	p-values				ASCAR	p-values		
0 to +1		0.2371	0.9996				0.2420	0.9997				0.2228	0.9991				-0.2364	0.9996		
-1 to + 1		0.265	0.9989				0.2721	0.9991				0.2358	0.9966				-0.2539	0.9982		
0 to + 2		-0.0535	0.7304				-0.0418	0.6843				-0.0568	0.7429				-0.0320	0.6434		
-5 to + 5		0.4249***	0.0054				0.4493***	0.0035				0.4580***	0.0030				0.4948***	0.0015		
-10 to + 10		0.1936	0.2003				0.2477	0.1411				0.2710	0.1197				0.3452	0.0669		

Panel 3.4: S&P 500 Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 227 conventional investments in the U.S.A (S&P 500 Index) for five days before and five days after the Emergency Use Approval announcement of the Pfizer vaccine in the U.S.A. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 2	SP500 Model 1					SP500 Model 2					SP500 Model 3					SP500 Model 4				
Days	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|
-5	0.0075	0.3184***	0.0000	145/82***	0.0000	0.3344	0.3344***	0.0000	146/81***	0.0000	0.0074	0.3088***	0.0000	143/84***	0.0000	0.0080	0.3944***	0.0000	151/76***	0.0000
-4	-0.0020	-0.1169	0.9609	101/126	0.0556	-0.1070	-0.107	0.9466	99/128	0.0316	-0.0018	-0.1043	0.9420	99/128	0.0316	-0.0017	-0.1158	0.9595	102/125	0.0721
-3	-0.0003	-0.0562	0.8016	102/125	0.0721	-0.0476	-0.0476	0.7636	102/125	0.0721	-0.0002	-0.0383	0.7179	103/124	0.0922	0.0001	-0.0125	0.5749	105/122	0.1441
-2	0.0043	0.2679***	0.0000	140/87***	0.0002	0.2779	0.2779***	0.0000	141/86***	0.0001	0.0048	0.2874***	0.0000	140/87***	0.0002	0.0046	0.2657***	0.0000	141/86***	0.0001
-1	0.0030	0.022	0.3702	108/119	0.2534	0.0375	0.0375	0.2862	107/120	0.2129	0.0033	0.0499	0.2261	110/117	0.3452	0.0034	0.0931	0.0803	112/115	0.4472
0	-0.0034	-0.1254	0.9706	98/129	0.0232	-0.1135	-0.1135	0.9564	101/126	0.0556	-0.0031	-0.1108	0.9524	99/128	0.0316	-0.0030	-0.1258	0.9710	101/126	0.0556
1	-0.0030	-0.1548	0.9901	86/141	0.0002	-0.1428	-0.1428	0.9843	86/141	0.0002	-0.0027	-0.1329	0.9774	87/140	0.0003	-0.0027	-0.1732	0.9955	88/139	0.0005
2	0.0045	0.2186***	0.0005	142/85***	0.0001	0.2394	0.2394***	0.0002	140/87***	0.0002	0.0042	0.1883***	0.0023	139/88***	0.0003	0.0051	0.2628***	0.0000	143/84***	0.0000
3	-0.0045	-0.2729	1.0000	84/143	0.0001	-0.2583	-0.2583	1.0000	81/146	0.0000	-0.0043	-0.2613	1.0000	84/143	0.0001	-0.0040	-0.2736	1.0000	84/143	0.0001
4	-0.0004	0.0294	0.3288	104/123	0.1161	0.0419	0.0419	0.2639	106/121	0.1764	-0.0004	0.0256	0.3501	104/123	0.1161	0.0001	0.0486	0.2322	108/119	0.2534
5	0.0000	0.0109	0.4346	113/114	0.5000	0.0179	0.0179	0.3939	116/111	0.3452	0.0003	0.0267	0.3435	113/114	0.5000	0.0003	0.0089	0.4467	119/108	0.2129
		ASCAR	p-values				ASCAR	p-values				ASCAR	p-values				ASCAR	p-values		
0 to +1		-0.2802	0.9986				-0.2564	0.9968				-0.0568	0.9953				-0.2990	0.9993		
-1 to + 1		-0.2582	0.9877				-0.2189	0.9715				-0.0568	0.9541				-0.2059	0.9633		
0 to + 2		-0.0616	0.7040				-0.0169	0.5586				-0.0554	0.6852				-0.0362	0.6237		
-5 to + 5		0.1410	0.2609				0.2796	0.1020				0.2390	0.1388				0.3725	0.045		
-10 to + 10		-0.5105	0.9534				-0.2717	0.8141				-0.3132	0.8485				-0.0137	0.5179		

Table 4. Emergency Use Approval announcement of the Moderna vaccine in the U.S.A.

Panel 4.1: JSI Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 49 socially responsible investments in Canada (Jantzi Social Index) for five days before and five days after the Emergency Use Approval announcement of the Moderna vaccine in the U.S.A. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 3	JSI Model 1					JSI Model 2					JSI Model 3					JSI Model 4				
Days	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**
-5	0.0014	0.1451	0.15489	25/24	0.3875	0.0010	0.1443	0.1562	25/24	0.3875	0.0015	0.1574	0.1353	25/24	0.3875	0.0010	0.1421	0.1599	25/24	0.3875
-4	0.0017	0.051	0.36055	26/23	0.2839	0.0003	0.0971	0.2483	23/26	0.3875	0.0016	0.0706	0.3107	26/23	0.2839	-0.0005	0.0888	0.2670	24/25	0.5000
-3	0.0051	0.2757**	0.02681	33/16	0.0051	0.0061	0.2068	0.0739	30/19**	0.0432	-0.0055	0.3065**	0.0159	33/16***	0.0051	-0.0074	0.2442**	0.0437	32/17**	0.0111
-2	-0.0103	-0.5302	0.99990	14/35	0.0021	-0.0098	-0.5757	1.0000	13/36	0.0008	-0.0100	-0.4875	0.9997	15/34	0.0051	-0.0090	-0.537	0.9999	13/36	0.0008
-1	0.0018	0.0037	0.48967	21/28	0.1957	-0.0025	-0.0518	0.6416	19/30	0.0766	-0.0021	0.0449	0.3765	21/28	0.1957	-0.0035	-0.0087	0.5242	20/29	0.1265
0	-0.0014	0.0028	0.49218	26/23	0.2839	-0.0025	0.0327	0.4095	26/23	0.2839	-0.0015	-0.0214	0.5595	26/23	0.2839	-0.0030	-0.0161	0.5449	25/24	0.3875
1	-0.0066	-0.3942	0.99710	16/33	0.0111	-0.0069	-0.4007	0.9975	16/33	0.0111	-0.0065	-0.3562	0.9937	16/33	0.0111	-0.0068	-0.376	0.9958	16/33	0.0111
2	-0.0105	-0.4367	0.99888	11/38	0.0001	-0.0101	-0.4774	0.9996	11/38	0.0001	-0.0102	-0.3680	0.9950	12/37	0.0003	-0.0093	-0.4111	0.9980	11/38	0.0001
3	0.0132	0.6624***	0.00000	34/15***	0.0021	0.0135	0.6258***	0.0000	33/16***	0.0051	-0.0135	0.681***	0.0000	34/15***	0.0021	-0.0142	0.6418***	0.0000	33/16***	0.0051
4	-0.0046	-0.1574	0.86473	16/33	0.0111	-0.0043	-0.1913	0.9097	15/34	0.0051	-0.0043	-0.1235	0.8064	17/32	0.0228	-0.0037	-0.1621	0.8718	19/30	0.0766
5	0.0002	0.0073	0.47962	49/0***	0.0000	0.0002	-0.0124	0.5345	15/34	0.0051	0.0000	0.0343	0.4052	49/0***	0.0000	0.0002	0.0053	0.4851	25/24	0.3875
		ASCAR	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**		
0 to +1		-0.3914	0.9736				-0.3680	0.9657				-0.3776	0.9692				-0.3921	0.9739		
-1 to + 1		-0.3877	0.9414				-0.4198	0.9551				-0.3326	0.9106				-0.4008	0.9474		
0 to + 2		-0.8281	0.9996				-0.8454	0.9997				-0.7456	0.9987				-0.8032	0.9994		
-5 to + 5		-0.3705	0.7829				-0.6026	0.8983				-0.0618	0.5519				-0.3888	0.7940		
-10 to + 10		0.8550	0.0958				0.4168	0.2622				1.4517**	0.0133				0.8324	0.1018		

Panel 4.2: TSX Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 173 conventional investments in Canada (TSX Index) for five days before and five days after the Emergency Use Approval announcement of the Moderna vaccine in the U.S.A. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 3	TSX Model 1					TSX Model 2					TSX Model 3					TSX Model 4				
Days	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**
-5	0.0028	0.1553**	0.0205	97/76**	0.0472	0.0022	0.1346**	0.0383	98/75**	0.0340	0.0018	0.1521**	0.0227	98/75***	0.0340	0.0027	0.1156	0.0642	90/83	0.2715
-4	0.0031	0.2753***	0.0001	110/63***	0.0001	0.0013	0.2066***	0.0033	101/72**	0.0113	-0.0002	0.2689***	0.0002	112/61***	0.0000	0.0027	0.1394**	0.0334	99/74**	0.0240
-3	-0.0071	0.2121***	0.0026	101/72**	0.0113	-0.0081	0.2611***	0.0003	102/71***	0.0075	-0.0095	0.2053***	0.0035	103/70***	0.0049	-0.0075	0.2986***	0.0000	106/67***	0.0012
-2	-0.0041	-0.2674	0.9998	59/114	0.0000	-0.0036	-0.2451	0.9994	60/113	0.0000	-0.0029	-0.2705	0.9998	58/115	0.0000	-0.0038	-0.2211	0.9982	63/110	0.0002
-1	-0.0040	0.0052	0.4725	76/97	0.0642	-0.0047	0.0389	0.3046	77/96	0.0856	-0.0056	0.0109	0.4429	75/98	0.0472	-0.0043	0.0758	0.1592	80/93	0.1808
0	-0.0016	-0.1355	0.9627	69/104	0.0049	-0.0030	-0.1879	0.9933	60/113	0.0000	-0.0041	-0.1274	0.9530	67/106	0.0019	-0.0019	-0.2257	0.9985	59/114	0.0000
1	-0.0034	-0.197	0.9952	69/104	0.0049	-0.0039	-0.2073	0.9968	68/105	0.0031	-0.0042	-0.1783	0.9905	69/104	0.0049	-0.0035	-0.203	0.9962	69/104	0.0049
2	-0.0041	-0.1088	0.9237	63/110	0.0002	-0.0038	-0.1145	0.9340	65/108	0.0007	-0.0032	-0.0866	0.8727	65/108	0.0007	-0.0039	-0.076	0.8412	67/106	0.0019
3	-0.0079	0.2112***	0.0027	108/65***	0.0004	-0.0082	0.2333***	0.0011	108/65***	0.0004	-0.0087	0.2034***	0.0037	107/66***	0.0007	-0.0081	0.2413***	0.0008	107/66***	0.0007
4	-0.0014	0.0115	0.4397	80/93	0.1808	-0.0012	0.017	0.4116	84/89	0.3805	-0.0008	0.0207	0.3928	80/93	0.1808	-0.0012	0.0383	0.3071	88/85	0.3805
5	-0.0004	-0.0137	0.5716	41/132	0.0000	-0.0005	-0.0198	0.6028	54/119	0.0000	-0.0005	-0.0138	0.5723	69/104	0.0049	-0.0003	-0.0202	0.6050	68/105	0.0031
		ASCAR	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**		
0 to +1		-0.3326	0.9990				-0.3953	0.9999				-0.3057	0.9978				-0.4288	1.0000		
-1 to + 1		-0.3273	0.9935				-0.3564	0.9966				-0.2948	0.9874				-0.3529	0.9963		
0 to + 2		-0.4413	0.9996				-0.5098	0.9999				-0.3923	0.9986				-0.5047	0.9999		
-5 to + 5		0.1483	0.2783				0.1168	0.3216				0.1847	0.2320				0.1629	0.2591		
-10 to + 10		0.6036**	0.0416				0.5398	0.0606				0.6557	0.0299				0.6091	0.0402		

Panel 4.3: KLD Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 396 socially responsible investments in the U.S.A (KLD Social Index) for five days before and five days after the Emergency Use Approval announcement of the Moderna vaccine in the U.S.A. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 3	KLD Model 1					KLD Model 2					KLD Model 3					KLD Model 4				
Days	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|
-5	-0.0035	-0.1302	0.99521	174/222	0.0091	-0.0035	-0.131	0.9954	172/224	0.0052	-0.0034	-0.1202	0.9916	174/222	0.0091	-0.0034	-0.1227	0.9927	176/220	0.0154
-4	-0.0023	-0.107	0.98336	175/221	0.0119	-0.0025	-0.111	0.9864	173/223	0.0069	-0.0022	-0.1026	0.9794	173/223	0.0069	-0.0024	-0.1137	0.9882	175/221	0.0119
-3	0.0040	0.1837***	0.00013	231/165***	0.0004	0.0043	0.2002***	0.0000	231/165***	0.0004	0.0040	0.166***	0.0005	227/169***	0.0015	0.0046	0.2044***	0.0000	232/164***	0.0003
-2	-0.0037	-0.2161	0.99999	140/256	0.0000	-0.0037	-0.2141	1.0000	140/256	0.0000	-0.0036	-0.2109	1.0000	141/255	0.0000	-0.0036	-0.2052	1.0000	139/257	0.0000
-1	0.0024	0.1374***	0.00312	218/178**	0.0197	0.0025	0.1442***	0.0021	222/174***	0.0069	0.0024	0.137***	0.0032	218/178**	0.0197	0.0027	0.1534***	0.0011	222/174***	0.0069
0	0.0000	0.0187	0.35495	202/194	0.3255	-0.0001	0.0133	0.3953	201/195	0.3625	0.0001	0.0343	0.2474	200/196	0.4008	-0.0001	0.0201	0.3447	199/197	0.4401
1	-0.0018	-0.1143	0.98851	177/219	0.0197	-0.0019	-0.1177	0.9904	178/218	0.0250	-0.0016	-0.1031	0.9799	182/214	0.0596	-0.0018	-0.1154	0.9892	181/215	0.0486
2	0.0014	0.0296	0.27773	185/211	0.1045	0.0013	0.0298	0.2766	187/209	0.1456	0.0015	0.0425	0.1990	191/205	0.2568	0.0014	0.0394	0.2167	188/208	0.1698
3	0.0070	0.3169***	0.00000	257/139***	0.0000	0.0070	0.3216***	0.0000	257/139***	0.0000	0.0071	0.3126***	0.0000	258/138***	0.0000	0.0071	0.3171***	0.0000	254/142***	0.0000
4	-0.0015	-0.0401	0.78763	176/220	0.0154	-0.0014	-0.0345	0.7535	179/217	0.0315	-0.0014	-0.0368	0.7678	176/220	0.0154	-0.0012	-0.025	0.6904	179/217	0.0315
5	-0.0001	-0.0053	0.54226	162/234	0.0002	-0.0001	-0.0036	0.5287	196/200	0.4401	0.0000	-0.0013	0.5103	205/191	0.2255	0.0000	-0.0002	0.5016	193/203	0.3255
		ASCAR	p-values				ASCAR	p-values				ASCAR	p-values				ASCAR	p-values		
0 to +1		-0.0956	0.9106				-0.1043	0.9290				-0.0688	0.8334				-0.0953	0.9100		
-1 to + 1		0.0419	0.3152				0.0399	0.3234				0.0683	0.2164				0.0582	0.2520		
0 to + 2		-0.0659	0.7756				-0.0746	0.8042				-0.0263	0.6187				-0.0559	0.7398		
-5 to + 5		0.0734	0.3298				0.0973	0.2797				0.1176	0.2401				0.1522	0.1806		
0 to + 10		0.2017	0.1905				0.2552	0.1339				0.2755	0.1158				0.3562	0.0609		

Panel 4.4: S&P 500 Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 227 conventional investments in the U.S.A (S&P 500 Index) for five days before and five days after the Emergency Use Approval announcement of the Moderna vaccine in the U.S.A. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 3	SP500 Model 1					SP500 Model 2					SP500 Model 3					SP500 Model 4				
Days	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|
-5	-0.0034	-0.1254	0.9706	98/129	0.0232	-0.0032	-0.1135	0.9564	101/126	0.0556	-0.0031	-0.1108	0.9524	99/128	0.0316	-0.0030	-0.1258	0.9710	101/126	0.0556
-4	-0.0030	-0.1548	0.9901	86/141	0.0002	-0.0029	-0.1428	0.9843	86/141	0.0002	-0.0027	-0.1329	0.9774	87/140	0.0003	-0.0027	-0.1732	0.9955	88/139	0.0005
-3	0.0045	0.2186***	0.0005	142/85***	0.0001	0.0046	0.2394***	0.0002	140/87***	0.0002	0.0042	0.1883***	0.0023	139/88***	0.0003	0.0051	0.2628***	0.0000	143/84***	0.0000
-2	-0.0045	-0.2729	1.0000	84/143	0.0001	-0.0043	-0.2583	1.0000	81/146	0.0000	-0.0043	-0.2613	1.0000	84/143	0.0001	-0.0040	-0.2736	1.0000	84/143	0.0001
-1	-0.0004	0.0294	0.3288	104/123	0.1161	-0.0002	0.0419	0.2639	106/121	0.1764	-0.0004	0.0256	0.3501	104/123	0.1161	0.0001	0.0486	0.2322	108/119	0.2534
0	0.0000	0.0109	0.4346	113/114	0.5000	0.0001	0.0179	0.3939	116/111	0.3452	0.0003	0.0267	0.3435	113/114	0.5000	0.0003	0.0089	0.4467	119/108	0.2129
1	-0.0039	-0.2401	0.9999	78/149	0.0000	-0.0038	-0.2352	0.9998	79/148	0.0000	-0.0035	-0.2101	0.9992	80/147	0.0000	-0.0036	-0.2364	0.9998	78/149	0.0000
2	-0.0029	-0.1327	0.9772	88/139	0.0005	-0.0027	-0.1246	0.9698	90/137	0.0011	-0.0026	-0.1212	0.9661	91/136	0.0017	-0.0025	-0.1502	0.9882	97/130	0.0168
3	0.0060	0.2197***	0.0005	128/99**	0.0232	0.0061	0.2291***	0.0003	130/97**	0.0120	0.0061	0.2277***	0.0003	128/99**	0.0232	0.0064	0.2851***	0.0000	132/95***	0.0058
4	-0.0020	-0.0511	0.7794	100/127	0.0422	-0.0019	-0.036	0.7062	100/127	0.0422	-0.0019	-0.0491	0.7701	100/127	0.0422	-0.0016	-0.0373	0.7129	100/127	0.0422
5	-0.0001	-0.0088	0.5526	75/152	0.0000	0.0000	0.0017	0.4897	121/106	0.1441	0.0001	0.0009	0.4945	117/110	0.2977	0.0002	0.0126	0.4246	137/90***	0.0007
		ASCAR	p-values				ASCAR	p-values				ASCAR	p-values				ASCAR	p-values		
0 to +1		-0.2291	0.9927				-0.2174	0.9897				-0.1834	0.9746				-0.2275	0.9923		
-1 to + 1		-0.1997	0.9588				-0.1755	0.9365				-0.1578	0.9151				-0.1789	0.9402		
0 to + 2		-0.3618	0.9992				-0.3420	0.9985				-0.3046	0.9960				-0.3777	0.9995		
-5 to + 5		-0.5070	0.9894				-0.3805	0.9580				-0.4163	0.9707				-0.3785	0.9572		
-10 to + 10		-0.1244	0.6588				0.1243	0.3414				0.0493	0.4356				0.3360	0.1347		

Table 5. Interim Approval Announcement of The Moderna Vaccine in Canada

Panel 5.1: JSI Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 49 socially responsible investments in Canada (Jantzi Social Index) for five days before and five days after the Interim approval announcement of the Moderna vaccine in Canada. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 4	JSI Model 1					JSI Model 2					JSI Model 3					JSI Model 4				
Days	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|
-5	-0.0103	-0.5302	0.9999	14/35	0.0021	-0.0098	-0.5757	1.0000	13/36	0.0008	-0.0100	-0.4875	0.9997	15/34	0.0051	-0.0090	-0.537	0.9999	13/36	0.0008
-4	0.0018	0.0037	0.4897	21/28	0.1957	0.0025	-0.0518	0.6416	19/30	0.0766	0.0021	0.0449	0.3765	21/28	0.1957	0.0035	-0.0087	0.5242	20/29	0.1265
-3	-0.0014	0.0028	0.4922	26/23	0.2839	-0.0025	0.0327	0.4095	26/23	0.2839	-0.0015	-0.0214	0.5595	26/23	0.2839	-0.0030	-0.0161	0.5449	25/24	0.3875
-2	-0.0066	-0.3942	0.9971	16/33	0.0111	-0.0069	-0.4007	0.9975	16/33	0.0111	-0.0065	-0.3562	0.9937	16/33	0.0111	-0.0068	-0.376	0.9958	16/33	0.0111
-1	-0.0105	-0.4367	0.9989	11/38	0.0001	-0.0101	-0.4774	0.9996	11/38	0.0001	-0.0102	-0.368	0.9950	12/37	0.0003	-0.0093	-0.4111	0.9980	11/38	0.0001
0	0.0132	0.6624***	0.0000	34/15***	0.0021	0.0135	0.6258***	0.0000	33/16***	0.0051	0.0135	0.681***	0.0000	34/15***	0.0021	0.0142	0.6418***	0.0000	33/16***	0.0051
1	-0.0046	-0.1574	0.8647	16/33	0.0111	-0.0043	-0.1913	0.9097	15/34	0.0051	-0.0043	-0.1235	0.8064	17/32	0.0228	-0.0037	-0.1621	0.8718	19/30	0.0766
2	-0.0002	0.0073	0.4796	49/0***	0.0000	-0.0002	-0.0124	0.5345	15/34	0.0051	-0.0000	0.0343	0.4052	49/0***	0.0000	-0.0002	0.0053	0.4851	25/24	0.3875
3	-0.0002	0.0073	0.4796	49/0***	0.0000	-0.0002	-0.0124	0.5345	15/34	0.0051	-0.0000	0.0343	0.4052	49/0***	0.0000	-0.0002	0.0053	0.4851	25/24	0.3875
4	0.0019	0.2185	0.0631	28/21	0.1265	0.0012	0.2327	0.0517	28/21	0.1265	0.0020	0.2289	0.0546	28/21	0.1265	0.0010	0.2246	0.0580	28/21	0.1265
5	0.0068	0.199	0.0818	27/22	0.1957	0.0069	0.1702	0.1168	27/22	0.1957	0.0070	0.2068	0.0739	28/21	0.1265	0.0075	0.1706	0.1162	27/22	0.1957
		ASCAR	p-values				ASCAR	p-values				ASCAR	p-values				ASCAR	p-values		
0 to +1		0.5050**	0.0062				0.4345**	0.0157				0.5575***	0.0029				0.4797**	0.0088		
-1 to + 1		0.0683	0.3913				-0.0429	0.5689				0.1895	0.2219				0.0686	0.3908		
0 to + 2		0.5123**	0.0192				0.4222**	0.0440				0.5918**	0.0084				0.4850**	0.0250		
-5 to + 5		-0.4175	0.8109				-0.6603	0.9183				-0.1264	0.6052				-0.4634	0.8360		
-10 to + 10		1.7231***	0.0042				1.2293**	0.0302				2.2887***	0.0002				1.6353**	0.0062		

Panel 5.2: TSX Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 173 conventional investments in Canada (TSX Index) for five days before and five days after the Interim approval announcement of the Moderna vaccine in Canada. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 4	TSX Model 1					TSX Model 2					TSX Model 3					TSX Model 4				
Days	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|
-5	-0.0041	-0.2674	0.9998	59/114	0.0000	-0.0036	-0.2451	0.9994	60/113	0.0000	-0.0029	-0.2705	0.9998	58/115	0.0000	-0.0038	-0.2211	0.9982	63/110	0.0002
-4	0.0040	0.0052	0.4725	76/97	0.0642	0.0047	0.0389	0.3046	77/96*	0.0856	0.0056	0.0109	0.4429	75/98	0.0472	0.0043	0.0758	0.1592	80/93	0.1808
-3	-0.0016	-0.1355	0.9627	69/104	0.0049	-0.0030	-0.1879	0.9933	60/113	0.0000	-0.0041	-0.1274	0.9530	67/106	0.0019	-0.0019	-0.2257	0.9985	59/114	0.0000
-2	-0.0034	-0.197	0.9952	69/104	0.0049	-0.0039	-0.2073	0.9968	68/105	0.0031	-0.0042	-0.1783	0.9905	69/104	0.0049	-0.0035	-0.203	0.9962	69/104	0.0049
-1	-0.0041	-0.1088	0.9237	63/110	0.0002	-0.0038	-0.1145	0.9340	65/108	0.0007	-0.0032	-0.0866	0.8727	65/108	0.0007	-0.0039	-0.076	0.8412	67/106	0.0019
0	0.0079	0.2112***	0.0027	108/65***	0.0004	0.0082	0.2333***	0.0011	108/65***	0.0004	0.0087	0.2034***	0.0037	107/66***	0.0007	0.0081	0.2413***	0.0008	107/66***	0.0007
1	-0.0014	0.0115	0.4397	80/93	0.1808	-0.0012	0.017	0.4116	84/89	0.3805	-0.0008	0.0207	0.3928	80/93	0.1808	-0.0012	0.0383	0.3071	88/85	0.3805
2	-0.0004	-0.0137	0.5716	41/132	0.0000	-0.0005	-0.0198	0.6028	54/119	0.0000	-0.0005	-0.0138	0.5723	69/104	0.0049	-0.0003	-0.0202	0.6050	68/105	0.0031
3	-0.0004	-0.0137	0.5716	41/132	0.0000	-0.0005	-0.0198	0.6028	54/119	0.0000	-0.0005	-0.0138	0.5723	69/104	0.0049	-0.0003	-0.0202	0.6050	68/105	0.0031
4	0.0017	0.1579**	0.0189	1.2763	0.0472	0.0007	0.1276	0.0467	91/82	0.2235	-0.0001	0.162**	0.0166	97/76**	0.0472	0.0015	0.1018	0.0903	90/83	0.2715
5	0.0077	0.214***	0.0024	98/75**	0.0340	0.0078	0.2292***	0.0013	98/75**	0.0340	0.0081	0.2069***	0.0033	100/73**	0.0166	0.0079	0.2295***	0.0013	104/69***	0.0031
		ASCAR	p-values				ASCAR	p-values				ASCAR	p-values				ASCAR	p-values		
0 to +1		0.2227**	0.0192				0.2503**	0.0100				0.2241**	0.0186				0.2796***	0.0047		
-1 to + 1		0.1139	0.1935				0.1358	0.1512				0.1375	0.1482				0.2036	0.0610		
0 to + 2		0.2090	0.0563				0.2305**	0.0400				0.2103	0.0552				0.2594**	0.0244		
-5 to + 5		-0.1362	0.7054				-0.1485	0.7220				-0.0866	0.6344				-0.0796	0.6239		
-10 to + 10		0.6582**	0.0294				0.6516**	0.0307				0.7152**	0.0200				0.7804**	0.0125		

Panel 5.3: KLD Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 396 socially responsible investments in the U.S.A (KLD Social Index) for five days before and five days after the Interim approval announcement of the Moderna vaccine in Canada. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 4	KLD Model 1					KLD Model 2					KLD Model 3					KLD Model 4				
Days	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**
-5	-0.0037	-0.2161	0.99999	140/256	0.0000	-0.0037	-0.2141	1.0000	140/256	0.0000	-0.0036	-0.2109	1.0000	141/255	0.0000	-0.0036	-0.2052	1.0000	139/257	0.0000
-4	0.0024	0.1374***	0.00312	218/178**	0.0197	0.0025	0.1442***	0.0021	222/174***	0.0069	0.0024	0.137***	0.0032	218/178**	0.0197	0.0027	0.1534***	0.0011	222/174***	0.0069
-3	0.0000	0.0187	0.35495	202/194	0.3255	-0.0001	0.0133	0.3953	201/195	0.3625	-0.0001	0.0343	0.2474	200/196	0.4008	-0.0001	0.0201	0.3447	199/197	0.4401
-2	-0.0018	-0.1143	0.98851	177/219	0.0197	-0.0019	-0.1177	0.9904	178/218	0.0250	-0.0016	-0.1031	0.9799	182/214	0.0596	-0.0018	-0.1154	0.9892	181/215	0.0486
-1	0.0014	0.0296	0.27773	185/211	0.1045	0.0013	0.0298	0.2766	187/209	0.1456	0.0015	0.0425	0.1990	191/205	0.2568	0.0014	0.0394	0.2167	188/208	0.1698
0	0.0070	0.3169***	0.00000	257/139***	0.0000	0.0070	0.3216***	0.0000	257/139***	0.0000	0.0071	0.3126***	0.0000	258/138***	0.0000	0.0071	0.3171***	0.0000	254/142***	0.0000
1	-0.0015	-0.0401	0.78763	176/220	0.0154	-0.0014	-0.0345	0.7535	179/217	0.0315	-0.0014	-0.0368	0.7678	176/220	0.0154	-0.0012	-0.025	0.6904	179/217	0.0315
2	-0.0001	-0.0053	0.54226	162/234	0.0002	-0.0001	-0.0036	0.5287	196/200	0.4401	0.0000	-0.0013	0.5103	205/191	0.2255	0.0000	-0.0002	0.5016	193/203	0.3255
3	-0.0074	-0.3971	1.00000	100/296	0.0000	-0.0072	-0.3882	1.0000	98/298	0.0000	-0.0074	-0.3969	1.0000	97/299	0.0000	-0.0070	-0.3739	1.0000	106/290	0.0000
4	-0.0049	-0.2534	1.00000	111/285	0.0000	-0.0050	-0.2558	1.0000	109/287	0.0000	-0.0047	-0.2396	1.0000	109/287	0.0000	-0.0049	-0.2472	1.0000	104/292	0.0000
5	0.0049	0.2391***	0.00000	261/135***	0.0000	0.0049	0.2441***	0.0000	263/133***	0.0000	0.0050	0.2388***	0.0000	257/139***	0.0000	0.0050	0.2458***	0.0000	260/136***	0.0000
		ASCAR	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**		
0 to +1		0.2768***	0.0000				0.2871***	0.0000				0.2758***	0.0001				0.2921***	0.0000		
-1 to + 1		0.3064***	0.0002				0.3169***	0.0001				0.3183***	0.0001				0.3315***	0.0001		
0 to + 2		0.2714***	0.0009				0.2835***	0.0006				0.2745***	0.0008				0.2919***	0.0004		
-5 to + 5		-0.2845	0.9561				-0.2608	0.9412				-0.2233	0.9098				-0.1911	0.8742		
-10 to + 10		1.2467***	0.0000				1.2914***	0.0000				1.3075***	0.0000				1.3564***	0.0000		

Panel 5.4: S&P 500 Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 227 conventional investments in the U.S.A (S&P 500 Index) for five days before and five days after the Interim approval announcement of the Moderna vaccine in Canada. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 4	SP500 Model 1					SP500 Model 2					SP500 Model 3					SP500 Model 4				
Days	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**
-5	-0.0045	-0.2729	1.0000	84/143	0.0001	-0.0043	-0.2583	1.0000	81/146	0.0000	-0.0043	-0.2613	1.0000	84/143	0.0001	-0.0040	-0.2736	1.0000	84/143	0.0001
-4	-0.0004	0.0294	0.3288	104/123	0.1161	-0.0002	0.0419	0.2639	106/121	0.1764	-0.0004	0.0256	0.3501	104/123	0.1161	0.0001	0.0486	0.2322	108/119	0.2534
-3	0.0000	0.0109	0.4346	113/114	0.5000	0.0001	0.0179	0.3939	116/111	0.3452	0.0003	0.0267	0.3435	113/114	0.5000	0.0003	0.0089	0.4467	119/108	0.2129
-2	-0.0039	-0.2401	0.9999	78/149	0.0000	-0.0038	-0.2352	0.9998	79/148	0.0000	-0.0035	-0.2101	0.9992	80/147	0.0000	-0.0036	-0.2364	0.9998	78/149	0.0000
-1	-0.0029	-0.1327	0.9772	88/139	0.0005	-0.0027	-0.1246	0.9698	90/137	0.0011	-0.0026	-0.1212	0.9661	91/136	0.0017	-0.0025	-0.1502	0.9882	97/130	0.0168
0	0.0060	0.2197***	0.0005	128/99**	0.0232	0.0061	0.2291***	0.0003	130/97**	0.0120	0.0061	0.2277***	0.0003	128/99**	0.0232	0.0064	0.2851***	0.0000	132/95***	0.0058
1	-0.0020	-0.0511	0.7794	100/127	0.0422	-0.0019	-0.036	0.7062	100/127	0.0422	-0.0019	-0.0491	0.7701	100/127	0.0422	-0.0016	-0.0373	0.7129	100/127	0.0422
2	-0.0001	-0.0088	0.5526	75/152	0.0000	0.0000	0.0017	0.4897	121/106	0.1441	0.0001	0.0009	0.4945	117/110	0.2977	0.0002	0.0126	0.4246	137/90***	0.0007
3	-0.0065	-0.3081	1.0000	73/154	0.0000	-0.0064	-0.2976	1.0000	75/152	0.0000	-0.0066	-0.3149	1.0000	71/156	0.0000	-0.0060	-0.2582	1.0000	81/146	0.0000
4	-0.0029	-0.1457	0.9859	77/150	0.0000	-0.0028	-0.1367	0.9803	84/143	0.0001	-0.0026	-0.1279	0.9731	81/146	0.0000	-0.0026	-0.1314	0.9762	92/135	0.0027
5	0.0065	0.2983***	0.0000	157/70***	0.0000	0.0066			161/66***	0.0000	0.0067	0.3022***	0.0000	159/68***	0.0000	0.0069	0.3364***	0.0000	165/62***	0.0000
		ASCAR	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**		
0 to +1		0.1686**	0.0362				0.1931**	0.0198				0.0285**	0.0285				0.2478***	0.0041		
-1 to + 1		0.0359	0.3773				0.0685	0.2756				0.0574	0.3088				0.0977	0.1978		
0 to + 2		0.1598	0.0822				0.1948	0.0451				0.1796	0.0592				0.2605**	0.0117		
-5 to + 5		-0.6009	0.9968				-0.4833	0.9859				-0.5015	0.9886				-0.3955	0.9638		
-10 to + 10		0.6191**	0.0209				0.8821***	0.0019				0.8015***	0.0042				1.0308***	0.0004		

Table 6. Full Approval Announcement of the Pfizer vaccine in the U.S.A.

Panel 6.1: JSI Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 49 socially responsible investments in Canada (Jantzi Social Index) for five days before and five days after the Full Approval announcement of the Pfizer vaccine in the U.S.A. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 5	JSI Model 1					JSI Model 2					JSI Model 3					JSI Model 4				
Days	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|
-5	-0.0053	-0.1314	0.8212	23/26	0.3875	-0.0056	-0.1397	0.8359	22/27	0.2839	-0.0052	-0.4875	0.9997	24/25	0.5000	-0.0054	-0.1315	0.8214	16/33	0.0111
-4	-0.0037	-0.1767	0.8919	23/26	0.3875	-0.0047	-0.1527	0.8574	23/26	0.3875	-0.0037	0.0449	0.3765	23/26	0.3875	-0.0050	-0.1558	0.8623	19/30	0.0766
-3	-0.0038	-0.1749	0.8896	19/30	0.0766	-0.0043	-0.1734	0.8876	19/30	0.0766	-0.0037	-0.0214	0.5595	21/28	0.1957	-0.0043	-0.1586	0.8666	21/28	0.1957
-2	-0.0062	-0.1427	0.8411	23/26	0.3875	-0.0069	-0.1312	0.8208	23/26	0.3875	-0.0061	-0.3562	0.9937	23/26	0.3875	-0.0070	-0.1248	0.8088	23/26	0.3875
-1	-0.0018	0.0526	0.3564	25/24	0.3875	-0.0009	-0.0104	0.5291	24/25	0.5000	-0.0014	-0.368	0.9950	28/21	0.1265	0.0003	0.0427	0.3825	27/22	0.1957
0	0.0087	0.232*	0.0522	26/23	0.2839	0.0097	0.1636	0.1260	25/24	0.3875	0.0091	0.681***	0.0000	27/22	0.1957	0.0110	0.2105*	0.0703	25/24	0.3875
1	0.0044	0.1186	0.2032	23/26	0.3875	0.0049	0.0734	0.3037	22/27	0.2839	0.0047	-0.1235	0.8064	25/24	0.3875	0.0058	0.1286	0.1840	23/26	0.3875
2	-0.0031	-0.0605	0.6640	24/25	0.5000	-0.0028	-0.0945	0.7457	24/25	0.5000	-0.0028	0.0343	0.4052	25/24	0.3875	-0.0022	-0.0752	0.7007	26/23	0.2839
3	0.0026	0.0659	0.3223	27/22	0.1957	0.0019	0.0753	0.2990	28/21	0.1265	0.0026	0.0343	0.4052	28/21	0.1265	0.0018	0.0726	0.3056	29/20*	0.0766
4	0.0068	0.2274	0.0557	31/18**	0.0228	0.0078	0.158	0.1344	31/18**	0.0228	0.0072	0.2289	0.0546	32/17**	0.0111	0.0091	0.2074*	0.0733	31/18**	0.0228
5	-0.0023	-0.0121	0.5338	19/30	0.0766	-0.0027	-0.0162	0.5451	21/28	0.1957	-0.0022	0.2068	0.0739	21/28	0.1957	-0.0026	-0.003	0.5085	24/25	0.5000
		ASCAR	p-values				ASCAR	p-values				ASCAR	p-values				ASCAR	p-values		
0 to +1		0.3506**	0.0413				0.2370	0.1204				0.4468**	0.0135				0.3391	0.0466		
-1 to + 1		0.4032	0.0516				0.2266	0.1799				0.5477**	0.0134				0.3818	0.0614		
0 to + 2		0.2901	0.1205				0.1426	0.2822				0.4109	0.0484				0.2639	0.1431		
-5 to + 5		-0.0018	0.5015				-0.2477	0.6994				0.3458	0.2328				0.0128	0.4892		
-10 to + 10		0.4799	0.2318				-0.0627	0.5381				1.1277**	0.0425				0.4414	0.2501		

Panel 6.2: TSX Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 173 conventional investments in Canada (TSX Index) for five days before and five days after the Full Approval announcement of the Pfizer vaccine in the U.S.A. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 5	TSX Model 1					TSX Model 2					TSX Model 3					TSX Model 4				
Days	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|
-5	-0.0056	-0.1410	0.9998	73/100	0.0240	-0.0060	-0.1577	0.9809	70/103	0.0075	-0.0062	-0.1352	0.9623	73/100	0.0240	-0.0056	-0.1623	0.9836	69/104	0.0049
-4	-0.0055	-0.1515	0.4725	71/102	0.0113	-0.0067	-0.1982	0.9954	65/108	0.0007	-0.0077	-0.1499	0.9757	72/101	0.0166	-0.0058	-0.2393	0.9992	64/109	0.0004
-3	-0.0008	-0.0184	0.9627	85/88	0.4396	-0.0015	-0.0390	0.6961	84/89	0.3805	-0.0019	-0.0164	0.5851	84/89	0.3805	-0.0009	-0.0552	0.7659	81/92	0.2235
-2	-0.0074	-0.1893	0.9952	65/108	0.0007	-0.0083	-0.2287	0.9987	64/109	0.0004	-0.0090	-0.1805	0.9912	65/108	0.0007	-0.0075	-0.2496	0.9995	61/112	0.0001
-1	-0.0011	0.0055	0.9237	87/86	0.4396	-0.0002	0.0375	0.3107	90/83	0.2715	-0.0010	0.0115	0.4401	83/90	0.3241	-0.0007	0.0812	0.1427	101/72**	0.0113
0	0.0099	0.1542***	0.0027	94/79	0.1119	0.0109	0.1972***	0.0047	93/80	0.1436	0.0122	0.1515**	0.0232	94/79	0.1119	0.0103	0.2372***	0.0009	96/77*	0.0642
1	0.0028	0.0085	0.4397	77/96	0.0856	0.0032	0.0248	0.3723	80/93	0.1808	0.0040	0.0076	0.4601	77/96	0.0856	0.0030	0.0456	0.2742	82/91	0.2715
2	-0.0007	0.0013	0.5716	83/90	0.3241	-0.0005	0.0038	0.4799	83/90	0.3241	-0.0001	0.0024	0.4871	83/90	0.3241	-0.0005	0.0183	0.4049	87/86	0.4396
3	0.0036	0.2170	0.5716	123/50***	0.0000	0.0028	0.1860***	0.0072	115/58***	0.0000	0.0021	0.2048***	0.0035	120/53***	0.0000	0.0035	0.1474**	0.0263	108/65***	0.0004
4	0.0062	0.0788**	0.0189	86/87	0.5000	0.0072	0.1249	0.0503	94/79	0.1119	0.0086	0.0822	0.1397	88/85	0.3805	0.0066	0.1713**	0.0121	96/77*	0.0642
5	0.0018	0.1300***	0.0024	106/67***	0.0012	0.0012	0.1089	0.0760	104/69***	0.0031	0.0009	0.1276	0.0466	107/66***	0.0007	0.0017	0.0951	0.1054	104/69***	0.0031
		ASCAR	p-values				ASCAR	p-values				ASCAR	p-values				ASCAR	p-values		
0 to +1		0.1628	0.0650				0.2220**	0.0195				0.1591	0.0695				0.2828***	0.0043		
-1 to + 1		0.1683	0.1006				0.2595**	0.0244				0.1705	0.0976				0.3641***	0.0028		
0 to + 2		0.1641	0.1064				0.2258**	0.0432				0.1615	0.1100				0.3012**	0.0111		
-5 to + 5		0.0951	0.3531				0.0596	0.4065				0.1057	0.3376				0.0899	0.3608		
-10 to + 10		0.4686	0.0893				0.4541	0.0962				0.4793	0.0844				0.5715	0.0505		

Panel 6.3: KLD Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 396 socially responsible investments in the U.S.A (KLD Social Index) for five days before and five days after the Full Approval announcement of the Pfizer vaccine in the U.S.A. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 5	KLD Model 1					KLD Model 2					KLD Model 3					KLD Model 4				
Days	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**
-5	-0.0034	-0.0909	0.9648	169/227	0.0021	-0.0024	-0.2141	1.0000	169/227	0.0029	-0.0033	-0.0912	0.9652	170/226	0.0029	-0.0032	-0.0852	1.0000	174/222	0.0091
-4	-0.0037	-0.1412	0.9975	163/233	0.0003	-0.0033	0.1442***	0.0021	165/231	0.0021	-0.0035	-0.1236	0.9930	165/231	0.0005	-0.0038	-0.1416***	0.0011	167/229	0.0011
-3	-0.0003	-0.0568	0.8709	187/209	0.1456	-0.0039	0.0133	0.3953	190/206	0.0005	0.0000	-0.0405	0.7896	197/199	0.4800	-0.0005	-0.0714	0.3447	188/208	0.1698
-2	-0.0055	-0.2136	1.0000	155/241	0.0000	-0.0006	-0.1177	0.9904	156/240	0.2255	-0.0054	-0.2107	1.0000	153/243	0.0000	-0.0053	-0.2073	0.9892	153/243	0.0000
-1	0.0006	-0.0187	0.6455	187/209	0.1456	-0.0054	0.0298	0.2766	187/209	0.0000	0.0006	-0.0248	0.6895	182/214	0.0596	0.0010	-0.0025	0.2167	189/207	0.1965
0	-0.0005	-0.1064	0.9829	172/224	0.0052	0.0008	0.3216***	0.0000	168/228	0.1456	-0.0005	-0.1033	0.9801	172/224	0.0052	-0.0001	-0.0782***	0.0000	174/222	0.0091
1	0.0050	0.1555***	0.0010	241/155***	0.0000	-0.0003	-0.0345	0.7535	243/153***	0.0015	0.0051	0.1663***	0.0005	240/156***	0.0000	0.0052	0.1711	0.6904	243/153***	0.0000
2	0.0019	0.118***	0.0094	229/167***	0.0008	0.0050	-0.0036	0.5287	234/162***	0.0000	0.0020	0.1145**	0.0114	226/170***	0.0021	0.0021	0.1202	0.5016	235/161***	0.0001
3	-0.0028	-0.1189	0.9910	183/213	0.0725	0.0019	-0.3882	1.0000	174/222	0.0001	-0.0027	-0.1127	0.9875	182/214	0.0596	-0.0030	-0.1277	1.0000	172/224	0.0052
4	0.0052	0.2165***	0.0000	247/149***	0.0000	-0.0030	-0.2558	1.0000	255/141***	0.0091	0.0052	0.2072***	0.0000	248/148	0.0000	0.0057	0.2349	1.0000	256/140***	0.0000
5	-0.0071	-0.3518	1.0000	122/274	0.0000	0.0055	0.2441***	0.0000	125/271	0.0000	-0.0071	-0.3462	1.0000	121/275	0.0000	-0.0069	-0.3358***	0.0000	127/269	0.0000
		ASCAR	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**		
0 to +1		0.0491	0.2449				0.0646	0.1816				0.0630	0.1877				0.0929	0.0957		
-1 to + 1		0.0303	0.3638				0.0553	0.2626				0.0381	0.3306				0.0904	0.1495		
0 to + 2		0.1671**	0.0274				0.1854**	0.0166				0.2806***	0.0006				0.213***	0.0072		
-5 to + 5		-0.6085	0.9999				-0.5823	0.9998				-0.5650	0.9997				-0.5235	0.9992		
-10 to + 10		-0.5098	0.9866				-0.4616	0.9775				-0.4352	0.9706				-0.3610	0.9415		

Panel 6.4: S&P 500 Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 227 conventional investments in the U.S.A (S&P 500 Index) for five days before and five days after the Full Approval announcement of the Pfizer vaccine in the U.S.A. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 5	SP500 Model 1					SP500 Model 2					SP500 Model 3					SP500 Model 4				
Days	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|
-5	-0.0044	-0.1265	0.9717	101/126	0.0556	-0.0042	-0.1161	0.9599	101/126	0.0556	-0.0043	-0.1259	0.9710	101/126	0.0556	-0.0039	-0.1210	0.9658	102/125	0.0721
-4	-0.0010	0.0446	0.2507	125/102**	0.0556	-0.0009	0.0526	0.2139	130/97**	0.0120	-0.0006	0.0707	0.1434	130/97**	0.0120	-0.0008	0.0372	0.2878	128/99**	0.0232
-3	0.0016	0.0490	0.2301	115/112	0.3953	0.0017	0.0572	0.1944	115/112	0.3953	0.0022	0.0876	0.0936	124/103*	0.0721	0.0018	0.0584	0.1895	122/105	0.1161
-2	-0.0058	-0.2273	0.9997	83/144	0.0000	-0.0056	-0.2158	0.9994	86/141	0.0002	-0.0056	-0.2224	0.9996	82/145	0.0000	-0.0054	-0.2481	0.9999	83/144	0.0000
-1	-0.0010	-0.0606	0.8195	100/127	0.0422	-0.0008	-0.0483	0.7665	101/126	0.0556	-0.0011	-0.0717	0.8600	99/128	0.0316	-0.0004	-0.0296	0.6722	106/121	0.1764
0	-0.0008	-0.2058	0.9990	93/134	0.0040	-0.0006	-0.1906	0.9980	90/137	0.0011	-0.0009	-0.1969	0.9985	90/137	0.0011	-0.0002	-0.1115	0.9535	91/136	0.0017
1	0.0045	0.1369**	0.0196	130/97**	0.0120	0.0047	0.1487**	0.0125	130/97**	0.0120	0.0047	0.1478**	0.0130	129/98**	0.0168	0.0049	0.1975***	0.0015	130/97**	0.0120
2	0.0034	0.1636***	0.0069	140/87***	0.0002	0.0035	0.1750***	0.0042	147/80***	0.0000	0.0035	0.1634**	0.0069	142/85***	0.0001	0.0038	0.1941***	0.0017	147/80***	0.0000
3	-0.0022	-0.0909	0.9145	99/128	0.0316	-0.0021	-0.0858	0.9019	101/126	0.0556	-0.0018	-0.0680	0.8470	103/124	0.0922	-0.0020	-0.1013	0.9364	104/123	0.1161
4	0.0028	0.0596	0.1848	124/103*	0.0721	0.0030	0.0775	0.1215	126/101**	0.0422	0.0027	0.0505	0.2234	116/111	0.3452	0.0034	0.1131**	0.0442	131/96***	0.0084
5	-0.0072	-0.3395	1.0000	71/156	0.0000	-0.0071	-0.3338	1.0000	74/153	0.0000	-0.0071	-0.3280	1.0000	72/155	0.0000	-0.0067	-0.3167	1.0000	75/152	0.0000
		ASCAR	p-values				ASCAR	p-values				ASCAR	p-values				ASCAR	p-values		
0 to +1		-0.0689	0.7687				-0.0419	0.6723				-0.0492	0.6999				0.0860	0.1798		
-1 to + 1		-0.1296	0.8702				-0.0902	0.7836				-0.1209	0.8535				0.0564	0.3119		
0 to + 2		0.0947	0.2052				0.1331	0.1235				0.0073	0.4747				0.2801***	0.0074		
-5 to + 5		-0.5969	0.9967				-0.4793	0.9853				-0.4930	0.9874				-0.3278	0.9318		
-10 to + 10		-0.3170	0.8513				-0.0840	0.6088				-0.1290	0.6642				0.2119	0.2430		

Table 7. The Same-Day Full Approval Announcement of The Pfizer and Moderna Vaccine in Canada

Panel 7.1: JSI Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 49 socially responsible investments in Canada (Jantzi Social Index) for five days before and five days after the same-day Full approval announcement of the Pfizer and Moderna vaccine in Canada. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 6	JSI Model 1					JSI Model 2					JSI Model 3					JSI Model 4				
Days	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|
-5	-0.0018	-0.1784	0.8941	21/28	0.1957	-0.0021	-0.1863	0.9039	20/29	0.1265	-0.0016	-0.1328	0.8236	21/28	0.1957	-0.0019	-0.1545	0.8602	20/29	0.1265
-4	-0.0017	-0.0835	0.7206	20/29	0.1265	-0.0022	-0.0781	0.7077	21/28	0.1957	-0.0016	-0.0714	0.6914	20/29	0.1265	-0.0023	-0.0838	0.7212	24/25	0.5000
-3	0.0096	0.2822**	0.0241	25/24	0.3875	0.0098	0.2505	0.0398	25/24	0.3875	0.0099	0.2937	0.0199	25/24	0.3875	0.0104	0.2554**	0.0369	25/24	0.3875
-2	0.0021	0.02	0.4443	23/26	0.3875	0.0013	0.037	0.3979	25/24	0.3875	0.0022	0.0145	0.4597	23/26	0.3875	0.0010	0.0101	0.4719	28/21	0.1265
-1	0.0023	0.0425	0.3830	22/27	0.2839	0.0034	-0.0277	0.5768	21/28	0.1957	0.0028	0.0972***	0.2482	23/26	0.3875	0.0046	0.0331	0.4083	21/28	0.1957
0	-0.0078	-0.328	0.9892	21/28	0.1957	-0.0085	-0.3159	0.9865	22/27	0.2839	-0.0078	-0.3108	0.9852	23/26	0.3875	-0.0087	-0.3177	0.9869	22/27	0.2839
1	-0.0020	-0.1794	0.8954	17/32	0.0228	-0.0028	-0.1587	0.8666	16/33	0.0111	-0.0020	-0.1615	0.8708	17/32	0.0228	-0.0032	-0.1602	0.8689	19/30	0.0766
2	0.0005	-0.1272	0.8134	20/29	0.1265	-0.0020	-0.0224	0.5624	26/23	0.2839	0.0001	-0.1593	0.8676	20/29	0.1265	-0.0038	-0.1012	0.7607	24/25	0.5000
3	-0.0020	-0.0127	0.5354	23/26	0.3875	-0.0014	-0.0641	0.6733	23/26	0.3875	-0.0017	0.0329	0.4088	25/24	0.3875	-0.0004	-0.0173	0.5482	23/26	0.3875
4	0.0080	0.3637***	0.0054	29/20*	0.0766	0.0092	0.2888**	0.0216	27/22	0.1957	0.0085	0.406	0.0022	30/19**	0.0432	0.0105	0.3399***	0.0087	29/20*	0.0766
5	0.0022	0.1061	0.2288	26/23	0.2839	0.0026	0.0647	0.3254	25/24	0.3875	0.0025	0.1706	0.1162	27/22	0.1957	0.0034	0.1272	0.1866	24/25	0.5000
		ASCAR	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**		
0 to +1		-0.5074	0.9940				-0.4745	0.9906				-0.4722	0.9903				-0.4779	0.9910		
-1 to + 1		-0.4649	0.9699				-0.5022	0.9788				-0.3751	0.9352				-0.4448	0.9639		
0 to + 2		-0.6346	0.9948				-0.4970	0.9777				-0.6316	0.9947				-0.5791	0.9904		
-5 to + 5		-0.0947	0.5792				-0.2123	0.6730				0.1792	0.3526				-0.0689	0.5578		
-10 to + 10		0.5755	0.1897				0.3747	0.2836				1.0381	0.0564				0.5796	0.1880		

Panel 7.2: TSX Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 173 conventional investments in Canada (TSX Index) for five days before and five days after the same-day Full approval announcement of the Pfizer and Moderna vaccine in Canada. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 22-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 6	TSX Model 1					TSX Model 2					TSX Model 3					TSX Model 4				
Days	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|
-5	-0.0014	-0.0662	0.8641	78/95	0.1119	-0.0018	-0.0851	0.8685	73/100	0.0240	-0.0021	-0.0671	0.8112	78/95	0.1119	-0.0014	-0.0959	0.8964	74/99	0.0340
-4	0.0041	0.1393	0.4103	88/85	0.3805	0.0033	0.1066	0.0805	89/84	0.3241	0.0027	0.1501**	0.0242	88/85	0.3805	0.0040	0.0954	0.1048	86/87	0.5000
-3	0.0074	0.1825	0.8453	102/71***	0.0075	0.0075	0.1982***	0.0046	103/70***	0.0049	0.0079	0.1629**	0.0161	102/71***	0.0075	0.0076	0.1887***	0.0065	103/70***	0.0049
-2	0.0051	0.229**	0.0169	115/58***	0.0000	0.0040	0.1967***	0.0048	112/61***	0.0000	0.0031	0.2205***	0.0019	114/59***	0.0000	0.0049	0.1549**	0.0208	101/72**	0.0113
-1	0.0017	-0.0274	0.6971	73/100	0.0240	0.0027	-0.0028	0.5145	76/97	0.0642	0.0040	-0.0180	0.5934	73/100	0.0240	0.0021	0.0482	0.2631	81/92	0.2235
0	-0.0026	0.0113	0.6469	99/74**	0.0240	-0.0035	-0.0321	0.6637	97/76**	0.0472	-0.0042	0.0049	0.4744	100/73**	0.0166	-0.0028	-0.0675	0.8128	97/76**	0.0472
1	-0.0016	-0.0459	0.0858	85/88	0.4396	-0.0028	-0.0812	0.8574	82/91	0.2715	-0.0037	-0.0550	0.7651	84/89	0.3805	-0.0018	-0.1264	0.9518	75/98	0.0472
2	-0.0042	-0.0915***	0.0030	80/93	0.1808	-0.0073	-0.2013	0.9960	75/98	0.0472	-0.0102	-0.1102	0.9263	73/100	0.0240	-0.0050	-0.336	1.0000	60/113	0.0000
3	-0.0001	-0.0105	0.1991	81/92	0.2235	0.0005	0.0162	0.4159	82/91	0.2715	0.0014	-0.0067	0.5350	85/88	0.4396	0.0001	0.0489	0.2599	86/87	0.5000
4	0.0025	0.0272	0.6702	79/94	0.1436	0.0037	0.0622	0.2065	80/93	0.1808	0.0052	0.0294	0.3497	78/95	0.1119	0.0030	0.1126**	0.0693	91/82	0.2235
5	-0.0033	-0.1919	0.7452	71/102	0.0113	-0.0030	-0.1882	0.9934	70/103	0.0075	-0.0024	-0.1789	0.9907	73/100	0.0240	-0.0031	-0.1565	0.9803	76/97	0.0642
		ASCAR	p-values				ASCAR	p-values				ASCAR	p-values				ASCAR	p-values		
0 to +1		-0.0346	0.6262				-0.1134	0.8542				-0.0501	0.6793				-0.1939	0.9644		
-1 to + 1		-0.0620	0.6811				-0.1161	0.8111				-0.0680	0.6973				-0.1457	0.8658		
0 to + 2		-0.1261	0.8309				-0.3147	0.9916				-0.1602	0.8882				-0.5299	1.0000		
-5 to + 5		0.1558	0.2683				-0.0109	0.5172				0.1320	0.3003				-0.1336	0.7019		
-10 to + 10		0.2676	0.2212				-0.0622	0.5709				0.2160	0.2677				-0.3219	0.8222		

Panel 7.3: KLD Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 396 socially responsible investments in the U.S.A (KLD Social Index) for five days before and five days after the same-day Full approval announcement of the Pfizer and Moderna vaccine in Canada. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 6	KLD Model 1					KLD Model 2					KLD Model 3					KLD Model 4				
Days	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|
-5	0.0030	0.1076	0.01614	225/171***	0.00286	0.0029	0.0998**	0.0235	224/172***	0.0039	0.0032	0.1148	0.0112	227/169***	0.0015	0.0030	0.0986***	0.0000	225/171***	0.0029
-4	0.0006	0.0692	0.08427	223/173***	0.00519	0.0004	0.0629	0.1052	222/174***	0.0069	0.0009	0.0755	0.0665	229/167***	0.0008	0.0005	0.0529***	0.0000	223/173***	0.0052
-3	0.0027	0.0920	0.03352	234/162***	0.00012	0.0028	0.0996**	0.0237	236/160***	0.0001	0.0028	0.0897**	0.0371	234/162***	0.0001	0.0029	0.1013	1.0000	234/162***	0.0001
-2	-0.0027	-0.1296	0.99504	159/237	0.00005	-0.0029	-0.1360	0.9966	155/241	0.0000	-0.0025	-0.1177	0.9904	163/233	0.0003	-0.0028	-0.1352***	0.0000	154/242	0.0000
-1	0.0012	0.0332	0.25430	201/195	0.36251	0.0014	0.0432	0.1952	209/187	0.1239	0.0012	0.0270	0.2957	196/200	0.4401	0.0016	0.049	0.6679	203/193	0.2902
0	-0.0005	-0.0794	0.94295	172/224	0.00519	-0.0005	-0.0780	0.9396	175/221	0.0119	-0.0003	-0.0704	0.9195	177/219	0.0197	-0.0004	-0.0726	0.5016	177/219	0.0197
1	0.0016	0.0321	0.26166	209/187	0.12388	0.0013	0.0236	0.3196	202/194	0.3255	0.0018	0.0484	0.1675	215/181**	0.0393	0.0014	0.0229	0.9982	204/192	0.2568
2	0.0017	0.1423***	0.00232	237/159***	0.00004	0.0012	0.1249***	0.0065	229/167***	0.0008	0.0020	0.1646***	0.0005	242/154***	0.0000	0.0012	0.1166	1.0000	225/171***	0.0029
3	-0.0029	-0.1677	0.99958	151/245	0.00000	-0.0029	-0.1689	0.9996	153/243	0.0000	-0.0028	-0.1624	0.9994	153/243	0.0000	-0.0028	-0.1655	1.0000	153/243	0.0000
4	0.0017	0.0559	0.13288	220/176**	0.01187	0.0019	0.0676	0.0891	226/170***	0.0021	0.0017	0.0447	0.1870	219/177**	0.0154	0.0021	0.0715	0.0496	233/163***	0.0002
5	0.0025	0.1052**	0.01817	212/184*	0.07252	0.0028	0.1205***	0.0082	220/176**	0.0119	0.0024	0.0973**	0.0264	207/189	0.1698	0.0030	0.1306	1.0000	221/175***	0.0091
		ASCAR	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**		
0 to +1		-0.0473	0.7473				-0.0544	0.7780				-0.0220	0.6215				-0.0497	0.7578		
-1 to + 1		-0.0141	0.5644				-0.0112	0.5513				0.0050	0.4772				-0.0007	0.5034		
0 to + 2		0.0949	0.1377				0.0705	0.2089				0.1427	0.0506				0.0669	0.2211		
-5 to + 5		0.2608	0.0588				0.2593	0.0599				0.3115**	0.0308				0.2700	0.0526		
-10 to + 10		0.0889	0.3497				0.0668	0.3858				0.2230	0.1664				0.0905	0.3471		

Panel 7.4: S&P 500 Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 227 conventional investments in the U.S.A (S&P 500 Index) for five days before and five days after the same-day Full approval announcement of the Pfizer and Moderna vaccine in Canada. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%

Event 6	SP500 Model 1					SP500 Model 2					SP500 Model 3					SP500 Model 4				
Days	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|	AAR	ASAR	p-values	+ve/-ve	Pr>=|b|
-5	0.0008	-0.0388	0.7206	110/117	0.3452	0.0009	-0.0316	0.6827	107/120	0.2129	0.0011	-0.0178	0.6054	113/114	0.5000	0.0011	-0.0145	0.5867	109/118	0.2977
-4	-0.0005	-0.0419	0.7363	114/113	0.4472	-0.0004	-0.0372	0.7124	116/111	0.3452	-0.0001	-0.0099	0.5593	116/111	0.3452	-0.0003	-0.0524	0.7849	118/109	0.2534
-3	0.0037	0.0981	0.0696	124/103*	0.0721	0.0039	0.1161**	0.0402	125/102*	0.0556	0.0038	0.0907	0.0859	124/103*	0.0721	0.0041	0.1406**	0.0171	123/104*	0.0922
-2	-0.0039	-0.1818	0.9969	86/141	0.0002	-0.0038	-0.1764	0.9961	84/143	0.0001	-0.0036	-0.1629	0.9929	90/137	0.0011	-0.0037	-0.2088	0.9992	84/143	0.0001
-1	0.0015	0.0080	0.4521	96/131	0.0120	0.0017	0.0235	0.3617	97/130	0.0168	0.0015	0.0089	0.4464	94/133	0.0058	0.0021	0.0479	0.2352	102/125	0.0721
0	-0.0011	-0.0814	0.8900	102/125	0.0721	-0.0010	-0.0702	0.8547	104/123	0.1161	-0.0009	-0.0674	0.8451	103/124	0.0922	-0.0008	-0.0745	0.8693	106/121	0.1764
1	0.0021	0.0661	0.1595	121/106	0.1441	0.0022	0.0658	0.1608	123/104*	0.0922	0.0026	0.1011	0.0638	124/103*	0.0721	0.0023	0.0778	0.1206	122/105	0.1161
2	0.0016	0.1619***	0.0073	131/96***	0.0084	0.0017	0.1604***	0.0078	137/90***	0.0007	0.0024	0.1998***	0.0013	140/87***	0.0002	0.0016	0.1436**	0.0153	139/88***	0.0003
3	-0.0021	-0.1237	0.9688	87/140	0.0003	-0.0020	-0.1164	0.9602	86/141	0.0002	-0.0019	-0.1076	0.9474	90/137	0.0011	-0.0018	-0.1214	0.9664	87/140	0.0003
4	0.0031	0.0944	0.0774	126/101**	0.0422	0.0032	0.1055	0.0561	135/92***	0.0017	0.0029	0.0852	0.0995	127/100**	0.0316	0.0036	0.1485**	0.0126	136/91***	0.0011
5	0.0021	0.0367	0.2900	112/115	0.4472	0.0023	0.0523	0.2153	113/114	0.5000	0.0019	0.0288	0.3323	109/118	0.2977	0.0028	0.1055	0.0560	116/111	0.3452
		ASCAR	p-values				ASCAR	p-values				ASCAR	p-values				ASCAR	p-values		
0 to +1		-0.0152	0.5645				-0.0044	0.5185				0.0337	0.3598				0.0033	0.4861		
-1 to + 1		-0.0073	0.5251				0.0191	0.4339				0.0426	0.3554				0.0512	0.3281		
0 to + 2		0.1467	0.1010				0.1560	0.0874				0.2335**	0.0211				0.1468	0.0589		
-5 to + 5		-0.0023	0.5041				0.0918	0.3384				0.1490	0.2492				0.1922	0.1913		
-10 to + 10		0.3932	0.0981				0.5826**	0.0277				0.7400***	0.0075				0.8427***	0.0028		

Table 8. Full Approval Announcement of The Moderna Vaccine in the U.S.A

Panel 8.1: JSI Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 49 socially responsible investments in Canada (Jantzi Social Index) for five days before and five days after the Full Approval announcement of the Moderna vaccine in the U.S.A. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 7	JSI Model 1					JSI Model 2					JSI Model 3					JSI Model 4				
Days	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**
-5	0.0008	-0.0387	0.6068	22/27	0.2839	0.0003	-0.0405	0.6115	22/27	0.2839	0.0009	-0.0115	0.5322	22/27	0.2839	0.0004	-0.0284	0.5789	23/26	0.3875
-4	0.0024	0.0466	0.3721	28/21	0.1265	0.0026	0.0149	0.4583	28/21	0.1265	0.0027	0.0682	0.3165	28/21	0.1265	0.0032	0.0315	0.4126	28/21	0.1265
-3	-0.0006	0.1282	0.1848	29/20*	0.0766	-0.0006	0.1082	0.2245	28/21	0.1265	-0.0004	0.1607	0.1303	30/19*	0.0432	-0.0002	0.1310	0.1796	32/17**	0.0111
-2	0.0028	0.3061**	0.0161	28/21	0.1265	0.0023	0.3057**	0.0162	29/20	0.0766	0.0029	0.3165**	0.0134	28/21	0.1265	0.0024	0.3016**	0.0174	30/19**	0.0432
-1	0.0017	0.2279*	0.0553	26/23	0.2839	0.0032	0.142	0.1601	24/25	0.5000	0.0023	0.2831**	0.0238	26/23	0.2839	0.0049	0.2093*	0.0714	25/24	0.3875
0	-0.0020	0.0645	0.3258	23/26	0.3875	-0.0007	-0.0764	0.7036	22/27	0.2839	-0.0012	0.1433	0.1579	27/22	0.1957	0.0033	0.0309	0.4144	23/26	0.3875
1	0.0019	0.1120	0.2165	26/23	0.2839	0.0035	0.0175	0.4512	22/27	0.2839	0.0024	0.1628	0.1272	28/21	0.1265	0.0052	0.0819	0.2833	24/25	0.5000
2	-0.0015	0.2485**	0.0410	27/22	0.1957	-0.0012	0.215	0.0662	27/22	0.1957	-0.0012	0.2755**	0.0269	29/20*	0.0766	-0.0006	0.238*	0.0479	28/21	0.1265
3	-0.0015	0.0197	0.4452	27/22	0.1957	-0.0005	0.0957	0.2515	27/22	0.1957	-0.0013	-0.0201	0.5558	27/22	0.1957	0.0017	0.0178	0.4505	27/22	0.1957
4	-0.0016	-0.0372	0.6027	21/28	0.1957	-0.0004	-0.1151	0.7897	20/29	0.1265	-0.0011	0.0181	0.4495	27/22	0.1957	-0.0011	-0.0502	0.6375	23/26	0.3875
5	-0.0011	-0.1672	0.8791	20/29	0.1265	-0.0014	-0.1756	0.8905	19/30	0.0766	-0.0010	-0.1600	0.8686	20/29	0.1265	-0.0012	-0.1823	0.8990	20/29	0.1265
		ASCAR	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**		
0 to +1		0.1765	0.1912				-0.0589	0.6147				0.3061	0.0649				0.1128	0.2884		
-1 to + 1		0.4044	0.0511				0.0831	0.3685				0.5892***	0.0086				0.3221	0.0965		
0 to + 2		0.4250**	0.0429				0.1561	0.2641				0.5817***	0.0094				0.3507	0.0782		
-5 to + 5		0.9104**	0.0273				0.4915	0.1498				1.2367***	0.0045				0.7810	0.0496		
-10 to + 10		0.8806	0.0893				0.4923	0.2260				1.3104	0.0227				0.7316	0.1319		

Panel 8.2: TSX Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 173 conventional investments in Canada (TSX Index) for five days before and five days after the Full Approval announcement of the Moderna vaccine in the U.S.A. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 7	TSX Model 1					TSX Model 2					TSX Model 3					TSX Model 4				
Days	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**
-5	-0.0031	-0.1713	0.9942	64/109	0.0004	-0.0037	-0.2054	0.9966	62/111	0.0001	-0.0041	-0.1616	0.9832	62/111	0.0001	-0.0032	-0.2115	0.9973	63/110	0.0002
-4	0.0027	0.0239	0.2128	90/83	0.2715	0.0028	0.0268	0.3620	92/81	0.1808	0.0031	-0.0019	0.5098	90/83	0.2715	0.0028	0.0109	0.4432	92/81	0.1808
-3	-0.0048	-0.0515	0.7675	83/90	0.3241	-0.0050	-0.0618	0.7918	83/90	0.3241	-0.0048	-0.0521	0.7533	83/90	0.3241	-0.0047	-0.0604	0.7865	79/94	0.1436
-2	-0.0048	-0.0846***	0.0001	83/90	0.3241	-0.0055	-0.1128	0.9311	83/90	0.3241	-0.0059	-0.094	0.8917	83/90	0.3241	-0.0049	-0.1376	0.9648	82/91	0.2715
-1	0.0029	0.1762	0.9991	107/66***	0.0007	0.0044	0.229***	0.0013	107/66***	0.0007	0.0062	0.1773***	0.0098	105/68***	0.0019	0.0034	0.2906***	0.0001	117/56***	0.0000
0	0.0005	-0.0856	0.6713	80/93	0.1808	0.0034	0.0196	0.3981	86/87	0.5000	0.0067	-0.0628	0.7957	76/97	0.0642	0.0014	0.1427**	0.0303	100/73**	0.0166
1	0.0025	-0.0662	0.7203	82/91	0.2715	0.0042	-0.0079	0.5416	83/90	0.3241	0.0062	-0.0528	0.7562	85/88	0.4396	0.0031	0.0706	0.1767	93/80	0.1436
2	-0.0033	-0.0590	0.5437	83/90	0.3241	-0.0031	-0.0581	0.7774	85/88	0.4396	-0.0027	-0.0625	0.7946	83/90	0.3241	-0.0031	-0.0480	0.7362	86/87	0.5000
3	-0.0008	0.1241	0.7370	94/79	0.1119	-0.0016	0.0389	0.3043	93/80	0.1436	-0.0038	0.0947	0.1065	92/81	0.1808	-0.0002	-0.0729	0.8311	83/90	0.3241
4	-0.0018	-0.2199	0.4243	60/113	0.0000	-0.0005	-0.1777	0.9903	67/106	0.0019	-0.0011	-0.2017	0.9960	66/107	0.0012	-0.0013	-0.1090	0.9242	77/96	0.0856
5	0.0040	0.1307***	0.0020	92/81	0.1808	0.0036	0.1271	0.0473	91/82	0.2235	0.0033	0.1203	0.0567	92/81	0.1808	0.0040	0.1045	0.0847	92/81	0.1808
		ASCAR	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**		
0 to +1		-0.1518	0.9210				0.0117	0.4566				-0.1156	0.8589				0.2132**	0.0237		
-1 to + 1		0.0244	0.4266				0.2407	0.0338				0.0617	0.3197				0.5039***	0.0001		
0 to + 2		-0.2108	0.9453				-0.0463	0.6376				-0.1782	0.9120				0.1652	0.1048		
-5 to + 5		-0.2832	0.8693				-0.1822	0.7651				-0.2969	0.8805				-0.0201	0.5318		
-10 to + 10		0.3311	0.1710				0.2245	0.2597				0.2899	0.2027				0.1356	0.3485		

Panel 8.3: KLD Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 396 socially responsible investments in the U.S.A (KLD Social Index) for five days before and five days after the Full Approval announcement of the Moderna vaccine in the U.S.A. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21 Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 7	KLD Model 1					KLD Model 2					KLD Model 3					KLD Model 4				
Days	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**
-5	0.0098	0.4411***	0.0000	246/150**	0.0315	0.0099	0.4483**	0.0000	245/151***	0.0000	0.0099	0.4408***	0.0000	247/149***	0.0000	0.0100	0.4513***	0.0003	244/152***	0.0000
-4	-0.0009	-0.0817	0.9480	179/217	0.0000	-0.0013	-0.0928	0.9677	178/218	0.0250	-0.0006	-0.0668	0.9081	183/213	0.0725	-0.0012	-0.0995***	0.0000	177/219	0.0197
-3	-0.0069	-0.4062	1.0000	116/280	0.0039	-0.0069	-0.407	1.0000	114/282	0.0000	-0.0068	-0.396	1.0000	117/279	0.0000	-0.0068	-0.4013	0.5508	117/279	0.0000
-2	-0.0032	-0.1337	0.9961	171/225	0.0000	-0.0034	-0.1394	0.9972	173/223	0.0069	-0.0031	-0.1153	0.9891	177/219	0.0197	-0.0033	-0.131	0.5017	171/225	0.0039
-1	-0.0075	-0.3750	1.0000	130/266	0.0001	-0.0069	-0.3506	1.0000	133/263	0.0000	-0.0078	-0.3642	1.0000	130/266	0.0000	-0.0066	-0.3014***	0.0000	136/260	0.0000
0	-0.0010	-0.1306	0.9953	161/235	0.4800	-0.0005	-0.109	0.9849	162/234	0.0002	-0.0011	-0.135	0.9964	160/236	0.0001	-0.0002	-0.0835	0.9332	163/233	0.0003
1	0.0009	-0.0050	0.5393	198/198	0.0000	0.0010	0.0019	0.4848	199/197	0.4401	0.0009	0.0012	0.4905	201/195	0.3625	0.0012	0.0166	0.1139	201/195	0.3625
2	-0.0067	-0.2768	1.0000	152/244	0.0000	-0.0065	-0.2662	1.0000	153/243	0.0000	-0.0068	-0.2964	1.0000	151/245	0.0000	-0.0063	-0.2723	1.0000	154/242	0.0000
3	0.0093	0.566***	0.0000	308/88***	0.0000	0.0087	0.54	0.0000	301/95***	0.0000	0.0098	0.6029***	0.0000	309/87***	0.0000	0.0086	0.5312	0.7002	294/102***	0.0000
4	-0.0081	-0.5465	1.0000	120/276	0.0000	-0.0079	-0.5419	1.0000	121/275	0.0000	-0.0080	-0.5254	1.0000	123/273	0.0000	-0.0078	-0.5138***	0.0001	124/272	0.0000
5	0.0042	0.1918***	0.0001	250/146***	0.0003	0.0041	0.1898***	0.0001	252/144***	0.0000	0.0043	0.1932***	0.0001	254/142***	0.0000	0.0041	0.1847	0.9999	249/147***	0.0000
		ASCAR	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**		
0 to +1		-0.1356	0.9718				-0.1070	0.9340				-0.1338	0.9701				-0.0669	0.8266		
-1 to + 1		-0.5106	1.0000				-0.4576	1.0000				-0.4980	1.0000				-0.3683	1.0000		
0 to + 2		-0.4124	1.0000				-0.3733	1.0000				-0.4302	1.0000				-0.3391	1.0000		
-5 to + 5		-0.7568	1.0000				-0.7269	1.0000				-0.6610	1.0000				-0.6189	0.9999		
-10 to + 10		0.0155	0.4732				-0.0316	0.5545				0.2470	0.1418				0.0626	0.3929		

Panel 8.4: S&P 500 Reaction

The daily Average Abnormal Returns (AAR), Average Standardized Abnormal Returns (ASAR) for the sample of 227 conventional investments in the U.S.A (S&P 500 Index) for five days before and five days after the Full Approval announcement of the Moderna vaccine in the U.S.A. Additionally, the 2-day (0, +1), 3-day (-1, +1) & (0, +2), 11-day (-5, +5) and 21-day Average Standardized Cumulative Abnormal Returns (ASCAR). +ve/-ve is the cross-sectional number of positive and negative ASARs and Pr >=|b| is the Binomial test p-value. * Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

Event 7	SP500 Model 1					SP500 Model 2					SP500 Model 3					SP500 Model 4				
Days	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**	**AAR**	**ASAR**	**p-values**	**+ve/-ve**	**Pr>=|b|**
-5	0.0041	0.1823***	0.0030	123/104*	0.0922	0.0042	0.1955***	0.0016	122/105	0.1161	0.0042	0.1901***	0.0021	124/103*	0.0721	0.0045	0.1915**	0.0020	128/99**	0.0232
-4	0.0038	0.1301**	0.0250	122/105	0.1161	0.0039	0.1348**	0.0211	125/102*	0.0556	0.0044	0.1679***	0.0057	130/97**	0.0120	0.0039	0.1659***	0.0062	126/101**	0.0422
-3	-0.0057	-0.3338	1.0000	84/143	0.0001	-0.0056	-0.3242	1.0000	85/142	0.0001	-0.0055	-0.3309	1.0000	86/141	0.0002	-0.0054	-0.3234	1.0000	85/142	0.0001
-2	-0.0015	-0.0486	0.7678	117/110	0.2977	-0.0014	-0.0444	0.7483	119/108	0.2129	-0.0011	-0.0286	0.6665	120/107	0.1764	-0.0012	-0.0553	0.7977	119/108	0.2129
-1	-0.0069	-0.2863	1.0000	81/146	0.0000	-0.0067	-0.2708	1.0000	88/139	0.0005	-0.0075	-0.3118	1.0000	76/151	0.0000	-0.0060	-0.2232	0.9996	97/130	0.0168
0	0.0015	-0.1393	0.9821	87/140	0.0003	-0.0013	-0.1209	0.9658	84/143	0.0001	-0.0019	-0.1582	0.9914	81/146	0.0000	-0.0007	-0.0743	0.8685	92/135	0.0027
1	-0.0010	-0.0726	0.8628	109/118	0.2977	-0.0011	-0.0644	0.8342	107/120	0.2129	-0.0009	-0.0523	0.7845	107/120	0.2129	-0.0015	0.0082	0.4509	107/120	0.2129
2	-0.0011	0.0465	0.2416	114/113	0.4472	-0.0009	0.0634	0.1696	115/112	0.3953	-0.0012	0.0239	0.3594	111/116	0.3953	-0.0005	0.0645	0.1656	114/113	0.4472
3	0.0114	0.7473***	0.0000	186/41***	0.0000	-0.0115	0.7495***	0.0000	181/46***	0.0000	-0.0125	0.809***	0.0000	184/43***	0.0000	-0.0113	0.7137***	0.0000	169/58***	0.0000
4	-0.0042	-0.3123	1.0000	80/147	0.0000	-0.0040	-0.289	1.0000	82/145	0.0000	-0.0041	-0.2963	1.0000	79/148	0.0000	-0.0037	-0.2505	0.9999	81/146	0.0000
5	0.0052	0.2273***	0.0003	149/78***	0.0000	0.0053	0.2377***	0.0002	146/81***	0.0000	0.0055	0.24***	0.0001	153/74***	0.0000	0.0055	0.2719***	0.0000	147/80***	0.0000
		ASCAR	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**				**ASCAR**	**p-values**		
0 to +1		-0.2119	0.9880				-0.1854	0.9759				-0.2105	0.9875				-0.0661	0.7594		
-1 to + 1		-0.4982	1.0000				-0.4562	1.0000				-0.5223	1.0000				-0.2893	0.9941		
0 to + 2		-0.1653	0.9248				-0.1219	0.8556				-0.1866	0.9477				-0.0016	0.5056		
-5 to + 5		0.1408	0.2612				0.2672	0.1124				0.2528	0.1254				0.4891	0.0131		
-10 to + 10		0.8563***	0.0024				1.0559***	0.0003				1.2249***	0.0000				1.2296***	0.0000		

Table 9. Events Impact using Dummy Coefficients

The table shows the reaction of JSI, KLD, TSX and S&P 500 constituent securities to the announcement of vaccine approvals. Events 1 to 7 are the announcement dates, and columns 1 to 7 show the average coefficient of the intercept from the dummy regression and p-values for each index.

* Statistically significant at 10%, ** Statistically significant at 5%, *** Statistically significant at 1%.

	Event 1	**Event 2**	**Event 3**	**Event 4**	**Event 5**	**Event 6**	**Event 7**
JSI	0.00295**	0.00049	-0.003**	0.000753	-0.00033	0.000878	0.000401
p-value	**0.043130**	**0.377424**	**0.0220**	**0.206636**	**0.260409**	**0.213598**	**0.244820**
TSX	-0.000610	0.001975**	0.000012	0.000077	0.000320	0.000703	-0.000390
p-value	**0.244053**	**0.017849**	**0.493452**	**0.449873**	**0.136210**	**0.104643**	**0.175747**
KLD	0.000823*	0.000117	0.000281	-0.000**	-0.00095***	0.00081***	-0.00093***
p-value	**0.087269**	**0.416496**	**0.224819**	**0.0142**	**0.000000**	**0.000135**	**0.000269**
S&P 500	0.002194***	-0.000520	-0.001**	-0.000032	-0.00092***	0.000657**	0.000422
p-value	**0.002747**	**0.222995**	**0.0180**	**0.473455**	**0.000014**	**0.037826**	**0.122810**

APPENDIX.B

Table 10. MSCI KLD 400 Social ETF Constituents.

Sourced from **MSCI**

iShares MSCI KLD 400 Social ETF		
Fund Holdings as of	29-Nov-22	
Ticker	Name	Sector
MSFT	MICROSOFT CORP	Information Technology
GOOGL	ALPHABET INC CLASS A	Communication
GOOG	ALPHABET INC CLASS C	Communication
TSLA	TESLA INC	Consumer Discretionary
NVDA	NVIDIA CORP	Information Technology
PG	PROCTER & GAMBLE	Consumer Staples
V	VISA INC CLASS A	Information Technology
HD	HOME DEPOT INC	Consumer Discretionary
MA	MASTERCARD INC CLASS A	Information Technology
ABBV	ABBVIE INC	Health Care
MRK	MERCK & CO INC	Health Care
KO	COCA-COLA	Consumer Staples
PEP	PEPSICO INC	Consumer Staples
MCD	MCDONALDS CORP	Consumer Discretionary
CSCO	CISCO SYSTEMS INC	Information Technology
ACN	ACCENTURE PLC CLASS A	Information Technology
DIS	WALT DISNEY	Communication
BMY	BRISTOL MYERS SQUIBB	Health Care
LIN	LINDE PLC	Materials
VZ	VERIZON COMMUNICATIONS INC	Communication
TXN	TEXAS INSTRUMENT INC	Information Technology
ADBE	ADOBE INC	Information Technology
CRM	SALESFORCE INC	Information Technology
AMGN	AMGEN INC	Health Care
UPS	UNITED PARCEL SERVICE INC CLASS B	Industrials
NKE	NIKE INC CLASS B	Consumer Discretionary
UNP	UNION PACIFIC CORP	Industrials
LOW	LOWES COMPANIES INC	Consumer Discretionary
IBM	INTERNATIONAL BUSINESS MACHINES CO	Information Technology
ORCL	ORACLE CORP	Information Technology
DE	DEERE	Industrials
CAT	CATERPILLAR INC	Industrials
ELV	ELEVANCE HEALTH INC	Health Care
SPGI	S&P GLOBAL INC	Financials

MS	MORGAN STANLEY	Financials
AMD	ADVANCED MICRO DEVICES INC	Information Technology
INTC	INTEL CORPORATION CORP	Information Technology
SCHW	CHARLES SCHWAB CORP	Financials
SBUX	STARBUCKS CORP	Consumer Discretionary
BLK	BLACKROCK INC	Financials
ADP	AUTOMATIC DATA PROCESSING INC	Information Technology
GILD	GILEAD SCIENCES INC	Health Care
PLD	PROLOGIS REIT INC	Real Estate
INTU	INTUIT INC	Information Technology
CI	CIGNA CORP	Health Care
AMT	AMERICAN TOWER REIT CORP	Real Estate
AXP	AMERICAN EXPRESS	Financials
CB	CHUBB LTD	Financials
MDLZ	MONDELEZ INTERNATIONAL INC CLASS A	Consumer Staples
AMAT	APPLIED MATERIAL INC	Information Technology
PYPL	PAYPAL HOLDINGS INC	Information Technology
ADI	ANALOG DEVICES INC	Information Technology
MMC	MARSH & MCLENNAN INC	Financials
BKNG	BOOKING HOLDINGS INC	Consumer Discretionary
VRTX	VERTEX PHARMACEUTICALS INC	Health Care
NOW	SERVICENOW INC	Information Technology
TGT	TARGET CORP	Consumer Discretionary
PGR	PROGRESSIVE CORP	Financials
CSX	CSX CORP	Industrials
ITW	ILLINOIS TOOL INC	Industrials
MMM	3M	Industrials
ZTS	ZOETIS INC CLASS A	Health Care
BDX	BECTON DICKINSON	Health Care
PNC	PNC FINANCIAL SERVICES GROUP INC	Financials
HUM	HUMANA INC	Health Care
APD	AIR PRODUCTS AND CHEMICALS INC	Materials
MPC	MARATHON PETROLEUM CORP	Energy
ETN	EATON PLC	Industrials
CME	CME GROUP INC CLASS A	Financials
TFC	TRUIST FINANCIAL CORP	Financials
LRCX	LAM RESEARCH CORP	Information Technology
EQIX	EQUINIX REIT INC	Real Estate
CL	COLGATE-PALMOLIVE	Consumer Staples
NSC	NORFOLK SOUTHERN CORP	Industrials
CCI	CROWN CASTLE INC	Real Estate

XTSLA	BLK CSH FND TREASURY SL AGENCY	Cash and/or Derivatives
SHW	SHERWIN WILLIAMS	Materials
ICE	INTERCONTINENTAL EXCHANGE INC	Financials
HCA	HCA HEALTHCARE INC	Health Care
VLO	VALERO ENERGY CORP	Energy
ADM	ARCHER DANIELS MIDLAND	Consumer Staples
PSX	PHILLIPS 66	Energy
SRE	SEMPRA	Utilities
GIS	GENERAL MILLS INC	Consumer Staples
EL	ESTEE LAUDER INC CLASS A	Consumer Staples
SNPS	SYNOPSYS INC	Information Technology
CNC	CENTENE CORP	Health Care
MCO	MOODYS CORP	Financials
EW	EDWARDS LIFESCIENCES CORP	Health Care
JCI	JOHNSON CONTROLS INTERNATIONAL PLC	Industrials
A	AGILENT TECHNOLOGIES INC	Health Care
CDNS	CADENCE DESIGN SYSTEMS INC	Information Technology
TRV	TRAVELERS COMPANIES INC	Financials
ROP	ROPER TECHNOLOGIES INC	Information Technology
MAR	MARRIOTT INTERNATIONAL INC CLASS A	Consumer Discretionary
KMB	KIMBERLY CLARK CORP	Consumer Staples
MSI	MOTOROLA SOLUTIONS INC	Information Technology
DXCM	DEXCOM INC	Health Care
NXPI	NXP SEMICONDUCTORS NV	Information Technology
SYY	SYSCO CORP	Consumer Staples
BIIB	BIOGEN INC	Health Care
ADSK	AUTODESK INC	Information Technology
WMB	WILLIAMS INC	Energy
FIS	FIDELITY NATIONAL INFORMATION SERV	Information Technology
AJG	ARTHUR J GALLAGHER	Financials
MCHP	MICROCHIP TECHNOLOGY INC	Information Technology
TT	TRANE TECHNOLOGIES PLC	Industrials
IQV	IQVIA HOLDINGS INC	Health Care
TEL	TE CONNECTIVITY LTD	Information Technology
PRU	PRUDENTIAL FINANCIAL INC	Financials
LNG	CHENIERE ENERGY INC	Energy
HLT	HILTON WORLDWIDE HOLDINGS INC	Consumer Discretionary
SPG	SIMON PROPERTY GROUP REIT INC	Real Estate
PH	PARKER-HANNIFIN CORP	Industrials
ECL	ECOLAB INC	Materials
CARR	CARRIER GLOBAL CORP	Industrials

ALL	ALLSTATE CORP	Financials
NEM	NEWMONT	Materials
PCAR	PACCAR INC	Industrials
EA	ELECTRONIC ARTS INC	Communication
AMP	AMERIPRISE FINANCE INC	Financials
FTNT	FORTINET INC	Information Technology
CMI	CUMMINS INC	Industrials
BK	BANK OF NEW YORK MELLON CORP	Financials
IDXX	IDEXX LABORATORIES INC	Health Care
KR	KROGER	Consumer Staples
ED	CONSOLIDATED EDISON INC	Utilities
HAL	HALLIBURTON	Energy
ILMN	ILLUMINA INC	Health Care
RMD	RESMED INC	Health Care
MTD	METTLER TOLEDO INC	Health Care
SBAC	SBA COMMUNICATIONS REIT CORP CLASS	Real Estate
ALB	ALBEMARLE CORP	Materials
KEYS	KEYSIGHT TECHNOLOGIES INC	Information Technology
WELL	WELLTOWER	Real Estate
CTSH	COGNIZANT TECHNOLOGY SOLUTIONS COR	Information Technology
PPG	PPG INDUSTRIES INC	Materials
DLR	DIGITAL REALTY TRUST REIT INC	Real Estate
ON	ON SEMICONDUCTOR CORP	Information Technology
MTB	M&T BANK CORP	Financials
DFS	DISCOVER FINANCIAL SERVICES	Financials
HPQ	HP INC	Information Technology
ROK	ROCKWELL AUTOMATION INC	Industrials
KDP	KEURIG DR PEPPER INC	Consumer Staples
OKE	ONEOK INC	Energy
FAST	FASTENAL	Industrials
KHC	KRAFT HEINZ	Consumer Staples
WDAY	WORKDAY INC CLASS A	Information Technology
BKR	BAKER HUGHES CLASS A	Energy
ES	EVERSOURCE ENERGY	Utilities
CPRT	COPART INC	Industrials
APTV	APTIV PLC	Consumer Discretionary
TROW	T ROWE PRICE GROUP INC	Financials
STT	STATE STREET CORP	Financials
GWW	WW GRAINGER INC	Industrials
GLW	CORNING INC	Information Technology
AWK	AMERICAN WATER WORKS INC	Utilities

WTW	WILLIS TOWERS WATSON PLC	Financials
ABC	AMERISOURCEBERGEN CORP	Health Care
IFF	INTERNATIONAL FLAVORS & FRAGRANCES	Materials
WBD	WARNER BROS. DISCOVERY INC SERIES	Communication
CBRE	CBRE GROUP INC CLASS A	Real Estate
HIG	HARTFORD FINANCIAL SERVICES GROUP	Financials
VMW	VMWARE CLASS A INC	Information Technology
URI	UNITED RENTALS INC	Industrials
TSCO	TRACTOR SUPPLY	Consumer Discretionary
AVB	AVALONBAY COMMUNITIES REIT INC	Real Estate
WY	WEYERHAEUSER REIT	Real Estate
ULTA	ULTA BEAUTY INC	Consumer Discretionary
NDAQ	NASDAQ INC	Financials
EQR	EQUITY RESIDENTIAL REIT	Real Estate
PFG	PRINCIPAL FINANCIAL GROUP INC	Financials
FTV	FORTIVE CORP	Industrials
LH	LABORATORY CORPORATION OF AMERICA	Health Care
HBAN	HUNTINGTON BANCSHARES INC	Financials
FRC	FIRST REPUBLIC BANK	Financials
CAH	CARDINAL HEALTH INC	Health Care
IR	INGERSOLL RAND INC	Industrials
RF	REGIONS FINANCIAL CORP	Financials
ANSS	ANSYS INC	Information Technology
MKC	MCCORMICK & CO NON-VOTING INC	Consumer Staples
CFG	CITIZENS FINANCIAL GROUP INC	Financials
PWR	QUANTA SERVICES INC	Industrials
DOV	DOVER CORP	Industrials
HPE	HEWLETT PACKARD ENTERPRISE	Information Technology
PODD	INSULET CORP	Health Care
WAT	WATERS CORP	Health Care
XYL	XYLEM INC	Industrials
CHD	CHURCH AND DWIGHT INC	Consumer Staples
EXPD	EXPEDITORS INTERNATIONAL OF WASHIN	Industrials
SYF	SYNCHRONY FINANCIAL	Financials
HOLX	HOLOGIC INC	Health Care
MOS	MOSAIC	Materials
K	KELLOGG	Consumer Staples
CLX	CLOROX	Consumer Staples
VTR	VENTAS REIT INC	Real Estate
DRI	DARDEN RESTAURANTS INC	Consumer Discretionary
NTRS	NORTHERN TRUST CORP	Financials

STE	STERIS	Health Care
BMRN	BIOMARIN PHARMACEUTICAL INC	Health Care
USD	USD CASH	Cash and/or Derivatives
CAG	CONAGRA BRANDS INC	Consumer Staples
IEX	IDEX CORP	Industrials
DGX	QUEST DIAGNOSTICS INC	Health Care
BALL	BALL CORP	Materials
KEY	KEYCORP	Financials
ABMD	ABIOMED INC	Health Care
WAB	WESTINGHOUSE AIR BRAKE TECHNOLOGIE	Industrials
BBY	BEST BUY INC	Consumer Discretionary
FDS	FACTSET RESEARCH SYSTEMS INC	Financials
ATO	ATMOS ENERGY CORP	Utilities
SJM	JM SMUCKER	Consumer Staples
WST	WEST PHARMACEUTICAL SERVICES INC	Health Care
PAYC	PAYCOM SOFTWARE INC	Information Technology
OMC	OMNICOM GROUP INC	Communication
BG	BUNGE LTD	Consumer Staples
IRM	IRON MOUNTAIN INC	Real Estate
AVY	AVERY DENNISON CORP	Materials
FICO	FAIR ISAAC CORP	Information Technology
COO	COOPER INC	Health Care
SWKS	SKYWORKS SOLUTIONS INC	Information Technology
AKAM	AKAMAI TECHNOLOGIES INC	Information Technology
HRL	HORMEL FOODS CORP	Consumer Staples
ALGN	ALIGN TECHNOLOGY INC	Health Care
LKQ	LKQ CORP	Consumer Discretionary
TRMB	TRIMBLE INC	Information Technology
ZBRA	ZEBRA TECHNOLOGIES CORP CLASS A	Information Technology
GRMN	GARMIN LTD	Consumer Discretionary
RCL	ROYAL CARIBBEAN GROUP LTD	Consumer Discretionary
PEAK	HEALTHPEAK PROPERTIES INC	Real Estate
DPZ	DOMINOS PIZZA INC	Consumer Discretionary
PTC	PTC INC	Information Technology
GEN	GEN DIGITAL INC	Information Technology
HST	HOST HOTELS & RESORTS REIT INC	Real Estate
UDR	UDR REIT INC	Real Estate
SIVB	SVB FINANCIAL GROUP	Financials
TECH	BIO TECHNE CORP	Health Care
HUBS	HUBSPOT INC	Information Technology
SNA	SNAP ON INC	Industrials

POOL	POOL CORP	Consumer Discretionary
CHRW	CH ROBINSON WORLDWIDE INC	Industrials
LW	LAMB WESTON HOLDINGS INC	Consumer Staples
SPLK	SPLUNK INC	Information Technology
SWK	STANLEY BLACK & DECKER INC	Industrials
L	LOEWS CORP	Financials
DELL	DELL TECHNOLOGIES INC CLASS C	Information Technology
MAS	MASCO CORP	Industrials
EQH	EQUITABLE HOLDINGS INC	Financials
WTRG	ESSENTIAL UTILITIES INC	Utilities
TRU	TRANSUNION	Industrials
GGG	GRACO INC	Industrials
DAR	DARLING INGREDIENTS INC	Consumer Staples
HSIC	HENRY SCHEIN INC	Health Care
CPB	CAMPBELL SOUP	Consumer Staples
BLDR	BUILDERS FIRSTSOURCE INC	Industrials
VFC	VF CORP	Consumer Discretionary
KMX	CARMAX INC	Consumer Discretionary
BXP	BOSTON PROPERTIES REIT INC	Real Estate
STX	SEAGATE TECHNOLOGY HOLDINGS PLC	Information Technology
DECK	DECKERS OUTDOOR CORP	Consumer Discretionary
MTN	VAIL RESORTS INC	Consumer Discretionary
BWA	BORGWARNER INC	Consumer Discretionary
ALLE	ALLEGION PLC	Industrials
JAZZ	JAZZ PHARMACEUTICALS PLC	Health Care
MKTX	MARKETAXESS HOLDINGS INC	Financials
FLEX	FLEX LTD	Information Technology
BKI	BLACK KNIGHT INC	Information Technology
ARMK	ARAMARK	Consumer Discretionary
CMA	COMERICA INC	Financials
RIVN	RIVIAN AUTOMOTIVE INC CLASS A	Consumer Discretionary
FFIV	F5 INC	Information Technology
NOV	NOV INC	Energy
OC	OWENS CORNING	Industrials
FBHS	FORTUNE BRANDS HOME AND SECURITY I	Industrials
ALLY	ALLY FINANCIAL INC	Financials
KNX	KNIGHT-SWIFT TRANSPORTATION HOLDIN	Industrials
RHI	ROBERT HALF	Industrials
LII	LENNOX INTERNATIONAL INC	Industrials
CGNX	COGNEX CORP	Information Technology
AGCO	AGCO CORP	Industrials

WHR	WHIRLPOOL CORP	Consumer Discretionary
HAS	HASBRO INC	Consumer Discretionary
CPRI	CAPRI HOLDINGS LTD	Consumer Discretionary
TTEK	TETRA TECH INC	Industrials
UGI	UGI CORP	Utilities
BEN	FRANKLIN RESOURCES INC	Financials
JLL	JONES LANG LASALLE INC	Real Estate
LECO	LINCOLN ELECTRIC HOLDINGS INC	Industrials
AOS	A O SMITH CORP	Industrials
FRT	FEDERAL REALTY INVESTMENT TRUST RE	Real Estate
EME	EMCOR GROUP INC	Industrials
ZION	ZIONS BANCORPORATION	Financials
OKTA	OKTA INC CLASS A	Information Technology
SEE	SEALED AIR CORP	Materials
PNR	PENTAIR	Industrials
MIDD	MIDDLEBY CORP	Industrials
ALV	AUTOLIV INC	Consumer Discretionary
CAR	AVIS BUDGET GROUP INC	Industrials
ZI	ZOOMINFO TECHNOLOGIES INC	Communication
ST	SENSATA TECHNOLOGIES HOLDING PLC	Industrials
GME	GAMESTOP CORP CLASS A	Consumer Discretionary
AYI	ACUITY BRANDS INC	Industrials
INGR	INGREDION INC	Consumer Staples
XRAY	DENTSPLY SIRONA INC	Health Care
VOYA	VOYA FINANCIAL INC	Financials
HOG	HARLEY DAVIDSON INC	Consumer Discretionary
MAT	MATTEL INC	Consumer Discretionary
IVZ	INVESCO LTD	Financials
LNC	LINCOLN NATIONAL CORP	Financials
MDU	MDU RESOURCES GROUP INC	Industrials
LBTYK	LIBERTY GLOBAL PLC CLASS C	Communication
NYT	NEW YORK TIMES CLASS A	Communication
SON	SONOCO PRODUCTS	Materials
AXTA	AXALTA COATING SYSTEMS LTD	Materials
LUV	SOUTHWEST AIRLINES	Industrials
ONB	OLD NATIONAL BANCORP	Financials
WU	WESTERN UNION	Information Technology
DAL	DELTA AIR LINES INC	Industrials
UHALB	AMERCO NON-VOTING SERIES N	Industrials
FTI	TECHNIPFMC PLC	Energy
EXPO	EXPONENT INC	Industrials

MHK	MOHAWK INDUSTRIES INC	Consumer Discretionary
NWL	NEWELL BRANDS INC	Consumer Discretionary
AIT	APPLIED INDUSTRIAL TECHNOLOGIES IN	Industrials
LUMN	LUMEN TECHNOLOGIES INC	Communication
TKR	TIMKEN	Industrials
R	RYDER SYSTEM INC	Industrials
AN	AUTONATION INC	Consumer Discretionary
NJR	NEW JERSEY RESOURCES CORP	Utilities
MAN	MANPOWER INC	Industrials
COUP	COUPA SOFTWARE INC	Information Technology
GWRE	GUIDEWIRE SOFTWARE INC	Information Technology
ASGN	ASGN INC	Industrials
CHH	CHOICE HOTELS INTERNATIONAL INC	Consumer Discretionary
NYCB	NEW YORK COMMUNITY BANCORP INC	Financials
PVH	PVH CORP	Consumer Discretionary
TDOC	TELADOC HEALTH INC	Health Care
UMPQ	UMPQUA HOLDINGS CORP	Financials
WFFUT	CASH COLLATERAL USD WFFUT	Cash and/or Derivatives
KSS	KOHLS CORP	Consumer Discretionary
FLS	FLOWSERVE CORP	Industrials
FUL	HB FULLER	Materials
LCID	LUCID GROUP INC	Consumer Discretionary
ORA	ORMAT TECH INC	Utilities
DVA	DAVITA INC	Health Care
AL	AIR LEASE CORP CLASS A	Industrials
CABO	CABLE ONE INC	Communication
PCH	POTLATCHDELTIC CORP	Real Estate
FL	FOOT LOCKER INC	Consumer Discretionary
TDC	TERADATA CORP	Information Technology
BOH	BANK OF HAWAII CORP	Financials
CATY	CATHAY GENERAL BANCORP	Financials
MTH	MERITAGE CORP	Consumer Discretionary
OFC	CORPORATE OFFICE PROPERTIES TRUST	Real Estate
LBTYA	LIBERTY GLOBAL PLC CLASS A	Communication
SIG	SIGNET JEWELERS LTD	Consumer Discretionary
GPS	GAP INC	Consumer Discretionary
COLM	COLUMBIA SPORTSWEAR	Consumer Discretionary
IBOC	INTERNATIONAL BANCSHARES CORP	Financials
RNG	RINGCENTRAL INC CLASS A	Information Technology
MODG	TOPGOLF CALLAWAY BRANDS CORP	Consumer Discretionary
UNFI	UNITED NATURAL FOODS INC	Consumer Staples

MAC	MACERICH REIT	Real Estate
SEM	SELECT MEDICAL HOLDINGS CORP	Health Care
AVA	AVISTA CORP	Utilities
PDCO	PATTERSON COMPANIES INC	Health Care
ITRI	ITRON INC	Information Technology
JWN	NORDSTROM INC	Consumer Discretionary
HBI	HANESBRANDS INC	Consumer Discretionary
ICFI	ICF INTERNATIONAL INC	Industrials
ARCB	ARCBEST CORP	Industrials
WLY	JOHN WILEY AND SONS INC CLASS A	Communication
ODP	ODP CORP	Consumer Discretionary
HTLF	HEARTLAND FINANCIAL USA INC	Financials
MTX	MINERALS TECHNOLOGIES INC	Materials
XRX	XEROX HOLDINGS CORP	Information Technology
UAA	UNDER ARMOUR INC CLASS A	Consumer Discretionary
UA	UNDER ARMOUR INC CLASS C	Consumer Discretionary
COMM	COMMSCOPE HOLDING INC	Information Technology
HAIN	HAIN CELESTIAL GROUP INC	Consumer Staples
GVA	GRANITE CONSTRUCTION INC	Industrials
JACK	JACK IN THE BOX INC	Consumer Discretionary
CMP	COMPASS MINERALS INTERNATIONAL INC	Materials
BKE	BUCKLE INC	Consumer Discretionary
SCHL	SCHOLASTIC CORP	Communication
MD	PEDIATRIX MEDICAL GROUP INC	Health Care
LZB	LA-Z-BOY INC	Consumer Discretionary
HNI	HNI CORP	Industrials
CLB	CORE LABORATORIES NV	Energy
TNC	TENNANT	Industrials
SCHN	SCHNITZER STEEL INDUSTRIES INC CLA	Materials
WWW	WOLVERINE WORLDWIDE INC	Consumer Discretionary
HOUS	ANYWHERE REAL ESTATE INC	Real Estate
DLX	DELUXE CORP	Industrials
TBI	TRUEBLUE INC	Industrials
RGP	RESOURCES CONNECTION INC	Industrials
SCS	STEELCASE INC CLASS A	Industrials
ETD	ETHAN ALLEN INTERIORS INC	Consumer Discretionary
TILE	INTERFACE INC	Industrials
KELYA	KELLY SERVICES INC CLASS A	Industrials
HSII	HEIDRICK AND STRUGGLES INTERNATION	Industrials
ACCO	ACCO BRANDS CORP	Industrials
ESZ2	S&P500 EMINI DEC 22	Cash and/or Derivatives

APPENDIX.C

Table 11. Jantzi Social Index (JSI) Constituents.

SUSTAINALYTICS
a Morningstar company

Jantzi Social Index Constituents (September 2020)

Company Name	Company Name
Agnico Eagle Mines Limited	Keyera Corp.
Air Canada	Kinross Gold Corp
ARC Resources Ltd.	Linamar Corp
B2Gold Corp	Loblaw Companies Ltd
Bank of Montreal	Lundin Mining Corporation
BCE Inc	Magna International Inc
BlackBerry Limited	Metro Inc.
Brookfield Renewable Partners	Pembina Pipeline Corporation
CAE Inc	Restaurant Brands International Inc.
Canadian National Railways	Rogers Communications Inc
Canadian Natural Resources Limited	Royal Bank of Canada
Canadian Tire Corporation Limited	Seven Generations Energy Ltd.
Celestica Inc	Shopify Inc.
Cenovus Energy Inc	Stantec Inc
CGI Inc.	Sun Life Financial Serv Canada
Chartwell Retirement Residences	Suncor Energy Inc
Cogeco Communications Inc	Teck Resources Limited
Enerplus Corporation	TELUS Corp
Finning Intl Inc	Thomson Reuters Corporation
First Capital REIT	Toronto-Dominion Bank
George Weston Ltd	Transcontinental Inc.
Gildan Activewear Inc	Vermilion Energy Inc.
IAMGOLD Corp	Wheaton Precious Metals Corp.
IGM Financial Inc	WSP Global Inc.
Imperial Oil Ltd	Yamana Gold Inc

Sourced from www.sustainalytics.com