

Which factors explain long-term value creation in mergers and acquisitions undertaken by listed firms in the Nordic region?

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Abstract

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This thesis examines long-term value creation following acquisitions by publicly listed firms in the Nordic region from 2005 to 2024, comparing Nordic and US acquirers within the same empirical framework. Using buy-and-hold abnormal returns at 12, 24, and 36 months on a sample corrected for overlapping event windows, I find that Nordic acquirers underperform their domestic benchmarks across all horizons. The losses are driven primarily by Swedish acquirers. Larger acquisitions relative to the size of the acquiring firm are associated with worse long-term returns, and the performance penalty grows as deals get bigger. Firm size is the strongest and most stable predictor of performance. Cross-border status, family ownership, and payment method show no robust association with long-term returns. When Nordic and US acquirers are compared directly and the deal structure is accounted for, no performance gap remains. The raw underperformance reflects deal composition rather than the governance environment in which Nordic firms operate.

Keywords: acquisitions; long-term abnormal returns; BHAR; Nordic acquirers; deal size; firm size; corporate governance

Resumo

Quais os fatores que explicam a criação de valor a longo prazo em fusões e aquisições realizadas por empresas cotadas na região nórdica?

Markus Hareide

Esta dissertação examina a criação de valor a longo prazo em aquisições realizadas por empresas cotadas na região nórdica entre 2005 e 2024, comparando adquirentes nórdicos e norte-americanos dentro do mesmo enquadramento empírico. Utilizando retornos anormais de compra e manutenção a 12, 24 e 36 meses numa amostra corrigida para janelas de eventos sobrepostas, conclui que os adquirentes nórdicos apresentam um desempenho inferior aos seus índices de referência domésticos em todos os horizontes. As perdas são impulsionadas principalmente por adquirentes suecos. Aquisições maiores em relação à dimensão da empresa adquirente estão associadas a piores retornos a longo prazo, e a penalização no desempenho aumenta à medida que o tamanho da transação cresce. A dimensão da empresa é o preditor positivo mais consistente e estável em todas as especificações. O estatuto transfronteiriço, a propriedade familiar e o método de pagamento não apresentam uma associação robusta com os retornos a longo prazo. Quando os adquirentes nórdicos e norte-americanos são comparados diretamente e a estrutura da transação é considerada, não subsiste qualquer diferença de desempenho. O fraco desempenho absoluto reflete a composição das transações e não o ambiente de governação em que as empresas nórdicas operam.

Palavras-chave: aquisições; retornos anormais a longo prazo; BHAR; adquirentes nórdicos; dimensão da transação; dimensão da empresa; governação corporativa

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1. Introduction

Companies looking to expand often turn to mergers and acquisitions as one of their most valuable strategic approaches. In 2025, worldwide M&A activity totalled USD 4.7 trillion, representing a twenty percent increase over the decade's average figure. This growth was driven primarily by a wave of major deals worth more than USD 10 billion each (Henry and Van Oostende, 2026). The returns that shareholders of acquiring companies receive over time differ significantly depending on the market and how long the performance is tracked. Research typically focuses on stock price reactions during brief periods around deal announcements, which reflect what investors expect at that moment rather than the actual profits shareholders receive in subsequent years. This thesis examines long-term acquirer returns in the Nordic region:

Which factors explain long-term value creation in mergers and acquisitions undertaken by listed firms in the Nordic region?

I analyse the relationship between deal characteristics and acquirer returns across 12, 24, and 36-month periods after announcement. The characteristics I examine include relative deal size, whether deals cross borders, ownership structure, and the financing of acquisitions. I measure performance using Buy-and-Hold Abnormal Returns compared to country-specific domestic market indices, allowing each acquirer to be assessed against its home market. Throughout this analysis, I maintain a US comparison sample alongside the Nordic data.

Nordic markets differ structurally from the US in ways that could influence acquisition outcomes. Nearly two-thirds of Nordic-listed companies have shareholders controlling over 20 percent of voting rights (Lekvall, 2014), creating concentrated ownership. US ownership patterns are more dispersed, with monitoring happening through market mechanisms instead of active large shareholders. This structural difference drives my comparison approach. If concentrated ownership leads to better acquisition decisions, Nordic acquirers should outperform their US peers. If ownership concentration does not improve outcomes, any raw performance differences between markets should vanish once I account for deal and firm characteristics.

My sample includes completed majority acquisitions by publicly listed companies in Norway, Sweden, Denmark, and Finland from 2005 to 2024, with a corresponding US sample from the same timeframe. This twenty-year period encompasses diverse market conditions, from the global financial crisis through the COVID-19 disruption and subsequent recoveries. I focus specifically on acquirer returns, as target company returns and combined synergy calculations lie beyond this study's boundaries.

My findings reveal that Nordic acquirers underperform their benchmarks over extended periods. Deal size and firm size emerge as the most significant factors. When I control for deal and firm characteristics in pooled regressions with US acquirers, no systematic performance difference between markets remains. The Nordic underperformance comes from deal composition rather than governance differences.

This thesis contributes a comprehensive analysis of long-term acquisition performance across the Nordic region over two decades. While short-term announcement returns reflect market expectations at deal disclosure, they do not capture what acquirer shareholders earn in subsequent years. My research tracks these longer-term outcomes and identifies which deal and firm characteristics drive performance. I test deal size, cross-border status, ownership structure, and payment method against long-term returns. The combined Nordic-US analysis then determines whether governance context explains any remaining performance gaps after accounting for these deal characteristics.

Section 2 examines existing literature on M&A performance, long-term methodologies, Nordic and US governance systems, and deal characteristics, then develops the five hypotheses I test. Section 3 outlines the econometric approach. Section 4 details data sources, construction methods, sample selection criteria, and variable definitions. Section 5 presents all empirical findings. Section 6 interprets these results. Section 7 addresses study limitations. Section 8 concludes with key findings, contributions, and suggestions for future research.

2. Literature Review and hypothesis development

2.1 Synergy and Value-Creation Logic

The traditional view of mergers and acquisitions is grounded in value-maximisation theory. Firms undertake acquisitions to generate synergies that exceed the premium paid to target shareholders. Under semi-strong market efficiency, these expected gains should be reflected in stock prices at announcement (Fama, 1998).

The gap between expected and realised synergies is substantial. At the announcement, managers project cost savings, revenue gains, and operational efficiencies under optimistic assumptions. In practice, integration is considerably more difficult. Cultural differences slow decision-making, key employees leave, systems do not merge cleanly, and customer relationships are disrupted in ways that are hard to anticipate. King et al. (2004) find that a large portion of variation in post-acquisition outcomes remains unexplained, even after controlling for study design and contextual moderators. This suggests that synergy realisation is genuinely unpredictable rather than merely poorly measured. Moeller et al. (2005) show that many acquiring firms experience weak or negative abnormal returns, particularly in large transactions. If acquisitions consistently generated the synergies managers project at announcement, persistent negative long-term abnormal returns would be difficult to explain. This is what this thesis sets out to test in the Nordic context.

2.2 Agency Theory and the Free Cash Flow Hypothesis

Agency theory offers a competing explanation for acquisition activity. Managers with excess free cash flow may invest in projects with negative net present value rather than distribute surplus capital to shareholders, leading to inefficient expansion and increased agency costs (Jensen, 1986). When monitoring is weak and cash is plentiful, managers have both the freedom and the resources to pursue acquisitions that end up destroying value rather than creating it.

Substantial wealth destruction for acquiring-firm shareholders during the 1998 to 2001 merger wave has been documented, driven primarily by a relatively small number of large transactions

(Moeller et al., 2005). Once long-term performance is measured using appropriate benchmarks and statistical procedures, average abnormal returns are often statistically indistinguishable from zero (Mitchell and Stafford, 2000). This pattern suggests that acquisitions do not reliably generate abnormal gains over time. Whether ownership concentration alters this dynamic by strengthening monitoring and limiting managerial discretion is one reason the Nordic context is worth examining.

2.3 Hubris and Behavioural Explanations

The hubris hypothesis provides a behavioural explanation for acquisition activity. Overconfidence among decision-makers at bidding firms leads to systematic overvaluation of target companies and consequently to overpayment (Roll, 1986). Managers bid when they believe the target is worth more than its market price, even when that belief turns out to be a valuation error (Roll, 1986).

Overconfidence is likely a larger problem in large transactions than in small ones. The complexity of valuing a large target gives overconfident managers more room to justify their estimates, makes the premium paid larger in absolute terms, and makes the integration challenge proportionally more demanding. In a small acquisition, the numbers are simpler and the downside more contained. Aggregate wealth destruction during the merger wave was concentrated in a relatively small number of very large transactions (Moeller et al., 2005). Although this is not a direct test of hubris, the pattern is what the hypothesis would predict, and deal size is therefore worth examining closely in the Nordic context.

Synergy logic, agency theory, and hubris are not mutually exclusive. In practice, a manager may genuinely believe in synergies that never materialise, while also overpaying for a target they are overconfident about. Which mechanism dominates in any given transaction is difficult to separate empirically, which is part of why post-acquisition performance remains so heterogeneous across studies.

2.4 M&A Performance Evidence Across Horizons

Studies of M&A performance differ fundamentally depending on the horizon examined. Short-term studies capture the market's immediate reaction to an announcement, reflecting investor expectations at the time of the deal. Long-term studies ask whether those expectations were justified, examining abnormal returns over the months and years following completion. Whether synergies were realised, whether the target was priced, and whether integration succeeded are questions that only become visible over time.

The event study methodology, which compares actual returns to a benchmark over a short window around the announcement date, is the standard approach for measuring short-term M&A performance (Brown and Warner, 1985). Under semi-strong market efficiency, the market's assessment of expected value creation is incorporated into prices at announcement (Fama, 1998). Cross-border transactions consistently produce lower bidder returns than domestic deals (Moeller and Schlingemann, 2005). Cross-border acquirers earn announcement returns approximately one percentage point lower than domestic acquirers (Moeller and Schlingemann, 2005). When a firm acquires domestically, investors have a reasonable basis for evaluating whether the price makes sense. In a cross-border deal, the acquirer operates in unfamiliar institutional territory. The market applies a discount for the added complexity, including regulatory differences, cultural distance, and the difficulty of conducting thorough due diligence on a foreign target.

The long-term picture is more contested, and much of that debate comes down to methodology. The preferred approach in early studies was to calculate mean buy-and-hold abnormal returns over multi-year windows and assess significance via simulated empirical distributions. Mitchell and Stafford (2000) show that this approach produces unreliable inferences because it assumes event-firm abnormal returns are independent. Major corporate events cluster by industry through time, producing positive cross-sectional dependence among event firms. Failing to account for this inflates t-statistics, in some cases by a factor of four (Mitchell and Stafford, 2000). Once that dependence is accounted for, t-statistics fall sharply and the evidence for systematic long-term underperformance largely disappears (Mitchell and Stafford, 2000). Mitchell and Stafford (2000) instead advocate a calendar-time portfolio approach, which

accounts for cross-correlations via portfolio variance and supports more reliable statistical inference.

The substantive findings also vary widely across studies. Substantial heterogeneity in post-acquisition performance has been documented even after controlling for study design and contextual moderators (King et al., 2004). What a given study finds depends heavily on sample characteristics, measurement choices, and institutional context. It seems hard to come up with any broad conclusions on long-term M&A performance overall. This also shows why methodological care ends up mattering so much when starting a new study.

2.5 Corporate Governance: Theoretical Foundations

Corporate governance refers to the institutional mechanisms that direct and control corporations. At its core, agency theory addresses the conflict arising from the separation of ownership and managerial control. When managers have access to free cash flow, they face incentives to grow the firm beyond what is optimal, including through acquisitions that serve their own interests rather than those of shareholders (Jensen, 1986).

Firms with stronger governance structures tend to exhibit higher market valuation (Brown and Caylor, 2006), and this positive association holds across institutional environments (Ammann et al., 2010). Concentrated ownership strengthens incentives for active oversight by giving large shareholders both the means and motivation to monitor management directly. In Nordic markets, close to two-thirds of listed companies have at least one shareholder controlling more than 20 percent of votes, reflecting a long-standing tradition of engaged ownership (Lekvall, 2014). When one shareholder holds dominant control, tensions with minority shareholders can follow, and the Nordic model responds to this through an extensive system of minority protection rules and practices. Mechanisms such as dual-class shares with differentiated voting rights further concentrate ownership power and are widely used across Nordic markets (Lekvall, 2014).

Governance structures influence how firms think about time, and that matters for large strategic decisions like acquisitions. Ownership structures that encourage long-term engagement may

produce different acquisition incentives than those oriented toward short-term market reactions. Whether this translates into different long-term acquisition returns is an empirical question.

2.6 Nordic Governance Characteristics

Nordic listed companies are typically controlled by dominant blockholders who hold substantial influence over strategic decisions, including acquisitions. Ownership engagement tends to be long-term, the general meeting carries real authority, and minority shareholders are protected through an extensive system of legal safeguards. Control-enhancing mechanisms, including dual-class shares with differentiated voting rights and nomination committees dominated by major owners, reinforce ownership concentration in Nordic listed companies (Lekvall, 2014).

Nordic governance is also embedded in a broader institutional framework built on stakeholder collaboration, collective bargaining traditions, and high levels of social trust. Employees participate through co-determination and workplace representation, and decision-making authority is relatively decentralised within organisations (Berg et al., 2024).

Concentrated ownership may reduce the frequency of poor acquisitions by disciplining the initial decision, but it does not necessarily improve the quality of the acquisitions that do get made. Much of the value in an acquisition is created or destroyed during integration and execution, a phase where ownership concentration provides less direct oversight. In the Nordic context, diversifying acquisitions generate higher bidder announcement returns than focused transactions, contrary to the pattern found in most international studies (Rose et al., 2017). This may reflect a tendency to overpay for targets within the core industry by overestimating operational synergies. The signalling effect of payment method, well-documented in US and European markets, does not appear to hold in Nordic markets (Rose et al., 2017).

2.7 US Governance Characteristics

The US corporate governance model is characterised by dispersed ownership and strong market-based monitoring. Institutional investors and activist shareholders play a central role in disciplining management through proxy contests, public campaigns, and leadership challenges.

Shareholder activism has intensified in recent years, with CEO-targeting campaigns more than quadrupling since 2018 (Tonello et al., 2025).

Market-based monitoring operates largely after the fact. Proxy contests and public campaigns respond to observed underperformance rather than shaping decisions before they are made. This limits the capacity of external discipline to prevent value destruction in acquisitions, where the consequences of poor decisions are realised before the market can intervene.

After adjusting for statistical biases, long-term abnormal returns following acquisitions in the US are often weak or statistically insignificant (Mitchell and Stafford, 2000). Merger waves characterised by elevated valuations have been associated with substantial bidder losses (Moeller et al., 2005). The empirical record suggests that neither dispersed nor concentrated ownership has reliably prevented value destruction in acquisitions.

2.8 Moderating Deal Characteristics

Deal structure shapes acquisition outcomes in ways the literature has consistently examined. One of the most discussed characteristics is the method of payment. Under asymmetric information, managers know more about their firm's true value than outside investors, creating a preference for internal funds and debt over equity issuance (Myers and Majluf, 1984). In the acquisition context, a stock offer can therefore signal that management considers its equity overpriced, leading the market to interpret equity-financed deals more cautiously. When valuation uncertainty is high, both acquirers and targets tend to prefer cash over stock, reflecting a rational effort to reduce counterparty risk rather than exploit information asymmetry (Klitzka et al., 2022).

A second deal characteristic is the relatedness between the bidder and the target. Synergy arguments suggest that related acquisitions should perform better because firms can exploit operational overlap and industry-specific knowledge. Agency-based arguments point in the opposite direction, implying that diversification may reflect managerial empire-building. Findings are mixed across studies, and no universal pattern has emerged.

In the Nordic context, diversifying acquisitions generate higher bidder announcement returns than focused transactions, possibly because acquirers overpay for targets within their core industry by overestimating operational synergies (Rose et al., 2017). Bidder announcement returns do not differ significantly between cash and stock-financed deals in the Nordic context, suggesting that the payment method signal carries weaker informational content than the international literature implies (Rose et al., 2017). Concentrated ownership may reduce information asymmetry between managers and investors, which could explain why the financing choice is less informative in this setting. These patterns in the Nordic context motivate a closer examination of how deal characteristics shape long-term acquirer returns.

2.9 Research Gaps and Contribution

Most empirical analyses of acquisition performance are based on US data, and those that do examine other markets rarely compare across institutional environments within a unified empirical framework. This limits the extent to which findings can speak to whether acquisition outcomes are driven by deal-level factors or by the institutional context in which acquirers operate. Based on my reading of the literature, studies comparing acquirers from different governance regimes while controlling for observable deal characteristics are uncommon.

A related gap concerns long-term performance measurement. Many studies focus on short-term announcement effects, which capture market expectations at the time of the deal rather than realised integration outcomes. Standard long-term event study methods have been shown to overstate statistical significance when cross-sectional dependence and skewness in compounded returns are not addressed (Mitchell and Stafford, 2000). The literature on long-term abnormal returns that explicitly addresses these methodological problems remains limited.

Governance differences between coordinated and market-based systems are well documented, but linking institutional structure directly to long-term acquisition performance remains rare in the empirical literature. Concentrated and dispersed ownership systems produce different monitoring incentives and managerial constraints, but the translation of these differences into measurable acquisition outcomes remains underexplored.

This thesis addresses all three gaps. It examines long-term acquisition performance in the Nordic region using a sample spanning two decades and four countries. Nordic and US

acquirers are compared within a unified empirical framework that controls for observable deal and firm characteristics. The methodological design explicitly addresses cross-sectional dependence and the contamination problem created by overlapping event windows, and this correction materially changes both the magnitude and significance of the results. The institutional comparison tests directly whether the governance characteristics of Nordic capital markets translate into measurable long-term acquisition outcomes, rather than treating governance as background context.

2.10 Hypothesis development

The following hypotheses test whether deal and firm characteristics systematically explain long-term abnormal returns in the Nordic M&A market.

H1: Long-term Abnormal Performance

Acquisitions do not systematically generate positive abnormal returns, and average effects are highly heterogeneous across studies (King et al., 2004). Once cross-sectional dependence and methodological biases in long-horizon returns are addressed, statistical evidence of persistent abnormal performance weakens considerably (Mitchell and Stafford, 2000). If capital markets efficiently incorporate expected synergies at announcement, long-term abnormal returns should not systematically differ from zero. Integration failures, behavioural biases, or misvaluation could give rise to persistent abnormal performance in either direction.

H1 alternative: Acquisitions generate statistically significant long-term abnormal returns for acquiring firms.

H1 null: Acquisitions do not generate statistically significant long-term abnormal returns for acquiring firms.

H2: Deal Size

Transaction size may influence post-acquisition outcomes through integration complexity, capital commitment, and exposure to valuation risk. Aggregate bidder losses during merger waves are driven primarily by a relatively small number of large transactions (Moeller et al., 2005). If large transactions increase the likelihood of overpayment or integration challenges, long-term abnormal returns should decline as relative deal size increases.

H2 alternative: Larger acquisitions are associated with lower long-term abnormal returns.

H2 null: Deal size has no statistically significant effect on long-term abnormal returns.

H3: Cross-Border Acquisitions

Cross-border acquisitions introduce additional uncertainty related to institutional distance, regulatory differences, cultural frictions, and information asymmetry. Firms adapt contractual arrangements in response to host-country legal environments, reflecting embedded institutional risk (Reuer et al., 2004). International expansion may also provide access to new markets, technologies, and growth opportunities (Hsu et al., 2021).

H3 alternative: Cross-border status is significantly associated with long-term abnormal returns.

H3 null: Cross-border status has no statistically significant effect on long-term abnormal returns.

H4: Payment Method

Payment method reflects information asymmetry and valuation uncertainty. Under asymmetric information, stock financing may signal potential overvaluation, whereas cash payments may reflect stronger internal valuation confidence (Reuer et al., 2004). More recent evidence indicates that payment structure is shaped by valuation risk and strategic considerations rather than systematic exploitation of equity mispricing (Klitzka et al., 2022).

H4 alternative: Cash-financed acquisitions are associated with higher long-term abnormal returns.

H4 null: Payment method has no statistically significant effect on long-term abnormal returns.

H5: Family Ownership

Ownership concentration alters governance incentives and monitoring intensity. Large blockholders have both the motivation and the power to monitor managerial decisions closely. In the Nordic context, concentrated ownership is combined with minority protection mechanisms, creating a governance structure that may strengthen acquisition discipline and post-merger oversight (Lekvall, 2014).

H5 alternative: Family-controlled acquirers exhibit higher long-term abnormal returns.

H5 null: Family ownership has no statistically significant effect on long-term abnormal returns.

3. Methodology

3.1 Empirical Design and Objectives

Two recurring findings in the M&A literature motivate the empirical design. Long-term acquiring-firm performance is highly heterogeneous, and commonly studied explanatory variables fail to explain variation in post-acquisition outcomes (King et al., 2004). Second, value destruction appears to be concentrated rather than uniform. During the 1998 to 2001 US merger wave, acquiring firms experienced substantial aggregate losses driven primarily by a relatively small number of large transactions (Moeller et al., 2005). Acquisition outcomes therefore vary across deal characteristics, and transaction-specific factors matter for long-term performance.

The thesis pursues two empirical objectives. The primary objective is to examine long-term abnormal returns among Nordic-listed acquirers. Specifically, the analysis tests whether transaction size, cross-border status, ownership structure, and payment method are associated with post-acquisition Buy-and-Hold Abnormal Returns measured over 12-, 24-, and 36-month horizons. The secondary objective is to assess whether the patterns documented in the Nordic sample reflect region-specific institutional features. This is assessed by comparing Nordic and US acquirers in a pooled regression that includes a Nordic indicator variable and interaction terms.

3.2 Measuring Long-term Acquisition Performance

Long-term post-acquisition performance is measured using Buy-and-Hold Abnormal Returns. BHAR captures the compounded return to holding the acquirer's stock over a specified evaluation window, net of a benchmark return over the same period.

For acquisition, I observed over horizon T , BHAR is defined as:

Equation 1: Buy-and-Hold Abnormal Returns

$$BHAR_{i,T} = \prod_{t=1}^T (1 + R_{i,t}) - \prod_{t=1}^T (1 + R_{b,t})$$

where $R_{i,t}$ denotes the return of the acquiring firm in period t , and $R_{b,t}$ denotes the benchmark return.

BHAR was chosen over Cumulative Abnormal Returns because compounding matters over long evaluation windows. CARs add up returns month by month rather than compounding them, which means they understate what an investor earns over a holding period of 12 to 36 months. A shareholder who buys at announcement and holds for three years experiences the compounding of returns month by month. BHAR is a standard performance measure in long-horizon acquisition studies, used because compounding better reflects the realised investor experience over multi-year windows (Mitchell and Stafford, 2000). The event window begins one month after the announcement date to avoid contaminating the long-term measurement window with the short-run announcement return. The short-run return reflects immediate market information processing rather than post-merger integration performance (Mitchell and Stafford, 2000).

Nordic acquirers were evaluated relative to country-specific domestic total market indices, and US acquirers relative to the US total market index. Domestic rather than global benchmarks were used so that abnormal returns reflect firm-level performance relative to the firm's own capital market environment (Griffin, 2002).

Conventional BHAR tests may overstate statistical significance if cross-sectional dependence and skewness in long-term returns are not accounted for (Mitchell and Stafford, 2000). Long-term return patterns must also be interpreted with caution, given concerns about model specification and joint-hypothesis testing within market efficiency frameworks (Fama, 1998). All regressions employed heteroskedasticity-robust standard errors clustered at the acquiring-firm level. This accounts for within-firm dependence across multiple transactions by the same acquirer (Petersen, 2009). A calendar-time portfolio approach was examined as an independent robustness check on the primary BHAR results. All models were estimated in R using the `lmtest` and `sandwich` packages for clustered standard errors.

Equation 2: Calendar-Time Abnormal Return

$$CTAR_t = R_{p,t} - R_{b,t}$$

where $R_{p,t}$ denotes the return of the event portfolio in period t , and $R_{b,t}$ denotes the country-specific benchmark return.

The BHAR estimator is also subject to new listings bias and rebalancing bias. New listings bias arises when recently listed firms are included in benchmark portfolios. These firms tend to underperform in early years, making event firms appear to outperform relative to an artificially weak benchmark. Rebalancing bias arises from the mechanical difference between how benchmark portfolios compound returns through periodic rebalancing and how individual buy-and-hold returns compound. Both biases can move BHAR estimates in either direction and are difficult to fully eliminate (Mitchell and Stafford, 2000). Using domestic total market indices as benchmarks partially mitigates these concerns by avoiding newly listed firms in the matching process.

3.3 Cross-Sectional Value Driver Model

To examine how observable deal and firm characteristics relate to long-term acquisition performance among Nordic acquirers, the following cross-sectional regression model was estimated using ordinary least squares:

Equation 3: Cross-Sectional Value Driver Model

$$BHAR_{i,T} = \alpha + \beta_1 RelDealSize_i + \beta_2 CrossBorder_i + \beta_3 Cash_i + \beta_4 Family_i \\ + \beta_5 LogAssets_i + \beta_6 ROA_i + \lambda_{year} + \delta_{industry} + \varepsilon_i$$

$BHAR_{i,T}$ is the buy-and-hold abnormal return for acquisition i over horizon T . $RelDealSize_i$ measures transaction size as deal value divided by acquirer market capitalisation. Scaling by acquirer market capitalisation reflects how much the deal commits the firm relative to its own size, which matters more than the raw dollar value when comparing firms across a wide size range. $CrossBorder_i$ equals one if the target firm is incorporated in a different country from the acquirer, including intra-Nordic transactions such as a Norwegian firm acquiring a Swedish target, and zero otherwise. $Cash_i$ equals one if the deal is fully cash-financed as recorded in ORBIS, and zero if payment is mixed or stock. $Family_i$ equals one if an individual or family

holds at least 50 percent of the acquirer's ownership stake as recorded in the ORBIS ownership module, and zero otherwise. LogAssets_i is the natural logarithm of total assets, sourced from ORBIS, included as a control for acquirer size. ROA_i is EBIT divided by total assets, included as a control for acquirer profitability.

OLS provides consistent parameter estimates under standard exogeneity assumptions when relevant controls are included (Angrist and Pischke, 2009). Year and industry fixed effects absorb common time shocks and persistent sectoral differences in acquisition activity. Standard errors were clustered at the acquiring-firm level to account for within-firm dependence when the same acquirer completes multiple deals during the sample period (Petersen, 2009).

The primary analysis uses a horizon-specific non-overlapping clean sample. For each horizon separately, any deal where the same acquirer announced a subsequent acquisition within the evaluation window is excluded. Serial acquirers are not entirely excluded from the sample. A firm that made multiple acquisitions over the sample period can still appear in the clean sample provided that the individual deals do not overlap within the relevant evaluation window.

3.4 Institutional Pooled Regression Model

To assess whether the patterns documented in the Nordic sample reflect institutional features specific to the region, I estimated the following pooled regression combining Nordic and US acquisitions:

Equation 4: Institutional Pooled Regression Model

$$\text{BHAR}_{i,T} = \alpha + \beta_1 \text{Nordic}_i + \beta_2 (\text{Cash}_i \times \text{Nordic}_i) + \beta_3 (\text{CrossBorder}_i \times \text{Nordic}_i) + \gamma' X_i + \lambda_{\text{year}} + \delta_{\text{industry}} + \varepsilon_i$$

Nordic_i equals one if the acquiring firm is headquartered in a Nordic country and zero if headquartered in the United States. $\text{Cash}_i \times \text{Nordic}_i$ and $\text{CrossBorder}_i \times \text{Nordic}_i$ are interaction terms testing whether the cash payment premium and the cross-border effect documented in the Nordic analysis operate differently across the two institutional environments. X_i includes the full set of deal and firm-level controls: relative deal size, cross-border status, family ownership, cash payment, log total assets, and return on assets. λ_{year} and δ_{industry} represent year and industry fixed effects.

β_1 captures the average conditional difference in long-term abnormal returns between Nordic and US acquirers after controlling for observable deal and firm characteristics. The Nordic indicator functions as a reduced-form proxy for institutional environment, capturing structural differences in governance systems including ownership concentration, monitoring intensity, and investor protection mechanisms (Lekvall, 2014; La Porta et al., 1998). Standard errors were clustered at the acquiring-firm level throughout.

Propensity score matching and Coarsened Exact Matching provide independent checks on the pooled regression. Where the pooled regression controls statistically for observable differences, matching constructs a paired sample where each Nordic deal is matched to the most similar US deal on observable characteristics before outcomes are compared. The propensity score is estimated using a logistic regression with log total assets, cross-border status, cash payment, announcement year, and industry sector as predictors. CEM is added as an alternative because it guarantees covariate balance by construction rather than improving it probabilistically. Balance is assessed using standardised mean differences.

3.5 Identification Strategy

The empirical framework is observational. Firms are not randomly assigned to institutional environments, and acquisition decisions are made by managers rather than determined by an external experiment. The analysis therefore estimates conditional relationships between variables rather than causal effects, consistent with standard practice in observational corporate finance research (Angrist and Pischke, 2009).

Firms self-select into acquisitions based on factors that are not fully observable, such as managerial confidence, strategic opportunity, and capital availability. The sample therefore describes variation in performance within the population of acquiring firms rather than the causal effect of acquiring versus not acquiring. The Nordic versus US comparison faces a related problem. The two samples differ systematically in observable deal characteristics and may also differ in unobservable dimensions such as managerial quality and integration capability that cannot be fully controlled for in the empirical specification.

The comparison is nonetheless informative because both regions represent mature capital markets with high disclosure standards and investor protection, while their governance structures differ in fundamental ways. Nordic firms operate within systems characterised by concentrated ownership and strong majority-owner influence combined with minority shareholder protection (Lekvall, 2014), while the US model relies more heavily on dispersed ownership and market-based monitoring. Financial data for Nordic acquirers were sourced from ORBIS with a coverage rate of 95.1 percent for the firm-level control variables. Broader differences in managerial practices and corporate culture may also influence observed performance, and institutional affiliation is not randomly assigned. The results are therefore interpreted as conditional associations rather than causal effects throughout.

4. Data and Variable Construction

4.1 Data Sources

Deal-level transaction data and firm-level financial controls were sourced from ORBIS, maintained by Bureau van Dijk. ORBIS was chosen because it covers smaller Nordic transactions more completely than US-centric alternatives such as SDC Platinum. Firm-level controls were extracted at Year-1 timing, meaning the financial year before the announcement date, with 95.1 percent coverage for the Nordic sample.

Stock return data were sourced from Datastream via LSEG Workspace, using monthly total return index series that reflect both price movements and dividend reinvestment. For Nordic acquirers, country-specific domestic total market indices were used as benchmarks: TOTMKSD for Sweden, TOTMKNW for Norway, TOTMKDK for Denmark, and TOTMKFN for Finland. For US acquirers, the benchmark is TOTMKUS. Domestic benchmarks were chosen so that abnormal returns reflect performance relative to each firm's own capital market environment. Country-specific benchmarks better capture return variation in international settings than global alternatives (Griffin, 2002).

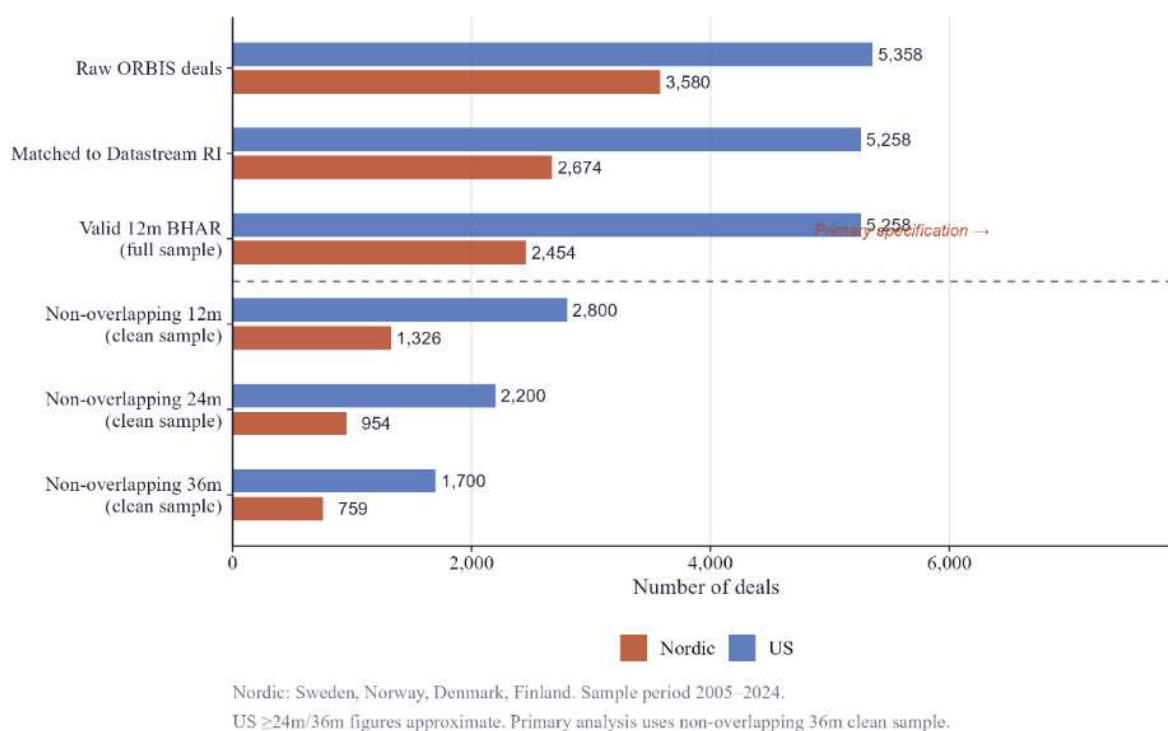
The sample covers January 2005 through December 2024, spanning the Global Financial Crisis, the COVID-19 shock, and extended periods of normal market conditions. The geographic scope

covers Sweden, Norway, Denmark, and Finland on the Nordic side, and the United States as the comparison market.

4.2 Initial Sample and Filters

The starting point for the Nordic sample was all completed acquisitions in ORBIS where the acquirer is a publicly listed firm headquartered in Sweden, Norway, Denmark, or Finland, with an announcement date between January 2005 and December 2024. Only completed deals were retained, as withdrawn or pending transactions cannot be used to measure post-announcement stock performance.

Figure 1: Sample Construction



Sequential filtering of Nordic and US deals from raw ORBIS extract to final clean estimation samples.

Each deal was matched to a Datastream return series using the acquirer's ISIN code. Deals were excluded from a given horizon where no return series could be identified, or where fewer than 50 percent of the expected monthly return observations were available within the evaluation

window. This ensures each BHAR represents a meaningful estimate of post-acquisition performance. After applying these filters, the full Nordic sample contains 2,454 deals at 12 months, declining to 2,397 at 24 months and 2,321 at 36 months. The same procedure was applied to the US sample, yielding 5,258 deals at 12 months.

All deal-level and firm-level variables were drawn from the same ORBIS export. Where multiple rows appeared per deal, the dataset was deduplicated by deal number before analysis.

4.3 Treatment of Overlapping Deals

Overlapping event windows arise when the same acquirer makes multiple acquisitions within the sample period, creating a measurement problem in long-term event studies. The BHAR for an earlier deal also reflects the market's reaction to subsequent transactions, making it difficult to attribute the measured return to a specific event. This problem grows more severe at longer horizons, since the probability that a serial acquirer announces another deal within the measurement window rises with time. At 12 months, 44.5 percent of Nordic deals have overlapping windows, rising to 57.1 percent at 24 months and 62.9 percent at 36 months. The Nordic sample contains 626 unique acquirers completing an average of 4.3 deals each.

Figure 2: Overlapping Event Windows



A deal is excluded at horizon T if the same acquirer made another acquisition within T months of the announcement date. Total full sample $N = 2,454$. Overlap rises from 44.5% at 12m to 62.9% at 36m.

A deal is excluded at horizon T if the same acquirer announced a subsequent acquisition within T months of the announcement date. Total full sample $N = 2,454$. Overlap rises from 44.5 percent at 12 months to 62.9 percent at 36 months.

Figure 2 shows the number of deals excluded and retained at each horizon. The primary analysis therefore uses a clean sample that excludes overlapping deals at each horizon separately. Any deal where the same acquirer announced a subsequent acquisition within the evaluation window is excluded. Serial acquirers are not excluded entirely. A firm that made multiple acquisitions can still appear in the clean sample provided its individual deals do not overlap within the relevant horizon.

4.4 Final Estimation Samples

The non-overlapping filter produces clean estimation samples of 1,326 deals at 12 months, 954 at 24 months, and 759 at 36 months for the Nordic sample. The same filter was applied to the US sample, yielding 2,875 deals at 12 months, 2,471 at 24 months, and 1,700 at 36 months.

Table 1: Sample Construction

Variable	Retained (N=759)	Excluded (N=1562)	p-value
Log total assets (mean)	12.574	13.195	<0.001***
Relative deal size (mean)	0.346	0.202	<0.001***
Cross-border (%)	53.4%	58.7%	0.017*
Cash payment (%; recorded deals)†	45.7%	51.6%	0.036*
Family-owned (%)	4.9%	5.9%	0.366
ROA (mean, winsorized)	-0.040	-0.034	0.604
Sweden (%)	47.4%	58.8%	<0.001***
Norway (%)	17.9%	15.3%	0.122
Finland (%)	20.6%	17.9%	0.133
Denmark (%)	14.1%	8.0%	<0.001***

† Cash payment rate computed on deals with recorded payment method data only (Retained N=512; Excluded N=926).
Continuous variables compared using Welch two-sample t-tests; binary and proportion variables compared using chi-squared tests.
Retained = deals passing the 36-month non-overlapping filter. Excluded = deals with overlapping 36-month event windows.
*** p<0.001, ** p<0.01, * p<0.05.

Table 1 compares retained and excluded observations on key deal and firm characteristics at the 36-month horizon. Sweden accounts for 47.4 percent of retained deals and 58.8 percent of excluded deals ($p < 0.001$), consistent with Swedish firms dominating serial acquisition activity. Norway accounts for 17.9 percent of retained deals, Finland 20.6 percent, and Denmark 14.1 percent.

Excluded deals come from larger firms, with a mean log total assets of 13.20 compared to 12.57 for retained deals ($p < 0.001$), reflecting that larger and more active acquirers make frequent acquisitions and therefore get excluded. Excluded deals are also smaller relative to acquirer size, with a mean relative deal size of 0.202 compared to 0.346 in the retained group ($p < 0.001$), more frequently cross-border at 58.7 percent versus 53.4 percent ($p = 0.017$), and more frequently cash-financed at 51.6 percent versus 45.7 percent ($p = 0.036$). ROA and raw deal value do not differ significantly between the two groups. The clean sample therefore describes occasional acquirers making relatively larger deals, rather than the full population of Nordic M&A activity.

Of the 2,454 Nordic deals in the full sample, 997 have no payment category recorded in ORBIS. Incomplete coverage of transaction characteristics for smaller deals is a known limitation of commercial M&A databases (Netter et al., 2011). The full sample is retained for hypotheses that do not require payment method data, and the analysis is restricted to deals with recorded payment information only for H4. In the clean sample, the H4 estimation sample contains 777 deals at 12 months, 557 at 24 months, and 448 at 36 months after applying both the non-overlapping filter and the payment data restriction.

The regression samples used in Sections 5.2 and 5.3 are smaller than the H1 sample at each horizon. At 12 months, 1,326 deals have valid BHAR observations but only 1,117 enter the regressions. At 24 months the figures are 954 and 796, and at 36 months 759 and 629. The difference arises from missing values on ORBIS control variables. At 36 months, 71 observations are lost due to missing relative deal size, 8 due to missing log total assets, and 51 due to missing ROA. Cross-border status, family ownership, and sector classification are complete for all observations.

The H1 t-test is unaffected because it requires only a valid BHAR observation and no control variables. The regression sample is therefore a subset of the H1 sample restricted to deals with complete data on all explanatory variables. Missing values arise from variation in ORBIS database coverage rather than deal performance, so there is no reason to expect systematic bias.

4.5 Variable Definitions

The dependent variable is the buy-and-hold abnormal return computed at 12, 24, and 36 months following the deal announcement date. BHAR is the difference between the acquirer's compounded stock return and the compounded return on the domestic market benchmark over the same window. The event window begins one month after the announcement date to avoid contaminating the long-term return with the short-run announcement effect. All BHAR values are winsorized at the 1st and 99th percentiles before analysis.

Deal size is the transaction value divided by the acquirer's market capitalisation at Year-1. A 100 million USD acquisition means something fundamentally different for a 200 million USD firm than for a 20 billion USD firm. Under the hubris hypothesis, bidding firms infected by hubris simply pay too much for their targets (Roll, 1986). Losses from overpayment scale with the size of consideration paid and are most damaging when highly valued acquirers pursue large transactions (Moeller et al., 2005). Under agency theory, deals that are large relative to the acquirer represent empire-building that shareholders cannot easily reverse (Jensen, 1986).

Cross-border equals one if the target is incorporated in a different country from the acquirer and zero otherwise. Cross-border deals carry higher integration costs than domestic deals (Moeller and Schlingemann, 2005) and greater information asymmetry across institutional

boundaries (Liang et al., 2017). The net effect is ambiguous, and no directional expectation is imposed.

Cash dummy equals one if the deal is fully cash-financed, and zero for mixed or stock payment. Managers who consider their equity undervalued prefer cash over issuing underpriced shares, and higher valuation uncertainty increases the proportion of cash applied in deal financing (Klitzka et al., 2022). Cash payment reflects acquirer confidence in both its own valuation and the acquisition price.

Family-owned equals one if an individual or family holds at least 50 percent of the acquirer's ownership stake, and zero otherwise. Under stewardship theory, family owners exercise greater acquisition discipline because their wealth is tied to the firm. Under the entrenchment theory, concentrated control may allow family shareholders to pursue deals at the expense of minority investors, a risk explicitly recognised in the Nordic governance context (Lekvall, 2014). Many family-influenced Nordic firms operate below this threshold through foundations or dual-class structures, so the variable understates the true extent of family influence.

Log total assets are the natural logarithm of acquirer's total assets at Year-1 in thousands of USD. Total assets are preferred over market capitalisation as a size control because the balance sheet figure is less sensitive to short-term market movements, reducing the risk of a circular relationship with the stock returns being explained. Larger firms bring more integration resources, face stronger institutional investor monitoring, and carry more prior acquisition experience.

Return on assets is EBIT divided by total assets at Year-1. EBIT is used rather than net profit because it is unaffected by tax rate differences between Nordic and US firms. ROA controls for the possibility that more profitable firms are better managed and more capable of integrating acquisitions successfully.

Table 2: Variable Definitions

Variable	Definition	Measurement	Expected Sign
BHAR_12m	12-month buy-and-hold abnormal return	$\prod(1+R_i) - \prod(1+R_b)$	Dependent
BHAR_24m	24-month buy-and-hold abnormal return	$\prod(1+R_i) - \prod(1+R_b)$	Dependent
BHAR_36m	36-month buy-and-hold abnormal return	$\prod(1+R_i) - \prod(1+R_b)$	Dependent
relative_deal_size_w	Deal value divided by acquirer market capitalisation	deal_value_usd / mktcap_usd	Negative
log_total_assets	Natural log of total assets in thousands of USD	log(total_assets_usd)	Positive
roa_w	EBIT divided by total assets (Year-1)	ebit_usd / total_assets_usd	Control
cross_border	Target incorporated in different country from acquiror	Binary (1 = cross-border, 0 = domestic)	Ambiguous
family_owned	Individual or family is largest ultimate owner of acquiror	Binary (1 = family-owned)	Positive
cash_dummy	Primary payment method is cash	Binary (1 = cash, 0 = stock or mixed)	Positive

BHAR = Buy-and-Hold Abnormal Return, computed relative to domestic total market index (Datastream TOTMK series).
All BHAR values winsorised at 1st and 99th percentiles. Relative deal size and ROA winsorised at P1/P99.
Firm-level controls measured at Year -1 relative to deal announcement date. Data sourced from ORBIS (Bureau van Dijk).

4.6 Descriptive Statistics

Table 3: Descriptive Statistics

Variable	Nordic (clean sample)			United States (clean sample)		
	Mean	SD	N	Mean	SD	N
BHAR 12m	-0.051	0.374	1,326	-0.024	0.272	2,875
BHAR 24m	-0.124	0.575	954	-0.057	0.437	2,039
BHAR 36m	-0.172	0.743	759	-0.103	0.582	1,523
Relative deal size	0.280	0.814	1,321	0.161	0.344	2,771
Log total assets	12.730	2.526	1,379	15.730	1.653	2,660
ROA	-0.034	0.257	1,303	0.112	0.406	2,500
Cross-border	0.558	—	1,485	0.242	—	3,077
Family-owned	0.051	—	1,485	0.007	—	3,077
Cash dummy	0.502	—	987	0.688	—	2,243

Statistics computed on the clean non-overlapping sample (primary specification). BHAR = Buy-and-Hold Abnormal Return relative to domestic total market index, winsorised at P1/P99. Relative deal size = deal value / acquirer market capitalisation, winsorised at P1/P99. ROA = EBIT / total assets (Year-1), winsorised at P1/P99. SD not reported for binary variables. Cash dummy N reflects restricted sample (recorded payment method only). Control variable N varies due to ORBIS coverage. US clean sample based on non-overlapping 36m filter.

Sweden accounts for roughly 59 percent of Nordic deals, and the aggregate results reflect this concentration more than any uniform Nordic institutional pattern. Sweden has significantly higher M&A activity than the other three countries, partly related to its larger and more technology-oriented listed sector.

The two markets differ sharply in deal size. The median deal value is 15.5 million USD for Nordic acquirers compared to 200 million USD for US acquirers, reflecting the structural difference in firm size between the two markets. The largest Nordic deal is Statoil's acquisition of Norsk Hydro's oil and gas activities at approximately 34.7 billion USD. Among Nordic deals with recorded payment data, cash is the most common method at 50.2 percent of transactions, followed by mixed payment and pure stock financing. Among US deals, 68.8 percent are cash-

financed, reflecting the greater financial capacity of large US acquirers and the more developed market for leveraged acquisition financing.

Family-owned firms account for approximately 5 percent of the Nordic sample. The cross-border rate of 55.8 percent in the Nordic sample is high by international standards, compared to 24.2 percent for US acquirers, suggesting Nordic firms are more internationally oriented in their acquisition activity. Nordic acquirers are considerably smaller than their US counterparts, with a mean log total assets of 12.73 compared to 15.73 for US acquirers.

5. Empirical Results

5.1 Long-term Acquisition Performance (H1)

Table 4: H1 BHAR Results

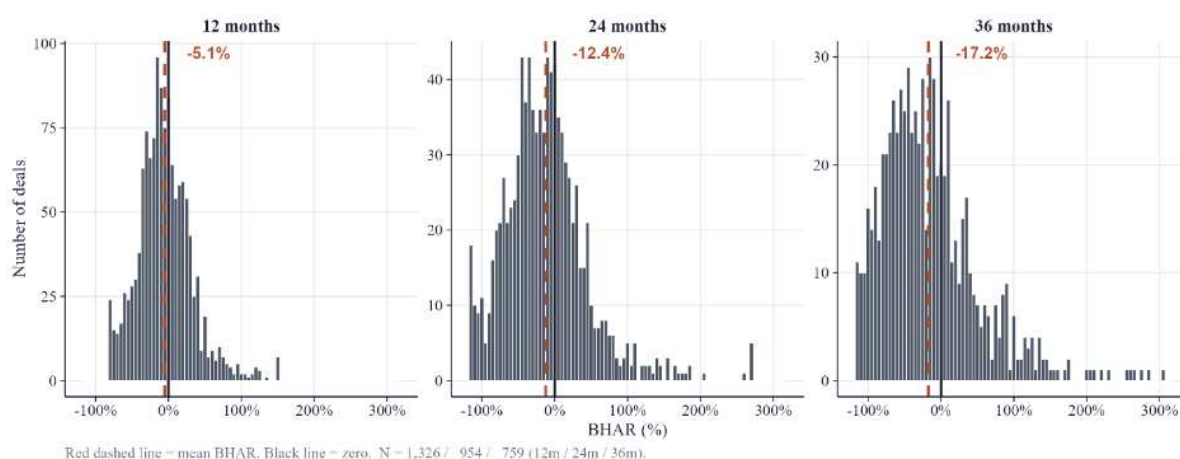
	N	Mean BHAR	t-statistic	p-value	
Panel A: Clean non-overlapping sample (primary specification)					
12 months	1,326	-5.127%	-4.987	<0.001	***
24 months	954	-12.416%	-6.671	<0.001	***
36 months	759	-17.191%	-6.376	<0.001	***
Panel B: Full sample (robustness)					
12 months	2,454	-1.856%	-2.299	0.022	**
24 months	2,397	-3.392%	-2.591	0.010	**
36 months	2,321	-6.389%	-3.917	<0.001	***

Ho: mean BHAR = 0. One-sample t-test against zero.
 BHAR = Buy-and-Hold Abnormal Return relative to domestic total market index (Datastream TOTMK series).
 All BHAR values winsorised at 1st and 99th percentiles. SE clustered at acquirer ISIN level.
 Clean sample excludes deals where the same acquirer made another acquisition within the BHAR evaluation horizon.
 *** p<0.001, ** p<0.01, * p<0.10.

Nordic acquiring firms generated statistically significant negative abnormal returns across all three horizons in the clean sample. The mean BHAR was -5.13 percent at 12 months ($t = -4.987$, $p < 0.001$), -12.42 percent at 24 months ($t = -6.671$, $p < 0.001$), and -17.19 percent at 36 months ($t = -6.376$, $p < 0.001$). H1 is rejected at all three horizons. A shareholder holding for three years lost approximately 17 cents per benchmark-adjusted dollar, with the loss worsening at each horizon rather than stabilising.

The full sample produces directionally consistent but smaller negative returns of -1.86 percent at 12 months ($p = 0.022$), -3.39 percent at 24 months ($p = 0.010$), and -6.39 percent at 36 months ($p < 0.001$). The larger magnitude in the clean sample follows from the exclusion of serial acquirers with overlapping event windows, so each deal's return is measured against an uncontaminated post-announcement window.

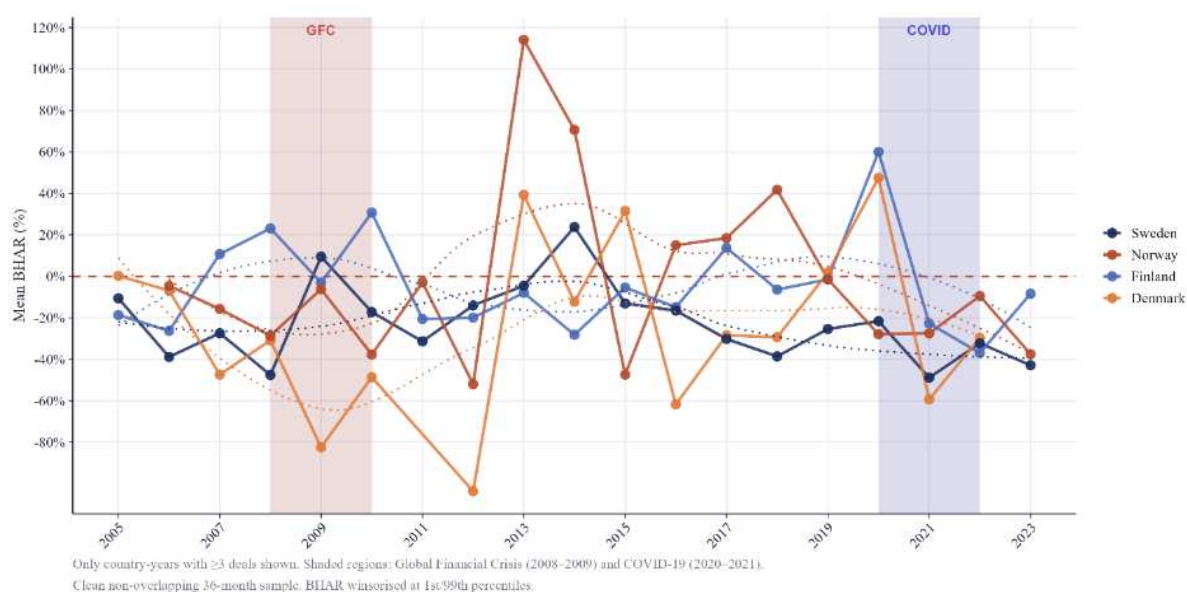
Figure 3: Distribution of BHAR



Distribution of Buy-and-Hold Abnormal Returns — Nordic Acquirers. Clean non-overlapping sample. $N = 1,326 / 954 / 759$ at 12, 24, and 36 months. Red dashed line = mean BHAR.

The distributions are left-skewed at all horizons, with the mass shifting further below zero as the horizon extends.

Figure 4: Mean 36-Month BHAR



Mean 36-Month BHAR by Country and Announcement Year. Clean non-overlapping sample. Only country-years with at least 5 deals are shown.

The underperformance pattern is broadly consistent across all four Nordic countries and is not concentrated in any single time period, though both the Global Financial Crisis and the COVID-19 shock are visible as periods of elevated spread.

5.2 Deal Characteristics

The analysis is conducted on the Nordic sample only. Hypotheses H2, H3, and H4 are estimated on the clean sample. H2 and H3 use 1,117 observations at 12 months, declining to 796 at 24 months and 629 at 36 months. H4 restricts the sample to deals with recorded payment data, yielding 777 observations at 12 months, 557 at 24 months, and 448 at 36 months. All models include year and industry fixed effects, and standard errors are clustered at the acquirer level (Petersen, 2009).

Table 5: H2 Deal Size Regression

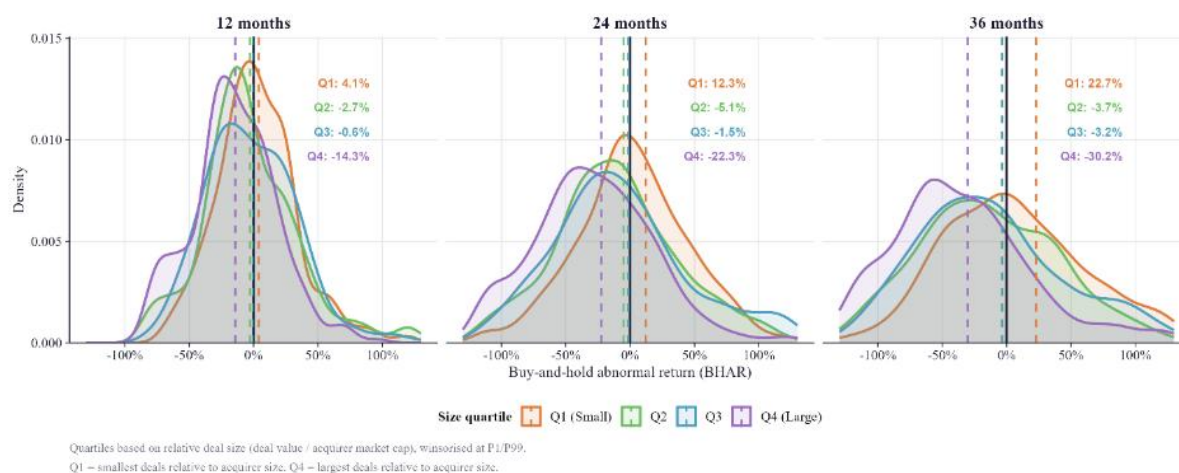
	N	β (Rel. deal size)	SE	t-statistic	p-value	R ²
12 months	1,117	-0.0343	0.0191	-1.799	0.072	0.085
24 months	796	-0.0667	0.0230	-2.900	0.004 **	0.110
36 months	629	-0.1063	0.0348	-3.052	0.002 **	0.147

Dependent variable: winsorised BHAR at each horizon. OLS with year and industry fixed effects.
Relative deal size = deal value / acquirer market capitalisation (Year-1), winsorised at P1/P99.
SE clustered at acquirer ISIN level. Clean non-overlapping sample (primary specification).
Model also includes cross-border, family-owned, log total assets, and ROA as controls.
*** p<0.001, ** p<0.01, * p<0.10.

The coefficient on relative deal size is negative across all three horizons in the linear specification. At 12 months the coefficient is -0.034 ($p = 0.072$), which does not reach conventional significance. At 24 months it strengthens to -0.067 ($p = 0.004$) and at 36 months to -0.106 ($p = 0.002$). H2 is rejected at 24 and 36 months. Each unit increase in relative deal size is associated with a 10.6 percentage point reduction in 36-month BHAR. An acquirer taking on a deal equal to its own market capitalisation loses approximately 10 percentage points more over three years than one making a negligible acquisition.

The quadratic specification reveals a non-linear relationship. The squared term is positive and significant at all three horizons. At 36 months the linear coefficient is -0.377 ($p < 0.001$) and the squared coefficient is $+0.052$ ($p < 0.001$), with a turning point at approximately 3.3 to 3.6 in relative deal size units. Below the turning point, each additional unit of relative deal size carries a progressively larger performance penalty, meaning mid-sized deals are disproportionately costly relative to small ones. Since most deals in the clean sample fall well below this threshold, the penalty steepens sharply through the observable range of Nordic deal sizes.

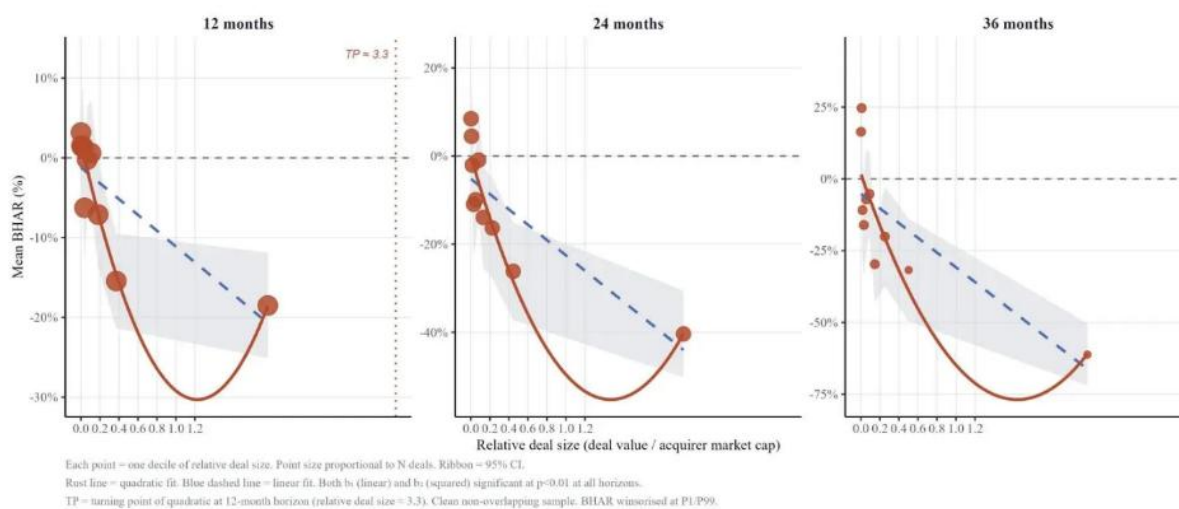
Figure 5: BHAR Relative Deal Size Quartile



BHAR distributions by relative deal size quartile. Clean non-overlapping sample. $N = 1,117 / 796 / 629$ at 12, 24, and 36 months.

The distributions shift leftward as deal size increases, with larger acquisitions showing worse long-term returns across all horizons.

Figure 6: BHAR Rel. size (Quadratic Fit)



Mean BHAR by relative deal size decile with linear and quadratic fit. Clean non-overlapping sample.

The quadratic fit tracks the decile means more closely than the linear specification, confirming the non-linear pattern in the data.

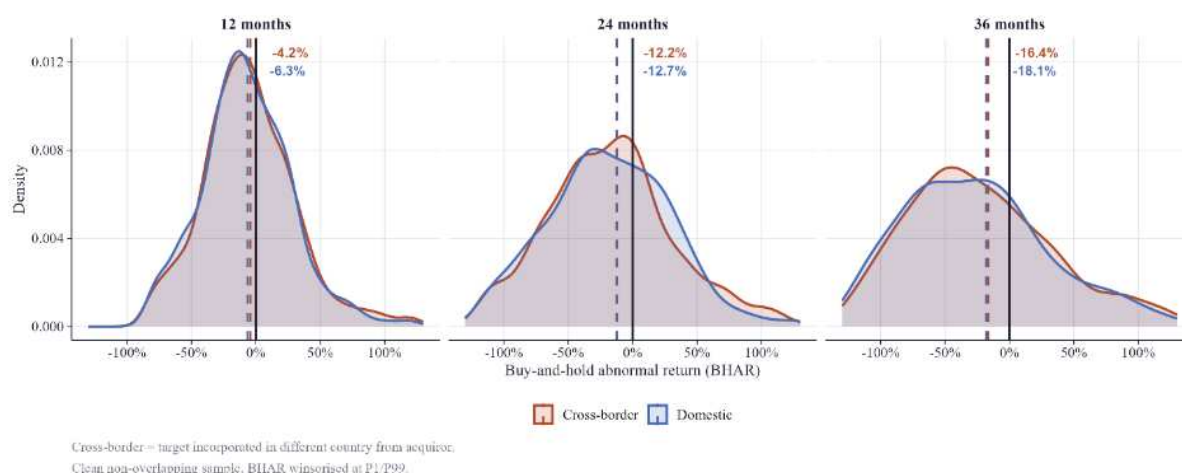
Table 6: H3 Cross-Border Regression

	N	β (Cross-border)	SE	t-statistic	p-value	R ²
12 months	1,117	0.0252	0.0257	0.981	0.327	0.085
24 months	796	-0.0173	0.0472	-0.367	0.714	0.110
36 months	629	-0.0241	0.0688	-0.350	0.726	0.147

Dependent variable: winsorised BHAR at each horizon. OLS with year and industry fixed effects.
Cross-border = 1 if target incorporated in different country from acquiror, 0 otherwise.
SE clustered at acquirer ISIN level. Clean non-overlapping sample (primary specification).
Model also includes relative deal size, family-owned, log total assets, and ROA as controls.
H3 null result: cross-border status is not significantly associated with long-run abnormal returns at any horizon.
*** p<0.001, ** p<0.01, * p<0.10.

Cross-border deals exhibit coefficients close to zero and are statistically insignificant at all three horizons in the clean sample: $b = +0.025$ ($p = 0.327$) at 12 months, $b = -0.017$ ($p = 0.714$) at 24 months, and $b = -0.024$ ($p = 0.726$) at 36 months. H3 cannot be rejected. Cross-border status is not associated with systematically different long-term returns, with coefficients within two percentage points of zero at all horizons.

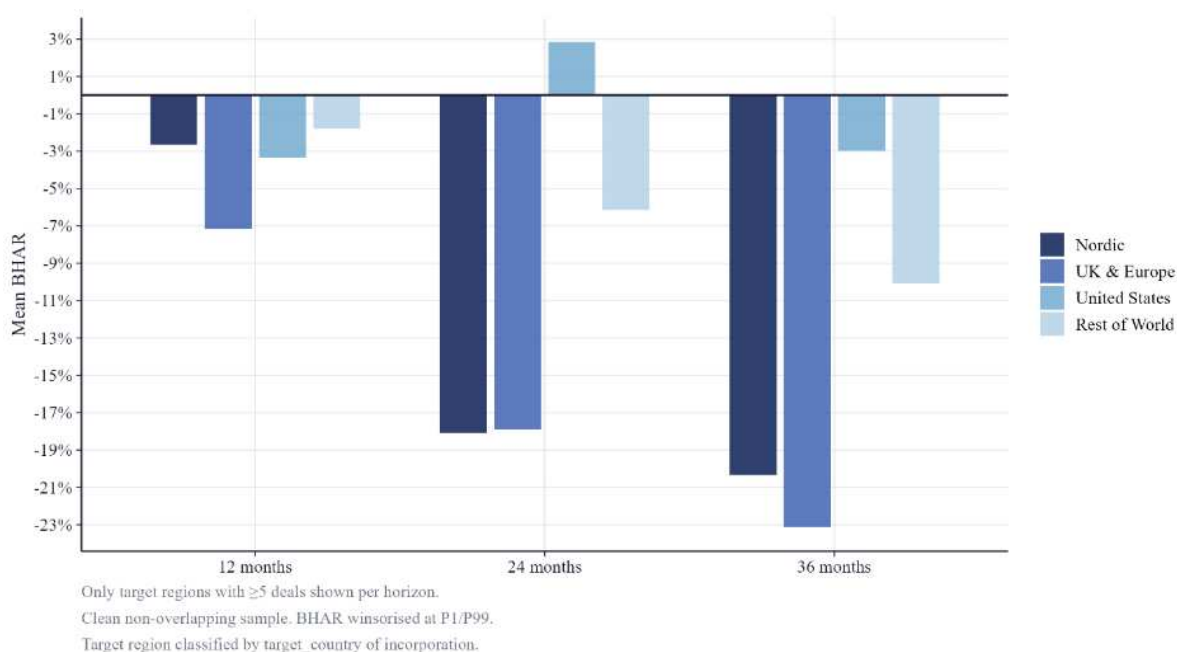
Figure 7: BHAR Cross-Border Vs. Domestic



BHAR Distribution — Cross-Border versus Domestic Acquisitions. Clean non-overlapping sample. $N = 1,117 / 796 / 629$ at 12, 24, and 36 months.

The distributions overlap substantially across all horizons, with no consistent separation between cross-border and domestic deals.

Figure 8: Cross-Border BHAR by Target Region



Cross-Border BHAR by Target Region. Clean non-overlapping sample. Only target regions with at least 5 deals shown per horizon.

No target region produces consistently positive abnormal returns, and the differences across regions are not stable across horizons.

Table 7: H4 Cash Payment Regression

	N	β (Cash dummy)	SE	t-statistic	p-value	R ²
12 months	777	0.0521	0.0353	1.478	0.140	0.091
24 months	557	0.1030	0.0558	1.844	0.066	0.124
36 months	448	0.0666	0.0766	0.869	0.385	0.144

Dependent variable: winsorised BHAR at each horizon. OLS with year and industry fixed effects.
 Cash dummy = 1 if primary payment method is cash, 0 if mixed or shares.
 SE clustered at acquirer ISIN level. Clean non-overlapping restricted sample (deals with recorded payment method).
 Model also includes relative deal size, cross-border, family-owned, and log total assets as controls.
 H5 null result: cash payment not significantly associated with long-run abnormal returns in clean sample.
 24-month result borderline ($p=0.066$). *** $p<0.001$, ** $p<0.01$, * $p<0.10$.

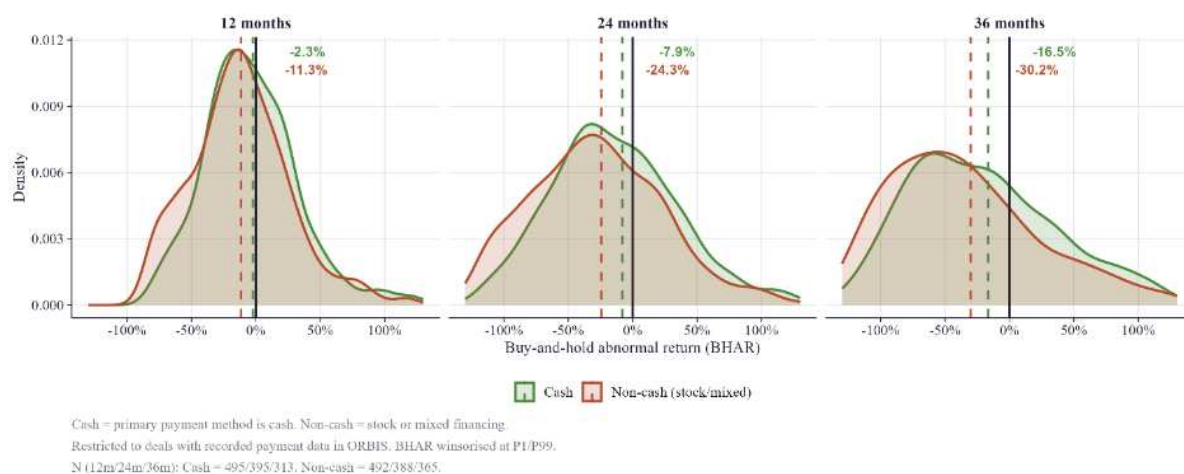
Table 8: Cash/Mixed/Shares Mean BHAR

	N	Mean BHAR		
		12 months	24 months	36 months
Cash	495	-2.3%	-0.9%	-0.8%
Mixed	319	-10.1%	-13.2%	-13.6%
Shares	173	-13.7%	-25.7%	-27.1%

BHAR winsorised at 1st and 99th percentiles. Clean non-overlapping restricted sample (deals with recorded payment method). Cash = 1 if primary payment is cash. Mixed = cash and stock combined. Shares = stock financing only. N shown for 12-month horizon. Cash acquirers consistently outperform mixed and share-financed acquirers in raw means, though the difference is not statistically significant in regression analysis after controlling for deal and firm characteristics.

The cash dummy is positive but statistically insignificant across all three horizons in the clean sample: $b = +0.052$ ($p = 0.140$) at 12 months, $b = +0.103$ ($p = 0.066$) at 24 months, and $b = +0.067$ ($p = 0.385$) at 36 months. H4 cannot be rejected. The point estimate at 24 months of $+0.103$ suggests cash-financed acquirers outperform non-cash acquirers by approximately 10 percentage points at that horizon, but this does not survive conventional significance thresholds.

Figure 9: BHAR Cash Vs. Non-Cash



BHAR distributions for cash and non-cash acquisitions. Clean non-overlapping restricted sample. Deals with the recorded payment method only.

Cash acquirers average -0.8 percent at 36 months compared to -27.1 percent for share-financed acquirers, a gap of 26 percentage points in raw means that does not survive regression controls for deal and firm characteristics.

5.3 Acquirer Characteristics

H5 is estimated on the clean sample of 1,117 observations at 12 months, declining to 796 at 24 months and 629 at 36 months. Return on assets and firm size are included as controls in all specifications. All models include year and industry fixed effects, and standard errors are clustered at the acquirer level (Petersen, 2009).

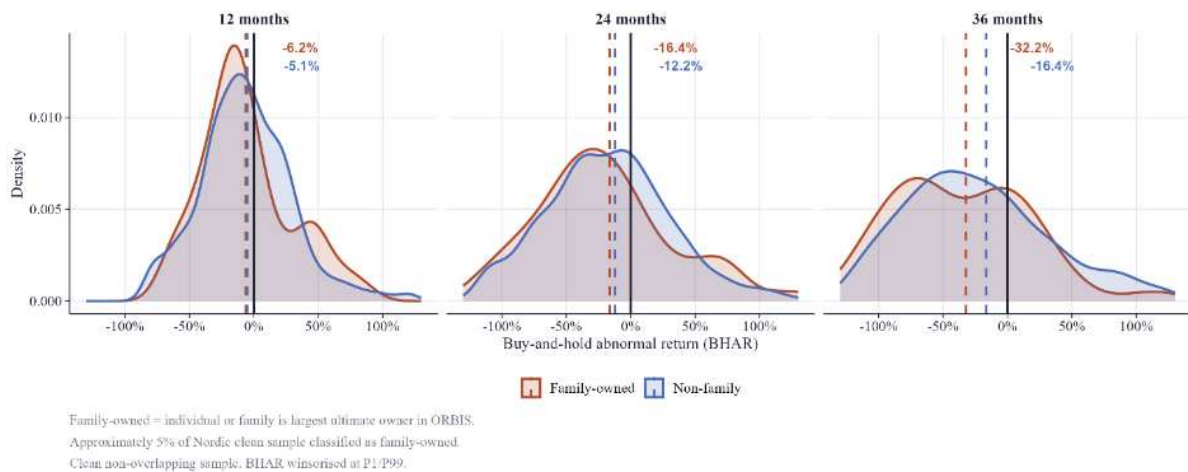
Table 9: H5 Family Ownership Regression

	N	β (Family ownership)	SE	t-statistic	p-value	R ²
12 months	1,117	-0.0077	0.0355	-0.217	0.829	0.085
24 months	796	-0.0779	0.0933	-0.834	0.404	0.110
36 months	629	-0.2455	0.1407	-1.745	0.082	0.147

Dependent variable: winsorised BHAR at each horizon. OLS with year and industry fixed effects.
Family ownership = 1 if individual or family is largest ultimate owner of acquiror in ORBIS, 0 otherwise.
SE clustered at acquirer ISIN level. Clean non-overlapping sample (primary specification).
Model also includes relative deal size, cross-border, log total assets, and ROA as controls.
H4 null result: family ownership is not significantly associated with long-run abnormal returns. Coefficient is consistently negative, contrary to stewardship theory prediction. 36-month result borderline (p=0.082).
*** p<0.001, ** p<0.01, * p<0.10.

The family ownership coefficient is negative across all horizons in the clean sample. The coefficients are -0.008 ($p = 0.829$) at 12 months, -0.078 ($p = 0.404$) at 24 months, and -0.246 ($p = 0.082$) at 36 months. At 36 months the point estimate of -0.246 implies family-owned acquirers underperform non-family acquirers by approximately 25 percentage points, though this does not reach conventional significance. The direction is consistently negative across all horizons, contrary to the stewardship prediction in H5, yet none of the coefficients reach conventional significance thresholds and H5 cannot be rejected. The data provides no statistical support for family ownership improving acquisition outcomes, and the borderline 36-month estimate is insufficient to draw a directional conclusion.

Figure 10: BHAR Family-Owned Vs. Non-Family

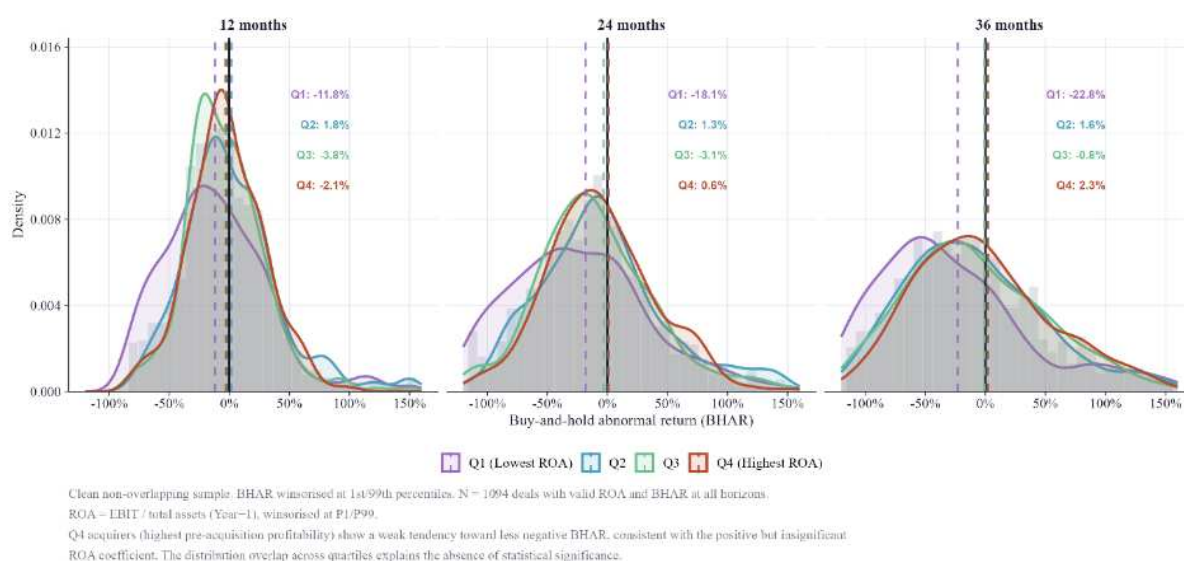


Family-owned versus non-family BHAR distributions. Clean non-overlapping sample. $N = 1,117 / 796 / 629$ at 12, 24, and 36 months.

Family-owned acquirers show a wider left tail at 24 and 36 months, consistent with the negative direction of the regression coefficient, though the distributional overlap is substantial across all horizons.

The ROA coefficient is positive across all three horizons in the clean sample: $b = +0.167$ ($p = 0.078$) at 12 months, $b = +0.276$ ($p = 0.057$) at 24 months, and $b = +0.313$ ($p = 0.108$) at 36 months. The coefficient does not reach conventional significance at any horizon, but the direction is consistent throughout. Higher pre-acquisition profitability is associated with less negative long-term abnormal returns, holding deal size, cross-border status, family ownership, firm size, and year and industry fixed effects constant.

Figure 11: BHAR Pre-Acquisition Profitability



BHAR distributions by pre-acquisition ROA quartile. Clean non-overlapping sample. N = 1,094 deals with valid ROA and BHAR at all horizons. Q1 = lowest ROA, Q4 = highest ROA.

Q1 acquirers average –11.8 percent at 12 months, –18.1 percent at 24 months, and –22.8 percent at 36 months. Q4 acquirers average –2.1 percent at 12 months and turn positive at 24 months (+0.6 percent) and 36 months (+2.3 percent). The gap between the lowest and highest profitability quartiles widens from 9.7 percentage points at 12 months to 25.1 percentage points at 36 months.

Table 10: Firm Size Results

	N	β (Log total assets)	SE	t-statistic	p-value	R ²
Nordic only (clean sample)						
12 months	1,117	0.0176	0.0055	3.174	0.002 **	0.085
24 months	796	0.0350	0.0096	3.640	<0.001 ***	0.110
36 months	629	0.0447	0.0140	3.194	0.002 **	0.147
Pooled Nordic + US (clean sample)						
12 months	1,390	0.0186	0.0050	3.745	<0.001 ***	—
36 months	1,283	0.0392	0.0106	3.682	<0.001 ***	—

Dependent variable: winsorised BHAR at each horizon. OLS with year and industry fixed effects.

Log total assets = natural log of total assets in thousands of USD (Year-1).

SE clustered at acquirer ISIN level. Finding not part of original hypothesis set but consistent across all specifications.

Nordic-only model includes relative deal size, cross-border, family-owned, and ROA as controls.

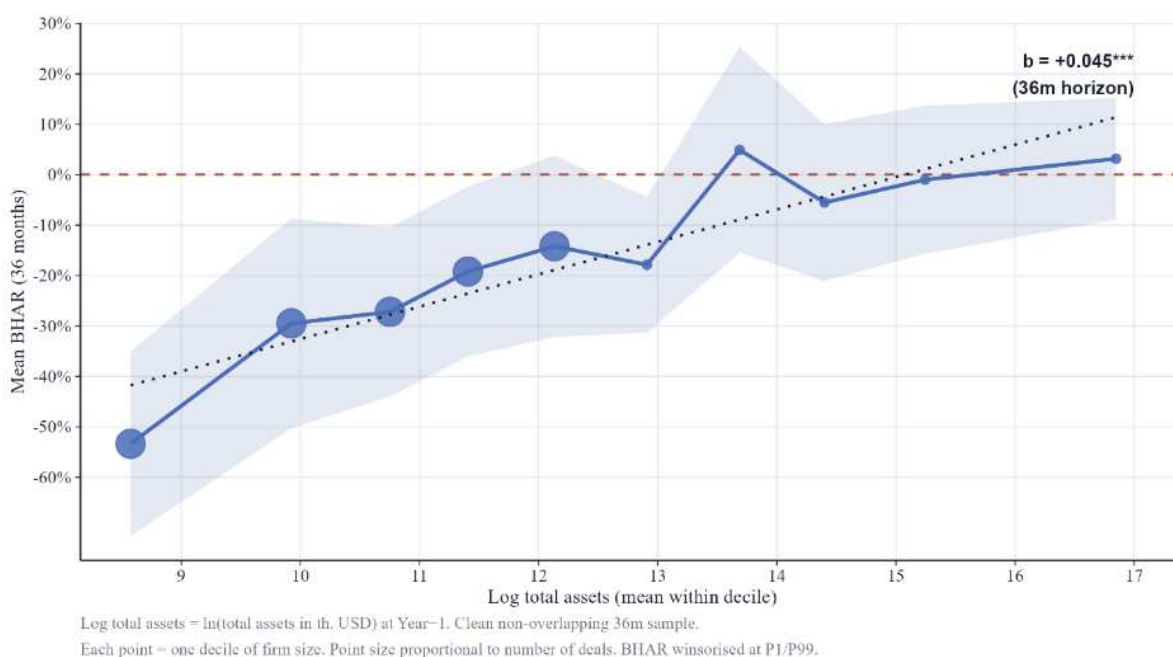
Pooled model additionally includes Nordic indicator, cash dummy, and interaction terms.

*** p<0.001, ** p<0.01, * p<0.10.

Log total assets are positive and statistically significant at all three horizons in the clean sample: b = +0.018 (p = 0.002) at 12 months, b = +0.035 (p = <0.001) at 24 months, and b = +0.045 (p = 0.002) at 36 months. A one-standard-deviation increase in log total assets is associated with

approximately 3-4 percentage-point higher 36-month BHAR. Although firm size was not part of the original hypothesis set, log total assets emerged as the most consistent predictor across all specifications.

Figure 12: Firm Size and Long-term Performance



Mean 36-month BHAR by decile of log total assets. Clean non-overlapping sample. Each point represents one decile. Point size proportional to number of deals.

Acquirers in the smallest decile, with mean log total assets of 8.57 corresponding to approximately USD 5.3 million, generate a mean 36-month BHAR of -53.4 percent across 72 deals. Acquirers in the largest decile, with mean log total assets of 16.8 corresponding to approximately USD 19.8 billion, generate a mean BHAR of +3.2 percent across 71 deals. The gap between the smallest and largest deciles spans approximately 56.6 percentage points.

Table 11: Overview of value drivers

	12 months		24 months		36 months	
	Clean	Full	Clean	Full	Clean	Full
Relative deal size	-0.0343	-0.0117	-0.0667**	-0.0114	-0.1063**	-0.0250
(SE)	(0.0191)	(0.0219)	(0.0230)	(0.0448)	(0.0348)	(0.0642)
Cross-border	0.0252	-0.0127	-0.0173	-0.0222	-0.0241	-0.0224
(SE)	(0.0257)	(0.0207)	(0.0472)	(0.0364)	(0.0688)	(0.0486)
Family ownership	-0.0077	0.0511	-0.0779	0.0044	-0.2455	0.0240
(SE)	(0.0355)	(0.0422)	(0.0933)	(0.0759)	(0.1407)	(0.1126)
Log total assets	0.0176**	0.0131*	0.0350***	0.0307**	0.0447**	0.0414**
(SE)	(0.0055)	(0.0055)	(0.0096)	(0.0097)	(0.0140)	(0.0131)
ROA	0.1673.	0.0892	0.2762.	0.2092	0.3127	0.2693
(SE)	(0.0950)	(0.0854)	(0.1448)	(0.1510)	(0.1941)	(0.2127)
Cash dummy†	0.0521	0.0387	0.1030	0.0935	0.0666	0.1315
(SE)	(0.0353)	(0.0324)	(0.0558)	(0.0505)	(0.0766)	(0.0695)
N	1,117	2,110	796	2,073	629	2,018
R²	0.085	0.069	0.110	0.075	0.147	0.094

Dependent variable: winsorised BHAR at each horizon. OLS with year and industry fixed effects.
SE clustered at acquirer ISIN level (in parentheses). *** p<0.001, ** p<0.01, * p<0.05, . p<0.10.
† Cash dummy uses restricted sample (recorded payment method only): Clean N = 777/557/448; Full N = 1,347/1,314/1,275.
Clean = non-overlapping sample (primary specification). Full = all deals including overlapping event windows.

5.4 Institutional Comparison: Nordic versus US Acquirers

The pooled regression combines Nordic and US acquisitions to test whether the underperformance documented in Section 5.1 reflects institutional features specific to the Nordic region or compositional differences in deal and firm characteristics. The Nordic indicator captures the conditional average difference in long-term abnormal returns between the two markets after controlling for relative deal size, cross-border status, family ownership, cash payment, firm size, and profitability. Two interaction terms test whether the cash payment and cross-border effects operate differently for Nordic acquirers relative to US acquirers.

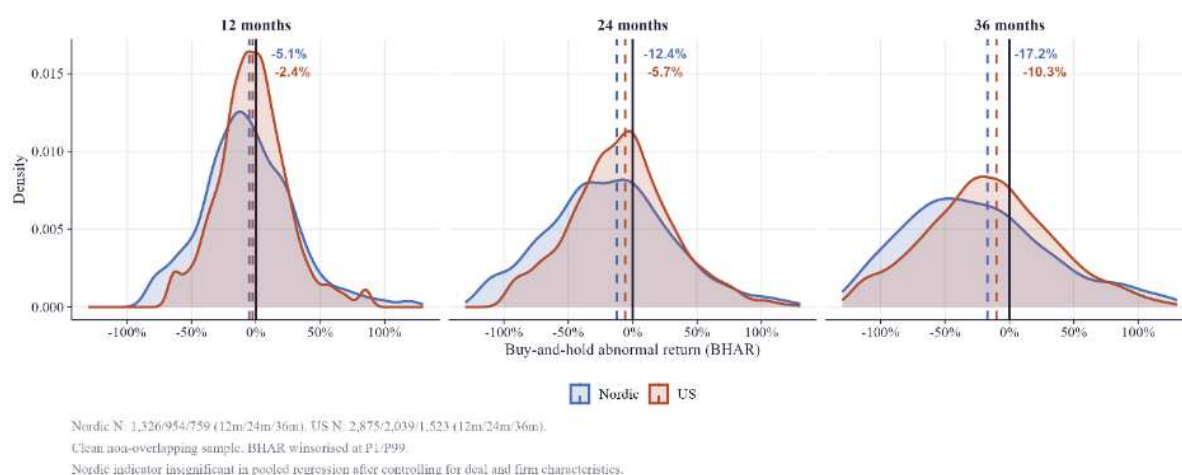
Table 12: Pooled Regression Results

	12 months	24 months	36 months
Nordic indicator	0.0307	-0.0155	0.0813
(SE)	(0.0405)	(0.0630)	(0.0890)
Relative deal size	-0.0317	-0.0964***	-0.1264***
(SE)	(0.0199)	(0.0227)	(0.0317)
Cross-border	-0.0137	0.0271	-0.0478
(SE)	(0.0240)	(0.0367)	(0.0461)
Family ownership	-0.0437	-0.1080	-0.1447
(SE)	(0.0479)	(0.0791)	(0.1165)
Cash payment	0.0408	-0.0358	0.0013
(SE)	(0.0230)	(0.0347)	(0.0450)
Log total assets	0.0186***	0.0221**	0.0392***
(SE)	(0.0050)	(0.0078)	(0.0106)
ROA	0.0259	0.0724*	0.1230**
(SE)	(0.0186)	(0.0329)	(0.0412)
Cash × Nordic	0.0084	0.0751	0.0086
(SE)	(0.0422)	(0.0660)	(0.0859)
Cross-border × Nordic	-0.0050	-0.0554	0.0012
(SE)	(0.0461)	(0.0678)	(0.0895)
N	1,390	1,336	1,283
R²	0.082	0.103	0.095
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Clustered SE	Acquiror	Acquiror	Acquiror
Dependent variable: winsorised BHAR at each horizon. Pooled Nordic and US clean non-overlapping sample. SE clustered at acquirer ISIN level (in parentheses). *** p<0.001, ** p<0.01, * p<0.05. Nordic indicator = 1 if acquirer headquartered in Nordic country, 0 if US. Interaction terms test whether cash premium and cross-border effect differ between Nordic and US acquirers. Nordic indicator insignificant at all horizons — unconditional gap explained by observable deal and firm characteristics.			

The pooled regression model includes the Nordic indicator, relative deal size, cross-border status, family ownership, cash payment, log total assets, return on assets, Cash × Nordic and Cross-border × Nordic interaction terms, and year and industry fixed effects. The estimation sample is restricted to deals with recorded payment data, yielding 1,390 observations at 12 months, 1,336 at 24 months, and 1,283 at 36 months. The Nordic indicator is statistically insignificant at all three horizons: $b = +0.031$ ($p = 0.449$) at 12 months, $b = -0.015$ ($p = 0.806$) at 24 months, and $b = +0.081$ ($p = 0.361$) at 36 months. Once deal and firm characteristics are controlled for, Nordic and US acquirers perform similarly. The conditional difference does not exceed 8 percentage points at any horizon and is never statistically significant.

Both interaction terms are insignificant at all horizons. The Cash $\times$ Nordic interaction produces coefficients of +0.008 ($p = 0.843$), +0.075 ($p = 0.255$), and +0.009 ($p = 0.920$) at 12, 24, and 36 months. The Cross-border $\times$ Nordic interaction produces coefficients of -0.005 ($p = 0.913$), -0.055 ($p = 0.414$), and +0.001 ($p = 0.990$). Log total assets remain positive and significant at all horizons: $b = +0.019$ ($p < 0.001$) at 12 months, $b = +0.022$ ($p = 0.005$) at 24 months, and $b = +0.039$ ($p < 0.001$) at 36 months. Relative deal size is significant at 24 and 36 months with coefficients of -0.096 ($p < 0.001$) and -0.126 ($p < 0.001$), consistent with the H2 finding.

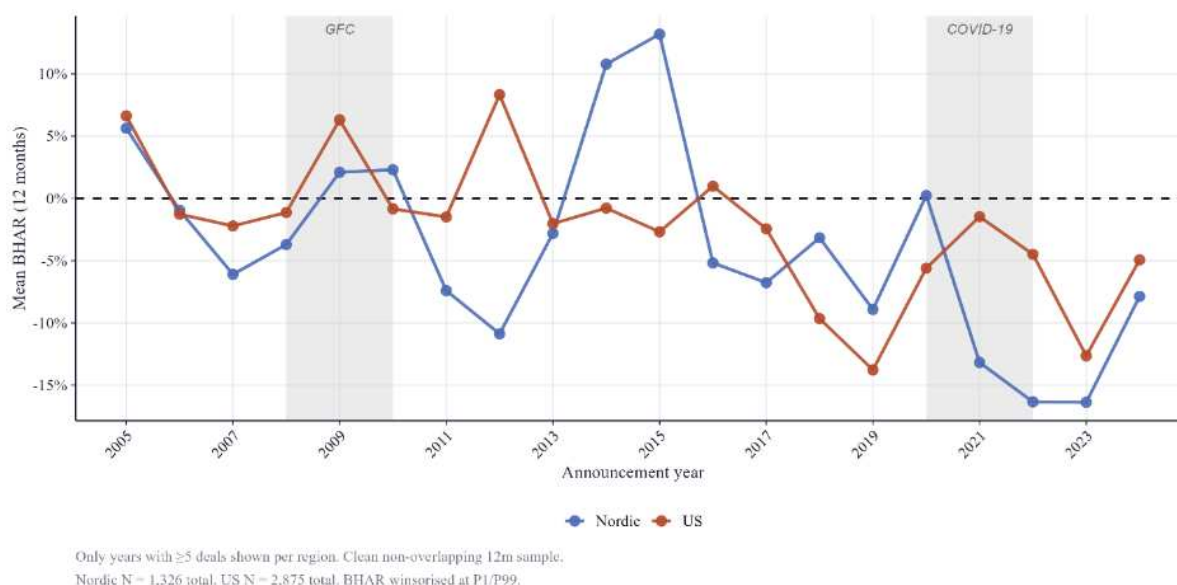
Figure 13: BHAR Nordic Vs. US Acquirers



BHAR distributions for Nordic and US acquirers. Clean non-overlapping sample. Nordic N = 1,326 / 954 / 759, US N = 2,875 / 2,471 / 1,700 at 12, 24, and 36 months.

At the unconditional level, Nordic acquirers average -10.4 percent, -16.4 percent, and -17.2 percent at 12, 24, and 36 months respectively, compared to -5.5 percent, -8.3 percent, and -10.3 percent for US acquirers. The unconditional gap is substantial and widens over time.

Figure 14: Mean 12-Month BHAR by Year



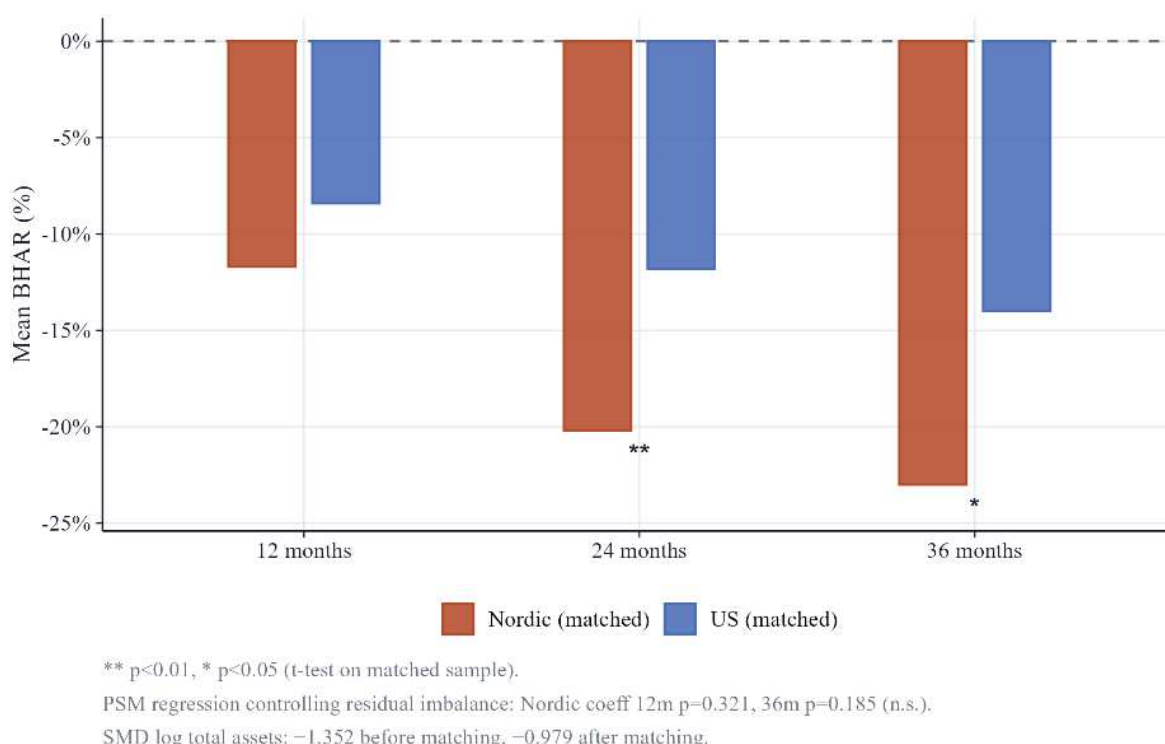
Mean 12-month BHAR by announcement year for Nordic and US acquirers. Clean non-overlapping sample. Only years with at least 3 deals per region are shown.

Nordic and US acquirers show broadly negative long-term returns across most of the sample period, with both regions experiencing notable declines around the Global Financial Crisis and the COVID-19 shock. Nordic returns are more volatile than US returns, with larger swings in both directions, and the two series do not show a consistent pattern of one region outperforming the other.

5.5 Propensity Score Matching: Nordic versus US Acquirers

Nearest-neighbour matching at a one-to-one ratio without replacement produced 607 matched pairs from 607 Nordic and 1,132 US deals with complete data on all matching variables.

Figure 15: PSM Mean BHAR in Matched Sample



Mean BHAR for Nordic and US acquirers in PSM matched sample. 607 matched pairs. Nearest-neighbour 1:1 matching without replacement.

Matching improved balance on all variables but did not achieve adequate balance by conventional standards. The standardised mean difference for log total assets improved from -1.352 to -0.979 after matching, still well above the 0.10 threshold. Nordic firms in the matched sample have mean log total assets of 12.30 compared to 14.76 for matched US firms. The t-test finds significant Nordic underperformance at 24 and 36 months: -3.31 percent at 12 months ($p = 0.110$), -8.49 percent at 24 months ($p = 0.008$), and -8.95 percent at 36 months ($p = 0.042$). A regression on the matched sample controlling for residual covariate imbalance produces an insignificant Nordic coefficient at 12 months ($b = +0.028$, $p = 0.321$) and 36 months ($b = +0.081$, $p = 0.185$).

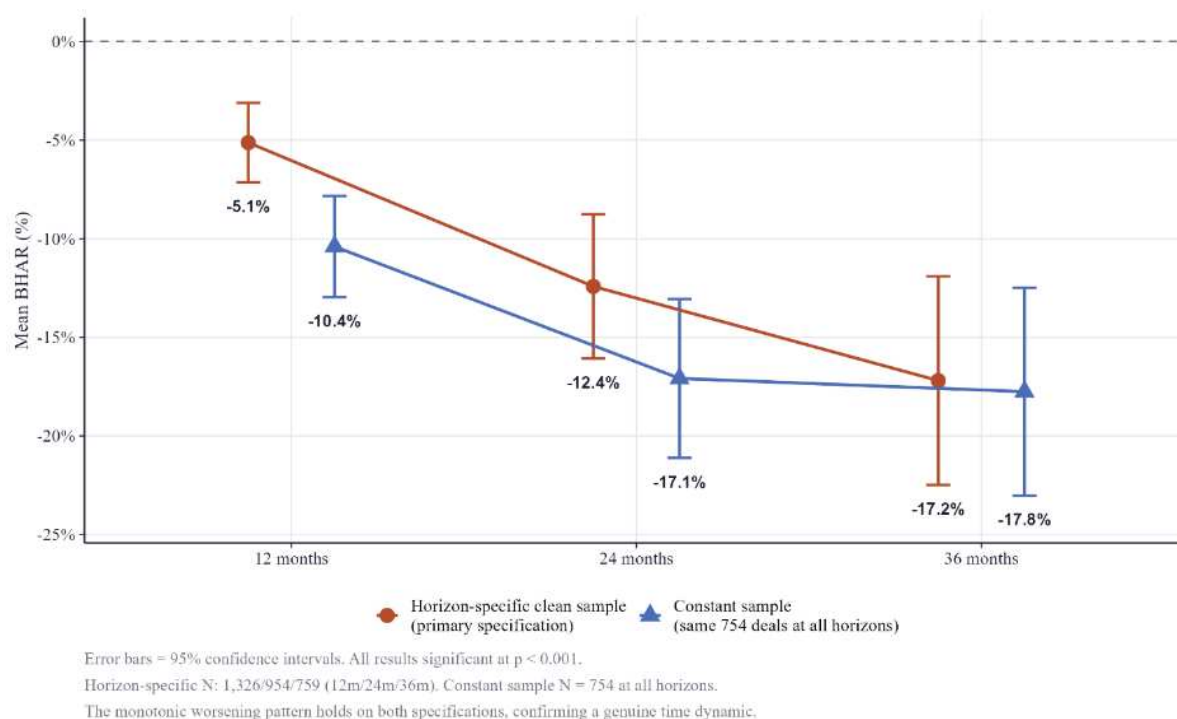
CEM achieved near-perfect balance across all covariates. The standardised mean difference for log total assets improved from -1.352 to -0.039 , compared to -0.979 after PSM. Cross-border status and cash payment achieved standardised mean differences of exactly zero. The matched sample consists of 123 Nordic and 165 US deals. The mean BHAR difference is $+5.05$ percentage points at 12 months ($p = 0.171$), $+7.71$ percentage points at 24 months ($p = 0.200$), and $+12.04$ percentage points at 36 months ($p = 0.184$). Nordic acquirers do not significantly underperform US acquirers at any horizon on the CEM-matched sample.

5.6 Robustness

Outlier treatment is the first robustness check. H1 t-tests were re-estimated on unwinsorized returns, producing directionally consistent but weaker results: -0.72 percent at 12 months ($p = 0.458$), -1.83 percent at 24 months ($p = 0.244$), and -3.72 percent at 36 months ($p = 0.094$). The direction holds across all horizons, but significance is not maintained, consistent with the right-skewed nature of compounded long-horizon returns.

Sample composition across horizons is the second concern. A constant sample of 754 deals was estimated at all three horizons simultaneously to verify that the worsening pattern reflects genuine time dynamics rather than shifting sample composition.

Figure 16: H1 BHAR Primary Vs. Constant Sample

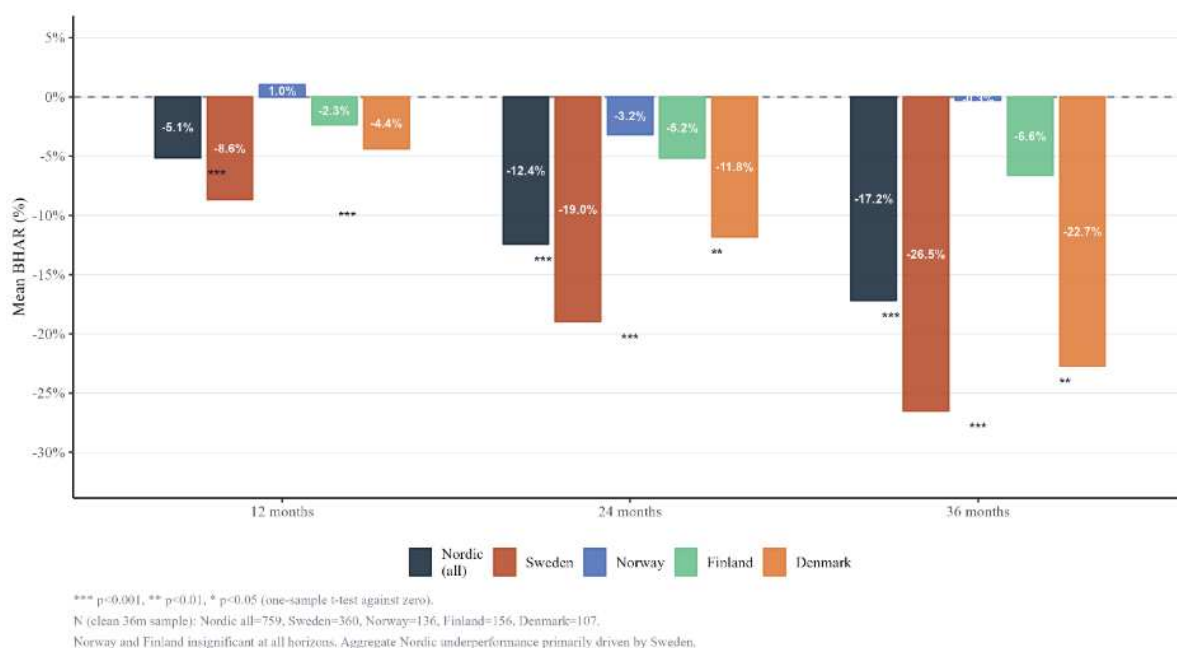


Mean BHAR across horizons for the horizon-specific clean sample and the constant sample of 754 deals. Error bars = 95% confidence intervals.

The average BHAR for the constant sample shows a consistent decline over time, dropping from -10.40 percent at 12 months to -17.08 percent at 24 months and further to -17.75 percent at 36 months, with all changes being statistically significant. Relative deal size is null at 12 months and significant at 24 months ($p = 0.013$) and 36 months ($p = 0.003$). Log total assets are positive and significant at all horizons. Cash payment remains insignificant throughout.

Geographic concentration is the third concern. Swedish acquirers account for 47.4 percent of the clean sample. All main specifications were re-estimated after excluding Swedish deals to assess whether the primary findings are driven by this concentration.

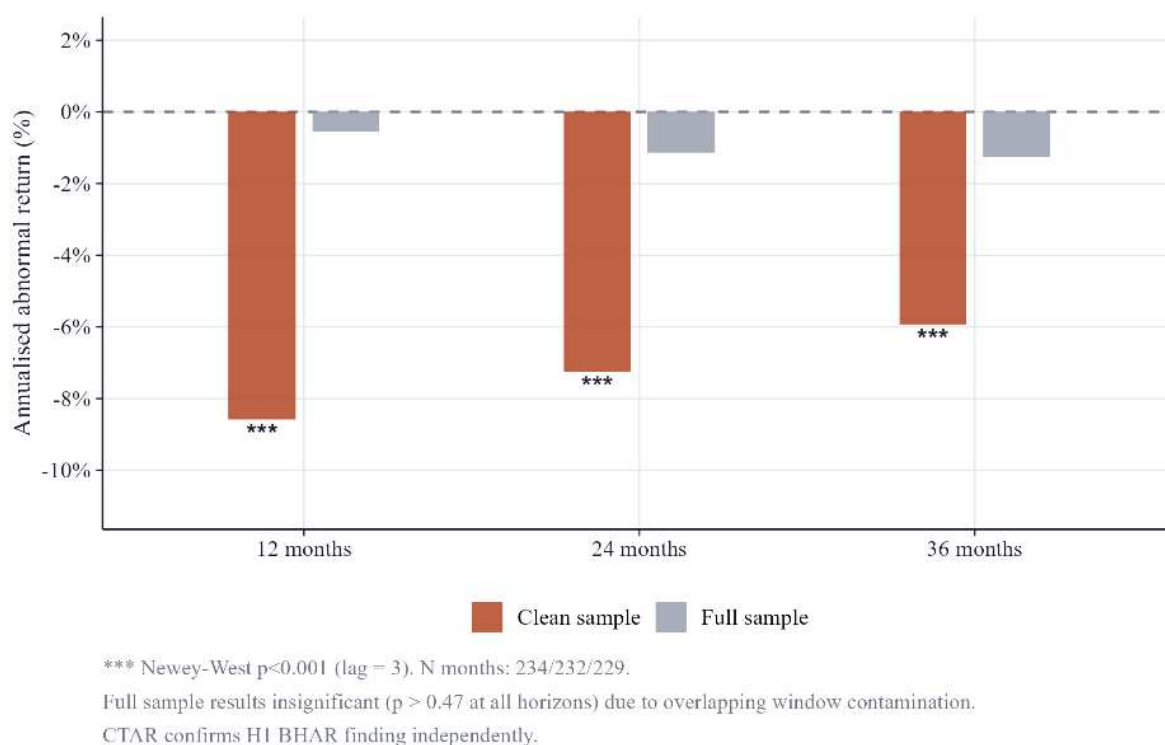
Figure 17: Geographic Sensitivity Analysis



Mean BHAR by country and horizon. Clean non-overlapping sample. Excludes Sweden robustness shown separately.

Without Sweden, mean BHAR at 12 months is -1.71 percent ($p = 0.206$), insignificant. At 24 months it is -6.26 percent ($p = 0.013$) and at 36 months -8.78 percent ($p = 0.020$), both significant but substantially smaller than the full Nordic results. Sweden alone generates mean BHAR of -26.51 percent at 36 months. Norway shows no significant underperformance at any horizon. Finland is consistently negative but never significant. Denmark shows mean BHAR of -11.81 percent at 24 months and -22.72 percent at 36 months.

Figure 18: Calendar-Time Portfolio Abnormal Returns



Annualised calendar-time abnormal returns on the clean and full sample. Newey-West $p < 0.001$ (lag = 3). $N = 234 / 232 / 229$ at 12, 24, and 36 months.

The annualised abnormal returns on the clean sample are -8.58 percent at 12 months ($p < 0.001$), -7.25 percent at 24 months ($p < 0.001$), and -5.93 percent at 36 months ($p = 0.001$), confirming the H1 finding through a methodologically distinct approach.

6. Discussion

6.1 Interpretation of Value Driver Results

Nordic acquiring firms destroyed substantial shareholder value in the three years following the acquisition. The underperformance worsens progressively from 12 to 36 months, which points toward integration failure rather than initial overpricing. If the market had simply overpaid at announcement, abnormal returns would stabilise once the mispricing was absorbed. The continued deterioration suggests value is being destroyed during integration. The calendar-time

portfolio approach confirms this independently using a methodologically distinct estimator, with annualised abnormal returns of -8.58 percent at 12 months and -5.93 percent at 36 months on the clean sample. The country-level breakdown shows the underperformance is not uniform across the region, and the aggregate result should not be read as a broad Nordic institutional pattern.

The deal size penalty deepens over time and accelerates through the moderate range where most Nordic acquisitions occur. The linear specification implies a penalty of 10.6 percentage points per unit of relative deal size at 36 months. The quadratic specification shows this penalty steepening for mid-sized deals before flattening at the extremes, suggesting the linear estimate understates the true cost. Managers pursuing deals large relative to their firm's size tend to overpay, as hubris leads bidding firms to make positive valuation errors (Roll, 1986). The overpayment problem scales with deal size, as losses to acquiring-firm shareholders increase with the consideration paid (Moeller et al., 2005). Deals large relative to acquirer size also represent commitments that shareholders cannot easily reverse once made (Jensen, 1986).

Cross-border status produces no significant effect. At 55.8 percent, the cross-border rate is high enough to suggest international acquisitions are a routine strategic choice for Nordic firms. Firms that acquire across borders regularly may develop capabilities for managing regulatory complexity and cultural distance, which could explain the absence of a consistent penalty (Liang et al., 2017).

The cash premium disappears once serial acquirers are excluded, and firm size is controlled for. In raw terms the gap is large. Cash acquirers average -0.8 percent at 36 months while share-financed acquirers average -27.1 percent, but this ordering does not survive regression controls for deal and firm characteristics. The cash premium in prior literature may partly reflect acquirer characteristics correlated with both cash payment and better performance. Klitzka et al. (2022) show that payment method choice reflects valuation uncertainty and firm-level characteristics rather than a pure asymmetric information signal, which is consistent with the disappearance of the premium after controls.

Family ownership is consistently negative in direction, opposite to the stewardship prediction. Family firms tend to perform better than non-family firms on average (Anderson and Reeb, 2003). At the same time, concentrated control still creates the risk that family shareholders

pursue acquisitions serving their own interests at the expense of minority investors (Lekvall, 2014). Stewardship and entrenchment effects may also roughly offset each other, producing a net result not significantly different from zero. The variable captures only firms above the 50 percent ownership threshold, covering approximately 5 percent of the sample, so the null result may also reflect insufficient statistical power rather than a genuine absence of effect.

Pre-acquisition profitability is consistently positive in direction across all horizons without reaching conventional significance. The gap between the lowest and highest ROA quartiles widens from 9.7 percentage points at 12 months to 25.1 percentage points at 36 months, large enough to be economically meaningful even without statistical confirmation. Firms entering acquisitions in stronger financial condition underperform by less.

Firm size produces the most stable result across all specifications and both samples. Larger firms bring more integration resources, face stronger institutional investor monitoring, and carry more prior acquisition experience. Firm size reduces but does not eliminate the underperformance. Only the largest acquirer decile generates a positive mean BHAR, averaging +3.2 percent at 36 months, while every other decile remains negative.

Which factors explain long-term value creation in acquisitions by Nordic listed firms? Deal size and firm size are the two consistent answers. Governance environment, cross-border status, family ownership, and payment method do not produce robust effects once deal and firm characteristics are controlled for. Nordic acquirers underperform on average, but the underperformance reflects what they acquire and how large they are, not where they operate.

6.2 Institutional Interpretation

At the unconditional level, Nordic acquirers underperform US acquirers at every horizon, with the gap reaching nearly seven percentage points at 36 months. Once deal and firm characteristics are controlled for, the Nordic indicator is statistically insignificant at all three horizons. Nordic deals are considerably smaller, more frequently stock-financed, and more cross-border than US deals, and these compositional differences independently explain the raw performance gap. Both interaction terms are also insignificant, meaning the cash payment and cross-border effects operate similarly across the two institutional environments. The

determinants of long-term acquisition performance do not differ by institutional setting once observable deal and firm characteristics are accounted for.

Nordic corporate governance ranks among the strongest globally on concentrated ownership combined with minority protection (Lekvall, 2014), yet this does not translate into detectably better post-merger integration outcomes. Masulis et al. (2007) show that better-governed acquirers make superior acquisition decisions, suggesting governance quality may shape deal selection more than post-merger integration. This could explain why no long-term governance premium is detectable in this sample.

The PSM t-test finds significant Nordic underperformance at 24 and 36 months. Once the regression controls for residual size imbalance, the Nordic coefficient becomes insignificant. The imbalance reflects the structural size difference between the two markets, which nearest-neighbour matching cannot fully resolve. The CEM procedure achieves near-perfect covariate balance and produces the same conclusion as the pooled regression, reinforcing rather than undermining the primary institutional comparison. On the size-balanced CEM sample, Nordic acquirers average +12.04 percentage points above US acquirers at 36 months. This further supports the view that the raw Nordic underperformance reflects size composition rather than governance environment.

6.3 Comparison with Existing Literature

The H1 finding is consistent with meta-analytical evidence that average long-term acquisition effects are small and highly heterogeneous across studies (King et al., 2004). Post-acquisition outcomes remain hard to predict even after controlling for study design and contextual moderators, consistent with synergy realisation being harder than managers anticipate at announcement. The magnitude of underperformance in the Nordic clean sample is larger than I had expected. This may reflect the prevalence of smaller transactions and the high cross-border rate in the Nordic market, both associated with more demanding integration environments.

The H2 finding extends evidence from US merger waves, where aggregate bidder losses are concentrated in a relatively small number of large transactions (Moeller et al., 2005). The

Nordic evidence suggests the deal size penalty operates proportionally across the size distribution rather than only at the very top. The quadratic specification shows the penalty accelerates through the moderate range most common in Nordic markets.

Nordic corporate governance ranks among the strongest in the world on concentrated ownership combined with minority protection (Lekvall, 2014), yet the pooled regression finds no systematic performance difference once deal structure is controlled for. Legal origin and investor protection shape ownership concentration and capital market development (La Porta et al., 1998), but these institutional advantages do not translate into detectably better post-merger integration outcomes. Masulis et al. (2007) show that governance quality affects acquisition decision-making rather than post-merger execution, which is consistent with the absence of a long-term Nordic governance premium in this sample.

6.4 Robustness and Sensitivity

The unwinsorized H1 t-tests produce directionally consistent but weaker results, with the 36-month BHAR of -3.72 percent falling short of conventional significance. The direction of underperformance holds across all three horizons regardless of outlier treatment, which is expected given the right-skewed nature of compounded long-horizon returns.

The constant sample of 754 deals estimated simultaneously at all three horizons confirms that the worsening BHAR pattern reflects genuine time dynamics rather than shifting sample composition. Mean BHAR deteriorates from -10.40 percent at 12 months to -17.75 percent at 36 months on this restricted sample, all significant at $p < 0.001$. The H2 deal size finding also replicates on the constant sample, remaining significant at 24 and 36 months.

The Sweden exclusion has specific implications for H2. The deal size penalty weakens after removing Swedish deals, remaining significant only at 36 months. This suggests the deal size effect is partly driven by Swedish acquirer behaviour rather than a uniform Nordic pattern, and the H2 finding should be interpreted with this sensitivity in mind.

The robustness checks do not change the central answer. Deal size and firm size remain the dominant explanatory factors across alternative outlier treatments, sample compositions, and

geographic subsets. The H1 underperformance is not driven by extreme observations or by shifting sample composition across horizons. Sweden shows concentration in both the underperformance and deal-size effects, but removing Swedish deals does not eliminate either finding. The answer to the research question is sensitive to Swedish acquirer behaviour but not dependent on it.

7. Limitations

Several limitations bear on the interpretation of the results. Target quality, strategic fit, integration team experience, corporate culture, and competitive dynamics at the time of the deal are absent from the specification. The clean sample restriction substantially reduces the primary estimation sample, from 2,454 deals in the full Nordic sample to 759 at 36 months, with the H4 cash payment sample falling further to 448 at 36 months. Serial acquirers are disproportionately excluded, meaning the clean sample describes occasional acquirers more than active ones.

The family ownership variable captures only firms where an individual or family holds at least 50 percent in ORBIS, covering approximately 5 percent of the Nordic sample. Many family-influenced Nordic firms operate through foundations, dual-class structures, or holding companies that fall outside this threshold. The null result for H5 may reflect measurement limitations as much as a genuine absence of effect.

BHAR tests may overstate statistical significance when cross-sectional dependence is not fully addressed (Mitchell and Stafford, 2000). The calendar-time portfolio approach addresses this concern by aggregating individual returns into a single monthly portfolio return before testing, thereby reducing cross-sectional correlation. Nordic and US capital markets differ not only in governance structures but also in market size, industry composition, investor bases, and macroeconomic exposures. The Nordic indicator captures institutional setting rather than a precise measure of governance quality, and the comparison should be interpreted accordingly.

A further limitation concerns the event window start date. The BHAR windows in this thesis are anchored to the announcement date rather than the completion date. Several established studies use the completion month as the starting point (Mitchell and Stafford, 2000; Rau and Vermaelen, 1998), and for deals where the gap between announcement and completion is

substantial, the two approaches can produce different return estimates. The results may therefore not be directly comparable to studies using a completion-month anchor. Differences in estimated abnormal returns relative to prior work may reflect this methodological choice rather than genuine differences in acquirer performance.

8. Conclusion

This thesis asks which factors explain long-term value creation in mergers and acquisitions undertaken by listed firms in the Nordic region. I find that Nordic acquiring firms underperform their benchmarks across all horizons, with the gap widening rather than narrowing over time. I find that relative deal size is the primary deal-level predictor, with larger deals relative to acquirer size producing progressively worse outcomes. I find that firm size is the most consistent positive predictor throughout. I do not find that cross-border status, family ownership, or payment method produce significant effects once deal and firm characteristics are controlled for. I do not find that Nordic acquirers underperform US acquirers once the structural size differences between the two markets are accounted for.

The Nordic region has received limited systematic attention over long horizons, and the results show that deal size and firm size explain the variation in post-acquisition returns while institutional context does not. That fits with growing evidence that integration outcomes depend more on the deal itself than on where the acquirer operates. The methodological finding makes the same point from a different angle. At the 36-month horizon, most Nordic deals in the full sample were contaminated by subsequent acquisitions by the same firm. Removing them changed the conclusions, not just the precision. Long-term event studies in markets with active serial acquirers should treat window overlap as a design decision from the start.

The governance result carries furthest beyond this sample. The Nordic model is among the world's strongest on ownership concentration and minority protection yet acquiring firms here do not outperform their US counterparts once the comparison is made on equal terms. What governance appears to do well is filter out bad deals before they happen. It does not appear to improve what happens after a deal closes.

Two limitations matter for how the results should be read. The family ownership measure misses most family-influenced Nordic firms because many operate through structures that fall below the 50 percent ORBIS threshold. The clean sample captures occasional acquirers well but cannot speak to how active serial acquirers perform. Future work using voting rights data and designs built for serial acquirers would fill both gaps.

Boards keep approving acquisitions, but should they become stricter about them? Evidence that most acquisitions destroy value over the long run has been available for decades, yet the pace of deal-making has not slowed. What this thesis adds is precision about when destruction is most likely to occur. Size mismatch between the deal and the acquirer is not an uncontrollable risk. It is a choice.

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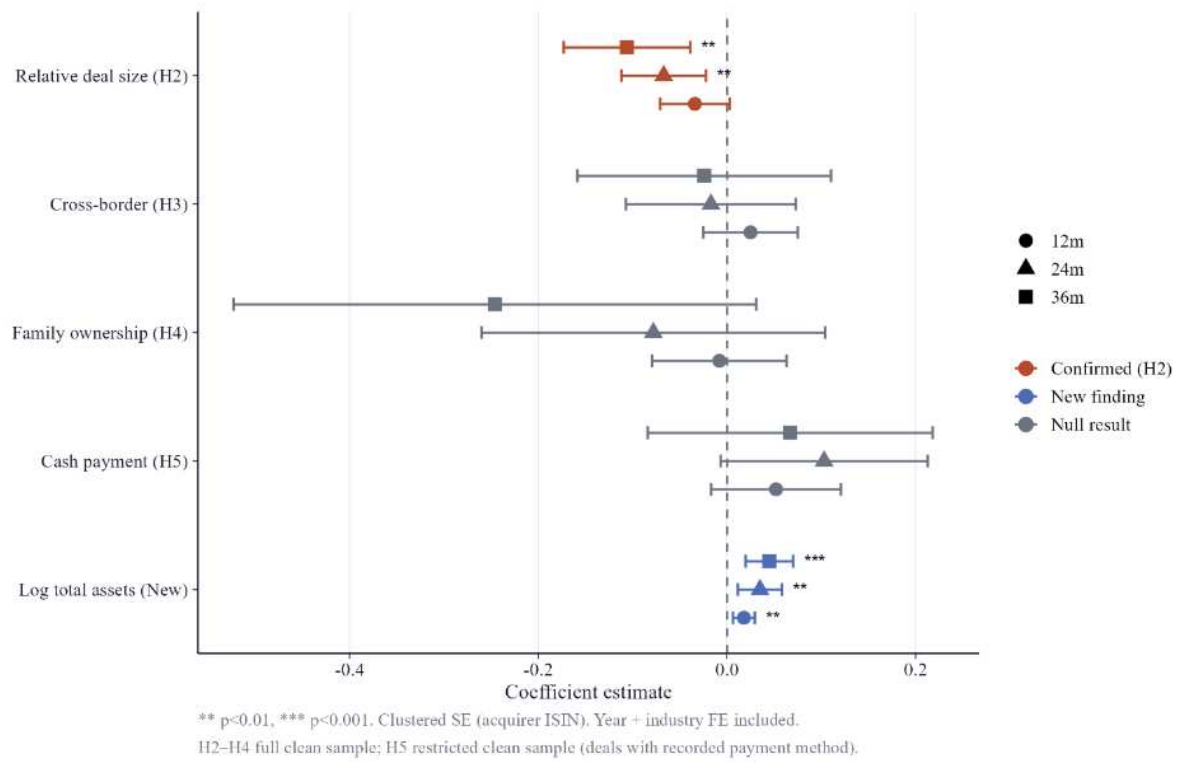
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Appendices

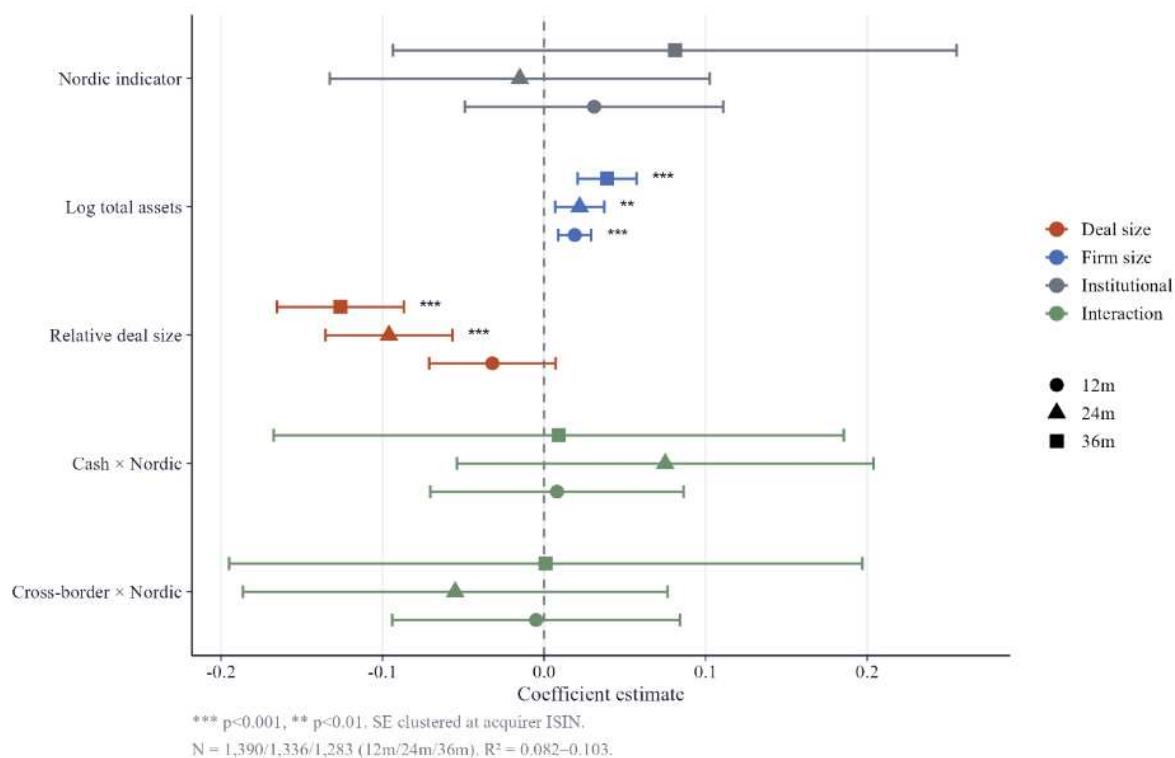
A1 Regression Coefficients - H2 to H5 and Firm Size

Figure 19: A1



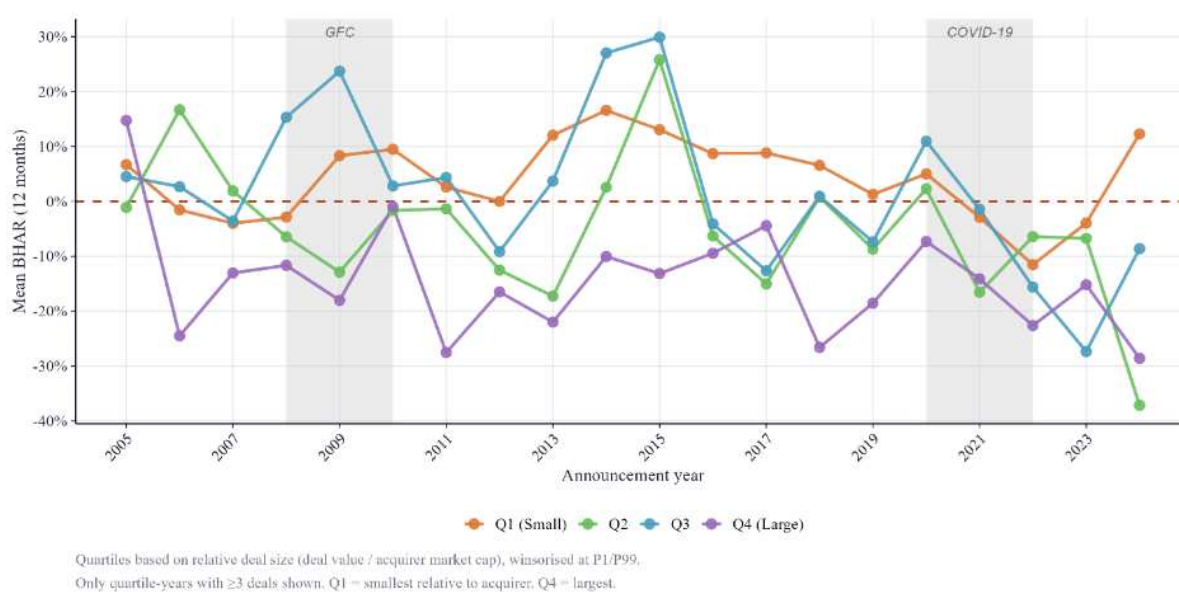
A2 Pooled Nordic-US Regression Key Coefficients

Figure 20: A2



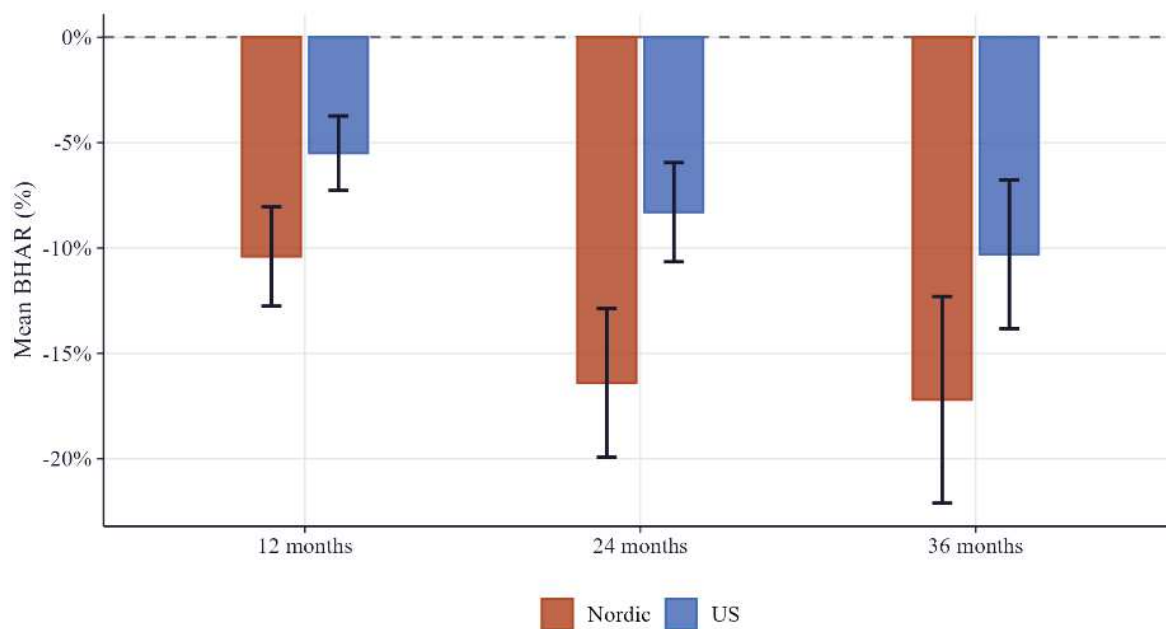
A3 Mean 12-Month BHAR by Rel. Deal Size Quartile

Figure 21: A3



A4 Long-term Returns Nordic Vs. US Acquirers

Figure 22: A4



Note: Pooled regression shows Nordic indicator insignificant at all horizons.
Unconditional gap explained by compositional differences in deal/firm characteristics.
Nordic N $\approx$ 759 (36m clean). US N $\approx$ 1,700 (36m clean). Error bars = 95% CI.