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Do earthquakes shake stock prices? Evidence from Turkey

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Abstract

This study investigates the causal effect of the earthquake on construction, transportation, and insurance stocks in Turkey. The results reveal a negative impact on these stocks, implying that a high level of uncertainty resulted in a substantial negative influence on the stock market's value. In addition, the results indicate that stocks are lower than expected values without an earthquake. The point-wise causal effect is the variation between the expected and actual values. It remains relatively stable near zero until the action is implemented, and it quickly decreases. Furthermore, the construction stock is more affected by the earthquake, followed by the transportation stock in relative terms. The findings have important implications for investors and policymakers, highlighting the importance of preparing for natural disasters to reduce their negative impact on the stock market.

Keywords: Stock Market; Earthquake; Causal Inference; Bayesian structural time-series; Counterfactual predicting

JEL code: E44; E66; G18.

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1. Introduction

In general, earthquakes can potentially damage critical infrastructure such as roads, bridges, and ports, disrupting supply chains and decelerating economic activity (Ferreira and Karali, 2015; Tao *et al*., 2022). This can adversely affect companies reliant on such supply chains, leading to stock prices decline. In the aftermath of a significant earthquake, the stock market may witness a reduction in value owing to the extensive damage inflicted upon infrastructure or the disruption of economic activity (Valizadeh *et al*., 2017; Xu *et al*., 2023; Khan *et al*., 2021). Moreover, earthquakes can have a more comprehensive economic impact, resulting in increased uncertainty and negative investor sentiment, which may lead to the transfer of capital to safer assets (Shan and Gong, 2012; Khurshid *et al*., 2023). Furthermore, insurance companies may increase their premiums following an earthquake, affecting companies that rely on insurance to operate and decreasing their stock prices (Tao *et al*., 2019; Derindere Köseoğlu *et al*., 2023). However, the impact of an earthquake on the stock market is generally short-lived as markets tend to recuperate relatively swiftly following a calamity. Similarly, investors may perceive an earthquake as an opportunity to invest in companies that could benefit from the reconstruction and recovery efforts. Therefore, the influence of earthquakes on the stock market may be less significant over the longer term as businesses and investors adjust to the novel reality of the post-earthquake world.

The primary goal of this research is to conclude the earthquake's impact on the construction, transportation, and insurance industries. Historically, the occurrence of an earthquake can cause significant damage to buildings and infrastructure, as well as affect the stock market. For instance, following the “Loma Prieta earthquake in 1989”, the Dow Jones Industrial Average (DJIA) fell by 7.2 % the following week (Aiuppa et al., 1993). Similarly, the Northridge earthquake in 1994 led to a 2.5% decrease in the DJIA on the day of the earthquake (Tao *et al*., 2020). Furthermore, the Kobe earthquake in 1995 was devastating and caused a significant impact on the stock market, with the Nikkei index falling by 5%. The Shanghai Composite Index dropped over 15% after

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the 2008 earthquake in China (Shan and Gong, 2012). Additionally, the earthquake in Chile in 2010 caused a temporary drop in the stock market (Ruiz and Barrero, 2014), but it quickly recovered in the days following. The 2010 earthquake in Haiti was one of the worst disasters and significantly impacted the global stock market, while companies involved in relief efforts experienced increased stock prices. The Tohoku earthquake and tsunami in Japan in 2011 were among the most powerful earthquakes in recorded history (Takao *et al*., 2013), and explored that insurance stock prices declined following the earthquake. However, the decline in stock values for non-life insurance businesses was less than that for life insurance companies. Moreover, this event significantly impacted the Japanese stock market, leading to a drop of over 10 % in the Nikkei index following the quake (Tao *et al*., 2019). Similarly, the earthquake in Christchurch in 2011 obstructed the New Zealand stock market, resulting in a 2.3 % decrease in the index on the day of the earthquake. The Kumamoto earthquakes that occurred in 2016 were a series of earthquakes that struck Japan, significantly impacting the Japanese stock market. The Nikkei index decreased by over 3 % in the days following the earthquake.

In this regard, Turkey experienced several episodes of the earthquake, which had severe consequences, resulting in volatility and uncertainty. For example, the Marmara earthquake in 1999 caused extensive damage and loss of life. As a result, the Borsa Istanbul stock exchange was closed for several days, and the BIST-100 index experienced a 13 % drop. Similarly, during the Van earthquake in 2011, the BIST-100 index decreased by 6.7 % on the first trading day following the earthquake. More recently, the Elazig earthquake in 2020 caused the BIST-100 index to drop by 1.66 % (Güleç, 2020; Yildirim and Alola, 2020). Meanwhile, the stock exchange suspended trading for five days for the first time in 24 years in February 2023. The subsequent selloff erased $35 billion after the devastating earthquake, with a three-month state of emergency declared for affected areas. The earthquake followed a panic among investors after the massive death toll and at least $1bn worth of building damage. As a result, the BIST-100 index has lost 16 % and entered a technical bear market after falling from its January high. The slump in stocks is the worst weekly performance since the 2008 global financial crisis. The government announced steps to encourage corporations to repurchase their stock and directed pension funds to boost their stock allocation. Earthquakes might cause major stock market volatility and uncertainty, resulting in index decreases, as evidenced by previous earthquakes in various countries. Thus, determining the causal link between earthquakes and the stock market is essential for controlling volatility and creating mitigation plans to lessen their effects.

This study has the following contributions to the literature: First, the study significantly adds to the body of knowledge about how natural disasters affect financial markets. It compared and verified that the earthquake has negatively influenced the stock market. It underlines the need to consider external factors like natural disasters in financial market analysis by confirming the detrimental effects of the earthquake on the stock market. Second, as far as we know, no research has attempted to determine the causal inference of the earthquake's influence on the stock market. Investors see the earthquake as disruptive news, causing fear in the market, and the market's reaction is sharp. The stock market wouldn't have decreased in value if there hadn't been an earthquake. As a result, the findings are significant as a benchmark for nations facing similar challenges. Finally, in terms of technique, this study provides a somewhat reliable way to estimate the stock market's response to the earthquake using causal inference. The study estimates using a counterfactual prediction model and includes control variables based on major stock exchanges worldwide to adjust for correlation with the construction, transportation, and insurance stocks. This approach ensures the validity of the causal inference. The results reveal a significant negative influence on the stock market value during the post-treatment period. The outcome finds a sharp deviation from the counterfactual predictions, highlighting the high uncertainty caused by the earthquake. The results indicate a rapid divergence from counterfactual projections, with the real stock falling below what would have been predicted without an earthquake.

The literature review is given in section 2. The methodology is outlined in section 3. The data is explained in section 4. Empirical results and robustness are presented in section 5 and 6, respectively. Finally, section 7 shows the conclusions.

2. Literature review

The impact of earthquakes on different sectors of stocks varies. Retail, real estate, and banking sectors sometimes experienced positive returns, while the food, steel, and forestry sectors experienced negative returns. However, the earthquake has directly impacted different sectors in some countries and reacted negatively. Moreover, some disasters do not affect firm earnings and stock returns. Aiuppa *et al*. (1993) investigated the insurance stock prices' response to the earthquake. The results showed that the market may increase insurance stock prices. Shan and Gong (2012) found that companies closer to the epicenter experienced significantly lower stock returns following the earthquake. In addition, this trend is not observed before or following the earthquake. Takao *et al*. (2013) found that insurance companies' stock prices declined after the earthquake. However, the spread of this decline was narrower for non-life insurance company stock prices than for life insurance. Scholtens and Voorhorst (2013) used event methodology to examine financial markets' response to earthquakes in 21 countries. The outcome showed that financial markets' reaction to earthquakes has been more pronounced recently. Moreover, the repone of financial markets is the same irrespective of all countries of the levels of earthquakes. Ruiz and Barrero (2014) showed that the Chilean earthquake of 2010 stock market volatility surged dramatically in the next five trading days. Moreover, positive returns were observed in the retail, real estate, and banking sectors, while negative returns were seen in the food, steel, and forestry sectors. Ferreira and Karali (2015) explained the stock market reaction to earthquakes and confirmed that markets are robust to earthquake shocks. Jaussaud *et al*. (2015) examined the stock price volatility before and after the disaster.

The outcome indicates higher volatility in the Japanese stock market after the earthquake. Seetharam (2017) found that natural disasters have reduced stock market returns. Valizadeh *et al*. (2017) discussed the earthquake on the stock market in 2011 Japan. The finding indicated that the earthquake has a short-run impact on all sector indices with heterogeneous components. Bourdeau-Brien and Kryzanowski (2017) confirmed that calamities significantly influence returns following the peak of disaster. Moridaira (2019) examined the impact of the East Japan earthquake on the stock market. The results did not reveal any statistically significant impact on the stock market. Nevertheless, the aggregate magnitude of the effect was bigger than that observed during the global recession of 2008.

Tao *et al*. (2019) investigated the effect of the Tohoku earthquake on the stock market. The results negative reaction returns after the event. However, construction is the only sector that responds favorably to individual equities, primarily from those with high demand in the recovery. Tao *et al*. (2020) examined the Northridge Earthquake impact on the stock market. The outcomes show that the earthquake did not affect the whole market, while 20 stocks reacted positively and 23 stocks reacted negatively. Güleç (2020) stated that earthquakes have no substantial association with Turkish stock markets. Yildirim and Alola (2020) found that earthquakes have a dynamic effect on the stock. Similarly, the earthquake has no meaningful influence on the stock in the short run, while the long-run effect of the earthquake is significant and negative. Pagnottoni *et al*. (2022) investigated how different stock markets respond to natural hazard shocks, finding that European countries' stock indexes show greater responsiveness to such shocks. Tao *et al*. (2022) determined the economic response to the California earthquake by measuring the abnormal volatility of the stock market. The outcome reveals no impact of the earthquake on the market. However, the earthquake has influenced some sectors, such as Industries, Capital Goods, and Energy

Companies. Ünvan and Özdemir (2023) looked into how natural disasters affected the stock market in Turkey. The results imply that stock prices are significantly impacted negatively by earthquakes. Wang et al. (2020) used the evaluation of publicly traded companies to gauge how corporations responded to natural disasters. The outcomes validated the mild effect of the earthquake on the stock market. Chang *et al*. (2020) examined the natural disasters in financial sectors in different countries. They conclude that disaster negatively affects financial risks high in com while smaller in the lower income countries. Kong *et al*. (2021) examined the influence of natural disasters on capital markets in China. The results of the study indicate that earthquakes do not have a significant impact on firm earnings and stock returns. This suggests that the pessimistic views expressed by analysts after earthquakes are not based on rational judgment. Chen et al. (2023) discovered that financial enterprises' capital market responses differ depending on the type of natural disaster. Banks respond exclusively to earthquakes, whereas insurance firms have insignificant cumulative abnormal returns to all three types of natural disasters. In order to overcome the previous literture limitation, the present work makes accurate counterfactual predictions using control time series that were not subjected to any treatment by using the causal inference approach. This study also considers how earthquakes affect the stock market and gives stakeholders important information. This study provides a complete understanding of the impact of conflicts by comparing projected and observed circumstances.

3. Methodology

Causal inference is a statistical method to determine the relationship between an intervention and its corresponding outcome. This study evaluates the impact of an intervention on a dependent variable by comparing observed results with counterfactual estimations of the outcome in the absence of the intervention. This approach emphasizes assessing the intervention's causal effect, considering control variables to provide a more precise prediction of the hypothetical outcome without the intervention, thereby mitigating any confounding variables. The utilization of the difference-in-difference (DD) approach is constrained in its ability to analyze causal effects. Brodersen *et al*. (2015) have succinctly summarized the limitations of this technique as follows: the method presupposes independently and identically distributed data, as DD is founded on a static regression model that disregards the temporal aspect of the approach. The utilization of static models in analyzing serially correlated data has yielded favorable outcomes characterized by precise conclusions and limited uncertainty ranges (Solon, 1984; Bertrand *et al*., 2004; Hansen, 2007a, 2007b). The event method primarily focuses on the pre-and post-intervention aspects, disregarding the crucial aspect of the evolving effect over time, which is essential for causal inference. Previous research has certain limitations in creating a synthetic control from a set of predictor variables when conducting DD analysis based on time series data. This study, however, addresses this issue and examines the causal effect while avoiding such limitations (Feng and Li, 2022).

The limitations associated with DD methods can be effectively addressed by utilizing state-space models to establish the temporal progression of a significant outcome. Furthermore, the comprehensive Bayesian approach, incorporating a spike-and-slab prior, effectively mitigates the risk of overfitting by incorporating subsequent uncertainty regarding the inclusion of variables and their impact on the forecasts of this study.

The causal inference method labeled by Brodersen *et al*. (2015) is employed in this context. The method starts with Bayesian structural time-series models, defined by equations (1). Then, it describes the models that constitute the method's foundation.

$$y_t = Z_t^T \alpha_t + \varepsilon_t \tag{1}$$

$$\alpha_{t+1} = T_t \alpha_t + R_t \eta_t \tag{2}$$

where $\varepsilon_t \sim N(0, \sigma_t^2)$ and $\eta_t \sim N(0, Q_t)$ are independent of all other unknowns.

The link between observed data y_t to a latent d-dimensional state vector α_t is established in Equation (1). The evolution of state vector at α_t through time is stated by Equation (2). In this study, y_t is a scalar observation, Z_t is a d-dimensional output vector, T_t is a $d \times d$ transition matrix, R_t is a $d \times q$ control matrix, $\varepsilon_t$is a scalar observation error with noise variance σ_t^2, and η_t is a q-dimensional system error with a $q \times q$ state-diffusion matrix Q, where $q \leq d$."

The regression model produces counterfactual predictions and serves as a vital component in the design under examination in this study. A synthetic control is constructed by combining various untreated markets to accomplish this. The capacity to clarify the fluctuating factors in the market that are not readily discernible through broader seasonal sub-models is facilitated by the observed reactions from these marketplaces.

The methodology employed in this study to generate accurate counterfactual predictions relies significantly on control time series that were not subjected to any treatment. The model considers various components, with particular emphasis on the effects of additional latent factors that would not be otherwise accounted for by the model. Linear regression is a conventional method for incorporating control variables into the model. The coefficients within the model can either remain constant or vary over time. The present study presents the incorporation of contemporaneous variables with fixed coefficients, which can be represented in state-space format by establishing a specific setting $Z_t = \beta^t x_t$ and $\alpha_t = 1$.

To establish a standardized terminology, we shall employ the symbol θ to denote the comprehensive set of model parameters. Similarly, we will utilize $\alpha = (\alpha_{1,\ldots\ldots\ldots,}\alpha_m)$ to represent the entirety of the state sequence.

According to Brodersen *et al*. (2015), a Bayesian method of inference may be modified by providing a prior distribution $\rho(\theta)$ on the model parameters and a distribution $\rho(\alpha_0\theta)$ on the starting state values, and sample from $\rho(\alpha, \theta_y)$ using the Markov Chain Monte Carlo (MCMC)

Concerning the estimation (point-wise) of the impact,

$$\emptyset_t^\tau := y_t - \sim y_t^\tau \quad (3)$$

is constructed for each draw τ and for each time point $t = n + 1, \dots \dots, m$, where n is the time the treatment happens, to gather findings from the a posteriori causal effect.

The cumulative sum of causal is calculated by:

$$\sum_{t=n+1}^{t} \emptyset_t^\tau \ \forall \ t = n + 1, \dots \dots ., m \quad (4)$$

4. Data

We use daily data of the BIST transportation, construction, and insurance stocks for analysis from 9 January 2023 to 6 March 2023. The earthquake in Turkey prompted extreme uncertainty and fear that negatively affected the stock market. The treatment date is 6 February 2023, when the earthquake occurs. Similarly, we set 9 January 2023 as the pretreatment period; 6 February 2023 to 6 March 2023 as the post-treatment period. The study considers the control variables and establishes a more accurate causal relationship between the treatment and the stock market outcomes. The summary statistic is highlighted in Table 1. It shows that the transportation stock has the highest standard deviation, followed by the construction stock. These stocks are negatively skewed and have platykurtic distribution. Moreover, the stocks are normally distributed.

Table 1. Descriptive statistic

	BIST transportation	BIST construction	BIST insurance
Mean	15541.881	6869.807	4707.712
Std. Dev.	815.376	441.193	241.607
Skewness	-0.138	-0.450	-0.461
Kurtosis	2.354	2.421	2.819
Jarque-Bera	0.760	1.770	1.364

The study estimates a model to demonstrate a relationship in the pre-period, which is then applied to the post-period, with the prediction providing a counterfactual estimate. This approach helps to control for confounding factors and establish a more accurate causal relationship between the treatment and the stock market outcomes. The study uses eleven major global stock market indexes as covariates to predict these stock indexes. The result found that during the pretreatment period, the trends of the covariates were similar. This suggests that the covariates could be used to offer a better counterfactual prediction of these stock indexes. The eleven covariates include the Jones Index (DJI), the S&P 500 index (SPX), the FTSE 100 index (FTSE), the French CAC 40 index (FCHI), the Nikkei 225 Index (N225), the Korea composite index (KS11), the Hang Seng Index (HSI), Russia Index (MOEX), BSE Sensex the Shanghai stock index (SSE) and the Taiex index (TWII).

5. Empirical analysis

Figure 1 shows the earthquake's original, point-wise, and cumulative causal effects on BIST transportation construction and construction stocks. Similarly, the solid line indicates data, while the dotted line denotes the counterfactual prediction for the post-treatment period. The point-wise causal effect means the difference between observed and counterfactual predictions. Similarly, the cumulative effect of the intervention by adding up the point-wise contributions. The vertical dashed line means the treatment dividing line. It shows a sharp divergence from counterfactual predictions, and the actual stock was lower than expected in the absence of an earthquake, resulting in a substantial negative impact on the construction stock (see panel (a)) and transportation stock value (see panel (b)). The two curves suggest a reconvening pattern in the stock market. This indicates that the earthquake-induced a high level of uncertainty. The point-wise causal effect remains relatively stable near zero until the action is implemented. Finally, the cumulative impact is obtained by incorporating the causal effect in the third panel. In relative terms, the post-treatment period shows a negative effect. These results are supported by Ruiz and Barrero (2014), Tao *et al*. (2019), Tao *et al*. (2020), and Yildirim and Alola (2020), which states that natural disaster has a negative effect on stock market returns.

(a) (b)

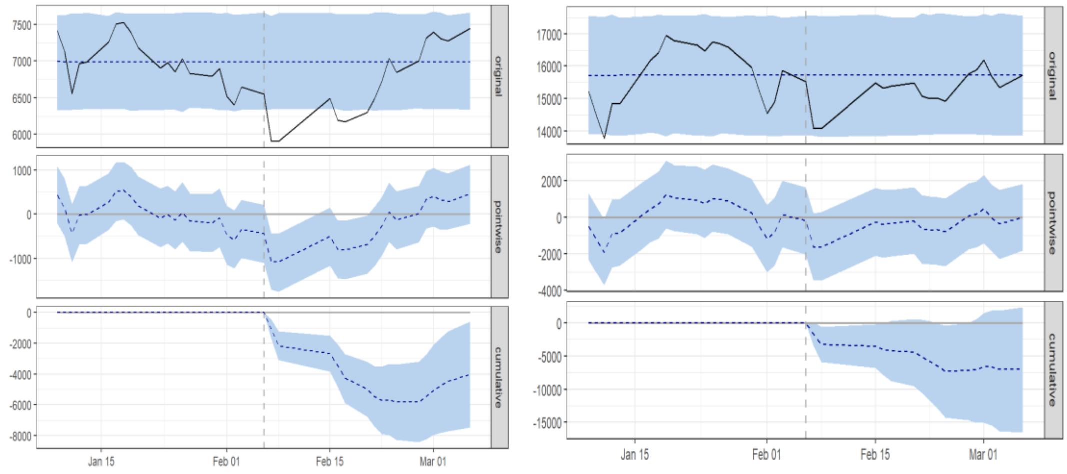

Figure 1. Earthquake effect on BIST construction and transportation stocks.

The average value of the BIST construction was 6.74K in the post-intervention period. However, the expected value would be 6.99K without intervention in the 95% interval of this counterfactual prediction [6.77K, 7.21K]. The intervention's causal effect on the BIST construction is -0.25K with a 95% interval of [-0.47K, -0.04K]. The response variable had an overall value of 107.82K post-intervention. However, there is expected to be a sum of 111.82K if there is no earthquake. The 95% interval of this prediction is [108.39K, 115.28K]. The BIST construction decreased by -4% in relative terms. The 95% interval of this percentage is [-7%, -1%]. Similary, the average value of the BIST transportation stock was 15.28K in the post-intervention period. However, the expected value would be 15.72K without intervention in the 95% interval of this counterfactual prediction [15.14K, 16.32K]. The intervention's causal effect on the BIST transportation is -0.44K with a 95% interval of [-1.03K, 0.14K]. The BIST transportation had an overall value of 244.53K in post-intervention. However, there is expected to be a sum of 251.51K if there is no earthquake. The 95% interval of this prediction is [242.22K, 261.08K]. The BIST transportation decreased by -3% in relative terms. The 95% interval of this percentage is [-7%, +1%] (Table 2).

Table 2. Earthquake causal effect on BIST construction and transportation stocks

	BIST construction		BIST transportation	
	Average	Cumulative	Average	Cumulative
Actual	6739	107824	15283	244531
Prediction	6989 (108)	111819 (1730)	15720 (300)	251514 (4804)
95% CI	[6775, 7205]	[108393, 115281]	[15139, 16318]	[242223, 261081]
Absolute	-250 (108)	-3996 (1730)	-436 (300)	-6983 (4804)
95% CI	[-466, -36]	[-7457, -569]	[-1034, 144]	[-16551, 2308]
Relative effect	-3.6% (1.5%)	-3.6% (1.5%)	-2.8% (1.9%)	-2.8% (1.9%)
95% CI	[-6.7%, -0.51%]	[-6.7%, -0.51%]	[-6.6%, 0.92%]	[-6.6%, 0.92%]

Note: The 'Average' column discusses the average post-intervention period. The 'Cumulative' column sums up individual time points.

Figure 2 shows a sharp divergence from counterfactual predictions, and the actual BIST insurance stock was lower than expected in the absence of an earthquake, resulting in a substantial negative impact on the insurance stock. The point-wise causal effect remained relatively stable near zero until the earthquake occurred. In relative terms, the post-treatment period shows a negative effect.

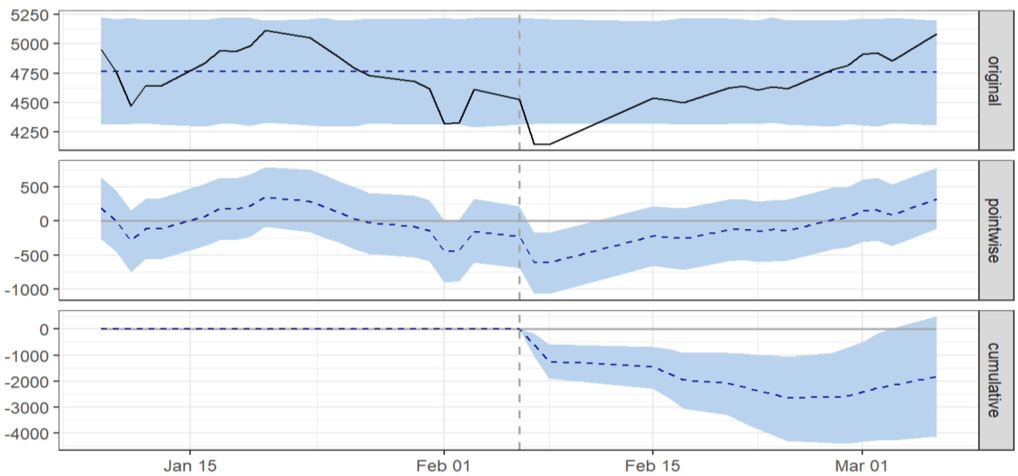

Figure 2. The time-varying causal effect of the earthquake on BIST insurance.

The average value of the BIST insurance stock was 4.65K in the post-intervention period. However, the expected value would be 4.76K without intervention in the 95% interval of this counterfactual prediction [4.62K, 4.90K]. The intervention's causal effect on the BIST insurance stock is -0.11K with a 95% interval of [-0.26K, 0.03K]. The BIST insurance stock had an overall value of 74.36K in post-intervention. However, there is expected to be a sum of 76.20K if there is no earthquake. The 95% interval of this prediction is [73.88K, 78.47K]. The BIST insurance stock decreased by -2% in relative terms. The 95% interval of this percentage is [-5%, +1%] (Table 3).

Table 3. Causal earthquake effect on BIST insurance stock.

	Average	Cumulative
Actual	4648	74362
Prediction	4762 (72)	76195 (1153)
95% CI	[4618, 4905]	[73881, 78474]
Absolute effect (s.d.)	-115 (72)	-1834 (1153)
95% CI	[-257, 30]	[-4112, 481]
Relative effect	-2.4% (1.5%)	-2.4% (1.5%)
95% CI	[-5.4%, 0.63%]	[-5.4%, 0.63%]

6. Robustness results

The findings of the causal inference are exhibited in Figure 3. The two curves suggest a reconvening pattern in the stock market in the last week of February 2023, which coincides with the resumption of stock market activities. This indicates that the earthquake induced a high level of uncertainty, resulting in a substantial negative influence on the stock market's value on a subsequent day. The point-wise causal effect refers to the variation between the expected and actual data, and it remains relatively stable near zero until the action is implemented, at which point it quickly decreases and then increases. In relative terms, the post-treatment period shows a negative impact, as evidenced by the BIST-100 index declining by -30%.

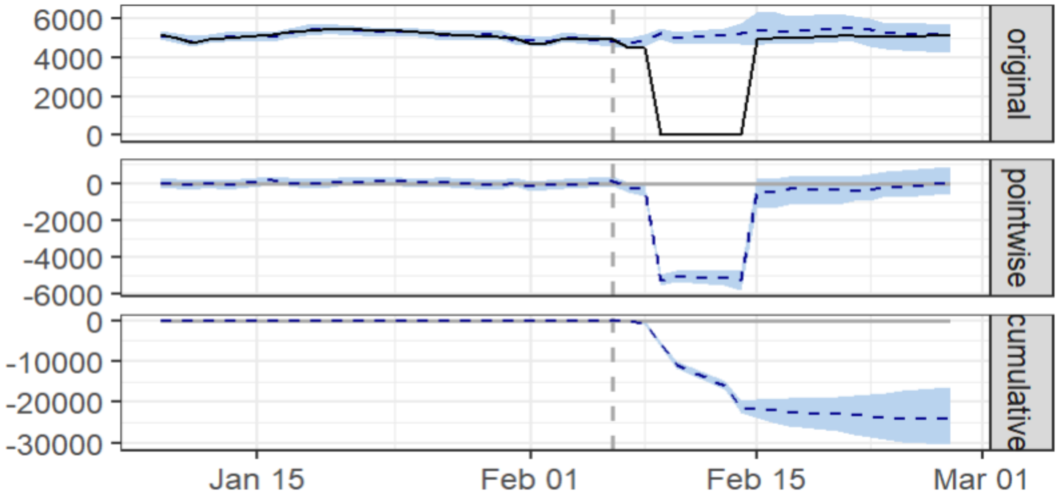

Figure 3. The causal effect of the earthquake on the BIST-100.

Table 4 highlights the results of the BIST-100 index. It shows that the BIST-100 had an average value of 3.65K following the earthquake. On the other hand, without intervention, the expected average response would be 5.24K. The 95% interval of this counterfactual prediction is [4.73K, 5.66K]. The difference between the prediction and the observed response is -1.60K, an estimate of the causal effect of the intervention with a 95% interval of [-2.02K, -1.08K]. After adding all the data points, the BIST-100 had a total value of 54.68K during the post-intervention period. On the other hand, the expected sum would be 78.61K without an earthquake, with a 95% interval [70.88K, 84.94K]. In relative terms, the BIST-100 declined by -30 %. The 95% interval of this percentage is [-38%, -21%]. It implies that the negative impact detected caused by the earthquake is statistically significant.

Table 4. The causal effect of the earthquake on the BIST-100 index.

	Average	Cumulative
Actual	3645	54676
Prediction (s.d.)	5240 (261)	78605 (3908)
95% CI	[4725, 5663]	[70881, 84938]
Absolute effect (s.d.)	-1595 (261)	-23929 (3908)
95% CI	[-2017, -1080]	[-30261, -16204]

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Relative effect (s.d.)	-30% (5%)	-30% (5%)
95% CI	[-38%, -21%]	[-38%, -21%]

Note: The ' average' column reflects the average post-intervention time. Each time points are totaled in the 'Cumulative' column.

7. Conclusion

The study evaluates the earthquake's impact on BIST construction, transportation, and insurance stocks. The finding shows that the earthquake in Turkey substantially impacted these stocks, experiencing a decrease in their value. The earthquake-induced a high level of uncertainty, as evidenced by the reconvening pattern in the stock market. In relative terms, the construction stock is more affected by the earthquake, which decreased by -4%.

The policy implications are listed here. Firstly, policymakers should develop effective risk management strategies to mitigate the potential negative impact of earthquakes, including insurance coverage, promoting building codes emphasizing earthquake-resistant structures, and strengthening transportation infrastructure. Secondly, policymakers should improve disaster preparation and response capabilities, including developing effective emergency response plans and enhancing communication networks between agencies and stakeholders. Similarly, investors should be aware of the risks of investing in regions prone to natural disasters. This includes considering the potential impact of natural disasters on the stock market and adjusting investment strategies accordingly. Moreover, the study highlights the importance of monitoring and regulating financial markets during periods of high uncertainty. Policymakers and law enforcement agencies must closely monitor financial markets during such periods and implement measures to ensure market stability and prevent panic selling. Lastly, investors should consider diversifying their portfolios by investing in various industries and sectors, including those less vulnerable to natural disasters. This preliminary investigation offers significant insights into the immediate consequences of the recent earthquake in Turkey on specific sectors of the

BIST. However, additional scholarly inquiry could delve into the enduring ramifications of this seismic event on these industries. To acquire a more comprehensive understanding of the timing for stabilizing and potentially recovering lost value, it is recommended that future research focuses on monitoring the recovery trajectory of construction, transportation, and insurance stocks in the subsequent months and years. Furthermore, it is suggested to broaden the scope of the study to evaluate the effects on many significant sectors within the Turkish economy, including but not limited to manufacturing, tourism, energy, and banking. The analysis of correlations among the performances of different industries following an earthquake can unveil significant interdependencies and risk factors that may not be readily discernible when considering sectors individually.

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