

Market Reactions To Changes In Sri-Kehati Index Constituents In The Post-COVID-19 Period

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Abstract

This study examines market reactions to the semi-annual rebalancing announcements of the SRI-KEHATI Index in Indonesia during the post-COVID-19 period (2022–2024). As environmental, social, and governance (ESG) investing gains increasing global relevance, understanding how investors in emerging markets respond to sustainability-related index changes is crucial. Using an event study methodology based on a single-index market model, this research analyzes abnormal returns and trading volumes around five rebalancing announcements involving 18 inclusions and 17 exclusions. The results reveal significant short-term positive abnormal returns and heightened trading volumes following stock inclusions, while exclusions trigger negative price reactions accompanied by increased trading activity. These findings support the price pressure hypothesis and, to some extent, the sustainability taste hypothesis, suggesting that short-term market reactions are driven by temporary demand shifts and growing ESG awareness among investors. However, no persistent long-term abnormal returns are observed, indicating that the Indonesian capital market remains only partially efficient in assimilating ESG-related information. This study contributes to the literature on sustainable finance by providing post-pandemic evidence from an emerging market context and offers practical implications for investors, regulators, and policymakers advancing ESG integration.

Keywords: SRI-KEHATI Index; ESG investing; event study; index rebalancing; post-COVID-19; sustainable finance.

A. INTRODUCTION

In recent years, environmental, social, and governance (ESG) considerations have gained substantial traction among global investors. According to the Global Sustainable Investment Alliance (GSIA, 2023), sustainable assets reached USD 30.3 trillion, with non-US markets expanding by 20% since 2020. In Indonesia, the Socially Responsible Investment (SRI)–KEHATI Index was launched in 2009 as a joint initiative between the Indonesia Stock Exchange (IDX) and the KEHATI Foundation to attract investors concerned with environmental and social issues. However, investor responses to sustainability indices may differ from those observed for broad-market indices due to cultural and regional variations in ESG awareness.

Empirical evidence on market reactions to ESG index changes remains mixed across regions. In Europe, stocks added to sustainability indices such as the DJSI Stoxx tend to experience positive price reactions, while exclusions are penalized (Lackmann et al., 2011). In contrast, studies on North American markets found muted responses (Robinson et al., 2011). Asia-Pacific evidence is even more inconsistent: (Cheung and Roca, 2012) reported that both inclusions and exclusions from sustainability indices often led to price declines, suggesting a profit-first mindset among investors in emerging markets.

In Indonesia, socially responsible investing is still at an early stage (Sutrisno, 2019). Earlier studies on the SRI-KEHATI Index show inconclusive results. (Sutrisno, 2019) found isolated short-term positive abnormal returns but no sustained impact, suggesting semi-strong form efficiency. (Targanski and Murhadi, 2021) reported that price declines followed inclusions during 2014–2018, while exclusions showed limited market reaction. (Wijaya et al., 2019) observed changes in trading volume without consistent price effects. These findings collectively indicate that investor responses to sustainability information were weak and inconsistent prior to 2020.

The COVID-19 pandemic, however, reshaped global investment behavior. During the 2020–2021 crisis, ESG-aligned indices such as the MSCI World SRI Select Index outperformed their conventional counterparts, indicating investor preference for resilient, sustainability-focused firms (Omura et al.,

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2021). The pandemic also accelerated structural changes in market behavior—such as the surge in retail participation and increased emphasis on corporate resilience (Murashima, 2023; Ortmann et al., 2020). As ESG awareness deepened, investors began treating sustainability signals as indicators of firm stability and quality.

In this evolving post-pandemic environment, the Indonesian market offers a unique context to re-examine the SRI-KEHATI Index effect. Despite increasing ESG integration by institutional investors, no study has yet assessed market reactions to SRI-KEHATI rebalancing events in the post-COVID-19 period. Most prior research predates 2020 and fails to capture recent shifts in investor sentiment and information efficiency. Given the heightened global focus on sustainability, it remains unclear whether Indonesian investors now react more strongly to index inclusion or exclusion announcements.

This study seeks to fill that gap by analyzing market reactions to five SRI-KEHATI rebalancing announcements between November 2022 and November 2024. Using an event study methodology based on the single-index market model, the research examines short-term and long-term abnormal returns as well as changes in trading volumes surrounding the announcements. The findings provide empirical evidence on whether Indonesian investors now perceive SRI-KEHATI membership as a value-relevant sustainability signal. Beyond its empirical contribution, this study enhances understanding of ESG information assimilation in emerging markets, offering implications for investors, regulators, and corporate decision-makers navigating the post-COVID-19 sustainable finance landscape.

B. LITERATURE REVIEW

Efficient Market Hypothesis (EMH)

The Efficient Market Hypothesis (EMH), introduced by (Fama, 1970), posits that asset prices fully reflect all available information, implying that investors cannot consistently achieve abnormal returns on a risk-adjusted basis. EMH distinguishes among three forms of market efficiency—weak, semi-strong, and strong—depending on whether information reflected in prices includes historical data, publicly available information, or both public and private data. In the context of stock index rebalancing, the semi-strong form of EMH predicts that market prices immediately incorporate public information regarding index inclusions or exclusions. Therefore, any observed abnormal returns following such announcements would indicate temporary inefficiency or short-term market overreaction. Testing price and volume responses around SRI-KEHATI rebalancing events provides an empirical assessment of semi-strong market efficiency in the Indonesian capital market.

Supported Hypothesis:

H1a. SRI-KEHATI index reconstitution announcements are associated with positive long-term price effects for index inclusions.

H1b. SRI-KEHATI index reconstitution announcements are associated with negative long-term price effects for index exclusions.

Index Effects and Related Theories

Empirical studies on index reconstitutions have documented consistent short-term anomalies surrounding inclusion and exclusion events. Several theoretical mechanisms have been proposed to explain these effects. The Price Pressure Hypothesis (Scholes, 1972; Harris & Gurel, 1986) asserts that short-term buy or sell pressures from index-tracking investors temporarily move prices, which later revert to equilibrium. Conversely, the Imperfect Substitutes Hypothesis (Shleifer, 1986) suggests that stocks are not perfect substitutes, so inclusion increases long-term demand and prices, while exclusion causes lasting declines. The Signaling Hypothesis (Jain, 1987; Denis et al., 2003) argues that index inclusion signals positive information about firm quality and governance, prompting a permanent upward price adjustment. The Liquidity Hypothesis (Amihud & Mendelson, 1986; Chen et al., 2004) proposes that inclusion enhances market liquidity, narrows bid-ask spreads, and attracts institutional investors. The Investor Awareness Hypothesis (Denis et al., 2003) extends this view by emphasizing increased visibility and analyst coverage as drivers of sustained investor interest.

Supported Hypotheses:

H2a. SRI-KEHATI index reconstitution announcements are associated with positive short-term price effects for index inclusions.

H2b. SRI-KEHATI index reconstitution announcements are associated with negative short-term price effects for index exclusions.

H3a. SRI-KEHATI index reconstitution announcements are associated with permanently positive changes in trading volume for index inclusions.

H3b. SRI-KEHATI index reconstitution announcements are associated with permanently negative changes in trading volume for index exclusions.

Socially Responsible Investment (SRI) and ESG Investing

Socially Responsible Investment (SRI) integrates environmental, social, and governance (ESG) principles into financial decision-making. SRI funds seek companies with strong sustainability practices while avoiding firms engaged in controversial industries. The objective is to align financial performance with ethical and environmental accountability (Sun et al., 2011). The growth of SRI indices globally—such as the MSCI KLD 400, Dow Jones Sustainability Index (DJSI), and SRI-KEHATI in Indonesia—has transformed ESG investing from a niche concern into a mainstream financial movement. Regulatory frameworks, such as the EU Sustainable Finance Disclosure Regulation and Indonesia's OJK Sustainable Finance Roadmap (2021–2025), further reinforce ESG integration as a core investment principle.

Supported Hypothesis:

H4a: SRI-KEHATI index reconstitution announcements are associated with negative changes in the price effect for index inclusions.

H4b: SRI-KEHATI index reconstitution announcements are associated with positive changes in price effect for index exclusions.

Index Effects in ESG and SRI Contexts

Empirical evidence on SRI or ESG index effects remains diverse across regions. (Becchetti et al., 2009; Consolandi et al., 2008) found that inclusion in European ESG indices generates significant positive abnormal returns, whereas exclusions trigger declines. (Robinson et al., 2011) reported similar but short-lived effects in the U.S. market. Conversely, (Cheung and Roca, 2013) observed that Asia-Pacific investors often react negatively to ESG inclusions, reflecting skepticism toward sustainability screening. In Indonesia, (Lindananty & Soedarman, 2015; Wijaya et al., 2019) found inconsistent market reactions to SRI-KEHATI announcements, with no persistent abnormal returns. (Targanski & Murhadi, 2021) further observed negative responses to inclusions, suggesting that ESG awareness was limited during 2009–2018. These mixed outcomes highlight that ESG-related index effects may depend on regional maturity, investor culture, and the perceived financial relevance of sustainability signals.

Supported Hypothesis:

H5a: SRI-KEHATI index reconstitution announcements are associated with positive changes in price effect for index exclusion.

H5b: SRI-KEHATI index reconstitution announcements are associated with negative changes in price effect for index inclusion.

The Rise of ESG Focus Post-COVID-19

The COVID-19 pandemic marked a turning point in global finance, accelerating the shift toward sustainability-oriented investments. Studies demonstrate that ESG indices outperformed traditional benchmarks during the crisis, as investors favored firms with strong governance and resilience (Omura et al., 2021; Gao & Geng, 2024). In Asia, ESG firms exhibited lower systematic risk and faster post-crisis recovery (Brzezczynski et al., 2022). In Indonesia, assets under management in SRI-KEHATI mutual funds rose from IDR 253 billion in 2017 to over IDR 4.2 trillion by 2023, reflecting stronger domestic ESG engagement. These developments suggest that investors now perceive sustainability credentials as indicators of stability and long-term value. Consequently, market reactions to SRI-KEHATI rebalancing announcements in the post-COVID period are expected to be more pronounced and directionally aligned with global ESG trends.

Supported Hypothesis:

H6: SRI-KEHATI index reconstitution announcements are associated with positive changes in trading volume for both index additions and exclusions.

C. METHODS

Research Design

This study employs an event study methodology to examine market reactions to the semi-annual rebalancing announcements of the SRI-KEHATI Index in Indonesia during the post-COVID-19 period (2022–2024). The event study approach measures the impact of a specific public event on stock prices and trading volumes by comparing actual returns with expected returns under normal market conditions (MacKinlay, 1997). The event of interest is the announcement of changes in SRI-KEHATI Index constituents, representing information releases that may signal firms' ESG quality to investors. The analysis tests both short-term and long-term effects on stock performance and trading activity to evaluate market efficiency and ESG sensitivity in Indonesia's capital market.

Sample and Data

The sample consists of all firms added to or removed from the SRI-KEHATI Index across five rebalancing periods between November 2022 and November 2024. During this period, the index included 18 additions and 18 deletions; however, one firm (WIKA) was excluded from the analysis due to trading suspension during the event window, resulting in a final sample of 18 inclusions and 17 exclusions. Daily stock price and trading volume data were obtained from the Indonesia Stock Exchange (IDX) and Yahoo Finance. The Jakarta Composite Index (JCI) was used as the market benchmark. To ensure data reliability and comparability, three filtering criteria were applied (Wang et al., 2015): 1) Firms must not have undergone mergers, acquisitions, or stock splits during the observation period; 2) Firms must have complete trading data from 150 days before to 60 days after the announcement; and 3) Only common shares actively traded during the entire window were included.

Event Window and Estimation Period

The study uses an event window of 76 days and an estimation window of 135 days, following best practices in event study design (MacKinlay, 1997; Brown & Warner, 1985). Estimation period: Day –150 to day –16 (used to estimate normal returns). Event period: Day –15 to Day +60, where Day 0 is the official announcement date of the index rebalancing. Short-term effects are analyzed over windows such as [–5,+5], [–1,+1], and [0,+4], while long-term reactions are observed up to Day +60.

Variables and Measurement

Abnormal Return (AR)

Daily stock returns are calculated as:

$$R_{it} = \frac{(P_{it} - P_{(it-1)})}{P_{(it-1)}}$$

Where,

R_{it} = The return of stock i at time t ,

P_{it} = The closing price at time t , and

$P_{((it-1))}$ = The closing price at time $t-1$.

Expected returns are estimated using the market model:

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

Where,

$E(R_{it})$ = The expected return of stock i at time t

α_i = The constant component of the security return for stock i derived via ordinary least squares (OLS) regression

β_i = The measure of stock i systematic risk, which remains constant over time, derived via ordinary least squares (OLS) regression

The Average Abnormal Return (AAR) across firms is:

$$AAR_t = \frac{1}{n} \sum_{i=t}^n AR_{it}$$

Where,

AAR_t = The average return of stocks at time t

AR_{it} = The abnormal return of stock i at time t

Moreover, the Cumulative Average Abnormal Return (CAAR) over a window $[t_1, t_2]$ is:

$$CAAR_{tk} = \sum_t^n AAR_t$$

Where,

$CAAR_{tk}$ = The cumulative average abnormal return between day t and day k

AAR_t = Average return of stocks at time t

Abnormal Trading Volume (AV)

Trading volume is used to capture liquidity changes and investor attention. Following (Chen et al., 2004), abnormal trading volume is measured as:

$$AV_{it} = \frac{V_{it}}{V_{mt}} / \frac{V_i}{V_m} - 1$$

Where,

AV_{it} = The proxy for the abnormal trading volume effect of stock i during period t

V_{it} = Turnover of stock i during event period t

V_{mt} = Turnover of the market during event period t

V_i = Average Turnover of stock i during the reference period $[-150, -16]$

V_m = Average Turnover of the market during the reference period $[-150, -16]$

Statistical Analysis

Prior to hypothesis testing, data normality is examined using the Shapiro–Wilk test (Razali & Wah, 2011). For normally distributed data, the one-sample t-test is employed; otherwise, the Wilcoxon signed-rank test is used. Statistical significance is tested at 1%, 5%, and 10% levels to evaluate whether the mean AR or AV significantly differs from zero. Results are interpreted in relation to the six theoretical hypotheses (H1–H6) regarding price pressure, liquidity, and sustainability taste effects.

Robustness Checks

To ensure robustness, the following additional tests are proposed:

- Alternative event windows ($[-3, +3]$, $[-3, +3]$, $[-3, +3]$, $[-10, +10]$, $[-10, +10]$, $[-10, +10]$) to verify short-term consistency.
- Separate analyses for inclusions and exclusions to isolate asymmetric effects.
- Cross-validation using non-parametric median tests for sensitivity to outliers.
- Visual inspection of CAAR and CAAV trends to confirm temporal convergence.

D. RESULTS AND DISCUSSION

Preliminary and Descriptive Analysis

Before performing inferential testing, preliminary analyses were conducted to ensure that the dataset met event study assumptions and that the selected sample accurately represented the population of SRI-KEHATI Index constituents. This section presents the characteristics of the sample, the distribution of inclusion and exclusion events, and the results of preliminary statistical diagnostics.

Sample Overview

This study analyzed 35 firm events affected by changes in the SRI-KEHATI Index between November 2022 and November 2024, consisting of 18 inclusions and 17 exclusions across five semi-annual rebalancing announcements. These reconstitutions reflect adjustments in the index's ESG screening methodology as part of ongoing sustainability assessment by the KEHATI Foundation and the Indonesia Stock Exchange (IDX). Table 1 summarizes the firms included and excluded in each rebalancing period.

The stock Wijaya Karya (WIKA) was excluded from the empirical analysis due to trading suspension during the event window, resulting in incomplete data availability.

Table 1. Included and Excluded Stock Samples

Announcement Date	No.	Inclusion	Exclusion
24-Nov-22	1	ANTM	AKRA
	2	ASRI	BBTN
	3	BTPS	BSDE
	4	ICBP	CPIN
	5	SILO	INCO
25-May-23	6	AUTO	AALI
	7	BBTN	ASRI
	8	INCO	BTPS
	9	SSMS	PGAS
24-Nov-23	10	TINS	SIDO
	11	AALI	ASII
	12	DRMA	PTPP
	13	EMTK	UNTR
27-May-24	14	AVIA	AALI
	15	SCMA	DRMA
	16	SIDO	SILO
	17	SMSM	TINS
	18	UNTR	WIKA*
22-Nov-24	-	-	-

*WIKA will not be included in the analysis because the stock was suspended from trading during the event window, resulting in insufficient data availability.

Source: Research Data, 2025

Data Characteristics

All firms included in the analysis were required to meet three data quality criteria: 1) Continuous trading during the estimation window (−150 to −16 days) and event window (−15 to +60 days); 2) Absence of corporate actions such as mergers, stock splits, or rights issues during the observation period; and 3) Complete availability of price and trading volume data. Descriptive statistics reveal that the mean daily return for all sample firms during the estimation window was 0.14%, with a standard deviation of 2.07%, indicating moderate volatility compared to the Jakarta Composite Index (JCI). The average trading turnover ratio (volume divided by shares outstanding) was 0.36%, showing that the SRI-KEHATI constituents represent a mixture of highly liquid and medium-cap firms. This composition aligns with the nature of ESG-focused indices, which typically include firms that balance financial performance with sustainability commitments.

Normality Testing

Before testing for abnormal returns and trading activity, normality of the data was assessed using the Shapiro–Wilk test, chosen for its robustness in small-sample contexts (Razali & Wah, 2011). Results indicate that while several short-term windows (e.g., [−1,+1] and [−2,+2]) met normality assumptions, many cumulative and long-term windows did not. Consequently, a hybrid statistical approach was adopted: 1) Parametric t-tests were applied for normally distributed data; 2) Non-parametric Wilcoxon signed-rank tests were used for non-normal data. This approach ensures reliable inference across heterogeneous data structures and minimizes potential bias due to non-normality.

Pre-Event Market Behavior

Visual inspection of average abnormal returns and trading volumes during the pre-event window (−15 to −1) shows random fluctuations around zero, without discernible upward or downward trends. This absence of systematic movement indicates that no information leakage or anticipatory trading occurred prior to the official announcement date. Such behavior suggests that the Indonesian market reacts to publicly released information rather than private signals, fulfilling a key assumption of the semi-strong form of market efficiency (Fama, 1970). It provides a clean baseline for evaluating subsequent reactions following inclusion or exclusion announcements.

Short-Term Market Reactions

This subsection discusses the market's immediate response to SRI-KEHATI Index rebalancing announcements, focusing on abnormal returns (AAR/CAAR) and abnormal trading volume (AAV/CAAV) around the event dates. The analysis distinguishes between stock inclusions and stock exclusions to capture potential asymmetries in investor behavior.

Market Reaction to Index Inclusions

Table 2 presents the short-term price and volume responses surrounding SRI-KEHATI inclusion announcements. The results show no significant abnormal returns or Turnover in the pre-event period (–5 to –1), indicating that information about the rebalancing was well-contained and not leaked before the official announcement. A clear market reaction emerges shortly after the announcement, peaking four days post-announcement (Day +4), which corresponds to the day preceding the actual index inclusion.

Table 2. Short-Term Abnormal Returns and Abnormal Turnover around Inclusion Announcements

Event Window	N	CAAR (%)	t-stat	Sig.	CAAV	z-stat	Sig.
[–5, –1]	18	0.06	0.06	ns	0.49	0.76	ns
[0]	18	–0.43	–0.76	ns	0.51	1.75	*
[+4]	18	5.08	3.02	***	1.77	3.08	***
[0, +4]	18	4.57	4.25	***	2.40	2.46	**
[–4, +4]	18	4.66	3.21	***	2.82	2.08	*
[–5, +5]	18	4.64	2.98	***	3.79	2.28	**

Notes: ns = not significant; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

CAAR = cumulative average abnormal return; CAAV = cumulative abnormal trading volume.

Source: Research Data, 2025

The largest abnormal return (CAAR = 5.08%, $p < 0.01$) occurs on Day +4, followed by a strong increase in trading activity (CAAV = 1.77, $p < 0.01$). The cumulative window [0,+4] also records significant positive values for both return and volume, implying that investors react most strongly just before the effective inclusion date. This behavior likely reflects portfolio rebalancing by institutional investors or index-tracking funds seeking to mirror the new index composition. The absence of any pre-event effect reinforces the semi-strong form of market efficiency (H1), while the sharp but temporary post-announcement surge supports the Price Pressure Hypothesis (H2a). The simultaneous rise in prices and trading volumes indicates that inclusion announcements serve as value-relevant signals, increasing firm visibility and perceived ESG credibility among investors. However, the fact that the effect peaks only after the announcement suggests delayed information absorption—a typical characteristic of emerging markets where market depth and investor responsiveness remain limited.

Market Reaction to Index Exclusions

Table 3 summarizes short-term market responses to stock exclusions from the SRI-KEHATI Index. Similar to inclusions, there is no evidence of anticipatory trading prior to the announcement (–5 to –1). However, significant negative price reactions occur in the days following the announcement.

Table 3. Short-Term Abnormal Returns and Abnormal Turnover around Exclusion Announcements

Event Window	N	CAAR (%)	t-stat	Sig.	CAAV	z-stat	Sig.
[–5, –1]	17	–0.15	–0.21	ns	–0.06	–0.09	ns
[0, +4]	17	–2.63	–2.56	**	1.50	1.93	*
[+4]	17	–2.34	–5.47	***	0.01	2.22	**
[–4, +4]	17	–2.59	–2.96	***	1.34	1.36	ns
[–5, +5]	17	–2.23	–2.18	**	2.01	1.75	*

Notes: ns = not significant; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Source: Research Data, 2025

The strongest reaction occurs on Day +4 (CAAR = –2.34%, $p < 0.01$), accompanied by a surge in trading turnover (CAAV = 1.50, $p < 0.10$). The cumulative windows [0,+4] and [–4,+4] also show significant negative returns, suggesting a swift downward revaluation once exclusion information is publicly released. This pattern supports the Price Pressure Hypothesis (H2b), where selling by index-tracking investors temporarily depresses prices. The negative reaction likely reflects a loss of ESG signaling value, as exclusion may be interpreted as a decline in sustainability standing. Nevertheless,

because prices tend to stabilize within a week, the effect appears to be transitory, aligning with semi-strong efficiency (H1).

Comparative Interpretation

Both inclusions and exclusions exhibit short-lived yet significant abnormal returns and trading volume effects around Day +4. This symmetrical timing implies that investors react more strongly as the effective date approaches, rather than immediately after the announcement. However, the direction of the effect differs: inclusions generate positive abnormal returns, while exclusions trigger negative ones. This pattern mirrors findings in prior literature on ESG indices (Consolandi et al., 2008; Cheung & Roca, 2013) and reinforces the notion that ESG-related index changes convey meaningful signals to investors. Compared with pre-pandemic evidence (Sutrisno, 2019; Targanski & Murhadi, 2021), the post-COVID results reveal a behavioral shift—investors now show stronger positive reactions to sustainability inclusions and a more measured response to exclusions. This indicates an increasing ESG awareness among Indonesian investors, consistent with the Sustainability Taste Hypothesis (H6).

Table 4. Summary of Findings (Short-Term Period)

Observation	Empirical Evidence	Supported Hypotheses
No significant pre-announcement effect	Information not leaked; efficient market	H1
Positive CAAR and CAAV for inclusions (Day +4)	Temporary buying pressure and index replication	H2a, H3
Negative CAAR and elevated CAAV for exclusions (Day +4)	Sell-side rebalancing and ESG credibility loss	H2b
Short-lived effects (no persistence beyond +5)	Transitory adjustment consistent with EMH	H1
Post-COVID stronger inclusion effect	Heightened ESG sensitivity among investors	H6

Source: Research Data, 2025

The short-term results suggest that the Indonesian capital market reacts efficiently but temporarily to SRI-KEHATI Index announcements. Inclusion in the index enhances firm visibility and prompts short-term price appreciation, while exclusion causes brief price declines. Both effects dissipate quickly, underscoring the market's semi-strong efficiency and supporting the view that ESG signals influence investor sentiment in the post-COVID era.

Long-Term Market Reactions

To examine whether the observed short-term effects persist beyond the initial announcement window, long-term abnormal returns (CAAR) and abnormal trading volumes (CAAV) were analyzed over extended post-event periods of up to 60 trading days. The analysis distinguishes between inclusions and exclusions, capturing differences in investor behavior and sustainability sentiment in the post-COVID-19 environment.

Long-Term Reactions to Index Inclusions

Table 5 presents the cumulative abnormal returns and Turnover for stocks added to the SRI-KEHATI Index. Results indicate that significant positive effects persist only within the first ten trading days after the announcement. Beyond this horizon, neither returns nor trading volumes remain statistically significant.

Table 5. Long-Term Abnormal Returns and Trading Volumes for Inclusions

Interval	N	CAAR (%)	t-stat	Sig.	CAAV	z-stat	Sig.
[+1, +10]	18	3.50	2.11	**	4.21	2.06	*
[+1, +20]	18	2.05	0.79	ns	4.32	1.22	ns
[+1, +30]	18	2.07	0.69	ns	4.30	0.86	ns
[+1, +60]	18	-5.52	-1.17	ns	13.65	1.32	ns
[-10, +10]	18	2.03	0.99	*	6.48	1.93	*

Notes: ns = not significant; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Source: Research Data, 2025

The results reveal a CAAR of 3.50% ($p < 0.05$) over the [+1, +10] window, but this effect diminishes in longer intervals. Similarly, trading volume remains elevated for approximately two weeks before normalizing. The cumulative 20-, 30-, and 60-day windows show no statistical significance, implying that

the inclusion effect is short-lived and does not lead to a sustained revaluation. These findings support the Liquidity Hypothesis (H3)—index inclusion improves trading activity and investor awareness temporarily but does not permanently alter firm valuation. The quick reversal after Day +10 also aligns with the semi-strong form of market efficiency (H1), where the market rapidly incorporates and adjusts to public ESG-related information. From a behavioral standpoint, the brief yet positive reaction suggests that investors view inclusion as a credible sustainability signal, but do not interpret it as a fundamental change in firm performance. This reaction pattern mirrors the findings of (Becchetti et al., 2009; Robinson et al., 2011) for ESG indices in mature markets, though the effect here is smaller and more transient—consistent with Indonesia’s evolving ESG investment landscape.

Long-Term Reactions to Index Exclusions

Table 6 displays the long-term abnormal returns and Turnover for stocks removed from the SRI-KEHATI Index. In contrast to inclusions, exclusions show no significant long-term price effect, although short-lived volume increases are observed within 45 days post-announcement.

Table 6. Long-Term Abnormal Returns and Trading Volumes for Exclusions

Interval	N	CAAR (%)	t-stat	Sig.	CAAV	z-stat	Sig.
[+1, +10]	17	-1.45	-1.27	ns	2.70	2.18	**
[+1, +20]	17	-2.41	-1.41	ns	3.61	1.05	ns
[+1, +45]	17	-1.51	-0.43	ns	15.74	1.97	*
[+1, +60]	17	-0.15	-0.04	ns	16.21	1.72	ns
[-10, +20]	17	-13.77	-2.30	**	3.89	0.96	ns

Notes: ns = not significant; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Source: Research Data, 2025

The absence of persistent negative returns indicates that investors quickly absorb and discount exclusion news, avoiding prolonged pessimism. The only significant long-term movement is seen in the cumulative window $[-10, +20]$ (CAAR = -13.77% , $p < 0.05$), which may partly capture overlapping short-term volatility rather than a sustained decline. Abnormal trading activity remains significant up to 45 days post-announcement (CAAV = 15.74, $p < 0.10$), suggesting that liquidity effects last longer than price effects. This is consistent with H3, which posits that index rebalancing primarily affects trading volume through temporary liquidity adjustments rather than lasting price changes. These findings align with those of (Chen et al., 2004; Hrazdil et al., 2013), showing that exclusion from sustainability indices tends to trigger temporary sell-offs and liquidity spikes but not enduring devaluations. The muted long-term price response further supports H1 (semi-strong efficiency)—prices react promptly to new information but revert to equilibrium once portfolio adjustments conclude.

Comparative Interpretation and Theoretical Implications

The contrast between inclusion and exclusion effects suggests that investors interpret SRI-KEHATI announcements as short-term informational shocks rather than permanent value signals. Inclusions generate temporary price appreciation and increased liquidity, reflecting optimism and the prestige effect of sustainability recognition. Exclusions trigger brief declines and volume surges, reflecting portfolio reshuffling rather than loss of fundamental value. Importantly, when compared with pre-COVID evidence (Sutrisno, 2019; Targanski & Murhadi, 2021), the current results reveal a behavioral transition. Post-pandemic investors appear more responsive to ESG-related signals, particularly to positive sustainability recognitions. This finding substantiates the Sustainability Taste Hypothesis (H6), suggesting that Indonesian investors increasingly value ESG credentials as indicators of corporate resilience and long-term viability. In essence, the post-COVID market environment in Indonesia exhibits partial efficiency with heightened ESG sensitivity—an intermediate state between informational efficiency and behavioral finance perspectives. The SRI-KEHATI Index, therefore, functions not only as a sustainability benchmark but also as a market-based barometer of ESG sentiment.

Table 7. Summary of Findings (Long-Term Period)

Observation	Empirical Evidence	Supported Hypotheses
Inclusions: short-lived CAAR up to +10 days	Temporary valuation adjustment, then reversal	H1, H3
Exclusions: no persistent negative CAAR	Short-term sell-off only, quick price recovery	H1, H3

Observation	Empirical Evidence	Supported Hypotheses
Persistent CAAV for up to 45 days	Temporary liquidity and the trading attention effect	H3
Post-COVID higher ESG responsiveness	Behavioral shift toward sustainability preference	H4, H6

Source: Research Data, 2025

The long-term analysis reveals that while SRI-KEHATI rebalancing announcements produce immediate market responses, these effects dissipate within two weeks. Price reversals and volume normalization reflect efficient information assimilation and portfolio reallocation. The findings underscore a growing, yet still developing, ESG awareness in Indonesia's capital market—where sustainability factors increasingly influence short-term trading dynamics without yet reshaping long-term valuation behavior.

Discussion

The empirical results provide comprehensive insights into how investors in the Indonesian capital market react to changes in the SRI-KEHATI Index during the post-COVID-19 period. Taken together, the short- and long-term findings indicate that index rebalancing announcements generate statistically significant but temporary market reactions, both in price and trading activity. These patterns have important implications for the Efficient Market Hypothesis (EMH), Price Pressure Theory, Liquidity and Awareness Hypotheses, and the evolving discourse on sustainability-driven investing in emerging markets.

Market Efficiency and Information Assimilation

The absence of abnormal returns before the announcement day supports the semi-strong form of EMH (Fama, 1970), confirming that the Indonesian market reacts only to publicly available information. However, the observed short-term anomalies—positive abnormal returns for inclusions and negative ones for exclusions—demonstrate temporary deviations from perfect efficiency, consistent with H1. These transient effects are likely attributable to trading frictions, market depth limitations, and delayed investor response, all of which are characteristic of emerging markets (Bekaert & Harvey, 2003). The price adjustments that peak around Day +4 and dissipate shortly thereafter suggest that investors require several days to incorporate ESG-related news fully. This lag implies that market participants acknowledge the value of ESG signals but are still refining their collective ability to process such information efficiently.

Short-Term Price Pressure and Liquidity Effects

The results confirm the Price Pressure Hypothesis (H2a, H2b)—temporary demand and supply imbalances surrounding index changes lead to short-lived abnormal returns. Positive reactions following inclusions and negative reactions following exclusions reflect mechanical portfolio adjustments by index-tracking investors rather than fundamental revaluations. Simultaneously, significant increases in trading volume across both types of events support the Liquidity and Investor Awareness Hypotheses (H3). Inclusions attract heightened trading activity, suggesting increased investor visibility and institutional attention. Exclusions, conversely, trigger sell-side pressures and temporary liquidity shocks. However, neither inclusion nor exclusion effects persist beyond ten trading days, implying that liquidity improvements are episodic rather than structural. This finding aligns with prior studies, such as (Chen et al., 2004; Denis et al., 2003), who observed similar liquidity-induced short-term adjustments in developed markets. It extends their conclusions by showing that even in a developing market with thinner liquidity like Indonesia, ESG-related index effects follow the same transitory pattern, albeit with a longer absorption lag.

Sustainability Signaling and ESG Sensitivity

From a behavioral perspective, the results illustrate the increasing role of ESG signaling in shaping investor reactions. The positive abnormal returns for inclusions suggest that investors now perceive sustainability recognition as value-enhancing information, reflecting greater trust in firms' long-term resilience and governance quality. This observation supports both the Signaling Hypothesis (Jain, 1987) and the Sustainability Taste Hypothesis (H6), which posit that investors derive utility from aligning

portfolios with socially responsible firms. The post-COVID period has amplified this behavior. The pandemic exposed corporate vulnerabilities and emphasized the importance of environmental and social responsibility. As global ESG awareness intensified, Indonesian investors began treating index inclusion as an endorsement of firm quality, marking a shift from the pre-2018 period when SRI-KEHATI inclusions often produced neutral or negative price effects (Targanski & Murhadi, 2021). This behavioral transition aligns with the global ESG trend documented by (Omura et al., 2021; Gao & Geng, 2024), where investors increasingly favor sustainability-oriented assets. However, unlike in mature markets, the Indonesian response remains short-term and sentiment-driven, suggesting that while ESG awareness is growing, it has not yet translated into systematic long-term valuation premiums.

The Role of Institutional Investors and Market Structure

The timing and concentration of reactions—peaking four days after announcements—suggest that institutional investors play a key role in driving market adjustments. Many large domestic funds rebalance portfolios near the effective date of index changes, leading to concentrated trading activity. This pattern mirrors evidence from European markets (Consolandi et al., 2008), though in Indonesia, the effects appear more delayed and less permanent, reflecting lower index replication intensity and weaker passive fund presence. Furthermore, the temporary nature of abnormal returns implies that the informational efficiency of the SRI-KEHATI Index has improved relative to earlier periods but remains partial. The market reacts rationally to ESG information, but liquidity constraints, limited analyst coverage, and behavioral biases continue to moderate the speed and magnitude of information assimilation.

Theoretical and Empirical Contributions

This study contributes to the literature in three key ways: 1) Post-Pandemic Evidence: It provides the first systematic post-COVID analysis of SRI-KEHATI market reactions, revealing heightened but still transient investor sensitivity to ESG signals; 2) Emerging Market Perspective: It demonstrates that ESG index effects—previously documented in developed economies—also operate in emerging markets, though moderated by liquidity and information asymmetry; 3) Integration of Behavioral and Efficiency Theories: It empirically reconciles the EMH with sustainability-driven investor preferences, showing that the Indonesian market exhibits semi-strong efficiency with behavioral ESG overlays. These insights expand the theoretical scope of sustainable finance by illustrating how financial rationality and moral preference coexist within developing capital markets.

Practical Implications

From a policy and industry standpoint, the findings hold several implications: 1) For regulators (OJK and IDX): Strengthening ESG disclosure standards and encouraging transparent sustainability reporting can enhance information efficiency and investor trust; 2) For institutional investors: The temporary abnormal returns suggest that ESG index rebalancing creates short-term trading opportunities but limited long-term arbitrage potential; 3) For listed firms: Inclusion in the SRI-KEHATI Index offers reputational and visibility benefits, which can be strategically leveraged in investor relations and capital-raising efforts. Overall, the findings indicate that the ESG ecosystem in Indonesia is maturing, and policy interventions that promote broader ESG integration could help transform temporary sentiment effects into lasting valuation relevance.

E. CONCLUSIONS

This study examined market reactions to the semi-annual rebalancing announcements of the SRI-KEHATI Index in Indonesia during the post-COVID-19 period (2022–2024), focusing on abnormal returns and trading activity surrounding inclusion and exclusion events. The results provide robust evidence that market participants respond significantly—but temporarily—to index rebalancing announcements. Stock inclusions generate positive abnormal returns and higher trading volumes, while exclusions lead to short-term negative returns accompanied by liquidity surges. These reactions peak around four days after announcement and dissipate shortly thereafter, suggesting semi-strong form market efficiency consistent with the Efficient Market Hypothesis (H1). The findings confirm that price and volume reactions are driven by short-term demand and supply imbalances—supporting the Price Pressure Hypothesis (H2) and Liquidity Hypothesis (H3)—rather than by lasting changes in firm fundamentals.

Furthermore, compared with pre-pandemic evidence, the post-COVID period reveals a behavioral shift among Indonesian investors, who increasingly interpret index inclusion as a credible sustainability signal. This evolution substantiates the Sustainability Taste Hypothesis (H6), suggesting that ESG awareness has become more deeply integrated into investment decision-making, even in an emerging market context.

The empirical evidence has several practical implications for market stakeholders. First, for policymakers and regulators (OJK and IDX): Strengthening the transparency of ESG reporting and standardizing sustainability disclosures can improve market efficiency and deepen investor confidence in ESG instruments. Integrating clearer guidelines for index rebalancing announcements may reduce volatility and enhance informational symmetry. Second, for institutional investors and fund managers: The short-term nature of abnormal returns suggests that SRI-KEHATI rebalancing offers tactical trading opportunities rather than strategic alpha generation. Index-tracking strategies should account for announcement timing and liquidity shifts when rebalancing portfolios. Third, for listed firms: Being included in the SRI-KEHATI Index enhances a firm's visibility, credibility, and reputation among investors, potentially lowering its cost of capital. Firms should therefore treat ESG compliance not merely as regulatory fulfillment but as a strategic signal of long-term corporate quality. Collectively, these implications highlight that Indonesia's ESG ecosystem is transitioning from a nascent to a maturing stage, where sustainability signals are increasingly acknowledged but have not yet resulted in durable valuation premiums.

Limitations and Directions for Future Research

Despite offering novel post-pandemic evidence, this study faces several limitations that present opportunities for future investigation. First, the sample focuses solely on the SRI-KEHATI Index, limiting generalizability to other ESG or thematic indices in the region. Future research could extend this framework to cross-country comparisons or include ASEAN ESG indices to explore regional integration patterns. Second, while the study employs robust event study methods, it does not control for firm-specific ESG scores or investor sentiment indices, which could provide deeper insights into the heterogeneity of reactions. Incorporating textual analysis of sustainability reports or machine-learning-based sentiment measures could strengthen causal inference. Third, the relatively small number of rebalancing events restricts statistical power. Future research could broaden the time horizon as more post-COVID data become available. By addressing these gaps, future studies can build upon the present findings to clarify whether ESG awareness in emerging markets will evolve from a short-term behavioral phenomenon to a long-term valuation driver, thereby advancing the theoretical and empirical understanding of sustainable finance dynamics in developing economies.

REFERENCES

- Afego, P. N. (2017). Effects of changes in stock index compositions: A literature survey. *International Review of Financial Analysis*, 52, 228–239. <https://doi.org/10.1016/j.irfa.2017.06.004>
- Amihud, Y., & Mendelson, H. (1986). Asset pricing and the bid-ask spread. *Journal of Financial Economics*, 17(2), 223–249. [https://doi.org/10.1016/0304-405x\(86\)90065-6](https://doi.org/10.1016/0304-405x(86)90065-6)
- Becchetti, L., Ciciretti, R., & Hasan, I. (2009). Corporate Social Responsibility and Shareholders' Value: An Event Study Analysis. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.928557>
- Bechmann, K. L. (2004). Price and Volume Effects Associated with Changes in the Danish Blue-Chip Index: The KFX Index. *Multinational Finance Journal*, 8(1/2), 3–34. <https://doi.org/10.17578/8-1/2-1>
- Bell, M. (2021). Why ESG performance is growing in importance for investors. https://www.ey.com/en_id/insights/assurance/why-esg-performance-is-growing-in-importance-for-investors
- Brown, S. J., & Warner, J. B. (1985). Using daily stock returns. *Journal of Financial Economics*, 14(1), 3–31. [https://doi.org/10.1016/0304-405x\(85\)90042-x](https://doi.org/10.1016/0304-405x(85)90042-x)
- Brzezczynski, J., Gajdka, J., Pietraszewski, P., & Schabek, T. (2022). Has the risk of socially responsible investments (SRI) companies stocks changed in the COVID-19 period? International evidence. *Finance Research Letters*, 49, 102986. <https://doi.org/10.1016/j.frl.2022.102986>
- Chen, H., Noronha, G., & Singal, V. (2004). The Price Response to S&P 500 Index Additions and Deletions: Evidence of Asymmetry and a New Explanation. *The Journal of Finance*, 59(4), 1901–1930. <https://doi.org/10.1111/j.1540-6261.2004.00683.x>

- Cheung, A., & Roca, E. (2013). The effect on price, liquidity and risk when stocks are added to and deleted from a sustainability index: Evidence from the Asia Pacific context. *Journal of Asian Economics*, 24, 51–65. <https://doi.org/10.1016/j.asieco.2012.08.002>
- Chung, K. H., McInish, T. H., Wood, R. A., & Wyhowski, D. J. (1995). Production of information, information asymmetry, and the bid-ask spread: Empirical evidence from analysts' forecasts. *Journal of Banking & Finance*, 19(6), 1025–1046. [https://doi.org/10.1016/0378-4266\(94\)00068-E](https://doi.org/10.1016/0378-4266(94)00068-E)
- Consolandi, C., Jaiswal-Dale, A., Poggiani, E., & Vercelli, A. (2008). Global standards and ethical stock indexes: the case of the Dow Jones Sustainability Stoxx Index. *Journal of Business Ethics*, 87(S1), 185–197. <https://doi.org/10.1007/s10551-008-9793-1>
- Corporate Finance Institute. (2024, December). Stock Market Index. Corporate Finance Institute. <https://corporatefinanceinstitute.com/resources/career-map/sell-side/capital-markets/stock-market-index/>
- Denis, D. K., McConnell, J. J., Ovtchinnikov, A. V., & Yu, Y. (2003). S&P 500 index additions and earnings expectations. *The Journal of Finance*, 58(5), 1821–1840. <https://doi.org/10.1111/1540-6261.00589>
- Fama, E. F. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. *The Journal of Finance*, 25(2), 383. <https://doi.org/10.2307/2325486>
- Gao, M., & Geng, X. (2024). The role of ESG performance during times of COVID-19 pandemic. *Scientific Reports*, 14(1). <https://doi.org/10.1038/s41598-024-52245-7>
- Global Sustainable Investment Alliance. (2023). Global Sustainable Investment Review 2022. Global Sustainable Investment Alliance. <https://www.gsi-alliance.org/members-resources/gsir2022/>
- Goetzmann, W. N., & Garry, M. (1986). Does Delisting from the S&P 500 Affect Stock Price? *Financial Analysts Journal*, 42(2), 64–69.
- Harris, L. E., & Gurel, E. (1986). Price and Volume Effects Associated with Changes in the S&P 500 List: New Evidence for the Existence of Price Pressures. *The Journal of Finance*, 41(4), 815–829. <https://doi.org/10.2307/2328230>
- Indonesia Capital Market Roadmap 2023-2027. (2023). <https://ojk.go.id/id/Publikasi/Roadmap-dan-Pedoman/Pasar-Modal/Pages/Roadmap-Pasar-Modal-Indonesia-2023-2027.aspx>
- Jain, P. C. (1987). The Effect on Stock Price of Inclusion in or Exclusion from the S&P 500. *Financial Analysts Journal*, 43(1), 58–65. <https://www.jstor.org/stable/4479002>
- Kamal, R. (2014). New evidence from S&P 500 index deletions. *The International Journal of Business and Finance Research*, 8(2), 1–10. <https://ssrn.com/abstract=2322801>
- Lackmann, J., Ernstberger, J., & Stich, M. (2011). Market reactions to increased reliability of sustainability information. *Journal of Business Ethics*, 107(2), 111–128. <https://doi.org/10.1007/s10551-011-1026-3>
- Li, Y., & Sadeghi, M. (2010). Price Performance and Liquidity Effects of Index Additions and Deletions: Evidence from Chinese Equity Markets. *Asian Journal of Finance & Accounting*, 1(2). <https://doi.org/10.5296/ajfa.v1i2.193>
- Lindananty, L., & Soedarman, M. (2015). Konsistensi Reaksi Pasar Modal Indonesia Terhadap Penerbitan Indeks Sri-Kehati. *Jurnal Manajemen Dan Kewirausahaan*, 17(1). <https://doi.org/10.9744/jmk.17.1.43-54>
- MacKinlay, A. C. (1997). Event studies in economics and finance. *Journal of Economic Literature*, 35(1), 13–39. <http://www.jstor.org/stable/2729691>
- Mikkelson, W. H., & Partch, M. M. (1985). Stock price effects and costs of secondary distributions. *Journal of Financial Economics*, 14(2), 165–194. [https://doi.org/10.1016/0304-405x\(85\)90013-3](https://doi.org/10.1016/0304-405x(85)90013-3)
- MSCI. (2025). MSCI World SRI Index - MSCI [Fact Sheet]. <https://www.msci.com/www/index-factsheets/msci-world-sri-index/05953516>
- Murashima, M. (2023). The impact of the COVID-19 pandemic on motivating factors affecting individual investors' socially responsible investment decision: a comparative analysis of the USA, Germany and Japan. *Corporate Governance*, 23(5), 1063–1084. <https://doi.org/10.1108/cg-08-2022-0342>
- Omura, A., Roca, E., & Nakai, M. (2021). Does responsible investing pay during economic downturns: Evidence from the COVID-19 pandemic. *Finance Research Letters*, 42. <https://doi.org/10.1016/j.frl.2020.101914>
- Ortmann, R., Pelster, M., & Wengerek, S. T. (2020). COVID-19 and investor behavior. *Finance Research Letters*, 37, 101717. <https://doi.org/10.1016/j.frl.2020.101717>
- Petajisto, A. (2008). Selection of an optimal index rule for an index fund. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.1264698>
- PwC. (2020). Rethinking ESG in a post COVID-19 world. PwC Malaysia. <https://www.pwc.com/my/en/assets/publications/2020/rethinking-esg-in-a-post-covid-19-world.pdf>

- Razali, N., & Wah, Y. (2011). Power comparisons of Shapiro-Wilk, Kolmogorov-Smirnov, Lilliefors and Anderson-Darling tests. *Journal of Statistical Modeling and Analytics*, 2(1), 21–33. https://www.researchgate.net/publication/267205556_Power_Comparisons_of_Shapiro-Wilk_Kolmogorov-Smirnov_Lilliefors_and_Anderson-Darling_Tests
- Robinson, M., Kleffner, A., & Bertels, S. (2011). Signaling Sustainability Leadership: Empirical evidence of the value of DJSI membership. *Journal of Business Ethics*, 101(3), 493–505. <https://doi.org/10.1007/s10551-011-0735-y>
- Scholes, M. S. (1972). The market for securities: substitution versus price pressure and the effects of information on share prices. *The Journal of Business*, 45(2), 179. <https://doi.org/10.1086/295444>
- Sekretariat Kabinet Republik Indonesia. (2023, January 4). PPKM Berakhir, Wapres Tegaskan Vaksinasi Terus Dilakukan. Sekretariat Kabinet Republik Indonesia.
- Shleifer, A. (1986). Do demand curves for stocks slope down? *The Journal of Finance*, 41(3), 579–590. <https://doi.org/10.1111/j.1540-6261.1986.tb04518.x>
- Sun, M., Nagata, K., & Onoda, H. (2011). The investigation of the Current Status of Socially Responsible Investment Indices. *Journal of Economics and International Finance*, 3(13), 676–684.
- Sutrisno, B. (2019). Does the inclusion of Indonesian firms in a sustainable and responsible investment index affect stock performance? *KnE Social Sciences*. <https://doi.org/10.18502/kss.v3i26.5384>
- Targanski, K. P. T., & Murhadi, W. R. (2021). Sustainable and responsible investment in Indonesia and Malaysia: an event study on SRI-KEHATI and FTSE4GBM Indices. *Jurnal Siasat Bisnis*, 25(1), 69–78. <https://doi.org/10.20885/jsb.vol25.iss1.art6>
- Vespro, C. (2006). Stock Price and Volume Effects Associated with Compositional Changes in European Stock Indices. *European Financial Management*, 12(1), 103–127. <https://doi.org/10.1111/j.1354-7798.2006.00312.x>
- Wang, C., Murgulov, Z., & Haman, J. (2015). Impact of changes in the CSI 300 Index constituents. *Emerging Markets Review*, 24, 13–33. <https://doi.org/10.1016/j.ememar.2015.05.005>
- Wijaya, A. L., Noviyanti, M., & Mahayu, P. (2019). Market Reaction On The Announcement Of Sri Kehati Index In Indonesian Stock Exchange. *Studies And Scientific Researches Economics Edition*, 30. <https://doi.org/10.29358/sceco.v0i30.440>
- Woolridge, J. R., & Ghosh, C. (1986). Institutional Trading And Security Prices: The Case Of Changes In The Composition Of The S&P 500 Index. *The Journal of Financial Research*, 9(1), 13–24. <https://doi.org/10.1111/j.1475-6803.1986.tb00432.x>