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Founder led firms in M&A activity: are founder led firms able to generate more shareholder value on the stock market?

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Executive summary

When analysing the available literature regarding founder and non-founder led firms, several opposing views of reputable economists might cause some confusion. More specifically, it's quite unclear whether or not founder led firms should be able to generate more value for their shareholders when engaging in M&A activity. On the one hand, founder's overconfidence could lead to higher activity on the M&A market with value destroying deals as a consequence (Lee, 2017; Malmendier, 2008). On the other hand, founder led firms do seem to be able to generate more value on the stock market in comparison with non-founder led firms (Fahlenbrach, 2009; Palia and Ravid, 2008). Therefore, the investigation implemented an analysis based on the investment behaviour and value creation of founder led firms, which engaged in M&A activity. The main conclusion of this investigation is that founder and non-founder led firms display similar investment behaviour when engaging in an acquisition. When analysing the performance on the stock market, founder led firms do seems to do better, although not every performance measure implemented by this investigation seems to provide the same conclusion.

1 Introduction

The domain of founder led firms is a well-documented area of investigation that has received some attention by several reputable economists. However, as is the case with several interesting topics, the available literature reveals not only interesting points but also interesting contradictions in the conclusions of authors investigating the same topic. Inspired by the contradictions in the founder led firm literature, the primary goal of this investigation is to combine two large domains of investigation regarding founder led firms. More specifically, the investigation will focus on the comparison of founder and non-founder led firms in M&A activity. This analysis will try to reveal if founders show some kind of different investment behaviour when engaging in a merger or acquisition. The first of two main research questions is defined as:

"Do founder led firms display different investment behaviour when engaging in M&A activity?"

In order to understand all elements that could possibly have an effect on founder's investment behaviour, the starting point of this investing is a thorough analysis of all available literature regarding the comparison of founder and non-founder CEOs. This analysis is elaborated in the first chapter of the literature review and produces several interesting results and contradictions. One of the most important conclusions for this investigation is the result of Palia and Ravid (2008). The authors reason that because of the higher ownership stake of founder CEOs, more of their personal wealth is at stake, which should induce more shareholder value maximization. However, the higher ownership stake of founder CEOs reduces agency costs, which could trigger riskier and value destroying investment behaviour. The latter argumentation is supported by the findings of Lee (2017) and Malmendier (2008). Lee finds that founder CEOs are more overconfident than non-founder CEOs. This work is then complemented by Malmendier stating that overconfident CEOs tend to be more active in M&A activity and destroy shareholder value. Again, this statement is contradicted by Nguyen (2015) who focusses on multiple deals instead of single deals. Another interesting paper, written by Fahlenbrach (2009), focusses on the investment behaviour of founder CEOs and concludes that founders tend to engage in smaller, non-diversifying deals. One could argue that this type of investment behaviour relates founder CEOs to a lower level of risk taking. However, the latter again is contradicted by Hirshleifer (2012) who specifically states that founder CEOs are

associated with a higher level of risk taking. All mentioned conclusions and investigations are discussed in the literature review and complemented by some suggestions which are investigated later on.

After comparing founder and non-founder led firms, the second part of the investigation focusses on which type of firm is able to generate the most value for its shareholders. Since founder CEOs tend to be overconfident and overconfidence in M&A activity could potentially lead to value destroying M&A decisions, this investigation defines the second research question as:

"Are founder led firms who are activity in a M&A environment able to create more value for their shareholders in comparison with non-founder led firms?"

The second part of the literature review is dedicated to provide an overview of all relevant papers regarding value creation in a M&A environment and on the stock market. First, several factors that tend to create shareholder value when engaging in M&A activity are briefly summarized. Draper and Paudyal (1999) argued that firms can generate the most value when there's less competition in the bidding process. Further, stock financed deals seem to be more value creating. However, since founder CEOs tend to be more overconfident (Lee, 2017), they perceive their own stock price as undervalued and should be less likely to use stock as method of payment. Finally, non-diversifying deals tend create more value as well. In terms of value creation on the stock market itself, the literature offers some opposing views. In general, it seems that more authors find a positive relationship between founder led firms and stock market performance. For example: Palia and Ravid (2008), Fahlenbrach (2009) and Jayaraman (2000) all find a positive relationship between founder CEO status and stock market performance based on a wide range of value creation measurements. In contrast to these findings, Johnson (1985) reasons that because founder CEOs are severely entrenched, they do not intend to maximize shareholder value since this entrenchment should be interpreted as a cost to the shareholders of the firm.

In order to conduct this investigation, one requires a sample of founder and non-founder led firms which also engage in M&A activity over the sample period. Because of unified reporting standards and a large M&A market in the United States, this investigation focusses on companies listed on the S&P 1500 index. The sample period will range from the beginning of 2008 until the end of 2017. An initial list that indicates the founder status of the CEO of all

S&P 1500 firms over a period ranging from 2008 until 2012 is provided by assistant professor Byoung-Hyoun Hwang of the Cornell University in New Yok. The list is then complemented by all relevant variables necessary for the investigation. This procedure is discussed in chapter 3.

2 Literature review

This chapter starts with the comparison of founder and non-founder led firms. The literature review starts with the most important theories discussed in the available literature and makes some conclusions/suggestions, which will be tested later on in this investigation. The comparison of founder and non-founder led firms is based on several variables. The goal of the first part of the literature review is to understand whether or not personal and organisational elements can potentially influence the behaviour of founder led firms. The second part of the literature review focusses on the M&A environment itself. This part starts with an overall introduction into mergers and acquisitions. Further, the M&A decision is discussed in combination with an overview of the most important factors of wealth creation. Finally, the available literature regarding valuation and stock market performance is analysed briefly.

2.1 Comparison of founder and non-founder CEOs

2.1.1 CEO succession

An interesting topic within the domain of CEO succession is to understand when founder CEOs are actually being replaced by non-founder or professional CEOs. When analysing the available literature regarding this matter, one should be aware of the different stages of development in which a specific firm can find itself. Drazin and Kazanjian (1993) have conducted their research on new technology ventures and identified 5 stages of venture growth[1]. They reason that growing ventures will require different needs and competencies over time. More specifically, in the initial stages a venture requires a CEO that has some technological expertise while at a later stage the venture requires a CEO with a focus on the managerial side of the competitive market. Drazin and Kazanjian (1993) find that although there's no significant difference in the presence of founder versus non-founder CEOs when comparing initial and later stages of the firm, founder CEOs tend to have technological backgrounds while successor CEOs tend to have financial, administrative or marketing backgrounds. In line with the previous statement, they also conclude that CEOs with technological backgrounds dominate early stages while CEOs with financial, administrative or marketing backgrounds tend to dominate later/growth stages of a firm (Drazin, 1993).

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[1] The first two stages are considered to be the early stages of firm growth. In these stages, CEO focus should be on creating the product and bringing it to the market. From stage 3 onward, the focus should shift towards the demands of the competitive market in combination with the managerial aspects that come along.

Additional research on CEO succession by Wasserman (2003) revealed that the rate of founder CEO succession increases after the completion of the development stage of a start-up. The same research also reveals that, in contrast with large companies, success in the early stages of a start-up doesn't necessarily decrease the succession rate of founder CEOs. Completing the development stage of a start-up or a financing round increases the rate of founder succession. Several personal characteristics such as providing financial resources or choosing not to grow too fast can decrease the succession rate (Wasserman, 2003). Another research with a focus on listed companies in the US finds that founder CEOs tend to leave their position after periods of both unusually high and unusually low performance (Adams, 2009).

In line with the previously mentioned literature, one could argue that because of differing needs in terms of the different venture growth stages and because of a decent probability of founder CEO succession, founder CEOs that are successful in going public with their firm and engage in M&A activity must have something special. One explanation could be that founder CEOs have superior knowledge of their firm or product(s) and have proven themselves to be successful. Their way of leading the firm has given them the confidence of the firm's shareholders. Further, it is possible that these founders have created within their own a firm a dominant position, which makes founder CEO succession more difficult. The latter relates to the concept of managerial entrenchment, which is discussed in the next chapter. However, the findings of Adams (2009) seem to contradict this statement.

2.1.2 CEO compensation and ownership

A significant part of the available literature regarding founder CEOs is related to founder CEO compensation and the related concept of entrenchment. Managerial entrenchment can be defined as: "the extent to which managers fail to experience discipline from the full range of corporate governance and control mechanisms, including monitoring by the board, the threat of dismissal or takeover, and stock- or compensation-based performance incentives" (Berger, 1997). When comparing founder and professional CEOs in large firms, Palia and Ravid (2008) found that there is no significant difference in mean salary and bonusses. Further, the authors conclude that founder CEOs have a higher ownership stake in their company suggesting that founders should have more incentives to maximize shareholder value. In terms of entrenchment, founder CEOs operate with a lower leverage ratio, have more insiders in their board, are more involved in the selection of board members and have smaller boards. These

findings all suggest that founder CEOs are more entrenched than professional CEOs (Palia, 2008).

First, it's important to note that a higher ownership stake of founders in comparison with professionals should operate as a trigger for founders to maximize shareholder value to a further extent. The higher level of ownership means that a bigger part the personal wealth of a founder is at stake, which could influence the investment decisions and risk taking of the manager. More specifically, because founder CEOs have a higher level of ownership, one could argue that they are triggered to take on less risky projects when engaging in M&A activity. However, the higher level of equity ownership also indicates that founder CEOs should have lower agency costs since they are both manager and owner of the firm. Following, the conclusion of Palia and Ravid (2008), founder CEOs are less likely to be removed from their position, which contradicts the previous conclusion. A founder CEO, because of his/her stronger position in the firm, could be triggered to invest more and take on riskier projects. The next few chapters investigate the drivers and the outcome of the investment behaviour of founder CEOs.

2.1.3 Personal characteristics

Since personal characteristics influence the behaviour of a person, it is interesting to know whether or not personal characteristics also influence or dominate corporate decision making. Bertrand and Schoar (2003) reason that in order to determine corporate practices, the analysis should be focussed on personal characteristics of CEOs and higher level executives. With a focus on investigating unexplained variety in corporate practices, the authors find that manager effects are especially relevant for acquisitions and diversification activities (Bertrand, 2003).

Another important domain to investigate is whether or not founder CEOs tend to be more overconfident. The answer to the first question is given by Lee, Hwang and Chen (2017) in their investigation on founder CEOs. The authors measure overconfidence based on the tone of CEO tweets, the tone of CEO statements and earnings conference calls, management earnings forecasts and the extent to which CEOs exercise their exercisable in-the-money options. The investigation concludes that founder CEOs use fewer negative words, present more optimistic forecasts and hold on to their options significantly longer because they have a perception of undervaluation. Based on these finding, the authors conclude that founder CEOs are more overconfident than professional CEOs (Lee, 2017).

The analysis of the effect of overconfidence on firm investments and M&A activity requires a small introduction into the concept of overconfidence. CEO overconfidence is defined in the available literature based on two critical concepts: managerial miscalibration and the better-than-average effect. Ben-David, Graham and Harvey (2013) define managerial miscalibration as a managerial bias in which the potential range of outcomes is systematically underestimated. These type of managers overestimate the precision of their forecasts or underestimate the variability of certain projects/returns. (Ben-David, 2013). One could argue that because of miscalibration, a CEO is more likely to engage M&A activity and therefore destroys shareholder value. The better-than-average effect is defined by Nguyen (2015) as the tendencies of managers to interpret situations in an unrealistically optimistic view. Overconfident CEOs overestimate the value of their own company and their ability to turn around/improve potential targets (Nguyen, 2015).

Malmendier and Tate (2008) investigate the relationship between CEO overconfidence and M&A activity. The authors find that the M&A activity of an overconfident CEO depends on the perceived undervaluation of the firm and the overestimation of potential targets. The probability of engaging in M&A activity increases by 65% if the CEO is interpreted as overconfident. Further, overconfident CEOs tend to engage in value destroying lower-quality mergers and acquisitions. The stock market reacts more negatively to M&A announcements if the acquiring CEO is considered to be overconfident (Malmendier, 2008). An interesting complementation to the work of Malmendier and Tate, which focusses on single deals, is conducted by Nguyen (2015). The author focusses on multiple deals and contradicts the findings of Malmendier and Tate. There's neither evidence of more acquisitiveness of overconfident CEOs nor evidence of worse performance in M&A activity. An interesting aspect of Nguyen's work is that during the financial crisis, overconfident CEOs completed a high level of diversifying deals, attained significantly positive abnormal returns and were more acquisitive in comparison with non-overconfident CEOs (Nguyen, 2015).

This part of the literature concludes that personal characteristics matter when analysing the M&A activity CEOs. The available literature agrees on the fact that founders tend to be more overconfident. However, the effect of overconfidence on M&A activity is somewhat uncertain. Malmendier and Tate reason that overconfidence leads to more deals and value destruction while Nguyen contests both findings. Additional research regarding the investment behaviour of CEOs is conducted in the next topic.

2.1.4 Investment behaviour

The available literature regarding the comparison founder and non-founder CEOs investigates several interesting topics. In the previous chapter, this investigation briefly discussed the work of Lee (2017) stating that founder CEOs are severely more overconfident than non-founder CEOs. It is therefore interesting to see whether or not overconfident CEOs make different investment decisions. Hirshleifer investigated in which way overconfident CEOs can create shareholder value. Their research indicates that overconfident CEOs are associated with greater innovation in terms of investments. The level of R&D expenditures bring along more innovative output. Overconfident CEOs are also more capable of exploiting growth opportunities to create firm value. However, the relationship between overconfident CEOs, greater innovative output and the exploitation of growth opportunities only holds in innovative industries (Hirshleifer, 2012). Fahlenbrach (2009) also investigated the level of R&D expenditures and found that founder CEOs tend to spend more of their resources on R&D. Founders also maintain higher capex and make more but smaller non-diversifying acquisitions. These finding are in line with Bertrand and Schoar (2003). He also concludes that acquisitions in a firm's core industry and a higher level of expenditures lead to an increase in the CEOs firm value. Important to note is that this is definitely not always the case (Fahlenbrach, 2009). Another work investigating the behaviour of founder CEOs in terms of innovation concludes that, in line with the classical entrepreneur profile, founders are associated with more innovation when comparing the decision making preference of firm managers (Walsh, 1995).

Several papers have been written about the risk aversion of founder CEOs. Hirschleifer (2012) pointed out that founders are associated with riskier projects. Tang, Li and Liu (2016) conducted a research stating that founders will take on more risk because of the previously mentioned concept of overconfidence. The authors prove that founder CEOs tend to take more risk but only under certain conditions. The relationship weakens when the CEO faces less uncertainty or complexity, the CEO chairs the board of directors and the CEO is younger (Tang, 2016).

Eisenmann investigated the risk-taking propensity of CEOs in terms of equity ownership. He finds positive relationship between CEO equity ownership and the risk-taking propensity, suggesting that founder will take on more risk. The rationale behind his work is that owner CEOs are less likely to be terminated by their boards, and are therefore more likely to take on risky projects. Owners also have more access to capital since they appear more credible to outside capital providers (Eisenmann, 2002).

Based on the available literature, this investigation assumes that founder CEOs can be associated with more innovation. Founders invest more in R&D and have higher capex. The most relevant conclusion for this investigation is given by Fahlenbrach (2009) stating that founders operate with a higher level of M&A activity but with a focus on nondiversifying deals. One could argue that nondiversifying deals can be related with a lower level of risk taking in comparison with diversifying deals. This is somewhat in contrast with the findings of Eisenmann (2002) and Hirschleifer (2012), which clearly state that founder CEOs can be associated with more risk.

2.1.5 Human Capital and personal experience

Another interesting aspect when comparing founder and professional CEOs is the experience effect and the role of human capital on the performance of a company. An interesting article written by Shane and Stuart (2002) reveals that the experience of a founding team has a positive impact on the probability of attracting capital and on the later performance of a start-up (Shane, 2002). One could argue that, because founder CEOs have a longer history within the company, the experience they have might offer them a competitive advantage over professional CEOs. An interesting paper regarding the effect of experience and human capital on entrepreneurs is written by Unger (2011). He finds a positive relationship between human capital and entrepreneurial success. However, the effect seems to be different depending on the context. First, the human capital needs to be applied at specifics task of the businessowner. Task-related human capital in terms of founder CEOs are for example industry or owner experience and entrepreneurial knowledge. Employment experience or general education can be interpreted as nontask-related human capital. Second, the human capital needs to be directly related to knowledge and skills, which are the outcomes of human capital investments such as education and work experience. Finally, the effects for young firms are also higher than older firms (Unger, 2011).

Another paper related the personal experience of CEOs was written by Kolasinski and Li (2013). These authors find that overconfident CEOs who experience losses in their personal portfolio on the stock market make better M&A decisions. Based on this finding, it's the personal experience of a manager that dominates the investment decisions of a firm rather than solely education and professional experience. In addition to this, the availability of a strong and independent board has a good chance of steering away overconfident CEOs from making bad M&A decisions (Kolasinski, 2013).

Based on these papers, this investigation argues that past experiences and the accumulated knowledge of a founder CEO don't always provide a significant competitive advantage in comparison with professional CEOs. Unger (2011) clearly indicates that knowledge is more important than past experience. One should keep in mind that professional CEOs might have more knowledge and/or experience in the M&A domain when replacing a founder CEO. In the assumption that founders have superior knowledge of their firms in comparison with professionals, they should be more capable of detecting potential synergies. However, this doesn't necessarily offer them a better deal since professionals might have more knowledge/experience in the M&A domain. This is what we intend to investigate in the next chapters.

2.2   Mergers and acquisitions

2.2.1   Introduction in the M&A environment

The underlying dynamics of the M&A environment and the potential motives of a company, which initiate a deal, are discussed in this chapter. But first, it's essential to understand the difference between a merger and an acquisition. When two or more companies come to together as one and decide to form a new legal entity, this method is defined as a merger. There are many different types of mergers defined in the available literature. This chapter briefly discusses the most important ones. A horizontal merger is defined as a merger of companies active in the same industry with the intention of increasing the market share of the company. A vertical merger, on the other hand, is related to companies which both work at the same product or service. These companies are active on a different level of an industry's supply chain and intend to decrease overall costs by merging with a supplier. A conglomerate merger is defined as a merger between unrelated companies. In theory, these companies should have nothing in common. Finally, a congeneric or product merger is defined as a merger between two companies which intend to align certain overlapping factors. These factors could be anything ranging from a production or marketing process to R&D or technology aspects. An acquisition on the other hand is defined as a deal between two companies, in which the acquiring company buys the shares of the target company with the intention of taking over control of the firm. It's important to note that this transaction doesn't necessarily mean that the acquirer needs to buy all the outstanding shares of the target in order to take over control. This investigation notes that there's a lot of flexibility for an acquirer when approaching a potential target. First, a decision needs to be made based upon the method of payment. The most

important options within this category are defined as offering cash, stock or a combination of both. An acquirer can also choose between a friendly and a hostile takeover. A hostile takeover is defined as a takeover in which the board of directors of the target doesn't express its approval. A typical case of a hostile takeover is a tender offer, in which the acquirer will directly approach the shareholders to sell their outstanding shares for premium price. A friendly takeover is the opposite and requires the approval of the target's board of director when the acquisition takes place. (Wohlner, Mergers and Acquisitions: Conclusion, 2005)

Further, it's important to understand the basic idea behind a merger or acquisition. In general, the overall goal when engaging in a merger or acquisition is to achieve a synergy, which is defined as: "the increase in performance of the combined firm over what the two firms are already expected or required to accomplish as independent firm" (Sirower, 1997). This investigation identifies three broad categories of synergies. The first type of synergy is called a revenue synergy. This type relates to the idea that a combined firm will be able to generate more revenue together then when being separated. The second category is the cost synergy, in which a merger or acquisition is able to reduce the overall costs of the company. The reduction of costs can relate to a wide range of cost drivers such as wages, shared information technology, shared patent usage, combined R&D facilities, etc. Finally, the third category is defined as the financial synergy and relates to the financial advantages of a larger entity. In general, a larger company should have more assets to offer as collateral. Therefore, a larger entity should have, amongst other advantages, a higher debt capacity, more cash flows and a lower cost of capital. (VAIDYA, 2018)

2.2.2   Factors of wealth creation in M&A

Since this investigation is targeted at the behaviour of founder CEOs in an M&A environment, a significant part of the literature review is dedicated at explaining several factors that can create wealth in M&A.

The first factor of influence discussed is the method of payment. In M&A activity, the bidder can pay for an acquisition using stock, cash or a combination of both. Following the argumentation of Draper (1999), the choice regarding method of payment can be interpreted as the way in which a manager perceives his/her company. The authors point out that a cash offer could signal the market that a manager perceives his/her own company as undervalued or is uncertain about the future synergies. Therefore, exchanging shares in M&A activity could decrease the share price of the bidder's shareholders. On the other hand, offering cash could

signal the market that the bidder potentially perceives his/her company as undervalued, has limited private information and is more certain about potential future synergies (Draper, 1999). In terms of wealth creation Datta, Pinches and Jayaraman (1992) investigate several factors of influence in terms of wealth creation in an M&A environment. The mode of payment is the most significant of their explanatory variables. The authors find that for the shareholders of both target and bidder the gains of a stock-financed deal are lower (Datta, 1992). Another paper investigating the wealth creation in M&A activity focusing on mode of payment concludes that the shareholders of a bidder are more likely to experience a decrease in wealth if a deal is financed using stock, while an increase in wealth is more likely to occur if the deal is financed using cash (Loughran, 1997).

The second factor of influence discussed is the type of acquisition. The type of acquisition refers to an expansion strategy within or outside of the core of the industry in which a company is currently active. When analysing the related literature, opposing views can be found on which of the two strategies should create the most value. Authors supporting nondiversifying deals find that synergies should be greater in related acquisitions. One explanation is that the transfer of core skills should be more fluently (Singh, 1987). Further, nondiversifying deals are capable of reducing systematic risk without regard of market conditions (Lubatkin, 1987). However, conglomerate or diversifying deals could potentially have positive effects on a firm as well. Datta, Pinches and Jayaraman (1992) briefly summarize potential benefits of a conglomerate deal and indicate that such deals might offer cheaper access to capital and a lower bankruptcy probability. However, the authors conclude that in general conglomerate acquisitions tend to have a negative impact on bidder shareholders. In addition to this, Devos (2008) investigated the value creation of M&A activity with a focus on synergy creation. The author finds that most of the value is generated by the operational synergies related to the deal and that these operational synergies are much higher in nondiversifying mergers in comparison with diversifying mergers. The gains in operational synergies are more related to cutbacks in investment expenditures than increases in operating profits (Devos, 2008).

The third factor of influence this investigation briefly identifies is the regulatory environment. Regulation can present opportunities and threats to the M&A activity. Important to note is that the government can substantially influence the level of competitiveness in the market and impose additional cost. An interesting paper about the effects of regulation is written by Moshieri and Campa (2009). The authors investigated the effects of the regulatory actions implemented by the European Commission. These actions have increased European M&A activity by harmonizing regulations and corporate practices. More specifically, the authors

show that regulatory actions increased the amount of cross-border deals, the use of cash in M&A deals, the height of industry-level consolidation and the importance of the private equity industry. To conclude, a decrease of the deal execution time has been caused by the regulatory actions of the European Commission (Moschieri, 2009).

The fourth factor of wealth creation in M&A activity is the so-called bidder's approach towards a potential target. This investigation briefly discusses two interesting options. In a merger, the bidder approaches the management and/or board of directors of a target in order to discuss a potential deal. If bidder and target can agree on a certain price, contact will be made with the shareholders of the target. These shareholders will then vote whether or not to accept the proposed offer. The other option, defined as a tender offer, is to directly contact the shareholders of a potential target in order to convince them to tender their share to the bidding firm, thereby bypassing the management and/or board of directors of the target. Offenberg and Pirinsky (2015) investigated how acquiring firms choose between mergers or tenders offers. The authors conclude that tenders have much lower completion times for obvious reasons. However, directly contacting the shareholders of a target firm requires a higher premium. They reason that direct contact with shareholders signals these shareholders the high demand for their shares. Further, the likelihood of a tender offer increases if the environment of the deal is more competitive and there are fewer external impediments (Offenberg, 2015). In terms of wealth creation for shareholders, Datta, Pinches and Jayaraman (1992) argue that the shareholders of a target should be better off in a tender for two reasons. First, a tender creates the possibility for shareholders to increase competition in the bidding process, therefore pushing bidders to increase their premium. Second, in a merger setup, the management of the target is able to negotiate potentially beneficial post-transaction contracts. In contrast, the shareholders of the target will be better off in a tender offers since in this case, the total value of the offered premium will flow directly towards them.

The last factor of wealth creation is the number of bidder. For obvious reasons, increasing competition among bidders will be beneficial for the shareholders of the target (Datta, Pinches and Jayaraman, 1992).

To conclude this topic, this part of the literature review briefly summarizes how a CEO can create the most value to his/her firm when engaging in M&A activity. First, the CEO will be better off when negotiating with a target without competition. This way, the target cannot put pressure on the bidder and play out potential bidders against each other. Further, stock-financed deals seem to provide more value to the bidder's shareholders. However, in the previous chapter the literature indicated that founder CEOs tend to be overconfident. And overconfident

CEOs seem to have a perception of undervaluation, which should trigger them to offer cash instead of stock. This is an interesting aspect to investigate. Finally, non-diversifying deals should be beneficial for bidder's shareholders. Table 1 offers a brief overview of the most relevant conclusions of the above mentioned authors.

Table 1: Summary of factors of wealth creation in M&A

Author(s)	Conclusion
Draper (1999)	• Exchanging shares can decrease the value of bidder's share price. • Offering cash could signal that the bidder perceives his/her company as undervalued, has limited private information and is more certain about potential future synergies.
Datta, Pinches and Jayaraman (1992)	• The gains of a stock-financed deal are lower for both bidder and target. • A conglomerate deal might offer cheaper access to capital and a lower bankruptcy probability but tends to have a negative impact on bidder's shareholders. • Shareholders of a target should be better off in a tender for two reasons. First, a tender creates the possibility for shareholders to increase competition in the bidding process, therefore pushing bidders to increase their premium. Second, in a merger setup, the management of the target is able to negotiate potentially beneficial post-transaction contracts. • Increasing competition among bidders will be beneficial for the shareholders of the target.
Loughram (1997)	• Shareholders of a bidder are more likely to experience a decrease in wealth if a deal is financed using stock, while an increase in wealth is more likely to occur if the deal is financed using cash.
Sign (1987)	• Synergies should be greater in related acquisitions due to the fluent transfer of core skills.
Lubatkin (1987)	• Non-diversifying deals are capable of reducing systematic risk without regard of market conditions.
Devos (2008)	• Synergy value is mostly created by the operational synergies related to the deal. These synergies are much higher in non-diversifying deals in comparison with diversifying deals. The gains in operational synergies are more related to cutbacks in investment expenditures than increases in operating profits.
Offenberg and Pirinsky (2015)	• Tenders have much lower completion times. • Directly contacting the shareholders of a target firm requires a higher premium. • The likelihood of a tender offer increases if the environment of the deal is more competitive and there are fewer external impediments.

2.2.3 Stock market performance and valuation

One of the most thoroughly investigated domains regarding the comparison of founder and non-founder led firms is the stock market performance and valuation of these firms. It is therefore no surprise that the available literature reveals some opposing views on whether or not founder led firms will create more value for their shareholders. A first interesting paper investigating the performance of large firms was written by Palia and Ravid (2008). The authors find significant results in favour of founder CEOs. In comparison with non-founder CEOs, founder led firms attain higher market valuation of equity and achieve both higher ROA and tobin's Q. However, despite the higher profitability, the variance of returns is significantly higher. Fahlenbrach (2009) also finds a significantly better stock market performance of founder led firms. Somewhat in line with the previous conclusion is the work of Anderson and Reeb (2003), who investigated the stock market performance of founding family owners. The authors based their investigation on family firms included in the S&P500 index and found that family firms, in comparison with non-family firms, perform at least as good. Further, this investigation also finds that the performance of family firms is better if family members, defined as founders or founder descendants, fulfil the CEO position (Anderson, 2003). Villalonga and Amit (2006) also investigated whether or not family firms create more value than non-family firms. The authors also conclude that family firms will create more value if the founder also functions as the CEO of the firm. In contrast with the work of Anderson and Reeb (2003), the authors state that if a founder CEO functions as the chairman of the company, the family firm tends to create more value. Finally, a descendant of a founder who serves as CEO in the follow-up period will likely decrease the value of the family firm (Villalonga, 2006). A more specific investigation, focusing on how abnormal returns are measured, was conducted by Gao and Jain (2011). The authors find that although founders tend to outperform their non-founder counterparts, the significance of their results depends on the measurement of abnormal returns. The authors test different measurements by implementing different benchmarks, factor regression models and portfolio weighting methods. Since the significance depends on these three elements, the authors conclude that there's no strong relationship between higher firm performance and founder CEOs. However, in line with the conclusion of Hirshleifer, the performance of founder led firms in high technology firms is superior in comparison with their non-founder led counterparts (Gao, 2011). The last paper this investigation discusses related to the positive impact of founder CEOs on firm performance is written by Jayaraman (2000). The author initially finds no specific relation between stock returns of a founder and CEO status. However, the impact of founder CEOs on stock market

performance of the firm is more positive for both smaller and younger firms (Jayaraman, 2000). Table 2 presents a brief overview of all relevant conclusions of authors who find a positive relationship between founder status and firm performance.

Table 2: Summary of authors who found positive impact of founders status on firm performance

Author(s)	Conclusions
Palia and Ravid (2008)	• Founder led firms attain higher market valuation of equity and achieve both higher ROA and tobin's Q. • The variance of returns of founder led firms is significantly higher.
Fahlenbrach (2009)	• Founder led firms perform better on the stock market.
Anderson and Reeb (2003)	• Family firms perform at least as good as non-family firms. • Family firms perform better if family members, defined as founders or founder descendants, fulfil the CEO position.
Villalonga and Amit (2006)	• Family firms will create more value if the founder also functions as the CEO of the firm. • Family firms tend to create more value if the founder acts as chairman of the company. • A descendant of a founder who serves as CEO in the follow-up period will likely decrease the value of the family firm.
Gao and Jain (2011)	• Founders tend to outperform their non-founder counterparts. • The significance of their results depends on the measurement of abnormal returns. • The performance of founder led firms in high technology firms is superior in comparison with their non-founder led counterparts.
Jayaraman (2000)	• The impact of founder CEOs on stock market performance of the firm is more positive for both smaller and younger firms.

After discussing the most relevant investigations that find at least partially a positive relationship between founder CEOs and firm performance, it's important to note that several authors find a negative relationship between these subjects as well. For example, Adams (2009) finds a significantly negative relationship between the performance of a firm and the likelihood that this firm is led by its founder. Based on this finding, the authors investigated when founder CEOs tend to leave their position. Founders tend to exit their leading position after periods of both good and bad performance. The authors reason that founders might value control over their own succession more or simply intend to leave the company in good shape (Adams, 2009). Further, in chapter 2.1.2, this investigation briefly discussed the concept of managerial entrenchment. The discussed literature revealed that founder CEOs have the potential of taking entrenchment measures. For example, Palia and Ravid (2008) find in their investigation that

founder CEOs are severely entrenched. In 1985, Johnson connected the concept of founder entrenchment and stock price performance. The investigation was targeted at finding out whether or not founders always intend to maximize shareholder value. Johnson reasons that this is not the case since founders entrench themselves at the cost of their shareholders. The author finds a positive relationship between the sudden death of a founder and the excess return of the shareholders (Johnson, 1985).

Table 3: Authors who found a negative impact of founder status on firm performance

Author(s)	Conclusion
Adams (2009)	• There's a significantly negative relationship between the performance of a firm and the likelihood that the company is led by its founder. • Founders tend to exit their leading position after periods of both good and bad performance.
Johnson (1985)	• Founders entrench themselves at the cost of their shareholders • There's a positive relationship between the sudden death of a founder and the excess return of the shareholders

To finalize this chapter, although not discussed in detail, it's interesting to note that several authors also find no significant relationship between founder CEO status and firm performance. An analysis of the available literature seems to support the idea that founder CEOs do create shareholder value on the stock market. One could argue that superior knowledge of founders regarding their own firm seems to steer them towards making the right decision. Further, the higher stock prices could indicate the trust of investors in the decision making of founder CEOs.

What drives this research is the stock market performance of founder led firms when engaging in M&A activity. Since founders tend to be overconfident, and overconfidence could lead to value destroying behaviour, it's interesting to see whether or not founders, active in the M&A environment, generate more value for their shareholders. It's well known that there's a variety of reasons why the stock price of an acquiring firm may decrease after announcing a deal. It's therefore interesting to investigate whether or not founder led firms display overconfident investment behaviour and tend to decrease shareholder value or have superior knowledge of their firm and tend to outperform their non-founder led counterparts on the stock market.

3 Methodology and data description

3.1 Investment behaviour

As discussed earlier, the first part of the investigation focusses on the comparison of the investment behaviour of founder and non-founder led firms in an M&A environment. This investigation uses several relevant variables retrieved from the Zephyr database. The first implemented variable is the method of payment. For the classification of the method of payment, this investigation uses three broad categories: a stock financed deal, a cash financed deal and a mixed version of both. The last category simply reflects the situation in which an acquiring firms offers both cash and stock as a method of payment. The second variable retrieved from Zephyr is related to the nationality of the target and is defined as: cross border or domestic target. As discussed in chapter 4, this investigation will focus on companies listed on the S&P1500 index. Therefore, a domestic target is identified as a United States based company while all other countries are included in the cross border category. The third variable is defined as: listed or non-listed target. For obvious reasons whether or not the target is listed on a stock exchange relates to the moment the deal takes place. The fourth variable indicates whether or not a deal is a merger or an acquisition. Finally, the last variable is defined as: diversifying or non-diversifying deal. A deal is identified as diversifying when the acquiring firm and the target firm operate in different industries. This investigation therefore implements an industry classification, which is based the SIC classification. The implemented categories are defined in table 4.

Table 4: Industry classification

Industry	Classification number
Agriculture, forestry and fishing	1
Mining	2
Construction	3
Manufacturing	4
Transportation, communications, electric, gas and sanitary services	5
Wholesale trade	6
Retail trade	7
Finance, insurance and real estate	8
Services	9
Public administration	10

This investigation starts by comparing previously described variables for founder and non-founder led firms. In addition to this, a multivariate linear regression will test the significance level between the total number of deals made by all sample firms and several relevant variables. The first and most important variable is the founder status. This variable relates to whether or not a company is identified as founder led or non-founder led. The second variable is defined as the relative size of the target. This variable is measured as the turnover of a target divided by the turnover of the acquirer. Both turnover figures relate to the first available year before the deal date. Finally, the industry effects refer to the industry in which both founder and non-founder led companies are active in. The regression equation is defined in equation 1.

Equation 1: regression equation with total number of deals as dependent variable

$$Total\ deals = b_0 + b_1 LN\left(\frac{turnover_{target}}{turnover_{acquirer}}\right) + b_2 dummy(Founder) +$$
$$b_3 Dummy(Mining) + b_4 Dummy(Communication) + b_5 Dummy(Wholesale) +$$
$$b_6 Dummy(Retail) + b_7 Dummy(Services) + \varepsilon$$

Based on the discussed literature review, this investigation argues that the assumed overconfidence of founders should lead to more deals per company. Therefore, the first hypothesis is defined as:

"Hypothesis 1: Founder led firms complete more deals than non-founder led firms."

The second part of the analysis will then reveal whether or not the observed investment behaviour generates more shareholder value.

3.2 Value creation of founder led firms

In order to test whether or not founder led firms create more value for their shareholders in comparison with non-founder led firms, this investigations follows the approach of Ritter in his investigation on IPO firms (1991). Ritter implemented two performance measures to analyse whether or not IPOs outperform the market: cumulative benchmark-adjusted average returns (CAAR) and holding period returns (HPR). Further, it is noted that this investigation uses stock return variables for several reasons. Stock return variables are ideal performance measures because the initial goal of this investigation is to compare value creation for the

shareholders of both types of firms. Further, the implementation of potentially different accounting principles has no effect on these return variables since stock prices simply reflect the market valuation of the firm at a specific moment in time. Finally, stock prices are also influenced by the perceived risk of the stock. This investigation already argued that founder led firms have the potential of being overconfident in M&A activity. Therefore, it's important to measure firm performance after controlling for risk (Jayaraman, 2000).

In order to investigate the value creation of founder led firms in comparison with non-founder led firms the following hypotheses will be investigated:

"Hypothesis 2: Founder led firms outperform their non-founder led counterparts over the holding period if both firms engaged in M&A activity throughout the sample period."

"Hypothesis 3: Founder led firms, which are active in M&A activity, outperform the S&P 500 index."

In order to calculate the CAAR, this investigation starts by retrieving monthly stock prices for all sample firms ranging from 2008-2017. Monthly raw returns are subtracted by a benchmark in order to get monthly benchmark-adjusted returns. As discussed in chapter 4, every founder led firm gets matched by a non-founder led firm based on industry classification and size. The monthly benchmark-adjusted return for a founder led firm i is calculated by subtracting the monthly return of the matched non-founder led firm j from the monthly return of the founder led firm and is defined in equation 2.

Equation 2: monthly benchmark-adjusted return

$$ar_{it} = r_{it} - r_{jt}$$

Afterwards, the average benchmark-adjusted return (AAR) is calculated. The AAR, defined in equation 3, can be interpreted as a portfolio return of n firms and is calculated by summing all benchmark-adjusted returns in the same time period and dividing this figure by n. As one can already interpret, the n stand for the total amount of outstanding pairs per time period.

Equation 3: average benchmark-adjusted return

$$AAR_t = \frac{1}{n} \sum_{i=1}^{n} ar_{it}$$

Finally, the cumulative benchmark-adjusted average return is calculated by summing all previous AAR's for every time period[2]. As equation already revealed. The CAAR, defined in equation 4, ranges from period u to period v.

Equation 4: cumulative benchmark-adjusted average return

$$CAAR_{u,\, v} = \sum_{t=u}^{v} AR_t$$

The advantage of this approach is that, if a certain founder-led firm leaves the sample throughout the sample period, the constructed portfolio return remains an equally weighted benchmark-adjusted average return in the following period. Therefore, as Ritter (1991) defines, the AAR and the CAAR can be interpreted as monthly rebalanced portfolio returns. Before actually testing whether or not founder led firms outperform their non-founder led counterparts, this investigation will divide all sample firms into 9 different industry categories. The different categories are identified based on the SIC code classification and are defined as: agriculture, forestry and fishing; mining; construction; manufacturing; transportation, communications, electric, gas and sanitary services; wholesale trade; retail trade; services and to conclude public administration[3]. The investigation reasons that different industries offer different opportunities and threats, and the risk profile of every industries should be different. Further, the investigation also expects an uneven distribution of sample firms over the different industries, which also justifies the division into industry categories. Based on the calculated returns, this investigation can then analyse whether or not founder led firms outperform non-founder led firms by interpreting the sign of the calculated returns and the significance of the calculated t-statistic. The outcome of these steps provides an answer to the second hypothesis. In order to answer hypothesis 3, somewhat the same analysis can be conducted. The important difference

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[2] The return figures per time period relate to monthly returns ranging from the beginning of 2008 until the end of 2017.

[3] The industry classification is discussed in table 4.

is to split up founder led firms and their non-founder matched counterparts. This time the AAR and CAAR will be calculated by using the S&P500 index return as the benchmark return and the same analysis can be performed (Ritter, 1991).

Following the approach of Ritter (1991) and Jayaraman (2000), the second performance measure implemented is the holding period return of the firm. The intuition of this approach is to conduct a buy-and-hold strategy for all firms from the moment they enter the sample until the moment they leave[4]. The holding period return for firm i is defined in equation 5. For obvious reasons, r represents the monthly the monthly return of the stock.

Equation 5: holding period return

$$HPR_i = \left[\prod_{t=1}^{T}(1 + r_{it})\right] - 1$$

After calculating HPR's for all sample firms, a multivariate linear regression needs to be conducted in order to find a relationship between return and founder status. This investigation intends to add the following control variables: method of payment (cash, stock or mixed version of both), cross-border or domestic target, listed or non-listed target, type of deal (diversifying or non-diversifying), acquisition (merger or acquisition), the relative size of the target and industry effects. In addition to these control variables, this investigation calculated the beta of all sample firms. Equation 6 represents the calculation of the beta, which is implemented by dividing the covariance of the return of stock i and the return of the S&P500 index, by the variance of the return of the S&P500 index. Equation 7 represents the latter discusses regression equation.

Equation 6: beta of a firm

$$\beta_i = \frac{Cov(r_i, r_m)}{Var(r_m)}$$

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[4] With few exceptions, most companies in the sample are active throughout the entire sample period (2008-2017).

Equation 7: regression equation with holding period return as dependent variable

$$HPR_i = b_0 + b_1 \beta_i + b_2 LN \left(\frac{turnover_{target}}{turnover_{acquirer}} \right) + b_3 Dummy(Founder) +$$

$$b_4 Dummy(Diversifying) + b_5 Dummy(Crossborder) + b_6 Dummy(Listed) +$$

$$+ b_7 Dummy(Shares) + b_8 Dummy(Mixed) + b_9 Dummy(Mining) +$$

$$b_{10} Dummy(Manufacturing) + b_{11} Dummy(Communication) +$$

$$b_{12} Dummy(Wholesale) + b_{13} Dummy(Retail) + \varepsilon$$

The results of the multivariate linear regressions are presented in chapters 5.1 and 5.2 provide and provide an answer to the formulated research questions.

4 Sample selection

A challenging domain of this investigation is to find out which firms are led by their original founders. After investigating the data chapters of all relevant literature, I got in touch with assistant professor Byoung-Hyoun Hwang of the Cornell University in New York. Byoung-Hyoun Hwang provided me an excel sheet that includes all CEOs who got listed with their companies on the S&P1500 index. More specifically, every company that was included in this index between 2008 and 2012 gets identified as being a founder or non-founder led company by looking at who held the position of CEO during this period. If the CEO is identified as one of the original founders of the company, the excel sheet indicates that this is a founder led company. This list functions as the basis of my investigation but requires a significant amount of additions in order to be functional. In the original file, 298 CEOs are indicated as being a founder CEOs and 1428 CEOs are indicated as professionals. Since this investigation intends to compare founder and non-founder led firms in M&A activity, the first step undertaken in order to complement this list is to find out how many of these firms were also involved in M&A activity between 2008 and 2017. To extract information regarding M&A activity, this investigation consults the Zephyr database provided by Bureau van Dyck. This database allows to investigate whether or not a selection of companies were active in M&A activity. Based on a selection of input queries, Zephyr identifies that from the initial list of founder led companies, 135 founders and 733 non-founders engaged in M&A activity. Important to note is that the initial list analyses whether or not founders acted as CEO between 2008 and 2012. Therefore, the investigation needs to check if founder CEOs remained active until the end of 2017. This information can be extracted from the Execucomp database. Execucomp offers information on executive compensation, function within the company and most importantly when an executive left as CEO. If Execucomp indicated that one of the remaining 135 founder CEOs left their position, this investigation consulted the Bloomberg executives and biography website to find out whether or not this person remains to have a substantial influence inside the company. This investigation argues that founders who leave their function as CEO to become, for example, the chairman of the board of directors still have a significant impact on the most important decisions, especially when engaging in M&A activity. Therefore, companies operating with a founder CEO between 2008 and 2012 are still considered to be founder led if the founder CEO becomes, for example, chairman of the board of directors until the end of 2017. This additional requirement eliminates another 25 firms out of the sample of founder led firms. Finally, all financial institutions are eliminated from the list. The elimination is done by screening primary

SIC codes. All companies with SIC codes between 6000 and 6999 are excluded from the list. After fulfilling the previously mentioned requirements, this investigations ends up with a selection of founder led firms that is both active in the M&A environment and is being led by an original founder between 2008 and 2017. Important for this investigation is to compare these firms with non-founder led firms. The approach of this investigation is to match every founder led firm with a non-founder led counterpart. The matching of these pairs is based on industry classification at first followed by the total value of assets. More specifically, the list is complemented by adding primary US SIC codes to every companies in the list. This investigation assumes that a pair of companies is active within the same industry if the first three digits of the SIC codes of both firms are identical. Every founder led firm is compared with a selection of non-founder led firms. Within the same industry, every founder led firm is then matched with a non-founder led firm by comparing the total value of the assets. After completing this step, this investigation ends up with a selection of 204 companies in total, evenly balanced between founder and non-founder led firms. The implemented approach is also used in the work of Jayaraman (2000). Finally, the last step of firm elimination is based on the variables needed in order to conduct the required analysis. Since this investigation will analyse the investment behaviour and the value creation of founder led firms, several variables need to be calculated or retrieved from databases. These variables are thoroughly explained in chapter 3. The last elimination is done based on the availability of the data regarding these variables. If the data of one variable was missing, the related firm was eliminated from the sample. Because of missing data, the investigation ends up with an evenly balanced sample of 116 firms and a total of 324 deals [5].

Further, figure 1 describes the distribution of founder and non-founder led firms based on industry classification. One can easily see that the distribution between founder and non-founder led firms is perfectly even. This should be the case since every founder led firm needs to be matched with a non-founder led counterpart. However, the even distribution is not applicable to this sample when comparing the different industries. This investigation initially identified 10 different main industries of which only 6 are included in the sample. As discussed in the in chapter 3, the implemented data was subject to several requirements. Out of the initial sample, only 116 firms were eventually included. These firms represents only 6 of the 10 identified industries. The services industry and the manufacturing industry clearly are more

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[5] 'Evenly balanced sample' refers to the balance between founder and non-founder led firms.

represented with 44 and 46 firms. The mining industry is the smallest category and represents only 4 firms.

Figure 1: Industry classification of founder and non-founder led firms
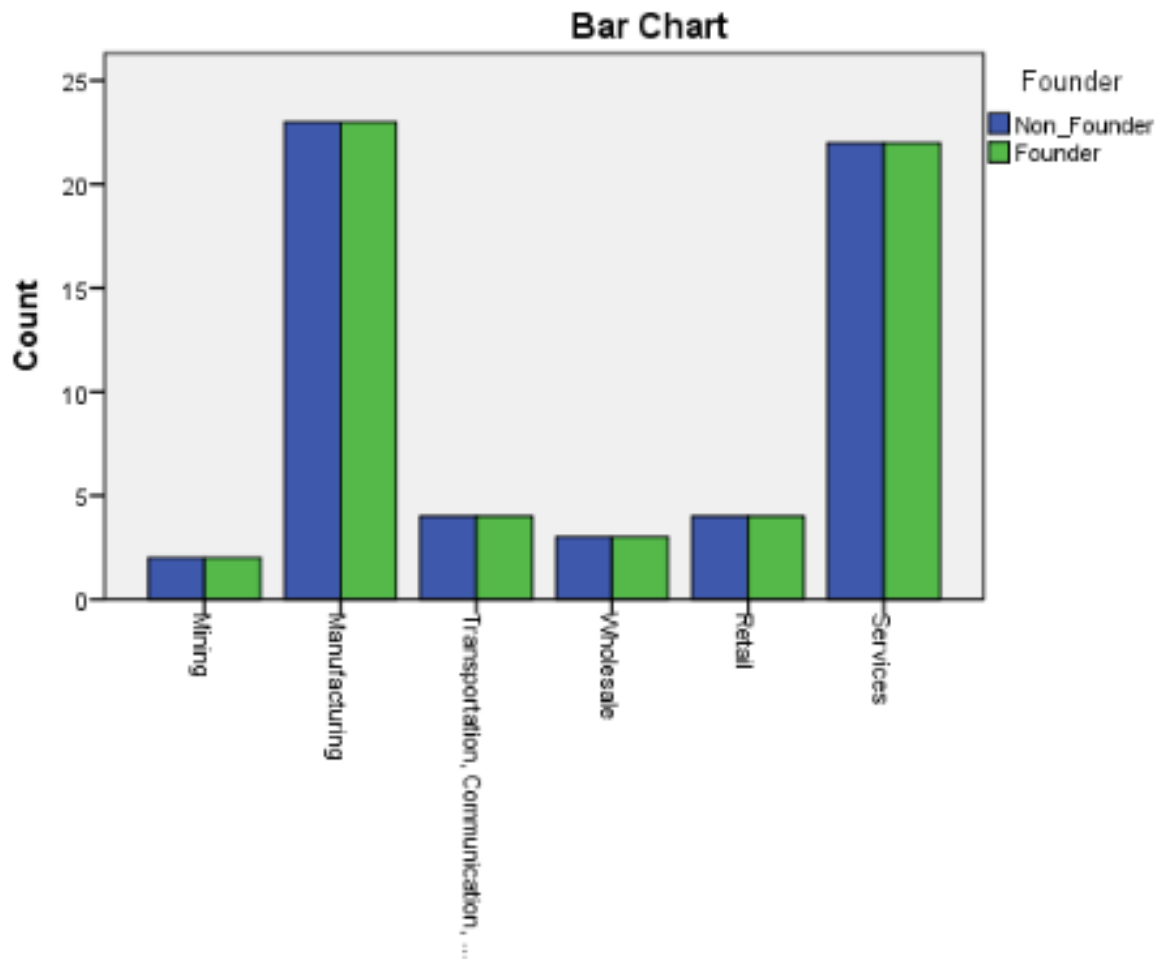
5 Analysis

5.1 Investment behaviour

Table 5 compares founder and non-founder led firms based on the deals made by all sample firms throughout the sample period. A first look at this data reveals that the investment behaviour of founder and non-founder led firms does not seem to differ that much. As discussed in the literature, there are no missing values in the sample. Indicated by the total count for all included variables, non-founder led firms made a total of 167 deals while their founder led counterparts made a total 157 deals. Further, this table reveals that for most of the variables there's always one category, which is the same for founders and non-founders, that dominates the sample. Based on table 5, it seems that both founder and non-founder led firms are most likely to conduct an acquisition targeting an unlisted, domestic firm paying with cash. The only uncertainty arises when the target is defined as inside or outside the acquirer's industry classification. For both founder and non-founder led firms, the division between diversifying and non-diversifying deal seems to be situated roughly around 50%.

To complement table 5, this investigation conducted chi-square tests in order to find out if the investment behaviour of founder and non-founder led firms is significantly different from each other. These chi-square tests were conducted for the following variables: target listed, method of payment, cross border deal and type of deal. The merger or acquisition variable is left out of the sample since all deals were acquisitions. Investigating the significance level of these variables in relation with founder status revealed that no chi-square values were significant. Therefore, no significant relationship can be found between founder status and either one of these variables. The outputs of these chi-square tests are included in appendix 8.1.

Table 5: Comparison of deals

Comparison of the different elements of a deal for founder and non-founder led firms. Type of deal, defined in chapter 2.2.2, refers to the comparison of the core of operations of acquirer and target. A deal is defined as diversifying if the target doesn't belong to the same industry category of the acquirer. The industry classification is defined in chapter 3.1. Cross border refers to the nationality of the target. If a target is not primarily based in the US, the deal is identified as a cross border deal. The acquisition variable refers to the choice of an acquirer between a merger or acquisition. Method of payment, refers to how the deal is paid and is divided into three main categories: cash, stock or a mixed version of both. Target listed refers to whether or not the target was listed during the bidding process or not.

		Founder status					
		Non-founder		Founder		Total	
			Column N		Column N		Column N
		Count	%	Count	%	Count	%
Type of deal	Non-diversifying	82	49,1%	73	46,5%	155	47,8%
	Diversifying	85	50,9%	84	53,5%	169	52,2%
	Total	167	100,0%	157	100,0%	324	100,0%
Cross border	Domestic	129	77,2%	117	74,5%	246	75,9%
	Cross border	38	22,8%	40	25,5%	78	24,1%
	Total	167	100,0%	157	100,0%	324	100,0%
Acquisition	Merger	0	0,0%	0	0,0%	0	0,0%
	Acquisition	167	100,0%	157	100,0%	324	100,0%
	Total	167	100,0%	157	100,0%	324	100,0%
Method of payment	Cash	123	73,7%	117	74,5%	240	74,1%
	Mixed	38	22,8%	35	22,3%	73	22,5%
	Shares	6	3,6%	5	3,2%	11	3,4%
	Total	167	100,0%	157	100,0%	324	100,0%
Target Listed	Listed	8	4,8%	7	4,5%	15	4,6%
	Unlisted	159	95,2%	150	95,5%	309	95,4%
	Total	167	100,0%	157	100,0%	324	100,0%

The first of two regression equations included in the paper, as discussed in the methodology, analyses the acquisitiveness of founder and non-founder led firms. More specifically, this investigation wants to know if founder led firms tend to do more acquisitions. The implemented regression equation is defined as:

Equation 1: regression equation with total number of deals as dependent variable

$$Total\ deals = b_0 + b_1 LN\left(\frac{turnover_{target}}{turnover_{acquirer}}\right) + b_2 dummy(Founder) +$$

$$b_3\ Dummy(Mining) + b_4 Dummy(Communication) + b_5 Dummy(Wholesale) +$$

$$b_6 Dummy(Retail) + b_7 Dummy(Services) + \varepsilon$$

Before running a multivariate linear regression, several assumptions need to be checked. The four required assumptions of a linear regression are: linearity of residuals, independence of residuals, normal distribution of residuals and equal variance of residuals. A review of all these assumptions reveals that the dataset meets all but one necessary assumption: the problem of heteroskedasticity. Figure 2, included in appendix 8.2, reveals that the standardized residuals roughly approximate the normal distribution but are a little left skewed. The skewness indicates the problem of heteroscedasticity in the residuals of the dependent variable. Therefore, this investigation decides to include a white correction in the analysis. Since there's no menu driven approach available in spss, this investigation uses a macro extension developed by A. F. Hayes. The output of this approach presents heteroscedasticity-consistent regression results and are discussed in table 8 (Hayes, 2007). Besides the problem of heteroskedasticity, there's also a high correlation between the industry dummies 'manufacturing' and 'services', which indicates multicollinearity. However, because these are variables within the same dummy category and one of the variables needs to act as a reference variable, this investigation decided to exclude the manufacturing dummy, which will serve as reference variable.

The analysis of the first regression starts with the descriptive statistics, which are presented in table 6. For all 116 firms included in the sample, the average number of deals over the sample period equals 2.73. The average size of a target equals \$343.171 while the average relative size of a target, measured as the turnover of the target divided by the turnover of the acquirer, equals 0.105. Further, table 7 presents the model summary. Although the adjusted r square figure is significant, this value seems rather low with only 7% of the variance of the dependent variable explained.

Table 6: Descriptive statistics regression 1

Descriptive statistics regression 1

Table presents the descriptive statistics of all included variables. N_deals acts as the dependent variable in regression 1 and is measured as the total number of deals of all sample firms throughout the sample period. For the independent variables, regression 1 starts with D_Founder, which stands for the founder status of the firms. Second the industry effects are measured through all six included industry categories: D_Mining, D_Manufacturing, D_Transportation_Communication, D_Wholesale, D_Retail and D_Services. The last two independent variables are size variables. LN_Size is defined as the natural logarithm of the size of the target. The size of the target is defined as the turnover of the target firm. LN_RSize is defined as the natural logarithm of the relative size of the target. The relative size of the target is defined as: $\frac{turnover\ target}{turnover\ acquirer}$.

	Mean	Std. Deviation	N (total number of firms)
N_Deals	2.73	2.184	116
D_Founder	.50	.502	116
D_Mining	.03	.183	116
D_Manufacturing	.40	.491	116
D_Transportation_Communication	.07	.254	116
D_Wholesale	.05	.222	116
D_Retail	.07	.254	116
D_Services	.38	.487	116
LN_Size	10.7223	2.18192	116
LN_RSize	-3.5226	2.01091	116

Table 7: Model summary regression 1

Model summary regression 1
This table presents the model summary. N_deals acts as the dependent variable in regression 1 and is measured as the total number of deals of all sample firms throughout the sample period. For the independent variables, regression 1 starts with D_Founder, which stands for thefounder status of the firms. Second the industry effects are measured through all six included industry categories: D_Mining, D_Manufacturing, D_Transportation_Communication, D_Wholesale, D_Retail and D_Services. The last two independent variables are size variables. LN_Size is defined as the natural logarithm of the size of the target. The size of the target is defined as the turnover of the target firm. LN_RSize is defined as the natural logarithm of the relative size of the target. The relative size of the target is defined as: $\frac{turnover\ target}{turnover\ acquirer}$.

					Change Statistics				
				Std. Error					
			Adjusted R	of the	R Square				Sig. F
Model	R	R Square	Square	Estimate	Change	F Change	df1	df2	Change
1	^{2}.368^a	.136	.071	2.105	.136	2.099	8	107	.042**

Finally, table 8 presents the coefficients of the first regression. This table presents heteroscedasticity-consistent regression results, which are derived based on the method of Hayes (2007). The regression shows that there's no significant relationship between founder status and total number of deals, suggesting that hypothesis 1 can be denied. Further, the analysis shows that the acquisitiveness in between industries is not equal. The mining dummy is significant with a negative coefficient, suggesting that less deals are being made in the mining industry in comparison with the manufacturing industry[6]. The services industry also shows a significant value but with a positive coefficient, suggesting that in the services industry more deals are being made in comparison with the manufacturing industry. Finally, the natural logarithm of the size of the targets is significant with a positive value as well. The positive coefficient suggests that if the size of the target increases, the total number of deals should increase as well. Because this finding seems a little strange, this investigation also includes the size of the target in comparison with the size of the acquirer. The natural logarithm of this variable (LN_RSize) has a negative coefficient, suggesting that an acquirer tends to do more deals if the relative size of the target is smaller. However, this variable is not significant so no conclusion can be made. To conclude this chapter, it's important to note that the distribution

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[6] The industry variable 'manufacturing' serves as the reference variable.

of firms is not even. Therefore, one must be careful when interpreting the coefficients related to the industry dummies.

Table 8: Coefficients regression 1

Coefficients regression 1

Table presents the coefficients of the regression. N_deals acts as the dependent variable in regression 1 and is measured as the total number of deals of all sample firms throughout the sample period. For the independent variables, regression 1 starts with D_Founder, which stands for the founder status of the firms. Second the industry effects are measured through all six included industry categories: D_Mining, D_Manufacturing, D_Transportation_Communication, D_Wholesale, D_Retail and D_Services. The last two independent variables are size variables. LN_Size is defined as the natural logarithm of the size of the target. The size of the target is defined as the turnover of the target firm. LN_RSize is defined as the natural logarithm of the relative size of the target. The relative siz of the target is defined as: $\frac{turnover\ target}{turnover\ acquirer}$.

	Unstand. Coefficient	Standard errors (Heteroskedasticity adjusted)	t	Sign.
Constant	-2.4234	2.4063	-1.0071	0.3162
D_Founder	0.0079	0.4322	0.0183	0.3162
D_Mining	-1.3782	0.6333	-2.1762	0.0317**
D_Transportation	0.0111	0.6372	0.0174	0.9861
D_Wholesale	-0.7279	0.7269	-1.0014	0.3189
D_Retail	0.3589	1.2966	0.2768	0.7825
D_Services	1.0624	0.4795	2.2156	0.0288**
LN_Size	0.3849	0.1690	2.2770	0.0248**
LN_RSize	-0.1935	0.1561	-1.2394	0.2179

5.2 Value creation of founder led firms in M&A activity

After identifying the investment behaviour of founder led firms in M&A activity, this investigation continues with the analysis of the value creation on the stock market. The first metric of value creation implemented, as discussed in the methodology, is the benchmark adjusted average return and the cumulative benchmark adjusted average return. The analysis starts by using the return figures of the non-founders as a benchmark in order to test whether or not founder led firms outperform their non-founder led counterparts. A one-sample t-test is implemented to test whether or not AAR and CAAR values are significantly different from zero. The one-sample t-test is conducted for all sample firms at once (general model) and for every industry separated. Table 9 presents the overall statistics. One can easily detect that the

means of all tested metrics are close to zero. This indicates that that there will probably be no trend of outperformance.

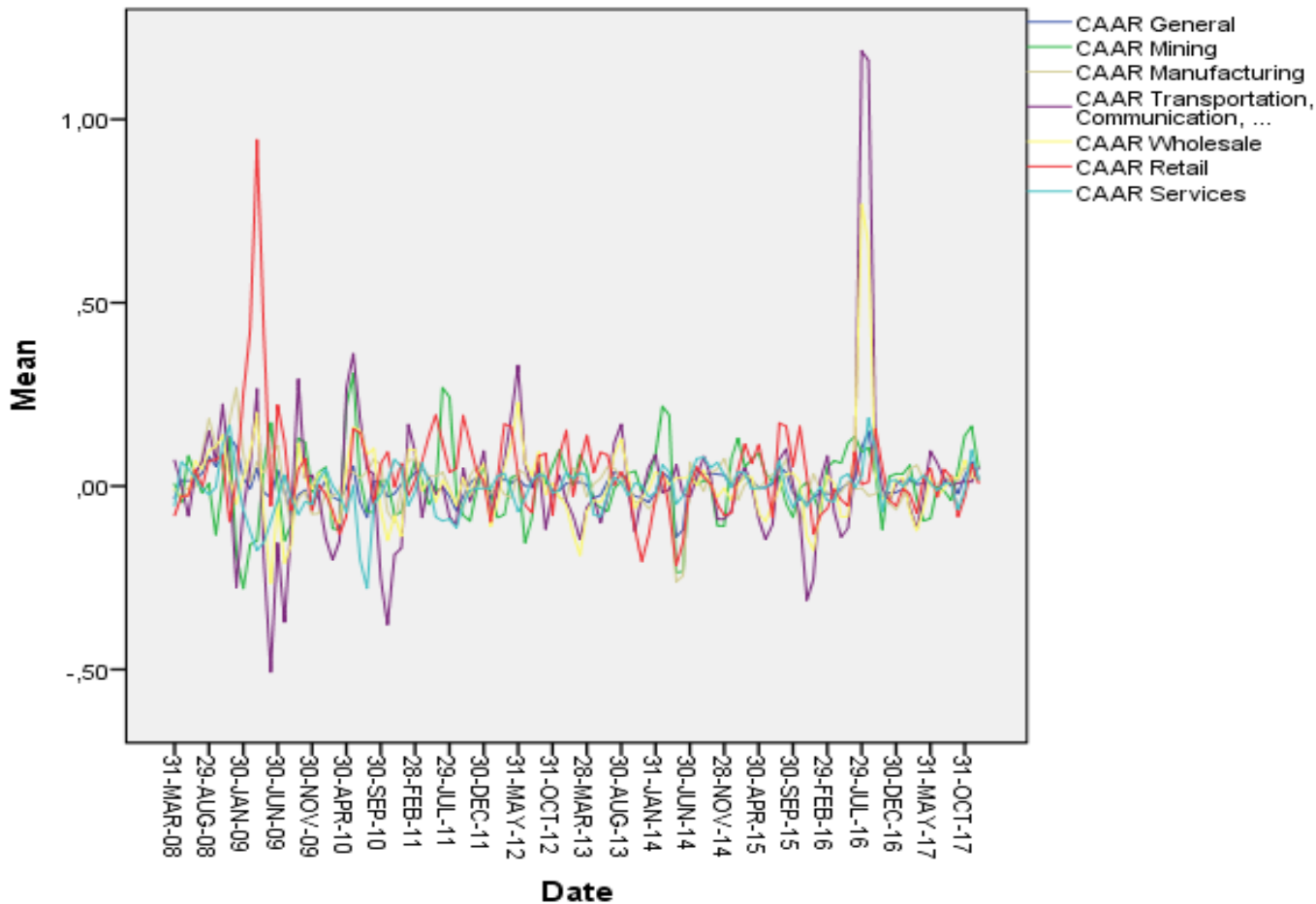Table 9: One-sample t-test statistics with non-founder returns as benchmark

One-sample t-test statistics with non-founder returns as benchmark

Table presents the statistics of the one-sample t-test with non-founder returns as benchmark. The calculated metrics are AAR and CAAR, discussed in chapter 4.2. AAR stands for the benchmark adjusted average return: $AAR_t = \frac{1}{n}\sum_{i=1}^{n} ar_{it}$. CAAR stands for cumulative benchmark adjusted average return: $CAAR_{u,v} = \sum_{t=u}^{v} AR_t$. Both metrics are calculated first as a general metric, meaning for all sample firms at once, and then for all 6 included industries: Mining; Manufacturing; Transportation, Communication, …; Wholesale; Retail and Services.

	Mean	Std. Deviation	Std. Error Mean
AAR General	0,0025	0,02804	0,00258
CAAR General	0,0047	0,04163	0,00383
AAR Mining	0,0036	0,06979	0,00642
CAAR Mining	0,0079	0,10010	0,00922
AAR Manufacturing	0,0042	0,04276	0,00394
CAAR Manufacturing	0,0082	0,06381	0,00587
AAR Transportation, Communication, ...	0,0033	0,14381	0,01324
CAAR Transportation, Communication, ...	0,0065	0,20378	0,01876
AAR Wholesale	0,0052	0,08709	0,00802
CAAR Wholesale	0,0102	0,12338	0,01136
AAR Retail	0,0179	0,09309	0,00857
CAAR Retail	0,0352	0,13291	0,01224
AAR Services	-0,0033	0,04335	0,00399
CAAR Services	-0,0070	0,06350	0,00585

Table 10 presents the output of the one-sample t-test. The output reveals that the general models of AAR and CAAR find no evidence of outperformance. The p-values for both the AAR and CAAR are not significant. In addition to this general model, an analysis is conducted for all relevant industries as well. Table 10 reveals that only the founder led firms in the retail industry seem to outperform their non-founder led counterparts. This is the only industry for which both the AAR and CAAR show significant p-values. The sample means are significantly greater than zero. In addition to this, figure 3 is a visual representation of table 10 for all CAAR values over the sample period. There's no obvious trend and all variables seem to move around zero. This investigation therefore argues that based on the first metric of performance, hypothesis 2 cannot be confirmed. Founder led firms do not outperform their non-founder led counterparts.

Table 10: One-sample t-test with non-founder returns as benchmark

One-sample t-test with non-founder returns as benchmark

Table presents the output of the one sample t-test. The calculated metrics are AAR and CAAR, discussed in chapter 4.2. AAR stands for the benchmark adjusted average return: $AAR_t = \frac{1}{n}\sum_{i=1}^{n} ar_{it}$. CAAR stands for cumulative benchmark adjusted average return: $CAAR_{u,v} = \sum_{t=u}^{v} AR_t$. Both metrics are calculated first as a general metric, meaning for all sample firms at once, and then for all 6 included industries: Mining; Manufacturing; Transportation, Communication, …; Wholesale; Retail and Services. The test value equals 0.

| | | | | | 95% Confidence Interval of the Difference | |
| | | | | Mean | | |
	t	df	Sig. (2-tailed)	Difference	Lower	Upper
AAR General	,968	117	,335	,00250	-,0026	,0076
CAAR General	1,217	117	,226	,00467	-,0029	,0123
AAR Mining	,558	117	,578	,00358	-,0091	,0163
CAAR Mining	,857	117	,393	,00789	-,0104	,0261
AAR Manufacturing	1,075	117	,285	,00423	-,0036	,0120
CAAR Manufacturing	1,392	117	,167	,00817	-,0035	,0198
AAR Transportation, Communication, ...	,248	117	,804	,00329	-,0229	,0295
CAAR Transportation, Communication, ...	,348	117	,728	,00653	-,0306	,0437
AAR Wholesale	,654	117	,515	,00524	-,0106	,0211
CAAR Wholesale	,900	117	,370	,01022	-,0123	,0327
AAR Retail	2,083	117	,039**	,01785	,0009	,0348
CAAR Retail	2,875	117	,005***	,03517	,0109	,0594
AAR Services	-,822	117	,413	-,00328	-,0112	,0046
CAAR Services	-1,204	117	,231	-,00704	-,0186	,0045

Figure 2: CAAR values with non-founder returns as benchmark

In order to address hypothesis 3 the same analysis is conducted with the distinction of not using the returns of non-founder led firms as a benchmark but the returns of the S&P500 index instead. The output of the one-sample t-test is presented in table 11 and reveals that founders seem to outperform the S&P500 index. The general model is significant with a mean greater than zero. When the distinction is made between industries one can see that in terms of CAAR values the manufacturing, retail and services industries show significant p-values, while the other three industries do not. One could argue that certain industries are more likely to outperform the S&P500 index, and that therefore the founders active in these industries are more likely to outperform the S&P500 index as well. However, as the general model indicates that founder seem to outperform the S&P500 index, this investigation states that hypothesis 3 can be confirmed. In addition to this, this investigation notes that the significance level of the return figures on industry level should be interpreted cautiously because of the uneven distribution of firms over the different industries (see figure 1).

Table 11: One-sample t-test with S&P500 returns as benchmark

One-sample t-test with S&P500 returns as benchmark

Table presents the output of the one sample t-test with S&P500 returns as benchmark. The calculated metrics are AAR and CAAR, discussed in chapter 4.2. AAR stands for the benchmark adjusted average return: $AAR_t = \frac{1}{n}\sum_{i=1}^{n} ar_{it}$. CAAR stands for cumulative benchmark adjusted average return: $CAAR_{u,v} = \sum_{t=u}^{v} AR_t$. Both metrics are calculated first as a general metric, meaning for all sample firms at once, and then for all 6 included industries: Mining; Manufacturing; Transportation, Communication, …; Wholesale; Retail and Services. The test value equals 0.

| | | | | | 95% Confidence Interval of the Difference | |
| | | | | Mean | | |
	t	df	Sig. (2-tailed)	Difference	Lower	Upper
AAR General	2,457	117	,015**	,00680	,0013	,0123
CAAR General	3,464	117	,001***	,01345	,0058	,0211
AAR Mining	-,658	117	,512	-,00545	-,0218	,0109
CAAR Mining	-,812	117	,419	-,00914	-,0314	,0132
AAR Manufacturing	2,196	117	,030**	,00702	,0007	,0134
CAAR Manufacturing	3,215	117	,002***	,01394	,0054	,0225
AAR Transportation, Communication, ...	,740	117	,461	,00896	-,0150	,0329
CAAR Transportation, Communication, ...	1,036	117	,302	,01831	-,0167	,0533
AAR Wholesale	,910	117	,365	,00502	-,0059	,0159
CAAR Wholesale	1,447	117	,151	,01019	-,0038	,0241
AAR Retail	2,530	117	,013**	,01283	,0028	,0229
CAAR Retail	3,203	117	,002***	,02479	,0095	,0401
AAR Services	1,742	117	,084*	,00631	-,0009	,0135
CAAR Services	2,476	117	,015**	,01225	,0025	,0220

Test Value = 0

Figure 4 plots the course of all included CAAR values over the sample period. Again, it's quite difficult to detect a specific pattern away from zero. This finding suggest that the outperformance of founder led firms, if any, is not too dominant.

Figure 3: CAAR values with S&P500 returns as benchmark
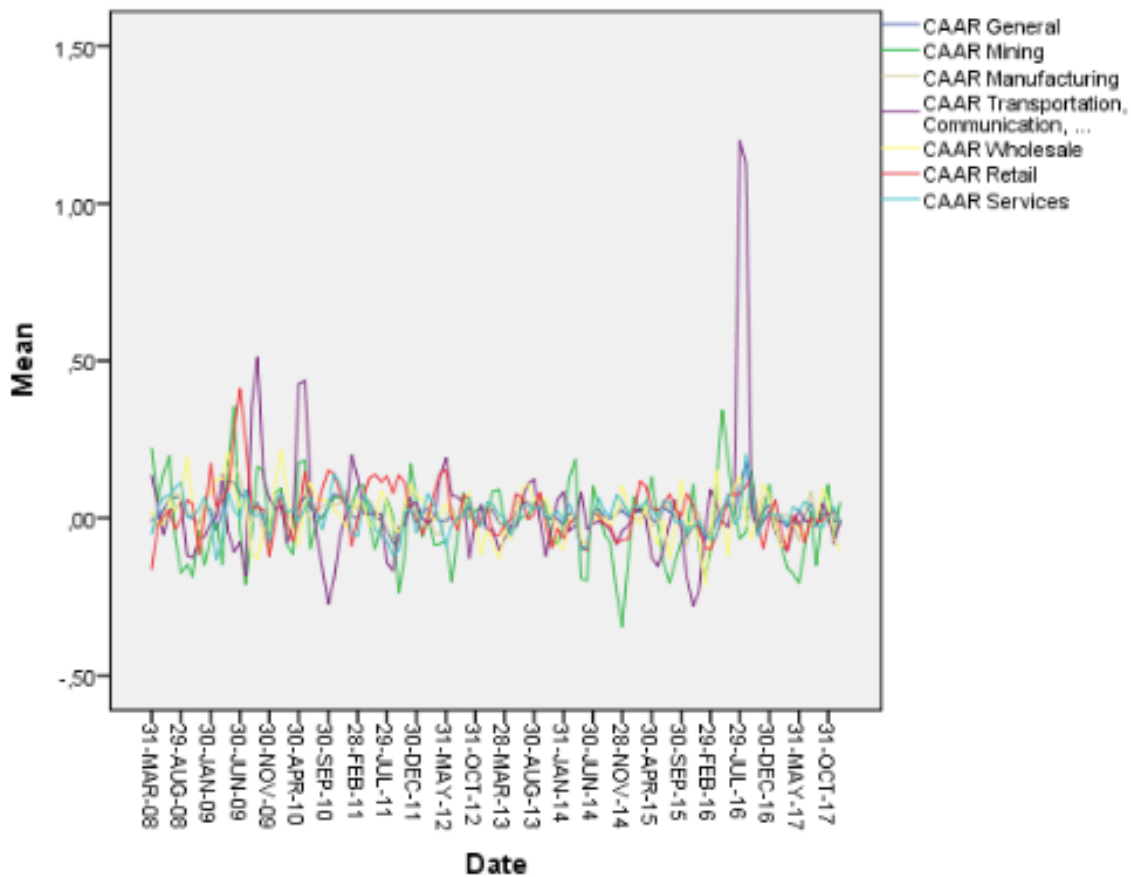
The second metric of value creation, as defined chapter 3.2, is the holding period return of a firm or HPR. In order to test the effect of founder status on HPR, a regression equation is constructed and complemented by several independent variables. The regression equation is defined as:

Equation 7: regression equation with holding period return as dependent variable

$$HPR_i = b_0 + b_1 \beta_i + b_2 LN\left(\frac{turnover_{target}}{turnover_{acquirer}}\right) + b_3\, Dummy(Founder) +$$

$$b_4\, Dummy\,(Diversifying) + b_5 Dummy(Crossborder) + b_6\, Dummy(Listed) +$$

$$+ b_7\, Dummy(Shares) + b_8\, Dummy(Mixed) + b_9\, Dummy(Mining) +$$

$$b_{10}\, Dummy(Manufacturing) + b_{11}\, Dummy(Communication) +$$

$$b_{12}\, Dummy(Wholesale) + b_{13}\, Dummy(Retail) + \varepsilon$$

As discussed in chapter 5.1, the analysis of a multivariate linear regression requires a check-up of several assumptions[7]. Analysing the data of this investigation revealed the same two problems as in chapter 5.1. The first problem arises when screening the correlation matrix of all independent variables for potential multicollinearity. Two independent variables (method of payment dummies 'cash' and 'shares') have a correlation of -0.912 while two other independent variables (industry dummies 'manufacturing' and 'services') have a correlation of -0.652. Because these two pairs of variables had the highest correlation within their industry, the method of payment dummy 'cash', and the industry dummy 'services' are excluded from the regression and serve as a reference variable. The second problem arises when screening the data for a potential heteroscedasticity problem. Although the dependent variable is not normally distributed, this investigation decided that based on figure 5, which is included in appendix 8.2, the standardized residuals do approximate the normal distribution and therefore the problem of heteroscedasticity is eliminated.

The significance of the model can be interpreted based on table 12. The adjusted r square values are both significant and increase from 0.175 to 0.374 when comparing model 1 with model 2. The increase in the explained variance of the dependent variable from 17,5% to 37.4% suggest that the inclusion of industry effects in the regression is important.

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[7] These assumptions are: linearity of residuals, independence of residuals, normal distribution of residuals and equal variance of residuals

Table 12: Model summary regression 2

Model summary regression 2

Table presents the model summary of regression 2. The dependent variable is defined as holding period return or HPR and follows the calculation as described in chapter 4.2: $HPR_i = [\prod_{t=1}^{T}(1 + r_{it})] - 1$. For the independent variables, model one includes the natural logarithm of the relative size of the target: LN($\frac{turnover\ target}{turnover\ acquirer}$), beta of the stock: $\beta_i = \frac{Cov(r_i, r_m)}{Var(r_m)}$ and several dummy variables. The dummy variables are: founder status (founder or non-founder), method of payment (cash, stock or mixed version of both), target listed (listed or non-listed), cross border deal (cross border or domestic) and type of deal (diversifying or non-diversifying). Model 2 adds the industry effects to the regression. The industry effects are coded as a dummy variable with the following observations: mining; manufacturing; transportation, communication, ...; wholesale; retail and services. The dummies cash and services are excluded from the regression and serve as reference variable for their own dummy categories.

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	,419a	,175	,154	2,93198	,175	8,368	8	315	,000***
2	,611b	,374	,348	2,57539	,199	19,654	5	310	,000***

Finally, most important for this investigation is the interpretation of the coefficients of the regression. Table 13 presents all the results of the regression and reveals that for both models the founder dummy is significant. So with or without the industry effects, using HPR's as a metric of value creation, founder led firms tend to outperform their non-founder led counterparts. Second, the natural logarithm of the relative size of the target is significant for both models as well. This means that a decrease in the relative size of the target should result in an increase of the HPR. So companies that tend to acquire smaller firms (measured as the relative size of the firm) should be able to generate more value on the stock market. Finally, the table shows that the HPR's are not the same in all industries. The retail dummy shows a significant p-value and a positive coefficient, which suggest that companies in the retail industry outperform companies in the services industry. To finalize, the results of regression 2 identify founder led firms as better performers on the stock market, which is in favor of hypothesis 2.

Table 13: Coefficients regression 2

Coefficients regression 2:

Table presents the model summary of regression 2. The dependent variable is defined as holding period return or HPR and follows the calculation as described in chapter 4.2: $HPR_i = [\prod_{t=1}^{T}(1 + r_{it})] - 1$. For the independent variables, model one includes the natural logarithm of the relative size of the target: $LN(\frac{turnover\ target}{turnover\ acquirer})$, beta of the stock: $\beta_i = \frac{Cov(r_i, r_m)}{Var(r_m)}$ and several dummy variables. The dummy variables are: founder status (founder or non-founder), method of payment (cash, stock or mixed version of both), target listed (listed or non-listed), cross border deal (cross border or domestic) and type of deal (diversifying or non-diversifying). Model 2 adds the industry effects to the regression. The industry effects are coded as a dummy variable with the following observations: mining; manufacturing; transportation, communication, …; wholesale; retail and services. The dummies cash and services are excluded from the regression and serve as reference variable for their own dummy categories.

Model		Unstand. Coefficients B	Std. Error	Stand. Coefficients Beta	t	Sig.	Correlations Z-order	Partial	Part
1	(Constant)	-1,355	,563		-2,409	,017**			
	Beta	,286	,292	,052	,978	,329	-,018	,055	,050
	Founder status	1,784	,326	,280	5,465	,000***	,286	,294	,280
	Type of deal	,751	,340	,118	2,210	,028**	,159	,124	,113
	Cross border	,310	,386	,042	,804	,422	,081	,045	,041
	Target listed	-,002	,779	,000	-,003	,997	,008	,000	,000
	LN relative size target	-,290	,058	-,264	-5,016	,000***	-,277	-,272	-,257
	Dummy MOP Shares	,125	,411	,016	,303	,762	-,046	,017	,016
	Dummy MOP Mixed	-,652	,929	-,037	-,703	,483	-,046	-,040	-,036
2	(Constant)	-,814	,510		-1,597	,111			
	Beta	,382	,257	,070	1,486	,138	-,018	,084	,067
	Founder status	1,588	,290	,249	5,486	,000***	,286	,297	,247
	Type of deal	,207	,318	,033	,653	,515	,159	,037	,029
	Cross border	,088	,341	,012	,257	,797	,081	,015	,012
	Target listed	-,019	,689	-,001	-,028	,978	,008	-,002	-,001
	LN relative size target	-,119	,054	-,108	-2,195	,029**	-,277	-,124	-,099
	Dummy MOP Shares	-,057	,368	-,008	-,156	,876	-,046	-,009	-,007
	Dummy MOP Mixed	-,336	,820	-,019	-,410	,682	-,046	-,023	-,018
	Dummy Mining	1,785	1,097	,076	1,627	,105	,046	,092	,073
	Dummy Manufacturing	,593	,352	,088	1,684	,093*	,009	,095	,076
	Dummy Communication Transportation	-,904	,610	-,070	-1,481	,140	-,130	-,084	-,067
	Dummy Wholesale	-1,096	,758	-,068	-1,446	,149	-,101	-,082	-,065
	Dummy Retail	5,445	,591	,473	9,210	,000***	,521	,463	,414

This investigation implemented two metrics of value creation in order to compare the performance founder and non-founder led firms. Comparing founder and non-founder led firms based on AAR and CAAR figures revealed an outperformance of founders in comparison with non-founders only in the retail industry. These figures also revealed a general outperformance of founder led firms in comparison with the S&P500 index. In contrast to this finding, a multivariate regression with the holding period return as a dependent variable revealed that founders outperform their non-founder led counterparts. Because of these opposing results, hypothesis 2 cannot be confirmed. To conclude, again this investigation states that cautiousness is required when analyzing results related to the industry classification due to an unevenly distributed sample over the different industries.

6 Conclusion

Before analysing any data, this investigation identified that certain parameters of a merger or an acquisition can lead to wealth creation on the stock market. For example, as pointed out by Draper (1991), a firm engaging in a merger or an acquisition should be able to generate more value to its shareholder if it finances a deal with cash instead of stock. This investigation analysed the investment behaviour of founder and non-founder led firms based on parameters such as method of payment, target listing, if the deal was an acquisition, if the deal was domestically orientated and if the target was inside or outside the main industry of the bidder. This investigation matched every founder led firm with a non-founder led counterpart based on industry classification and size, and revealed that no significantly different investment behaviour based on either one of these parameter can be found. An interesting point in this part of the analysis is that both founders and non-founders dominantly chose to offer cash as a method of payment. Both averages are situated around 74%. Following the point of view of Draper, offering cash could signal the market that the management perceives its company as being undervalued. This feeling of undervaluation is often related to the concept of overconfidence, which Lee (2017) identified as a characteristic applicable to founder CEOs. However, since stock as a method of payment often offers lower returns on the stock market (Datta, 1992) one could also reason that offering cash is better way of financing.

Further, as discussed in the literature review, this investigation starts with the intention of explaining which one of two opposing views would be the most accurate. These two opposing views were extracted from the available literature. On the one hand, founder's overconfidence can lead to a higher level of acquisitiveness and value destroying deals. (Lee, 2017; Malmendier, 2008). For obvious reasons, making value destroying deals should lead to a worse performance on the stock market in comparison with companies that make successful deals. On the other hand, founder led firms have a strong reputation and are able to generate more value on the stock market based on the research of several reputable economists. (Palia,2008; Fahlenbrach 2009; Jayaraman, 2000). The results of the analysis show that there's no significant difference between founder and non-founder led firms when analysing the acquisitiveness of both types of firms. The second part of the analysis looks at the value creation based on two metrics. First, based on the AAR and CAAR no significant relationship can be identified when comparing founder and non-founder led firms. Founder led firms do tend to outperform the S&P500 index, however this is not applicable to every industry in which founder led firms are active. In addition to this, a multiple linear regression identified that, in

general, founders tend to outperform non-founder led firms. Ideally, both metrics of value creation should present the same conclusion in order to make a valid point. Since this is not the case, no incontestable conclusion can be made towards the comparison of founder and non-founder led firms. However, this investigation does argue that the conclusion of the multiple linear regression, being that founder led firms tend to outperform their non-founder led counterparts, adds more value to the case than the conclusion of the AAR and CAAR values. The regression analysis has a stronger ability to predict a relationship between variables because it allows to include several independent variables. The main conclusion of this investigation is that founder and non-founder led firms display similar investment behaviour when engaging in an acquisition. When analysing the performance on the stock market, founder led firms do seem to do better, although not every performance measure seems to provide the same conclusion.

7 Limitations and recommendation

The biggest limitation of this investigation is definitely related to the sample of firms. As discussed in chapter 4, this investigation starts with a relatively large sample of firms. However, because the analysis required an evenly matched sample that contains values for a large set of variables, the investigation ended up with a relatively small sample of firms. Although the sample is big enough to be statistically significant, the uneven distribution in terms of industry is a big limitation for this investigation. More specifically, both chapters of the analysis reveal that there's a significant difference in the investment behaviour and performance when comparing the pairs in terms of industry. However, the distribution of firms doesn't allow to analyse within each industry category whether or not founder led firms display different investment behaviour or are able to generate more value for the shareholders in comparison with non-founder led firms. The main recommendation for future investigators is therefore to find a way to complement the dataset of this investigation and to conduct a comparable analysis but with the inclusion of a comparison of founder and non-founder led firms within each identified industry category.

8 Appendix

8.1 Appendix 1: chi-square tests

Table 14: Chi-square test for the variables type of deal and founder status

Chi-square test for the variables type of deal and founder status. Type of deal, defined in chapter 2.2.1, refers to the comparison of the core of operations of acquirer and target. Type of deal, defined in chapter 2.2.1, refers to the comparison of the core of operations of acquirer and target. A deal is defined as diversifying if the target doesn't belong to the same industry category of the acquirer. The industry classification is defined in chapter 4.1. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 75,11. Computed only for a 2x2 table

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	,220[a]	1	,639		
Continuity Correction[b]	,128	1	,720		
Likelihood Ratio	,220	1	,639		
Fisher's Exact Test				,658	,360
Linear-by-Linear Association	,219	1	,640		
N of Valid Cases	324				

Table 15: Chi-square tests for variables cross border deal and founder status

Chi-square tests for variables cross border deal and founder status. Cross border refers to the nationality of the target. If a target is not primarily United States based, the deal is identified as a cross border deal. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 37,80. Computed only for a 2x2 table.

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	,328[a]	1	,567		
Continuity Correction[b]	,196	1	,658		
Likelihood Ratio	,328	1	,567		
Fisher's Exact Test				,604	,329
Linear-by-Linear Association	,327	1	,567		
N of Valid Cases	324				

Table 16: Chi-square tests for variables method of payment and founder Status

Chi-square tests for variables method of payment and founder Status. Method of payment, defined in chapter 2.2.1, refers to how the deal is paid and is divided into three main categories: cash, stock or a mixed version of both. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 5,33.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	,056[a]	2	,973
Likelihood Ratio	,056	2	,973
Linear-by-Linear Association	,048	1	,827
N of Valid Cases	324		

Table 17: Chi-Square tests for variables target listed and founder status

Chi-Square tests for variables target listed and founder status. Target listed refers to whether or not the target was listed during the bidding process or not. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 7,27.

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	,020[a]	1	,887		
Continuity Correction[b]	,000	1	1,000		
Likelihood Ratio	,020	1	,887		
Fisher's Exact Test				1,000	,549
Linear-by-Linear Association	,020	1	,887		
N of Valid Cases	324				

8.2 Appendix 2: distribution of standardized resiudals
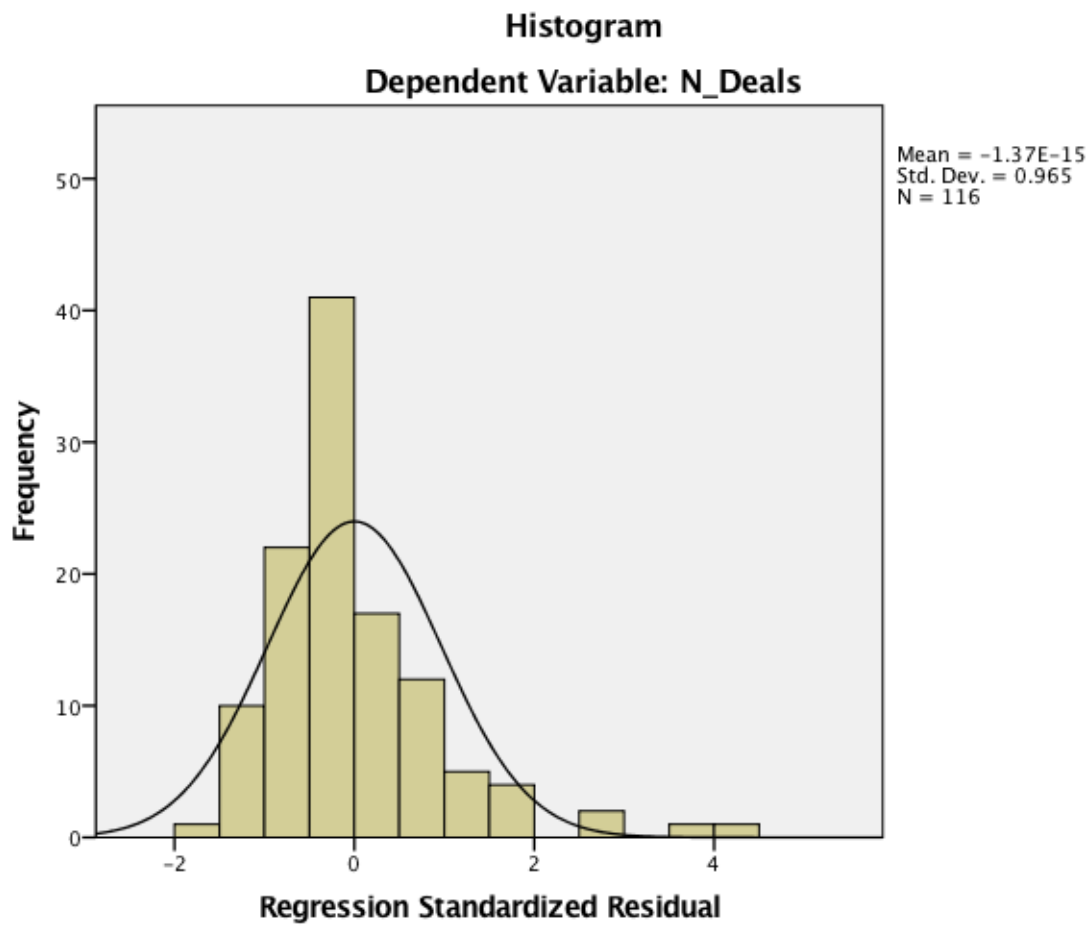
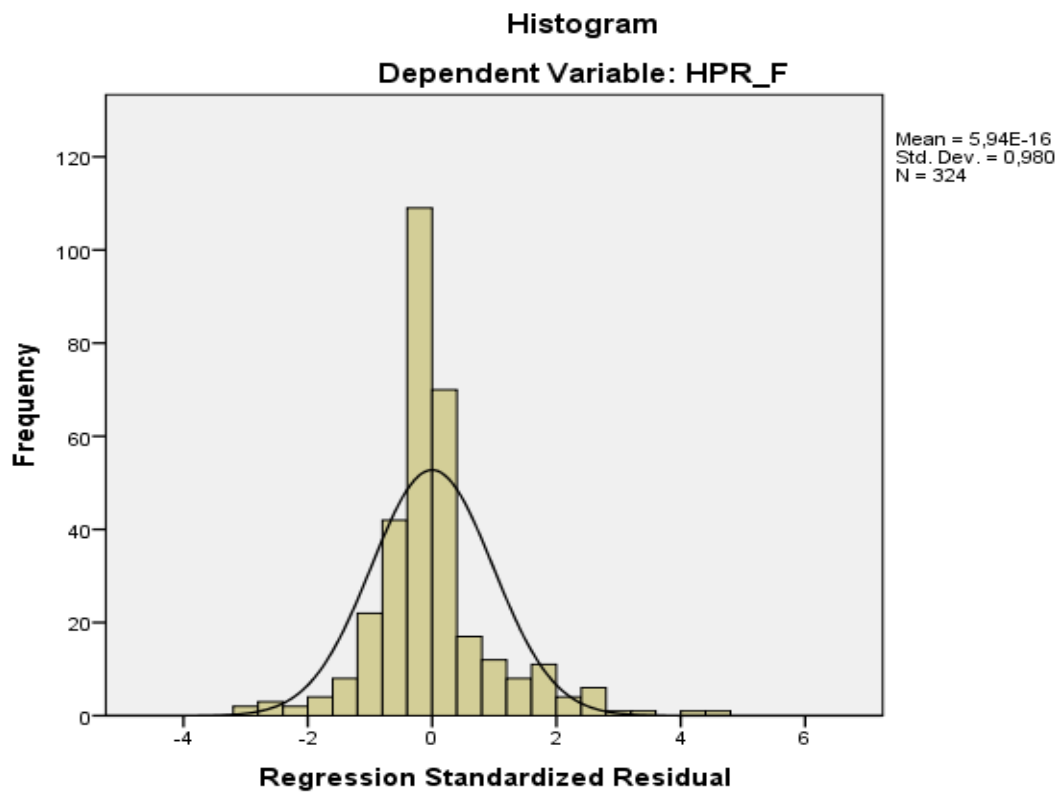Figure 4: Distribution of the standardized residuals of regression 1

Histogram

Dependent Variable: N_Deals

Mean = −1.37E−15
Std. Dev. = 0.965
N = 116

Figure 5: Distribution of the standardized residuals for regression 2

Histogram

Dependent Variable: HPR_F

Mean = 5,94E-16
Std. Dev. = 0,980
N = 324

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