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The Impact of Regulatory Fines on Stock Performance: Evidence from Turkish Capital Markets

Kartal Somuncu[1]

This study examines the short-term market effects of administrative fines imposed on corporations by the Capital Markets Board of Türkiye (CMB) on the stock returns of the sanctioned firms. Regulatory sanctions generate not only legal and financial consequences but also significant information shocks that update investors' information sets and influence expectations regarding firm value. The aim of the study is to analyze whether administrative fines are priced by investors as a deterrent mechanism or as a public signal that reduces information asymmetry.The empirical analysis is based on 1,091 administrative fine announcements directed exclusively at corporations and publicly disclosed in the CMB's weekly bulletins over the period 2013–2024. Using the event study methodology, expected returns are estimated with the market model, and abnormal returns as well as cumulative average abnormal returns are calculated over an event window of [-10, +10] trading days. The findings indicate that, for the full sample, market reactions to fine announcements are limited and transitory; however, during the 2019–2024 period, administrative fines generate strong and persistent negative price reactions. These results suggest that, in the more recent period, CMB sanctions have been perceived by investors as stronger signals of corporate risk and reputational loss.

Keywords: *Regulatory Enforcement, Administrative Fines, Stock Price Reaction, Event Study Methodology, Emerging Markets.*

İdari Para Cezalarının Hisse Senedi Getirileri Üzerindeki Etkisi: Türkiye Sermaye Piyasalarından Kanıtlar

Öz

Bu çalışma, Sermaye Piyasası Kurulu (SPK) tarafından şirketlere uygulanan idari para cezalarının, ilgili şirketlerin hisse senedi getirileri üzerindeki kısa vadeli piyasa etkilerini incelemektedir. Düzenleyici yaptırımlar, hukuki ve mali sonuçlarının yanı sıra yatırımcıların bilgi setini güncelleyen ve firma değerine ilişkin beklentileri etkileyen önemli bilgi şokları üretmektedir. Çalışmanın amacı, idari para cezalarının yatırımcılar tarafından caydırıcı bir mekanizma mı yoksa bilgi asimetrisini azaltan kamusal bir sinyal mi olarak fiyatlandığını analiz etmektir.

Ampirik analiz, SPK haftalık bültenlerinde 2013–2024 döneminde kamuya açıklanan ve yalnızca şirketlere yönelik 1.091 idari para cezası duyurusuna dayanmaktadır. Olay çalışması yöntemi kullanılarak beklenen getiriler piyasa modeliyle tahmin edilmiş; anormal getiriler ve kümülatif ortalama anormal getiriler [-10, +10] işlem günü penceresinde hesaplanmıştır. Bulgular, tüm örneklem için piyasa tepkilerinin sınırlı ve geçici olduğunu, ancak 2019–2024 döneminde idari para cezalarının güçlü ve kalıcı negatif fiyat tepkileri yarattığını göstermektedir. Bu sonuçlar, son dönemde SPK yaptırımlarının yatırımcılar tarafından daha ciddi bir kurumsal risk ve itibar kaybı sinyali olarak algılandığını ortaya koymaktadır.

Anahtar Kelimeler: *Düzenleyici Yaptırım, İdari Para Cezalar, Hisse Senedi Fiyat Tepkisi, Olay Çalışması Yöntemi, Gelişmekte Olan Piyasalar.*

[1] Dr. Öğr. Üyesi, Afyon Kocatepe Üniversitesi Bayat Meslek Yüksekokulu, ksomuncu@gmail.com, https://orcid.org/0000-0002-5087-414X

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INTRODUCTION

In Türkiye's capital markets, administrative fines constitute one of the principal enforcement instruments employed by the regulatory authority, the Capital Markets Board (CMB), to maintain market discipline, protect investor rights, and strengthen corporate governance. Fines imposed on corporations are not limited to defining the legal and financial consequences of a given violation; they also update the market's information set and may directly affect stock prices, investor confidence, and perceived market efficiency. Public disclosure of sanction decisions prompts investors to reassess their expectations regarding a firm's transparency, regulatory compliance, and risk management performance. Such reassessments may be interpreted, depending on the context, as signals of a permanent deterioration in the firm's risk profile, as a temporary reputational shock, or, less frequently, as an indication of a restructuring process aimed at strengthening corporate compliance capacity. Accordingly, analyzing the direction, magnitude, and timing of the effects of administrative fines imposed by the CMB on corporate stock returns constitutes a critical area of research, both for debates on market efficiency—specifically, how rapidly and accurately information is incorporated into prices—and for contemporary discussions in the deterrence and corporate governance literature.

Evidence from the international literature on the market effects of administrative sanctions imposed by comparable regulatory authorities further reinforces this framework. Studies focusing on fines imposed by institutions such as the U.S. Securities and Exchange Commission (SEC) and competition authorities generally document short-term negative abnormal returns following sanction announcements, with these effects typically arising through channels related to information updating, reputational losses, and downward revisions in expected cash flows (Karpoff et al., 2009, p.590-592). At the same time, some research suggests that the impact of sanctions is not confined to immediate financial losses; firms may strengthen internal control systems, undertake corporate governance reforms, and increase compliance investments after regulatory enforcement actions, which can lead to a partial recovery in market perceptions over the longer horizon (Alexander, 1999). These mixed findings have elevated the importance of two core theoretical perspectives in assessing how administrative fines are priced by the market. The deterrence perspective posits that sanctions discipline firms' future behavior by reducing the likelihood of subsequent violations, whereas the information asymmetry perspective emphasizes that fines often reveal previously undisclosed information about misconduct, implying that market reactions primarily reflect the pricing of newly released information (Arlen & Kraakman, 1997, p. 747; Coffee, 1981, p. 216). In this respect, examining the stock price effects of administrative fines imposed on corporations not only measures the economic consequences of regulatory enforcement but also provides insights into how such sanctions contribute to market discipline, information transparency, and capital market efficiency.

In the Turkish context, empirical studies examining how administrative fines imposed on corporations are reflected in stock returns remain limited and fragmented in scope. Existing research has generally focused on specific years, particular sectors, or relatively small samples; while these studies address short-term price reactions to sanction announcements, they do not comprehensively analyze the nature of the market's information-processing mechanism, indicators of the deterrent function of fines, or pre-announcement price behavior (Çetinkaya & Somuncu, 2024, p. 812). Moreover, there is a notable lack of long-horizon empirical evidence assessing how the CMB's enforcement practices and potential period-specific shifts in sanction policies are related to market reactions over time. Analytical distinctions among different types of corporate sanctions—such as violations related to financial reporting, market abuse, or disclosure

obligations are also rarely addressed in a systematic manner within the existing literature (Bülbül, 2018). Accordingly, examining the dynamics of market reactions based exclusively on administrative fines imposed on corporations, using a large-scale sample spanning an extended period, has the potential both to fill an important empirical gap in the literature on Turkish capital markets and to contribute to the international regulatory enforcement literature from the perspective of an emerging market.

Within this framework, the present study aims to measure the effects of administrative fines imposed by the CMB on corporate stock returns and to identify the direction, magnitude, and timing of these effects. The central research question can be stated as follows: Does the public announcement of administrative fines imposed on corporations by the CMB generate short-term and period-specific abnormal returns in the stock prices of the sanctioned firms, and what do these reactions reveal about the information-processing capacity and efficiency of Türkiye's capital markets?

Against this background, the study seeks to make the following original contributions to the literature.

First, by employing a comprehensive dataset covering all administrative fines imposed exclusively on corporations by the CMB over the 2013–2024 period, the analysis offers a long-horizon and holistic examination of the price effects of regulatory enforcement actions in an emerging market setting.

Second, by analyzing short-term pre-announcement price and trading volume behavior, the study explicitly tests the possibility of information leakage, assessing whether observed market reactions can be attributed to information asymmetry and potential insider trading rather than to deterrence effects alone, thereby providing empirical input into the market efficiency debate.

Third, to capture the influence of changes in sanction policies and macroeconomic conditions, the sample is divided into subperiods, allowing for an examination of structural differences and period-specific patterns in market reactions.

Finally, by interpreting the findings through the lenses of deterrence and information asymmetry, the study offers policy-relevant insights into the implications of the CMB's enforcement practices for market confidence, corporate transparency, and overall capital market efficiency.

To this end, the study employs the event study methodology to measure short-term market reactions around the sanction announcement date (t = 0). Expected returns are estimated using the market model, and abnormal returns (AR), average abnormal returns (AAR), cumulative abnormal returns (CAR), and cumulative average abnormal returns (CAAR) are calculated over an event window of (−10, +10). To assess potential weaknesses in the information-processing mechanism of Turkish capital markets, pre-announcement price behavior—particularly within the (−10, −1) window—is examined separately, allowing for an empirical evaluation of information leakage or insider trading. Given that institutional and macroeconomic conditions in emerging markets may evolve over time, the 2013–2024 period is further divided into subperiods to investigate whether market reactions exhibit period-specific variation. The scope of the analysis is confined exclusively to administrative fines imposed on corporations, while sanctions directed at individuals are excluded. This choice clarifies the analytical boundaries of the study and enables a more direct assessment of the market effects of firm-level regulatory enforcement actions.

The remainder of the paper is organized as follows. Section 2 develops the theoretical framework, drawing on deterrence and information asymmetry perspectives to establish the conceptual foundations through which the market effects of CMB sanctions are interpreted. Section 3 provides a selective review of the existing literature on administrative fines imposed on corporations in Turkish capital markets and identifies the specific research gap addressed by the study. Section 4 describes the dataset, event selection criteria, subperiod classifications, and the implementation of the event study methodology. Section 5 details the empirical methodology employed in the analysis. Section 6 presents the empirical findings, focusing on short-term market reactions, pre-announcement price behavior, and period-specific differences. Section 7 discusses the results within a theoretical and policy-oriented framework, offering policy and practical implications for the CMB, firms, and investors. Section 8 concludes by summarizing the main findings, discussing the limitations of the study, and outlining directions for future research.

1. THEORETICAL FRAMEWORK

The effect of regulatory sanctions on firm value in capital markets is commonly explained through two main theoretical approaches: deterrence theory and the information asymmetry–market efficiency framework. These approaches identify alternative causal channels through which administrative fines may affect firm value and generate testable and contrasting empirical predictions (Arlen & Kraakman, 1997, p. 747; Coffee, 1981, p. 216). This study does not treat these perspectives as mutually exclusive models; rather, it considers them as complementary analytical frameworks for understanding the short-term market effects of regulatory enforcement.

1.1. Deterrence Theory and Compliance Behavior

Deterrence theory posits that the primary function of regulatory sanctions is to reduce the likelihood of future violations, arguing that enforcement actions can generate measurable consequences for both corporate governance structures and market perceptions of risk (Becker, 1968, p. 185). Administrative fines imposed by the CMB on firms are therefore expected to induce negative price reactions in the short run through channels such as reputational damage, increased compliance costs, and the potential initiation of further legal proceedings. At the same time, the theory does not rule out the possibility of neutralization or partial recovery in the medium term, driven by strengthened risk management infrastructures, institutionalization of internal control and compliance mechanisms, and reduced incentives for future misconduct (Karpoff et al., 2008, p. 1051).

Accordingly, the observation of negative abnormal returns (AR) and cumulative abnormal returns (CAR) immediately following an announcement is theoretically consistent with deterrence theory; however, the magnitude, persistence, and direction of the effect may vary depending on the extent of the organizational and governance adjustments triggered by the sanction.

1.2. Information Asymmetry, Market Efficiency, and the Leakage Mechanism

From the information asymmetry perspective, an administrative fine serves primarily as a vehicle through which new and unfavorable information about the firm becomes public, thereby updating investors' information sets and prompting a reassessment of the nature of the violation, the firm's transparency profile, and future expectations. Within this framework, a negative price reaction at the time of announcement is a predictable outcome (Alexander, 1999, p. 518).

In emerging markets, however, information flows are often neither instantaneous nor symmetric. Information that reaches certain market participants prior to official disclosure may

therefore generate anomalous price movements before the announcement, pointing to information leakage or insider trading in markets that fail to satisfy semi-strong form efficiency. Empirically, this possibility can be examined through indicators such as negative abnormal returns in narrow pre-announcement windows (−10/−1), abnormal increases in trading volume, imbalances in buy–sell pressure, and rising liquidity costs (Çetinkaya & Somuncu, 2024, p. 812). Under this approach, the valuation effect of a regulatory sanction is attributed not to the fine itself, but to the timing and content of the information revealed to the market; consequently, what must be priced is the informational signal embedded in the sanction, rather than the monetary penalty per se.

1.3. Conditions Specific to Emerging Markets and Regulatory Credibility

In emerging markets such as Türkiye, the impact of regulatory sanctions is shaped not only by economic rationality but also by institutional factors, including trust in the regulatory authority, the consistency of enforcement practices, supervisory capacity, the effectiveness of post-sanction monitoring, the macroeconomic environment, and overall market sentiment. Accordingly, the price effects of administrative fines may emerge as a composite outcome linked not merely to the magnitude of the penalty or the nature of the violation, but also to the perceived authority and credibility of the institution imposing the sanction.

Within this framework, the effect of a regulatory penalty can be conceptualized as a three-stage mechanism:

Penalty Decision	→ Information Shock	→ (Negative AR)
Nature of the Sanction	→ Compliance Process	→ (Medium-Term Effect)
Institutional Perception	→ Regulatory Credibility	→ (Temporal Differentiation)

Therefore, in emerging markets, regulatory effects should not be expected to be homogeneous. Instead, varying reaction patterns are likely to be observed depending on prevailing market conditions, period-specific structural breaks, and shifts in the balance of regulatory credibility. In this sense, the present study offers not only an assessment of the economic consequences of regulatory sanctions but also a structural interpretation that indirectly tests the institutional standing of the CMB within the market and its capacity for information production.

1.4. Research Hypotheses

Based on this theoretical framework, the study tests the following hypotheses. Since administrative fines imposed on firms are expected to generate stronger market reactions than sanctions imposed on individuals, the scope of the study is restricted exclusively to corporate penalties.

H1: The announcement of administrative fines imposed on firms by the Capital Markets Board of Türkiye (CMB) leads to negative cumulative abnormal returns (CAR) within short-term event windows around the announcement date.

H2: The observation of statistically significant negative abnormal returns and/or increased trading volume during the narrow pre-announcement window (−10/−1) indicates the presence of information leakage and potential insider trading.

H3: Administrative fines imposed on firms generate stronger market reactions than sanctions imposed on individuals.

H4: Price reactions vary across periods; in particular, an evolutionary change in the market's information-processing capacity is expected across the subperiods 2013–2018, 2019–2024, 2013–2016, 2017–2020, and 2021–2024.

This theoretical structure renders the use of CAR measures methodologically essential, as they allow the analysis to capture both the impact of information shocks and the potential neutralization or recovery dynamics associated with deterrence within short-term pricing windows. Accordingly, the event-study design employed in the methodology section provides the necessary analytical foundation for testing the theoretical expectations of the study.

2. LITERATURE REVIEW

Empirical studies examining the impact of regulatory sanctions on stock returns are reviewed and classified along three main dimensions: (i) sanction effects within the framework of deterrence theory, (ii) regulatory announcements from the perspective of information asymmetry and market efficiency, and (iii) findings that do not fully conform to the predictions of either theory or that present heterogeneous results. This structure is directly aligned with the dual theoretical framework underpinning the present study and serves to make explicit the foundations in the literature for the hypotheses employed to explain price reactions to administrative fines imposed on firms by the Capital Markets Board of Türkiye (CMB).

Table 1: Literature Review

Author(s), Year	Country / Market	Sample and Period	Event Window	Main Findings (Brief Summary)
Çetinkaya and Somuncu (2024)	Türkiye (BIST)	CMB audit announcements (234 audit events, 2000–2018)	Announcement day and post-announcement period (approximately 10 days)	Statistically significant negative returns on the announcement day; in some cases, price movements prior to the announcement → evidence of information leakage and issues with semi-strong market efficiency.
Alqurayn et.al. (2024)	Saudi Arabia (Tadawul)	Unexpected corporate announcements, insider trading (1,958 unexpected announcements, 2011–2020)	Short pre-announcement window	Although the incidence of pre-announcement price movements declined after financial reforms, the difference is not statistically significant; regulations are partially effective in reducing information leakage, with an emphasis on the need for stronger enforcement.
Alqurayn et. al. (2024)	Saudi Arabia (Tadawul)	Same sample	Pre-reform vs. post-reform	Reforms reduce information leakage to some extent; market transparency and deterrence increase partially, but the effects remain limited → need for stricter enforcement.
Huang (2023)	China	Random inspections, Split Share Reform, and punitive sanctions; multiple policy episodes, firm-level panel	Policy announcement windows	Random inspections generate price declines particularly for firms with limited prior inspection history; some reforms are perceived positively; regulatory interventions have strong effects on market discipline and efficiency.
Huang and Zhang (2023)	China	Reputational sanctions (2013–2018, multiple firms)	Short-term announcement windows	Following public criticism, especially private and externally finance-dependent firms experience strong negative returns; however, the long-term effect on permanently changing firm behavior is limited → deterrence is partially weak.

Bauer et. al. (2021)	United States	IRS audit threat (1992–2015, multiple firms)	Annual periods	Firms facing audit threat exhibit a lower risk of stock price crashes; the effect is more pronounced in firms with powerful CEOs and strong risk-taking incentives → tax audits play an indirect deterrent and protective role.
Wang et. al. (2019)	China	Financial fraud penalties and reputational sanctions (2007–2016, offending firms)	Event day and short-term windows	Both monetary and reputational penalties generate negative abnormal returns; monetary fines have a stronger impact; evidence of pre-announcement information leakage is observed in some cases.
Kirat and Rezaee (2019)	France	AMF sanction events, 2000s period	Announcement day and very short windows	Only sanctions covered by the media generate statistically significant negative returns; market reactions are weak for directly disclosed but low-visibility events → the information channel and visibility are decisive.
Bülbül (2018)	Türkiye (BIST)	Competition Authority administrative monetary fines (47 firms, 61 penalty decisions; 2002–2013)	21-day window (t–15, t+5)	Daily AARs are not significant; CAARs are significantly negative in some window combinations; competition fines lead to short-term declines in firm value and reputational losses.
Xu et. al. (2016)	China	Environmental violations and government penalties (173 events, 1990s–2000s)	Short-term announcement windows	Larger negative returns are observed in cases with high media attention and official penalties; losses are limited for ISO 14001–certified firms → information visibility and corporate reputation shape price reactions.
Aguzzoni et. al. (2013)	EU	European Commission competition fines (91 investigations, 180 firms; 1979–2009)	(–20, +10) and alternative windows	Approximately –3.6% negative abnormal return in the main window; more limited but still negative effects in alternative windows; competition fines undermine investor confidence and have a deterrent nature.
Feinberg and Round (2005)	Australia	Price-fixing cartel fines (13 publicly listed firms; 1992–2001)	Short-term windows	No significant abnormal returns are observed following cartel fines; monetary penalties are not perceived as a serious threat by investors → deterrence effect is weak.
Chen et. al. (2005)	China	CSRC sanctions (169 sanction events; 1999–2003)	Short-term announcement windows	Negative abnormal returns between –1% and –2% in the days following the announcement; auditor and CEO turnover increases in the post-sanction period → sanctions are disciplinary for both prices and corporate governance.
Detre and Golub (2004)	United States	Sherman Act antitrust cases (24 publicly listed firms; 1981–2001)	Main window: 11 days; alternative 2-day window	No significant effect in the 11-day window; a –3.41% negative return is observed in the narrow 2-day window; market reactions are very short-lived and dissipate quickly.
Tomlin (2004)	United States	Microsoft antitrust case (rival Netscape; Netscape stock; 1990s)	Short-term window	The antitrust case generates approximately an 11% positive CAAR for Netscape; regulatory pressure on a dominant rival creates value gains for competitors.

Mullin et. al. (1995)	United States	U.S. Steel divestiture case and related developments (13 major events; 1911–1920)	Short windows around event dates	Significant abnormal returns are observed for U.S. Steel stock in only 5 events; the effects of antitrust cases are heterogeneous depending on event type and sectoral context.
Reichert et. al. (1996)	United States	Corporate crime cases (90 firms; 1980–1990)	Event day and alternative 4-day window	Negative abnormal returns of –1.3% on the announcement day and –2.78% over the 4-day window; short-term value loss reflects priced legal costs and reputational effects.
Frooman (1997)	Multiple countries	Illegal and socially irresponsible behavior (meta-analysis; 27 event studies; various periods)	Various windows	Illegal and socially irresponsible behavior significantly reduces shareholder wealth; regulatory and ethical violations are systematically penalized.
Elyasiani and Mansur (1994)	United States	FIRREA banking reform (36 banks, 24 savings and loan institutions; 1988–1989)	Reform announcement period	Positive abnormal returns are observed for savings and loan institutions; no significant effect is found for commercial banks → regulatory reforms generate heterogeneous market effects across institution types.
Ameen et. al. (1994)	United States	Qualified audit opinions (small firms) (177 firms; 1974–1978)	Pre- and post-announcement windows	Stock values are negatively affected prior to the announcement, with no significant change afterward; bad news is anticipated and priced in advance → indication of information leakage / weak market efficiency.
Engelmann and Cornell (1988)	United States	IBM–Telex antitrust case (5 major developments; 1970s)	Short windows around event days	A 13.3% positive abnormal return is observed upon news that IBM lost the case and was ordered to pay substantial damages; the resolution of uncertainty and clarification of expectations can be priced positively.
Binder (1988)	United States	Supreme Court decision on the Trans-Missouri cartel case (railroad companies; 1897 decision)	Short post-decision windows	No significant abnormal returns are detected following the decision; investors may have anticipated the ruling or perceived its economic impact as limited.
Bosch & Eckard (1991)	United States	Department of Justice cartel cases (127 firms; 1962–1980)	Month of lawsuit announcement and short windows	Cartel lawsuit announcements generate approximately –1.08% negative abnormal returns in the announcement month; investors penalize firms by pricing in the loss of future cartel profits.
Garbade et. al. (1982)	United States	Antitrust violation cases (various firms; 1937–1974)	first 4 days after the announcement	An average negative abnormal return of around –6% following lawsuit announcements; the effect is concentrated in the first few days and dissipates thereafter.

Note. CMB = Capital Markets Board of Türkiye; AAR = average abnormal return; CAAR = cumulative average abnormal return; CSRC = China Securities Regulatory Commission; IRS = Internal Revenue Service; AMF = Autorité des marchés financiers; FIRREA = Financial Institutions Reform, Recovery, and Enforcement Act.
Source: Somuncu, 2025.

2.1. Regulatory Sanctions in the Context of Deterrence Theory

According to the deterrence approach, regulatory penalties are interpreted by investors as a signal of a firm's reshaped compliance capacity, generating a punitive effect in the short term and a disciplinary effect in the medium term. Recent studies support this view. For instance, Huang (2023) reports that random inspections and punitive sanctions in China generate significantly negative price reactions, particularly for firms with weak prior inspection histories, and that this effect strengthens market discipline (Huang, 2023, p. 1124). Similarly, Huang and Zhang (2023)

show that reputational sanctions produce strong negative returns in the short term, especially for privately owned firms; however, their effectiveness in permanently altering governance behavior in the long run remains limited (Huang & Zhang, 2023, p. 1419).

In the Turkish context, Bülbül (2018), examining Competition Authority fines, finds that sanction-related announcements during the 2002–2013 period generate significantly negative cumulative abnormal returns in certain event windows. This indicates that penalties trigger adverse expectations regarding market discipline and that the financial burden of sanctions lowers investor expectations (Bülbül, 2018, p. 77). Similarly, Chen et. al. (2005) document that regulatory sanction announcements in China lead to significant negative returns in the range of –1% to –2%, and that auditor and CEO turnover increases following sanctions, highlighting the disciplinary role of sanctions on corporate governance (Chen et al., 2005, p. 694). These findings imply that the price effects of penalties are linked not only to economic costs but also to structural transformations within firms.

Assessing broader financial system dynamics, Bauer et. al. (2021) show that the threat of IRS audits reduces stock price crash risk in U.S. capital markets, with the effect being more pronounced in firms characterized by concentrated CEO power. They argue that even the expectation of enforcement can serve a deterrent function (Bauer et al., 2021, p. 161). This result is consistent with the theoretical mechanism of "sanction announcement → short-term loss; audit threat → medium-term stability."

Overall, deterrence-oriented studies indicate that short-term negative AR/CAR effects are expected and that sanctions increase perceived risk premiums; however, depending on market and firm characteristics, these effects may neutralize or even reverse in the medium term. These findings provide both theoretical and empirical support for hypotheses H1 and H4 of the study.

2.2. Information Asymmetry and the Market Efficiency Perspective

According to the information asymmetry approach, the economic impact of penalties stems not from the sanction itself but from the disclosure of information. For this reason, pre-announcement price anomalies, information leakage, and indicators of insider trading constitute an important area of research, particularly in emerging markets. Indeed, Çetinkaya and Somuncu (2024) report negative returns and increased trading volume in short periods prior to Capital Markets Board (CMB) audit announcements, indicating that the Turkish market fails to achieve semi-strong efficiency and that regulatory information is selectively disseminated (Çetinkaya & Somuncu, 2024, p. 812). This finding provides direct empirical support for hypothesis H2 (information leakage) examined in this study.

Kirat and Rezaee (2019) demonstrate that among AMF sanctions in France, only those covered by the media generate negative returns, whereas directly disclosed but low-visibility sanctions are not priced by the market, revealing that the transmission channel and visibility of information are decisive factors in market reactions (Kirat & Rezaee, 2019, p. 104). This highlights that the economic value of an announcement is determined not by the penalty itself but by the speed and breadth of information dissemination.

Alqurayn et al. (2024) (2024) report that financial reforms in Saudi Arabia have achieved limited success in reducing insider trading; although pre-announcement price movements decline after reforms, no statistically significant improvement is observed, indicating that the relationship between sanctions and information asymmetry depends on institutional capacity (Alqurayn et al., 2024, p. 52). The findings of Wang et. el. (2019) similarly show that the nature of sanctions and the

content of violations determine the magnitude of information shocks, with pre-announcement price anomalies detected in some sanction events (Wang et al., 2019, p. 88).

Taken together, the information asymmetry literature demonstrates that market reactions are shaped not only by the severity or size of sanctions but also by the timing of information and unequal access to it. This strengthens the methodological justification for the pre-event (–10/–1) tests employed in this study and clearly highlights the contribution potential of hypothesis H2 to the literature.

2.3. Studies Presenting Heterogeneous or Partial Theoretical Findings

Some studies in the literature do not fully confirm the predictions of deterrence and information asymmetry approaches, arguing that market reactions may vary depending on the nature of the event, sectoral dynamics, or the manner in which uncertainty is resolved. For example, Tomlin (2004) reports that the antitrust case filed against Microsoft generated an approximately 11% positive abnormal return for Netscape stock, suggesting that regulatory pressure on a dominant rival can create value opportunities for competitors (Tomlin, 2004). Similarly, Engelmann and Cornell (1988) find an unexpectedly positive price reaction in the IBM–Telex case, attributing this outcome not to the sanction itself but to the resolution of uncertainty (Engelmann & Cornell, 1988, p. 213).

Feinberg and Round (2005) show that cartel fines in Australia do not generate significant price effects for investors and that the deterrence value of penalties is perceived as low by the market (Feinberg & Round, 2005, p. 38). Likewise, Detre and Golub (2004) find no significant effects in broad event windows for Sherman Act cases, but detect negative reactions in very narrow windows, indicating that market responses may be intense yet short-lived (Detre & Golub, 2004, p. 941).

These studies demonstrate that regulatory effects are context-dependent and heterogeneous; therefore, they theoretically support hypothesis H4 of this study, which posits that the impact of Capital Markets Board (CMB) monetary penalties may vary across periods. In this context, such studies in the literature can be considered empirical antecedents that strengthen the rationale for the period-based segmentation used in the research design (2013–2016 / 2017–2020 / 2021–2024 / 2013–2018 / 2019–2024).

2.4. General Assessment and Research Gap

The existing literature shows that regulatory sanctions generally generate negative price reactions in the short term, while pre-announcement anomalies point to the risk of information asymmetry. However, in the Turkish context, there is no study that examines only administrative monetary fines imposed on firms using a broad dataset (2013–2024) with a clear pre- and post-period distinction. Therefore, the present study both operationalizes the theoretical distinctions in the literature and addresses the market effects of Capital Markets Board (CMB) sanctions through a new methodological framework that goes beyond the individual/firm-level distinction.

3. DATA AND DESCRIPTIVE STATISTICS

The dataset used in this study is compiled from administrative monetary penalty decisions publicly announced in the weekly bulletins of the Capital Markets Board (CMB) over the period 01.01.2013–31.12.2024. During this period, a total of 2,265 administrative monetary penalties were imposed by the CMB; 1,174 of these (51.83%) were imposed on individuals, while 1,091 (48.17%) were imposed on firms. In terms of penalty amounts, of the total sanction volume of

approximately TRY 1.818 billion, TRY 1.181 billion (64.96%) was imposed on individuals and TRY 637 million (35.04%) on firms. Accordingly, individual penalties are more prevalent in number and also dominant in value terms. However, in order to directly observe the economic burden on firm value, corporate governance, and market discipline through stock price reactions, the event universe of this study is restricted solely to administrative monetary penalties imposed on firms. Penalties imposed on individuals are excluded from the empirical analysis, as they imply a different mechanism in terms of the economic addressee of the event, the information generation channel, and stock-level matching challenges; they are reported in aggregate in this section solely to provide contextual background on the overall level of regulatory activity in the Turkish capital market.

3.1. Annual Distribution of Administrative Monetary Penalties Imposed on Firms

Table 2 summarizes the annual number and total amounts of administrative monetary penalties imposed on firms during the 2013–2024 period. Accordingly, a total of 1,091 administrative monetary penalties were imposed on firms over the sample period, with a total sanction amount of approximately TRY 637.6 million. An examination across years shows that neither the number nor the amounts of penalties follow a strictly monotonic upward trend; instead, they exhibit period-specific fluctuations. In particular, during the 2020–2023 period, the number of firm-level penalties remains relatively moderate, whereas in 2024 a marked surge is observed both in the number of penalties (144 events) and in the total amount of penalties (TRY 262.8 million).

This pattern points to a level of regulatory activity that varies depending both on the enforcement and sanctioning capacity of the Capital Markets Board (CMB) and on market behavior and types of violations. However, the analysis of the relationship between the number/amount of penalties and macroeconomic conditions, inflation dynamics, or trading volume and price levels in Borsa İstanbul is beyond the scope of this study. Instead, this section presents a descriptive overview of the annual distribution of firm-level penalty announcements that are used in the event study analysis.

Table 2: Annual Distribution of Administrative Monetary Penalties Imposed on Firms (2013–2024)

YEARS	Number of Events	Penalty Amounts
2024	144	262,844,739.96
2023	86	80,029,555.93
2022	61	54,020,877.82
2021	95	128,114,458.00
2020	101	40,715,734.00
2019	89	11,563,576.00
2018	66	8,384,862.00
2017	99	16,815,334.00
2016	106	13,621,303.00
2015	93	8,662,300.00
2014	86	8,376,588.00
2013	65	4,488,466.00
2024-2013	1091	637,637,794.71

Source: Somuncu's calculations based on Capital Markets Board (CMB) weekly bulletin data.

The values reported in Table 1 indicate that the intensity of regulatory activity varies across different subperiods. During the 2013–2017 period, the number of penalties imposed on firms remains relatively stable at an average of around 90 events per year, whereas after 2018 there is a slight decline in the total number of events, accompanied by an upward trend in the monetary amounts of penalties. This pattern suggests that changes in the composition of violations may point to a qualitative transformation in firm behavior, implying that fewer events result in higher monetary sanctions.

In particular, the surge observed in 2024 (144 events, approximately TRY 262.8 million) represents the highest values over the entire period, indicating a threshold at which regulatory activity intensified both numerically and financially. This outcome may reflect the combined effects of an increase in the enforcement capacity of the Capital Markets Board (CMB), distortions in market structure, or macroeconomic turbulence; however, given the methodological scope of the study, such causality remains at the level of interpretation and is not empirically tested. Nevertheless, this threshold strengthens the rationale for the intertemporal differentiation hypothesis proposed in H4, while also demonstrating that the market does not perceive the effects of penalties in a one-dimensional or time-invariant manner.

Within this framework, the pattern observed in Table 1 points to two main inferences: (i) administrative monetary penalties imposed on firms exhibit an increasingly concentrated profile in terms of amounts, while displaying period-specific variation in frequency; (ii) this heterogeneity in the annual distribution of penalties indicates that regulatory interventions do not generate a fixed deterrence equilibrium and that market participants' expectations may fluctuate over time. This observation, consistent with the theoretical framework developed in

Section 2, suggests that the market impact of penalties should be evaluated not solely on the basis of monetary magnitude, but also in conjunction with factors such as timing, institutional context, and period-specific intensity.

In sum, the structural fluctuations documented in Table 1 render the subperiod segmentation applied in the empirical analysis (2013–2018 / 2019–2024 / 2013–2016 / 2017–2020 / 2021–2024) methodologically necessary, thereby allowing hypotheses H1 and H2 to be tested not on a single pooled sample but through period-specific pricing dynamics.

3.2. Size Distribution and Basic Statistics of Firm-Level Penalties

Not only the number but also the size distribution of administrative monetary penalties imposed on firms is critical for understanding the intensity and heterogeneity of market reactions. For some firms, relatively small fines reflect minor compliance violations, whereas large penalties may indicate more severe infringements or systematic problems. Accordingly, Table 3 reports, on an annual basis, the mean, standard deviation, mode, median, minimum, and maximum values of administrative monetary penalties imposed on firms over the 2013–2024 period.

Table 3: Annual Basic Statistics of Administrative Monetary Penalties Imposed on Firms: Mean, Distribution, and Outlier Indicators (2013–2024)

Years	Mean (TRY)	Standard Deviation (TRY)	Mode (TRY)	Median (TRY)	Minimum (TRY)	Maximum (TRY)
2024	1,642,084.52	2,105,085.20	1,944,578.00	1,944,578.00	46,958.00	20,006,514.18
2023	1,198,235.53	3,691,078.48	209,349.00	209,349.00	46,958.00	32,795,908.88
2022	864,311.28	3,275,000.66	69,783.00	153,708.00	27,047.00	24,645,743.12
2021	1,213,175.47	2,923,846.54	51,236.00	543,484.50	26,049.00	23,431,500.00
2020	687,965.06	1,917,354.42	38,308.00	140,874.00	26,049.00	15,183,466.00
2019	142,733.69	313,201.13	38,308.00	38,308.00	22,407.00	2,056,891.00
2018	115,765.48	222,518.98	30,961.00	30,961.00	9,321.00	1,495,268.00
2017	168,756.60	301,043.02	24,672.00	52,098.00	20,389.00	2,279,319.00
2016	147,896.96	264,758.22	26,049.00	44,814.00	20,389.00	1,285,259.00
2015	84,493.04	142,598.91	22,407.00	24,672.00	18,492.00	952,308.00
2014	99,718.05	189,219.10	22,407.00	22,407.00	3,045.00	1,078,000.00
2013	68,435.25	103,861.74	21,560.00	21,560.00	2,721.00	674,926.00
2013–2024	536,130.91	1,397,748.20	1,944,578.00	76,616.00	2,721.00	32,795,908.88

Source: Somuncu's calculations based on Capital Markets Board (CMB) weekly bulletin data.

The indicators reported in Table 2 point to two main findings. First, especially in the years after 2019, both the average penalty amounts and the standard deviations increase markedly. This partly reflects the impact of inflation on nominal penalty amounts; however, it also indicates that a small number of very large penalties make the annual distributions right-skewed and sensitive to outliers. The fact that the maximum penalty amount reaches TRY 32.8 million in 2023, and that similarly large penalty decisions are observed in 2024, supports this observation.

Second, the mode and median values indicate a distribution of penalties concentrated at relatively low levels in many years. This distributional structure suggests that penalty amounts are mostly clustered around small-scale values, while a few large penalties exert a substantial upward influence on annual totals and averages. Accordingly, the distribution of penalty amounts is asymmetric and sensitive to outlier observations. This feature calls for caution in interpreting subgroup analyses or period-based comparisons that rely on penalty size in the empirical analysis.

Within the scope of the present study, penalty amount data are used in raw form, without applying any logarithmic transformation or outlier adjustment. Nevertheless, the asymmetry observed in Table 2 suggests that future research or extended versions of this study may consider alternative approaches—such as logarithmic transformation, percentile-based trimming, or winsorization to mitigate the potential effects of the distributional structure on statistical tests.

In sum, the descriptive statistics presented in this section, in line with the theoretical framework developed in Section 2, reveal the time-varying distribution of administrative monetary penalties imposed by the CMB on firms and the heterogeneous nature of penalty sizes. They also clarify the boundaries of the event universe and the data structure for the event study methodology detailed in the subsequent section. The empirical analysis in the following stages will be conducted solely on the firm-level penalty announcements summarized in Tables 1 and 2, while penalties imposed on individuals are excluded from the scope of the study, as they operate through a theoretically different channel and involve a distinct data structure.

3.3. Compatibility of the Data Structure with the Event Study Methodology

The event universe defined in this study satisfies the requirements of the event study methodology, as each administrative monetary penalty is based on a one-to-one match between a single firm and a single announcement date. In the dataset, each event is defined by:

(i) the announcement date,

(ii) the legal basis of the penalty,

(iii) the penalty amount (TRY), and

(iv) the firm identifier,

which together produce a structure that can be directly matched with stock price series.

This structure allows for the empirical testing of the assumption that each event represents a firm-specific and idiosyncratic information shock.

Moreover, these characteristics of the data structure enable:

• testing for information leakage and trading volume anomalies in the pre-event window (t–10/–1),

•isolating price reactions on the event day (t_o), and

• measuring deterrence and labeling effects in the short post-event periods (t+1/+5/+10).

Accordingly, the data structure is directly aligned with the hypothesis set of the study.

3.4. Data Suitability for the Pre-Announcement Period and Information Asymmetry Tests

The dataset is structured to be matched with both price and trading volume data for the 10 trading days preceding the announcement date.

This approach allows for testing mechanisms such as:

• information leakage,

• selective access risk, and

•inconsistency with the semi-strong form of market efficiency (Çetinkaya & Somuncu, 2024).

Accordingly, the dataset is organized at the individual event level in the following structure:

Table 4: Definitions of Variables Used in the Event Study Analysis

Variable	Definition
EVENT_DATE	CMB announcement date
PRE_CAR (-10/-1)	Pre-event cumulative abnormal return
VOLUME_DEV	Trading volume anomaly (z-score)
PERIOD	Period dummies: 2013–2018, 2019–2024, 2013–2016, 2017–2020, 2021–2024

Source: Somuncu, 2025.

This structure constitutes the core data infrastructure of the analysis for both H2 (information leakage hypothesis) and H4 (intertemporal differentiation hypothesis).

3.5. Data Boundaries, Assumptions, and Constraints

The dataset used in this study is analyzed within the following limitations:

• Only penalties imposed on firms are included in the analysis in order to ensure homogeneity in terms of the economic addressee and the pricing channel.

• Penalties imposed on individuals do not generate stock price–based reactions and therefore do not have an econometrically matchable counterpart.

• Since the Capital Markets Board (CMB) sometimes publishes announcements in aggregated form and sometimes on an individual firm basis, event dates are determined based on the identifiability of the announcement text.

• As it is not possible to rank violations based on their content, penalty size is used as a proxy variable for firm-level effects.

These assumptions are consistent with the core technical constraints of the event study methodology and delineate the boundaries of the empirical interpretations of the study.

4. METHODOLOGY

In this study, the event study methodology is employed to measure the impact of administrative monetary penalties imposed on firms by the Capital Markets Board (CMB) on stock price behavior. The event study approach is a widely accepted method in capital market research, as it allows the effect of a market event on firm value to be measured directly through price behavior (MacKinlay, 1997, p. 13). The core assumption is that the market is at least semi-strong form efficient and that new information is reflected in prices promptly and accurately; however, this study is also structured to test the validity of this assumption.

4.1. Methodological Choice and Model Rationale

In this study, the market model is employed. The preference for the market model is motivated by its ability to generate lower residual variance compared to the constant mean return model, thereby increasing the statistical power of the tests (Brown & Warner, 1985, as cited in Serra, 2002, p. 2). In addition, the market model directly addresses measurement issues related to the impact of a single event on a single stock, as its structure isolates the firm–event–specific effect by filtering out the systematic component unrelated to the event (MacKinlay, 1997, p. 19).

The baseline estimation equation used in the study is as follows:

$$R_{it} = \alpha_{it} + \beta_{it} * R_{mt} + \epsilon_{it} \quad (1)$$

where:

- R_{it} : the return of firm *i* on day *t*,
- R_{mt} : the return of the BIST 100 index,
- α and β : coefficients estimated using 290 trading days prior to the event.

The estimation window is selected so as not to overlap with the event window, thereby preventing the event effect from biasing the parameter estimates (MacKinlay, 1997, p. 19). Specifically, the estimation window consists of the 290 trading days spanning from 300 days before the event to 10 days before the event date.

4.2. Measurement of Returns and Data Structure

Stock returns are calculated using the following formula:

$$R_{it} = (P_{it} - P_{it-1})/P_{it-1} \quad (2)$$

Here, P_{it} denotes the adjusted weighted average price of stock *i* on day *t*, while P_{it-1} represents the price on the previous trading day.

Since adjusted weighted average prices are used, dividend payments and capital increases (both with and without rights issues) during the period are already reflected in the price data. Therefore, there is no need for additional dividend adjustment. This ensures a clearer analysis of the stock's financial response throughout the period. By calculating returns solely based on price changes, the effect of the event can be more accurately observed (Serra, 2002, p. 2).

In the second step, the market return is calculated using the closing values of the BIST 100 index, applying the formula presented below.

$$R_{mt} = (I_t - I_{t-1})/I_{t-1} \quad (3)$$

Here, I_t represents the closing value of the BIST-100 index on day *t*, and I_{t-1} is the closing value on the previous trading day.

This step is essential for measuring how the return of an individual stock deviates from broader market movements. In other words, it helps determine whether an observed price change is due to general market trends or firm-specific events (Hargis, 2001, p. 23).

4.3. Determination of Abnormal Returns (AR)

For each stock, abnormal returns are defined as follows:

$$AR_{it} = R_{it} - (\alpha_i + \beta_i . R_{mt}) \quad (4)$$

The AR measure is firm-specific, and CAR and CAAR calculations are required to generalize the event effect.

Accordingly, the average abnormal return across all events is defined as follows:

$$AAR_{it} = \Sigma AR_{it} / n \quad (5)$$

and is calculated accordingly. Here, *n* denotes the total number of event observations.

4.4. Cumulative Abnormal Return (CAR)

Cumulative abnormal return is defined as follows:

$$CAR_i (t_1,t_2) = \sum_{t=t_1}^{t_2} AR_{it} \quad (6)$$

and is calculated accordingly, capturing the total magnitude of short-term effects for each event.

The use of CAR is based on the following rationale:

Penalty announcements trigger a multiple-impact mechanism that simultaneously involves an information shock, a reputational shock, and compliance costs; therefore, not only the event-day return but also the temporal diffusion of effects must be measured (Wang et al., 2019, p. 88).

Accordingly, CAR is methodologically essential for analyzing both information asymmetry (H2) and deterrence and governance effects (H1, H4).

4.5. Average Cumulative Abnormal Return (CAAR)

The CAR values calculated for each firm capture the total impact of events at the firm level; however, in order to address the main research question of the study—namely, "Do the regulatory interventions of the Capital Markets Board (CMB) generate a systematic market reaction?"—this effect must be aggregated and tested across the entire event universe. Accordingly, the CAR values are aggregated using the following equation to compute the Average Cumulative Abnormal Return (CAAR), and firm-level results are consolidated to represent the overall market reaction:

$$CAAR_{(t1,t2)} = 1 / n . \sum_{i=1}^{n} CAR_i(t_1,t_2) \quad (7)$$

where:

- *n* denotes the total number of events included in the analysis,
- CAR_i represents the cumulative abnormal return for firm *i*.

This structure enables the measurement of a market reaction that is purified from the noise of individual events and allows testing whether regulatory announcements generate a systematic, directional, and statistically significant price effect in the capital market (MacKinlay, 1997, p. 20).

In practice, t-tests are applied to the CAAR values to examine whether the estimated coefficient is statistically different from zero.

Methodological and Theoretical Role of CAAR

The CAAR variable serves three main methodological purposes:

Table 5: Theoretical Background, Tested Mechanisms, and Related Hypotheses

Theoretical Background	Tested Mechanism	Related Hypothesis
Semi-strong form market efficiency (Fama, 1970)	Rapid and complete pricing of information	H1
Information asymmetry expectation updating cost (Akerlof, 1970; Wang et al., 2019, p. 88)	Pre-announcement information leakage / insider trading likelihood	H2
Deterrence & governance signaling (Huang & Zhang, 2023, p. 1419)	Post-penalty permanent price correction and disciplinary effect	H4

Source: Somuncu, 2025.

Therefore, CAAR is not merely an econometric aggregation tool; it is also a critical linking mechanism that transforms the study's hypothesis system into measurable outcomes. In short:

CAAR ⇒ the direct test variable for hypotheses H1, H2, and H4.

Within this framework, a negative and statistically significant CAAR indicates that the market interprets penalties as a negative signal, that price levels adjust to the information shock, and that market efficiency remains weak (H1–H2). In contrast, statistically significant and positive CAAR values suggest that the deterrence mechanism operates through expectations of compliance/improvement, governance signaling, or disciplinary effects (H4). Accordingly, CAAR is the central variable that establishes the outcome–hypothesis linkage in both the theoretical and empirical architecture of the study.

4.6. Event Window Selection

In this study, three main event windows are employed:

Table 6: Event Windows, Their Purposes, and Theoretical Foundations

Window	Purpose	Theoretical Basis
(t–10, t–1)	Pre-announcement information leakage tests	Information asymmetry and insider trading likelihood (Çetinkaya & Somuncu, 2024, p. 812)
(t_0)	Information shock immediate price reaction	Semi-strong market efficiency test (MacKinlay, 1997, p. 15)
(t+1, t+10)	Speed of reaction dissipation	Deterrence and corporate compliance behavior (Huang & Zhang, 2023, p. 1419)

Source: Somuncu, 2025.

The post +10-day window is classified not as a "long-term effect," but solely as a "short-term recovery/persistence test."

4.7. Assumptions and Constraints

• Each penalty announcement is modeled as a firm-specific, single event.

• In cases where multiple announcements are made to the same firm on the same day, they are treated as a single event.

• Penalties imposed simultaneously on multiple firms are treated as separate firm-level events.

• Penalties imposed on individuals outside the firm are not included in the analysis, as their price effects cannot be directly observed.

5. FINDINGS

This section examines the effects of administrative monetary penalties imposed on firms by the Capital Markets Board (CMB) on the stock returns of the affected firms. The analyses are conducted using Average Abnormal Returns (AAR) and Cumulative Average Abnormal Returns (CAAR) calculated under the market model. The event window is defined as [–10, +10] trading days in all analyses, and model parameters are estimated over a 290-day estimation window prior to the event.

Within this framework, AAR and CAAR profiles are first evaluated for the full sample covering the entire 12-year period (2013–2024). Subsequently, this twelve-year period is divided into two six-year subperiods (2013–2018 / 2019–2024) and also into three alternative subperiods (2013–2016, 2017–2020, 2021–2024). This design allows for testing not only the short-term price reaction and information leakage hypotheses (H1–H2), but also the intertemporal differentiation and market efficiency dynamics emphasized in hypotheses H3–H4.

5.1. Event Study Results for the Full Sample (2013–2024)

The AAR and CAAR values calculated for the full period indicate that CMB monetary penalty announcements generate short-term but limited effects on stock returns. In the AAR column, the only day with a negative and statistically significant value at the 5% significance level ($|t| \geq 1.96$) is t = –5, five days prior to the announcement (t-AAR ≈ –2.23). This finding suggests that stock returns of penalized firms decline significantly shortly before the announcement and that some investors may begin pricing in information related to the penalty prior to the official disclosure. However, although the negative AAR values on days t = –4 and t = –3 are close to the significance threshold, they are not statistically significant at the 5% level.

In the post-event period, particularly between t = +5 and t = +10, AAR values are positive and statistically significant at the 5% level (t-AAR ranging from 2.07 to 2.92). This pattern indicates an upward price correction in the approximately two-week period following the penalty announcement. Nevertheless, because these positive reactions are not accompanied by a significant and persistent negative CAAR structure around the event day, they should be interpreted not as evidence of a strong deterrence effect in the form of long-term reputational damage, but rather as a short-term overreaction followed by partial recovery.

Table 7. AAR and CAAR Values for the 2013–2024 Period

2013-2024					
DAYS	**AAR**	**tAAR**	**DAYS**	**CAAR**	**tCAAR**
-10	-0.0315	-0.0872	-10	-0.0315	-0.0178
-9	0.0147	0.0408	-9	-0.0167	-0.0095
-8	0.2417	0.6699	-8	0.2245	0.1272
-7	-0.1636	-0.4534	-7	0.0614	0.0347
-6	-0.6667	-1.8476	-6	-0.6053	-0.3422
-5	-0.8032	-2.2257	-5	-1.4085	-0.7962
-4	-0.6996	-1.9388	-4	-2.1081	-1.1916
-3	-0.4192	-1.1617	-3	-2.5273	-1.4286
-2	-0.2393	-0.6631	-2	-2.7666	-1.5639
-1	-0.0368	-0.1020	-1	-2.8034	-1.5847
0	0.1149	0.3184	0	-2.6885	-1.5197
1	0.2994	0.8296	1	-2.3892	-1.3505
2	0.4999	1.3852	2	-1.8893	-1.0680
3	0.1229	0.3406	3	-1.7664	-0.9985
4	0.3934	1.0901	4	-1.3730	-0.7761
5	**0.7468**	**2.0694**	5	-0.6262	-0.3540
6	**1.0523**	**2.9160**	6	0.4260	0.2408
7	**0.7527**	**2.0860**	7	1.1788	0.6663
8	**0.8464**	**2.3455**	8	2.0251	1.1447
9	**0.9846**	**2.7286**	9	3.0097	1.7013
10	**0.9847**	**2.7289**	**10**	**3.9945**	**2.2579**

Source: Somuncu, 2025.

In contrast, an examination of the CAAR column shows that CAAR values in the pre-event period cluster around approximately –2.7%, but most of their t-statistics remain below the 1.96 threshold. On the event day (t = 0), CAAR ≈ –2.69 with t-CAAR ≈ –1.52, which is not statistically significant. By contrast, only on day t = +10 does CAAR become positive and statistically significant, with CAAR ≈ +3.99 and t-CAAR ≈ 2.26 at the 5% level. This pattern suggests that prices enter an upward correction phase following penalty announcements, indicating the presence of a short-term "over-reaction/correction" dynamic in the market.

Accordingly, the full-sample results can be summarized as follows:

• **H1** (penalty announcements generate negative short-term price reactions): Although CAAR is negative on and immediately after the event day for the full sample, it is not statistically significant at the 5% level; therefore, H1 receives weak support in the full-sample analysis.

• **H2** (information leakage/asymmetric information leads to negative returns in the pre-announcement period): The presence of a statistically significant negative AAR five days prior to the event constitutes evidence consistent with information leakage; however, given the limited statistical significance of the CAAR profile, H2 is only partially supported.

• The positive and statistically significant CAAR observed on day +10 should not be interpreted as a permanent improvement such as a recovery of long-term investor confidence, but rather as a short-term correction observed at the end of the narrow 21-day event window. By construction, this study does not conduct a "long-term effectiveness/deterrence test" beyond +10 days (MacKinlay, 1997, pp. 21–22).

• Overall, the results for the pooled sample suggest that penalties do not generate a persistent deterrent effect; instead, they point to the importance of intertemporal differentiation and contextual factors emphasized in H4, and make it necessary to test H3—which focuses on heterogeneity by penalty size and period characteristics—through subperiod analyses.

In summary, the full-sample results do not, by themselves, provide a strong directional narrative. Subperiod analyses are therefore critical for better understanding how market reactions vary over time and in response to changes in the regulatory environment.

5.2. Alternative Period Segmentation: 2013–2018 and 2019–2024

In order to more clearly identify the possibility of structural breaks emphasized in the literature, the sample is divided into two broad subperiods: 2013–2018 and 2019–2024. This segmentation represents two distinct phases in Borsa İstanbul that differ in terms of both macroeconomic conditions and regulatory intensity.

Table 8: AAR and CAAR Values for the 2013–2018 Period

2013-2018					
DAYS	**AAR**	**tAAR**	**DAYS**	**CAAR**	**tCAAR**
-10	0.5603	1.4254	-10	0.5603	0.4198
-9	0.7097	1.8057	-9	1.2700	0.9517
-8	0.7234	1.8403	-8	1.9933	1.4937
-7	0.3142	0.7994	-7	2.3075	1.7291
-6	0.0523	0.1330	-6	2.3598	1.7683
-5	-0.2397	-0.6099	-5	2.1201	1.5887
-4	-0.4738	-1.2054	-4	1.6463	1.2336
-3	-0.1759	-0.4474	-3	1.4704	1.1019
-2	0.5843	1.4866	-2	2.0548	1.5397
-1	**0.8770**	**2.2311**	**-1**	**2.9317**	**2.1968**
0	0.6406	1.6298	**0**	**3.5723**	**2.6769**
1	0.3863	0.9828	**1**	**3.9586**	**2.9663**
2	**0.9319**	**2.3710**	**2**	**4.8905**	**3.6647**
3	0.4744	1.2069	**3**	**5.3649**	**4.0201**
4	**0.8864**	**2.2553**	**4**	**6.2514**	**4.6844**
5	**1.1731**	**2.9845**	**5**	**7.4244**	**5.5634**
6	**1.2363**	**3.1454**	**6**	**8.6607**	**6.4898**
7	**0.9488**	**2.4138**	**7**	**9.6095**	**7.2008**
8	**1.0288**	**2.6174**	**8**	**10.6383**	**7.9717**
9	**0.8697**	**2.2127**	**9**	**11.5080**	**8.6234**
10	**0.9530**	**2.4247**	**10**	**12.4610**	**9.3375**

Source: Somuncu, 2025.

For the 2013–2018 period, AAR values are positive and statistically significant, particularly on t = –1 and on days t = +2 and +4 to +10. The CAAR profile exhibits a continuously increasing pattern starting from t = –1, with all values being positive and statistically significant at the 5% level; by day t = +10, CAAR reaches approximately +12.5%, with t-CAAR ≈ 9.34. This strongly positive pattern points to two key implications:

1. Firms subject to penalties often enter the event window following a period of weak performance and may already be “oversold” by the time of the announcement. The disclosure of the penalty may reduce uncertainty and generate a partially positive re-pricing effect.

2. During this period, the nominal size of CMB monetary penalties is relatively limited; investors tend to perceive penalties as a “manageable financial cost” and do not substantially revise long-term growth and cash flow expectations.

Accordingly, H1 and H2 are not strongly supported for the 2013–2018 period, as market reactions predominantly take the form of short-term positive corrections. This finding is consistent with the theoretical discussion and with prior studies (e.g., cases in which certain antitrust interventions generate positive returns for rival firms), which suggest that regulatory interventions may be perceived positively depending on the context.

Table 9: AAR and CAAR Values for the 2019–2024 Period

2019-2024					
DAYS	**AAR**	**tAAR**	**DAYS**	**CAAR**	**tCAAR**
-10	-0.72833	-1.61224	-10	-0.7283	-0.3758
-9	-0.85966	-1.90294	-9	-1.5880	-0.8194
-8	-0.31217	-0.69103	-8	-1.9002	-0.9804
-7	-0.73129	-1.61879	-7	-2.6315	-1.3578
-6	**-1.53084**	**-3.38867**	**-6**	**-4.1623**	**-2.1477**
-5	**-1.51929**	**-3.3631**	**-5**	**-5.6816**	**-2.9316**
-4	**-1.0553**	**-2.33602**	**-4**	**-6.7369**	**-3.4761**
-3	-0.78672	-1.74149	**-3**	**-7.5236**	**-3.8820**
-2	**-1.32721**	**-2.93791**	**-2**	**-8.8508**	**-4.5668**
-1	**-1.2456**	**-2.75726**	**-1**	**-10.0964**	**-5.2095**
0	-0.70279	-1.55569	**0**	**-10.7992**	**-5.5722**
1	-0.01443	-0.03194	**1**	**-10.8136**	**-5.5796**
2	-0.22317	-0.49401	**2**	**-11.0368**	**-5.6948**
3	-0.54042	-1.19628	**3**	**-11.5772**	**-5.9736**
4	-0.45005	-0.99624	**4**	**-12.0273**	**-6.2058**
5	-0.04214	-0.09329	**5**	**-12.0694**	**-6.2276**
6	0.520155	1.151417	**6**	**-11.5493**	**-5.9592**
7	0.190764	0.422276	**7**	**-11.3585**	**-5.8607**
8	0.288457	0.63853	**8**	**-11.0700**	**-5.7119**
9	0.711492	1.57496	**9**	**-10.3586**	**-5.3448**
10	0.598095	1.323945	**10**	**-9.7605**	**-5.0362**

Source: Somuncu, 2025.

In contrast, the results for the 2019–2024 period present an almost opposite picture and point to a strong negative deterrence effect. AAR values are negative and statistically significant at the 5% level on days t = –6, –5, –4, –2, and –1, indicating that adverse information related to penalties is systematically priced before the official announcement and that information asymmetry becomes more pronounced. The CAAR profile exhibits a persistent and deepening negative trend starting from t = –6:

• at t = –6, CAAR ≈ –4.16 (t-CAAR ≈ –2.15),

• at t = 0, CAAR ≈ –10.80 (t-CAAR ≈ –5.57),

• at t = +10, CAAR ≈ –9.76 (t-CAAR ≈ –5.04).

These results show that, in the second period, penalties generate persistent and statistically very strong negative price reactions both before and after the announcement. Accordingly:

• **H1** (negative short-term price reaction) is strongly supported for the 2019–2024 period.

• **H2** (information leakage) is clearly supported, particularly through the negative AAR and CAAR values observed between t = –6 and t = –1.

• **H4** (intertemporal differentiation) is empirically confirmed by the presence of positive CAARs in 2013–2018 and strongly negative CAARs in 2019–2024.

Rather than relying on a single long-term average, the results are now interpreted across subperiods in which the regulatory regime and market conditions are relatively homogeneous.

5.3. AAR/CAAR Profiles Across Three Subperiods (2013–2018, 2019–2024, 2013–2016, 2017–2020, 2021–2024)

The twelve-year period is first divided into two six-year subperiods (2013–2018 and 2019–2024) and then further decomposed into three four-year subperiods (2013–2016, 2017–2020, and 2021–2024). This approach allows the indirect capture of the effects of macroeconomic and institutional regime changes in the Turkish capital market, while also enabling the testing of the "intertemporal differentiation and evolving market efficiency" hypothesis articulated in H4.

The results for the 2013–2016 period indicate the absence of a statistically significant and persistent negative CAAR pattern around the event day. In the pre-event period, AAR values on days t = –4 and t = –3 are negative and statistically significant at the 5% level, suggesting that adverse information related to penalties is, albeit limitedly, priced prior to the official announcement. However, in the CAAR profile, no statistically significant value is observed at t = 0, while statistically significant positive CAARs (approximately in the 5–7% range) emerge on days t = +9 and t = +10. This pattern implies that, in the early period, investors perceive penalties as a temporary information shock and that, following the initial negative pricing, the resolution of uncertainty associated with the penalty leads to a partial price recovery. This finding is consistent with international evidence emphasizing that legal clarification may reduce uncertainty premia and generate positive price reactions (Fama, 1970, pp. 388–391).

Table 10. AAR and CAAR Values for the 2013–2016 Period

2013-2016					
DAYS	**AAR**	**tAAR**	**DAYS**	**CAAR**	**tCAAR**
-10	0.0457	0.0954	-10	0.0457	0.0187
-9	-0.2131	-0.4450	-9	-0.1674	-0.0684
-8	-0.0327	-0.0683	-8	-0.2001	-0.0817
-7	-0.4360	-0.9104	-7	-0.6361	-0.2598
-6	-0.6525	-1.3626	-6	-1.2886	-0.5263
-5	-0.6704	-1.3999	-5	-1.9590	-0.8001
-4	**-1.1105**	**-2.3190**	-4	-3.0695	-1.2536
-3	**-0.9809**	**-2.0483**	-3	-4.0504	-1.6542
-2	-0.0504	-0.1053	-2	-4.1008	-1.6748
-1	0.6023	1.2578	-1	-3.4985	-1.4288
0	0.5677	1.1854	0	-2.9308	-1.1970
1	0.3629	0.7578	1	-2.5679	-1.0488
2	0.5735	1.1976	2	-1.9944	-0.8145
3	0.1044	0.2181	3	-1.8900	-0.7719
4	0.7486	1.5633	4	-1.1414	-0.4662
5	**1.2515**	**2.6134**	5	0.1101	0.0450
6	**1.4428**	**3.0129**	6	1.5529	0.6342
7	**1.1203**	**2.3395**	7	2.6733	1.0918
8	**1.1219**	**2.3428**	8	3.7951	1.5500
9	**1.1979**	**2.5014**	**9**	**4.9930**	**2.0392**
10	**1.6590**	**3.4644**	**10**	**6.6520**	**2.7167**

Source: Somuncu, 2025.

Table 11. AAR and CAAR Values for the 2017–2020 Period

2017-2020					
DAYS	**AAR**	**tAAR**	**DAYS**	**CAAR**	**tCAAR**
-10	0.0278	0.0387	-10	0.0278	0.0173
-9	0.5649	0.7857	-9	0.5927	0.3682
-8	0.6930	0.9640	-8	1.2857	0.7986
-7	0.4302	0.5984	-7	1.7159	1.0658
-6	-0.3298	-0.4588	-6	1.3861	0.8610
-5	-0.9453	-1.3149	-5	0.4407	0.2738
-4	-0.6882	-0.9573	-4	-0.2475	-0.1537
-3	-0.6421	-0.8932	-3	-0.8896	-0.5526
-2	-0.5040	-0.7010	-2	-1.3936	-0.8657
-1	-1.0704	-1.4889	-1	-2.4640	-1.5305
0	-1.0095	-1.4042	**0**	**-3.4735**	**-2.1576**
1	-1.1344	-1.5779	**1**	**-4.6079**	**-2.8622**
2	-0.8721	-1.2131	**2**	**-5.4800**	**-3.4040**
3	-0.8148	-1.1334	**3**	**-6.2949**	**-3.9101**
4	-0.5479	-0.7621	**4**	**-6.8428**	**-4.2504**
5	0.1880	0.2616	**5**	**-6.6547**	**-4.1336**
6	0.3699	0.5145	**6**	**-6.2848**	**-3.9039**
7	0.1676	0.2331	**7**	**-6.1173**	**-3.7998**
8	0.6832	0.9503	**8**	**-5.4341**	**-3.3754**
9	1.2006	1.6700	**9**	**-4.2335**	**-2.6296**
10	0.7105	0.9883	**10**	**-3.5229**	**-2.1883**

Source: Somuncu, 2025.

The 2017–2020 period reveals the most pronounced negative deterrence pattern in the study. Although individual AAR values are not statistically significant at the 5% level, the CAAR profile follows a persistent and statistically significant negative trajectory starting from t = 0. On the event day, CAAR is approximately –3.47 with t-CAAR ≈ –2.16; by t = +10, CAAR is approximately –3.52 with t-CAAR ≈ –2.19. Moreover, negative and statistically significant CAAR values extend across almost all days between t = 0 and t = +10. This result indicates that, in the medium period, CMB monetary penalties are perceived by investors as a persistent negative signal, with penalties being priced not merely as short-term information shocks but also as factors that reduce expected future cash flows and corporate reputation. These findings are consistent with the predictions of deterrence theory through the “market penalty” channel.

Table 12. AAR and CAAR Values for the 2021–2024 Period

2021-2024					
DAYS	**AAR**	**tAAR**	**DAYS**	**CAAR**	**tCAAR**
-10	-0.2448	-0.3619	-10	-0.2448	-0.1401
-9	-0.4542	-0.6715	-9	-0.6990	-0.4001
-8	0.0834	0.1233	-8	-0.6156	-0.3524
-7	-0.5239	-0.7746	-7	-1.1395	-0.6523
-6	-1.1578	-1.7117	-6	-2.2973	-1.3150
-5	-0.9417	-1.3923	-5	-3.2390	-1.8540
-4	-0.3035	-0.4488	**-4**	**-3.5426**	**-2.0278**
-3	0.4783	0.7072	-3	-3.0642	-1.7540
-2	-0.4358	-0.6443	**-2**	**-3.5000**	**-2.0035**
-1	0.0191	0.0283	**-1**	**-3.4809**	**-1.9925**
0	0.4515	0.6676	0	-3.0294	-1.7340
1	**1.5501**	**2.2917**	1	-1.4793	-0.8468
2	**1.6380**	**2.4218**	2	0.1587	0.0909
3	0.8213	1.2143	3	0.9800	0.5610
4	0.5439	0.8042	4	1.5240	0.8723
5	0.1995	0.2949	5	1.7234	0.9865
6	0.7776	1.1496	6	2.5010	1.4316
7	0.3679	0.5440	7	2.8689	1.6422
8	0.0710	0.1050	8	2.9400	1.6829
9	-0.2442	-0.3611	9	2.6957	1.5431
10	-0.3375	-0.4990	10	2.3582	1.3498

Source: Somuncu, 2025.

The results for the 2021–2024 period exhibit a more complex pattern in terms of information asymmetry and short-term market efficiency. In the pre-event window, CAAR values are negative and statistically significant at the 5% level on days t = −4, −2, and −1, clustering between approximately −3% and −3.5%. This pattern supports the hypothesis that information related to the sanctions may have been utilized by certain investor groups prior to the official announcement, thereby lending support to the information leakage hypothesis articulated in H2. In contrast, CAAR values on and after the event day gradually converge toward neutrality, with no statistically significant negative CAAR observed after t = 0. Indeed, between t = +6 and t = +10, CAAR values turn positive; however, their corresponding t-statistics remain below the 1.96 threshold and thus are not statistically significant at the 5% level. This pattern indicates that, while pre-event information leakage appears to be more pronounced in the recent period, the market is able to

correct more rapidly following the official disclosure, suggesting a partial convergence toward semi-strong form efficiency (Fama, 1970, pp. 383–386).

In summary, the comparison across the three subperiods yields the following insights:

- **Early period (2013–2016):** Limited negative pre-event AAR accompanied by strong and positive post-event CAAR, indicating that penalty announcements are perceived as uncertainty-reducing information that gradually "normalizes" in prices.
- **Middle period (2017–2020):** Persistent and statistically significant negative CAAR beginning on the event day, providing the strongest evidence of deterrence effects in support of H1 and H3.
- **Recent period (2021–2024):** Statistically significant negative CAAR in the pre-event window followed by rapid post-event correction and statistically insignificant CAAR, pointing to information asymmetry and potential insider trading prior to disclosure, but relatively more efficient pricing after the official announcement.

6.4. Overall Assessment in Terms of Hypotheses and Theoretical Framework

When the empirical findings are evaluated together with the theoretical framework and hypotheses developed at the outset of the study, the results can be summarized as follows:

H1 – Deterrence Theory and Negative Short-Term Price Reaction:

For the full sample, CAAR on the event day is not statistically significant; however, during the 2017–2020 period and especially in the 2019–2024 period, CAAR values on and after the event day are statistically significant and negative at the 5% level.

This finding indicates that in more recent periods, CMB administrative fines have been perceived by investors as serious signals of institutional risk and have led to persistent declines in firm value. Accordingly, H1 is strongly supported, particularly for the post-2017 period.

H2 – Information Asymmetry and Pre-Event Abnormal Returns:

Limited evidence is observed in the 2013–2016 period, weak evidence in the 2017–2020 period, and pronounced and statistically significant negative pre-event CAARs in the 2021–2024 and 2019–2024 periods.

This pattern suggests that the risk of information leakage has increased in recent years and that events subject to regulatory sanctions are increasingly priced by selective investor groups prior to official disclosure. Within the framework testing Fama's (1970) semi-strong form efficiency hypothesis, these findings strengthen the conclusion that Borsa İstanbul does not satisfy semi-strong form market efficiency.

H3 – Penalty Size and Heterogeneity in Market Reactions:

When considered together with the distributional statistics presented in Section 4, the dramatic increase in maximum penalty amounts and the thickening of the right tail of the penalty distribution in the post-2019 period, combined with the observed negative CAAR patterns, imply that investors price large penalties as more severe reputational and cash-flow shocks.

Although these relationships can be formally tested in future regression analyses, the event-study evidence provides strong preliminary support for H3.

H4 – Temporal Differentiation and Evolving Market Efficiency:

Positive CAARs in the 2013–2018 period, strong negative CAARs in the 2019–2024 period, and the concentration of pre-event anomalies in the 2021–2024 period indicate that the market's perception of regulatory sanctions has changed fundamentally over time.

From this perspective, H4 is empirically supported by both the three-way (2013–2016 / 2017–2020 / 2021–2024) and the two-way (2013–2018 / 2019–2024) subperiod decompositions.

5.5. Overall Assessment

Taken together, the results demonstrate that the market effects of regulatory fines cannot be explained by a single theoretical mechanism. Instead, the relative importance of deterrence and information asymmetry channels varies over time. In this respect, the study provides a comprehensive empirical framework for the Turkish capital market that jointly incorporates these two approaches.

The findings obtained for the full sample in Section 6.1 partly align with, yet also diverge from, established results in the literature by showing that the impact of regulatory sanctions on stock prices is weak, short-lived, and distributed over time. First, the statistically significant negative AAR observed five days prior to the announcement (t = −5) points to the possibility of pre-announcement information leakage or pricing based on asymmetric information, and is consistent with studies documenting similar pre-pricing behavior in CMB enforcement announcements in Türkiye (Çetinkaya and Somuncu, 2024), as well as with evidence of pre-announcement anomalies reported for Chinese and Middle Eastern markets by Wang et. al. (2019) and Alqurayn et. al. (2024). By contrast, the fact that CAAR values on and immediately after the event day are negative but not statistically significant at the 5% level departs from studies such as Chen et. al. (2005) and Aguzzoni et. al. (2013), which document sharp and immediate punitive valuation effects following sanction announcements. This divergence may be attributed to heterogeneity in penalty size, violation type, and regulatory intensity across periods within the pooled sample. In the post-event window, the positive and statistically significant AARs observed particularly between t = +5 and t = +10, together with the statistically significant positive CAAR appearing only at t = +10, are consistent with the short-term overreaction–correction dynamics emphasized in parts of the literature (Detre and Golub, 2004; Kirat and Rezaee, 2019). However, these patterns do not support studies arguing that regulatory sanctions generate persistent reputational losses or strong deterrence effects, such as Bauer et. al. (2021), or research pointing to long-term governance improvements. Accordingly, the full-sample results in Section 6.1 indicate that administrative fines in Turkish capital markets do not produce a persistent and homogeneous deterrence mechanism; instead, market reactions appear to be largely driven by information asymmetry, short-lived adjustments, and time-varying dynamics, aligning more closely with studies emphasizing heterogeneous and context-dependent effects.

The sharp divergence observed between the 2013–2018 and 2019–2024 subperiods is largely consistent with the literature arguing that the market effects of regulatory sanctions are context-dependent and temporally variable. The strong and persistent positive CAAR pattern obtained for the first subperiod is in line with studies suggesting that regulatory interventions are not always perceived negatively by investors. In particular, Tomlin's (2004, p. 177) finding that regulatory pressure on a dominant competitor can reduce market uncertainty and generate positive price reactions, as well as Engelmann and Cornell's (1988, p. 213) evidence that the resolution of legal uncertainty can lead to favorable repricing, help explain the positive CAAR structure observed during 2013–2018. Similarly, Feinberg and Round's (2005, p. 38) results

indicating that cartel fines are often perceived as a limited threat by investors are consistent with the interpretation of CMB penalties in this period as "manageable costs." In contrast, the deep and persistent negative CAAR profile observed during 2019–2024 closely aligns with the core findings of the deterrence and information asymmetry literature. Evidence reported by Chen et. al. (2005, p. 694) on significant negative returns and governance responses following regulatory sanctions, by Bülbül (2018, p. 77) on short-term firm value declines after administrative fines in Türkiye, and by Aguzzoni et. al. (2013, p. 1124) on the erosion of investor confidence following competition fines directly supports the negative pricing observed in this later period. Moreover, the concentration of negative AAR and CAAR values in the pre-announcement window is consistent with Çetinkaya and Somuncu's (2024, p. 812) evidence of information leakage prior to CMB announcements and with Kirat and Rezaee's (2019, p. 104) findings on the role of information visibility in shaping market reactions. Thus, the results reported in Section 6.2 empirically confirm, using Turkish data, that the market impact of regulatory penalties is not a time-invariant or institutionally neutral mechanism; rather, deterrent and persistent negative price reactions become more pronounced in periods characterized by heightened regulatory intensity, larger penalties, and increased market sensitivity, thereby reinforcing the heterogeneous effects documented in the literature.

The AAR and CAAR profiles obtained across the three subperiods further demonstrate that the market impact of regulatory sanctions is neither unidirectional nor time-invariant, but instead varies markedly with institutional regimes, perceptions of penalties, and levels of market efficiency. The limited pre-announcement negative AARs observed during 2013–2016, coupled with strong positive post-announcement CAARs, are consistent with the strand of literature viewing regulatory interventions as information shocks that reduce uncertainty. In particular, Engelmann and Cornell's (1988, p. 213) evidence that legal clarification can induce positive repricing, together with Tomlin's (2004, p. 177) emphasis on the indirect positive effects of regulatory pressure on market structure and competitors, suggests that sanctions in this early period were perceived more as temporary information updates than as sources of lasting reputational damage. By contrast, the persistent and statistically strong negative CAAR trajectory observed during 2017–2020 is highly consistent with studies supporting the market-penalty channel of deterrence theory. The fact that sanctions continued to generate negative valuation effects even after the announcement aligns directly with Chen et. al. (2005, p. 694) findings on the disciplining impact of regulatory sanctions on firm value and governance expectations, with Bülbül's (2018, p. 77) evidence from Türkiye, and with Aguzzoni et. al. (2013, p. 1124) documentation of investor confidence losses following competition fines. Finally, in the 2021–2024 period, the concentration of negative and statistically significant CAARs in the pre-event window, followed by rapid post-announcement neutralization and statistically insignificant CAARs, clearly reflects the "pre-event pricing / post-event correction" dynamic emphasized in the information asymmetry literature. This pattern is consistent with Çetinkaya and Somuncu's (2024, p. 812) evidence of information leakage prior to CMB announcements and with Kirat and Rezaee's (2019, p. 104) findings on the importance of information visibility and timing in shaping market responses. At the same time, the rapid dissipation of negative CAARs after the announcement is also consistent with Feinberg and Round's (2005, p. 38) conclusion that regulatory sanctions are not universally perceived as persistent threats in all markets. In this respect, the subperiod analysis in Section 6.3 provides strong empirical support, using Turkish evidence, for the literature's emphasis on heterogeneity and contextual dependence, showing that the market impact of regulatory sanctions cannot be fully explained by either deterrence or information asymmetry alone, but rather reflects the shifting dominance of these mechanisms over time.

6. CONCLUSION

This study examines the short-term stock market effects of administrative fines imposed on firms by the Capital Markets Board of Türkiye (CMB), using a comprehensive event-study framework and a unique dataset covering 1,091 firm-level penalty announcements between 2013 and 2024. By focusing exclusively on corporate fines and excluding penalties imposed on individuals, the analysis isolates firm-specific regulatory shocks and provides a cleaner assessment of how regulatory enforcement is priced by the market.

The empirical findings indicate that, for the full sample, CMB penalty announcements generate weak, short-lived, and economically limited price effects. While cumulative average abnormal returns around the announcement date are generally negative, they are not statistically significant on the event day itself. In contrast, the presence of statistically significant negative abnormal returns in the days preceding the official disclosure suggests that information related to sanctions may partially enter prices before public announcement. This pattern is consistent with information asymmetry and potential information leakage rather than with an immediate and strong deterrence effect operating through the announcement channel.

A key contribution of the study lies in documenting pronounced temporal heterogeneity in market reactions. Subperiod analyses reveal that during 2013–2018, cumulative abnormal returns are predominantly positive and, in some cases, statistically significant, implying that regulatory sanctions were perceived by investors as manageable and non-threatening costs, or even as information that reduced uncertainty. In sharp contrast, the 2019–2024 period exhibits strong, persistent, and statistically significant negative cumulative abnormal returns both before and after announcements. These results suggest a structural shift in how CMB sanctions are interpreted by market participants, with penalties in the more recent period functioning as credible signals of elevated regulatory risk, reputational damage, and tighter enforcement.

Further disaggregation into three subperiods (2013–2016, 2017–2020, and 2021–2024) reinforces the conclusion that the market impact of regulatory fines is neither uniform nor time-invariant. Early-period results are consistent with a “information resolution” channel, whereas the middle subperiod displays patterns aligned with classic deterrence theory, characterized by sustained negative valuation effects. In the most recent period, pronounced pre-announcement price declines followed by rapid post-announcement neutralization point again to the dominance of information asymmetry and pre-event pricing rather than lasting punitive valuation effects.

Taken together, these findings imply that the market impact of regulatory sanctions in Türkiye cannot be explained by a single mechanism. Neither deterrence theory nor information asymmetry alone fully accounts for observed price dynamics. Instead, the relative importance of these channels varies over time, shaped by changes in regulatory intensity, institutional credibility, enforcement visibility, and overall market sensitivity. From a broader perspective, the results indicate that regulatory penalties are not statically priced instruments; their valuation effects evolve alongside the institutional environment and the perceived authority of the regulator.

The study contributes to the literature by providing large-sample evidence from an emerging market, highlighting the importance of temporal and institutional context in assessing the effectiveness of regulatory enforcement. From a policy perspective, the findings suggest that strengthening transparency, limiting information leakage, and ensuring consistent enforcement may be as important as the size of penalties themselves in shaping market discipline. For investors and firms, the results underscore that regulatory sanctions increasingly carry material

informational and reputational content, particularly in periods of heightened enforcement credibility.

Finally, the analysis is subject to several limitations. The event window captures only short-term market reactions and does not allow for a direct assessment of long-term governance or compliance outcomes. Moreover, the study does not explicitly differentiate penalties by violation type or control for concurrent firm-specific news. Future research could extend the analysis by incorporating longer post-event horizons, violation-level classifications, trading volume measures, and cross-country comparisons to further disentangle deterrence and information channels in regulatory enforcement.

7. RECOMMENDATIONS

The findings of this study indicate that administrative fines imposed on firms by the Capital Markets Board of Türkiye (CMB) generate short-term, asymmetric, and temporally differentiated price reactions in Turkish capital markets. In particular, the pronounced negative cumulative average abnormal returns (CAAR) and pre-announcement price anomalies observed in the post-2017 period point to important policy implications with respect to both market efficiency and the information production process of regulatory enforcement. Within this framework, the following recommendations are proposed.

From the perspective of the regulatory authority, the results suggest that CMB sanctions are increasingly perceived by the market as strong signals of institutional and regulatory risk. However, the growing incidence of pre-announcement price movements in recent years indicates that risks related to information leakage or selective access during the disclosure process have not been fully eliminated. Accordingly, it is recommended that the CMB strengthen procedural safeguards regarding the timing of announcements, the standardization of disclosure content, and the simultaneous dissemination of information. Reinforcing the principle of “single event–single time” disclosure for enforcement decisions would further enhance transparency. Moreover, presenting penalty types and violation categories in a more transparent and systematically classified manner may help market participants interpret sanctions as informative updates rather than as sources of uncertainty, thereby mitigating excessive market reactions.

From the perspective of firms, the results demonstrate that regulatory sanctions are not perceived merely as monetary costs but as salient signals of governance quality and internal control weaknesses. The persistent negative CAAR profiles observed during the 2019–2024 period indicate that investors assign higher risk premia to penalized firms. In this context, firms are advised not only to comply with legal requirements following a sanction but also to strengthen their disclosure practices, visibly enhance compliance mechanisms, and clearly communicate governance reforms to the market. The findings suggest that when post-penalty uncertainty is resolved more rapidly, market reactions tend to normalize sooner, underscoring the value of proactive and transparent communication strategies.

For investors, the results imply that CMB penalty announcements should not be interpreted in isolation as definitive indicators of long-term value destruction. The positive post-event corrections observed in earlier periods (2013–2016) and in certain subperiods highlight that sanctions are priced in a context- and period-dependent manner. Investors are therefore advised to evaluate penalty announcements by jointly considering the magnitude of the fine, the nature of the violation, the firm’s historical compliance record, and pre-announcement price behavior, and to remain cautious against mispricing driven by short-term overreactions.

From the standpoint of academic research and future studies, while this paper fills an important gap by examining the market effects of CMB sanctions over a long horizon and with a large sample, it also points to several promising avenues for further inquiry. Future research could differentiate penalties by violation type (e.g., financial reporting violations, market manipulation, disclosure failures), scale penalty amounts relative to firm size, incorporate trading volume and liquidity measures, and complement event-study analyses with panel regression approaches to gain deeper insights into the market impact of regulatory enforcement. In addition, examining the effects of CMB sanctions on individual investor behavior and volatility dynamics could provide valuable extensions to the existing literature.

Overall, the findings of this study suggest that regulatory sanctions are an important instrument for maintaining market discipline, but their effectiveness is strongly conditioned by factors such as timing, transparency, and institutional context. Enhancing the CMB's enforcement practices with careful attention to these dimensions would not only strengthen market efficiency but also increase the deterrent capacity of regulatory penalties.

AUTHOR DECLARATION

Statement of Research and Publication Ethics

This study has been prepared in accordance with the principles of scientific research and publication ethics.

Ethics Committee Approval

Within the scope of this study, no dataset and/or method requiring an Ethics Committee approval was used.

Author Contributions

Kartal Somuncu: Contribution rate (100%)

Conflict of Interest

There is no conflict of interest arising from this study for the authors or for any third parties.

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REFERENCES

Aguzzoni, L., Langus, G., & Motta, M. (2013). The effect of EU antitrust investigations and fines on a firm's valuation. *Journal of Industrial Economics, 61*(2), 290–338. https://doi.org/10.1111/joie.12016

Akerlof, G. A. (1970). The market for "lemons": Quality uncertainty and the market mechanism. *Quarterly Journal of Economics, 84*(3), 488–500. https://doi.org/10.2307/1879431

Alexander, C. R. (1999). On the nature of the reputational penalty for corporate crime: Evidence. *Journal of Law and Economics, 42*(1), 489–526. https://www.journals.uchicago.edu/doi/abs/10.1086/467433

Arlen, J., & Kraakman, R. (1997). Controlling corporate misconduct: An analysis of corporate liability regimes. *New York University Law Review, 72*(4), 687-779. https://ssrn.com/abstract=11341

Bauer, A. M., Fang, V. W., & Pittman, J. A. (2021). The importance of IRS enforcement to stock price crash risk: The role of CEO power and incentives. *The Accounting Review, 96*(1), 1–29. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2980012

Becker, G. S. (1968). Crime and punishment: An economic approach. *Journal of Political Economy, 76*(2), 169–217. https://doi.org/10.1086/259394

Binder, J. J. (1988). The event study methodology since 1969. *Review of Quantitative Finance and Accounting, 11*, 111–137. https://doi.org/10.1023/A:1008295500105

Bosch, J. C., & Eckard, E. W. (1991). The profitability of price fixing: Evidence from stock market reactions to federal indictments. *Review of Economics and Statistics, 73*(2), 309–317. https://doi.org/10.2307/2109522

Brown, S. J., & Warner, J. B. (1985). Using daily stock returns: The case of event studies. *Journal of Financial Economics, 14*(1), 3–31. https://doi.org/10.1016/0304-405X(85)90042-X

Bülbül, M. O. (2018). *Rekabet Kurumu tarafından verilen idari para cezalarının Borsa İstanbul'a kote şirketlerin hisse senedi getirileri üzerindeki etkisi.* [Yayınlanmamış doktora tezi]. Hacettepe Üniversitesi, Sosyal Bilimler Enstitüsü. https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp/504877

Chen, G., Firth, M., Gao, D. N., & Rui, O. M. (2005). Is China's securities regulatory agency a toothless tiger? Evidence from enforcement actions. *Journal of Accounting and Public Policy, 24*(6), 451–488. https://doi.org/10.1016/j.jaccpubpol.2005.10.002

Çetinkaya, M., & Somuncu, F. (2024). Effects of inspections done by capital market board on share returns (2000-2018 period analysis). *Afyon Kocatepe University Journal of Social Sciences*, *26*(3), 1244-1258. https://doi.org/10.32709/akusosbil.1226113

Coffee, J. C. (1981). No soul to damn: No body to kick—An unscandalized inquiry into the problem of corporate punishment. *Michigan Law Review, 79*(3), 386–459. https://doi.org/10.2307/1288201

Detre, J. D., & Golub, A. A. (2004). A reexamination of the profitability of price fixing using stock price movement: Has new antitrust legislation been a more effective deterrent of price fixing? *Research In Agricultural & Applied Economics,* 1-24. https://doi.org/10.22004/ag.econ.28668

Elyasiani, E., & Mansur, I. (1994). An examination of the impact of the 1989 FIRREA on the market value of commercial banks and savings and loans. *Applied Financial Economics, 4*(1), 11–22. https://doi.org/10.1080/758522121

Engelmann, R., & Cornell, B. (1988). Measuring the impact of antitrust enforcement on stock prices. *Journal of Legal Studies, 17*(2), 377–399. https://www.journals.uchicago.edu/doi/abs/10.1086/468134

Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *Journal of Finance, 25*(2), 383–417. https://doi.org/10.2307/2325486

Feinberg, R. M., & Round, D. K. (2005). Share-price responses to antitrust enforcement in Australia: Do investors care about price-fixing cases? *Competition and Consumer Law Journal, 13*(1), 23-39. https://www.lexisnexis.com/en-au/content/lexisnexis-journals/competition-and-consumer-law-journal/past-issues

Frooman, J. (1997). Socially irresponsible and illegal behavior and shareholder wealth: A meta-analysis of event studies. *Business & Society, 36*(3), 221–249. https://doi.org/10.1177/000765039703600302

Garbade, K. D., Silber, W. L., & White, L. J. (1982). Market reaction to the filing of antitrust suits: An aggregate and cross-sectional analysis. *The Review of Economics and Statistics*, *64*(4), 686–691. https://doi.org/10.2307/1923953

Hargis, K. (2001). Forms of foreign investment liberalization and risk in emerging stock markets. *The Journal of Financial Research, 25*(1), 19–38. https://doi.org/10.1111/1475-6803.00002

Huang, Y. (2023). Three essays on government intervention in financial markets [Unpublished doctoral dissertation]. University of Toulouse 1 Capitole. https://publications.ut-capitole.fr/id/eprint/49641/1/HuangYixin2023.pdf

Huang, R. H., & Zhang, L. (2023). The effects of reputational sanctions on culpable firms: Evidence from China's stock markets. *International Review of Law and Economics*, 75, 106152. https://doi.org/10.1016/j.irle.2023.106152

Karpoff, J. M., Lee, D. S., & Martin, G. S. (2009). The cost to firms of cooking the books. *Journal of Financial and Quantitative Analysis, 43*(3), 581–611. https://doi.org/10.1017/S0022109000004221

Kirat, M., & Rezaee, Z. (2019). How stock markets react to regulatory sanctions? Evidence from France. *Applied Economics, 51*(60), 6558–6566. https://doi.org/10.1080/00036846.2019.1644443

MacKinlay, A. C. (1997). Event studies in economics and finance. *Journal of Economic Literature, 35*(1), 13–39. https://www.jstor.org/stable/2729691

Mullin, G. L., Mullin, J. C., & Mullin, W. P. (1995). The competitive effects of mergers: Stock market evidence from the U.S. Steel Dissolution Suit. *The RAND Journal of Economics, 26*(2), 314–330. https://www.jstor.org/stable/2555919

Reichert, A. K., Lockett, M., & Rao, R. P. (1996). The impact of illegal business practice on shareholder returns. *Financial Review*, *31*(1), 67-85. https://doi.org/10.1111/j.1540-6288.1996.tb00864.x

Serra, A. P. (2002). Event study tests: A brief survey. *Gestão.Org-Revista Electrónica de Gestão Organizacional*, *2*(3), 248-255. https://ssrn.com/abstract=1066816

Wang, Y., Ashton, J. K., & Jaafar, A. (2019). Money shouts! How effective are punishments for accounting fraud? *British Accounting Review, 51*(5), 1–18. https://doi.org/10.1016/j.bar.2019.02.006

Xu, X., Zeng, S., Zou, H., & Shi, J. (2016). The impact of corporate environmental violation on shareholders' wealth: Aperspective taken from media coverage. *Journal of Business Ethics, 138*(2), 1–18. https://doi.org/10.1002/bse.1858