



SCHOOL OF
ECONOMICS AND
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Single Sourcing Financing and Advice in M&A

An Event Study of Selected Non-Financial Companies listed on
Nasdaq Stockholm.

By

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ABSTRACT

This thesis is done in collaboration with Nordea Corporate Finance. It was borne out of the need to examine the effect single sourcing acquisition deals has on value creation for acquiring shareholders. A short-term event study methodology with varying event windows was employed to empirically test this effect. The sample is made up of 69 M&A deals involving non-financial firms listed on Nasdaq Stockholm between 2000 and 2020. To measure if single sourced deals created more value than deals that were not, the study focuses on abnormal returns following the announcement of an acquisition. The results suggest that, contrary to general findings, mergers and acquisitions created value, in terms of abnormal returns, for the shareholders of the observed acquiring firms. However, outcomes from the cross-sectional regressions fail to provide sufficient evidence to support the notion that single sourced deals influence the creation of more value for acquiring shareholders than multiple sourced deals.

Keywords: Single Sourcing, M&A Value Creation, Event Study

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LIST OF ABBREVIATIONS

AAR	Average Abnormal Returns
AR	Abnormal Returns
BPG	Breusch-Pagan-Godfrey
CAAR	Cumulative Average Abnormal Returns
CAPM	Capital Asset Pricing Model
CAR	Cumulative Abnormal Returns
EMH	Efficient Market Hypothesis
M&A	Mergers and Acquisitions

1. INTRODUCTION

1.1 BACKGROUND TO THE STUDY

Mergers & Acquisitions (hereafter M&A) are a well-known means of business strategy of combining or purchasing companies to create value, predominantly in the form of improved synergies, amongst other benefits. M&As are one of the most important corporate finance activities that result in a substantial reallocation of resources, and as such Acquiring and Target Firms seek the support of financial advisors throughout an M&A transaction process. The financial advisors, typically investment banks, act as agents on behalf and in the best interests of the party being advised (Golubov, Petmezas & Travlos, 2012; Morkoetter, 2017).

The roles carried out by these investment banks have been broadly categorised into three (Bao & Edmans, 2011; McLaughlin, 1990; Servaes & Zenner, 1996). First, the identification and structuring of potential acquisition deals. The second category relates to investment banks employing unbiased strategic activities that protect and benefit their clients. Lastly, they provide valuations, and in some cases, finance the M&A operation. Low interest rate environments induce the shift of banking operations from interest generating to fee related and trading activities (Brei, Borio & Gambacorta, 2019). A sustained low interest rate environment like one in which a lot of banks today find themselves in, along with unconventional monetary policies aimed at restoring confidence in the banking sector, have over time chipped away at the income generatable by traditional lending activities, and consequently overall shareholder value. This reduction in earning capabilities has been further exacerbated by the implementation of Basel III, which has served to accelerate a long-term strategy among full service financial institutions to seek to combine the provision of acquisition financing with advisory services. As advisors to both targets and acquirers, financial institutions also get the chance to employ their information gathering expertise to ascertain the reservation price of the merger counterparty, the potential for synergistic gains, as well as the risks of the transaction (Allen, Jagtiani,

Peristiani & Saunders, 2004). Allen and Peristiani (2007) provide evidence of acquirers who single sourced their acquisition deal being granted non-acquisition loans post-merger announcement at below market prices. Financial institutions can claim that their clients stand to gain other several benefits from single sourcing bundled services, such as funding and bidding process optimization, increased analysis providing credit comfort on the part of the financier which in turn enables more aggressive funding structures, and lower lending costs subsidised by advisory fees across the whole funding syndicate. Banks may be well positioned and incentivized to offer these services, particularly in situations where pre-existing relationships with either party to the acquisition deal have already been cultivated.

A short-term analysis of stock price reactions to M&A announcements using varying event windows indicated that M&A did create value for acquiring shareholders. The sample, however, could not provide enough evidence to support the hypothesis that single sourcing creates higher returns and is more efficient than multiple sourced deals. It should be noted that the lack of evidence from the sample does not prove either that single sourced deals create less value than multiple sourced deals, to acquiring shareholders.

1.2 STATEMENT OF THE PROBLEM

A significant number of literature dedicated to this subject matter have largely cast their attention on the probable ills, reduced acquirer returns and conflicts of interest that are bound to arise should financial institutions provide an acquisition client with the combined services of raising capital and serving as an advisor on the M&A deal (Allen et al. 2004; Ertugrul & Krishnan, 2014). Although Siming (2011) finds that merger advising fees collected by dual role advisors are lower than for non-dual role advisors, this variance is explained as being the result of discontented shareholders paying relatively less. McLaughlin (1992) examines the incentives banks have, and the agency problems that stem from their participation in corporate finance

advisory activities. Servaes and Zenner (1996) challenge the belief that investment banks play important roles in the acquisition process, and report that there were no benefits in terms of announcement abnormal returns to firms who engaged the services of highly reputable third-party investment banks in comparison to firms who executed acquisition deals inhouse. Consequently, this focus has resulted in a lack of empirical evidence to support the beneficial claims in terms of a higher success rate among acquirers single sourcing funding and financial advice. While other papers have investigated this subject area from the perspective of returns earned by acquirers versus targets of single sourced deals, this study presents a different and new take on the subject matter. This take is based on the point of view of returns earned by the acquirers of single versus multiple sourced deals. The target party is not observed due to the non-availability of sufficient data and the generalisation that a large portion of M&A value created transfers to target shareholders. This paper aims to fill this gap by empirically investigating the benefits, if any, derivable from single sourcing acquisition financing and advisory services.

1.3 RESEARCH OBJECTIVES

Using a sample of 69 M&A deals completed between 2000 and 2020, involving non-financial acquiring companies listed on Nasdaq Stockholm, this study seeks to determine the extent to which M&A clients who single sourced have been more successful than those who did not, in terms of abnormal returns to shareholders. As well as to measure efficiencies attributable to sourcing financial and advisory services from a single financial service provider as opposed to multiple sourcing.

1.4 STRUCTURE OF THE THESIS

The remainder of this thesis is structured in the following way: Chapter 2 provides a review of previous empirical literature that cover theories underpinning this study. Chapter 3 describes the sourcing, categorisation, and limitations of the data of the study. Chapter 4 discusses the research methodology, as well as statistical tools used for data analysis. Chapter 5 presents the findings of the study. Chapter 6 reports the conclusion and recommendations for further research.

2. LITERATURE REVIEW

2.1 M&A THEORY

Theoretically, the simple logic of synergy implies that M&A create value for shareholders. Previous studies have consistently concluded that acquisitions create value for all shareholders involved (Andrade, Mitchell & Stafford, 2001; Bhagat, Dong, Hirshleifer & Noah, 2005). This has led to a substantial part of empirical M&A literature being dedicated to investigating how this value is distributed between acquirer and target shareholders. The general consensus tended to be that acquirer shareholders made returns that were statistically insignificant from zero (Alexandridis, Petmezas & Travlos, 2010; Martynova & Renneboog, 2008; Moeller, Schlingemann & Stulz, 2005). The accrual of M&A value created to target shareholders occurs for a number of reasons, acquisition premium being the most culpable. Mueller and Sirower (2003) find that acquirers are often unable to create value of improvements that are higher than the steep premium usually paid for the target firm. Berkovitch and Narayanan (1993) posited that acquirers share more synergy value with target shareholders than they retain,

especially in situations where the target is in a better negotiating position. Acquiring firms also incur other acquisition related expenses such as costs associated with change of control and integration. In addition to which takeover defences, fair price amendments and antitakeover provisions make M&A difficult for acquirers and boost the bargaining position of target firms at the expense of their prospective acquirers (Weston & Chung, 1990).

2.1.1 MOTIVES

Despite collective evidence that M&A is largely value destroying for acquiring firms, recurring surges in M&A activity can still be observed. Berkovich and Narayanan (1993) suggest three major motives for acquisition, which are synergy, agency and hubris. The creation of synergy value materialises in two main forms: Operating and Financial. Bruner (2005) proposes that opportunities to capture synergies are greater for the acquiring firm when the strategy for acquisition is focus rather than diversification, as this offers prospects for cost reductions and other efficiencies because of an overlap of assets owned by both acquirer and target firms. Morck, Shleifer and Vishny (1990) report that acquisitions driven by diversification and growth motives result in systematically lower announcement day returns for acquiring firms.

Serial acquirers are not as restricted as targets who have to provide persuasive justifications to shareholders for approvals on acquisition deals (Allen et al. 2004). Acquiring managers may pursue acquisition deals that improve certain performance metrics, disregarding the bigger picture of value creation. The agency motive defines this incident. It proposes that managers, particularly those with access to excess free cashflow, engage in M&A deals for entrenchment and/or empire building reasons, usually at the expense of the shareholders (Jensen, 1986).

Roll (1986) theorises the hubris hypothesis that explains management's overconfidence in their own ability to integrate and create synergy value post-acquisition as the reason behind the excessiveness of acquisition premiums. Rarely are target firms ever so mismanaged to the point

where high premiums can be vindicated by the value realised post-acquisition. This is backed up by Malmendier and Tate (2005) who find that overconfident managers are likely to overpay for target companies and undertake value-destroying acquisitions. The effects are more pronounced when the acquisition is funded internally with cash financing. Cools, Gell, Kengelbach and Roos (2007) find that deals above \$1 billion in value destroy nearly twice as much as deals under \$1 billion, and that more value is destroyed the larger the target is relative to the acquirer. The study echoes similar past findings that more value is destroyed when management overpays for a deal.

2.2 ROLE OF FINANCIAL ADVISORS

Financial advisors play a significant role in the market for corporate control. Firstly, they improve the quality of matches between acquirers and targets, and accelerate the matching process. Secondly, they provide valuable anonymity in the preliminary stages of a M&A process. Finally, they help reduce information asymmetry about both parties as their experience may stem from their financing service, which grants them access to private information beyond the reach of would-be acquirers or would-be targets. This in turn helps in setting up the financial conditions of deals, subsequently resulting in lower merger-related costs for either party (Chahine & Ismail, 2009). In determining whether financial advisors add value in the acquisition process, Servaes and Zenner (1996) compare acquisitions carried out by in-house advisors against those executed by external advisors. The findings show that the acquisition announcement returns for acquirers are lower when firms make use of financial advisors. However, when controlling for several transaction characteristics, this effect disappears.

Bao and Edmans (2011) find that contrary to Servaes and Zenner (1996), there are benefits to engaging the services of investment bank advisors with a significant effect on the acquirer's announcement returns. Firms hire advisors if transactions are more complex, management has less acquisition experience, targets have lower insider ownership and operate in different

industries. Moreso, advisors are likely to be hired when a deal is hostile and includes non-cash payment. Closing such deals require experienced handling and skill, and so it is in these types of transactions that advisors will create most value for their clients (Da Silva Rosa, Lee, Skott & Walter, 2004).

2.2.1 SINGLE SOURCING

Single sourcing comes into play when the advisor providing M&A advisory services, also takes on responsibility for financing the acquisition, be it in the form of credit facilities or equity underwriting. This is otherwise known as dual role advising. Similarly, Siming (2009) defines a dual role advisor as an advisor who advises the target firm and is equally involved in financing the transaction for the acquiring firm. Allen et al (2004) refer to dual role advising as having commercial banks act in the capacity of a lender and advisor to either an acquirer or a target in a merger process. Ertugrul and Krishnan (2014) on the other hand, consider investment banks acting as dual role advisors to be in addition to advising the acquirer, underwriters of public securities issued by the acquiring firm to finance the deal.

Ertugrul and Krishnan (2014) present two hypotheses to motivate the potential advantages of dual role advisors. The expedited acquisition hypothesis suggests that dual role advisors are associated with shorter deal completion times. Information garnered during the advisory stage can be reused in the financing stage, reducing the time needed to complete the transaction. In addition, the transition between both stages may be easier when one party performs both services. Acquirers may want shorter completion timeframes to prevent competing bids, reduce additional costs related to a prolonged acquisition deal and to make sure that current market conditions do not change substantially before the process is over. The other is the reduced transaction costs hypothesis, which predicts that acquirers may have a cost advantage when they single source their deals, over others who do not. Investment banks incur lower costs of information production, as some relevant information on parties involved were already obtained

during the advisory process. As a result, they would be able to share some of that cost savings with the acquirer by charging lower fees. Although the Chinese wall is up as a barrier intended to block the exchange of information between advisory and financing departments, breaching this barrier in some cases is not criminal, and in these cases, the resulting effect is a conflict of interest. Connected to the reduced transaction cost hypothesis is the certification effect. Forte, Iannotta and Navone (2010) find that banks' specialisation in information gathering can be used to signal the deal quality, therefore providing a certification effect. While Allen et al (2004) only find evidence for the certification effect of target firms, the potential conflict of interest stemming from having banks act as both advisors and lenders dominate the certification effect for acquirers.

2.2.2 AGENCY THEORY

Conflict of interest occurs when the interests of an agent (in this instance, an advisor) who has a fiduciary duty to a principal diverges from those of the principal (acquirers and/or targets). This is the fundamental assumption of agency theory (Jensen & Meckling, 1976), that the agent seeks to maximize their own utility. Allen et al (2004), Ertugrul and Krishnan (2014) bring up the conflict-of-interest hypothesis to explain why acquirers should exercise caution when seeking out bundled services from investment banks. The divergence of interests is more likely to happen when the acquirer's advisor negotiates the terms of both the acquisition deal and funding. Recommendations may then be skewed when the bank possesses additional information related to either party's credit exposure incurred in both past and future lending activities. Bias could also present itself in the form of pushing for the closure of deals to score advisory and underwriting fees, as large percentages of the advisor's fee depend on the completion of the deal. According to McLaughlin (1990), having advisory fees contingent on deal completion makes room for conflict of interest in which the advisor is incentivized to complete deals that could be value destroying for clients. This conflict is more pronounced with

bundled services and single sourced deals. However, Jensen and Meckling (1976) recommend the introduction of incentives to ensure that interests are aligned, as well as monitoring structures to impede aberrant activities of the agent. One of which is having an independent advisor provide a fairness opinion (Chen, 2010).

2.3 EFFICIENT MARKET HYPOTHESIS (EMH)

In Fama's (1970) "Efficient Capital Markets" article, market efficiency was defined as the degree to which current stock prices reflect available information about the value of financial assets. The efficient market hypothesis states that stock prices fully reflect all available information, implying that shares trade at their fair value. The EMH only holds under certain "perfect" conditions, which are that there are no transaction costs, all information is available at no cost incurred to market participants, and all agents in the market agree on the implications of current information for the current price and distributions of future prices of each security. These assumptions do not hold in the real world, and as such there are three variations or levels to the efficient market hypothesis: weak, semi-strong, and strong forms of market efficiency. The weak form posits that historical price information is not useful in predicting future prices and returns. It assumes that current stock prices reflect all past available information, but may not reflect new information that has not been made publicly available. The weak form efficiency relates to the random walk theory, which states that past movements of a stock price cannot be used to predict its future value. This suggests that stock prices today immediately reflect all available information today, and tomorrow's price movements reflect only that day's available information, independent of previous price movements (Malkiel, 2003). The weak form of efficiency is supported by extensive empirical tests. In the semi-strong form of market efficiency, stock prices are a function of both past and newly released information. They adjust quickly to the new public information so that an investor cannot benefit over and above the market by trading on that new information.

Finally, with the strong form of market efficiency, stock prices are a function of all publicly available and private information. In this condition, neither insider information, nor technical and fundamental analysis can help predict future price movements. Fama (1998) concludes that the market efficiency hypothesis holds to a large extent with evidence of market underreactions and overreactions. Therefore, it is impossible for an agent to beat the market, as arbitrage opportunities and consistent alpha generation are inherently impossible. The event study methodology is especially useful in detecting and assessing market reactions. It provides a basis for observing trading returns that are earned from “outperforming” the market. The event study approach tracks pricing behaviour using a pricing model as a benchmark for testing market efficiency (Kliger & Gurevich, 2014).

2.4 HYPOTHESIS DEVELOPMENT

2.4.1 SINGLE SOURCING AND VALUE CREATION

Following the efficient market hypothesis, to examine the impact of deal sourcing approach on the value of the acquiring shareholders’ returns, it is essential to posit the relation between the sourcing of M&A services and acquiring firm returns.

H₁: Single sourced M&A deals create a higher value return for acquiring shareholders than multiple sourced M&A deals.

2.4.2 SINGLE SOURCING AND EFFICIENCIES

According to the reduced transaction costs and expedited acquisition hypotheses theorised by Ertugrul and Krishnan (2014), single sourced transactions raise expectations that they are not just at least cheaper than those multiple sourced, but that they have faster completion time.

H₂: Single sourced M&A deals have faster deal completion time rate than multiple sourced deals.

3. DATA

3.1 RESEARCH DESIGN

The sections below describe the process of data collection and categorisation using quantitative data. The quantitative approach to research is the most appropriate for examining causal relationships (Creswell, 2002), like the effect of single sourcing on shareholders' returns. A descriptive analysis is provided to present an overview of the final sample used in this study.

3.2 M&A DATA

The sample for this study comprising completed M&A deals from the 1st of January, 2000 to the 31st of December, 2020 was obtained from the Zephyr database offered by Bureau van Dijk. To ensure data validity, acquisition deals were selected based on the following criteria: that the acquirer is a non-financial firm trading on the Swedish Stock Exchange – Nasdaq Stockholm; mergers and acquisitions involving financial firms as either the target or acquirer were excluded, as well as acquisitions having deal value less than 100 million SEK and no deal value reported on Zephyr; deals made in private, or without a public announcement and completion date were excluded; deals with the acquiring firm having no historical stock data available were excluded; deals with incomplete information for single or multiple categorization were excluded. These restrictions are similar to those imposed in previous studies (Allen et al. 2004; Ertugrul & Krishnan, 2014; Servaes & Zenner, 1996), and yielded a sample of 69 deals.

3.2.1 DATA CATEGORISATION

In order to identify and correctly categorise how each deal was sourced, data from Zephyr and MergerMarket were used, and where either dataset did not contain the required information, the prospectus of each M&A deal as published on the Finansinspektionen's information database was examined to manually fill in the missing information. Single sourced deals were defined as deals having an investment bank act as a financial advisor to either party whilst also financing

or guaranteeing that same acquisition deal. A financial advisor as defined by Siming (2011, p. 44)

may be an investment bank hired to deliver a fairness opinion of the deal or a general advisor that in addition to an assessment of the transaction pricing performs supplementary services such as advice on the overall approach to the transaction, negotiating tactics and assistance with the assembly of a team of professional advisors.

Deals in which the acquisition financing institution did not also provide advisory services to either the target or the acquirer were categorised as multiple sourced. This categorization implied that the M&A deals which had incomplete information on who the advisor or financier was were excluded. Therefore, deals financed in totality with either the acquirer's cash funds, and deals with no publicly available terms of acquisition and consideration were not included in the sample.

3.3 OTHER DATA

The acquirer's historic closing stock and OMX Stockholm PI index prices were collected from Nasdaq. For each deal, prices dating back to every announcement day, 5 days before and after the announcement, as well as 181 days prior to the event window were exported and converted to daily returns. Where there were deals that had been announced on a weekend, the next trading day was used as the event date.

Announcement and completion dates required to calculate each deal completion time were sourced from Zephyr. As well as all other relevant data pertaining to the M&A deals such as acquirer's total asset, industry classification.

3.4 DESCRIPTIVE ANALYSIS

The sample of this study consists of 69 deals, in which 30 (43.5%) of them were categorised as single sourced, and the remaining 39 (56.5%) as multiple sourced. Table 1 shows the distribution of the number of deals executed yearly along with the average deal value and average size of the acquiring firms involved. It can be observed that the frequency of single sourced deals increased, and at least one deal was executed in every year following the 2008-2009 financial crisis and the ushering in of a prolonged low interest rate environment, as well as other stringent monetary policies.

Table 1: Sample distribution of Single and Multiple Sourced deals from year 2000 to 2020.

<u>Year</u>	<u>No of Deals</u>		<u>Avg Deal Value (mSEK)</u>		<u>Avg Total Asset (Acquirer: mSEK)</u>	
	<u>Single</u>	<u>Multiple</u>	<u>Single</u>	<u>Multiple</u>	<u>Single</u>	<u>Multiple</u>
2000	0	1	-	121	-	99307
2001	0	0	-	-	-	-
2002	0	0	-	-	-	-
2003	0	0	-	-	-	-
2004	2	0	3379	-	51868	-
2005	1	0	1790	-	1539	-
2006	0	2	-	1438	-	82991
2007	0	1	-	588	-	31650
2008	0	1	-	178	-	3231
2009	2	0	13157	-	216968	-
2010	0	3	-	1617	-	3009
2011	3	2	1280	947	2242	7754
2012	3	2	2527	1626	3806	16889
2013	2	0	262	-	27438	-
2014	1	6	1695	2017	12976	15397
2015	1	1	11358	1470	3890	1108
2016	3	4	10343	4049	3818	9211
2017	2	3	1676	2113	4004	1985
2018	5	4	4266	858	8236	2728
2019	4	5	2614	2754	18964	13972
2020	1	4	3869	808	603	2993
	<u>30</u>	<u>39</u>				

3.5 LIMITATIONS

The scope of this thesis is limited to the Non-Financial Institutions listed on Nasdaq Stockholm. The sample is restricted because of the brevity of time and resources to acquisition deals over a 21-year timespan from 2000 to 2020 that meet strict requirements as listed in section 3.2. The paucity of sufficient data, and in some cases, restricted access to relevant databases impedes our ability to properly observe comprehensively the effects sourcing bundled services from a single advisor has on post-acquisition success. Therefore, the results of this paper should be understood as reflecting specific conditions, and may not necessarily be generalisable to others.

4. RESEARCH METHODOLOGY

This chapter on methodology presents the use of the event study approach in testing the differences in abnormal returns between single and multiple sourced M&A deals. Accordingly, additional data sourced for each deal is used to construct a cross-sectional regression model to explain how value creation and efficiencies are influenced by deal specific characteristics.

4.1 EVENT STUDY

In accordance with previous research on this topic, an event study will be employed to examine the effect single sourcing has on shareholder value creation (Allen et al. 2004; Ertugrul & Krishnan, 2014). Conducting an event study is a useful means of measuring the impact of a specific economic event on the value of a firm, given that the effects of said event will be immediately reflected in security prices, particularly common equity. Although event studies do not follow a standardised format, the structure of the event study of this paper will be largely influenced by the outline as discussed in Brooks (2019) and MacKinlay (1997).

4.2 DEFINING THE EVENT

The initial step in conducting an event study is the definition of the event of interest, and the identification of the period in which stock prices will be examined, also referred to as the event window. The event of interest for this study is defined by the announcement date of each acquisition deal as obtained from Zephyr. Figure 1 below presents this event study in the form of a timeline:

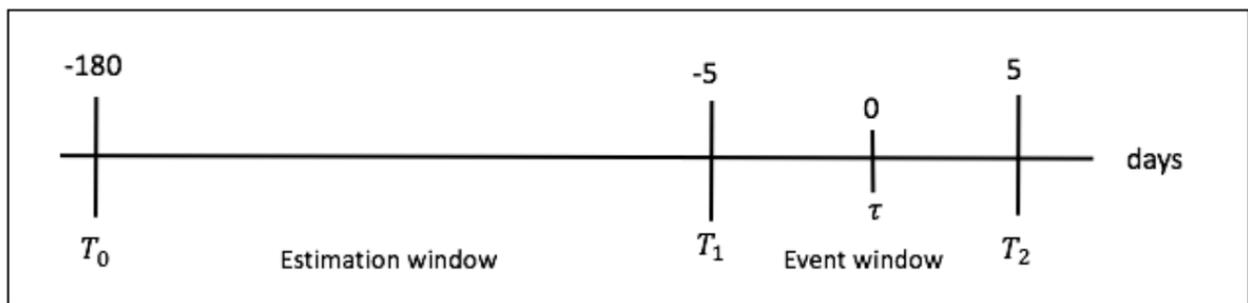


Figure 1: Timeline of an Event Study

An 11-day event window represented by T_1 to T_2 is employed, consisting of an event date ($\tau = 0$), 5 pre-event days and 5 post-event days. The 5 pre-event days capture the possibility that information relating to the event of interest might have leaked before the event date, while the 5 post-event days account for the likelihood that the market is inefficient. For each announcement, the 180-trading day period prior to each event window is used as the estimation window. Data from this window is used to estimate the parameters of the normal return. The post-event window (from T_2 onwards) is used to investigate longer term company performance, and like with other conventional event studies (Brown & Warner, 1985), the post event window will not be used in this study.

4.3 DEFINING NORMAL RETURN

A follow-up on defining the event timeline of the study is determining the selection criteria for the inclusion of acquisition deals in the sample. The selection criteria of this study are defined in section 3.2. An evaluation of the impact of the type of M&A service sourcing has on value

creation requires a measure of normal and abnormal returns, for which the stock and index prices were converted to daily actual returns using their natural logarithm.

$$\text{That is: } R_{it} = \ln \left(\frac{P_{it}}{P_{it-1}} \right)$$

Where R_{it} is the actual return of stock i on day t ; P_{it} is the closing price of the same stock on day t ; and P_{it-1} is the closing price on day $t-1$. The use of logarithmic returns reduces skewness, and improves the normality of the distribution (Fama, Fisher, Jensen & Roll, 1969).

The normal return, $E[R_{it}^* | \Omega_{it}]$, is defined and denoted as the expected value of the return for asset i at time t , conditional on information available at time t for asset i . Where $*$ signifies observations which belong to the event window (Asgharian, 2020).

4.3.1 MEASURING NORMAL RETURNS

The market model is the method adopted in measuring the expected normal returns. It is most preferred because the gains from using complex economic models like CAPM for event studies are limited and restrictions imposed by such economic models are questionable. The market model assumes a stable linear relationship between the market return and security return. This relationship is estimated using a single index model, as seen below:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad \varepsilon_{it} \sim N(0, \sigma_{\varepsilon_i}^2) \quad t \in \text{estimation window}$$

Where R_{it} is the returns on stock i at time t ; R_{mt} is the returns on the market portfolio at time t ; α_i is the intercept; β_i is the beta of stock i , reflecting the stock's sensitivity to changes in the market; with the assumption that residual value ε_{it} is normally distributed with an expected value of 0 and a variance equal to $\sigma_{\varepsilon_i}^2$.

$$\text{Therefore, } E[R_{it}^* | \Omega_{it}] = \hat{\alpha}_i + \hat{\beta}_i R_{mt}^* \quad t \in \text{event window}$$

The parameters of the single index model, $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated using Ordinary Least Squares regression on observations in the estimation window.

4.4 MEASURING ABNORMAL RETURN

Abnormal return is defined as the difference between the actual observable returns in the event window and the market's expectations of normal returns, that is,

$$AR^*_{it} = R^*_{it} - E[R^*_{it} | \Omega_{it}] \quad t \in \text{event window}$$

The OMX Stockholm PI Index is used to estimate the market's expected returns. The abnormal return is calculated for each stock i and for each time t in the event window.

4.4.1 ESTIMATING VARIANCE FOR ABNORMAL RETURN

The variance for abnormal returns is estimated using the residuals from the market model in the estimation window rather than the observed variances in the event window. The estimation window approach is favoured because variances in the event window tend to be heavily dependent on the outcome of the event of interest, which in this case is the announcement date per M&A deal. The downside to the estimation window approach is that variances in the event window could change over time and using that estimate would function as a poor proxy for further testing. However, with only an 11-day event window, the likelihood of drastic changes is low. Therefore, for each observation i , a variance is estimated individually for all 180 days in the estimation window, using:

$$\hat{\sigma}^2(AR_{it}) = \frac{1}{T-2} \sum_{t=T_0+1}^T \hat{u}^2_{it}$$

Where the T is the number of days in the estimation window.

4.5 MEASURING AVERAGE ABNORMAL RETURN (AAR)

The average abnormal return is derived by dividing the sum of abnormal returns of each observation i over time t , by the number of observations N . The AAR shows the sample average abnormal return for each day t in the event window.

$$\widehat{AR}_t = \frac{1}{N} \sum_{i=1}^N AR_{it}$$

4.5.1 ESTIMATING VARIANCE FOR AAR

The sample variance for AAR is derived using the same estimation window approach as in section 4.4.1. Individual variances estimated for each observation are summed up and divided by the square of the number of observations (N^2):

$$\widehat{\sigma}^2(AR_t) = \frac{1}{N^2} \sum_{i=1}^N \widehat{\sigma}^2 \epsilon^2$$

4.6 MEASURING CUMULATIVE AVERAGE ABNORMAL RETURN (CAAR)

CAAR is obtainable by either summing up the AAR for any chosen time frame ($T_1 \leq t_1 - t_2 \leq T_2$) in the event window, or by cumulating the abnormal returns, which is then divided by the number of observations:

$$\widehat{CAR}(t_1, t_2) = \sum_{t=t_1}^{t_2} \widehat{AR}_t$$

4.6.1 ESTIMATING VARIANCE FOR CAAR

The variance estimate from section 4.5.1 is multiplied by the number of event days in the chosen time frame to yield:

$$\widehat{\sigma}^2(CAR(t_1, t_2)) = (t_2 - t_1 + 1) \widehat{\sigma}^2(AR_t)$$

4.7 HYPOTHESIS TEST

A parametric test is used to test the statistical significance of AAR for all 11 event days and CAAR over varying time frames in the event window: [-5, 5], [-2, 2] and [-1, 1].

4.7.1 HYPOTHESIS TEST OF AAR AND CAAR

A positive AAR/CAAR may imply that value was created for the shareholders of the observed firms. However, statistical conclusions from the results of the AAR/CAAR can only be drawn when the null hypothesis has been tested. The null hypothesis states that the mean of the AAR/CAAR within the event window is zero. If the parametric test results in a t-value that is greater than the critical value determined by a significance level, the result is said to be statistically significant, and this is potentially evidence that the M&A announcement itself had an effect on shareholder stock returns. Therefore, the null hypothesis is rejected.

The hypothesis test for average abnormal returns is given by:

$$\theta_1 = \frac{\hat{AR}_t}{\hat{\sigma}^2(AR_t)^{1/2}} \sim N [0, 1]$$

The hypothesis test for cumulative average abnormal returns is formulated as:

$$\theta_1 = \frac{\widehat{CAR}(T_1, T_2)}{\hat{\sigma}^2(CAR(T_1, T_2))^{1/2}} \sim N [0, 1]$$

4.8 CROSS-SECTIONAL REGRESSION

To test the research hypotheses and examine the association between deal-specific characteristics and acquirer's cumulative abnormal returns, two multiple regression models are constructed using the variables below:

The CAR of each acquirer is used to measure value created, and is used as the dependent variable. In terms of how deals were sourced, Single sourcing is used as the main independent

variable. The dummy variable, *Single Sourcing* takes on the value of 1 for all deals categorised as single sourced, and 0 for deals categorised as multiple sourced. Eight control variables are used to control for deal-specific characteristics that influence value creation and efficiencies. They are chosen based on what is common practice in previous research, and availability of data. In addition to the single sourcing variable, *Cross-Border*, *Diversification*, *Merger Wave*, and *Industry Classification* are also structured as dummy variables.

The *Cross-Border* dummy variable takes on the value of 1 for all deals in which the target firm was non-Swedish, and 0 otherwise. Similarly, the *Diversification* dummy variable takes on the value of 1 for all deals in which the acquirer and target had different 2-digit SIC codes. The *Merger Wave* dummy variable takes on the value of 1 for all deals that were executed during cycles of increased M&A activities (Boundless, n.d.) to control for differences in deal outcome over time. The sample of M&A deals was broadly grouped into three main industries using the Morningstar Classification Structure: *Cyclical*, *Sensitive*, and *Defensive* (Morningstar Research, 2010). All of which are dummy variables. To avoid perfect multicollinearity, no dummy variable is given to deals that take on the value of 1 if the acquirer operates in the Cyclical industry. Appendix A (Tables 7-9) presents a breakdown of the distribution of the sample across these dummy variables.

The acquirer size and deal value are also controlled for using the log of the book value of total assets in million SEK, and the log of the deal value respectively.

4.8.1 MEASURE OF EFFICIENCY

Deal Completion Time is used as a proxy for measure of efficiency in this study. An M&A process can be split into two stages: Decision-Making Phase and Integration Phase (Dikova, Sahib & Van Witteloostuijn, 2010). The decision-making phase can be subdivided into two periods defined by three events: (i) private takeover phase (where M&A initiation has begun,

but parties involved are yet to make a public announcement), (ii) a public announcement marks the start of the second phase, which continues until there is a resolution and (iii) the resolution marks the start of the third phase which involves either the completion or abandonment of the deal (Roh, Hwang & Park, 2021). The deal completion time is then defined by researchers as the time interval between the last two phases (public announcement and completion date) that are made public (Dikova, Sahib & Van Witteloostuijn, 2010; Luypaert & De Maeseneire, 2015; Muehlfeld, Sahib & van Witteloostuijn, 2012; Roh, Hwang & Park, 2021). Deals with the same dates for announcement and completion were excluded (Ertugrul & Krishnan, 2014).

Similarly to Chahine, Hasan & Mazboudi (2018), extreme outliers are excluded from the sample of the study. These extreme outliers are 3 single sourced and 10 multiple sourced deals that were completed in (i) less than 28 days, and (ii) in more than 2 years. The distribution of the sample is reported in Appendix A (Table 10). The deal completion time is used as the dependent variable for the second regression model to test the research hypothesis regarding efficiency as stated in section 2.4.2.

4.8.2 HOMOSCEDASTICITY

Under the assumption of homoscedasticity, the variance of the error term in a regression model should be constant and not change for each observation. Financial time series data like stock returns generally violate this assumption and are heteroscedastic in nature. This in turn results in a wrong standard error and incorrect inference. The Breusch-Pagan-Godfrey (BPG) and White tests are used to check if the regression model satisfies the homoscedastic assumption. The results of these tests as presented in Appendix A (Table 11) both yield test values that are less than the critical value, and as such we do not reject the null hypothesis of homoscedasticity.

5. ANALYSIS AND DISCUSSION OF RESULT

5.1 RESULT OF EVENT STUDY

The average abnormal returns are tested for each day in the 11-day event window for both single and multiple sourced M&A deals. The results are presented in Table 2 below:

Table 2: Hypothesis Test Result of Average Abnormal Returns

Event Day	<u>Single Sourced</u>			<u>Multiple Sourced</u>		
	AAR	T-stat	Significant	AAR	T-stat	Significant
5	0.00%	-0.004	No	-0.15%	-0.473	No
4	0.17%	0.473	No	-0.21%	-0.658	No
3	-0.31%	-0.852	No	0.36%	1.133	No
2	0.12%	0.321	No	-0.36%	-1.120	No
1	0.89%	2.453	Yes*	1.31%	4.129	Yes*
0	1.56%	4.299	Yes*	2.28%	7.182	Yes*
-1	0.19%	0.538	No	0.02%	0.051	No
-2	-0.06%	-0.179	No	-0.72%	-2.261	No
-3	0.14%	0.389	No	0.23%	0.714	No
-4	0.45%	1.253	No	0.00%	0.013	No
-5	-0.32%	-0.872	No	0.23%	0.719	No

* denotes significance at 1%

A test value (T-stat) greater than the critical value of 1.96 indicates statistical significance, as seen with the announcement day and 1-day post announcement AAR for both single and multiple sourced deals. This result implies that the announcement of M&A deals created short-term abnormal returns for the acquiring shareholders of both categories.

The CAAR as presented in the Table 3 shows the test results for three different event window time frames. The CAAR shows the accumulated effect of M&A announcement on the value of the returns attributable to shareholders.

Table 3: Hypothesis Test Result of Cumulative Average Abnormal Returns

Event Day	<u>Single Sourced</u>			<u>Multiple Sourced</u>		
	CAAR	T-stat	Significant	CAAR	T-stat	Significant
[-1, 1]	2.64%	4.209	Yes*	3.61%	6.560	Yes*
[-2, 2]	2.69%	3.324	Yes*	2.54%	3.569	Yes*
[-5, 5]	2.83%	2.358	Yes*	3.00%	2.843	Yes*

* denotes significance at 1%

Contrary to general findings in studies such as Alexandridis, Petmezas and Travlos (2010), Martynova and Renneboog (2008), and Moeller, Schlingemann and Stulz (2005), the table above indicates that M&A did create value for the acquiring shareholders of both categories in the sample observed. The CAAR results for the [-1, 1] and [-5, 5] windows suggest that acquiring shareholders of single sourced deals earned less returns than those whose deals were multiple sourced. The [-2, 2] announcement returns, on the other hand suggests otherwise. A more comprehensive matrix hypothesis test is shown in Appendix B, where the 5-day before [-5, -1] and 5-day after [1, 5] announcement CAR are presented with no significance. This implies that the returns of those windows were no larger nor smaller than normal. The outcome of this result reinforces the efficient market hypothesis posited by Fama (1970; 1998). This result could be interpreted as being that either there was no leakage of information prior to the event, or that leaked information could not be used to outperform the market. As majority of abnormal returns made by acquiring shareholders was earned at announcement date or the day after, lending credence to the market's efficiency, and strengthening the validity of the event study approach in assessing market reactions to economic events.

5.1.1 VALUE CREATION

In order to test whether these announcement returns can be attributed to how the M&A deals were sourced, as well as other deal specific characteristics, a cross-sectional regression model was employed. The explanatory variables of the regression model explain only 11.5% of the dependent variable (CAR) in the [-1, 1] event window, 9.3% in [-2, 2], and 6.9% in [-5, 5]. The result is presented in Table 4:

Table 4: Regression Result for Value Creation

Variables	CAR	CAR	CAR
	[-1, 1]	[-2, 2]	[-5, 5]
Single Sourced	-0.0093	0.0043	-0.0041
Cross-Border	-0.0040	0.0037	-0.0223
LN Value	0.0011	-0.0010	-0.0045
LN Total Asset	0.0010	-0.0007	0.0030
Diversification	-0.0156	-0.0217	0.0047
Merger Wave	0.0227	0.0158	0.0130
Defensive	0.0067	0.0152	0.0159
Sensitive	0.0010	0.0045	0.0097
Constant	-0.0224	0.0443	0.0538

Upon testing for explanatory factors, the regression model yields results that are in agreement to the conclusion derivable from the hypothesis test of CAAR. Table 4 presents that single sourcing deals contributed positively to the abnormal returns earned by acquiring shareholders in [-2, 2]. However, the opposite effect is seen over the other two windows being observed. Therefore, this result is inconclusive. Diversification and Cross-Border variables present mixed results. The diversification variable lends support to the focus hypothesis theorised by Bruner (2005) and the findings of Morck, Shleifer and Vishny (1990) in that M&A transactions that are driven by diversification and growth motives result in systematically lower announcement

day returns for acquiring firms. The drop in value creation for cross-border transactions could stem from complications and increased costs of executing acquisition transactions over geographical boundaries.

Table 4 shows that looking beyond the immediate announcement timeframe, diversification seems to influence value creation positively. Similarly, the *Ln Value* and *Ln Total Asset* variables present mixed outcomes. It can be seen that both variables create a shorter-term value for acquiring shareholders before they start to detract from CAR. This lends credence partly to the report by Cools, et al (2007) that larger firms are prone to overpayment and highly priced M&A deals, which in turn are value destroying for shareholders.

The *Merger Wave* variable across all observed timeframes, reveals that deals executed during a global surge in M&A transactions are more likely to perform better, and have an increasing effect on CAR. A similar effect can be seen for firms in the *Defensive and Sensitive Industry*.

Examining the results reveals a lack of statistical significance for the variables across all event windows tested. Therefore, the results of this study should be interpreted with caution as the observed sample does not provide sufficient evidence to support the hypothesis (H_1) which states that single sourced M&A deals create a higher value return for acquiring shareholders than multiple sourced M&A deals.

5.1.2 EFFICIENCY

The average number of days it took to complete deals categorised as single sourced was 97.61 in contrast to the 159.65 days multiple sourced deals required. This result prior to trimming outliers could have provided support for the expedited transaction hypothesis presented by Ertugrul and Krishnan (2014). However, in accounting for extreme cases as stated in section 4.8.1, Table 5 presents a contradictory outcome with a marginal difference.

Table 5: Average Days to Deal Completion

Completion Time	Single	Multiple
Before trimming	97.61	159.65
After trimming	107.2	96.08

Similarly to CAR, the deal completion time outcome post-trimming is controlled for to examine if the time period it takes to complete a deal is influenced by how the deal was sourced and by other factors presented in the Table 6:

Table 6: Regression Result for Efficiency

Variables	Completion Time
Single Sourced	-9.5671
Cross-Border Variable	-45.6633
LN Value	15.2416
LN Total asset	-2.2632
Diversification	54.2671
Merger Wave	15.9571
Defensive	-47.1311
Sensitive	-0.2560
Constant	-143.0179

Table 6 presents that single sourced deals contributed positively to reducing deal completion time, providing support for the expedited transaction hypothesis. Surprisingly, the cross-border variable presents the same effect on deal completion time. On the other hand, the higher the deal value, and the less focused the acquisition motive, the longer it is likely to take to finalise the deal. Acquiring firms with relatively larger sizes also command a reduction in completion time. Deals executed during merger waves take longer to be completed. M&A transactions for

firms in the Sensitive industry, and particularly the Defensive industry present a quicker deal completion time.

However, similarly to the results presented in 5.1.1, there is a lack of statistical significance for all variables tested. The outcome from the cross-sectional regression fails to provide sufficient evidence to back up the second hypothesis of this study, that single sourced deals have faster deal completion time rate than multiple sourced deals.

5.2 DISCUSSION

The empirical findings of this study do not only present mixed results, but are not statistically significant enough to draw solid conclusions on. A probable explanation for this conflicting result could be the ‘relatively’ small size of the sample observed. Over a 21-year period, out of an original sample frame of 754, only 69 acquisition deals met the criteria for observation in this study. Although statistical inferences cannot be made given the limited number of deals, the economic significance of the outcome of the study can be highlighted, but should be interpreted with caution. The announcement returns of acquiring shareholders do not, to a large extent, reflect the expected benefits claimable for single sourcing M&A advice and financing. In an ideal world, it is logical to reason that it should cost less and require less time when firms engage the services of investment banks who offer bundled alternatives to multiple sourcing. Contrary to this logical reasoning, this study ambiguously lends partial support for both forms of sourced deals, as neither category was outrightly superior to the other, based on the results obtained. This contradictory conclusion can also be seen with deal completion time, the results of which are inconsistent. One consistent and statistically valid conclusion that can be drawn however, is that financial advisors (investment banks) create value for acquiring shareholders. This is in line with the findings of Bao and Edmans (2011) that there are benefits to engaging the services of investment banks. In weighing the potential advantages single sourcing has to offer against obvious drawbacks, conflict of interest concerns can be raised. As

seen from the outcome both In Value and In Total Asset variables present, there are indications that highly priced deals that would generate substantial income for investment banks are value destroying for acquiring shareholders. This raises a query about the incentives investment banks have to be willing to take a highly likely reduction in deal fees that are largely contingent on the value of deals completed. Improved value creation for clients influenced by lower deal values, and consequently lower deal fees payable do not align with the profit-making objectives of investment banks. Along with other monitoring instruments as presented by Jensen and Meckling (1976), it is proposed that a deal fee incentive scheme based on post-acquisition performance, identical to how earnouts are structured, be put in place to bridge the misalignment of interests of both parties.

6. CONCLUSION

The intent behind this study was to shed more light on an under researched area in Finance, that is, the influence single sourcing deals has on acquiring shareholders' returns, and other efficiencies attributable to bundled M&A services, over multiple sourced deals. Upon setting criteria for observation, a sample size of 69 acquisition deals involving non-financial companies listed on Nasdaq Stockholm was drawn from an initial sample frame of 754 deals. These are tested using an event study approach on varying event windows to assess the effects single sourced deals, and control variables like deal value, diversification, acquirer's total asset, have on the average abnormal returns and cumulative average abnormal returns of acquiring shareholders.

Contrary to already existing literature (Alexandridis, Petmezas & Travlos, 2010; Martynova & Renneboog, 2008; Moeller, Schlingemann & Stulz, 2005), the result of this study show that M&A create value, in terms of abnormal returns, for acquiring shareholders irrespective of how the deals were sourced. However, the statistical insignificant results of the study do not provide evidence for beneficial claims with respect to increased value creation (abnormal returns) and efficiencies (deal completion time) from single sourced deals over multiple sourced deals. A statistical conclusion could not be derived for the expedited acquisition hypothesis that single sourced deals have a faster deal completion time. This does not in any term imply that multiple sourced deals outperformed single sourced deals either.

Although the sample for this study started out with a significant amount of acquisition deals, issues arising with publicly available information and documentation of M&A transaction details decreased the sample size drastically. Therefore, to improve on this study, a more inclusive and larger sample size is required. This is achievable by including deals with transaction value below 100 million SEK, getting access to well documented databases, or by expanding the scope of the study to accommodate for new markets like Nordic countries, and other parts of the world. Moreso, a comparative analysis between acquirer and target firms can be carried out to get a more comprehensive picture on differences between single and multiple sourced deals, and how they influence shareholders' returns. Conflicts from misaligned interests under this single sourcing subject matter seem interesting and ripe for research. Most especially, from the point of view of the financial advisor. Solutions and other incentive measures could also be proffered to contain these conflicts.

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APPENDIX A

Presentation of Sample Distribution

Table 7: Sample Distribution of M&A deals for Dummy Variables

<u>Dummy Variables</u>	<u>Single</u>	<u>Multiple</u>
Cross Border	17	33
Domestic	13	6
Diversified	7	10
Focused	23	29
Merger Wave	20	32
Non-Cyclical	10	7
Industry: Cyclical	6	12
Sensitive	16	19
Defensive	8	8

Table 8: Sample Distribution of M&A deals according to Morningstar Classification Structure

<u>Industry Classification</u>	<u>Single</u>	<u>Multiple</u>
<u>Cyclical:</u>		
Basic Materials	2	7
ConsumerCyclical	2	4
Real Estate	2	1
<u>Sensitive:</u>		
Communication	4	3
Energy	0	1
Industrial	8	8
Technology	4	7
<u>Defensive:</u>		
ConsumerDefensive	2	2
Healthcare	5	6
Utilities	1	0

Table 9: M&A Transaction Cycles over the years [Adapted from Boundless (n.d.)]

Merger Wave	
Period	Name
1893-1904	First Wave
1919-1929	Second Wave
1955-1970	Third Wave
1974-1989	Fourth Wave
1993-2000	Fifth Wave
2003-2008	Sixth Wave
2014-2020	Seventh Wave

Table 10: Sample Distribution and Result of Days to Completion (DTC) before and after trimming for extreme outliers

Completion Time		
	Single	Multiple
(Before trimming)		
No of Deals	28	34
Average DTC	97.61	159.65
(After trimming)		
No of Deals	25	24
Average DTC	107.2	96.08

Table 11: Calculated and Critical Values for Homoscedasticity Test

Homoscedasticity		
[-1, 1]	Tstat	Tcritical
BPG Test	5.6440	15.5073
White's Test	29.8912	52.1923
<hr/>		
[-2, 2]		
BPG Test	6.0313	15.5073
White's Test	44.0394	52.1923
<hr/>		
[-5, 5]		
BPG Test	7.2645	15.5073
White's Test	40.0927	52.1923

APPENDIX B

Event Study Result

Matrix of CAR Hypothesis Test Result

CAR (Single)	5	4	3	2	1	0	-1	-2	-3	-4	-5
5	-1.609E-05										
4	0.00169748	0.00171357									
3	-0.0013866	-0.0013705	-0.0030841								
2	-0.000224	-0.000208	-0.0019215	0.00116258							
1	0.00866181	0.0086779	0.00696434	0.01004844	0.00888586						
0	0.02423116	0.02424725	0.02253368	0.02561778	0.0244552	0.01556934					
-1	0.02617873	0.02619482	0.02448126	0.02756536	0.02640278	0.01751692	0.00194758				
-2	0.02553016	0.02554625	0.02383268	0.02691678	0.0257542	0.01686834	0.001299	-0.0006486			
-3	0.02694065	0.02695674	0.02524318	0.02832728	0.0271647	0.01827884	0.0027095	0.00076192	0.0014105		
-4	0.03147933	0.03149542	0.02978185	0.03286595	0.03170337	0.02281751	0.00724817	0.0053006	0.00594917	0.00453867	
-5	0.02832173	0.02833782	0.02662426	0.02970836	0.02854578	0.01965992	0.00409058	0.002143	0.00279158	0.00138108	-0.0031576

t-stat (CAR)	5	4	3	2	1	0	-1	-2	-3	-4	-5
5	-0.0044428										
4	0.33141688	0.47313704									
3	-0.221047	-0.2675846	-0.8515589								
2	-0.0309309	-0.0331508	-0.3751597	0.32100291							
1	1.06957206	1.19803931	1.11021083	1.96186808	2.45349754						
0	2.73139627	2.99408158	3.11091645	4.08382465	4.77465996	4.29889133					
-1	2.73203201	2.9527456	3.02297743	3.80557095	4.2089637	3.42002197	0.53775012				
-2	2.49226754	2.66602529	2.68647905	3.32371906	3.55552942	2.68904427	0.25361797	-0.1790802			
-3	2.47955113	2.6315319	2.63439694	3.19312136	3.35433233	2.52350879	0.43193089	0.14875839	0.38945628		
-4	2.74860069	2.89876045	2.90732055	3.4299154	3.57368316	2.81753631	1.0006557	0.84498749	1.16152289	1.25318514	
-5	2.35781482	2.47430197	2.45043094	2.90014603	2.97905882	2.21611511	0.50510983	0.2958549	0.44501578	0.26964362	-0.8718515

1.96	5	4	3	2	1	0	-1	-2	-3	-4	-5
5 No											
4 No	No										
3 No	No	No									
2 No	No	No	No								
1 No	No	No	Yes	Yes							
0 Yes	Yes	Yes	Yes	Yes	Yes	Yes					
-1 Yes	No										
-2 Yes	No	No									
-3 Yes	No	No	No								
-4 Yes	No	No	No	No							
-5 Yes	No	No	No	No	No						

Multiple CAR	5	4	3	2	1	0	-1	-2	-3	-4	-5
5	-0.001501464										
4	-0.003590926	-0.0020895									
3	8.75622E-06	0.00151022	0.004								
2	-0.003548479	-0.002047	4E-05	-0.0035572							
1	0.009569419	0.01107088	0.013	0.00956066	0.013118						
0	0.032385629	0.03388709	0.036	0.03237687	0.035934	0.02281621					
-1	0.032548434	0.0340499	0.036	0.03253968	0.036097	0.02297902	0.0001628				
-2	0.025364858	0.02686632	0.029	0.0253561	0.028913	0.01579544	-0.0070208	-0.0071836			
-3	0.02763313	0.02913459	0.031	0.02762437	0.031182	0.01806371	-0.0047525	-0.0049153	0.00226827		
-4	0.027675533	0.029177	0.031	0.02766678	0.031224	0.01810611	-0.0047101	-0.0048729	0.00231068	4.2403E-05	
-5	0.029960767	0.03146223	0.034	0.02995201	0.033509	0.02039135	-0.0024249	-0.0025877	0.00459591	0.00232764	0.00228523

t-stat (CAR)	5	4	3	2	1	0	-1	-2	-3	-4	-5
5	-0.472605353										
4	-0.799236338	-0.6576855									
3	0.001591255	0.33613133	1.133								
2	-0.55846501	-0.372001	0.009	-1.1196862							
1	1.347051858	1.74235244	2.392	2.12792712	4.12903						
0	4.161601432	4.7701615	5.662	5.88380193	7.997894	7.1817005					
-1	3.872263035	4.37546243	5.087	5.12114443	6.559839	5.11446479	0.05124498				
-2	2.822742135	3.19626631	3.721	3.56928518	4.550425	2.87048213	-1.5626209	-2.2611246			
-3	2.899296232	3.24225926	3.715	3.549773	4.38932	2.84289459	-0.8636648	-1.0940047	0.71396827		
-4	2.754734595	3.06128034	3.48	3.29149588	4.012332	2.54873117	-0.7412822	-0.8855452	0.51428954	0.01334697	
-5	2.843415678	3.13165046	3.52	3.33322599	3.98657	2.62031855	-0.3413389	-0.407251	0.83520789	0.51806478	0.71930726

1.96	5	4	3	2	1	0	-1	-2	-3	-4	-5
5	No										
4	No	No									
3	No	No	No								
2	No	No	No	No							
1	No	No	Yes	Yes	Yes						
0	Yes	Yes	Yes	Yes	Yes	Yes					
-1	Yes	Yes	Yes	Yes	Yes	Yes	No				
-2	Yes	Yes	Yes	Yes	Yes	Yes	No	No			
-3	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No		
-4	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	
-5	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No

APPENDIX C

Detailed Cross-Sectional Regression Result

Regression result for Value Creation (CAR)

3-day event window: [-1,1]

Variables	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Single Sourced	-0.0093	0.0175	-0.5297	0.5983	-0.0442	0.0257	-0.0442	0.0257
Cross-Border Variable	-0.0040	0.0183	-0.2188	0.8276	-0.0406	0.0326	-0.0406	0.0326
LN Value	0.0011	0.0058	0.1892	0.8506	-0.0106	0.0128	-0.0106	0.0128
LN Total Asset	0.0010	0.0044	0.2333	0.8163	-0.0078	0.0099	-0.0078	0.0099
Diversification	-0.0156	0.0191	-0.8164	0.4175	-0.0538	0.0226	-0.0538	0.0226
Merger Wave	0.0227	0.0185	1.2236	0.2260	-0.0144	0.0597	-0.0144	0.0597
Defensive	0.0067	0.0230	0.2924	0.7710	-0.0392	0.0526	-0.0392	0.0526
Sensitive	0.0010	0.0198	0.0505	0.9599	-0.0385	0.0405	-0.0385	0.0405
Intercept	-0.0224	0.1656	-0.1352	0.8929	-0.3537	0.3089	-0.3537	0.3089

5-day event window: [-2,2]

Variables	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Single Sourced	0.0043	0.0195	0.2223	0.8249	-0.0347	0.0433	-0.0347	0.0433
Cross-Border Variable	0.0037	0.0204	0.1824	0.8559	-0.0371	0.0446	-0.0371	0.0446
LN Value	-0.0010	0.0065	-0.1519	0.8798	-0.0140	0.0121	-0.0140	0.0121
LN Total Asset	-0.0007	0.0049	-0.1339	0.8939	-0.0105	0.0092	-0.0105	0.0092
Diversification	-0.0217	0.0213	-1.0185	0.3126	-0.0644	0.0209	-0.0644	0.0209
Merger Wave	0.0158	0.0207	0.7667	0.4463	-0.0255	0.0572	-0.0255	0.0572
Defensive	0.0152	0.0256	0.5952	0.5540	-0.0360	0.0665	-0.0360	0.0665
Sensitive	0.0045	0.0220	0.2057	0.8377	-0.0396	0.0486	-0.0396	0.0486
Intercept	0.0443	0.1847	0.2397	0.8114	-0.3253	0.4139	-0.3253	0.4139

11-day event window: [-5,5]

Variables	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Single Sourced	-0.0041	0.0237	-0.1720	0.8641	-0.0514	0.0433	-0.0514	0.0433
Cross-Border Variable	-0.0223	0.0248	-0.8990	0.3723	-0.0720	0.0273	-0.0720	0.0273
LN Value	-0.0045	0.0079	-0.5644	0.5746	-0.0203	0.0114	-0.0203	0.0114
LN Total Asset	0.0030	0.0060	0.5011	0.6182	-0.0090	0.0150	-0.0090	0.0150
Diversification	0.0047	0.0259	0.1797	0.8580	-0.0472	0.0565	-0.0472	0.0565
Merger Wave	0.0130	0.0251	0.5183	0.6062	-0.0372	0.0632	-0.0372	0.0632
Defensive	0.0159	0.0311	0.5103	0.6117	-0.0464	0.0781	-0.0464	0.0781
Sensitive	0.0097	0.0268	0.3610	0.7194	-0.0439	0.0632	-0.0439	0.0632
Intercept	0.0538	0.2244	0.2397	0.8114	-0.3953	0.5029	-0.3953	0.5029

Regression result for Efficiency (Deal Completion Time)

Variables	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Single Sourced	-9.5671	21.2822	-0.4495	0.6555	-52.6144	33.4802	-52.6144	33.4802
Cross-Border Variable	-45.6633	23.6901	-1.9275	0.0612	-93.5810	2.2545	-93.5810	2.2545
LN Value	15.2416	6.8083	2.2387	0.0310	1.4705	29.0127	1.4705	29.0127
LN Total Asset	-2.2632	5.0464	-0.4485	0.6563	-12.4706	7.9442	-12.4706	7.9442
Diversification	54.2671	25.3150	2.1437	0.0384	3.0628	105.4715	3.0628	105.4715
Merger Wave	15.9571	23.9331	0.6667	0.5089	-32.4522	64.3664	-32.4522	64.3664
Defensive	-47.1311	27.7948	-1.6957	0.0979	-103.3514	9.0892	-103.3514	9.0892
Sensitive	-0.2560	23.5968	-0.0108	0.9914	-47.9851	47.4730	-47.9851	47.4730
Intercept	-143.0179	199.7291	-0.7161	0.4782	-547.0081	260.9722	-547.0081	260.9722