A Re-Examination of the Experience-Performance Relationship in M&A and an Inquiry into the Possible Moderating Effect of Executive Turnover

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Abstract

This study sets out to clear up the literature concerning the experience-performance relationship in M&A, adding the possible moderating effect of executive turnover to the discussion. The literature on the nature of the relationship between M&A experience and M&A performance is contradictory. This leads to the hypothesis of both an inverse U-shaped-, or U-shaped relationship. Furthermore, literature on the effects of turnover at the individual-, and group-level are used to hypothesize a possible moderating effect of executive turnover. Analysis of a sample consisting of 437 deals by S&P 500 acquirers spanning 173 companies in 39 distinct 2-digit SIC code industries with both U.S. and foreign targets fails to support hypotheses predicting both an inverse U-shaped-, or U-shaped relationship between M&A experience and M&A performance. Furthermore, hypotheses that predicted a moderating effect of executive turnover by way of a turning point shift to the right and flattening also have to be rejected. Lastly, academic-, and managerial implications alongside limitations and opportunities for future research are discussed.

Preface

Before you lies the thesis *''A Re-Examination of the Experience-Performance Relationship in M&A and an Inquiry into the Possible Moderating Effect of Executive Turnover''*, the basis of which lies in an event study conducted based on a sample of M&A deals conducted by large U.S. acquirers between 2003 and 2017. This thesis was written to fulfil the graduation requirements for the master's program Strategic Management at Tilburg University. The process of writing this thesis engaged me from October 2020 to January 2021.

The research and writing process for this thesis was at times difficult, especially given the unfortunate and somewhat peculiar circumstances concerning online guidance. Fortunately, my supervisor, Dr. Marco Testoni was always available for help. Nevertheless, I am confident in saying that this thesis answers the questions it set out to answer. Furthermore, I also want to acknowledge that this masters' curriculum and writing this thesis have taught me a great deal, both on a professional and personal level, for which I am grateful.

I also want to take the time to acknowledge a few individuals, without whom the writing of this thesis would have not been possible. Firstly, gratitude to my supervisor Dr. Marco Testoni for his excellent guidance during the research- and thesis writing process. Secondly, I want to thank my parents for enabling and supporting me throughout my academic pursuits, including the writing of this thesis. Last but not least, I want to thank my friends for the support they have given me.

I sincerely hope that you enjoy reading this thesis.

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1. Introduction

Mergers and acquisitions (M&A) are a subject that has been broadly covered in business literature by scholars for over a hundred years, and not for lack of reason. Next to other entry modes, M&A can be a choice tool for organizational growth for firms according to Bauer & Matzler (2014). This is reflected in the continued popularity of M&A. Yet, M&A have a generally high failure rate, which has been reported to be 40 to 60 percent by some authors (Bagchi & Rao, 1992; Bower, 2001), and as high as 70 to 90 percent by others (Christensen, Alton, Rising, & Waldeck, 2011). Yet, despite this high failure rate M&A may still be very fruitful when they are successful. Companies can use M&As to gain economies of scale, increases in market share, access to new markets (Scherer & Ross, 1990), increases in asset productivity and cashflow (Healy, Palepu, & Ruback, 1992), and to improve technological performance (Cassiman, Columbo, Garrone, & Veugelers, 2005; Di Guardo & Valentini, 2007).

Understanding the factors affecting M&A success and -failure is valuable because of the high stakes and the inherent complexity in M&A. A majority of the research regarding M&A has thus focused on these determinants of M&A performance. The current literature concerning this topic can be divided into four major streams: the strategic management stream, the organizational behaviour stream, the process-oriented stream, and the experience-oriented stream.

Firstly, some researchers in the field of Strategic management have studied pre-merger relatedness, perceived similarity, and/or complementarity. Larson & Finkelstein (1999) have positively related combination potential (as a construct encompassing both similarity and complementarity) as well as organizational integration with synergy realization. Cartwright & Schoenberg (2006) reviewed the literature at the time and concluded that strategic fit or lack thereof cannot be solely responsible for M&A performance without taking into account the integration process. While Bauer & Matzler (2014) found that greater strategic complementarity leads to greater M&A success, a better cultural fit, and a greater degree of integration. Secondly, researchers have also focused on the acquisition process itself as a determining factor for M&A success. Scholars such as Jemison & Sitkin (1986) argue that next to a choice-perspective a process-perspective must also be utilized because successful integration is not guaranteed and can be impaired by activity segmentation, escalating momentum, expectational ambiguity, and management system misapplication. Thirdly, some scholars have looked at organizational behaviour factors. Birkinshaw, Bresman, & Håkanson (2000) studied the interaction of task- and human integration and found that there is a two-phase process that occurs consisting of human- and task integration. Cultural compatibility was investigated by Weber, Shenkar, & Adi (1996), who found that national- and corporate cultures should be treated as separate constructs. Cultural distance was studied by Morosini, Shane, & Singh (1998), who found a positive relationship between cross-border acquisition performance and cultural distance. Management style similarity was researched by Datta (1991) who found that differences in management styles negatively impact acquisition performance regardless of integration level. While Larson & Finkelstein (1999) found that greater management style similarity leads to less employee resistance while failing to find support for increased levels of integration. Larsson & Lubatkin (2001) found that acculturation is best achieved through social controls. Furthermore, Nahavandi & Malekzadeh (1998) looked at target and acquirer propensity for acculturation modes and the stress a discrepancy causes. Teerikangas & Very (2006) supplemented these views by researching acculturative modes, the progress of cultural integration, and managerial actions throughout the M&A process.

Lastly, there is the experience-oriented stream of research, which this study will focus on. While some of the previous factors influencing M&A performance were controversial, acquisition experience is perhaps the most interesting factor with regards to its coverage by scholars. Acquisition experience and its relationship to performance is a well-studied yet highly controversial topic with regards to M&A performance (King, Dalton, Daily, & Covin, 2004). Some scholars claim there is a positive

relation (Fowler & Schmidt, 1989). Other researchers have however found a negative relationship (Kusewitt, 1985). While yet other researchers have found a U-shaped relationship (Haleblain & Finkelstein, 1999). While Hayward (2002) found an inverted U-shaped relationship. Zollo & Singh (2004) even found results indicating there is no significant relationship at all. Thus, an interesting question arises: what *is* the nature of the relationship between M&A experience and M&A performance?

One possible reason for the differing conclusions on the experience performance relationship in M&A is a moderating effect of executive turnover. This relationship has to my knowledge not yet been explored by researchers. This is despite the existence of substantial evidence from psychologists that turnover harms organizational learning (Argote, Insko, Yovetich, & Romero, 1995; Carley, 1992; Devadas & Argote, 2006).

Executive turnover may negatively affect retention of experience possibly gained through acquisitions. A large portion of executive activities including M&A can be categorized as tacit knowledge-based. These activities are heavily reliant on pattern recognition, especially activities as complex and as recognized by Hayward (2002) heterogeneous and casually ambiguous like M&A. Pattern recognition is a key part of tacit knowledge (Johnson, Lorenz, & Lundvall, 2002; Johnson, 2007; Smith, 2011). Tacit knowledge is by definition difficult to codify (Teece, Pisano, & Shuen, 1997) and thus difficult to transfer to others. Thus, it seems intuitive that executives leaving may negatively affect retention of experience gained through acquisitions.

On an individual level, M&A performance literature from the strategic management-, the organizational behaviour-, the process-oriented-, and the experience-oriented streams are explored to form the basis of the argument that executives may be vessels for this tacit knowledge with regards to the selection of M&A targets, organizational structure best suited to the M&A, their role in the M&A process, and managing acculturation.

Furthermore, executive turnover may also affect the group-level. By applying collective mind theory (Wegner, Erber, & Raymond, 1991; Wegner, Giuliano, & Hertel, 1985; Weick & Roberts, 1993) to executive management teams several effects of executive turnover can be theorized. Loss of the individual means the loss of that individuals lower-order information. Furthermore, the executive management team may experience a loss of function due to losing the leaving executives' location information. Finally, the remaining executives will also likely experience more difficulties with their personal retrieval of information through context loss caused by the leaving executive.

This loss of knowledge on the individual- and group-level may be especially bad in the context of a complex and risky move such as M&A. Experience that may be gained could be lost due to executive turnover. In complex and high stakes moves like M&A keeping or losing experience gained might make the difference between M&A success and M&A failure.

Understanding the relationship between M&A experience and -performance and any factors possibly affecting this relationship is important because it has implications for executives making decisions regarding M&A and investors interested in these firms. Managers make strategic decisions based on assumptions (Barnes, 1984; Schwenk, 1989; Stubbard, 1984). Thus, research must allow managers to make correct assumptions. For example, the rationale behind a positive relationship between M&A experience and M&A performance might lead executives to managerial hubris, as they may wrongly assume that their firm has gained an advantage through experience, perhaps resulting in unwise acquisitions. On the other hand, the belief in a U-shaped or negative relationship might cause managers to be very careful of acquiring, assuming that they are aware of their overconfidence, leading to missed opportunities. While these are just some examples, the assumptions managers have may have major consequences, especially regarding high risk and high reward complex decisions like M&A. Furthermore, the nature of the relationship between M&A experience and M&A performance

as well as any moderating effect of executive turnover is also of interest to investors. As if a significant effect is found for either the main relationship or the moderating effect of executive turnover, these factors could be important to take into account for investors in their decision to invest or not. Thus, an inquiry into this relationship is important because the nature of the relationship between M&A experience and M&A performance and possible moderating effects of executive turnover has implications for both managers and investors.

Because of these gaps in the literature, their shown relevance, and academic- and practical importance, this study empirically investigates the link between M&A experience and M&A performance (if any) and examines a possible explanation for the discrepancy in previous empirical findings, namely: the possible moderating effect of executive turnover.

This study will tackle the problem definition described above by way of an event study based on a sample consisting of 437 M&A deals by S&P 500 acquirers spanning 173 companies in 39 distinct 2-digit SIC code industries with both U.S. and foreign targets. This dataset of M&A deals will come from Zephyr and is based on public firms. Data utilized in the measurement of performance by way of cumulative abnormal returns will come from CRSP. For additional data regarding the acquirers, Compustat and Execucomp will also be utilized. Data from this sample will then be analysed using OLS regression, as well as fixed-effects-, and random-effects regression. Furthermore, the significance of a non-linear equation will be tested based on the regression coefficients to determine if executive turnover is causing any turning point shift.

This paper will henceforth be structured as follows. Chapter two consists of a literature study that takes a deeper dive into the theory behind the hypotheses central to this study. Then, chapter three will cover the methods that were used to gather-, compute-, and analyse the data. Chapter four will follow, describing the data, models and results. Finally, chapter five covers the conclusions, academic- and managerial implications of this study, as well as its limitations.

2. Hypothesis development

This chapter contains a literature study that expands on the relevant theory with regards to the literature on the experience-performance relationship in M&A and the literature regarding the effects of executive turnover on organizational learning at the individual-, and group-level. This chapter is aimed at critically assessing the extant literature and synthesizing it into the hypotheses central to this study.

2.1. The effect of M&A experience on M&A performance

Acquisition experience and its relationship to performance is a well-studied yet highly controversial topic (King, et al., 2004). Furthermore, researchers have hypothesized and proven a myriad of different contradictory relationships, which creates the question: what *is* the nature of the relationship between M&A experience and M&A performance?

Researchers have found a negative relationship between acquisition rate and M&A performance (Kusewitt, 1985). When Kusewitt (1985) researched common factors that he hypothesized affected the long-run financial performance of acquiring firms he found that acquisition rate was negatively related to firm performance measured in ROA and market return. Kusewitt did not develop an extensive theory as to why this relationship might exist apart from the theorization that it was the result of what he called ‘’corporate indigestion’’. ‘’Corporate indigestion’’ is a result of ‘’acquisition fever’’ caused by firms often acquiring firms smaller than themselves and thus assuming a quicker rate of assimilation than is possible.

Some scholars claimed the existence of a positive relation (Fowler & Schmidt, 1989). Fowler & Schmidt (1989) performed a general study on determinants for M&A performance and looked at prior acquisition experience, relative firm size, the nature of the takeover, and organizational age and found that more experienced firms, firms acquiring a larger percentage of a target, and older firms had significantly higher post-acquisition performance. They hypothesized that firms may become more adept at making structural changes, and thus avoid administrative problems and dealing with resistance from existing hierarchies with more M&A experience. Their findings supported their hypothesis. However, their reasoning may be flawed, as a positive relationship may not tell the whole story. As it seems unreasonable to assume that there is no limit to how much benefit a company can gain through learning to deal with these administrative and resistance-based problems.

Interestingly, Zollo & Singh (2004) concluded that there is no significant relationship at all in their study looking at the effects of acquisition capability building mechanisms and integration decisions on acquisition performance. Zollo & Singh (2004) aligned themselves with the knowledge-based view of the firm and hypothesized a positive relationship but failed to find any significant relationship. They concluded that mere ‘’exposure’’ to M&A in the form of experience is not enough and that firms primarily learn through codifying and verbalizing lessons from past experiences in the context of infrequent, heterogeneous, and causally ambiguous tasks like M&A. Yet, they did not develop any detailed theory as to the reasons why there is no relationship, as they did not hypothesize an insignificant relationship being present

Furthermore, an inverted U-shaped relationship has been found by Hayward (2002) when he studied the effects of similarity in previously acquired firms to the focal firm, small losses in previous acquisitions, and time between the last acquisition and the focal one on acquisition performance. Hayward claimed that previous scholars that hypothesized a positive relationship were wrong for several reasons. Firstly, he argued that M&A are heterogeneous because they are performed for different reasons. Furthermore, big differences in M&A performance lead managers to vary their intensity of inference of lessons learned in said M&A. lastly, he argues that because M&A occur irregularly even if knowledge is gained it cannot be applied promptly. He proposed an inverted U-shaped relationship. His reasoning for doing so was twofold. On one hand, he claims that performance

in M&A is an open-ended problem. This type of problem is best handled through diverse interferences, which can best be gained by diverse market entering to prevent making type 1 and type 2 mistakes. This implies a positive latent function between performance and experience. On the other hand, he also claims that this type of diverse market entering slows learning on how to compete in a particular field and that corporations are likely to become loosely linked and incoherent, thus incurring information- and coordination costs. This may form a latent exponentially rising cost function with increased complexity since in theory coordinating three business units to work together requires three times the coordination and information lines (assuming they all need to work together). These two latent functions form an additive combination causing M&A to be a balancing act; thus, Hayward suggests an inverted U-shaped relationship between similarity of previous experience and focal firm M&A performance, which was proven empirically.

Yet other researchers have found a U-shaped relationship (Haleblain & Finkelstein, 1999). Haleblain & Finkelstein (1999) studied acquisition experience and similarity of previously made acquisitions to the focal acquisition and their relationship to M&A performance. These researchers found a U-shaped relationship between experience and acquisition performance. They theorized that there were four possible experience-related outcomes for M&A (see Figure 1: Experience-related outcomes) These outcomes were dependent on the antecedent conditions, which consisted of similar and dissimilar past M&A experience and on organization behaviour, which could be generalization (a firm choosing to deem previous experience relevant to the focal M&A) or discrimination (where the firm sees the focal M&A as unique and chooses not to apply previous experience). Combining these dimensions leads to the following four possible outcomes: (1) Appropriate generalization, which leads to positive consequences; (2) inappropriate generalization, which leads to neutral consequences; (3) appropriate discrimination, which also leads to neutral consequences; and lastly (4) inappropriate generalization, which leads to negative consequences on M&A performance. Haleblain & Finkelstein (1999) also remarked that previous authors hypothesizing positive relationships have made their hypotheses based on the assumptions of quadrant one, which makes these argumentations doubtful at best. Several relationships were hypothesized based on these quadrants: a positive relationship based on conditions for quadrant one, no significant relationship based on quadrant three, a negative relationship based on quadrant four, and finally a U- shaped relationship. The U-shaped relationship was eventually found to be supported. For this relationship, the authors hypothesized that the first M&A serves as a baseline, which is followed up by the firm inappropriately generalizing, leading to a drop in performance. As the firm gains further experience, it lessens its propensity to inappropriate generalization and increases it for appropriate generalization, leading to performance gains. Concluding that inexperienced acquirers might generalize their experience with their first M&A too much, while experienced acquirers might not.

Figure 1: Experience-related outcomes

		Antecedent Condition: Similar experience	Antecedent Condition: Dissimilar experience
Organization Behaviour	Organization Response: Generalization	Appropriate Generalization (Positive) (1)	Inappropriate Generalization (Negative) (4)
	Organization Response: Discrimination	Inappropriate Discrimination (Neutral) (2)	Appropriate Discrimination (Neutral) (3)

(Haleblain & Finkelstein, 1999: p. 33)

The conflicting findings within the field make it difficult to hypothesize one type of relationship between M&A experience and M&A performance. However, the argumentation present in the literature is stronger with regards to a U-shaped (Haleblain & Finkelstein, 1999) or an inverted U-shaped relationship (Hayward, 2002) than for a positive (Fowler & Schmidt, 1989)-, negative (Kusewitt, 1985)-, or insignificant relationship (Zollo & Singh, 2004). Authors have thus far not developed any theory that goes beyond superficial argumentation with regards to a negative (Kusewitt, 1985)-, or an insignificant relationship (Zollo & Singh, 2004). Additionally, argumentation provided by Fowler & Schmidt (1989) for a positive relationship seems flawed, as it is unlikely that benefits in dealing better with administrative issues and resistance are infinite. A positive relationship may be an oversimplification, concurring with views by Haleblain & Finkelstein (1999) that such literature mostly dealt with appropriate generalization, and views by Hayward (2002) that M&A are heterogeneous because they are performed for different reasons, big differences in M&A performance lead managers to vary their intensity of inference of lessons learned in said M&A, and M&A occur irregularly so that even if knowledge is gained it may not be applied on time. Thus, hypotheses for an inverse U-shaped relationship and a U-shaped relationship are the only ones that stand up to a critical assessment of their argumentation.

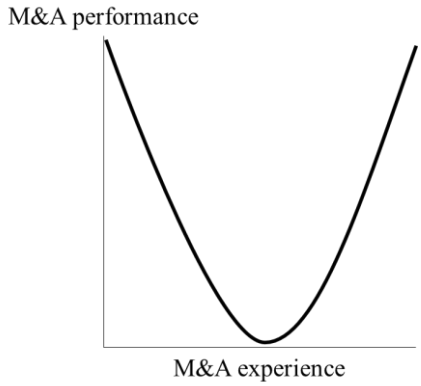
The reasoning above leads to the following set of hypotheses:

H1a: *M&A experience will have an inverse U-shaped relationship with M&A performance (figure 2: Hypothesis 1a visualized).*

Figure 2: Hypothesis 1a visualized

H1b: *M&A experience will have a U-shaped relationship with M&A performance (figure 3: Hypothesis 1b visualized).*

Figure 3: Hypothesis 1b visualized



2.2. Individual-level effects of executive turnover

The discrepancy present in the literature on the relationship between M&A experience and M&A performance could be caused by a moderating effect of executive turnover. Executives are by nature responsible for making the most important decisions with regards to strategy, including decisions on M&A. According to scholars like Barnes (1984); Schwenk (1989); and Stubbard (1984) decision-makers make decisions based on assumptions. These assumptions are changed through experience challenging or strengthening these assumptions (Yechiam & Busemeyer, 2005). Executives likely gain experience from previous M&A on important topics regarding M&A performance, since they would be the ones thinking, discussing and looking at feedback on these decisions to judge the success of the current decision and to make better decisions in the future. Losing or keeping that experience due to turnover may be a key factor currently missing in the literature that could be causing the differing findings within the field.

Important experience gained from M&A by executives may be lost through turnover because of loss of individual-, and group tacit knowledge and the retrieval of it. The reasoning for this will be explained by highlighting individual- and group tacit knowledge effects by taking after Berman, Down, & Hill, (2002), who also distinguish between these two levels.

On an individual level, it can be argued that a large portion of executive management activities including M&A require pattern recognition, and must therefore be based on tacit knowledge. According to scholars, tacit knowledge can be conceptualized as knowledge which is by its definition hard to transfer or codify (Teece, Pisano, & Shuen, 1997) and is similar to skills as a concept, being honed through experience and practice (Nelson & Winter, 1982). Pattern recognition is recognized by scholars as a key part of tacit knowledge (Johnson et al., 2002; Johnson, 2007; Smith, 2011). Pattern recognition must play a key part in executive activities because executives need to make decisions based on irregular and incomplete information while performing unpredictable tasks in a changing environment. This may be especially important in the context of the often-recognized complex nature of M&A and its inherent information asymmetry between target and acquirer.

Executives in M&A may gain individual-level tacit knowledge on several parts of M&A. Some of the most important parts from the M&A performance literature will be elaborated on below.

Firstly, executives often play a major role in the selection of suitable M&A targets and may be the ones who learn how to make these decisions better. It is often the executives' role to judge if a firm is fit to acquire and on what terms the acquisition should take place. As mentioned before, strategic complementarity and relatedness (Bauer & Matzler, 2014; Cartwright & Schoenberg, 2006; Larson & Finkelstein, 1999), cultural fit (Bauer & Matzler, 2014), and management style similarity (Datta, 1991;

Child, Pitkethly, & Faulkner, 1999; Larson & Finkelstein, 1999) have been proven to affect M&A performance. These factors are all largely dependent on the selection of proper M&A targets by the acquirer. Experience shapes how firms perceive, interpret and respond to market opportunities (Maitlis, 2005; Tripsas & Gavetti, 2000). Additionally, firms experience may help them more efficiently acquire and assess information from their environment by directing their attention (Bingham, Eisenhardt, & Furr, 2007). Recent research by Wu & Reuer (2020) has even indicated that M&A experience effects an acquirers likelihood to respond to signals that are generally perceived as positive for performance. These are complex subjects that need to be assessed by executives beforehand. Since executives assess possible targets and make the final decisions on whether they will pursue these targets it is plausible that they will be the ones to accrue learning benefits to make similar decisions in the future if any are accrued.

Secondly, executives may also gain firm-specific knowledge regarding the organizational structure needed to best reap the rewards from M&A. The right organisational structure is paramount since benefits from M&A can be negated when the wrong structure is applied (Lubatkin, 1983). Executives may gain firm-specific information on how to best design new organizational structures to maximize expected synergies and minimize coordination and adjustment costs, which can be a major downside to related diversification (Rawley, 2010). These costs have also been cited as a cause for possible diminished returns in M&A performance (Hayward, 2002) and firm performance (Zhou, 2011). This is because synergies often require sharing resources, which are often indivisible (Penrose, 1959). Dividing these resources requires coordination, which can become increasingly costly as complexity increases (Zhou, 2011). Executives may gain general-, industry-, and firm-specific knowledge on how to limit these costs by designing a fitting structure to enable efficient coordination through experience from previous M&A.

Thirdly, top executives are largely responsible for designing and overseeing the process of M&A and are likely the ones who will learn from experience with this process. According to the process-oriented school of research, the integration- and implementation process are of vital importance to M&A success (Birkinshaw et al., 2000). Birkenshaw et al. (2000) proposed that the M&A process has to be tackled by a proper integration process where firstly human integration is performed to establish organizational culture convergence and mutual respect. Afterwards, task integration can begin to create synergies. Therefore, executives capable of creating fitting integration processes contribute vitally to M&A success. Furthermore, Jemison and Sitkin (1986) claim that successful M&A can be impaired by management activity segmentation, escalating momentum, expectational ambiguity, and management system misapplication. Activity segmentation leads to poor integration of analyses and too little focus on organizational fit. Escalating momentum can lead to rash conclusions. Expectational ambiguity brought over from the negotiating phase is harmful to integration in the actual merger. Management system misapplication can occur because executives may want to compensate for paid acquisition premiums by looking for quick results and imposing their will, leading to negative reactions within the acquired firm. These impediments in the M&A process could be prevented by experience, as executives may learn how to identify and prevent said impediments.

Executives may also gain experience regarding acculturation during the merger process. Acculturation, which can be described as a collaborative process that leads to a jointly determined culture has been explored by scholars who believe that a view of two separate cultures influencing each other throughout the M&A process is oversimplified, and therefore flawed. Larsson & Lubatkin (2001) found that acculturation is best achieved through social controls, which will create a joint culture voluntarily. Nahavandi & Malekzadeh (1998) proposed a model wherein the preferred mode of acculturation for each firm was determined by the acquired firms' desire for preserving its culture and the acquiring firms' tolerance, diversification strategy, and the degree of relatedness between the firms. Congruence in preferences for acculturation modes will then affect acculturative stress, which in turn will influence the difficulty of integration. Teerikangas & Very (2006) add to these ideas, as they also

conclude that acculturative modes, the progress of cultural integration, and managerial actions throughout the M&A process mediate the impact of culture on M&A performance. Executives' experience in M&A may affect acculturation since they can determine social controls, partly influence the firms' preference for acculturation modes, and can take managerial actions. Previous M&A experience may enhance their decision-making in these regards.

Although this may not be an exhaustive list of topics where experience may be gained, and knowledge on these effects may also be gathered and used at the group- or organisational level, these are areas that stand out in the M&A performance literature where executives may accrue helpful experience with regards to M&A.

Concluding the individual-level effects, executives in M&A may be vessels for key knowledge gained through M&A experience. This is because of the important learning effects which may accrue at the individual executive level with regards to the selection of M&A targets, organizational structure best suited to the M&A, their role in the M&A process, and finally, their role in acculturation, as presented above. Because executives are the ones tasked with making these decisions, they are likely also the ones to accrue any experience benefits. Containing executives that have learned from previous mergers with the company may therefore affect the experience-performance relationship in M&A.

2.3. Group-level effects of executive turnover

Executive turnover may also affect the experience-performance relationship in M&A at the group level. Group learning literature from the field of psychology is clear on the negative effect of turnover on organizational learning (Argote et al., 1995; Carley, 1992; Devadas & Argote, 2006). Using a laboratory setting Argote et al. (1995) found that turnover negatively affected organizational learning and that this effect was amplified over time. Moreover, in a follow-up study, Devadas and Argote (2006) confirm this effect and also determined that performance gain from experience is greater in groups that experience less turnover. Carley (1992) also concurs with Argote et al. (1995) and Devadas and Argote (2006) and adds that organizations facing complex tasks are less resilient to the effect of turnover on learning. This is a point that may be especially salient in the context of M&A, which are often viewed as deeply complex.

At a group level, it can also be argued that executive decisions are largely based on tacit knowledge by drawing on collective mind theory (Wegner et al., 1991; Wegner, et al., 1985; Weick & Roberts, 1993). What these scholars argue can be characterized by the following quote:

''People in close relationships enact a single transactive memory system, complete with differentiated responsibility for remembering different portions of common experience. People know the locations rather than the details of common events and rely upon one another to contribute missing details that cue their own retrieval. . . . Transactive memory systems are integrated and differentiated structures in the sense that connected individuals often hold related information in differentiated locations.''
(Weick & Roberts, 1993: p. 383)

It can be argued that executive teams fit this description. This is because executive activities including M&A are often complex tasks that are time-sensitive and require coordination and mutual adjustment between the executives to complete successfully. Furthermore, executive management teams function with a striking similarity to the description of the collective mind by Wegner, et al. (1985). These authors distinguish between three types of information present in individuals within the collective mind: *lower-order-, higher-order-, and location information*. Lower-order information can be considered as raw and detailed information. Higher-order information consists of a topic, theme or a set of several lower-order information items. Location information is information regarding the location of lower-, or higher-order information. Members of the group often possess different lower-order information. Through interaction group members come to understand what information members may possess that others do not. This is referred to as *differentiation*. Interaction also leads group

members to get acquainted, which leads to shared knowledge, referred to as *integration*. Location information is also formed through interaction. Herein lies a key element of the collective mind: group members gain information as to where lower-, or higher-order information they do not possess but which resides within other members of the collective can be found. In other words: when one knows who has information on a particular subject, they have location information on said subject, even though they might not know the precise lower-order information. Regarding executive teams, the knowledge required to make complex executive decisions is similarly often diffused between the executives since executives often make up multi-faceted functional teams of individuals with differing expertise. Lower-order information may for example be specific detailed information on operational subjects. Tacit knowledge falls into this category by definition, as it cannot be articulated to others. Higher-order information may for example be overarching topics like human resources, finance, operations etc. Executives also possess location information, as one group member may know to direct a question they cannot answer regarding a targets balance sheet towards the finance specialist.

Following this train of thought, if part of the executive management team is lost due to executive turnover then it follows that the whole team also ceases to function properly. Executive activities are often complex and multi-faceted. Thus, no one individual holds all the knowledge that is required to complete the whole task. When a part of the group is lost due to turnover their lower-order information (which individual knowledge is part of) is lost. Additionally, the loss of location information, in a system where members rely on their own and others location information for retrieval will cause the collective mind to experience a loss of function with the loss of a part of the group. Furthermore, members may also experience increased difficulty with their own individual retrieval of differentiated information. Cognitive psychologists have found that individuals are more adept at retrieval of information when retrieval context is similar to the context in which the information was encoded (Tulving & Thomson, 1973). Encoding of information often occurs together with members of the executive team, as matters are discussed together and differing viewpoints are divulged. According to Wegner et al. (1985) experiencing together might enable group members to bounce information off of each other and thus be more effective in the recollection of information. Thus, if part of the group is lost, individual lower-order information from the leaving member is lost, location information is lost leading to faltering in group information retrieval, and individual retrieval of the remaining group members might also suffer through the loss of context.

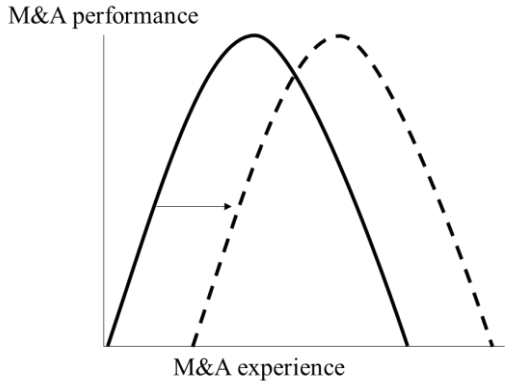
Concluding, a significant part of the individual- and group level tacit knowledge that is accrued through experience will be lost in the event of higher turnover. Individual tacit knowledge with regards to the selection of M&A targets, organizational structure best suited to the M&A, their role in the M&A process, and their role in acculturation will be lost in the event of high turnover. Furthermore, on a group level knowledge retrieval will be hampered because the collective mind has lost access to lower-order and location information, and the remaining members might have increased difficulty in retrieving their own lower-order information due to a loss of context.

Following the reasoning above, two general hypotheses can be synthesized.

In the case of an inverted U-shaped relationship, a turning point to the right is hypothesized. Since tacit knowledge gained in M&A is lost through individual- and group-level effects of turnover, total knowledge gain will be slower with higher executive turnover. More total M&A experience will be needed to achieve the same amount of tacit knowledge required to make richer interferences and to prevent type 1 & 2 errors. Yet, the countervailing force of information- and coordination costs is unaffected. A turning point shift to the right of the relationship between M&A experience and M&A performance is therefore hypothesized.

H2a: *Executive turnover moderates the relationship between M&A experience and M&A performance, such that at high levels of executive turnover the turning point of the relationship between M&A experience and M&A performance is shifted to the right. (see figure 4: Hypothesis 2a visualized)*

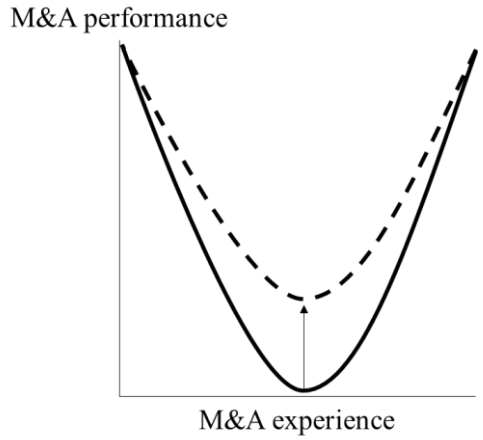
Figure 4: Hypothesis 2a visualized



Alternatively, it is hypothesized that flattening will occur in the case of a U-shaped relationship. This is because the u-shaped relationship hypothesis is based on the assumption that executives will first be overconfident about their ability to discern between which experience can- and which cannot be generalized, followed by learning when to generalize and when not to, through experience in recognizing and distinguishing between underlying and superficial features. If these decision-makers leave the organization negative individual- and group-level effects of executive turnover could cause the organization to be less inclined to overconfidence at first since the new decision-makers will not have any reason to be. However, the organization may also be less able to accurately discern when to generalize and when to discriminate, due to the loss in individual- and group-level tacit knowledge not giving them the ability to discern between underlying and superficial features. For these reasons it is expected that higher levels of executive turnover will moderate the u-shaped relationship through flattening.

H2b: *Executive turnover moderates the relationship between M&A experience and M&A performance, such that at high levels of executive turnover the relationship between M&A experience and M&A performance is flattened. (see Figure 5: Hypothesis 2b visualized)*

Figure 5: Hypothesis 2b visualized



3. Methods

This chapter covers the methods used to conduct this study, and why these methods were chosen. An overview of the sample is given followed by explanations on how data for the dependant, independent and control variables was gathered and how these variables were computed.

3.1. The sample

To conduct this study a dataset of M&A deals from Zephyr on public firms was utilized. Data utilized in the measurement of M&A performance came from CRSP. For additional data regarding the acquirers, Compustat and Execucomp were also utilized. Zephyr is a database that contains information on global deal information and is used to extract the deal- and financial information of the acquirer. CRSP is a database containing historical market data. Compustat is a global database with financial and market information on companies. ExecuComp is a database that contains data on executive compensation of S&P 500 companies and is used to establish executive turnover before the M&A.

This study uses a sample of 437 M&A deals by S&P 500 firms from 2003 to 2017. This sample spans 173 companies in 39 distinct 2-digit SIC code industries with both U.S. and foreign targets. A total of 1673 deals were extracted from Zephyr for U.S.-based acquirers part of the S&P 500 between 1998 and 2017. Acquirers needed to have no- or a minority stake (50% or less) before the M&A and a majority stake after the M&A (50.1% or higher) to be included. Deals for the first five years were only used to compute the experience variable for the final sample, as will be covered later in this chapter. Hence, these deals were excluded in the final analysis. Due to missing values within the Zephyr, Compustat, and Execucomp data, the final sample consisted of 437 deals.

This sample was deemed appropriate for this study for several reasons. Firstly, using publicly available information provides rigour and replicability. As all data used in this study is publicly available, other researchers can follow the methods outlined in this chapter and replicate this study. This provides rigour to the study as it is easier to verify the results. Secondly, data for many acquirers in many different industries are available through the use of these databases. This aids in the validity and generalizability of the study. Thirdly, public deals are more likely to have more time spent on them, as managers are held responsible by their shareholders. This ensures that deals made are not just small deals made on a whim by managers because of empire building or managerial hubris.

3.2. Dependent variable

For measurement of M&A performance event study analysis yielding cumulative abnormal returns (CAR) were used. Abnormal returns are a market-based measure consistent with the extant literature (Haleblain & Finkelstein, 1999; Haleblain, Kim, & Rajagopalan, 2006; Hayward, 2002). The event study methodology is based on the assumption of the market efficiency hypothesis. This hypothesis states that if financial markets are efficient, they will adapt fast to new information.

There is ample evidence supporting the use of event study methodology in measuring performance and the market efficiency hypothesis. Jensen (1986) noted that while evidence for event study methodology is not literally ubiquitous, it is perhaps the most studied proposition in science. Results from more than 100 studies by Elton and Gruber (1986) showed that markets do respond rapidly supporting the market efficiency hypothesis. Additionally, Healy et al. (1992) found that there is a strong relationship between positive abnormal returns at announcement and increases in post-merger cashflows. Furthermore, Kaplan and Weisbach et al. (1992) found that when comparing successful and unsuccessful divestitures, unsuccessful divestitures had significantly lower abnormal returns, which suggests that abnormal returns may be predictive of performance. Moreover, Sirower (1997) found that abnormal returns were indicative of long-term performance. lastly, it is important to note that in a typical event study returns change from day to day, indicating a fast response by the market. Thus, there is ample evidence that market measures are a valid measure of M&A performance.

However, event study analysis is not without its critics. Its use has been criticized by scholars such as King et al. (2004), who argued that market-based measures do not account for other dimensions of performance. Additionally, Bauer and Matzler (2014) argued that market-based measures don't account for the integration phase.

Despite these criticisms, there are several reasons why this study used the event study methodology as opposed to accounting and or subjective measures. Firstly, data on stock prices are public information. Therefore, event studies allow for greater sample sizes in contrast to subjective measures. Secondly, rigour is increased as data and results are public and thus verifiable. Thirdly, other means of measurement may be equally if not more flawed than event studies. Subjective measures as used by Capron, (1999); Datta, (1991); and Trichterborn et al. (2016) could be influenced by biases associated with surveys and only allow for far smaller sample sizes, especially within the restrictions of this thesis (assuming enough participants could even be found). Accounting measures are also problematic. Accounting-based performance effects of M&A are often lagged by six months to two years, and thus not immediately reflected in financial statements (Rhoades, 1994). This can cause other events besides the focal M&A to influence results. Additionally, accounting measures also do not account for non-financial motives for M&A. Furthermore, accounting-based measures can be misleading due to differences in accounting practices between firms and or countries. These key arguments lead to the adoption of the event study methodology as opposed to accounting or subjective measures.

Equation one was used to compute abnormal returns.

$$r_{it} = \alpha_i + \beta_i r_{mt} + \varepsilon_{it} \quad (1)$$

In equation one r_{it} stands for the stock return of firm i on day t, r_{mt} is the matching daily market return based on the CRSP weighted value index, α_i and β_i are firm-specific OLS regression estimates of risk and volatility of stock for firm i based on the estimation window.

Following, equation two was used to compute the daily abnormal returns for firm i.

$$\hat{r}_{it} = \hat{\alpha}_i + \hat{\beta}_i r_{mt} \qquad (2)$$

Using the results from equation one and two the daily abnormal returns were calculated using equation three.

$$\hat{\varepsilon}_{it} = r_{it} - \hat{r}_{it} \qquad (3)$$

Finally, the cumulative abnormal returns were then calculated using equation four.

$$CAR_i = \sum_t \hat{\varepsilon}_{it} \qquad (4)$$

To compute abnormal returns a market model was used. This model was predicated on the following parameters. An estimation window of 250 trading days or roughly one trading year was used. Within this window at least 100 observations were required for inclusion in the dataset. A gap of 38 days between the estimation window and the event window was used to limit the effect of possible early takeover news affecting market returns. An event window of three days before the event till three days after the event is utilized (-3,3). Windows for one (-1,1), two (-2,2), four (-4,4), and five (-5,5) days before and after the event were also calculated to verify results from the main event window.

3.3. Independent variable

Regarding the measurement of M&A experience, the literature is quite clear. This variable can be measured by the number of acquisitions a firm has undertaken (Haleblain & Finkelstein, 1999; Haleblain et al., 2006; Hayward, 2002; Zollo & Singh, 2004). For this study, M&A experience was measured for the five years before the M&A. This was done because according to Hayward (2002) experience older than five years is unavailable to organizations. This variable was winsorized at the first and 99th percentile to deal with outliers in the sample.

3.4. Moderating variable

Executive turnover represents the number of people that have left the acquiring firms top management team divided by the average executive top management team size during that period. This variable shows how much of the average management team during this period has departed the acquiring firm. This variable was measured based on the number of team members that have left in the five years before the M&A in the dataset since once again M&A experience older than five years is unavailable to corporations according to Hayward (2002). Data for this variable was gathered by utilizing data from Execucomp.

3.5. Control variables

Several control variables were utilized to rule out contamination of the results. Financial control variables used were based off information from one year before the announcement date to prevent contamination of the data by the M&A event and thus alleviate issues of reverse causality.

Relatedness was controlled for by using a dummy variable. Similar to Fowler & Schmidt (1989) and Kusewitt (1985) controlling for relatedness was done by computing a dummy variable based on a match between the first two SIC codes where one constituted a match or a zero for when no match was present.

Relative deal size was also controlled for since the relative size of the acquirer to the target has been linked to M&A performance (Asquith, Bruner, & Mullins, 1983) and has been controlled for in the past by many scholars researching influences on M&A performance (Haleblain & Finkelstein, 1999; Haleblain et al., 2006; Hayward, 2002). This variable was measured by the ratio of deal value to market capitalization.

Acquirer performance was also controlled for. Acquirer performance can influence abnormal returns as investors may see higher firm performance as a justification for a higher share price and react by buying the share, in line with the market efficiency hypothesis. Although acquirer fixed effects (which are discussed below) do account for unobserved heterogeneity with regards to performance between firms, they do not account for performance changes across time. Therefore, this variable is included in all regressions, despite the use of acquirer fixed effects. This variable was operationalized in the form of return on assets (ROA). ROA has also been included in the analysis of previous scholars for similar reasons (Haleblain & Finkelstein, 1999; Haleblain et al. 2006). Although Haleblain et al. (2006) did use a slightly different operationalization, by subtracting industry average ROA. Zollo & Singh, (2004) even used ROA-difference as their independent variable for firm performance, indicating its use as a performance measure. This variable was winsorized at the first and 99^{th} percentile to deal with outliers in the sample.

Whether a deal was national or international was also controlled for. This is because scholars like Morosini et al. (1980) have proven that differences in national culture (among other cultural differences) can affect M&A. This may be because of complementarity or clashing based on cultural differences. This variable was computed as a dummy variable called **Internationality** with the deal either being with a U.S. target (0) or a foreign target (1).

Toehold will also be controlled for. Toehold is the initial stake an acquirer has in a target before the M&A event. This stake may indicate previous involvement and or cooperation between the two firms which may influence performance though lessening knowledge asymmetry, valuable linkages already in place, and the perception of shareholders being affected, as they may see such an M&A as having less risk.

leverage was also a necessary factor to control for since it can affect M&A behaviour Jensen (1986), and a similar variable called slack resources has been controlled for in previous studies by scholars such as Haleblain and Finkelstein (1999) and Haleblain et al. (2006). Finance scholars such as Jensen (1986) have argued that firms with large amounts of free cash flow are more likely to engage in less beneficial M&A. This may be because opportunity-costs of M&A are decreased for these managers. Leverage was computed by dividing total debt by total assets.

Payment method used in the M&A was also controlled for. According to some scholars, payment method may affect firm performance when measured with market measures (Giannopoulos, Holt, Khansalar, & Mogoya, 2017). Because of what Rau & Vermaelen (1998) called the *payment hypothesis phenomenon* acquiring firms' management is inclined to use the cheapest method of payment. Which may be indicative of their knowledge on the valuation of their firm. If an acquiring firm chooses to pay in shares its management likely feels its shares are overvalued, as purchasing in this way would provide them with a discount arising from the difference between the market share price and their perception of the ‘’actual’’ value. It is for this reason that payments in shares may result in negative returns in the short term. Payments in cash may signal the opposite sentiment of the acquiring managers, indicating that management feels its share price is undervalued, which may lead to positive abnormal returns, as empirically proven by Giannopoulos, et al. (2017). This variable was computed as a dummy variable where cash/cash assumed constituted a one and other forms of payment constituted a zero.

Firm size was also controlled for. This is because firm size has been connected to inertia in strategic decisions (Haleblain, et al. 2006) and has been used by previous scholars researching M&A performance and the effect of experience on M&A performance (Haleblain & Finkelstein, 1999; Hayward, 2002; Haleblain, et al. 2006). This variable was operationalized in the form of acquirer total assets.

Industry was also controlled for since it has been linked to firm performance (McGahan & Porter, 1997; Short, Ketchen, Palmer, & Hult, 2007). There are many possible underlying reasons why industry might affect firm performance. A few examples might be market structures, industry concentration, industry growth, and the existence of barriers to mobility (Short et al. 2007). Additionally, developments in an industry could also influence the development of sales, operating margin, and investor sentiment, thus affecting abnormal returns. Industry performance was controlled for using industry dummies based on the acquirers' two-digit SIC codes.

The **year** in which a deal took place was also controlled for. This is done because events of global significance such as recessions or upturns in the economy might affect a company’s performance during a given year, especially when measuring performance using a market-based measure like abnormal returns.

For an overview of the used variables and their origins and/or calculations see Table 1: Variable overview.

Table 1: Variable overview

Variable name	Type of variable	Operationalization
Cumulative abnormal returns (CAR)	Dependent variable	$CAR_i = \sum_t \hat{\varepsilon}_{it}$
Experience	Independent variable	Number of M&A deals in the five years before the focal deal
Executive turnover	Moderating variable	$\frac{\text{Executives that have left the acquirer in the five years before the focal M\&A}}{\text{The average executive team size for five years before the focal M\&A}}$
Relatedness	Control variable	A dummy variable based on whether there is a match (=1) or no match (=0) between the acquirer- and the target primary two-digit SIC codes
Relative deal size	Control variable	$\frac{\text{Deal value}}{\text{Acquirer market capitalization}}$
Acquirer performance	Control variable	$\frac{\text{Net income}}{\text{Total assets}}$
Internationality	Control variable	A dummy variable based on whether the target is U.S. based (=0) or not U.S.-based (=1)
Toehold	Control variable	The acquirers' initial stake in the target before the focal M&A deal
Leverage	Control variable	$\frac{\text{Total debt}}{\text{Total assets}}$
Payment method	Control variable	A dummy variable for Payment method in cash/cash assumed constitutes (=1) and other forms of payment (=0)
Firm size	Control variable	The natural logarithm of Total assets
Industry	Control variable	A dummy variable for each industry by 2-digit acquirer SIC code
Year	Control variable	A dummy variable for each year

3.6. Methods of analysis

To analyse the gathered data OLS regression was used. This regression was supplemented with fixed-, and random-effects regression models as robustness checks. This method of analysis allowed for delineation between different types of relationships and to judge their capacity to explain the variance in results. Both a fixed-effects model with acquirer fixed-effects utilizing within-estimation and a random-effects model were used. In this way, exogenous variables that could not be controlled for otherwise in the model, such as cultural variables were still controlled for. Robust standard errors were also used to alleviate the problem of heteroskedasticity which is otherwise normally present within event studies. This is because robust standard errors allow for unbiased standard errors of OLS coefficients, which is a prerequisite for OLS regression that is violated by event studies since returns are calculated for consecutive days in the event window.

To test hypothesis 2a, some supplementary tests were required. This is because testing for a turning point shift cannot be done by merely looking at single regression coefficients like one can for other variables or flattening and steepening moderation (Haans, Pieters, & He, 2016). Equation five is a general regression equation which will provide clarity for the explanation of the required tests.

$$Y = \beta_0 + \beta_1 X + \beta_2 X^2 + \beta_3 XZ + \beta_4 X^2 Z + \beta_5 \qquad (5)$$

According to Haans et al. (2016) a test[1] that determines if the entirety of equation six is significantly different from zero must be performed for specified values of the moderating variable to assess if a turning point shift is occurring.

$$\frac{\partial X}{\partial Z} = \frac{\beta_1 \beta_4 - \beta_2 \beta_3}{2(\beta_2 + 2\beta_4 Z)} \qquad (6)$$

Coefficients of the regression results were used to perform a non-linear test to determine if the equation was significantly different from zero for set values of executive turnover.

[1] In STATA the nlcom and tesnl commands can be used to determine whether equation 6 is significant

4. Results

This chapter serves to report the results from the study as described in the previous chapter. Firstly, descriptive statistics and correlations of the data will be covered. Secondly, a description of the regression models ran will be given alongside the regression results. Thirdly, the results for rejection or confirmation of the hypotheses will be presented. Finally, the remaining significant effects of the moderating variable and the control variables are covered.

4.1. Descriptive statistics & correlations

Table 2: Descriptive statistics & correlations shows the descriptive statistics and correlations for the variables. The average abnormal returns in the sample are .004. This mean is not statistically significant from zero at a 95 percent confidence level as it has a p-value of .062. Thus, on average firms in the sample did not see benefits from M&A deals in terms of capital. On average acquirers in the sample had a little more than three M&A deals worth of experience. Acquirers in the sample also experienced an executive turnover of 0.742 in the five years before the focal M&A deal. The sample contained almost a 50/50 split with regards to related and unrelated acquisitions, as the sample average of relatedness was .497. The average deal size was .069, which means that on average deals were worth almost seven percent of the acquirer market capitalization. 66% (292) of the deals were national, while 34% (152) were international, leading to a sample average of .343. The vast majority of the sample deals happened without the acquirer having an initial stake within the targets, as 424 of the firms owned no stake of the targets before the deal. The average leverage within the sample was .224. A majority of the sample deals were paid for in cash as 366 deals were paid (or assumed to be paid) with cash, while 71 deals were paid for by other means such as shares, bonds, liabilities, earn-out deferred payment, or otherwise. As mentioned previously, the sample contains acquirers from 39 different industries and spanning 15 years.

To ensure that there is no multicollinearity potentially affecting the analysis the variance inflation index (VIF) was calculated. The mean VIF was 1.09, with none of the individual variables scoring higher than 1.21. Thus, it can be concluded that no multicollinearity affected the analysis.

Table 2: Descriptive statistics & correlations

Variable	Obs	Mean	Std. Dev.	Min	Max	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) CAR (-3,3)	437	.004	.045	-.223	.169	1.000										
(2) Experience	437	3.206	5.046	0	30	-0.091	1.000									
(3) Executive turnover	437	.742	.362	0	2.115	-0.038	0.009	1.000								
(4) Relatedness	437	.497	.501	0	1	0.013	-0.149	-0.026	1.000							
(5) Relative deal size	437	.069	.155	0	1.422	0.115	-0.162	-0.004	0.077	1.000						
(6 Acquirer performance	437	.079	.055	-.237	.349	-0.004	0.039	-0.081	0.004	-0.065	1.000					
(7) Internationality	437	.343	.475	0	1	0.044	-0.099	0.018	0.005	-0.043	0.003	1.000				
(8) Toehold	437	.018	.09	0	.5	-0.060	-0.058	0.037	0.031	0.084	-0.010	0.106	1.000			
(9) leverage	437	.224	.171	0	1	0.012	-0.299	0.044	0.084	0.155	-0.161	0.075	0.054	1.000		
(10) Payment method	437	.838	.369	0	1	0.085	-0.041	0.029	-0.034	-0.124	0.034	0.005	-0.060	-0.073	1.000	
(11) Firm size (log)	437	9.187	1.429	5.634	13.59	-0.043	0.145	0.157	-0.100	-0.172	-0.085	-0.011	0.078	0.085	-0.059	1.000

4.2. Regression models

To test the hypotheses several regression models (see Table 3: Regression results) were used. Model one contains the dependent variable and the control variables. Model two adds the independent variable experience into the equation. Model three brings in the moderating variable executive turnover. Model four adds the squared term of experience and the interaction terms with the normal-, and squared terms of experience combined with executive turnover. Model five and six contain the same variables as model four, except that these regressions were based on acquirer fixed-effects and random-effects respectively to control for unobserved heterogeneity. These models are included as robustness checks. The Durbin–Wu–Hausman test was performed to determine which model would be more appropriate. This test yielded an insignificant result (Prob>chi2 = 0.7723), which suggests that a random-effects model is more appropriate. However, the fixed-effects model will also be considered and reported, as this model is more commonly used in the literature.

Industry fixed-effects were included in all models except model five and six. Year fixed-effects were included in all models. Industry and year fixed effects are not reported for brevity and will be further elaborated on below.

Table 3: Regression results

Dependent variable: CAR (-3,3)	Model 1	Model 2	Model 3	Model 4	Model 5 (FE)	model 6 (RE)
Experience		-0.000	-0.000	0.002	-0.000	0.003
		(0.001)	(0.001)	(0.004)	(0.005)	(0.004)
Experience squared				0.000	0.000	-0.000
				(0.000)	(0.000)	(0.000)
Executive turnover			-0.009	-0.001	-0.008	0.000
			(0.008)	(0.014)	(0.021)	(0.015)
Experience × Executive turnover				-0.003	0.000	-0.004
				(0.005)	(0.007)	(0.005)
Experience squared × Executive turnover				-0.000	-0.000	0.000
				(0.000)	(0.000)	(0.000)
Relatedness	-0.004	-0.004	-0.004	-0.004	0.005	-0.003
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Relative deal size	0.039	0.038	0.039	0.038	0.021	0.035
	(0.025)	(0.025)	(0.025)	(0.025)	(0.032)	(0.027)
Acquirer performance	-0.001	0.000	-0.008	-0.002	0.039	0.009
	(0.050)	(0.050)	(0.050)	(0.051)	(0.070)	(0.048)
Internationality	0.003	0.003	0.003	0.003	0.004	0.003
	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)
Toehold	-0.058**	-0.058**	-0.058**	-0.058**	-0.054	-0.057*
	(0.027)	(0.027)	(0.027)	(0.027)	(0.047)	(0.032)
leverage	-0.007	-0.008	-0.009	-0.009	-0.034	-0.005
	(0.015)	(0.015)	(0.016)	(0.016)	(0.034)	(0.017)
Payment method	0.012*	0.012*	0.012*	0.012*	0.013*	0.012*
	(0.006)	(0.006)	(0.006)	(0.006)	(0.008)	(0.006)
Firm size (log)	0.000	0.001	0.001	0.001	0.017	0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.011)	(0.003)
Constant	0.057**	0.055**	0.059**	0.051**	-0.161	0.043
	(0.025)	(0.025)	(0.025)	(0.024)	(0.100)	(0.027)
Industry fixed-effects	yes	yes	yes	yes	no[2]	yes
Year fixed-effects	yes	yes	yes	yes	yes	yes
Observations	437	437	437	437	437	437
R-squared	0.142	0.144	0.148	0.151	0.100	0.149
Number of acquirers	173	173	173	173	173	173

Results are presented as:
coefficient (robust std. error)

*** p<.01, ** p<.05, * p<.1

[2] Because of the use of acquirer fixed-effects the industry fixed effects are omitted from the regression.

4.3. Hypotheses 1a & 1b

Hypothesis 1a argued that there would be an inverse U-shaped relationship between M&A experience and M&A performance. However, regression results as shown in table 3 failed to support hypothesis 1a. None of the tested models showed a significant effect of M&A experience in the past five years on M&A performance ($p > 0.05$). These results thus offer no evidence that M&A experience has an inverse U-shaped relationship with M&A performance.

Hypothesis 1b argued for a U-shaped relationship between M&A experience and M&A performance. As discussed above, none of the tested models showed a significant effect of M&A experience in the past five years on M&A performance ($p > 0.05$). Therefore, hypothesis 1b must also be rejected. These results thus offer no evidence that M&A experience has a U-shaped relationship with M&A performance.

Besides including the acquirer fixed-, and random-effects models, several robustness checks were performed to verify the results with regards to hypotheses 1a & 1b (see Appendix I: Robustness tests). Event windows for one to five days before- and after the event date were also tested using model 4. None of these tests yielded a significant effect of experience on performance ($p > 0.05$), therefore supporting the results found based on the main regression results from table 3. To test the robustness of the results further, the difference in ROA one year before- and after the completion of the focal deal was used as a substitute for abnormal returns. This test once again yielded no differing significant results. Total experience (within the original 20-year sample from Zephyr) was also tested. This was done to check if the five-year window which was chosen for the experience to be deemed relevant was chosen correctly. These results did not yield any differences in significance compared to the models which used the five-year window. Concluding, the robustness checks verify the results based on the main regressions with regards to H1a and H1b, leading to the confirmation of the rejection of both hypotheses.

4.4. Hypotheses 2a & 2b

Hypothesis 2a argued that executive turnover would moderate the relationship between M&A experience and M&A performance, leading to a turning point shift to the right. However, results failed to support hypothesis 2a. To test if a turning point shift occurs due to the moderator the significance of equation 3 was computed based on coefficients from model 4 (see Table 4: Tests for turning point shift). Since specific values needed to be assigned to the moderator (Z), the significance was tested based on the arbitrary values every 0.5 points in executive turnover (so for 0, 0.5, 1, 1.5, and 2) and for the minimum, average, and maximum values of executive turnover in the sample, being 0; 0.742 & 2.115 respectively. These tests yielded no evidence of a significant turning point shift to the right or left side (Prob > chi2 >0.05). Therefore, hypothesis 2a must be rejected.

Table 4: Tests for turning point shift

Executive turnover value[3]	Chi2	Prob>chi2
0	0.00	0.8998
0.5	0.00	0.9542
0.742	0.02	0.8998
1	0.00	0.9801
1.5	0.00	0.9995
2	0.00	0.9950
2.115	0.00	0.9945

*** p<0.01, ** p<0.05, * p<0.1

To verify the robustness of these results, several robustness checks were performed (see Appendix I: Robustness tests). Firstly, the significance of equation 3 was tested again using event windows for one to five days before and after the event date. These tests also did not produce any evidence of a turning point shift (Prob > chi2 >0.05). Secondly, the regression coefficients from the regression using the difference in ROA one year before- and after the completion of the focal deal were used as a substitute for abnormal returns when computing the significance of equation 3. These results also provide no evidence for any turning point shift, as equation 3 is not significant for any of the values of executive turnover. Thus, Hypothesis 2a must still be rejected.

Hypothesis 2b argued that executive turnover would moderate the relationship between M&A experience and M&A performance, flattening the relationship at high levels. Results show that executive turnover does not cause flattening of the relationship between M&A experience and M&A performance, since none of the interaction effects tested in any of the models from table 3 were found to be significant ($p > 0.05$). Therefore, hypothesis 2b must also be rejected.

To verify the robustness of these results several robustness checks similar to those used with H1a and H1b were performed (see Appendix I: Robustness tests). Once again, event windows from 1 to 5 days before- and after the event date were tested. None of these regressions yielded a significant effect of experience on performance ($p > 0.05$), therefore supporting the results found based on the main regression results from table 3. Furthermore, abnormal returns were again substituted with the difference in ROA one year before- and after the completion of the focal deal. Interestingly, this regression model yielded a significant positive effect of the first-order interaction term between experience and executive turnover ($p<0.05$). A significant positive coefficient for the first-order interaction term between experience and executive turnover without a significant direct effect of experience means that experience does not have a direct effect on accounting performance but experience and executive turnover combined do seem to have a positive effect when using ROA-difference as a performance measure. Nevertheless, there is no evidence for flattening as hypothesized in hypothesis 2b, as results still find no evidence pointing towards a direct first-, or second-order relationship between M&A experience and M&A performance and the coefficient of the interaction term is positive. To conclude, hypothesis 2b must thus still be rejected.

[3] The values 0; 0.742; and 2.115 represent the sample minimum, -average, and -maximum respectively

4.5. Effects of executive turnover and control variables

Although no hypothesis predicting a direct relationship between M&A performance and executive turnover was developed, and market-based measures do not offer evidence for such a relationship, the robustness checks utilizing ROA-difference did identify a significant relationship. Notably, results indicated that there was a highly significant ($p < 0.01$) negative first-order effect between executive turnover and ROA-difference.

As shown in Table 3: Regression results, a number of the control variables also produced some interesting regression results which need to be addressed.

At first glance, and contrary to expectation, toehold appears to hurt M&A performance. This contradicts the previously presented argumentation that toehold might indicate lower knowledge asymmetry between acquirer and target, valuable linkages already being in place, and lower risk in the eyes of shareholders. However, model five and six, which include firm fixed effects and random effects respectively, do not show a significant effect at a 95 percent confidence level ($p > 0.05$). Furthermore, the majority of the regressions utilizing different event windows or ROA-difference as a dependant variable show any significant effect. Additionally, it has to be noted that the part of the sample having any toehold was very limited, as only 13 acquirers had any previous stake in their targets. For these reasons, it cannot be concluded that toehold significantly influences M&A performance, despite results from the first four regression models in table 3.

Industry appears to have a significant effect on M&A performance. In models one through four almost all of the categorical industries included in the sample were found to have a significant influence on the abnormal returns. The models used in robustness checks which replaced abnormal returns with ROA-difference found that far fewer industries had any significant effects on ROA gained or lost.

As a whole, the year variable was not found to have a significant impact on M&A performance. However, the year 2005 does seem to have had a highly significant effect positive on abnormal returns in models one to three ($p < 0.05$) and is significant based on 90% confidence ($p > 0.1$) in the fourth and fifth models.

5. Conclusions, discussion, and recommendations

This final chapter is intended to discuss the meaning, relevance, and importance of the results of this study, as well as to acknowledge its limitations. This chapter starts by presenting the conclusions of this study. Subsequently, its academic and managerial implications will be discussed. Finally, acknowledgement is given to the limitations that this study is subject to.

5.1. Conclusions

This study set out to empirically investigate the link between M&A experience and M&A performance and to examine the possible moderating effect of executive turnover as an explanation for the discrepancy in previous empirical findings. Analysis of a sample consisting of 437 deals by S&P 500 acquirers spanning 173 companies in 39 distinct 2-digit SIC code industries with both U.S. and foreign targets fails to support hypotheses predicting both an inverse U-shaped-, or U-shaped relationship between M&A experience and M&A performance. Furthermore, hypotheses that predicted a moderating effect of executive turnover by way of a turning point shift to the right and flattening are also rejected.

5.2. Academic implications

Despite expectations, the results of this study indicate that there is no significant relationship between M&A experience and market-based M&A performance. This conclusion concurs with results from Zollo & Singh (2004) while contradicting findings from Fowler and Schmidt (1989), Haleblain and Finkelstein (1999), Hayward (2002), and Kusewitt (1985). Zollo & Singh (2004) appear to have been right when they suggested that mere exposure to M&A is not enough for a firm to gain a performance benefit. M&A are relatively infrequent, heterogeneous, and causally ambiguous tasks (Hayward, 2002) and an experience effect may therefore be very difficult to obtain from exposure alone (Zollo & Singh, 2004). Furthermore, it is also a possibility that firms recognize that each M&A is unique and may therefore be primarily discriminating, be it appropriately (quadrant 3) or inappropriately (quadrant 2), leading to a neutral performance effect of M&A experience on M&A performance (Haleblain & Finkelstein, 1999).

Speaking more broadly, this study also highlights that researchers should be careful when assuming possible learning effects. Such effects may not be applicable everywhere just because there is an expectation that individuals and/or groups learn by doing, as M&A's serve as an example of when such effects may seem logical but are not present.

The results of this study also show that contrary to expectations, there seems to be no significant moderating effect of executive turnover on the relationship between M&A experience and M&A performance when performance is measured using market measures. Thus, executive turnover does not seem to be a significant factor in whether a firm retains relevant knowledge regarding M&A.

One reason why no significant moderating effect of executive turnover is found may be that executive replacement may have a countervailing moderating effect on the relationship between codifiable M&A experience and M&A performance, negating the negative effects of executive turnover. Weick & Roberts (1993) suggested that newcomers might have a positive effect on existing group members. While Zollo & Singh (2004) also name verbalization as a key factor in organizational learning. When turnover occurs someone new is often brought in to replace the leaving executive. When insiders have to relate their experience to these newcomers through sharing experience which is codifiable, insiders may be *''resocialized''* (Weick & Roberts, 1993). When forced to tell a narrative to newcomers outsiders are forced to reiterate and rethink their experiences, which may lead to new or renewed insights. Thus, this positive effect of replacement may counteract any negative effects of leaving executives caused by the turnover.

Another interesting implication lies in the differing results when utilizing market-measures and accounting-based measures of M&A performance. While performing the main analysis based on

market-measures no evidence was found for any of the hypotheses and it seemed like there was no relationship present between the independent-, dependent-, and moderating variable whatsoever. However, when utilizing ROA-difference as a dependant variable some unexpected effects were found. Firstly, executive turnover was found to have a highly significant negative effect on ROA-difference. This may be caused by factors such as increased selection-, and training costs, operational disruption and demoralization (Staw, 1980). Furthermore, a significant positive first-order interaction effect was found. This indicates that although no relationship between acquisition experience and acquisition performance nor a moderating effect can be proven using market-based measures, using accounting-based measures of performance provides some evidence pointing towards an effect wherein higher values of both executive turnover and experience have a positive effect. This provides more support for the previously stated positive effect of replacement. As perhaps this positive effect on ROA is caused by executives passing on lessons learned in previous M&A to replacement executives, revitalizing their knowledge in the process. However, due to the inherent flaws with accounting-based measures, it is also possible that this effect is a more general one, not just pertaining to M&A. As ROA-difference may be affected by other factors besides M&A.

This discrepancy in results between market- and accounting-based measures of performance also illustrates a need to distinguish clearly between them. While market-based measures and accounting-based measures are sometimes used by scholars interchangeably when developing theory around performance, they are different dimensions of performance and an observable effect on one measure might not be present in another. Future researchers should therefore take care when making broad inferences and explicitly distinguish what sort of performance effects they are referring to in their theory development.

While not a focus of this study nor included in any of the hypotheses, two remarks can also be made regarding results for some of the control variables. Firstly, results indicate that industry is correlated with firm performance, as they were proven to be significant in the regressions utilizing market-based measures. These results concur with findings by previous scholars in the strategic management field (McGahan & Porter, 1997; Short et al., 2007). The models used in robustness checks which replaced abnormal returns with ROA-difference found that far fewer industries had any significant effects on ROA gained or lost. This suggests that industry may be an important factor influencing investor perception, while not necessarily influencing accounting-based measures such as ROA. Secondly, while the year in which an M&A deal takes place does not generally seem to affect M&A performance, 2005 does seem to have been a year of particularly good performance. This may have been because of the economic upturn which had set in around 2003. Another reason may be the rise of the economies of China and India at the time, perhaps spurring on firms to M&A as a form of FDI. Though caution is appropriate in drawing any definitive conclusions here, as these findings were not aims of this study.

5.3. Managerial implications

This study also has implications for managers. Results show that there is no significant relationship between M&A experience and M&A performance. Managers should therefore be mindful that just because their firm has experience with M&A does not mean that they have gained an advantage through that experience alone. Furthermore, results show that executive turnover does not have a significant moderating effect on the relationship between experience and market performance. Yet, managers and investors should still be wary of executives leaving top management teams. Results from robustness checks using accounting-based measures find that executive turnover has a significant negative effect on ROA-difference. Another reason why managers should still be mindful of executive turnover is that while there may not be any significant effects on market-based M&A performance, organizational learning regarding other activities may still be negatively affected. Yet, a significant positive effect is present when both experience and turnover are high. Thus, if executive turnover cannot be avoided it may also provide opportunities.

5.4. Limitations & opportunities for future research

As with any study, this study has limitations. These limitations are wholeheartedly acknowledged to add to the rigour of this study through critical assessment and to provide researchers with future opportunities for research.

Firstly, this study utilizes a sample exclusively containing acquirers who are part of the U.S. S&P 500. Therefore, caution is advised when generalizing findings from this study to different populations. While caution is always advisable when generalizing findings, it is especially applicable here for two main reasons. Firstly, since the U.S. is often recognized as an Anglo-Saxon society (Carr, 2005; Siepel & Nightingale, 2014), results may not apply to societies with vastly differing societal models. Especially in societies with Eastern models, where cooperation and the common good are more important than the individual, group-level knowledge loss based on the theory of the collective mind may have a greater effect. Therefore, M&A performance might yet be significantly moderated by executive turnover in these societies. Future research should be performed using samples from societies following an Eastern- or Rhineland model, to see if the results of this study are also generalizable to firms in these societies.

Secondly, this sample only contains very big public acquirers. Therefore, results may not generalize to smaller and/or private firms. Smaller firms may have different motives for an acquisition than large firms and may not have to consider investor reactions to their acquisitions, as they may not be traded publicly. This may lead to differences in acquisition behaviour between public and private firms (Angwin, 2007; Asker, Farre-Mensa, & Ljungqvist, 2011). Furthermore, small firms may lack the regulated processes of due diligence and assessment that larger firms may have, therefore making M&A decisions more dependent on the management team alone. Because of these factors possibly affecting generalizability to smaller firms, future research should try to determine if this study's findings are also applicable to smaller/private firms.

Thirdly, this study does not quantify the cultural factors affecting M&A. As mentioned earlier, several cultural factors influence M&A (Datta, 1991; Larson & Finkelstein, 1999; Larsson & Lubatkin, 2001; Morosini, et al., 1998; Nahavandi & Malekzadeh, 1998; Teerikangas & Very, 2006; Weber, et al., 1996). These factors have been controlled for by utilizing acquirer fixed- and random-effects and by controlling for internationality. However, this study does not quantify the effects of culture on the M&A deals within the sample. This decision was made because of two reasons. Firstly, there is no real scientific consensus on if and how culture can and should be measured quantitatively (Barney, 1986; Schein, 1990; Trice & Beyer, 1993). Secondly, no usable data is currently available for the chosen sample. Furthermore, this study does not control for acculturation, which as mentioned earlier is noted by Larsson & Lubatkin (2001); Nahavandi & Malekzadeh (1998); and Teerikangas & Very (2006) as an important aspect of M&A. Controlling for this aspect was however not possible within this study, as acculturation is by definition a unique process between two cultures of the acquirer and target. Therefore, no quantitative data on acculturation is currently available. Including these cultural factors should be a focal concern for future researchers.

Fourthly, this study was not able to take the effects of knowledge codification into account. While results by Zollo & Singh (2004) indicate that knowledge codification positively affects M&A performance, this variable could not be included in the analysis because of several reasons. Firstly, the operationalization used by Zollo & Singh (2004), was specific to the banking industry (Acquiring Bank Questionnaire) and such centralized information was not available for this study. Although some similar information is publicly available, including this data in the analysis was not possible due to time restraints. Furthermore, a measure using such filings may not be fully applicable to executive teams, as this paperwork may not necessarily be drafted or even seen by them. For these reasons, it was not possible to include knowledge codification in this study and it may be interesting for future researchers to do so.

Lastly, this study primarily uses market-based measures of M&A performance. Market-based measures have been criticized as a measure of performance. Some scholars in the field of M&A have called for the use of multiple measures (King, et al., 2004), or subjective measures of performance (Bauer & Matzler, 2014). King's call for the use of multiple measures was heeded, as robustness checks were also performed using ROA-difference between the completion date and a year after the completion date as a substitute measure for M&A performance. Additionally, Bauer & Matzler, et al. (2014) argued for the use of subjective measures. However, the use of subjective measures was not possible due to the unavailability of participants in combination with time constraints. Utilizing all three measures comparatively could provide interesting avenues for future research.

Although not a limitation, another opportunity for further research lies in further application of collective mind theory and exploring the effects of executive turnover. Future opportunities for research lay in the possible effects of collective mind theory on performance in executive team tasks other than M&A, such as divestitures, corporate entrepreneurship and reorganization. These tasks are also often considered relatively complex, time-sensitive, and require coordination and mutual adjustment between the executives to complete successfully. Therefore, these tasks may be affected by executive turnover in interesting ways, which should be explored by future scholars.

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Appendix I: Robustness tests

Table 5: Regression results robustness checks

VARIABLES	CAR (-1,1)	CAR (-2,2)	CAR (-3,3)	CAR (-4,4)	CAR (-5,5)	ROA-Difference
Experience	0.001	0.002	0.002	0.001	0.003	-0.003
	(0.003)	(0.004)	(0.004)	(0.005)	(0.005)	(0.003)
Experience squared	0.000	-0.000	0.000	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Executive turnover	0.001	-0.001	-0.001	-0.003	0.005	-0.028***
	(0.011)	(0.012)	(0.014)	(0.016)	(0.016)	(0.009)
Experience × Executive turnover	-0.001	-0.002	-0.003	-0.003	-0.005	0.008**
	(0.004)	(0.005)	(0.005)	(0.006)	(0.006)	(0.004)
Experience squared × Executive turnover	-0.000	0.000	-0.000	0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Relatedness	0.000	-0.002	-0.004	-0.003	-0.005	0.008
	(0.004)	(0.004)	(0.005)	(0.005)	(0.006)	(0.005)
Relative deal size	0.029	0.034	0.038	0.036	0.051*	0.026*
	(0.020)	(0.024)	(0.025)	(0.023)	(0.027)	(0.015)
Acquirer performance	0.002	0.008	-0.002	0.028	0.008	-0.079
	(0.033)	(0.041)	(0.051)	(0.052)	(0.056)	(0.056)
Internationality	0.001	0.001	0.003	0.002	0.001	-0.002
	(0.003)	(0.004)	(0.005)	(0.005)	(0.006)	(0.005)
Toehold	-0.034	-0.041	-0.058**	-0.065**	-0.048	-0.016
	(0.027)	(0.031)	(0.027)	(0.027)	(0.031)	(0.021)
leverage	-0.002	-0.002	-0.009	-0.008	0.001	0.008
	(0.012)	(0.015)	(0.016)	(0.017)	(0.018)	(0.021)
Payment method	0.001	0.002	0.012*	0.013*	0.014*	-0.010
	(0.004)	(0.005)	(0.006)	(0.007)	(0.007)	(0.006)
Firm size (log)	0.000	0.000	0.001	0.002	0.001	0.004*
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)
Constant	0.029	0.013	0.051**	0.033	0.067*	-0.020
	(0.046)	(0.038)	(0.024)	(0.027)	(0.037)	(0.024)
Industry fixed-effects[4]	yes	yes	yes	yes	yes	yes
Year fixed-effects	yes	yes	yes	yes	yes	yes
Observations	437	437	437	437	437	437
R-squared	0.166	0.163	0.151	0.151	0.159	0.321

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[4] Because of the use of acquirer fixed-effects the industry fixed-effects are omitted from the regression.

Table 6: Results robustness checks H2a with different event windows

Executive turnover value	CAR (-1,1)		CAR (-2,2)		CAR (-4,4)		CAR (-5,5)	
	Chi2	**Prob>chi2**	**Chi2**	**Prob>chi2**	**Chi2**	**Prob>chi2**	**Chi2**	**Prob>chi2**
0	0.00	0.9878	0.02	0.8952	0.00	0.9844	0.27	0.6024
0.5	0.00	0.9988	0.05	0.8222	0.04	0.8446	0.12	0.7319
0.742	0.00	0.9640	0.14	0.7036	0.01	0.9282	0.00	0.9931
1	0.00	0.9789	0.01	0.9074	0.00	0.9469	1.24	0.2658
1.5	0.00	0.9822	0.00	0.9945	0.00	0.9561	0.81	0.3693
2	0.00	0.9831	0.00	0.9736	0.00	0.9592	0.64	0.4230
2.115	0.00	0.9832	0.00	0.9710	0.00	0.9596	0.62	0.4297

The values 0; 0.742; and 2.115 represent the sample minimum, -average, and -maximum respectively
*** p<0.01, ** p<0.05, * p<0.1

Based on model 4

Table 7: Results robustness checks H2a for model 5&6, and ROA-difference

Executive turnover value	**Model 5 (FE)**		**Model 6 (RE)**		**ROA-difference**	
	Chi2	**Prob>chi2**	**Chi2**	**Prob>chi2**	**Chi2**	**Prob>chi2**
0	0.00	0.9981	0.00	0.9822	0.04	0.8432
0.5	0.00	0.9982	0.00	0.9976	0.00	0.9705
0.742	0.00	0.9981	0.02	0.8841	0.01	0.9283
1	0.00	0.9981	0.00	0.9546	0.01	0.9152
1.5	0.00	0.9981	0.00	0.9665	0.01	0.9059
2	0.00	0.9981	0.00	0.9693	0.02	0.9020
2.115	0.00	0.9981	0.00	0.9697	0.02	0.9015

The values 0; 0.742; and 2.115 represent the sample minimum, -average, and -maximum respectively
*** p<0.01, ** p<0.05, * p<0.1