AN EVENT STUDY ANALYSIS OF GREEN BOND ISSUANCE: SIGNALING CORPORATE COMMITMENT AND MARKET PERCEPTION IN AN EMERGING ECONOMY (THE CASE OF PT XYZ, INDONESIA)

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Abstract

This study examines the short-term stock market reaction to the green bond issuance announcement by PT XYZ, a publicly listed Indonesian bank, using an event study methodology. The analysis focuses on the announcement date of 21 June 2022 as the event day and applies an eleven-trading-day event window (t_{-5} to t_{+5}) to capture both pre-announcement and post-announcement market responses. Abnormal Return (AR) and Cumulative Abnormal Return (CAR) are calculated using the Mean Adjusted Return Model, which is appropriate for descriptive single-firm event studies over short horizons. The results reveal a significant positive abnormal return of 4.17% on the event day, indicating that investors initially perceived the green bond issuance as value-relevant information and a credible sustainability signal. However, abnormal returns exhibited volatility in the post-event period, and cumulative abnormal returns progressively adjusted toward their pre-event level, suggesting efficient incorporation of information and short-term market efficiency. Interpreted through the lens of Signaling Theory, the findings indicate that green bond issuance functions as a credible corporate signal that generates immediate investor response, although its valuation impact is transitory. This study contributes to the green finance literature by providing event study evidence from an emerging market context and highlights the role of credibility in shaping short-term investor reactions to sustainability-linked corporate actions.

Keywords: Green Bond, Event Study, Abnormal Return (AR), Cumulative Abnormal Return (CAR), Signaling Theory, Case Study, Indonesia

INTRODUCTION

The global financial landscape is increasingly shaped by a shift toward sustainable and responsible investment, positioning green bonds as a cornerstone of capital market innovation (Flammer, 2021). Green bonds are debt instruments whose proceeds are explicitly earmarked for environmentally beneficial projects such as renewable energy development, energy efficiency, and clean water management (Climate Bonds Initiative, 2024). These instruments play a critical role in mobilizing private capital to support the Sustainable Development Goals (SDGs) and the commitments outlined in the Paris Agreement (United Nations, 2015). Reflecting this growing importance, the cumulative volume of aligned green, social, sustainability, and sustainability-linked debt issuance globally surpassed USD 5.4 trillion by the third quarter of 2024 (Climate Bonds Initiative, 2024).

In emerging economies, green bonds have gained particular relevance as policy-supported instruments to bridge climate-financing gaps while strengthening capital market credibility (Asian Development Bank, 2022). In Indonesia, the sustainable bond market has demonstrated a clear upward trajectory in issuance volume over recent years (Asian Development Bank, 2022). This development has been supported by the Financial Services Authority Regulation POJK No. 60/POJK.04/2017, which establishes formal criteria for the issuance, monitoring, and reporting of green bonds (Otoritas Jasa Keuangan, 2017). Within this regulatory framework, PT XYZ, a major publicly listed bank in the Indonesian banking sector, issued green bonds in 2022, signaling both regulatory compliance and a strategic commitment to sustainable finance (Otoritas Jasa Keuangan, 2017).

Beyond their role as financing instruments, green bonds also function as strategic corporate communication tools in capital markets (Flammer, 2021). From an informational perspective, the issuance of green bonds represents a deliberate corporate action that conveys signals regarding a firm's long-term orientation and environmental commitment (Spence, 1973). For publicly traded companies, such signals are rapidly incorporated into stock prices as investors update their expectations (Fama, 1970). As a result, stock market reactions around announcement dates provide an observable measure of how investors interpret the credibility and relevance of sustainability-related corporate actions (MacKinlay, 1997).

Despite the rapid expansion of the global green bond market, empirical evidence on short-term stock market reactions remains inconclusive (Fatica & Panzica, 2021). Several studies document positive abnormal returns around green bond announcements, suggesting that investors reward firms for credible sustainability commitments (Flammer, 2021). Other studies highlight short-term volatility and subsequent price correction as investors reassess issuance costs and environmental additionality (Fatica & Panzica, 2021). In emerging markets, these dynamics may be more pronounced due to higher information asymmetry and evolving ESG disclosure practices (Kothari & Warner, 2007).

Accordingly, this study employs an event study methodology to examine the short-term stock market reaction to PT XYZ's green bond issuance announcement. The primary research objective is to assess the impact of the announcement on the firm's stock performance by analyzing Abnormal Return (AR) within a defined event window (Brown & Warner, 1985). The study further evaluates Cumulative Abnormal Return (CAR) to capture the aggregate market response surrounding the event date (MacKinlay, 1997). By focusing on immediate market reactions, this research contributes to the green finance literature by

evaluating the effectiveness of green bonds as corporate signaling mechanisms in an emerging market context (Spence, 1973).

REVIEW OF LITERATURE

The theoretical foundation for assessing investor responses to voluntary corporate disclosures, including green bond issuance, is grounded in Signaling Theory (Spence, 1973). Signaling Theory explains how information asymmetry arises in capital markets when corporate managers possess superior knowledge about firm quality and long-term strategy compared to external investors (Spence, 1973). To mitigate this asymmetry, firms may engage in observable and costly actions that credibly signal their underlying quality and commitment to specific strategic objectives (Spence, 1973).

Within this framework, green bonds can be interpreted as costly and credible signals of corporate commitment to environmental sustainability. The issuance of green bonds typically involves additional costs relative to conventional debt, including external verification, ongoing reporting requirements, and reputational exposure if environmental commitments are not fulfilled (Flammer, 2021). These costs increase the credibility of the signal because they are more easily borne by firms with genuine environmental commitment than by firms engaging in symbolic or opportunistic disclosure (Spence, 1973).

Empirically, the effectiveness of green bonds as market signals is commonly examined using event study methodology, which evaluates short-term stock market reactions to discrete informational events (MacKinlay, 1997). Event studies are widely applied in sustainable finance research because they capture how quickly and in what direction investors incorporate new sustainability-related information into equity prices (Brown & Warner, 1985). Within this approach, green bond announcements are treated as information events that may generate abnormal returns if investors perceive them as value-relevant (MacKinlay, 1997).

Evidence from developed markets generally indicates that green bond announcements are associated with positive abnormal stock market reactions. Flammer (2021) documents statistically significant positive cumulative abnormal returns around green bond announcement dates, particularly when issuances are accompanied by third-party certification. The study further shows that green bond issuance is followed by improvements in environmental performance and ESG scores, suggesting that investors reward signals that are reinforced by substantive environmental action rather than symbolic disclosure (Flammer, 2021).

The importance of credibility mechanisms is further emphasized by Tang and Zhang (2020), who find that market reactions to green bond announcements are more favorable when external reviews are incorporated into the issuance process. Their findings indicate that third-party verification reduces information uncertainty and moderates adverse price noise by strengthening investor confidence in the environmental integrity of the bond (Tang & Zhang, 2020). This evidence supports the view that verification costs enhance the signaling value of green bonds by limiting greenwashing concerns.

However, empirical studies also demonstrate that short-term market reactions to green bond announcements are not uniformly positive. Fatica and Panzica (2021) report that abnormal returns around announcement dates often display volatility, reflecting investor reassessment of issuance costs, project eligibility, and environmental additionality. Their

findings suggest that investors may initially react cautiously while processing complex sustainability information, particularly regarding whether financed projects represent genuinely new environmental investments (Fatica & Panzica, 2021).

Overall, the literature indicates that the magnitude and pattern of abnormal returns observed in event studies serve as an immediate barometer of investor perceptions regarding the credibility of green bond issuance. Event study evidence highlights how investors initially interpret sustainability signals, while longer-term studies demonstrate whether these signals are supported by realized performance outcomes (MacKinlay, 1997). Together, these strands of literature provide a comprehensive framework for analyzing green bond issuance as both a short-term market signal and a longer-term strategic commitment to sustainable development.

RESEARCH METHOD

This study employs the Event Study methodology, a descriptive quantitative approach, to examine the short-term stock market reaction to the Green Bond issuance announcement by PT XYZ. Event study methodology is widely used in financial research to assess how quickly and in what direction capital markets respond to discrete and value-relevant information events (MacKinlay, 1997). The focus on short-term price movements allows the analysis to capture immediate investor reactions following the public disclosure of sustainability-related corporate actions.

The research adopts a single-case study design, with the Green Bond issuance announcement by PT XYZ designated as the event of interest. The event day (t0) is defined as 21 June 2022, corresponding to the official public announcement of the Green Bond issuance. To capture both anticipatory trading behavior and post-announcement price adjustment, an event window of eleven trading days is employed, spanning from five trading days before to five trading days after the event (t_{-5} to t_{+5}). The use of a short event window is consistent with standard event study practice and helps minimize the influence of confounding market events unrelated to the announcement (Brown & Warner, 1985; MacKinlay, 1997).

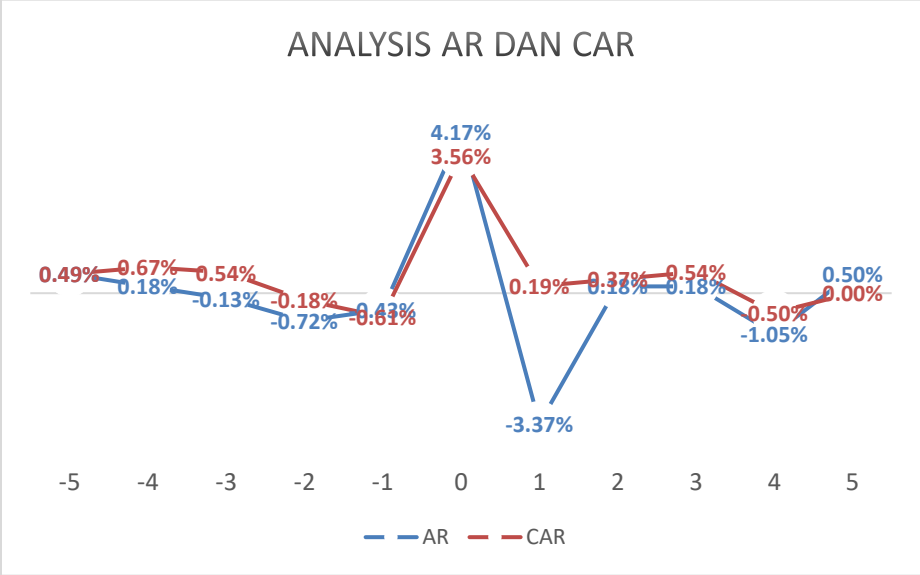
The data used in this study consist of daily closing stock prices of PT XYZ, obtained from official stock exchange publications and reliable financial data platforms. Daily stock returns are calculated based on changes in closing prices, reflecting the realized short-term returns experienced by investors. In line with the selected expected return model, no market index is employed in the return estimation process.

Expected returns are estimated using the Mean Adjusted Return Model, which assumes that a stock's normal return can be approximated by its average historical return (Brown & Warner, 1985). This model is commonly applied in descriptive event studies and single-firm analyses, particularly when the event window is short and the primary objective is to capture immediate market reactions rather than to test asset pricing models (MacKinlay, 1997). The market response was quantified by calculating two primary metrics: Abnormal Return (AR) and Cumulative Abnormal Return (CAR). The Abnormal Return ($AR_{i,t}$) for PT XYZ (i) on day (t) was determined as the difference between the stock's actual daily return ($R_{i,t}$) and its expected return ($\bar{R}_i$). The expected return was estimated using the Mean Adjusted Return Model, which is considered adequate for descriptive case studies over short time frames. The formula used is $AR_{i,t} = R_{i,t} - \bar{R}_i$. Subsequently, the Cumulative Abnormal

Return (CAR) was calculated by summing the daily Abnormal Returns across the entire event window. The CAR, calculated using the formula $CAR\ (t_1, t_2) = \sum_{t_2}^{t_1} AR_{i,t}$, provides a measure of the overall, cumulative market effect on the stock price in response to the Green Bond signal.

RESULTS AND DISCUSSION

The analysis of market reaction focuses on the period between 14 June and 28 June 2022, encompassing an eleven-trading-day event window from t_{-5} to t_{+5}, with 21 June 2022 designated as the event day (t_0). This window is designed to capture both anticipatory investor behavior prior to the green bond announcement and immediate post-announcement price adjustment, consistent with standard event study methodology (MacKinlay, 1997).The key metrics are presented below:



The results indicate that the stock market reaction to PT XYZ's green bond issuance announcement was dynamic and multi-phased, reflecting varying stages of investor interpretation and information processing. In the pre-event period (t−5 to t−1), abnormal returns fluctuate and are predominantly negative, with cumulative abnormal return (CAR) declining to −0.61% at t−1. This pattern suggests that prior to the official announcement, the market had not yet incorporated positive expectations regarding the green bond issuance into the stock price, indicating limited information leakage or cautious investor sentiment (Kothari & Warner, 2007).

A pronounced market reaction occurs on the event day (t0). On 21 June 2022, the abnormal return (AR) increases sharply to +4.17%, causing the cumulative abnormal return to rise to +3.56%. This substantial positive abnormal return indicates that the announcement of the green bond issuance was perceived as value-relevant information by investors. From the perspective of Signaling Theory, this immediate positive response suggests that the market interpreted the green bond issuance as a credible signal of the firm's commitment to environmental sustainability and improved governance quality (Spence, 1973; Flammer, 2021).

The positive abnormal return on the event day reflects investor recognition of the green bond issuance as a meaningful sustainability signal rather than a routine financing activity. By issuing green bonds, the firm conveyed information regarding its strategic orientation and long-term commitment to environmental objectives. The market's immediate response suggests that this signal was considered credible and sufficiently informative to warrant a positive price adjustment. This finding supports the argument that green bond issuance can function as an effective short-term corporate signaling mechanism.

In the post-event period (t+1 to t+5), abnormal returns exhibit renewed volatility, including negative values at t+1 (−3.37%) and t+4 (−1.05%), alongside smaller positive abnormal returns on intervening days. As a result, cumulative abnormal returns gradually decline and return to 0.00% by the end of the event window (t+5). This post-announcement correction reflects a process of investor reassessment following the initial reaction, during which market participants evaluate the financial implications, issuance costs, and credibility of the sustainability commitment embedded in the green bond issuance (Fatica & Panzica, 2021).

The observed pattern—an immediate positive abnormal return followed by short-term correction and normalization—aligns with prior event study findings on green bond announcements. Tang and Zhang (2020) document that while green bond issuance often generates favorable initial market responses, short-term price adjustments are common as investors reassess the quality and credibility of the issuance. The normalization of CAR by the end of the event window suggests that although the market initially rewarded the announcement, the valuation effect did not persist in the short run, indicating rapid information assimilation and market efficiency (MacKinlay, 1997).

From a signaling perspective, these results imply that PT XYZ's green bond issuance functioned as a credible sustainability signal that was positively received upon announcement but subsequently subjected to heightened scrutiny. The absence of persistent cumulative abnormal returns does not invalidate the signaling effect; rather, it suggests that the market quickly incorporated the information and adjusted prices to reflect revised expectations regarding the firm's long-term prospects (Spence, 1973). This finding is consistent with the view that green bonds can enhance corporate reputation and legitimacy even when short-term stock price effects are temporary (Flammer, 2021).

Overall, the event study results demonstrate that the green bond issuance announcement generated a significant but transitory market reaction. The positive abnormal return on the event day indicates investor recognition of the issuance as a meaningful sustainability signal, while the subsequent normalization of cumulative abnormal returns highlights the market's cautious and evaluative response. These findings underscore the importance of credibility, transparency, and post-issuance disclosure in sustaining investor confidence beyond the initial announcement period (Fatica & Panzica, 2021).

CONCLUSION

This study employs an event study methodology to examine the short-term stock market reaction to the green bond issuance announcement by PT XYZ. The findings reveal a clear and immediate market response, as evidenced by a significant positive abnormal return on the event day. This reaction indicates that investors perceived the green bond issuance as value-relevant information and interpreted it as a credible signal of the firm's

commitment to sustainability. However, the subsequent volatility and correction in cumulative abnormal returns suggest that the initial market response was subject to rapid reassessment. Overall, the results demonstrate that green bond issuance can generate meaningful short-term signaling effects in the equity market.

Despite the positive event-day reaction, the cumulative abnormal return returned to zero by the end of the event window, indicating that the valuation impact was temporary. This pattern suggests that while sustainability-related announcements can attract immediate investor attention, their short-term effects on stock prices may not persist. The findings are consistent with the notion of short-term market efficiency, where new information is quickly absorbed and incorporated into prices. From a signaling perspective, the results imply that green bond issuance enhances corporate credibility without necessarily producing sustained abnormal returns. Future research may extend this analysis by incorporating longer event windows or comparing multiple issuers to better understand the persistence of sustainability signals in capital markets.

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