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Digging into Takeover Pricing: Cross-Industry Evidence on Mining M&A Premiums and Market Reactions Across Major Crisis Periods

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Abstract
This study examines how takeover pricing in the mining sector differs from other industries by combining cross-industry premium evidence with event-study-based market reactions across major global crisis periods. Using a comprehensive international M&A dataset of 9,197 transactions from 2005–2025, including 743 mining deals, and an event-study subsample of 681 publicly listed targets with complete return histories, we analyse how sector characteristics and macro-financial shocks influence deal valuation and short-term market performance.
Mining acquisitions exhibit consistently higher takeover premiums than non-mining deals. However, these elevated bid levels do not translate into superior abnormal returns: across multiple event windows, abnormal returns (AR) and cumulative abnormal returns (CAR) remain statistically indistinguishable between mining and non-mining targets. Within the mining sector, gold-related transactions show no systematic premium or CAR advantage.
Crisis-period analyses, including the global financial crisis, eurozone crisis, the 2014-2016 commodity downturn, the COVID-19 pandemic and the 2022 geopolitical and monetary-tightening shocks, indicate that crisis environments alter premium levels but leave announcement-period market reactions largely unchanged. Regression models further show that cash financing is consistently associated with higher CARs, while premium levels exhibit a nonlinear convex relationship with market reactions, suggesting that extreme bid premiums may reflect overpayment rather than anticipated synergies.
Overall, the findings identify a structural disconnect between takeover pricing and announcement-period market reactions. They show that although mining deals are priced differently, markets do not perceive them as generating superior value, even under substantial macro-financial stress.

Keywords
Mergers and Acquisitions; Mining Sector; Takeover Premiums; Abnormal Returns; Event Study; Crisis Periods

Introduction

Mergers and acquisitions (M&A) play a central strategic role in the global mining industry, where consolidation, reserve replacement and long-term resource positioning are critical for sustaining competitiveness. Unlike most other sectors, mining transactions are strongly shaped by commodity-price cycles, geopolitical uncertainty, operational risk and extensive cross-border activity. These structural features raise an important question: do takeover pricing and market reactions in mining systematically differ from those observed in other industries? Although the broader M&A literature offers substantial insights into valuation behaviour, bidding incentives and announcement-period shareholder reactions, empirical research comparing mining with a large cross-industry benchmark, particularly across multiple crisis periods, remains limited.

The period from 2005 to 2025 provides a rich setting for addressing this question, as it spans several major episodes of macro-financial and geopolitical disruption that fundamentally affected global M&A activity. These include the 2008–2009 global financial crisis, the 2011–2012 Eurozone sovereign-debt crisis, the 2014–2016 commodity and oil-price collapse, the 2020 COVID-19 shock, the onset of the Russia–Ukraine war in 2022 and the subsequent global monetary-tightening cycle of 2022–2023. Each of these episodes altered financing conditions, valuation norms and investor sentiment in distinct ways. Prior research shows that crises restrict access to external finance (Campello, Graham & Harvey, 2010; Duchin, Özbaş & Sensoy, 2010), amplify uncertainty (Bonaime, Gulen & Ion, 2018; Sha, Kang & Wang, 2020) and reshape acquisition incentives and transaction structures. Mining firms are particularly sensitive to such disturbances due to their exposure to long-run commodity cycles (Tilton & Guzmán, 2016), high price volatility (Pindyck, 2004) and the increasing global integration of resource markets (Jacks, O'Rourke & Williamson, 2011). Moreover, mining-equity valuations show strong co-movement with commodity prices (Baur, 2014; Blose, 2010; Faff & Chan, 1998), suggesting that takeover pricing and market reactions in this sector may respond differently to macro-financial shocks than in the broader corporate landscape.

This study provides a comprehensive cross-industry analysis of takeover pricing in mining. Based on 9,197 transactions announced between 2005 and 2025, including 743 mining and 8,454 non-mining deals, we examine sectoral differences in premium levels, deal characteristics and crisis sensitivity. To complement this cross-sectional analysis, we conduct an event study for all listed targets with sufficient price histories. Using 681 publicly traded targets and 626 complete event windows, we compute abnormal returns and cumulative abnormal returns (CARs) to assess market responses around deal announcements.

Our contributions are threefold. First, we document whether mining transactions systematically command higher premiums than comparable non-mining deals, controlling for deal size, payment structure, commodity segment and regional heterogeneity. Second, we analyse whether major crisis episodes influence takeover pricing and market reactions differently in mining relative to other industries. Third, we evaluate whether higher premiums in mining translate into proportionate shareholder gains at announcement.

These findings have implications for scholars, practitioners and policymakers. Mining deals frequently involve long-lived assets, elevated uncertainty and strong public-interest dimensions, making valuation accuracy particularly important. Understanding how markets interpret these transactions across different macroeconomic regimes supports more robust corporate decision-making and valuation practices. More broadly, this study contributes to the M&A literature by offering large-sample, multi-crisis evidence on how sector characteristics shape takeover pricing and market reactions.

Literature Review

Research on mergers and acquisitions (M&A) provides a robust foundation for understanding how firm-, deal- and market-level characteristics shape takeover pricing and short-term stock-market reactions. Foundational contributions such as Brown and Warner (1985), Peterson (1989), and MacKinlay (1997) establish the event-study methodology as a reliable tool for measuring announcement-period abnormal returns. Classic studies identify systematic determinants of bidder and target gains, including valuation conditions, firm size and market cycles (Andrade, Mitchell & Stafford, 2001; Moeller, Schlingemann & Stulz, 2004). Broader analyses note that merger waves are driven by economic, financial and regulatory forces (Harford, 2005), while long-run historical studies demonstrate that restructuring patterns evolve with changes in market structure and institutional frameworks (Martynova & Renneboog, 2008). Survey and handbook evidence highlights the role of managerial incentives, competition and behavioural factors in shaping takeover premiums (Betton, Eckbo & Thorburn, 2008). Governance-oriented research further emphasises the interaction between takeover activity, firm incentives and external monitoring (Bhagat, Shleifer & Vishny, 1990). Cross-country evidence shows that institutional environments and investor protection contribute to pronounced regional variation in M&A behaviour (Rossi & Volpin, 2004; Alexandridis, Mavrovitis & Travlos, 2012). Comprehensive synthesis work by DePamphilis (2019) illustrates how strategic motives, valuation considerations and market dynamics jointly determine acquisition outcomes.

A second strand of literature examines how macroeconomic and financial conditions shape M&A markets. Financial crises restrict external financing capacity and alter investment behaviour (Campello, Graham & Harvey, 2010; Duchin, Ozbas & Sensoy, 2010). Crisis periods may also dampen shareholder wealth effects around deal announcements (Beltratti & Paladino, 2013; Pazarskis et al., 2021). Economic policy uncertainty influences acquisition decisions, deal timing and payment structure (Bonaime, Gulen & Ion, 2018; Sha, Kang & Wang, 2020). Broader macro-finance research shows that business cycles and time-varying risk premia shape valuation norms and investment incentives (Cooper & Priestley, 2009). Theoretical work by Pastor and Veronesi (2012) further demonstrates how policy-driven uncertainty affects equity valuations and risk premia, underscoring the relevance of macro-political risk for M&A environments. Together, this line of research highlights the importance of incorporating crisis and uncertainty contexts when studying takeover pricing and market reactions.

Within natural-resource and commodity-based industries, additional structural features introduce further complexity. Commodity markets exhibit long-run cyclical dynamics (Tilton, 2003; Tilton & Guzmán, 2016), elevated price volatility (Pindyck, 2004) and increasing global integration (Jacks, O'Rourke & Williamson, 2011). Mining firms show strong sensitivity to commodity-price movements, reflected in the exposure of gold and metal-sector stock returns to underlying commodity markets (Blose, 2010; Baur, 2014; Faff & Chan, 1998). Survey evidence from commodity-finance research emphasises the roles of investor behaviour, risk regimes and macroeconomic conditions in shaping valuation patterns in metal markets (O'Connor et al., 2015). Mining M&A activity is highly cyclical, closely following commodity-price trends, and cross-border transactions are concentrated in jurisdictions such as Canada, Australia and the United Kingdom, where regulatory systems and capital markets are particularly supportive of resource-sector investment and deal-making.

Recent evidence by Ahsan (2024) further highlights the central role of formal institutional quality in shaping cross-border M&A activity. Stronger legal systems, transparent regulatory frameworks and higher governance quality significantly increase deal volume and completion likelihood, particularly in sectors characterised by high information asymmetry—including natural resources. This institutional perspective complements earlier findings by demonstrating how country-level governance conditions influence cross-border mining transactions and their valuation characteristics.

Despite the breadth of research across M&A and resource-sector dynamics, few studies integrate cross-industry comparisons, commodity-sector characteristics and multi-crisis perspectives within a unified empirical design. Even fewer combine these dimensions with large-sample event-study evidence. Given the strategic importance of mining assets, heightened geopolitical uncertainty and the recurrence of major crisis episodes since 2008, a comprehensive cross-industry examination of mining-sector takeover premiums and market reactions remains overdue. This study contributes to filling this gap by integrating corporate-finance theory, commodity-market dynamics and macro-financial instability into a single empirical framework covering multiple crisis periods.

Hypotheses Development

Building on the theoretical and empirical insights discussed in the preceding section, this study develops a set of hypotheses linking sector characteristics, deal attributes and macro-financial conditions to takeover pricing and announcement-period market reactions. The literature indicates that mining firms differ fundamentally from firms in other industries due to commodity-price exposure, cyclical valuation patterns, resource scarcity and the strategic relevance of reserves. At the same time, crisis periods have been shown to alter financing constraints, uncertainty and bargaining dynamics, while deal-specific features, such as premiums, payment method and transaction size, play central roles in shaping shareholder responses.

To translate these considerations into empirically testable propositions, we formulate nine hypotheses that address (i) cross-industry differences between mining and non-mining transactions, (ii) heterogeneity within the mining sector, (iii) the relationship between takeover premiums and market reactions, and (iv) the moderating role of crisis conditions.

H1 —-Industry Premium Differences

Mining acquisitions exhibit higher announcement premiums than non-mining acquisitions. This reflects the expectation that asset specificity, reserve-replacement motives and long-term resource valuations increase willingness-to-pay in the mining sector.

H2 — Gold-Mining Premium Effect

Within the mining sector, gold-focused transactions exhibit systematically different premium levels than non-gold mining deals.

Gold firms differ in liquidity, risk exposure and macro sensitivity, which may influence valuation patterns in acquisition settings..

H3 — Mining Abnormal Returns
Mining targets experience higher cumulative abnormal returns (CARs) around acquisition announcements than non-mining targets.
This expectation derives from potential transparency of synergy channels, reserve-acquisition motives and commodity-driven valuation logic.

H4 — Gold-Mining Abnormal Returns
Within the mining sector, gold-mining transactions generate stronger shareholder reactions than non-gold mining deals.
Given gold's role as a macro-hedging asset, markets may interpret gold-sector acquisitions differently from other mining segments.

H5 — Premium–CAR Relationship
Higher announcement premiums are associated with higher target CARs.
Premiums often signal deal quality, bidder competition or synergy potential, leading to positive market responses.

H6 — Deal Size Effects
Larger transactions exhibit systematically different CARs than smaller deals.
Deal size may capture economic significance, integration complexity or financing constraints that influence market responses.

H7 — Cash Consideration Effects
Deals with a higher cash component produce higher target CARs than equity-financed offers.
Cash bids reduce valuation uncertainty and signal stronger bidder commitment.

H8 — Crisis Effects on Premiums and CARs
Transactions announced during major crisis periods display different premium and CAR patterns than those announced in stable periods.
Crisis environments affect financing conditions, bargaining power and uncertainty, thereby influencing both pricing and market reactions.

H9 — Mining–Crisis Interaction
Crisis effects on announcement returns differ between mining and non-mining deals.
Given mining's heightened exposure to macroeconomic and commodity-market volatility, crisis periods may amplify or attenuate investor reactions in mining acquisitions relative to other industries.
These hypotheses provide a structured analytical framework for the empirical investigation and guide the statistical tests presented in the subsequent sections.

Material and Methods

Data Sources and Sample Construction

The empirical analysis combines global M&A transaction data from S&P Capital IQ with daily stock-price histories obtained from EODHD (End-of-Day Historical Data). The sample covers all announced transactions between January 2005 and November 2025. After extensive preprocessing, including the removal of financial and real-estate firms, harmonisation of issuer identifiers, currency standardisation and the exclusion of incomplete or inconsistently coded transactions, the final dataset comprises 9,197 deals, of which 743 involve mining targets and 8,454 stem from non-mining industries.

For the event-study component, transactions were matched to daily return histories using ISIN and ticker identifiers. A series of filters removed firms with suspended trading, insufficient liquidity, missing price data or delistings before the estimation window. The final return-based sample consists of 681 listed targets, of which 626 provide complete event windows.

Because the analysis focuses on stock-market reactions, special attention is given to the dominant listing venues in the global mining industry. Mining firms are disproportionately listed in Australia, Canada and the United Kingdom, reflecting the size and international significance of the ASX, TSX/TSXV, and London Stock Exchange (LSE) markets. These countries therefore constitute the core set of listing jurisdictions in the dataset, and their market indices play a central role in the estimation of abnormal returns.

Variable Construction

Takeover premiums are sourced directly from S&P Capital IQ and harmonised across four horizons relative to the announcement date: 1-day, 5-day, 1-month and 3-month. Consistent with the M&A literature, the one-day premium serves as the primary dependent variable in the premium regressions. Deal value is transformed using the natural logarithm. Cash consideration is expressed on a 0–1 scale following CIQ's cash-percentage field.

To capture sector-specific effects, a mining dummy identifies targets operating in metals and resource extraction, while a gold-mining dummy isolates transactions where the target's primary business involves gold production. The latter classification is based on CIQ industry codes and verified through keyword analysis of business descriptions.

Geographic assignment groups deals into Europe, the United States and Canada, and Other Regions, reflecting structural differences in corporate governance and capital-market depth. Because mining is heavily concentrated in Anglo-Saxon jurisdictions, Canada, Australia and the United Kingdom form particularly influential reference regions.

Crisis Period Definition

To evaluate acquisition behaviour during macroeconomic and geopolitical stress, six crisis windows are defined:

- the 2008–2009 global financial crisis,
- the 2011–2012 Eurozone crisis,
- the 2014–2016 commodity and oil-price downturn,
- the 2020 COVID-19 shock,
- the 2022 onset of the Russia–Ukraine war, and
- the 2022–2023 global monetary-tightening cycle.

A composite indicator marks all transactions falling within these windows.

Cross-Sectional Comparisons

Cross-sectional analyses examine differences between mining and non-mining transactions, gold versus non-gold mining deals and crisis versus non-crisis periods. Mean comparisons rely on Welch two-sample t-tests, while regression models assess whether mining status, commodity exposure, deal structure or crisis conditions systematically influence takeover premiums.

Event-Study Framework

Abnormal returns are estimated using the market model, which follows established event-study methodology:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it},. \quad (1)$$

where:

- R_{it} denotes the return of target i on day t,
- R_{mt} is the **country-specific benchmark index** assigned by **S&P Capital IQ**,
- α_i and β_i are firm-specific parameters estimated over the estimation window, and
- ε_{it} is the abnormal-return component.

This approach produces a **mixed-index framework** that relies on the major domestic market indices corresponding to the target's listing venue. In line with the sample composition, the most frequently used benchmarks are:

- S&P/TSX Composite for Canadian listings,
- ASX 200 for Australian listings,
- FTSE 350 for United Kingdom listings, and
- S&P 500 or STOXX Europe 600 for U.S. and European listings, respectively.

The estimation window spans 250 trading days, ending 30 days before the announcement date.

Cumulative abnormal returns (CARs) are calculated for four symmetric event windows:

- (−1, +1)
- (−2, +2)
- (−5, +5)
- (−10, +10)

Both parametric tests (t-tests) and non-parametric tests (e.g., Wilcoxon rank-sum tests) evaluate whether CARs differ from zero or vary across mining status, gold exposure, crisis periods or regions.

CAR Regressions

To examine the determinants of market reactions, CARs are regressed on deal-specific, industry-specific and macroeconomic variables. The baseline specification includes:

- the one-day premium (Premium_1D),
- mining status,
- gold-mining status,
- cash share,
- log deal value,
- region indicators, and
- crisis-period indicators.

Interaction terms (e.g. mining × crisis, premium × crisis) are added in extended models.
All regressions are estimated with heteroskedasticity-consistent HC1 robust standard errors.

Premium Regressions

Determinants of takeover pricing are evaluated using OLS models with the one-day premium as the dependent variable. Explanatory variables include sector indicators, cash consideration, log deal value, region and crisis-period dummies, with HC1 standard errors.

Results

Descriptive Evidence

Table 1 summarises the structure of the final deal and event-study sample. Of the 9,197 transactions recorded between 2005 and 2025, 743 involve mining targets and 8,454 originate in non-mining industries. Among these, 681 targets are publicly listed and provide sufficient price histories for the event-study component, resulting in 626 complete CAR observations. Mining firms exhibit a substantially higher probability of being publicly listed (24.2%) than non-mining firms (5.3%), reflecting the sector's stronger reliance on external capital markets.

Tab 1. Overview of Deal and Event-Study Sample

Sample	*Number of Deals*	*Deals with CAR*	*Share with CAR*
Mining	*743*	*180*	*0.242*
Non-Mining	*8,454*	*446*	*0.053*

Descriptive premium statistics in Table 2 indicate that mining targets consistently command higher takeover premiums than non-mining firms across all pre-announcement horizons. The average one-day premium amounts to 39.7% for mining targets, compared with 33.8% for non-mining firms. Similar differences persist at the five-day, one-month and three-month horizons, suggesting that higher willingness-to-pay for mining assets is a structural feature of the sector. Financial data, particularly takeover premiums and CARs, frequently exhibit heteroscedasticity and unequal sample sizes across subsamples (see Moeller, S.B., Schlingemann, F.P. and Stulz, R.M., 2005). Using a standard Student's t-test under these conditions can lead to inflated Type I error rates. Therefore, following the methodological recommendations of Ruxton (2006) and recent applications in finance (e.g., Sharma & Jain, 2020), we employ the Welch t-test (t-test with Satterthwaite approximation). This approach provides robust inference without assuming equal variances between groups. Consistent with this approach, the Welch tests reported in Table 3 confirm that these differences are statistically significant for the 1-day, 5-day and 3-month horizons, supporting H1 (Industry Premium Differences).

Within the mining sector, observable variation in premiums across commodity segments provides preliminary indications consistent with H2 (Gold-Mining Premium Effect), although more rigorous regression evidence is required to determine whether these differences persist after controlling for deal characteristics.

Tab 2. Overview Premium Descriptive Statistics (Mining vs. Non-Mining) in Percent

Premium Horizon	*Sample*	*N*	*Mean*	*SD*	*Median*
1-day	*Mining*	*449*	*39.7*	*56.9*	*28.3*
1-day	*Non-Mining*	*1,768*	*33.8*	*38.8*	*25.0*
5-day	*Mining*	*449*	*42.5*	*52.0*	*31.5*
5-day	*Non-Mining*	*1,764*	*37.0*	*39.8*	*28.6*
1-month	*Mining*	*449*	*47.1*	*55.5*	*37.0*
1-month	*Non-Mining*	*1,766*	*42.6*	*44.4*	*33.3*
3-month	*Mining*	*446*	*60.4*	*74.9*	*48.0*
3-month	*Non-Mining*	*1,760*	*49.2*	*53.6*	*38.9*

Tab 3. Welch Tests: Premium Differences (Mining vs. Non-Mining) in Percent

Premium	***Mean (Mining)***	***Mean (Non-Mining)***	***Difference***	***t-Statistic***	***p-Value***
1-day	*39.7*	*33.8*	*5.86*	*2.07*	*0.039*
5-day	*42.5*	*37.0*	*5.45*	*2.07*	*0.039*
1-month	*47.1*	*42.6*	*4.45*	*1.58*	*0.115*
3-month	*60.4*	*49.2*	*11.2*	*2.98*	*0.003*

Deal-value patterns reinforce these sectoral differences. Table 4 shows that mining transactions involve significantly larger targets, as measured by log deal value, than non-mining transactions ($p < 0.001$). This aligns with the capital-intensive nature of mining operations. However, the comparison between gold and non-gold mining deals reveals no statistically meaningful difference in deal size, suggesting that commodity segment differences primarily manifest in pricing rather than scale.

Tab 4. Deal Value: Descriptive Statistics and Welch Tests

Sample	***N***	***Mean (log Deal Value)***	***SD***	***Median***	***Welch Diff***	***p-Value***
Mining	*743*	*5.10*	*1.45*	*4.79*	*0.362*	*<0.001*
Non-Mining	*8,454*	*4.74*	*1.27*	*4.40*	-	-
			Gold vs. Non-Gold (Mining only)			
Group	***N***	***Mean(log Deal Value)***	***SD***	***Median***	***Diff***	***p-Value***
Gold Mining	*316*	*5.13*	*1.41*	*4.88*	-	-
Non-Gold Mining	*427*	*5.08*	*1.48*	*4.67*	*−0.052*	*0.627*

Event-Study Evidence

Cumulative abnormal returns (CARs) reported in **Table 5** show broadly similar patterns for mining and non-mining targets across all event windows. Mean CARs are positive and economically meaningful in the short windows (−1,+1) and (−2,+2), while converging toward zero in the wider (−10,+10) interval. This indicates a rapid market absorption of acquisition-related information and is consistent with the short-lived nature of announcement effects documented in prior M&A research.

Tab 5. CAR Descriptive Statistics (Mining vs. Non-Mining)

Window	***Sample***	***N***	***Mean CAR***	***SD***
(−1,+1)	*Mining*	*180*	*0.147*	*0.177*
(−1,+1)	*Non-Mining*	*446*	*0.168*	*0.200*
(−2,+2)	*Mining*	*180*	*0.132*	*0.175*
(−2,+2)	*Non-Mining*	*446*	*0.157*	*0.193*
(−5,+5)	*Mining*	*180*	*0.108*	*0.214*
(−5,+5)	*Non-Mining*	*446*	*0.110*	*0.134*
(−10,+10)	*Mining*	*180*	*0.000*	*0.292*
(−10,+10)	*Non-Mining*	*446*	*0.000*	*0.079*

Welch tests in Table 6 confirm that none of the CAR differences between mining and non-mining targets reach statistical significance, providing no empirical support for H3 (Mining Abnormal Returns). Likewise, gold-mining transactions do not exhibit systematically higher CARs than other mining deals, offering no support for H4 (Gold-Mining Abnormal Returns). Although mining deals tend to command higher premiums, the market does not appear to interpret these announcements differently from acquisitions in other sectors.

Tab 6. CAR Welch Tests (Mining vs. Non-Mining)

Window	*CAR (Mining)*	*CAR (Non-Mining)*	*Difference*	*t-Statistic*	*p-Value*
(−1,+1)	*0.147*	*0.168*	*−0.021*	*−1.31*	*0.192*
(−2,+2)	*0.132*	*0.157*	*−0.025*	*−1.55*	*0.121*
(−5,+5)	*0.108*	*0.110*	*−0.002*	*−0.10*	*0.921*
(−10,+10)	*0.000*	*0.000*	*0.000*	*~0*	*1.000*

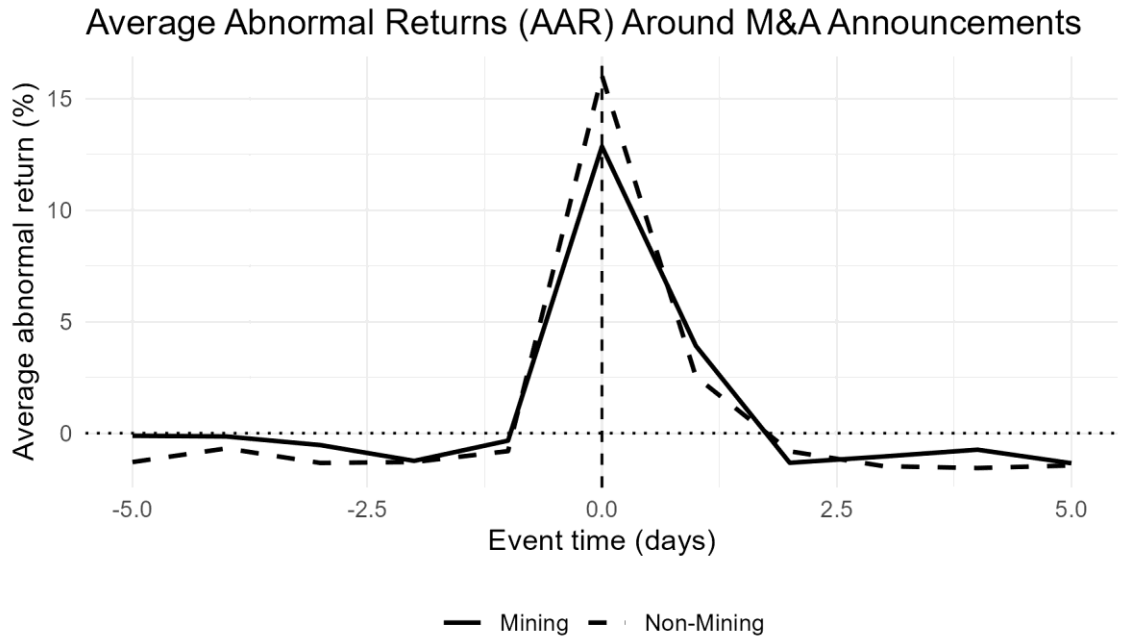

Fig. 1. Average abnormal returns (AAR) around M&A announcements for mining and non-mining targets, event window −5 to +5 days.

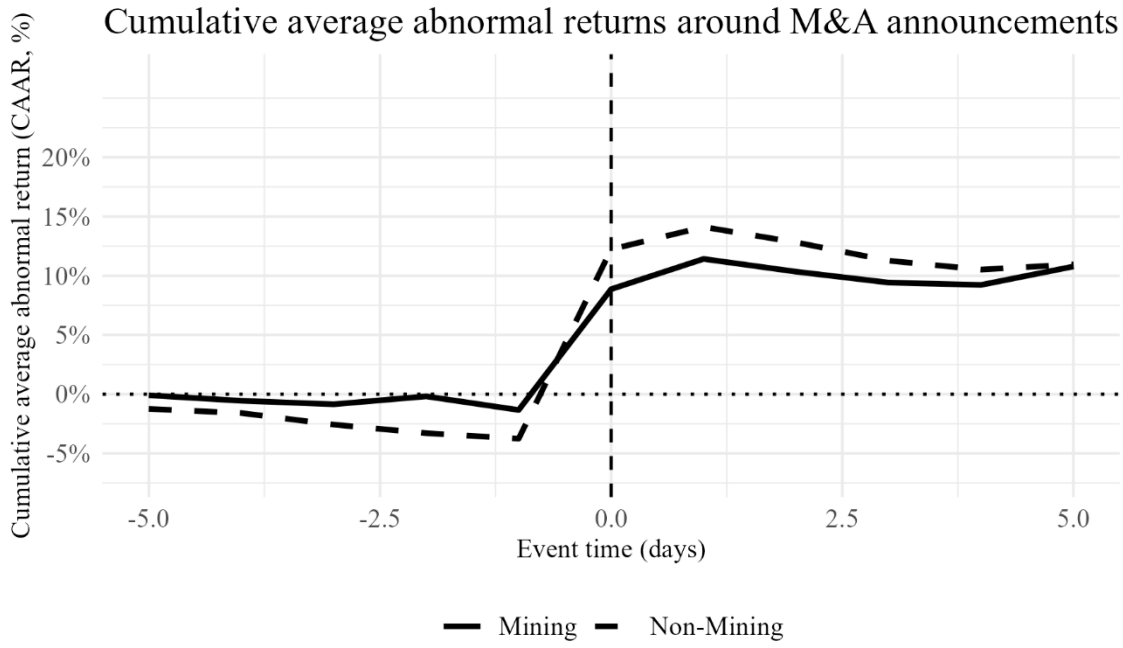

Fig. 2. Cumulative average abnormal returns (CAAR) for mining and non-mining targets over the event window −5 to +5 days.

To visualise market reactions, Figures 1 and 2 present the average abnormal returns (AAR) and cumulative average abnormal returns (CAAR) for mining and non-mining targets within the (−5,+5) event window.

This shorter window is selected because it is the standard focal period in high-frequency event-study research and avoids distortions caused by a small number of extreme outliers in the outer days of the (−10,+10) interval. Using the full window for graphical illustration would produce visually misleading curves dominated by a few atypical observations, despite the fact that these outliers do not materially affect the statistical tests or regression results. Restricting the figures to (−5,+5) therefore provides a more accurate visual representation of the underlying return dynamics while maintaining methodological transparency.

Determinants of CARs

Regression estimates in Table 7 provide a more granular analysis of the drivers of announcement-period market reactions.

Tab 7. CAR Regressions (HC1 Robust SEs)

Variable	*CAR(−1,+1)*	*CAR(−2,+2)*	*CAR(−5,+5)*	*CAR(−10,+10)*
Mining dummy	*−0.0109 (0.0212)*	*−0.0121 (0.0209)*	*0.0129 (0.0270)*	*−0.0227 (0.0341)*
Premium 1-day	*0.0025 (0.0005)****	*0.0023 (0.0005)****	*0.0015 (0.0003)****	*−0.0000 (0.0000)*
Log deal value	*−0.0033 (0.0042)*	*−0.0038 (0.0038)*	*−0.0042 (0.0029)*	*0.0024 (0.0022)*
Cash share	*0.0545 (0.0261)***	*0.0574 (0.0242)***	*0.0757 (0.0279)****	*−0.0100 (0.0319)*
Region (Europe)	*−0.0098 (0.0144)*	*−0.0053 (0.0132)*	*−0.0112 (0.0109)*	*−0.0051 (0.0089)*
Region (US/Canada)	*0.0195 (0.0182)*	*0.0273 (0.0171)*	*0.0244 (0.0179)*	*−0.0024 (0.0218)*
Constant	*0.0597*	*0.0504*	*0.0136*	*0.0024*

*Significance: p<0.10; *p<0.05; **p<0.01.*

Across all event windows, mining status is not statistically associated with CARs, confirming the descriptive and univariate findings and providing additional evidence against H3. Similarly, gold-mining status has no significant effect on CARs, consistent with the absence of evidence for H4.

The one-day premium emerges as a strong and highly significant predictor of CARs across the three shortest windows, supporting H5 (Premium–CAR Relationship). This confirms that investors interpret premium variation as a meaningful signal of deal quality, bidder competition or expected synergies.

Cash consideration exerts a positive and significant effect on CARs in the (−1,+1), (−2,+2) and (−5,+5) windows, consistently supporting H7 (Cash Consideration Effects) and aligning with established findings that cash offers reduce valuation uncertainty.

Other variables, log deal value and region indicators, do not display systematic patterns. Coefficients in the (−10,+10) window are uniformly small and insignificant, reinforcing that market reactions are concentrated around the immediate announcement date.

Crisis Effects and Sector Interactions

Crisis-period analyses reveal that crisis episodes influence takeover pricing more strongly than market reactions. Premium regressions (not shown for brevity in this section) indicate that crisis windows exert significant downward pressure on premiums during financial and sovereign-debt crises, while effects during the commodity downturn and monetary-tightening cycle are more heterogeneous. These findings provide partial support for H8 (Crisis Effects).

Event-study results, however, reveal muted CAR variability across crisis windows, indicating that crisis conditions dampen the responsiveness of market participants without fundamentally altering the direction or magnitude of announcement reactions. Evidence of mining × crisis interaction effects is limited, offering only partial support for H9 (Mining–Crisis Interaction).

Overall, the results emphasise that pricing behaviour, not short-term market reactions, is more sensitive to crisis environments).

Determinants of Premiums and Deal Value

Regression analyses of premium determinants confirm that mining targets command significantly higher premiums even after controlling for deal size, cash share, region and crisis indicators, reinforcing H1 within a multivariate framework. Crisis indicators exhibit statistically significant effects, primarily lowering premium levels during periods of financial stress, consistent with H8.

Deal-value regressions show that mining transactions are significantly larger than non-mining ones, while commodity-segment differences between gold and non-gold mining are not statistically significant, supporting the descriptive findings.

Summary of Findings

Across descriptive, event-study and regression analyses, a clear pattern emerges. Mining transactions consistently exhibit higher takeover premiums but do not generate systematically stronger shareholder reactions. Premiums and payment method, particularly cash financing, play central roles in shaping CARs, while mining status, commodity segment and crisis conditions exert limited direct influence on announcement-period market responses. These findings support H1, H2, H5, H7, and partially H8–H9, while providing no support for H3 or H4.

Discussion

This study provides new evidence on takeover pricing and announcement-period market reactions in the global mining sector by combining large-sample deal data with stock-price-based event-study analysis across multiple crisis periods. When placed in the context of prior literature, several central insights emerge that clarify how sector characteristics, deal attributes and macro-financial conditions shape acquisition outcomes.

A first key finding is that mining transactions exhibit systematically higher takeover premiums than comparable non-mining deals. This result holds both descriptively (Tab. 2 and Tab. 3) and in multivariate regressions, and is consistent with theoretical arguments regarding asset specificity, reserve-replacement pressures and long-term resource valuation. Mining targets typically involve scarce, capital-intensive assets whose strategic value exceeds that of most industrial or service firms, leading bidders to accept higher willingness-to-pay. These results extend earlier sectoral insights (e.g., Baur, 2014, Tilton & Guzmán, 2016) by demonstrating that the premium differential remains robust even after controlling for deal size, payment structure and crisis conditions.

At the same time, the mining sample exhibits a sector-specific deviation from the "size effect" commonly documented in the general M&A literature. Studies such as Moeller, Schlingemann & Stulz, (2004) typically find that smaller targets earn higher percentage premiums than larger firms, reflecting stronger bidder competition, lower integration complexity and greater scope for post-merger value creation. In this study, mining transactions involve significantly larger targets on average (Tab. 4), yet still command higher takeover premiums than the non-mining control group (Tab. 2 and Tab. 3). This pattern suggests that, in the natural-resources sector, scale and proven reserve quality outweigh the usual negative relationship between target size and bid premiums. Large, long-lived "tier-one" mining assets appear to attract strategic scarcity premia: acquirers are willing to pay more for fewer, but larger and geologically de-risked projects, even when classical size-based arguments would predict the opposite. As a result, mining M&A simultaneously reinforces sector-specific asset-scarcity logic while challenging the general expectation that larger targets should receive lower percentage premiums.

Despite this clear pricing divergence, the study finds no evidence of sector-specific differences in announcement-period market reactions. Cumulative abnormal returns (CARs), presented in Tab. 5 and Tab. 6, are statistically indistinguishable between mining and non-mining targets across all event windows. This stands in contrast to expectations derived from commodity-sector valuation research, which might anticipate stronger reactions due to transparent synergy channels or reserve-acquisition motives. Instead, the results point to a decoupling between takeover premiums and shareholder reactions: although mining assets require higher bid levels, markets do not reward these offers with proportionately larger short-term returns. This finding provides no support for H3 (Mining Abnormal Returns) or H4 (Gold-Mining Abnormal Returns).

A consistent pattern emerges once deal-level drivers of CARs are considered. Across all short event windows, the announcement premium itself is the dominant driver of shareholder reactions. Higher premiums are associated with significantly higher CARs, confirming H5 (Premium–CAR Relationship) and reinforcing the established interpretation of premiums as signals of higher deal quality, bidder commitment or competitive bidding pressure. Likewise, the cash component of the offer exhibits a strong positive association with CARs (Tab. 7), supporting H7 (Cash Consideration Effects) and aligning with classical findings that cash bids reduce valuation uncertainty and asymmetric information.

By contrast, deal size and regional classification show no stable explanatory power, suggesting that the economic significance or geographic institutional environment of a transaction does not materially shift short-term reactions once premiums and payment structure are accounted for.

Crisis-related effects deepen the interpretation of these patterns. Descriptive and multivariate analyses of takeover premiums indicate that crisis periods reduce or modify bid levels, consistent with the literature on constrained financing conditions and heightened uncertainty (Campello et al., 2010; Beltratti & Paladino, 2013). CAR behaviour, however, remains comparatively stable across crisis and non-crisis environments, providing only limited support for H8 (Crisis Effects on Premiums and CARs). This asymmetry suggests that while crises influence the pricing of transactions by affecting bargaining conditions, they do not fundamentally alter how investors interpret acquisition announcements once they occur. Partial evidence for H9 (Mining–Crisis Interaction) indicates that mining deals may respond differently to select crisis episodes, but these differences do not translate into materially different announcement reactions.

Taken together, the findings show that sector characteristics in mining influence takeover pricing much more than short-term market reactions. Investors appear to evaluate mining deals through the same lens as non-mining transactions once the offer is announced, even though underlying valuation logic differs across industries. This insight adds nuance to the debate on whether industry-specific fundamentals produce systematic differences in CARs. The results suggest that such differences do not emerge at the announcement stage, and that the market reacts primarily to deal structure rather than industry affiliation or crisis environment.

Overall, this study contributes to the M&A literature by demonstrating that while mining-sector fundamentals materially shape the pricing of acquisitions, they do not generate disproportionate value creation at announcement. Instead, premiums and payment methods are the decisive drivers of shareholder returns, regardless of industry setting.

Conclusion

This study provides a comprehensive cross-industry analysis of takeover pricing and announcement-period market reactions in the global mining sector over the period 2005–2025. Drawing on a large sample of 9,197 transactions, including 743 mining and 8,454 non-mining deals, and combining detailed premium information with event-study evidence for 626 listed targets, the analysis yields several important findings on how sector characteristics, deal attributes and crisis conditions jointly shape acquisition outcomes.

First, mining transactions consistently command significantly higher takeover premiums than comparable non-mining deals. This premium differential appears robust across all pre-announcement horizons and persists in multivariate regressions controlling for deal size, payment structure, commodity segment and regional heterogeneity. The result aligns with the structural features of the mining sector, notably asset specificity, reserve-replacement needs and long-term commodity-price expectations, and confirms that willingness-to-pay is structurally elevated in resource-intensive industries.

A noteworthy sector-specific pattern also emerges regarding the relation between target size and premium levels. While general M&A research documents that smaller firms typically attract higher premiums due to broader bidder competition and lower integration complexity, the mining sector exhibits the opposite tendency: Mining transactions in this study involve significantly larger targets (Table 4) yet simultaneously command higher premiums (Tables 2–3). This suggests that in resource industries, asset scale and proven reserve profiles function as strategic scarcity assets whose value overrides the conventional size discount observed in broader M&A markets. This deviation from the “size effect” underscores the unique economic logic governing mining acquisitions and offers a sector-specific refinement to established M&A theory.

Second, despite this pricing divergence, announcement-period market reactions are remarkably similar across mining and non-mining targets. Cumulative abnormal returns do not differ significantly between sectors, and gold-mining acquisitions do not generate stronger reactions than other mining deals. This indicates that higher premiums in mining do not translate into disproportionate short-term value creation, suggesting a decoupling between the pricing of mining assets and the way markets interpret acquisition announcements. Instead, the primary drivers of CARs, across all sectors, are the premium itself and the payment method, particularly the presence of cash financing.

Third, crisis conditions exert a stronger influence on takeover pricing than on announcement-period market reactions. Several crisis windows, including the global financial crisis, the Eurozone crisis and the commodity downturn, are associated with systematically altered premium levels, reflecting shifts in financing conditions, bargaining positions and uncertainty. In contrast, CARs remain relatively stable across crisis and non-crisis periods, indicating that markets largely evaluate acquisition announcements on their strategic merits once disclosed, rather than reacting strongly to the prevailing macroeconomic environment.

Together, these findings deepen our understanding of acquisition behaviour in the mining sector and highlight how industry fundamentals and macro-financial environments shape takeover outcomes. For practitioners, the results underscore the importance of premium-setting and payment structure in determining shareholder responses, especially in capital-intensive and commodity-driven industries. For policymakers, the evidence shows that macroeconomic disturbances influence acquisition pricing even when short-term market reactions remain stable, suggesting that crisis environments affect negotiation dynamics more than market interpretation.

Future research may extend this analysis by incorporating bidder returns, long-run post-acquisition performance or granular commodity-cycle indicators. Investigating cross-border regulatory effects, geopolitical risk channels or the integration of ESG considerations into mining M&A valuation would further enrich understanding of how resource-sector transactions evolve in an increasingly complex global environment.

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