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Cumulative Wisdom or Compounding Complexity: The learning curve among serial acquirers. (Sweden)

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Abstract

This thesis investigates the performance dynamics of serial acquirers in the Swedish market, specifically focusing on their ability to realize cost synergies over time. Through an empirical analysis of Swedish firms engaging in mergers and acquisitions (M&A) between 2010 and 2019, we aimed to determine whether serial acquirers exhibit improved synergy realization in subsequent acquisitions compared to their initial ones, and how their performance contrasts with single acquirers. Our methodology employs event studies and regression analyses to subsequently evaluate cost-saving outcomes and operational efficiency post-acquisition, using the financial metrics Gross Profit margin and EBITDA margin. Our findings suggest that serial acquirers do not outperform single acquirers in terms of abnormal EBITDA margins and abnormal Gross Profit margins, if something serial acquirers in our sample appear to underperform compared to single acquirers. However, we found that specific factors such as industry type, deal size, and payment method could significantly influence the outcomes. The research contributes to the M&A literature by providing nuanced insights into the Swedish market and challenging the assumption that experience in multiple acquisitions inherently leads to better performance. These results have implications for refining existing models and guiding future research on the strategic management of serial acquirers.

We want to dedicate a special thanks to our supervisor:

Jens Forssbaeck

Table of Contents

1. INTRODUCTION 4

2. LITERATURE REVIEW 6

2.1 Synergies 6
2.2 Economies of Scope and Scale 7
2.3 Serial Acquirers 9
2.4 Hubris Hypothesis 10
2.5 Learning Hypothesis 11
2.6 Other Factors Affecting Value Creation 12
2.8 Hypotheses 13

3. METHOD 16

3.1 Methodology Overview 16
3.2 Event Study 16
3.3 Dependent Variables 17
3.4 Implementation 18
3.5 Data Collection & Sample Selection 19
3.6 Regression Specifications 20
3.7 Control Variables 21
3.8 Diagnostics and Robustness Tests 22
3.9 Descriptive Statistics 23

4. RESULTS 27

4.1 Classical Tests of Hypotheses 27
4.2 Regression abnormal EBITDA margin 30
4.3 Regression abnormal Gross Profit margin 33

5. DISCUSSION 36

5.1 Are Economies of Scope and Scale Observable? 36
5.2 Is There Any Evidence of Learning or Hubris? 37
5.3 Effect of serial acquisitions 38
5.4 Cumulative Wisdom or Compounding Complexity 39

6. CONCLUSION 41

7. REFERENCES 42

APPENDIX 45

1. Introduction

Corporations have been actively engaging in mergers and acquisitions (M&A) over the last centuries seeking to enhance their market position, achieve strategic growth and expand their product portfolios. These M&A transactions often come with a hefty price tag known as the acquisition premium. In essence, the bidder company pays a premium over the target company's current market value to acquire its assets and operations. This premium is justified by the expectation of significant synergies that the combined entity will realize post-merger, ultimately resulting in a positive net present value of the investment.

Throughout the years, extensive research has been conducted to understand the dynamics and outcomes of M&A transactions. Scholars have examined various aspects, including shareholder returns and stock price reactions. However, despite extensive research, there is no consensus on whether M&A transactions create value for the acquiring companies. According to DePamphilis (2010) there are two primary methods for evaluating the performance of M&As: one involves assessing abnormal returns, and the other uses accounting performance measures like cash flow and profit metrics. Unfortunately, these two different approaches can yield conflicting results regarding the long-term impact of M&A activities. Some research indicates that M&As create shareholder value, but other studies report that as many as 50-80 percent of M&As underperform compared to industry peers (DePamphilis, 2010). The lack of consensus underscores the complexity and variability of M&A outcomes.

Research interest in this area has surged due to the rapid increase in M&A transactions, which topped $5 trillion globally in 2021 (Nishant, 2021). Firms often pursue serial acquisitions to expand quickly into new markets and reach new customer groups, seeking to achieve fast growth and synergies that enhance competitive advantages. However, there is limited empirical research made of company's ability to actually create value in acquisitions through the realization of synergies (Koller, Goedhart, Wessels & Mckinsey and Company, 2020). Acquirers often motivate M&A transactions with all kinds of strategic benefits but these are really all about cutting costs (Koller et al., 2020). In the absence of empirical research, besides abnormal returns, Koller et al. (2020) identify archetypes for value creation in acquisitions. To enhance the target company's performance, the transaction should expand market access for its products and acquire skills or technologies that reduce costs more efficiently than internal development. Additionally, the acquirer should exploit business scalability, identify and invest in high-potential ventures, and consolidate firms to eliminate industry overcapacity.

Kolb (1984) suggests that acquirers can mitigate the risks associated with M&A transactions by learning from experience. By analysing the performance of acquirers, Kolb found that organizational learning can enable firms to create value through acquisitions successfully. Conversely, other studies, such as those by Billett & Qian (2008), hypothesize that frequent M&A activity may lead to managerial overconfidence, resulting in diminishing financial performance over time. Serial acquirers are firms that frequently acquire other companies as a strategic part of its business growth and operational model. In the topic of serial acquirers, we can find companies that have overperformed and grown significantly partly because of their M&A activity (Gaughan, 2017).

The purpose of this study is to examine the historical performance of serial acquirers to determine if there is an improvement in capturing synergies over time or if there is a compounding complexity. Specifically, we seek to understand whether serial acquirers demonstrate an improved ability to realize synergies in subsequent acquisitions compared to their initial ones, and whether they outperform or underperform compared to single acquirers. We will explore the cost-saving implications of acquisitions and assess how well management can develop acquisition-related expertise. Our research will analyse the financial performance of Swedish acquiring firms engaged in M&A transactions between 2010 and 2019, addressing the research question: "Do Swedish serial acquirers demonstrate an improved ability to realize synergies in subsequent acquisitions compared to their initial ones?".

This study aims to contribute to the M&A literature by providing empirical evidence on the performance of serial acquirers in the Swedish market, a relatively under-researched area, and challenges the assumption that experience in multiple acquisitions necessarily leads to better synergy realization. Ultimately, we will contribute by explicitly estimating the realized cost synergies from these acquisitions, providing a clearer understanding of their actual financial impact. Our findings suggest that serial acquirers do not outperform single acquirers in terms of abnormal EBITDA margins and abnormal Gross Profit margins, if something serial acquirers in our sample appear to underperform compared to single acquirers. However, we found that specific factors such as industry type, deal size, and payment method could significantly influence the outcomes. The reminder of the study is structured as follows, Literature Review, Method, Results, Discussion and followed by a Conclusion.

2. Literature Review

2.1 Synergies

For a M&A transaction to take place, there must be compelling reasons behind it. These reasons vary among companies, but one of the primary motives is typically the possibility of synergies. This means that the combined operations of the merged entities are expected to yield efficiencies that neither could achieve independently, thereby creating added value from the merger. Synergies are typically categorized into two categories, cost reductions and revenue enhancements (Berk & Demarzo, 2017). Cost reduction synergies, the more common of the two, often involve layoffs of overlapping staff and the elimination of redundant resources, including optimizing Selling, General and Administrative (SG&A) and Research and Development (R&D) expenditures. On the other hand, revenue driven synergies come from the possibilities to expand into new markets or gain more customers.

Mergers and acquisitions add value only if the two companies are worth more together than separate. The term synergy refers to the type of reaction that occurs when two substances or factors combined produce a greater effect together than the sum of the two separate (Gaughan, 2017). This can basically be seen as when two added by two equals five. Many mergers and acquisitions fail to achieve anticipated synergistic benefits, although synergies are the single most important source of value creation in M&A (Mirc, Sele, Rouzies & Angwin, 2023). Mirc et al. (2023) further explain that realizing these important synergies is a notoriously difficult process. The best you can do to unlock the synergies is to spot the potential in the pre-acquisition phase and explore the complementariness between the firms (Mirc et al., 2023).

Revenue enhancing synergies can source from pricing power, combination of operational strengths and growth prospects. Pricing power is mostly relevant when two companies in the same business merge. If large pricing power gains are accessible due to increased market concentration, authorities might not give regulatory approval for the acquisition. The combination of operational strengths can be seen when a firm has a strong R&D department while the other firm has a great marketing department. In this case, each partner in a M&A deal could bring important capabilities that the other lack which then together builds a better product (Gaughan, 2017). Regarding growth prospects, this is most seen in conglomerate mergers where mature entities acquire small high growth firms because of the lack of potential in their current market. For an acquiring firm it can be more effective to find

a target firm in the market they would like to enter rather than to try and enter it by themselves (Gaughan, 2017). Revenue enhancing synergies might be difficult to realize and customers might not want to do business with a larger company which further complicates M&As. The latter is referred to as revenue related dis-synergies.

Feldman & Hernandez (2022) evaluates the value in M&As that derives from the synergies of an acquirer and the target. Internal synergies create a combination of resources or capabilities that the firms can share with one another which jointly can create higher revenues or lower costs. With a combined firm market power can be gained through weakening/eliminating competitors or increasing buying/pricing power (Feldman & Hernandez, 2022). The new relationship can also create enhancement through shared assets or by a bigger network that strengthens the combined firm's structural position. At last Feldman & Hernandez (2022) explains that this new relationship can create legitimacy which improves the relationship with stakeholders.

Due to the fact that revenue enhancing synergies can be difficult to realize, merger planners tend to look for cost reducing synergies instead (Gaughan, 2017). Cost reductions are often a result of economies of scale where you can decrease the cost per unit because of the increase of scale in the firm's operations.

2.2 Economies of Scope and Scale

Economies of scope occur when a company saves costs, for example, by marketing and distributing different but related products together. This strategy involves utilizing a specific set of skills or assets already in use for one product to support the production and sale of other related products. Economies of scope are typically realized when it is more cost-effective to produce multiple product lines within a single firm than in separate firms (Berk & Demarzo, 2017). Furthermore, economies of scale refer to the cost advantages that enterprises obtain due to the scale of operation, with cost per unit of output generally decreasing with increasing scale as fixed costs are spread out over more units of output. Essentially, as a company produces more goods, it can reduce the cost per unit, making it more efficient.

Acquisitions are often proceeded with the hope of reducing costs and achieving economies of scale (Brealy, Myers & Allen, 2022). Cost savings can for example be opportunities to shut down inefficient facilities, reduce labour cost or lower sourcing costs. Brealy et al. (2022) further explains that the larger combined sales of two firms can lead to better bargains with retailers. If the companies can share central services, such as accounting

and top-level management, there are often possibilities to add value through an M&A. Economies of scale is therefore often the motivation for horizontal- and conglomerate mergers. In vertical mergers on the other hand the acquisitions often are motivated with the gaining of control over the production process.

Small firms sometimes miss ingredients necessary for success that larger ones can provide which adds economic value. These ingredients can be things like niche engineering knowledge or a major sales organization that might be required to make it on a large scale. Even if it is possible to gain these ingredients over time it may be quicker and more efficient in a broad picture to merge with a firm that already has the resources needed (Brealy et al., 2022). A merger might also open up opportunities neither firm would pursue otherwise due to complementary resources.

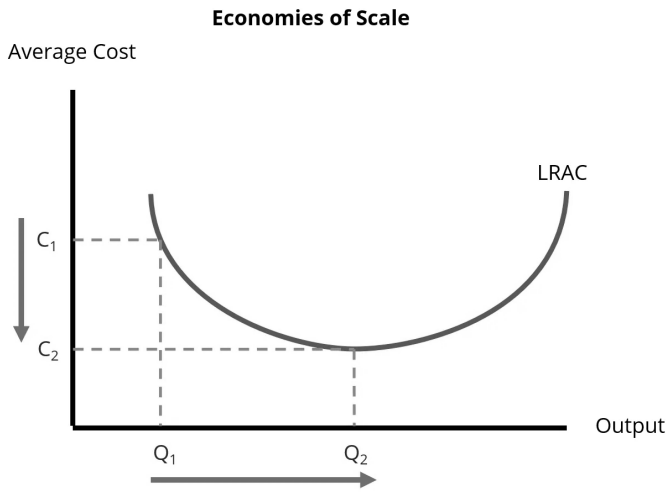

Figure 1: Is retrieved CFI (Corporate Finance Institute) and illustrates the phenomenon Economies of Scale.

Capital-intensive manufacturing firms often experience high per-unit costs at low levels of output due to fixed costs being spread over a smaller production volume. As production increases, these per-unit costs decrease, a process known as spreading overhead (Gaughan, 2017). Benefits also stem from enhanced specialization in labour, management and more efficient capital equipment utilization, which are not feasible at lower outputs. This phenomenon continues for a certain range of output, after which unit per cost may arise as the firm enters diseconomies of scale (Gaughan, 2017). Diseconomies of scale may arise as the firm experiences higher costs and other problems associated with coordinating a larger-scale operation. However, the extent to which diseconomies of scale exist is a topic of dispute for many economists.

2.3 Serial Acquirers

Management often overestimates their ability to realize synergies in mergers (De Matos, 2001). Research on serial acquirers indicates that companies that mainly grow through acquisitions tend to experience diminishing returns over time (Gaughan, 2017). However, there is also evidence that supports that certain frequent acquirers may be better at M&As and therefore can better realize synergies and create higher shareholder value due to their experience and knowledge. One example of this is the research made by Gulubov, Petmezas & Travlos (2015) where they found that certain acquirers could utilize extraordinary performance compared to other firms active in M&As. Their research demonstrated that the enhanced performance of these firms persisted even after a CEO change, indicating that the M&A expertise can be deeply embedded within the firm.

In the qualitative study Grant, Nilsson & Nordvall (2022) the authors examined two large Swedish serial acquirers and one Swedish private equity firm to evaluate serial acquirers' capabilities. They found that serial acquirers developed pre-merger capabilities that help them identify target potentials better. However, this is not what all serial acquirers manage due to the extensive experience needed to develop expertise and routines in M&As (Grant et al., 2022). Because of this the authors motivate that serial acquirers should not be treated as one coherent group.

Furthermore, in another study using 2696 acquisition announcements reported in Australia between 2000 and 2016, the sample showed higher risk and lower returns for acquisitions made by serial acquirers compared to single acquirers (Hossain, Pham & Islam, 2021). The authors revealed that the first transaction plays an important role and acts as a key for coming acquisitions. Serial acquirers also proved lower performance as they over time gained more control over the firm's resources (Hossain et al., 2021).

Despite the aggregate M&A market exceeding several trillion dollars annually, acquiring firms often underperform compared to non-acquiring firms (Renneboog & Vansteenkiste, 2019). In their extensive literature review, they noted that scholars generally define serial acquirers as firms making five or more acquisitions, with many specifying that no more than 24 months should pass between any two deals. However, the definition varies significantly across studies, indicating a lack of consensus among scholars (Renneboog & Vansteenkiste, 2019). Renneboog & Vansteenkiste (2019) reviewed 151 studies and found that 13 of them reported a negative impact of serial acquisitions on M&A performance, attributing these negative outcomes to hubris. They also examined studies on CEO and organizational

learning among serial acquirers. The results here were mixed: six studies found negative performance, one showed no effect, two were non-significant, and three indicated that CEO and organizational learning improved performance. Furthermore, they reviewed studies on the diminishing attractiveness of opportunities for serial acquirers. Four studies found a negative effect, while one found a non-significant effect. Based on these findings, Renneboog & Vansteenkiste (2019) concluded that the performance of serial acquirers consistently declines as firms increase their acquisitiveness. This underperformance appears to be consistent regardless of the event window or methodological approach used in the studies. The primary reasons for this underperformance, according to Renneboog & Vansteenkiste (2019), are poor acquirer governance and inadequate merger execution and integration.

2.4 Hubris Hypothesis

Roll (1986) introduced the hypothesis that M&As might be motivated by hubris and pride of the acquiring managers. The hubris hypothesis of takeovers implies that key personnel seek to acquire firms based on personal motives rather than economic gains for the acquiring firm.

Gaughan (2017) highlights that a large body of research has supported the hubris hypothesis and explains that it might be related to manager's overconfidence in their own valuations. Berk & Demarzo (2017) takes a broader view and discusses that people in general tend to be overconfident in their own abilities. They motivate their arguments from psychological research indicating that it takes several failures for people to change their own belief. Giannopoulos, Khansalar & Neel (2017) found that if the initial acquisition is successful the acquirer suffers from hubris going forward. In contrast unsuccessful first-time acquirers learn from their experience. The learning is however temporary and the company will go on to suffer from hubris further on. Giannopoulos et al. (2017) also found that UK single acquirers during 2002-2006 performed better, compared to serial acquirers, and were able to create wealth for their existing shareholders, especially when acquiring private companies. Ismail (2008) found similar results but also proved that the underperformance of serial acquirers grew even further when the payment was made in equity. He also describes how unsuccessful first time acquirers learn but successful first time bidders suffer from hubris directly.

Malmendier & Tate (2008) investigated the role of CEO overconfidence in mergers and acquisitions, highlighting its significant impact on the likelihood and outcomes of such transactions. Their study, with a sample of 477 large publicly-traded U.S. firms from 1980 to 1994, reveals that overconfident CEOs are more likely to pursue acquisitions due to an inflated

belief in their ability to generate returns. This overconfidence often leads them to undertake mergers that fail to create value, resulting in poorer financial performance for the acquiring firm. Consequently, the market typically reacts negatively to merger announcements made by these overconfident CEOs, as evidenced by a more substantial decline in stock prices compared to announcements by non-overconfident counterparts (Malmendier & Tate, 2008). The research underscores the effects of managerial overconfidence on acquisition strategies and aligns well with the hubris hypothesis in M&A literature.

2.5 Learning Hypothesis

Aktas, de Bodt & Roll (2009) argues that a declining cumulative abnormal return from deal to deal is not sufficient to reveal the presence of hubris and is a bit sceptical of existing research conclusions. They explain that if the CEO indeed would be learning from M&A deals, this declining CAR trend would be observed. Downward trending CAR among serial acquirers could instead be due to the fact that the target knows that an experienced acquirer will be able to realize synergies better and therefore know that the value of the acquisition for the experienced acquirer is higher (Aktas et al., 2009). The declining trend of CAR in acquisitions programs is an empirical fact but risk aversion among rational CEOs would lead to this observed pattern (Aktas et al., 2009). The pattern is due to declining investment opportunities, budget constraints and increasing competition. Aktas et al. (2009) predicts that a rational CEO should indeed learn from deal to deal and therefore should bid more aggressively over time. The experience increases the fraction of synergies the acquire realizes but the value of synergies will over time increasingly land among target shareholders (Aktas et al., 2009). This indicates that experience in M&A leads to more effective integration but that this comes with the cost of target knowledge of the acquirers' experience.

Kengelbach, Klemmer, Schwetzler & Sperling (2012) also argues that there is indeed a learning among serial acquirers. However, the learning doesn´t depend on the quantity of transactions but instead the type of deals. In their research of 20975 M&A transactions they found that serial acquirers gained proficiency in specific types of deals, this was most notable when the target was a public company. This result follows the specialized learning hypothesis. Kengelbach et al. (2012) also establishes that the time between transactions and the relative deal size are key to a successful M&A. This is due to the fact that the capacity of an organization to integrate is limited. Serial acquirers therefore do get better at realizing synergies but there is a limited ability to the organization's integration (Kengelbach et al., 2012). In

contrast Chao (2018) found no significant effect of past acquisition frequency on current acquisition performance. However, repetitive acquisitions should familiarize management with the acquisition process containing for instance target selection, target integration and due diligence (Chao, 2018). Therefore, you would expect acquisition performance to increase with the deal sequence.

2.6 Other Factors Affecting Value Creation

There is a critical distinction within M&A research where scholars argue that managers believe they are doing the right thing for their shareholders but irrationally overestimate their abilities (Berk & Demarzo, 2017). Other researchers instead argue for the agency conflict where managers know that they are destroying shareholder value but personally gain from doing so. The impact of ownership structure on company performance has been extensively discussed in academic literature. The separation between ownership and control, initially described by Berle & Means (1932), gave rise to the well-known agency problems. Agency theory was first conceptualized by Ross (1973) and later developed in greater theoretical detail by Jensen & Meckling (1976). Jensen & Meckling (1976) describe the company's management as agents and shareholders as principals. The agent is granted the authority to make decisions and act on behalf of the principal. However, a significant issue in this corporate structure is that agents do not necessarily act in the best interests of the principals. A fundamental assumption of agency theory is that the interests of the owners and the management do not always naturally align, an issue that Berle & Means (1932) also highlighted. This misalignment of interests between principals and agents can lead to suboptimal decision making in acquisitions, where management pursues deals that may benefit them personally but not necessarily create value for shareholders.

Another factor that could impact value creation in mergers and acquisitions is tax efficiency. This includes the ability to more effectively utilize tax shields of the combined entity (DePamphilis, 2010). This refers to using the financial benefits of deductibles like interest or depreciation to reduce taxable income and, consequently, the tax burden. When a firm earns a profit, it is required to pay taxes on the profit. However, when it incurs a loss, the government does not rebate taxes. Therefore, conglomerates may have a tax advantage over single-product firms because they can offset losses from one division against profits from another, thereby reducing their overall tax liability (DePamphilis, 2010). This ability to balance

different divisions' financial outcomes can lead to significant tax savings for diversified companies.

When talking of M&A transactions, the specific type of merger is often overlooked. There are several different types that vary depending on the relation between the target and the acquirer. In a M&A deal where the target and the acquire are in the same industry the merger is typically called a horizontal merger. Vertical integration occurs when two companies within the same industry, producing different stages of a single production process merge. This type of merger allows the combined entity to produce and control multiple stages of the production cycle, potentially leading to greater efficiency and cost savings (Berk & Demarzo, 2017). Conglomerate mergers are when the target and the acquirer operate in totally different and unrelated industries. The complexities of integrating and managing two disparate businesses effectively can negatively impact value creation in acquisitions. These challenges can lead to inefficiencies and a failure to realize the anticipated synergies, ultimately affecting the overall success of the merger.

Moreover, when acquisitions are paid in cash it signals that the buyer knows the real value of the synergies and that he/she knows that their own stock is undervalued (De Matos, 2001). Cash payments also eliminate free cash flow for the buying firm which lowers the risk of agency costs. With lower cash, managers do not have the possibility to spend money on unprofitable projects (De Matos, 2001). Changs (1998) research on the topic found that in the short-term cash offers on both private- and public companies yielded zero returns that did not vary a lot. On the other hand, positive stock returns were found in the short-term for deals paid with equity, if the target was private. Gaughan (2017) explains this positive return by noting that the target firm initially has few owners and the acquisition creates greater monitoring. This increased monitoring reduces adverse agency effects, ultimately enhancing the firm's value. In contrast to Changs research, Loughran & Vijh (1997) found positive abnormal returns for cash deals but negative abnormal returns for stock deals. The biggest difference between the papers is that Chang focused on short-term effects and Loughran & Vijh focused on long-term effects of the payment method.

2.8 Hypotheses

In M&As, sellers generally do better than buyers due to a takeover premium (Brealy et al., 2020). The seller knows that the buyers see potential synergies in the deal and therefore push up the price to a point where the price broadly represents the value of the firm and the potential

synergies. Acquire managers may also be working under overconfidence or hubris which leads to overpayment (Brealy et al., 2020).

The most common value creation strategy in M&As is to improve the target companies' performance. Koller et al. (2020) suggests that this is simply made by radically reducing costs to improve margins and cash flows. In some cases, it is also possible to accelerate the growth of the target. Acharya, Gottschalg, Hahn & Kehoe (2013) explains that radically reducing costs is what the best private equity firms do. They studied acquisitions made by PE firms and analysed how the target firm was bought, improved and sold. To isolate the effect on financials as much as possible they controlled that no additional acquisition was made during the event window. The results showed that the Operating Profit margins on average increased by 2,5 percentage points more for the PE firms than for peer companies.

Further, Chaturvedi & Weigelt (2024) evaluates whether acquisitions put more emphasis on the possibility of realizing cost versus revenue synergies. The two synergy types require different resource reconfigurations and therefore the amount of effort needed to realize the synergies can vary. In acquisitions, cost synergies can be realized due to either economies of scale, scope or through operational efficiency as a result from shared knowledge (Chaturvedi & Weigelt, 2024). By measuring changes in EBITDA margins, they manage to capture realizations of cost synergies. Their results showed that experienced acquirers were more likely to integrate an acquisition if the acquisition were motivated by cost synergies rather than revenue synergies. Moreover, their results showed that experience with cost synergies had a marginally positive effect on EBITDA margin and that serial acquirers were better at realizing both cost and revenue synergies. However, they could not with significance prove that a shorter time between acquisitions lead to better integration (Chaturvedi & Weigelt, 2024). Their research was conducted on US acquirers and exclusively on public targets.

In an analysis of the most active acquirers in seven different sectors in the U.S., it was found that a high rate of acquisitions in general lead to negative performance (Laamanen & Keil, 2008). Their research showed that acquisition experience had moderate negative effects which talked against the learning hypothesis. In contrast to Chaturvedi & Weigelt (2024) Laamanen & Keil (2008) could, with significance, prove that acquisition frequency and performance had a negative relationship.

Based on our comprehensive literature review, the research consensus suggests that serial acquirers generally experience negative abnormal returns compared to single acquirers. This finding indicates that being a serial acquirer can negatively impact the financial performance of a company post-acquisition. However, contrasting this view, studies done by

Chaturvedi & Weigelt (2024) and Acharya et al. (2013) present evidence that serial acquirers may possess an advantage in achieving cost synergies compared to single acquirers. Furthermore, the learning hypothesis posits that serial acquirers can develop superior acquisition-related expertise over time, potentially leading to better integration and realization of synergies. These observations have sparked further investigation into the dynamics of serial acquisitions within the Swedish market. Consequently, these observations have inspired us to formulate the following two hypotheses.

Hypothesis 1: Swedish serial acquirers are better than Swedish single acquirers at realizing cost synergies, operationalized as change in EBITDA margin.

Hypothesis 2: Swedish serial acquirers are better than Swedish single acquirers at realizing cost synergies, operationalized as change in Gross Profit margin.

3. Method

3.1 Methodology Overview

Our study will measure the performance from a cost savings perspective based on Gross Profit margin and EBITDA margin, rather than measuring abnormal returns or cumulative abnormal returns based on stock prices. The research on this topic, focusing on the Swedish market is very limited/non-existent, which underscores the unique contribution of our study. According to Brealy et al. (2022) one could also use a discounted cash flow valuation of the target company, including merger benefits and then subtract the cash required for the acquisition to estimate the benefits of an M&A activity. However, this is a complicated way of valuing where large errors are likely. Because of this, scholars have focused on trying to find abnormal performance compared to the market and the acquirers' peers to measure the benefits of mergers.

There is no found perfect way to measure M&A performance and scholars are searching for the best possible option that can be considered good enough. Recent research in M&A has in different ways used stock prices to measure values of these transactions. In this paper we take a different approach trying to estimate serial acquirer performance by looking solely on cost synergies which hopefully can give valuable insights to the field of study. Our methodology is inspired by the few existing researches made within the subject of cost synergies, especially Acharya et al. (2013) and Chaturvedi & Weigelt (2024).

3.2 Event Study

The field of event studies has evolved significantly since its inception, with numerous influential articles contributing to its development and application. Fama, Fisher, Jensen & Roll (1969) originally introduced the methodology of event studies in finance. The paper discussed how stock prices changed to new information and gave insights into the market efficiency. Ball & Brown (1968) refined the methodologies used in event studies in their article. They particularly focused on the measurement techniques for abnormal returns. Their work has become a critical part of ensuring the robustness and validity of empirical findings in event studies. Further, MacKinlay (1997) criticized early event studies and discussed various statistical methods and models to use in event studies, offering insight on how to conduct an analysis and how to interpret the results.

In empirical financial research, event studies are a fundamental method for assessing how specific events affect a firm's market value (Gaughan, 2017). Since the event study methodology is well-known and widely understood in academic literature, this study will follow the outlined approach.

(i) Define the Event: Identify the event of interest along with the estimation window, both the period before and post the event.
(ii) Data Selection Criteria: Determine which firms or entities are relevant for analysing the event's impact.
(iii) Estimate Model Parameters: Develop a model to predict and test the hypotheses.
(iv) Calculate the Performance: Use the model to estimate expected performance and compare these with the actual observed performance during the event window.
(v) Determine the results: Calculate the performance by comparing the pre acquisitions performance compared to the merged entity performance.

3.3 Dependent Variables

When evaluating cost synergies, it is essential to understand the efficiencies gained post-transaction. Gross Profit margin and EBITDA margin are two effective metrics for such analysis. Gross Profit margin measures the percentages of revenue that exceeds the cost of goods sold (COGS). Berk & Demarzo (2017) highlights the relevance of Gross Profit margin in assessing financial performance. The metric provides a reflection of production efficiency and scalability benefits that may come from the acquisition. By examining Gross Profit margin, we can more effectively assess how increased production and operational efficiencies impact profitability as firms grow. Further, the measure provides a clear indicator of the cost advantages that larger firms may achieve, making it a suitable metric for analysing the financial outcomes of serial acquisitions.

EBITDA margin, which accounts for earnings before interest, taxes, depreciation and amortization, offers insight into a company's operational profitability excluding non-operational expenses. This metric is therefore an excellent indicator of the underlying operational performance and the realization of the cost synergies (Boeh & Beamish, 2007). According to Platt (2009), when evaluating acquisitions, the simplest and probably the most common technique used to value target companies is by an earnings-multiple method. This thesis uses the earnings figure EBITDA shown in equation (1).

(1) EBITDA = Operating income (EBIT) + Depreciation and Amortization

Operating income (EBIT) equals operating revenues less operating costs. Operating costs include costs such as COGS, SG&A, depreciation and amortization. Depreciation and amortization are added back to EBIT since they are non-cash expenses which are available for use by the acquiring company (Platt, 2009). According to Koller et al. (2020), the EBITDA multiple is often favoured over the EBITA multiple by many professionals. It comes from the fact that depreciation is a non-cash expense linked to past costs rather than future spending.

3.4 Implementation

In our research, we will measure synergies resulting from M&A transactions by analysing the financial metrics of the target firms. Initially, we retrieve both the EBITDA margin and the Gross Profit margin of the acquiring and target firms at the year-end prior to the acquisition close date. This provided a baseline to compare against future performance. To capture the post-transaction effects, we then assess the same metrics: EBITDA margin and Gross Profit margin at the year-end two years after the transactions close date. This two-year period allows us to identify any economic of scale, diseconomies of scale or integration impacts that might have occurred after the transaction. Further, we will analyse the combined performance of the target and acquiring companies' post-merger to evaluate the actual contribution of the target firm to the new entity. Finally, we then compare this percentage change in both the EBITDA margin and Gross Profit margin of the combined entity towards peer groups change in EBITDA margin and Gross Profit margin. This is made to further isolate the impact of the merger.

(2) $AEM = \Delta E_A - \Delta E_P$ $\quad \Delta E_A = E_{A,t+2} - E_{A,t}$ $\quad \Delta E_P = E_{P,t+2} - E_{P,t}$

AEM = Abnormal EBITDA margin

ΔE_A = Change in EBITDA margin of the acquirer

ΔE_P = Change in EBITDA margin of the peer group

(3) $AGPM = \Delta G_A - \Delta G_P$ $\quad \Delta G_A = G_{A,t+2} - G_{A,t}$ $\quad \Delta G_P = G_{P,t+2} - G_{P,t}$

AGPM = Abnormal Gross Profit margin

ΔG_A = Change in Gross Profit margin of the acquirer

ΔG_P = Change in Gross Profit margin of the peer group

Additionally, our analysis includes a control for multiple acquisitions where we will employ a dummy variable to identify whether the acquiring firm engaged in other acquisitions during the two-year window post-announcement. This approach will help us isolate the effects of the studied transaction from other potential confounding activities, providing a clearer view of the synergies realized from the merger or acquisition.

Previous research and literature have not been able to establish a consistent definition of a serial acquirer. Different scholars have proposed different definitions where some scholars have more conservative definitions whereas others more ambiguous. For example, according to Chaturvedi & Weigelt (2024), serial acquirers are characterized as entities that make more than four acquisitions within a 10-year window. However, on the more aggressive and ambiguous side, Klasa & Stegemoller (2007) define a serial acquirer as a firm that performs five or more transactions over a 12-month period. Other researchers such as, Fuller, Netter & Stegemoller (2002) implies that for a firm to be a serial acquirer it has to engage in five deals within a three-year window. Our study has considered previous research, but since there is no consensus among scholars, we have defined a serial acquiring firm as one that engages in eight or more transactions over a 10-year period. However, the frequency of acquisitions is not considered when defining serial acquirers, meaning it does not matter if they complete all eight acquisitions in one year or spread them out over the study period. This definition is inspired by previous research but has been adjusted to fit the Swedish M&A market and our sample. To determine whether a company is a serial or single acquirer, we measured the number of acquisitions over the entire observation period, including acquisitions both within and outside of Sweden.

Not only has the number of transactions being discussed, regarding the definition of serial acquirer in literature, but also on the consequences of allowing the same firm to appear multiple times in a dataset. Rather than addressing this issue, researchers such as Kengelbach et al. (2012), Alexandridis, Antypas & Travlos (2017), Ismail (2008) and Laamenen & Keil (2008) assume that each deal is independent to facilitate the application of regression analysis. We have decided to follow the same approach and assume that each deal is independent.

3.5 Data Collection & Sample Selection

We collected the sample to test our hypothesis on Swedish acquiring firms with data retrieved from Refinitiv Eikon, Capital IQ and Bisnode InfoTorg. The selected period ranges from 1st January 2010 to 1st January 2020. We chose this time frame for several reasons. First, we

wanted to exclude the financial crisis in 2008, second, we wanted to cover a wide range of business cycles post the financial crisis and lastly, we found limitations in the availability of annual reports of the target firms before 2009. We also focused on Swedish firms primarily because obtaining annual reports from international unlisted companies proved challenging. The observations are based on the following selection criteria;

(i) Swedish companies acquiring Swedish firms where the total transaction value is larger than $5M.
(ii) Deals must be completed and closed.
(iii) Acquiring firms must acquire majority control of the ownership.
(iv) Financial and real estate sectors were excluded.
(v) Target firms can be public, private or subsidiaries.
(vi) The acquiring firms are publicly traded.

By setting up these constraints, we initially obtained data from 85 transactions. We acknowledge the limitation of the sample size. However, our data set provides a focused and manageable scope for our analysis. Additionally, the selection criteria ensures that the transactions included are significant enough to yield meaningful insights into the financial performance post-acquisition.

The collected data from Refinitiv Eikon, Capital IQ and Bisnode InfoTorg contains information regarding Company name, M&A announcement date, M&A close date, Transaction type, Total transaction value, Industry classifications, Market capitalization, ROA, P/E, Total debt, Total equity, Cash, Total assets, Revenue, Leverage, Type of merger, Payment method. Furthermore, it included the number of deals acquiring companies have done in the last 10 years and if the acquire have done multiple deals during the event window. Lastly, the data set obtained EBITDA margin and Gross Profit margin for both acquiring company, target company and respective peer groups. The peer groups for comparison averaged around 40-50 companies, providing a robust benchmark to evaluate the performance of our sample.

3.6 Regression Specifications

To analyse the impact of the M&A activity and the relationship between realized cost synergies and our explanatory variables, we run an ordinary least square (OLS) regression. We assume every transaction to be independent. We also use multiple control variables which is further

discussed in part 3.7. Specified financial explanatory variables all come from the acquiring firm post transaction.

Regression formula:

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(4) $Abnormal\ EBITDA\ margin = \beta0 + \beta1 * Serial\ acquirer + \beta2 * Log\ Market\ cap + \beta3 * Log\ ROA + \beta4 * Log\ P/E + \beta5 * Log\ Leverage + \beta6 * Log\ Cash/Total\ assets + \beta7 * Log\ Deal\ size/Total\ assets + \beta8 * Industry:\ Consumer\ Discretionary + \beta9 * Industry:\ Consumer\ Staples + \beta10 * Industry:\ Health\ Care + \beta11 * Industry:\ Industrials + \beta12 * Industry:\ Information\ Technology + \beta13 * Industry:\ Materials + \beta14 * Horizontal\ acquisition + \beta15 * Conglomerate\ acquisition + \beta16 * Payment\ Method:\ Equity + \beta17 * Payment\ Method:\ Debt + \beta18 * Payment\ Method:\ Mixed + \beta19 * Year\_2011 + \beta20 * Year\_2012 + \beta21 * Year\_2013 + \beta22 * Year\_2014 + \beta23 * Year\_2015 + \beta24 * Year\_2016 + \beta25 * Year\_2017 + \beta26 * Year\_2018 + \beta27 * Year\_2019 + \varepsilon$

(5) $Abnormal\ Gross\ Profit\ margin = \beta0 + \beta1 * Serial\ acquirer + \beta2 * Log\ Market\ cap + \beta3 * Log\ ROA + \beta4 * Log\ P/E + \beta5 * Log\ Leverage + \beta6 * Log\ Cash/Total\ assets + \beta7 * Log\ Deal\ size/Total\ assets + \beta8 * Industry:\ Consumer\ Discretionary + \beta9 * Industry:\ Consumer\ Staples + \beta10 * Industry:\ Health\ Care + \beta11 * Industry:\ Industrials + \beta12 * Industry:\ Information\ Technology + \beta13 * Industry:\ Materials + \beta14 * Horizontal\ acquisition + \beta15 * Conglomerate\ acquisition + \beta16 * Payment\ Method:\ Equity + \beta17 * Payment\ Method:\ Debt + \beta18 * Payment\ Method:\ Mixed + \beta19 * Year\_2011 + \beta20 * Year\_2012 + \beta21 * Year\_2013 + \beta22 * Year\_2014 + \beta23 * Year\_2015 + \beta24 * Year\_2016 + \beta25 * Year\_2017 + \beta26 * Year\_2018 + \beta27 * Year\_2019 + \varepsilon$

3.7 Control Variables

Our regression has multiple control variables to ensure that the analysis is correctly done and to further examine the results. Descriptive statistics are presented in 3.9. In order to isolate the effect of M&A transactions on cost synergies based on Gross Profit margin and EBITDA margin, it is essential to control for firm-specific and market-specific variables that might otherwise give false or skewed results. Time-fixed effects are included as our first control variable; thus, it controls macroeconomic conditions and industry trends that affect all firms in

our data set equally each year. Industry classification is also a critical variable because it accounts for industry-specific factors that could influence profitability and cost structures. Market capitalization is the variable accounting for company size. It is important since it is related to economics of scale which can affect the firm's ability to realize synergies. Return on Asset (ROA) and Price/Earnings (P/E) ratio are two measures that provide information regarding operational efficiency and a measurement of market valuation. The control variables Cash/Total asset and Leverage (Debt/Equity) ratio accounts for the firm's financial structure and liquidity, which could impact the M&A activity and integration success. Types of mergers are also considered in the regression analysis because of its different strategic intent behind the deal and how the differences between the types of mergers can impact synergy realization. Payment method is another essential control variable, which can impact the immediate financial stability of the merged entity post transaction. Deal size in relation to total assets accounts for the impact of the deal size relative to the company's scale. Furthermore, as discussed in 3.4, we define serial acquirers as entities that make eight or more acquisitions within a 10-year window. Finally, our analysis includes a control for multiple acquisitions; we employed a dummy variable to identify whether the acquiring firm engaged in other acquisitions during the two-year window post-announcement. This approach helped us isolate the effects of the studied transaction from other potential confounding activities, providing a clearer view of the synergies realized from the merger or acquisition.

The control variables were selected based on established research, adhering to accepted scholarly methodologies. Relevant studies on serial acquisitions, discussed in sections 2.3 and 2.8, set the foundation for our choice of these variables. By following the methodologies endorsed by previous research, we aim to ensure the robustness and validity of our analysis.

3.8 Diagnostics and Robustness Tests

To test the robustness of our regression, we will perform several diagnostic tests. We will use the Variance Inflation Factor (VIF) to quantify the severity of multicollinearity in our OLS regression. Additionally, we will conduct a White test to detect any heteroscedasticity in the regression model's error terms. These tests will help to ensure the reliability and validity of our regression models.

The regressions will, apart from base configuration, be made with change in Gross Profit margin and change in EBITDA margin instead of abnormal Gross Profit margin and abnormal EBITDA margin. This is done to check the model and ensure its robustness by

examining whether the findings hold true with different measures of performance. By using changes in these margins, we aim to validate the consistency and reliability of the results, ensuring that the observed effects are not specific to the abnormal metrics alone. We will also conduct regressions when defining serial acquirers as firms that engage in more than four transactions over a 10-year period. This is also done to control for robustness and ensure that our findings are not too sensitive to the specific definition of serial acquirers. This additional analysis will help confirm that the impact of serial acquirers on firm performance remains robust and significant across various definitions, thereby strengthening the overall conclusions of our study.

3.9 Descriptive Statistics

Before presenting the results of our analysis, we examine the descriptive statistics of our data set. This provides an overview of the key variables and helps to identify any initial patterns or anomalies. The following tables summarize the main descriptive statistics for the variables used in our study.

Industry	Number of Deals	Serial	Single
by Industry Classification Benchmark (ICB)			
Communication Services	18	13	5
Consumer Discretionary	9	4	5
Consumer Stapels	9	7	2
Healthcare	5	2	3
Industrials	34	21	13
Information Technology	8	3	5
Materials	1	1	0
Utilities	1	1	0
Total	85	52	33

Table 1 presents an overview of the number of transactions conducted in each industry.

Table 1 presents information regarding the number of transactions in various industries and the corresponding split share between single and serial acquirers. The sample includes acquisitions from eight different industries, where Industrials and Communication Services are the two most dominant sectors with M&A activity during the event window. Notably, these two sectors also have the largest share of serial acquirers. Materials and Utilities are the two

sectors with lowest M&A activity during the event window with only one serial acquirer in each sector.

Variable	Obs	Mean	Std. dev.	Min	Max
Abnormal EBITDA margin	81	.025	.131	-.313	.645
Abnormal Gross Profit margin	77	.006	.083	-.165	.237
Market cap	85	2575.786	5919.419	.100	39125.950
ROA	85	.026	.010	-.554	.156
P/E	72	36.020	68.972	.690	523.950
Leverage	85	.714	.658	.000	3.570
Cash/Total assets	85	.093	.101	.000	.426
Deal size/Total assets	85	.189	.355	.000	2.473

Table 2 presents descriptive statistics of the dependent variables and the financial control variables.

Table 2 presents descriptive statistics for our dependent variables and financial control variables, which reflects considerable variance across the data. Notably, Market cap and P/E ratio among others exhibit quite substantial variability because of their high standard deviation relative to their means, but also a broad range between their minimum and maximum values. This variability and the presence of extreme values suggest skewness in the distribution. Consequently, logarithmic transformations have been used on all of the financial independent variables to mitigate the effects of outliers and skewness to achieve a more normal distribution. This approach helped us to stabilize the variance and enhance the robustness of the regressions. For ROA, we applied the logarithm to the absolute value of ROA plus one, ensuring that both positive and negative values were appropriately transformed.

The abnormal EBITDA margin has a mean of .025, indicating a slight positive average within our data set, but shows significant variation between the minimum and maximum values. The same trend is seen for abnormal Gross Profit margin, but here the mean is .006. We chose not to exclude any extreme values due to our small sample size. Instead, we double-checked to ensure that the observations were accurate. This approach allows us to retain the full dataset, maintaining the integrity of our analysis while ensuring that the data points are valid and correctly recorded.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Number of Deals	7	7	6	4	6	6	10	16	13	10	85
Deals by: Serial acquirer	3	3	4	3	5	4	4	12	8	6	52
Deals by: Single acquirer	4	4	2	1	1	2	6	4	5	4	33

Table 3 presents a summary of the number of deals conducted each year, categorized by whether the deals were made by serial acquirers or single acquirers.

Table 3 outlines the distribution of M&A activity during the event window as well as classifying them into serial and single acquirer deals. Notably over the period, the number of deals fluctuated, with a steep increase in M&A activity in 2016 and 2017. Serial acquirers showed increased activity in 2017 with 12 deals, which shows a strategic pattern of frequent acquisitions during this year. On the other hand, single acquirers were most active in 2010, 2011, 2016, and 2018 with the number of single acquirer deals peaking at 6 in 2016.

Table 4 provides a correlation matrix over the financial control variables and its relationship with the dependent variables abnormal EBITDA margin and abnormal Gross Profit margin. Based on the correlation coefficient, all of the values are relatively low suggesting no significant level of multicollinearity. According to Brooks (2019), multicollinearity could become a concern if the independent variables exceed 0.8 or at least close to it. Thus, we do not experience any multicollinearity based on these matrices. Additionally, VIF tests was performed and is discussed in section 4.2 and 4.3.

Variable	Abnormal EBITDA margin	Abnormal Gross Profit margin	Serial Acquirer	Log Market cap	Log ROA	Log P/E	Log Leverage	Log Cash /Total assets	Log Deal size /Total assets
Abnormal EBITDA margin	1.000								
Abnormal Gross Profit margin	-.085	1.000							
Serial Acquirer	-.174	-.002	1.000						
Log Market cap	.011	-.005	.169	1.000					
Log ROA	-.264	.228	-.081	.413	1.000				
Log P/E	.384	-.171	-.477	.383	.217	1.0000			
Log Leverage	.018	.203	.179	-.183	-.363	-.190	1.000		
Log Cash/Total assets	-.012	-.123	-.266	.019	.181	.397	-.111	1.000	
Log Deal size/Total assets	.247	-.016	-.294	-.485	.068	.178	.104	.053	1.000

Table 4 presents a correlation matrix regarding our dependent variables and our financial control variables.

4. Results

4.1 Classical Tests of Hypotheses

In this section, we present the results of our empirical analysis. The tests are formulated to answer our Hypotheses. Using conventional statistical methods, we examine whether Swedish serial acquirers demonstrate superior cost synergy realization, as indicated by changes in abnormal EBITDA margin and abnormal Gross Profit margin, compared to single acquire firms.

Group	Obs	Rank sum	Expected	Group	Obs	Rank sum	Expected
(i) Base definition of Serial acquirer				(ii) Alternative definition of Serial acquirer			
0	30	1235	1230	0	22	940	902
1	51	2086	2091	1	59	2381	2419
Combined	81	3321	3321		81	3321	3321
Adjusted variance	10455				8870		
z	.049				.403		
Prob > z	.961				.687		
Exact prob	.965				.693		

Table 5 shows Mann-Whitney U test results for the independent variable Abnormal EBITDA margin: H0: diff=0.

The Mann-Whitney U test results presented in Table 5 analyse the effect serial acquirers have on the independent variable abnormal EBITDA margins. We also compare the results yielded from the two different definitions of serial acquirers, as mentioned in 3.8. For the base definition of a serial acquirer, the groups consist of 30 observations for single acquirers and 51 observations for serial acquirers. The rank sums are 1235 and 2086, respectively, with expected values closely matching the observed ranks. The test indicates that there is no significant difference between the two groups.

For the alternative definition of a serial acquirer, the groups consist of 22 observations for single acquirers and 59 for serial acquirers. The rank sums are 940 and 2381, respectively, with expected values again closely matching the observed ranks. The test statistic for this alternative model also indicates no significant difference between the two groups, seen by p >

0.05. Overall, the results suggest that there is no statistically significant difference in abnormal EBITDA margin between serial acquirers and single acquirers, regardless of the definition used.

Group	Obs	Rank sum	Expected	Group	Obs	Rank sum	Expected
(i) Base definition of Serial acquirer				(ii) Alternative definition of Serial acquirer			
0	29	1272	1230	0	22	945	858
1	48	1731	2091	1	55	2058	2145
Combined	77	3003	3003		77	3003	3003
Adjusted variance	9048				7865		
z	1.482				.981		
Prob > z	.138				.327		
Exact prob	.140				.332		

Table 6 shows Mann-Whitney U test results for the independent variable Abnormal Gross Profit margin: H0: diff=0.

Further, Table 6 shows Mann-Whitney U test which is used for analysing the potential effect serial acquirers have on the independent variable abnormal Gross Profit margins. The test statistic is 1.482 with a p-value of .138, indicating no significant difference between the two groups. For the alternative definition of a serial acquirer, the test statistic is .981 with a p-value of .327, which also indicates no significant difference between the two groups. The exact probability in this case is .332, reinforcing the non-significant result. Overall, these findings suggest that there is no statistically significant difference in performance, measured as abnormal Gross Profit margin between serial acquirers and single acquirers.

Group	Obs	Mean	Std. Err.	Group	Obs	Mean	Std. Err.
(i) Base definition of Serial acquirer				(ii) Alternative definition of Serial acquirer			
0	30	.048	.034	0	22	.066	.045
1	51	-.012	.012	1	59	.010	.010
Combined	81	.025	.015		81	.025	.015
Diff		.036	.030			.056	.032
t	1.112				1.736		
Pr(T>t)	.115				.043		
Degree of freedom	79				79		

Table 7 shows T-test results for the independent variable Abnormal EBITDA margin: Ha: diff > 0.

Table 7 summarizes the performed two-sample t-tests comparing the abnormal EBITDA margin between serial acquirers and single acquirers using two different definitions of a serial acquirer. First, we will examine the results for our base case definition. For single acquirers (Group 0), the mean abnormal EBITDA margin is .048, while for serial acquirers (Group 1), it is .012. The difference in means is .036, suggesting that single acquirers have a higher mean abnormal EBITDA margin. However, the t-test results show a t-statistic of 1.122 and a p-value of .115, which is greater than the common significance level of .05. This means we fail to reject the null hypothesis, indicating no statistically significant difference between the two groups. The analysis suggests that serial acquisitiveness does not significantly impact the abnormal EBITDA margin. Therefore, the observed higher mean for single acquirers does not hold statistical significance, implying that both groups perform similarly in terms of abnormal EBITDA margin.

However, when using the alternative definition of a serial acquirer (more than four transactions over a 10 year-period) the mean abnormal EBITDA margin for single acquirers is .066, while for serial acquirers, it is .010. The difference in means is .056, which suggests a higher mean abnormal return EBITDA margin for single acquirers. Furthermore, this t-test shows a t-statistics of 1.736 and a p-value of .043, which is less than the significance level of .05. These results suggest that according to the alternative defitnition of serial acquirer, single acquirers significantly outperform serial acquirers in terms of abnormal EBITDA margin.

Group	Obs	Mean	Std. Err.	Group	Obs	Mean	Std. Err.
(i) Base definition of Serial acquirer				(ii) Alternative definition of Serial acquirer			
0	29	.023	.017	0	22	.026	.022
1	48	-.005	.011	1	55	-.002	.010
Combined	77	.006	.010		77	.006	.010
Diff		.028	.019			.028	.021
t	1.433				1.354		
Pr(T>t)	.078				.090		
Degree of freedom	75				75		

Table 8 shows T-test results for the independent variable Abnormal Gross Profit margin: Ha: diff > 0.

The results presented in Table 8 summarize the performed two-sample t-tests comparing the abnormal Gross Profit margin between serial acquirers and single acquirers. First, we will examine the results for our base case definition. For single acquirers, the mean

abnormal Gross Profit margin is .023, while for serial acquirers, it is -.005. The difference in means is .028, indicating that single acquirers have a higher mean abnormal Gross Profit margin compared to serial acquirers in our sample. The t-test results show a t-statistic of 1.433 with 75 degrees of freedom and a p-value of .078. This p-value is greater than the common significance level of .050 but is less than 0.100, suggesting that the difference is not statistically significant at the 95% confidence level but is significant at the 90% confidence level. At the 90% confidence level, the p-value suggests an indication that single acquirers might perform better in terms of abnormal Gross Profit margin. Therefore, while the evidence is not strong enough to confirm a significant difference at the 95% level, there is a suggestion of marginal significance at the 90% level, implying that single acquirers could have a slight advantage over serial acquirers in this context.

Furthermore, by once again looking at our alternative definition of a serial acquirer the mean abnormal Gross Profit margin for single acquirers is .026, while for serial acquirers, it is -.002. The difference in means is .028, again indicating a higher mean abnormal Gross Profit margin for single acquirers. Also the t-test results show a t-statistic of 1.354 and a p-value of .090, which is less than .100, suggesting significance at the 90% confidence level. With 75 degrees of freedom, these findings suggest that, based on the alternative definition of a serial acquirer, single acquirers may possess an advantage in abnormal Gross Profit margin over serial acquirers.

4.2 Regression abnormal EBITDA margin

By employing a variety of statistical techniques, we aim to exhibit if serial acquirers are superior at to utilizing cost synergies compared to their single acquirer counterparts. The subsequent analyses provide insights into the financial performance and efficiency gains achieved through serial acquisition strategies.

	(i) Base model		(ii) Adjusted serial		(iii) - P/E		(iv) % Change	
	Coefficient	Std. err.	Coefficient	Std. err.	Coefficient	Std. err.	Coefficient	Std. err.
Serial acquirer	-.065	.052	.006	.047	-.061	.037	.025	.024
Log Market cap	.031	.039	.048	.029	.031	.019	.007	.016
Log ROA	-.310	.611	-1.769***	.479	-.437*	.234	-.174	.299
Log P/E	.093	.076	.015	.057			-.007	.028
Log Leverage	.068	.063	-.007	.049	.058	.036	.020	.026
Log Cash/Total assets	-.022	.063	.023	.050	-.034	.038	.048*	.025
Log Deal size/Total assets	.039	.041	.063*	.033	-.004	.026	.020	.017
Industry: Consumer Discretionary	.039	.076	.066	.059	.057	.054	.054	.032
Industry: Consumer Staples	.095	.075	.069	.056	.125**	.052	.019	.033
Industry: Health Care	.310***	.115	.380***	.091	.392***	.080	.061	.043
Industry: Industrials	.016	.050	.033	.040	.036	.038	.023	.022
Industry: Information Technology	.137	.099	-.028	.080	-.041	.063	-.010	.048
Industry: Materials	.215	.157	.175	.124	.182	.133	.179**	.068
Horizontal acquisition	-.028	.069	-.004	.054	-.031	.052	.011	.030
Conglomerate acquisition	-.082	.080	-.064	.062	-.076	.058	.011	.034
Payment Method: Equity	.012	.119	-.080	.093	.058	.064	-.094*	.048
Payment Method: Debt	.087	.073	.040	.058	.039	.051	-.016	.032
Payment Method: Mix	-.059	.054	-.057	.045	-.044	.038	-.033	.024
Year_2011	-.134	.131	-.140	.100	-.023	.081	-.002	.053
Year_2012	-.008	.096	-.119	.073	-.048	.072	-.028	.043
Year_2013	-.090	.117	-.165*	.089	-.043	.080	-.067	.050
Year_2014	-.035	.096	-.103	.072	-.054	.070	-.055	.042
Year_2015	-.086	.117	-.042	.091	.081	.085	-.024	.052
Year_2016	-.129	.106	-.154*	.083	-.109	.071	-.036	.045
Year_2017	-.036	.087	-.073	.066	-.035	.063	.004	.038
Year_2018	-.093	.097	-.101	.072	.005	.066	-.010	.042
Year_2019	-.070	.090	-.106	.070	-.067	.069	.000	.039
_cons	-.026	.230	.144	.180	-.019	.127	.085	.099
Number of obs	68		68		81		68	
F-statistic	2.17		2.8		1.990		1.180	
Prob > F	.013		.002		.016		.310	
R-squared	.594		.654		.503		.450	
Adj R-squared	.320		.421		.250		.070	

Note: Significance levels: * p < .1, ** p < .05, *** p < .01

Table 9 presents regression on Abnormal EBITDA margin. regression formula is provided in 3.6.

Table 9 presents the regression results for the analysis of abnormal EBITDA margins, testing Hypothesis 1. The models include various adjustments to examine the impact of serial acquisitions on EBITDA margins. In the base model (i), the R-squared value is .594, indicating that approximately 59% of the variance in abnormal EBITDA margin is explained by the predictors, while the adjusted R-squared is .320. This disparity suggests potential overfitting, as the adjusted R-squared accounts for the number of predictors.

Model (ii), which uses the alternative definition for serial acquirers, shows an improved R-squared of .654 and an adjusted R-squared of .421, indicating a better fit compared to the base model. Model (iii), which excludes the P/E ratio, results in a lower R-squared of .503 and an adjusted R-squared of .250, implying a reduction in explanatory power when excluding the variable for P/E. The reason behind excluding the variable P/E in model (iii) lies in the missing values, affecting the number of observations included in the regression. Finally, model (iv) considers only the percentage change in EBITDA margins rather than the abnormal margins, which are compared to a peer group. This model has an R-squared of .450 and an adjusted R-squared of .070, indicating a significant drop in explanatory power.

Across all models, the variable for serial acquirers does not show a significant effect on abnormal EBITDA margins, suggesting that serial acquirers do not significantly impact the realization of cost synergies. Notably, the healthcare industry dummy is significant at the 1% level in models (i), (ii), (iii), indicating that acquirers in this sector may be more effective at realizing cost synergies. Additionally, the ROA variable is significant at the 1% level in (ii) and at the 10% level in the -P/E model. The Deal size/Total assets variable is significant at the 10% level in (ii), while the industry: Materials is significant at the 5% level in (iv). The Payment method: Equity variable is significant at the 10% level in (iv), suggesting that acquisitions financed through equity may have an impact on EBITDA margins. These significant variables highlight specific factors that can influence abnormal EBITDA margins. Overall, while the models provide insights into the predictors of abnormal EBITDA margins, the results underscore the need for a larger sample size to capture more subtle effects and improve model robustness.

The results of White's test for heteroskedasticity, applied to the base regression analysis on abnormal EBITDA margin, indicate no significant evidence of heteroskedasticity. The result of the White's test is found in Table 11, located in the appendix. The base models' results were also strengthened by a conducted VIF test for multicollinearity which yielded a mean VIF of 3,14. The results showed no signs of worrying multicollinearity. Together these diagnostics

suggest that the regression model for abnormal EBITDA margin is reliable and that the results can be interpreted with confidence.

4.3 Regression abnormal Gross Profit margin

Continuing with our second model, we examine the potential relationship between the performance, operationalized as abnormal Gross Profit margin, among serial acquirers compared to performance of single acquirers. As in 4.2, we performed a White's test for heteroskedasticity for the (i) base model, seen in Table 12. The result indicated no significant evidence of heteroskedasticity. The base models' results were also strengthened by a conducted VIF test for multicollinearity which yielded a mean VIF of 3,12. Thus, the results showed no signs of worrying multicollinearity. Together these findings suggest that the base regression model for abnormal Gross Profit margin is reliable and that the results can be interpreted with confidence.

	(i) Base model		(ii) Adjusted serial		(iii) - P/E		(iv) % Change	
	Coefficient	Std. err.	Coefficient	Std. err.	Coefficient	Std. err.	Coefficient	Std. err.
Serial acquirer	-.117*	.064	.023	.035	-.049*	.029	-.036	.032
Log Market cap	.006	.046	-.040*	.023	.000	.014	-.045*	.023
Log ROA	.498	.719	.914**	.363	-.161	.175	1.322***	.360
Log P/E	.040	.090	.033	.044			-.005	.046
Log Leverage	.055	.076	.095**	.038	.046*	.027	.108***	.036
Log Cash/Total assets	-.077	.073	-.038	.038	-.027	.028	-.036	.035
Log Deal size/Total assets	-.069	.046	-.016	.024	.012	.019	-.026	.024
Industry: Consumer Discretionary	-.110	.095	-.062	.048	-.035	.043	-.054	.045
Industry: Consumer Staples	-.030	.087	-.014	.042	-.002	.038	.019	.041
Industry: Health Care	-.066	.135	.006	.067	-.012	.058	.040	.065
Industry: Industrials	-.096	.062	-.033	.031	-.015	.028	-.008	.030
Industry: Information Technology	-.141	.105	-.024	.053	-.009	.044	-.033	.054
Industry: Materials	.510***	.182	.037	.092	.033	.096		
Horizontal acquisition	-.002	.081	.021	.040	-.013	.038	-.006	.038
Conglomerate acquisition	.016	.095	.004	.047	-.039	.043	-.019	.045
Payment Method: Equity	.110	.145	-.020	.072	.007	.049	-.008	.072
Payment Method: Debt	.046	.086	-.056	.044	-.017	.038	-.054	.042
Payment Method: Mix	.067	.061	-.040	.033	-.019	.028	-.058	.035
Year_2011	.140	.149	.019	.074	-.002	.058	.045	.073
Year_2012	.137	.124	.002	.060	.033	.060	.046	.062
Year_2013	.239*	.136	.071	.066	.158***	.059	.101	.067
Year_2014	.026	.113	-.017	.054	.002	.052	.035	.054
Year_2015	.062	.126	-.003	.060	.010	.058	.019	.061
Year_2016	.112	.123	-.051	.062	-.017	.052	-.060	.063
Year_2017	.147	.099	.013	.049	.032	.046	.040	.050
Year_2018	.015	.115	-.057	.056	-.062	.049	-.018	.057
Year_2019	.074	.110	-.022	.055	-.009	.052	.010	.056
_cons	-.243	.260	-.015	.130	.062	.092	.043	.131
Number of obs	65		65		77		65	
F-statistic	1.45		.970		1.06		1.650	
Prob > F	.144		.521		0.421		.086	
R-squared	.515		.416		0.355		.566	
Adj R-squared	.161		-.011		0.019		.224	

Note: Significance levels: * p < .1, ** p < .05, *** p < .01

Table 10 presents regression on Abnormal Gross Profit margin. regression formula is provided in 3.6.

Table 10 presents the regression results for the analysis of abnormal Gross Profit margins, testing Hypothesis 2. The models for Gross Profit margin include the same various adjustments as in 4.2. In the base model (i), the R-squared value is .515, indicating that approximately 51.5% of the variance in abnormal Gross Profit margin is explained by the predictors, while the adjusted R-squared is .161. Model (ii), which uses the alternative definition for serial acquirers, shows an R-squared of .416 and an adjusted R-squared of -.011, indicating a worse fit compared to the base model. Model (iii), which excludes the P/E ratio, results in a lower R-squared of .355 and an adjusted R-squared of .019, implying a reduction in explanatory power when excluding the variable for P/E. Finally, model (iv) has an R-squared of .566 and an adjusted R-squared of 0.224. As seen by Prob > F, none of the models seems efficient in predicting the outcome of abnormal Gross Profit margin.

The variable for serial acquirers shows a significant effect in model (i) and (iii) at the 10% level, suggesting that serial acquirers might have some impact on the realization of cost synergies. There are additionally differences in significance among the financial independent variables, compared to the significant variables in 4.2 (regression for abnormal EBITDA margin). Market cap showed a significant effect in (ii) and (iv). Furthermore, Leverage also showed significance in (ii), (iii) and (iv). However, contradicting the results in 4.2, Cash/Total assets, Consumer Staples, Health care and Equity did not yield any significant effect on abnormal performance.

In conclusion, while the models reveal that specific variables can have a significant impact on synergy realization, we cannot with confidence prove any significant effect of serial acquirers. This analysis may highlight the need for more focused models that perhaps reduces the number of variables to those most impactful, or considers an expansion of the dataset to more robustly capture the subtleties effect of serial acquisitions. Further exploration and refinement are necessary to construct a model that can effectively disentangle the nuanced relationships influencing abnormal Gross Profit margins and abnormal EBITDA margins without overfitting or under-specifying the effects of crucial variables.

5. Discussion

5.1 Are Economies of Scope and Scale Observable?

As presented in Table 2, the mean abnormal EBITDA margin was positive at approximately 2.5 percentage points. This indicates that our observations, on average, performed better than the peer groups. EBITDA includes operating expenses such as SG&A, capturing the potential effects of economies of scope. Assuming the peer groups, on average, were not as active in M&A as our sample, it could suggest that acquiring firms can effectively utilize economies of scope. This implies that acquiring firms are able to leverage specific skills or assets to enhance the performance and synergies of the combined entity. This capability allows them to support and integrate different components effectively, leading to improved overall outcomes for the merged firm.

The abnormal Gross Profit margin, also presented in Table 2, shows a lower but still positive mean of about .6 percentage points. This metric is a more accurate indicator of the effect of economies of scale because it focuses solely on the cost of goods sold relative to revenue. Berk & Demarzo (2017) explain that larger clients can leverage their buying power to negotiate better prices and terms with suppliers. This purchasing advantage means that, due to larger volumes of goods or services purchased, suppliers may offer discounts, lower prices, or other favourable conditions. However, based on our observations, this effect may be marginal, especially when compared to the abnormal EBITDA margin and the potential impact of economies of scope.

While our observations suggest the positive effects of both economies of scope and scale, there also appears to be a trend towards diseconomies of scale. When interpreting the results in Table 8, we observe that the most active acquirers exhibit a negative abnormal Gross Profit margin compared to the less active acquirers. Gaughan (2017) explains that as firms expand, they may encounter higher costs and other challenges associated with coordinating larger-scale operations. This could explain why the serial acquirers in our sample tend to perform slightly worse than the single acquirers. The increased complexity and higher operational costs may outweigh the benefits of economies of scale, leading to diminishing performance.

5.2 Is There Any Evidence of Learning or Hubris?

Aktas et al. (2009) argued that declining abnormal performance from deal to deal is not sufficient to reveal the presence of hubris. Even though our results were not significant in broad terms, we did not find any indications of learning among serial acquirers. Instead, our results, if something, indicated that serial acquirers were less likely to utilize cost synergies effectively compared to single acquirers. However, it is likely that all companies in our sample had conducted M&A transactions before our observation period, and they might have learned from those deals. This could explain why our sample on average performed better than the peer groups, assuming the peer groups did not engage in any acquisitions during the respective event windows. Such an interpretation would support Aktas et al. (2009), who suggest that experienced acquirers are better at realizing synergies and that M&A experience leads to more effective integration. Kengelbach et al. (2012) agreed with Aktas et al. (2009) but argued that learning depends not on the quantity of transactions but on the type of deals, an area that warrants further study. Kengelbach et al. (2012) also explained that an organization's capacity to integrate is limited. Therefore, while serial acquirers may improve at realizing synergies, there is a limit to an organization's integration ability. This limitation could explain the indications of worse performance from the more frequent acquirers in our sample.

As presented in sections 4.2 and 4.3, our regression results do not show any strong significant effect of serial acquisitions on abnormal performance. However, the t-test indicated significant underperformance by serial acquirers, compared to single acquirers, on abnormal Gross Profit margin at the 10% significance level. Giannopoulos et al. (2017) explained that serial acquirers suffer from hubris, which can potentially explain the lower mean performance observed among serial acquirers on both measures. If managers succeed with their initial transactions, they may become overconfident in their ability to realize cost synergies and therefore may not exert the necessary effort to achieve their targets.

These results can also be discussed in the context of broader M&A research, where there is a critical distinction between managerial intentions. Agency theory, initially conceptualized by Ross (1973) and further developed by Jensen & Meckling (1976), suggests that agents might pursue personal gains at the expense of shareholder value. The separation of ownership and control, as described by Berle & Means (1932), can exacerbate these issues, leading to decisions that do not align with shareholder interests. This study's findings highlight the potential consequences of such misalignments, suggesting that serial acquisition strategies

might not lead to the anticipated synergies and could potentially result in worse performance compared to single acquirers.

5.3 Effect of serial acquisitions

Grant et al. (2022) argued that serial acquirers develop pre-merger capabilities that help them better identify the targets potential. This implies that serial acquirers should be able to find targets where they can more easily utilize cost synergies, thereby performing better than single acquirers. However, they noted that not all serial acquirers manage this due to the extensive experience needed to develop expertise and routines in M&As. Our study does not find indications supporting this view. Instead, it seems that serial acquirers either do not learn or generally become worse at utilizing cost synergies. It would be interesting to follow Hossein et al. (2022) and examine if the first transaction sets the tone for utilizing cost synergies, not only abnormal returns.

Renneboog & Vansteenkiste (2019) concluded that the performance of serial acquirers consistently declines as firms increase their acquisitiveness. This underperformance appears consistent regardless of the event window or methodological approach used in the studies. The primary reasons for this underperformance could be poor acquirer governance and inadequate merger execution and integration. Our study does not contradict this finding. However, since our result is not significant at the 5% level, it might indicate that in Sweden, there is no significant effect of having made several acquisitions on a company's cost saving performance.

The most common strategy for creating value in mergers and acquisitions is to enhance the performance of the target company by significantly reducing costs, thereby improving margins and cash flows. According to Acharya et al. (2013), private equity firms excel at realizing cost synergies more effectively than peer companies. This proficiency may be attributed to PE firms frequently engaging in acquisitions, positioning them as serial acquirers. However, our study reveals no abnormal performance among serial acquirers, suggesting that factors other than experience might contribute to the superior performance of PE firms compared to their peers. The complexity inherent in M&A transactions possibly necessitates deep engagement in the acquisitions market, which could be crucial for gaining the expertise required to surpass peer groups in performance.

Chaturvedi & Weigelt (2024) evaluated whether acquisitions place more emphasis on realizing cost versus revenue synergies. By measuring changes in EBITDA margins, similar to our methodology, they managed to capture the realizations of cost synergies. Their results

showed that experience with cost synergies utilization had a marginally positive effect on EBITDA margins and that serial acquirers were better at realizing both cost and revenue synergies. In contrast, our study did not yield the same result, suggesting there might be differences for Nordic companies compared to their American counterparts, even though the logical assumption would be that firms improve at integrating acquisitions with increased experience. However, one explanation for the differing results could be cultural differences. For instance, Swedish firms might prioritize consensus and gradual integration, potentially slowing down the realization of cost synergies. Conversely, American firms, often characterized by a more aggressive and results-oriented culture, might push faster for integration and cost-cutting measures. The U.S. might also offer a more dynamic economic environment where cost efficiencies can be more readily extracted and leveraged for competitive advantage. Sweden, known for its strong social welfare system and high employment security, might find it harder to realize synergies as quickly. As our event window only spans two years, this might not capture the realization of cost synergies if they appear later in Swedish acquisitions.

Furthermore, Laamanen & Keil (2008) found that a high rate of acquisitions generally led to negative performance. Their research showed that acquisition experience had moderate negative effects, which argue against the learning hypothesis and align more with our results.

5.4 Cumulative Wisdom or Compounding Complexity

The study finds no support for any of the Hypotheses. Swedish serial acquirers, if something, seems to be less effective at realizing cost synergies. The study does not support the hypothesis that Swedish serial acquirers are more effective at realizing cost synergies, as measured by changes in EBITDA margin. The regression analysis of abnormal EBITDA margin shows that the variable for serial acquirers has no significant effect. Likewise, the T-test and Mann-Whitney U test comparing the abnormal EBITDA margins of serial and single acquirers reveals no statistically significant difference between the two groups. Consequently, Hypothesis 1 is not supported, suggesting there may be no performance difference between single and serial acquirers.

Similarly, the regression analysis in Table 10 reveals a coefficient for serial acquirers that is not significant at the 5% level, though it is marginally below the 10% threshold, suggesting that the experience of serial acquisitions does not positively impact abnormal Gross Profit margins. Furthermore, the Mann-Whitney U test, Table 6, for Gross Profit margin does

not present any significant difference between the performance of serial and single acquirers. However, the T-test results indicate that single acquirers have a higher mean abnormal Gross Profit margin compared to serial acquirers, with the difference being marginally significant at the 90% confidence level. Our findings highlight a noticeable difference in mean performance between single and serial acquirers within the sample, suggesting that serial acquisition strategies might lead to less favourable outcomes in terms of Gross Profit margin improvements which contradict the learning hypothesis.

The study therefore suggests that the performance of Swedish serial acquirers, in terms of realizing cost synergies, may not significantly differ from that of single acquirers. In fact, the findings indicate that serial acquirers might be worse at utilizing cost synergies compared to single acquirers. The lack of strong significant findings could be influenced by various factors, including the complexities inherent in M&A transactions and the sample size. These results underscore the need for further research with an expanded datasets to better understand the nuanced relationships influencing cost synergies in M&A transactions.

6. Conclusion

This study has examined if Swedish serial acquirers demonstrate an improved ability to realize synergies in subsequent acquisitions compared to their initial ones. Interestingly, the results point towards potential diseconomies of scale among the most active acquirers. This finding supports Gaughan (2017), who argued that larger operations might face higher coordination costs, ultimately diminishing performance. The trend also suggests that while economies of scope, in many cases, are leveraged effectively, economies of scale present a more significant challenge as firms expand.

The study further explores the concepts of learning and hubris in serial acquisitions. Contrary to Aktas et al. (2009) and Kengelbach et al. (2012), the results do not show clear evidence of learning among serial acquirers. Instead, there is a suggestion of underperformance, potentially due to managerial hubris. The examination of serial acquisitions also reveals that despite the theoretical advantages proposed by Grant et al. (2022) and Chaturvedi & Weigelt (2024), Swedish serial acquirers do not exhibit superior performance in synergy realization. The results align more closely with Renneboog & Vansteenkiste (2019) and Laamanen & Keil (2008), with a decline in performance with increased acquisitiveness. This suggests that the complexity and governance challenges in M&A may outweigh the potential benefits of experience.

Based on a thorough literature review and multiple statistical tests, our results indicates that serial acquirers do not have an improved ability to realize synergies. In our sample, consisting of 85 closed M&A deals ranging from 2010 – 2019, single acquirers overperformed the serial acquirers, which contradicts our Hypotheses and the learnings hypothesis. These conclusions contribute to the broader M&A literature by emphasizing the importance of strategic integration capabilities. Serial acquisition strategies should address the inherent challenges and be aware of the potential of managerial overconfidence.

Finally, further research could explore several areas to deepen the understanding of cost synergies in M&A transactions. One promising direction is to conduct a comparative analysis between Swedish serial acquirers and their counterparts in different regions to examine if cultural or regulatory differences impact the realization of cost synergies. Additionally, future studies could investigate the long-term performance of serial acquirers beyond the two-year window used in this study to capture potential delayed synergies. Moreover, qualitative studies focusing on the integration processes and managerial practices among serial acquirers could provide valuable insights into why some firms succeed while others do not.

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Appendix

White's test
H0: Homoskedasticity
Ha: Unrestricted heteroskedasticity
chi2(67) = 68.000
Prob > chi2 = .443

Source	chi2	df	p
Heteroskedasticity	68.000	67	.443
Skewness	16.150	27	.950
Kurtosis	1.330	1	.249
Total	85.480	95	.747

Table 11 presents White's test made for regression on Abnormal EBITDA margin.

White's test
H0: Homoskedasticity
Ha: Unrestricted heteroskedasticity
chi2(67) = 65.000
Prob > chi2 = 0.442

Source	chi2	df	p
Heteroskedasticity	65.000	64	.442
Skewness	18.900	27	.874
Kurtosis	2.350	1	.125
Total	86.250	92	.650

Table 12 presents White's test made for regression on Abnormal Gross Profit margin.