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Finance Experience on the Board of Directors

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Abstract

This thesis studies the match between directors with finance experience and firms, as well as the relationship between financially experienced directors and firm policies. Using panel data of S&P 1,500 firms from 1993 to 2013 and a novel measure of finance experience, I first find evidence of a director-firm match where finance directors are hired by larger, older firms with less investment opportunities. Second, having financially experienced directors on the board is negatively associated with cash holdings and positively associated with leverage and payouts to investors. This is consistent with the theory that firms with finance directors are less financially constrained, and evidence is found thereof. Third, a weakly positive relationship between the presence of financially experienced directors and firm performance is found. However, there are methodological issues with the study, suggesting that the results should be interpreted with caution.

Keywords: finance experience, financial policy, firm performance, director-firm match

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1. Introduction

Ever since the Sarbanes-Oxley Act was implemented in 2002, requiring firms to disclose the presence of financial experts on the board's audit committee, the role of financial expertise and experience on a firm's board of directors should be of interest to firms and policy makers. Furthermore, previous studies have shown that finance experience is valued in the marketplace in the form of favorable market reactions to the appointment of financially experienced executives (Defond, Hann and Hu, 2005) and higher compensation to directors (Fedaseyeu, Linck and Wagner, 2013).

However, the role that the presence of finance experience on the board of directors plays for a firm remains unclear. While the body of research on board composition and its relationship with firm policy is vast, a majority of it has focused on other aspects, such as the proportion of independent directors, rather than the experience of the directors. Other papers have examined the experience of the chief executive officer and other executives outside the board of directors.

Papers that do examine financial expertise in the board room are limited, and often focus on very specific topics, giving a far from complete picture. There is evidence that bankers tend to sit on the boards of large, stable firms with high asset tangibility and a low degree of short-term financing (Kroszner and Strahan, 2001), but there is still no clear answer as to how they influence the firm once they have been appointed. While it has been found that the presence of commercial bankers on the board is positively associated with aggregate firm debt (Booth and Deli, 1999), and negatively associated with cash flow sensitivity (Güner, Malmendier and Tate, 2008), there are many other elements of a firm's financial policy that financially experienced directors may be related to. Moreover, no extensive study has been made on the relationship between finance experience and firm performance.

This study fills this gap, as well as brings together these different strands of literature, by doing a more thorough analysis of the role of finance experience on the board of directors. More specifically, three areas are covered. First, the match between firms and directors with finance experience is studied. Second, the relationship between directors with finance experience and firm financial policy is explored. Third, tests are conducted to see whether or not finance experience is also associated with firm performance.

To do this, nearly 700,000 positions and the biographies of more than 30,000 directors are analyzed, resulting in the most extensive measure of finance experience used in the literature

thus far. These directors correspond to a sample of 1,540 unique S&P 1500 firms between the years 1993 and 2013.

To examine the first research area, a probit model is employed, finding that the match between directors and firms is anything but random. Rather, financially experienced directors¹ often sit on the board of older, larger firms with lower growth, lower capital expenditures and less research and development expenses. This is in line with prior research but adds information to the previous findings that size and asset tangibility determine the director-firm match.

Next, using a panel data approach, this study shows that the presence of finance directors is negatively associated with cash holdings and positively associated with financial leverage and payouts to investors in the form of dividends and share repurchases. These findings are driven by the presence of commercial and investment banking directors in particular, and are interpreted as being due to the lower financial constraints of firms with finance experience on the board. By subsequently running a set of split-sample regressions, support for this theory is found. While the relationship with leverage has been found before, the role that financially experienced directors play for a firm's cash holdings and payout policy has not been found before.

Finally, by running another set of regressions of firm performance on finance experience, a weak positive relationship between the two is found, which is driven by the same type of directors who were found to be associated with the firms' financial policy. This is interpreted as weak evidence that the influence that financially experienced directors exert on firm policy is of some benefit to the firm. Overall, however, the relationship with firm performance remains ambiguous.

As other researchers have pointed out, there are methodological issues inherent in studies of board composition and firm policy. More specifically, it is difficult to determine the extent to which financially experienced directors are appointed by firms with a certain policy, and to what extent they are the driving force behind the policy. Thus, I argue that the results in this study should be interpreted with caution, especially in terms of cause and effect.

This study contributes to the body of research in two major ways. First, it brings together different areas of literature and fills a gap in research on the role that finance experience plays for firms. By finding new relationships between finance experience and cash holdings, as well as

¹ In this thesis, expressions such as "financially experienced directors", "finance directors" and "directors with finance experience" are used interchangeably, according to the definition presented in Appendix B.

between finance experience and payout policy, it is arguably the most extensive study of its kind. Second, in doing so, it gives valuable insights to policy makers and firms looking to regulate the presence of, and hire, respectively, directors with finance experience.

The remainder of the thesis is structured as follows. In section 2, the different areas of research related to this study are outlined, resulting in a series of predictions for the outcome of this paper. In section 3, the data used in this study is described. Section 4 in turn presents the empirical results for the different topics, before concluding with a discussion on potential issues with the study. Section 5 concludes.

2. Previous Literature and Hypotheses

While there is a significant body of research related to the composition and characteristics of the board of directors, most previous research has focused on other aspects than the presence of finance experience, such as the degree of board independence.² One of the reasons might be that finance experience is not as readily observable, and there is no clear consensus within the research community on which definition to use in empirical work.³

Moreover, the research on finance experience is split between those papers that look at CEOs with finance experience (such as Custódio and Metzger (2012b)), and papers on a board level (for instance, Güner et al. (2008)). There are, however, reasons to believe that some of the research related to CEOs can be translated into a context of the board of directors, as the two often work together, and the board may exert some influence on firm policy as well. Schwartz-Ziv and Weisbach (2013) find that boards can be seen as active monitors that often request more information and updates on financial matters, and in some cases vote against the CEO.

However, since the enactment of the Sarbanes-Oxley Act in 2002, requiring firms to disclose whether they have a financial expert on the board's audit committee (Defond et al., 2005), there should be an increased interest in what role the financial expertise of directors plays in firms. Furthermore, as research has shown that directors' finance experience is associated with higher compensation (Fedaseyeu et al., 2013), it is natural to investigate further what the impact of directors with finance experience is on firm policy.

In the following sections, three broad areas of research are discussed, namely the director-firm match, the impact of finance experience on financial policy, and the impact of finance experience on firm performance. The sections begin by outlining the previous research on executives and how this can be connected to a board level, before moving on to a summary of the literature on boards. Each section ends with a hypothesis that will be tested later on in this study.

² See, for instance, Baysinger and Butler (1985), Fich and Shivdasani (2006), Hermalin and Weisbach (1988), Kini, Kracaw and Mian (1995), Klein (1998), Linck, Netter and Yang (2008), Perry and Payer (2005), and Raheja (2005).

³ Custódio and Metzger (2012b) define financial expert CEOs as those with past experience in banks or investment firms, large auditing firms, or past finance-related roles such as accountant or treasurer. Fedaseyeu et al. (2013) define finance experience as "prior or current finance experience or Chartered Financial Analyst credentials". Most other papers (e.g., Güner et al. (2008)) study directors who currently or previously worked at a bank.

2.1. The Director-Firm Match

One of the problems when studying the effect of board composition on firm policy is that of causation; it is difficult to establish to what extent directors with certain characteristics affect a firm's policy, and to what extent the directors are drawn to firms with a certain proclivity for said policy. Adams, Hermalin and Weisbach (2010) argue that the question of a board's makeup and actions is intertwined, and that studies of boards should thus be seen as joint statements of firms' selection of directors, and of the directors' effect on board actions. Therefore, this study begins by examining the determinants of the match between firms and directors, in an attempt to determine in which firms directors with finance experience are likely to end up.

2.1.1. Studies of Executives

As mentioned earlier, much of the previous research has been concerned with the match between CEOs and firms rather than directors and firms. Some papers have found that firms choose executives whose characteristics and values are similar to those of the firm. For instance, Cronqvist, Makhija and Yonker (2011) find evidence of a preference-based matching, where CEOs who are willing to bear more financial risk on a private level are matched more optimally with firms that have a higher level of optimal leverage.

Other studies have pointed to skill complementarity as a determinant of the match between executives and firms, with the purpose of appointing someone that can bring qualities to a firm that it otherwise does not possess. In line with this, Kaplan, Klebanov and Sorensen (2008) find that leveraged buyout and venture capital firms are more likely to hire CEOs with greater general abilities, such as being efficient and detailed, which are not necessarily qualities that are inherent in the firm. Pan (2014) conclude that the executive labor market is characterized by an assortative matching, wherein complementarities between firms and managers are sought, as an efficient matching of executives with different skills to firms with different characteristics can create an economic surplus. This can, for example, explain why R&D-intensive firms in Silicon Valley often hire CEOs with science degrees and high technical expertise.

While some of the results from these studies can be applied to the director-firm match, there are reasons to believe that the choice of CEO is partly dictated by other factors, making the selection process different. For one thing, CEOs often leave their positions only a few years after getting appointed (Allgood and Farrell, 2003), which changes the time perspective of the selection. Moreover, there is a difference between hiring one CEO and multiple directors, which

might make skill complementarity an even more important determinant of the match between a firm and any given director.

2.1.2. Board Level Studies

While there is no clear consensus on what determines the match between firms and directors, it does seem clear that directors with certain characteristics are appointed by firms with certain characteristics in a way that is far from random. Boone, Field, Karpoff and Raheja (2007) show that the cross-sectional variation in board composition can be explained by economic considerations, as board size and composition vary across firms and time according to the characteristics of the firm.

On a board level, there are some studies that consider financially experienced directors specifically. Booth and Deli (1999) argue that the optimal board composition should be dictated by a firm's contractual relationships, such that a firm with greater use of debt, for instance, would benefit from the presence of a banker in the board room. Similarly, according to Agrawal and Chadha (2005), financial expertise is particularly needed in young, high-growth firms, which are likely to have greater financial needs. Kroszner and Strahan (2001) find, however, that bankers tend to sit on the boards of large, stable firms that have a high level of tangible assets, and to a low degree rely on short-term financing.

In conclusion, while the exact determinants of the director-firm match remains unclear, it is clear from previous studies that the matching between firms and directors is far from random. Thus, the working hypothesis of this paper is that firms with certain characteristics are more likely to hire financially experienced directors than others. However, if these firms are young, with high growth, or large and stable, remains to be seen, and no prediction is made thereof.

2.2. Financial Policy

This section is divided into two main parts. The first part outlines previous studies on the relationship between professional characteristics, with a particular focus on the finance experience of board directors, and financial policy. The second part discusses the relationship between financial constraints and financial policy, which is not strictly linked to board composition or finance experience, but may prove useful later on in the analysis.

2.2.1. Professional Characteristics and Financial Policy

2.2.1.1. Studies of Executives

Again, there is a large body of research that focuses on the characteristics and experience of the CEO, rather than the board of directors, in relation to financial policy. Bertrand and Schoar (2003) claim that managers have their own styles that they imprint on their firms when making investment and financing decisions. Similarly, Cronqvist et al. (2011) find that the CEO's personal behavior influences the financial behavior of the firm he or she manages. More specifically, by regressing corporate leverage on personal home leverage, a positive relationship between the two is found.

In a study very similar to this one, except for the fact that it is conducted on CEOs, rather than directors, with a background in finance, Custódio and Metzger (2012b) investigate the effect of appointing a financial expert CEO on the firm's corporate policies. Using a panel data approach, they show that the appointment of a financial expert CEO is associated with a firm decreasing its cash holdings and increasing its leverage. One of the interpretations is that these CEOs have better access to external financing, thus being able to borrow more, and thereby have a lower need to hold high cash stocks. Custódio and Metzger also point out that this is consistent with a higher degree of financial sophistication. Furthermore, they find that firms with a financial expert CEO is more likely to pay out dividends. Finally, they find evidence that firms with financial expert CEOs have a lower cash flow sensitivity.

As mentioned before, the board of directors also takes part in these decisions, and I therefore predict that the relationship between a firm's CEO and its financial policy is quite transferable to the board level. At the same time, the appointment of a single director might not have the same bearing on firm policy as the appointment of the CEO, since the power of any one director is more limited.

2.2.1.2. Board Level Studies

There are also several papers that study the impact of having financial expertise, or members of financial institutions, present on a firm's board of directors. Stearns and Mizruchi (1993) show that both the amount and type of financing of a firm is affected by the types of financial institutions that are represented on the firm's board. They argue that monitoring plays a large part in this, as a firm may find it easier to obtain financing if the financial institution has access to inside information on the firm's financial situation through the board.

In a similar study, Booth and Deli (1999) find a positive association between having commercial bankers on the board and aggregate firm debt. The positive relationship holds for both short-term and long-term debt, as well as total bank debt. In contrast with Stearns and Mizruchi, the effect is restricted to unaffiliated commercial bankers, which Booth and Deli take as evidence for the theory that bankers supply debt market expertise rather than monitor lending relationships. However, they are unable to establish causality, meaning that it might be the case that firms with more bank debt add commercial bankers to the board, rather than the other way around.

In a particularly relevant paper, Güner et al. (2008) use a sample of publicly traded firms between the years 1988 and 2001, and find that having directors who also work as commercial bankers on the board is negatively associated with investment-cash flow sensitivity. Furthermore, external funding increases in the presence of commercial bankers. This is again found to be related to affiliation, that is, the results are driven by the presence of bankers whose banks have a lending relationship with the firm.

Although previous papers have had a slightly different focus than this one by predominantly focusing on CEOs and directors who currently work in financial institutions, rather than directors with prior finance experience, I expect that the link to financial policy is the same. Thus, this paper hypothesizes that firms with a (higher) presence of directors with finance experience is positively associated with the use of leverage and payouts, and negatively associated with cash holdings.

2.2.2. Financial Constraints and Financial Policy

To understand the relationship between directors' finance experience and financial policy, it is important to understand the underlying reasons for why a firm has or would want to have a certain policy.

Many papers have studied the effect of financing constraints on financial policy. By conducting a survey of firms in seventeen countries, Bancel and Mittoo (2002) find that financial flexibility, or, in other words, access to external financing, is one of the most important determinants of debt policy.

Financial constraints also play an important part in determining a firm's level of cash holdings. Almeida, Campello and Weisbach (2004) find that financially unconstrained firms have a lower incentive to safeguard against future investment needs by having large cash holdings.

Similarly, using a regression framework, Bates, Kahle and Stulz (2009) also find that the level of cash holdings is largely determined by such precautionary motives.

In conclusion, the level of financial constraints is an important determinant of a firm's financial policy in that firms are able to borrow more, and have a lower need to hold cash, if financial constraints are low. I therefore hypothesize that directors with finance experience are negatively associated with financial constraints, which in turn influence financial policy, such as cash holdings and leverage.

2.3. Firm Performance

As mentioned earlier, Defond et al. (2005) find a positive market reaction to the appointment of financial experts on audit committees. Fedaseyeu et al. (2013) further show that financial experience is priced in the form of higher compensation. Furthermore, while this paper has yet to prove a relationship, previous sections have given many examples of how financial expertise and finance experience – for better or worse – seems to influence corporate policy. If directors with such experience exert a large influence on the firms that they are in, and are valued by the market, one might also expect this to translate into some (positive) effect on firm performance.

2.3.1. Studies of Executives

Starting again on an executive level, previous research has examined the relationship between different professional characteristics and different variables related to performance, such as stock returns and the quality of financial reporting. One such example is a paper by Adams, Almeida and Ferreira (2005), where stock return variability is higher for firms run by powerful CEOs. In another paper, Custódio and Metzger (2012a) study how CEO characteristics affect performance in takeovers, and find that abnormal announcement returns are two to three times higher if the CEO has experience in the target industry, suggesting a direct effect on value creation. These studies show that professional characteristics can have a bearing on firm performance.

There are some papers that examine financial expertise or experience specifically. On a CFO level, Aier, Comprix, Gunlock and Lee (2005) show that earnings restatements are negatively associated with the financial expertise of the CFO. Moreover, in the aforementioned paper by Custódio and Metzger (2012b), results show that the interaction between the financial expertise of the CEO and firm age is positively related to firm performance. This is interpreted as evidence of financial expertise being complementary to the mature stage of the firm.

Overall, while the first papers mentioned in this section simply establish that executive characteristics are related to firm performance, the ones that examine financial expertise in particular suggest that it may be positively associated with the quality of reporting and firm performance. The question is if this is transferable to a board level context. While no paper has sought to examine this, I again argue that the presence of financial expertise on the board has a similar effect.

2.3.2. Board Level Studies

On a board level, the research is somewhat divided. Neither Hermalin and Weisbach (1991), nor Klein (1998), nor Bhagat and Black (1999) find any relation between board composition and firm performance. Moreover, many authors (such as Barnhart and Rosenstein (1998) and Bennedsen, Perez-Gonzalez and Wolfenzon (2006)) address the endogeneity issue present in these studies, meaning that certain types of directors, for instance, are hired by more profitable firms to begin with.

There are, however, studies that find different types of relationships. Pfeffer (1972) finds that firms that deviate from an empirically estimated optimal board structure equation are likely to underperform their peers. Pfeffer considers both the number of representatives from financial institutions and the number of outside directors, and argue that the optimal composition will depend on factors such as the firm's capital requirements. More recently, Baysinger and Butler (1985), as well as Perry and Peyer (2005) also show (weak) evidence that higher board independence can enhance firm value.

In one of few studies of financial expertise, Agrawal and Chadha (2005) find that earnings restatements are less likely when an independent director with financial expertise is present on the board or audit committee. Their conclusion is that this type of director is valuable in providing oversight of a firm's financial reporting practices.

Güner et al. (2008), on the other hand, challenge the view that directors with financial expertise unambiguously improve firm policy. While there are benefits to having financial expertise on the board, such as better access to capital, these have to be weighed against the costs due to misaligned incentives, such as overinvestment. For instance, investment bank directors are found to be associated with worse investments in outside targets.

In conclusion, the outcome of studying the relationship between finance experience on the board of directors and firm performance is not obvious, as the results of previous studies

have ranged from negative, via no impact, to good. However, given that financial expertise seems to be positively priced by the market, and papers have more frequently found a positive relationship rather than a negative, a positive association with firm performance seems like the most intuitive outcome, and will therefore be the working hypothesis in this paper, when moving to the analysis.

3. Data

The final sample used in this study consists of 17,325 firm-year observations corresponding to 1,540 unique S&P 1500 firms between the years 1993 and 2013. The data consists of two distinct parts – professional data and firm data – which are described further in the sections below.

3.1. Professional Data

The data over the directors who sit on the boards of the chosen firms is taken from the S&P Capital IQ People Intelligence database, which covers the positions held by more than 4.5 million professionals, as well as personal characteristics related to these individuals. The database also contains extensive biographies of all the professionals in the form of a text field. In a first step, all the professionals who sat on the board of an S&P 1,500 firm at some point during the sample period were identified. This amounted to 34,208 individuals. Next, all the positions pertaining to these individuals in the database were retrieved in order to analyze their previous experience, for a total of almost 700,000 positions.⁴

The finance experience measure, which is a key part of this study, was constructed as follows. First, any finance experience within the Capital IQ data set was identified. This can either come from having previously worked at a financial firm, or from having held a financial position in a non-financial firm. However, as the database does not always contain all the positions that a professional has held in his or her life, some directors may falsely be classified as not having any prior finance experience. Thus, in a second step, the aforementioned biographies were searched for words or phrases (such as “private equity” and “asset management”) that indicate additional finance experience. After these two steps, the experience was broken down further into three different groups: commercial banking experience, investment banking experience, and other finance experience. The construction of the finance experience measure is described in more detail in Appendix B. Finally, some additional data such as the professional’s age and tenure for each position was computed.

Panel A of Table 1 provides descriptive statistics for the directors included in the study (aggregated on a firm-year level). From this, it can be seen that the average director is 58 years old, and has held his or her position for about seven years. This is roughly in line with the profile of the professionals in comparable studies (e.g., Güner et al. (2008), Custódio and Metzger

⁴ This would suggest that a professional on average has about 20 different jobs in his or her career, which may sound much, but in general, each entry in the Capital IQ database corresponds to a different function within a firm, meaning that if a person got a promotion or changed title, it would be registered as a new position.

(2012b), and Fedaseyeu et al. (2013)). Furthermore, almost every firm (98 percent of the firm-year observations) has at least one director with some type of finance experience. Turning to the number of directors with finance experience as a proportion of the total board members, the table shows that the average board has around 63 percent of directors with finance experience, with the representation of the different types ranging from 22 percent of prior commercial banking experience, to 42 percent of investment banking experience. This is a bit higher than that found in previous research, which might be a result of the broader, more inclusive definition of finance experience used in this study.⁵

Finally, the Capital IQ database contains both person and firm identifiers, making it possible to link the professionals to the firms.

3.2. Firm Data

On a firm level, all the S&P 1,500 firms between the years of 1993 and 2013 were identified, and fundamental data was collected mainly from COMPUSTAT, with some complementary stock price data from CRSP. Observations with missing data for any of the variables used in the analysis were dropped, leaving, as mentioned before, a final sample size of 17,325 observations.

Descriptive statistics of the firms are provided in Panel B of Table 1, whereas the definition and the construction of the variables are described further in Appendix A.⁶ The average firm is about 19 years old, has a book value of assets of USD 5.7 billion, and a market capitalization of a bit more than USD 7 billion. As for the main variables of interest in this study, the average book leverage is 19 percent, whereas cash holdings as a proportion of assets are on average 17.5 percent. These numbers are within the range of values found in previous research, which varies quite a lot from paper to paper.

An initial analysis that will sometimes be referred to going forward is conducted in Figure 1 and Table 2. Figure 1 shows how the variables that are analyzed in the next sections change as firms go from having a minority to a majority of financially experienced directors on the board. Similarly, Table 2 shows the difference in means for the variables used in the study between firms

⁵ In this regard, the most comparable study is that of Fedaseyeu et al. (2013), wherein 53 percent of the directors have prior finance experience.

⁶ The variable definitions are very similar to those used by Custódio and Metzger (2012b) and Fedaseyeu et al. (2013).

with a majority and a minority of finance directors, as well as whether or not the difference is statistically significant.⁷

Figure 1 reveals that an increase in the proportion of financially experienced directors seems to be negatively associated with cash holdings, capital expenditures and Tobin's Q. Moreover, finance experience seems to be positively associated with leverage, payouts and the return on assets. However, these preliminary findings should be interpreted with caution for two reasons. First, all firms are not included in Figure 1, as not all of them move from having a minority to a majority of finance directors during the sample period.⁸ Second, it need not be the case that we should observe any major changes in the variables around the 50 percent threshold. Indeed, Figure 1 does not show any signs of a jump around the event year, but rather a smooth development.

Turning to Table 2, the difference between firms with a majority of financially experienced directors and firms with a minority is statistically significant for all of the variables of interest except for Tobin's Q. This gives us an idea of how these variables relate to finance experience. The next sections will test these relationships more formally.

⁷ Around 70 percent of the observations pertain to firms with a majority of financially experienced directors on the board.

⁸ 518 out of the total 1,540 firms are part of the sample in Figure 1.

4. Analysis and Results

The analysis in this study consists of three major parts. In the first part, the director-firm match is explored, and evidence suggests that there is a match between finance directors and firms where directors with finance experience are mainly drawn to older, larger firms with less capital expenditures and R&D expenditures. While the effects are more pronounced for some types of finance experience than others, there is not much evidence that directors with different experience end up in different types of firms.

In the second, and main, part of the analysis, the relationship between finance experience and financial policy is discussed. I find that finance experience is associated with lower cash holdings and higher leverage, and that these results are mainly driven by the presence of commercial and investment bankers. The section then pushes the analysis further by investigating the firms' use of financing. Evidence suggests that the presence of commercial bankers on the board is positively associated with the total payout to investors. The relationship between finance experience and financial constraints is analyzed, and it is argued that the results found in previous sections might be driven by financially experienced directors lessening the constraints of the firms they are in.

In the third part, the effect of finance experience on firm performance is analyzed. Weak evidence of a positive relationship between the two is found.

In a final section, the results are summed up, and the findings are problematized in a number of ways.

4.1. The Director-Firm Match

Though not the main purpose of the study, the determinants of the match between directors and firms is of interest since, as mentioned above, many studies have pointed out that the effect of board composition on firm policy should be analyzed jointly with the determinants of the firm's selection of directors. For the sake of causality, a researcher would ideally want the selection to be random, and this section aims to establish if such an assumption is reasonable.⁹

Preliminary, unreported tests suggests that the selection is all but random, as there are highly statistically significant differences in the proportion of directors with finance experience,

⁹ This assumption is often made in empirical work. See, for instance, Malmender and Tate (2008) who assume a random assortment of CEOs and firms.

both across firms and industries.¹⁰ Following the methodology of Kroszner and Strahan (2001), the determinants of the match between financially experienced directors and firms are tested through a probit model, wherein dummy variables that indicate the presence of finance directors on the board of the firm are regressed on various firm characteristics.

The results are presented in Table 3. The table shows the marginal effects rather than the probit coefficients per se, and can thus be interpreted as the change in probability of having a financially experienced director present on the board, given a unit increase in the independent variable. The most significant findings are that financially experienced directors (of any kind) are more likely to be found in large firms with low growth, and low capital and R&D expenditures. This is in line with the executive level findings of Custódio and Metzger (2012b), as well as the board level findings of Kroszner and Strahan (2001). The results suggest that finance directors often end up on the board of mature firms, as these are all characteristics associated with firms at a later stage of the life cycle. Indeed, the table also shows a positive relationship between firm age and the presence of a finance director, lending further support to this interpretation. This is in contrast with the findings of Agrawal and Chadha (2005). There is also strong evidence suggesting that firms with lower retained earnings are associated with financially experienced directors.

Turning to the two measures of firm performance used later in the study, we find that the probability of having a finance director on the board is higher for firms with a higher market-to-book ratio (as measured by the natural logarithm of Tobin's Q) and a lower return to assets. These findings are somewhat puzzling as they ostensibly contradict each other, and might suggest that the role firm performance plays in the director-firm match is more spurious.

Finally, there are for the most part no discernible differences between the different types of finance experience. The only variable that changes sign between the different groups is asset volatility, which might reflect differences in risk aversion between those that, for instance, have worked with commercial and investment banking. One could interpret this in two different ways. Either it does not matter which type of experience a director has, or a firm desires to have all types of experience represented at once, as they might complement each other.¹¹ Further

¹⁰ Differences in means of the proportion of directors with overall finance experience, as well as the three types of experience, both across firms and across the 48 Fama-French industries, are tested using, in turn, Wilks' lambda, Pillai's trace, Lawley-Hotelling trace, and Roy's largest root. See Butt, Shahbaz and Kamal (2008) for a description of these tests.

¹¹ Skill complementarity as a determinant of the executive-firm match is put forward by Pan (2014).

discussion on this matter might be held off until later sections have revealed whether or not the different types of directors seem to exert different influences on firm policy.

In conclusion, this section gives strong support to the hypothesis that the match between directors and firms is based on the characteristics described in this section and in Table 3. Finance directors are more likely to be hired by larger, older firms with lower growth and lower investments. Some of these results have been found in literature previously, while others contradict prior findings. Taken together, this study finds a new set of determinants of the director-firm match.

There are, however, no large differences between selecting, say, a director with a background in commercial banking, or in other types of finance. As no previous studies on the director-firm match have made the distinction between these types of financially experienced directors, this lack of clear differences is a novel result in and of itself.

4.2. Finance Experience and Financial Policy

This second research area in turn consists of three separate sections. First, one might say that the balance sheet is studied, by examining how the presence of finance experience on the board of directors is associated with cash holdings and leverage. Second, we turn to the firm's use of cash and financing, by examining payout policy and capital expenditures. Lastly, the relationship between finance experience and financial constraints is examined, as this has been hypothesized as being one of the driving forces behind financial policy.

4.2.1. Cash Holdings and Leverage

4.2.1.1. Overall Finance Experience

In this section, the relationship between the presence of directors with overall finance experience and financial policy, in terms of cash holdings and leverage, respectively, is explored. Table 4 shows the results from the baseline regression.¹² The regressions control for a number of firm characteristics that have commonly been used in the literature on capital structure, and in particular follow the specification of Custódio and Metzger (2012b) closely. All regressions include year fixed effects, and firm and industry effects are used as indicated by the table.¹³

¹² The use of fixed effects and other statistical details described in this section are also used in the remainder of the paper.

¹³ When including industry fixed effects, these are based on the Fama-French 48 classification. See http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_48_ind_port.html for details.

Moreover, all regressions control for heteroskedasticity after finding evidence of its presence.¹⁴ The main independent variable of interest in all regressions is the proportion of directors on the board with prior finance experience (of any kind). This is used for two reasons. First, as seen by Table 1, nearly every board has at least one director with finance experience, making a simple dummy variable less than ideal as an independent variable. Second, one could imagine that it might be difficult for a single finance director to exert significant influence on the firm, so that a higher proportion (at least up to a certain point) could enhance whatever relationship between finance experience and firm policy that is found.

In the first four columns, the dependent variable is the natural logarithm of cash holdings. The results point towards a negative relationship between the finance experience of directors and the level of cash holdings in a firm; that is, the more financially experienced directors that sit on the board, the less cash the firm holds. When adding firm fixed effects, as is done in columns 2 through 4, the relationship remains negative, but the statistical significance disappears, suggesting that the results should be interpreted with caution, as they can be explained by variations within firms.

One of the explanations for this finding is that financially experienced directors might give firms greater access to capital markets, which is consistent with holding less cash, as the precautionary motive for doing so decreases when firms can obtain external financing in times of lower liquidity (Opler, Pinkowitz, Stulz and Williamson, 1999). Opler et al. also find that riskier firms hold more cash and large, stable firms hold less, which is consistent with the coefficients on (the natural logarithm of) assets and asset volatility found among the control variables in Table 4.

Turning to leverage, which is the dependent variable in columns 5 through 8, there seems to be a positive and highly significant relationship between the presence of financially experienced directors and the level of leverage. The magnitude of the coefficient of interest as well as its significance is roughly the same both when fixed effects and additional control variables are added, which is a sign that the finding is robust.

It is commonly suggested in the literature that a firm's optimal leverage be determined by weighing the benefits of debt, in the form of tax shields and agency benefits, against costs of bankruptcy and other indirect costs.¹⁵ One possible explanation is that directors with finance experience also possess a higher financial expertise, and that this causes them to promote a

¹⁴ The test suggested by Breusch and Pagan (1979) was conducted.

¹⁵ See, for instance, Korteweg (2010), or any textbook on corporate finance such as Berk and DeMarzo (2011).

higher use of leverage. Another interpretation that in no way contradicts the first is that finance directors, again, give firms better access to capital markets, perhaps by currently working at a bank, or through their connections with financial institutions, and that this in turn causes firms that were otherwise unable to obtain external financing to increase their leverage.¹⁶

Some previous papers (Stearns and Mizruchi, 1993; Güner et al., 2008) have suggested that the results are driven by affiliated bankers that both sit on the board of a firm and work at the bank lending money to the firm. One cannot exclude the possibility that this is the case in this study as well. However, the measure of finance experience used in this study does not only include directors who are presently affiliated with a bank. Thus, it seems unlikely that affiliation is the only driver of the results, but rather, one of the factors, together with financial expertise.

4.2.1.2. Types of Finance Experience

This section expands upon the analysis of the previous section by breaking down the types of finance experience that the directors have into smaller groups, thereby investigating if the results are driven by any particular type of finance director. The results are shown in Table 5.

In the first four columns, the dependent variable is again the natural logarithm of cash holdings, but the main variables of interest are now the proportion of directors on a firm's board with the indicated type of finance experience. This suggests that the negative relationship between finance experience and cash holdings found in Table 4 is driven by the presence of commercial banking directors. What is more, this result is highly significant and robust to changes in specification. This result sheds more light on previous findings, and could perhaps also be seen as evidence of the theory that these directors facilitate firms' access to capital markets; directors with a commercial banking background might be the group most likely to provide this service to their firms.

The results for the other two types of finance directors are more spurious, with the coefficients both losing their significance and changing signs between specifications, and should thus be interpreted with considerable caution, if at all. They might, however, suggest that investment bankers are also negatively associated with cash holdings, whereas the relationship between cash and other finance directors is slightly positive. Finally, all other variables in the

¹⁶ Since leverage is defined as the ratio of long-term debt to total assets, it could theoretically decrease either due to an increase in the numerator or a decrease in the denominator. In unreported results, the increase of leverage seems to be driven by firms taking on more debt.

regressions have values and t-statistics that closely resemble the corresponding findings from Table 4, which could be seen as a sign of robustness, lending further validity to the study.

In the last four columns of Table 5, leverage is given the same treatment. Here, it is the presence of directors with experience within investment banking that seems to drive the positive relationship with leverage found in Table 4. Like with the commercial bankers and cash holdings, this result is highly significant and stable across all specifications. This finding could also tie into the speculations that investment bankers provide access to capital markets as well as financial expertise. It remains a puzzle, however, why commercial bankers would drive a firm's cash holdings, while the investment bankers exert an influence on the firm's level of leverage. If affiliation was the main explanation, as some papers have suggested, it would seem more likely that the relationship between finance experience and leverage was driven by commercial bankers, as commercial banks seem more likely to lend money to firms. Another possible explanation is that investment bankers have a more aggressive preference in terms of leverage; previous research has found a positive relationship between corporate and personal leverage (Cronqvist et al., 2011).

Again, the results for the other types of finance directors are weaker. However, the coefficient for other finance directors might partly drive the choice of leverage, as the coefficient is at least consistently positive throughout all regressions. Finally, the control variables, which might be of limited interest per se, are consistent both with Table 4 and with previous papers such as that of Custódio and Metzger (2012b).

To conclude this section, the presence of finance experience on a firm's board seems to be negatively associated with cash holdings, and positively associated with the use of leverage. The former relationship is seemingly driven by commercial banking directors, while investment banking directors are the driving force behind the latter. It is hypothesized that these findings might be caused by finance directors possessing a higher financial expertise, and facilitating firms' access to capital markets, thereby enabling firms to obtain more external financing, as well as requiring them to hold less cash for precautionary reasons.

The positive relationship between finance experience and leverage confirms previous findings in the literature. That the presence of finance experience is negatively associated with cash holdings has, however, previously only been found in studies of CEOs with financial expertise. Thus, this paper contributes to the body of research by finding that the relationship also holds for the board of directors.

Finally, it has been stressed earlier that the directors' influence on firm policy should be seen in conjunction with the director-firm match. Section 4.1 did reveal that finance directors are more likely to end up in older, larger and more stable firms, which is consistent with holding less cash and increasing leverage to begin with. Thus, it is difficult to say to what extent directors have the effect discussed in this section, and to what extent they are selected by firms with said characteristics.

4.2.2. Payout Policy and Capital Expenditures

In this section, the focus is shifted to how the firm's payout policy and capital expenditures are related to the presence of finance experience in the board room. This is of interest in and of itself, as it sheds further light on how firm policy is related to a firm's board composition. Furthermore, having established in the previous section that firms with a higher concentration of financially experienced directors seem to hold less cash and use more debt, this section continues where the previous one ended, by aiming to explain why firms borrow more money and what they do with their cash.

In a preliminary analysis, Figure 1 shows a graphical representation of how the two variables that are under study in this section change as the proportion of finance directors move above the 50 percent threshold. This suggests that the amount paid out to investors increase, while the capital expenditures decrease. Table 2 tests for differences in means between boards with more than 50 percent finance directors against those with less than 50 percent. This gives largely the same picture, as there are statistically significant differences suggesting that firms with a majority of finance directors have a higher level of dividends and share repurchases, and invest less. These relationships are then tested more formally in a set of regressions that follow Table 5 closely.¹⁷

Table 6 shows the results. Starting with payouts, the table suggests that the presence of commercial banking directors in particular is positively associated with payouts to investors. This relationship is statistically significant throughout all regressions. For investment banking and other finance directors, the relationship is the opposite, but also much less significant. While the coefficients on other finance experience directors are significant in the last three columns, the significance is lower than for commercial bankers both in a statistical and economic sense. Finally, while the control variables will not be discussed or interpreted in detail, it is a good sign

¹⁷ In unreported results, a regression using the overall proportion of financially experienced directors similar to Table 4 was run. It showed the same trends as described below, but in less statistically significant terms.

that they are robust as firm fixed effects and additional controls are added, and that they are qualitatively similar to those from previous research such as Custódio and Metzger (2012b).

That the presence of commercial bankers is positively associated with payouts ties nicely into the findings of previous section where commercial bankers were negatively associated with cash holdings. Part of the reason that cash holdings are lower might therefore be that the firms that have more commercial bankers on the board use some of their excess liquidity to increase dividends and the amount of share repurchases. This also relates to the two theories outlined earlier, in that these are firms with better access to capital and at a later stage in their life cycle. Having better access to capital markets, which the presence of financially experienced directors might cause, again reduces the need to hold cash for precautionary motives, enabling firms to pay out more to investors. Furthermore, mature firms at a later stage in the life cycle might have less investment opportunities and thus prefer to spend more on dividends and share repurchases.

Next, the focus is shifted to capital expenditures, which is the dependent variable in the last four columns of Table 6. Here, the results are much weaker than in any of the previous sets of regressions, and it is difficult to draw any firm conclusions. None of the types of directors has a clear influence on a firm's capital expenditures. The coefficient on the commercial banking variable is consistently positive, suggesting a positive relationship with capital expenditures, but it is economically close to zero in all cases and statistically not significantly different from zero when adding firm fixed effects. For directors with experience from investment banking, the relationship with capital expenditures is on the other hand consistently negative, but never statistically significant. Finally, the effect of having more directors with other finance experience is unstable, even if the negative coefficient in column 5 is the strongest one of them all.

Overall, having finance experience on the board of directors does not influence a firm's policy regarding capital expenditures in any notable way. This result is somewhat disappointing, but not unreasonable. One might have predicted that financially adept directors could help a firm find investment opportunities, causing capital expenditures to go up, but it also seems likely that the amount of investment opportunities are driven by factors outside of the board's control, some of which are already controlled for in the regressions. For instance, Table 6 shows that younger firms with higher growth spend more on investments. Furthermore, the analysis in section 4.1 showed that financially experienced directors often sit on the boards of firms who spend less on investments to begin with.

To sum up this section overall, the evidence suggests that the presence of financially experienced directors is associated with higher payouts to investors, and that this is driven by those with commercial banking experience in particular. Neither of these tests has been conducted previously, making them a novel contribution to the literature.

Together with section 4.2.1, this paints a more complete picture of how finance directors are related to firm policy. So far, all findings have been consistent with the interpretation that finance directors facilitate firms' access to capital markets, enabling the firms to borrow more, hold less cash, and pay more to investors. This will be explored further in the next section.

4.2.3. Finance Experience and Financial Constraints

Previous sections have found evidence that a higher presence of financially experienced directors on the board of directors of a firm is associated with lower cash holdings, higher financial leverage, and higher payouts to investors. I have theorized that this is due to finance directors giving firms a better access to capital markets. If that is the case, one might expect to find that this relationship is stronger among financially unconstrained firms. This section sets out to test this by running a series of regressions wherein the firms have been divided into those that are financially unconstrained and those that are financially constrained. This split-sample approach has been used previously in the literature, for instance by Güner et al. (2008).

How to measure financial constraints in the best way is a subject of debate in the research community. Almeida et al. (2004) divide firms into unconstrained and constrained based on, in turn, payout distribution, asset size and whether or not the firms' debt and commercial papers have been rated. Another commonly used measure is the KZ ratio as developed by Kaplan and Zingales (1997). This has, however, been criticized by many for failing to measure what it sets out to do. In a more recent empirical paper, Hadlock and Pierce (2009) show that the KZ index fails to identify financially constrained firms. They find that firm size and age constitute better proxies for financial constraints, and develop a new measure based on these variables called the SA index. This is the measure used in this paper, and is constructed as follows:¹⁸

$$SA_{it} = -0.737 * Size + 0.043 * Size^2 - 0.040 * Firm\ Age$$

¹⁸ Size is defined as the natural logarithm of total assets, and firm age is defined according to Appendix A. Moreover, in accordance with Hadlock and Pierce (2009), size is winsorized or capped at the natural logarithm of USD 4.5 billion, and firm age is capped at 37 years. Robustness tests showed that this had very little bearing on the results.

For each year, a firm is classified as unconstrained (constrained) if it had an SA index below (above) the sample median.

Before turning to the regressions, Figure 1 gives us a visual representation of the relationship between finance experience and financial constraints.¹⁹ This suggests that firms with a majority of finance directors are less constrained on average.

Next, the relationship is tested more formally by running the regressions from sections 4.2.1 and 4.2.2 separately for the two subsamples. The results are presented in Table 7. In Panel A, the cash holding regressions from Table 5 are replicated. This shows that the effects observed earlier in the paper are indeed mainly present in financially unconstrained firms. For commercial banking directors, who were the ones driving the results in Table 5, the coefficient is consistently negative, but with the exception of column 5, the effect is statistically significant only for financially unconstrained firms. This suggests that these directors try to keep cash holdings at a lower level for all firms, but that the firms that remain financially constrained still need to maintain a higher level of cash holdings for precautionary reasons. For the other types of directors, the results are largely the same as in Table 5 as well, inasmuch as there is a slightly negative but for the most part insignificant relationship with cash holdings.

In Panel B, the split-sample regressions are run using book leverage as the dependent variable. Again, the result is that the relationship seen earlier is mainly present in financially unconstrained firms, in that investment bankers are positively associated with leverage with a high statistical significance. As before, the findings for the other types of directors are less robust. However, it is worth noting that the presence of every type of director is positively associated with leverage for unconstrained firms. This suggests that all of them promote a higher use of leverage, but that investment bankers exert the strongest influence.

In Panel C, the focus is shifted to payouts to investors in the form of dividends and share repurchases. Here, the evidence also suggests that directors with commercial banking experience are mainly associated with higher payouts in firms that are financially unconstrained. As with leverage, the coefficient is consistently positive, but only significant in the unconstrained firms. For the other director types, the results are similar to Table 6. Investment bankers seem to exert a more positive influence on payouts in unconstrained firms than what could be observed previously, but as the result is largely insignificant, it should be interpreted with caution. For

¹⁹ The blue line indicates the proportion of firms that are classified as financially constrained in the sample.

unconstrained firms, there is a statistically significant negative relationship between directors with other finance experience and payouts in three out of four regressions. However, it is smaller than the result for commercial bankers both economically and statistically, suggesting that the net effect of having financially experienced directors on the board is positive.

Finally, capital expenditures are subjected to the same treatment in Panel D. In Table 6, no strong relationships were found between finance experience and the level of capital expenditures, and the same is true when splitting the sample in two. To the extent that there is a relationship, it does seem to be negative and restricted to unconstrained firms, but the results are so unstable that the conclusion remains that capital expenditures are driven by other considerations.

In conclusion, the tests conducted in this section have largely confirmed the hypothesis posed in the beginning of the section, namely that financially experienced directors in general, and those with a background within commercial and investment banking in particular, are associated with lower cash holdings, higher leverage and higher payouts by way of lessening their firms' financial constraints. While other researchers have put forward financial constraints as a determinant of financial policy, the connection to directors with finance experience has not been made in the same way before.

There is still the caveat that it is difficult to establish causality, meaning that while finance directors might make firms less constrained, it could also be the case that they are recruited by firms that were less constrained to begin with. However, looking at Figure 1 g, it does seem like the proportion of financially constrained firms fall among those firms that go from having a minority of finance directors to a majority. Thus, it seems reasonable to conclude that financially experienced directors at least partly lessen a firm's constraints.

4.3. Finance Experience and Firm Performance

Having found evidence of several connections between the finance experience of directors and firm policy in previous sections, a logical follow-up question is whether or not these potential impacts are for better or worse. One way of analyzing this is to see if there is also a relationship with firm performance, which is what this section sets out to test. As before, the analysis begins by examining overall finance experience, before breaking it down into the previously used subcategories.

4.3.1. Overall Finance Experience

Following the methodology of previous sections, firm performance is regressed on the finance experience variable as well as a number of control variables previously used in research on board composition and firm performance. Two different measures of performance are used; first, the logarithm of Tobin's Q, and second, the return on assets. The results are reported in Table 8.

From this table, one can see that using either measure, the proportion of directors with previous finance experience is positively associated with firm performance in all specifications but one. However, it is also evident that the statistical significance disappears when introducing firm fixed effects in the regressions. This casts some doubt on the results, as it seems like firm performance can be explained solely by within-firm variation as well as the control variables. At this stage, one can conclude that there seems to be a weakly positive link between overall finance experience and firm performance, and hope that an examination of the finance types sheds more light on the issue.

4.3.2. Types of Finance Experience

This section presents the results from regressing firm performance on the proportion of the different types of finance experience. For each type and each measure of firm performance, two regressions are run – one with and one without firm fixed effects – using the full set of control variables from the last columns in Table 8. The results are shown in Table 9.²⁰

The table suggests that using variables pertaining to a certain type of finance experience does not change the weakly positive link between finance experience and firm performance, but to the extent that there is such an effect, it is driven by the boards' investment bankers, first and foremost. This can be seen by the fact that it is the only group for which the significance for the two measures without firm fixed effects remains. However, as the significance disappears when introducing firm fixed effects even for those with investment banking experience, the validity of the result can be questioned.

In conclusion, the results point towards a weak positive relationship between finance experience and firm performance at best, and that, to the extent that such a relationship exists, it is driven by those with a background in investment banking. As mentioned earlier, this is in line

²⁰ The specification used in this section differs somewhat from previous sections in that only one finance experience variable is used in each regression. This is mostly a matter of presentation, as it was found to have very little bearing on the results.

with previous research that has oftentimes failed to find a significant relationship between board composition and performance. However, it is interesting to note that the significance was the highest for the groups that in previous sections were found to be significantly related to the firms' financial policy. This could mean that everything fits together; commercial and investment bankers in particular affect firm policy in the ways previously discussed, and this is of some benefit to the firms.

4.4. Further Discussion and Problematicization

This final section of the analysis aims to discuss a few possible problems with this study that suggest that the findings of previous sections be interpreted with caution.

The first caveat concerns the measure of finance experience. First, as finance experience has not been defined in any previous studies exactly the same way as in this one, the reliability of the measure could be questioned. However, in unreported tests, the regressions were replicated using the measure of finance experience employed by Custódio and Metzger (2012b), and the results were qualitatively similar albeit a bit weaker. The reason for this could be that the measure used in this study looks at a larger part of a professional's career, and thereby captures some experience that is relevant with regard to the influence directors have on firm policy. Furthermore, this measure has been subject to rigorous testing, wherein, for example, the assessment of finance experience as made through programming has been controlled manually (by reading the professional's biographies and all their entries in the database) for a random sample of individuals. In these tests, the accuracy and reliability of the measure has been deemed high.

However, even if the measure as such is accurate, one might wonder if finance experience, either overall or when broken down into subcategories, is a proxy for some other quality that the directors have obtained by working within the finance industry. This is an issue that has not been discussed extensively in previous research and may have to be left for future research. However, even if the impact of finance directors is driven by factors that they obtain through their experience, the results in this study are still interesting, and are in fact what policy makers and firms looking to find new directors should be interested in.

A second, and more serious, concern, that has been mentioned in the section on previous literature and subsequently been stressed repeatedly throughout this paper, is that of endogeneity and the difficulty of establishing causality. The problem is not considered more severe in this paper than in other comparable studies, but it is nevertheless worth discussing. The fact that the

director-firm match according to section 4.1 is based on firm characteristics is an interesting, valuable and unsurprising result, but it begs the question of the extent to which directors are selected by firms with a certain policy already in place, and to what extent directors actually change a firm's policy. While this paper does not attempt to disentangle the two effects, nor make any definitive statement regarding causality, there are at least two reasons to believe that financially experienced directors have at least some influence on firm policy. First, as seen by Figure 1 and other (unreported) tests, a change in some of the variables under study seems to follow an increase in the proportion of financially experienced directors. Second, the fact that the presence of these directors adds explanatory power to the regressions even when controlling for all the characteristics that are nearly unanimously considered to determine financial policy and firm performance should indicate that the directors have an impact.

All in all, the results in this paper should be interpreted with the same caution as other papers within the field, but the validity and reliability of the study is ultimately considered high, making it an important contribution to the existing body of research.

5. Conclusion

This thesis has studied the role that directors with finance experience play in the firms that they are in. To answer this, three broad research questions have been examined. First, the factors that determine the match between directors and firms have been analyzed. Second, the relationship between these directors and firm financial policy has been explored. Third, an analysis of the association between finance directors and firm performance has been made.

Using a probit model, this paper found evidence of a match between firms and directors with finance experience based on firm characteristics. This suggests that finance directors are often recruited by larger, older firms with lower growth and less investment opportunities. While this is no large departure from the existing body of research, it expands upon previous findings of the director-firm match.

In the following section, a panel data approach was used to find that having more directors with finance experience on the board is associated with lower cash holdings and higher financial leverage. In a second set of regressions, it was found that these directors are also associated with higher payouts to investors. No strong evidence of a relationship with capital expenditures was found. Moreover, these results were found to be driven by the directors with experience within commercial banking and investment banking in particular. An interpretation of this was that directors with finance experience are also associated with lower financial constraints by giving firms a better access to capital markets. By further testing for differences between financially constrained and unconstrained firms, evidence to support this interpretation was found as the results described above were restricted to unconstrained firms. Furthermore, the directors may bring a higher financial expertise to the firms, consistent with some of these policy choices. Similar findings have been made before regarding finance experience and financial leverage, but the way cash holdings and payouts are related to finance experience is a new result, and the connection to financial constraints has not been made previously.

In the third section, a weak positive relationship between finance experience and firm performance was found. As these results were driven by the same type of directors that drove the results for the firms' financial policy, my interpretation was that the influence that financially experienced directors exert on financial policy might be beneficial for firms. However, as in previous studies of board composition and firm performance, the relationship is somewhat unclear.

While the validity and reliability of the study is considered high, there is an issue of endogeneity and causality that previous researchers in the field have also acknowledged. This means that it is difficult to say how much directors with finance experience change a firm's policy, and how much they are selected by firms with a different policy to begin with.

This thesis makes valuable contributions in two major ways. First, it contributes to the body of research on board composition and its relationships with firm characteristics by conducting tests that had previously not been done, and by tying together different strands of literature that have been studied separately in the past. Second, it gives a better understanding to policy makers who are interested in knowing the implications of requiring firms to have some kind of financial expertise on their boards. It also gives a better understanding to firms as to what profile to look for when hiring new directors.

Finally, just as this paper has continued the work done by other researchers in the past, I hope that future research will attempt to study the questions that remain unanswered. First, there is more work to be done on the role of finance experience, such as other areas of a firm's operations not covered by this paper. It would also be interesting to see if the results found in this study are transferable to other geographical areas than the U.S. market. Second, as mentioned earlier in the thesis, previous papers have found evidence that other types of experience are valued by the market. Thus, similar studies on other director characteristics would be a valuable contribution to this body of research.

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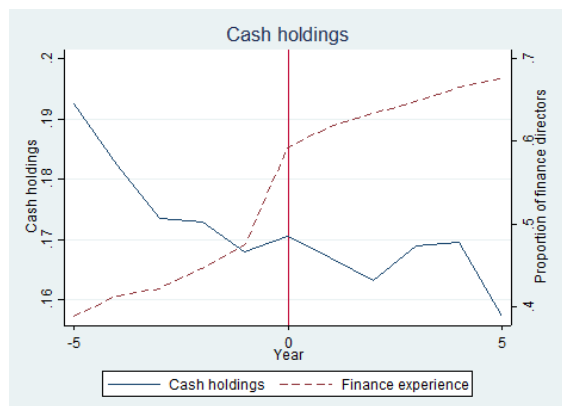
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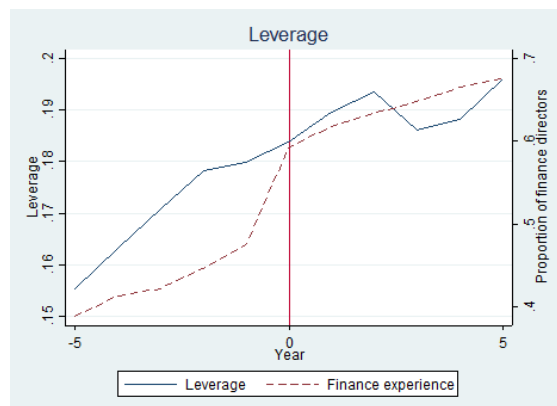
Figure 1. Finance Experience and Firm Characteristics

The figures show the development of the indicated variable during the five years before and after the directors with finance experience become the majority of a firm's board of directors.

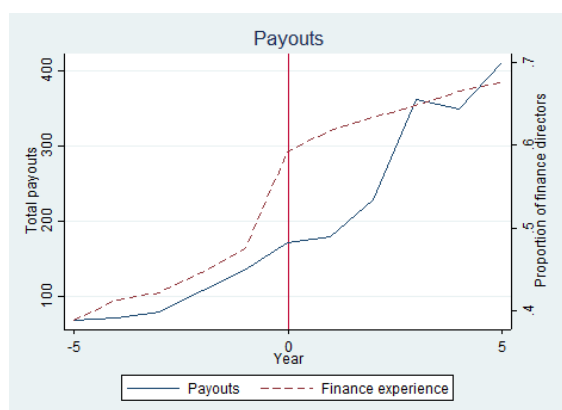
1 a. Cash Holdings



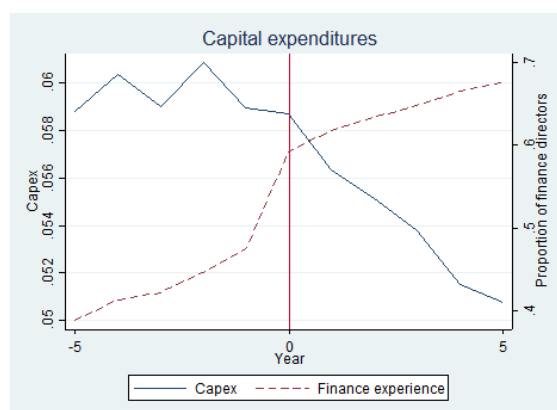
1 b. Leverage



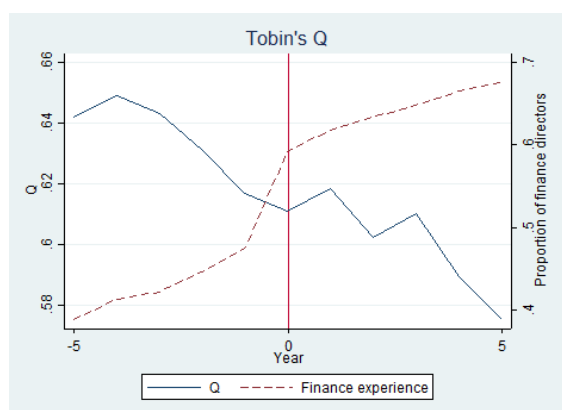
1 c. Payouts



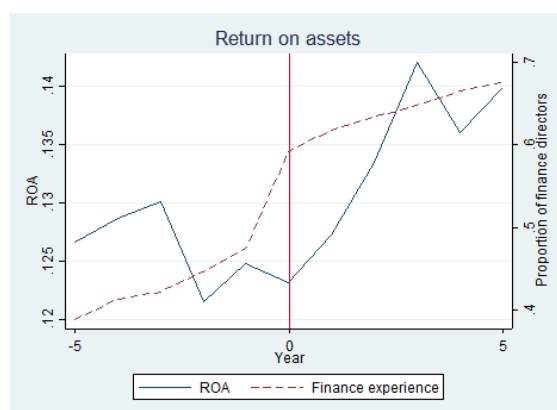
1 d. Capital Expenditures



1 e. Q



1 f. Return on Assets



1 g. Financial Constraints

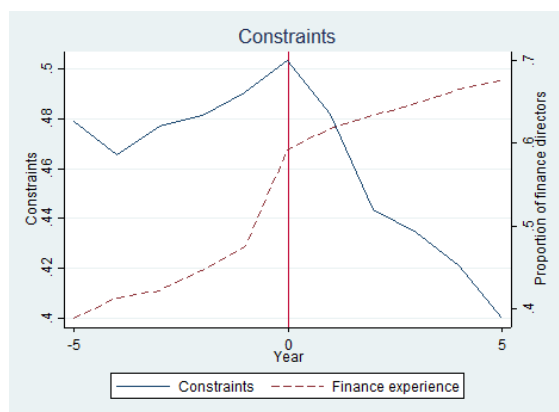


Table 1. Descriptive Statistics

The table shows summary statistics for the variables used later in the analysis. Panel A shows the director characteristics, whereas Panel B shows the firm characteristics. All financial variables are winsorized at the 1% tails. All variables are defined in Appendix A.

Panel A: Director characteristics						
Variable	N	Mean	25th Pctl.	Median	75th Pctl.	Std. Dev.
Age	17,325	57.973	54.778	58.333	61.583	5.045
Tenure	17,325	7.452	4.714	7.000	9.615	3.827
Age of first board position	17,325	48.221	48.221	48.221	48.778	2.941
Financial experience						
Dummy	17,325	0.983	1.000	1.000	1.000	0.130
Commercial banking	17,325	0.769	1.000	1.000	1.000	0.421
Investment banking	17,325	0.936	1.000	1.000	1.000	0.245
Other finance experience	17,325	0.905	1.000	1.000	1.000	0.293
% of board members	17,325	0.629	0.500	0.643	0.778	0.212
Commercial banking	17,325	0.220	0.077	0.200	0.333	0.189
Investment banking	17,325	0.423	0.250	0.417	0.571	0.226
Other finance experience	17,325	0.329	0.200	0.333	0.444	0.199
Panel B: Firm characteristics						
Total assets	17,325	5,663.907	347.890	1,034.431	3,720.951	16,601.160
Market capitalization	17,325	7,096.153	426.459	1,179.259	4,126.584	23,996.930
R&D	17,325	0.041	0.000	0.003	0.060	0.067
ROA	17,325	0.132	0.088	0.134	0.188	0.110
Leverage	17,325	0.189	0.012	0.164	0.298	0.177
Capital expenditures	17,325	0.057	0.022	0.042	0.071	0.052
Q	17,325	2.215	1.241	1.664	2.486	1.994
Board size	17,325	9.285	6.000	9.000	12.000	4.337
Asset volatility	17,325	0.083	0.043	0.068	0.107	0.057
Firm age	17,325	19.395	7.000	15.000	30.000	15.368
Cash holdings	17,325	0.175	0.026	0.095	0.262	0.195
Payouts	17,325	240.817	0.000	2.456	62.100	1,286.373
Asset growth	17,325	0.166	-0.006	0.078	0.215	0.366
Net working capital	17,325	0.058	-0.040	0.059	0.181	0.205
Retained earnings	17,325	0.178	0.042	0.425	0.785	1.766

Table 2. Descriptive Statistics on Boards Dominated by Finance Experience

The table shows the differences between boards with a majority of finance directors, and boards that do not have a majority, in terms of the indicated variables. The last three columns denote the differences in mean, the t-statistic, and the correlation between the variable and a dummy variable that takes on the value one if finance directors are in the majority. All variables are defined in Appendix A.

	Average firm characteristics				Correlations
	Majority finance directors	Minority finance directors	Difference	tstat	Director finance experience
Panel A: Director characteristics					
Age	57.959	58.007	-0.048	-0.574	-0.004
Tenure	7.092	8.286	-1.195	-19.060	-0.143
Age of first board position	48.351	47.919	0.432	8.892	0.067
Panel B: Firm characteristics					
Total assets	7,019.016	2,528.337	4,490.679	16.470	0.124
Market capitalization	8,620.090	3,569.935	5,050.155	12.774	0.097
R&D	0.038	0.048	-0.010	-8.855	-0.067
ROA	0.133	0.129	0.004	2.196	0.017
Leverage	0.197	0.170	0.027	9.308	0.071
Capital expenditures	0.055	0.060	-0.005	-6.210	-0.047
Q	2.201	2.247	-0.046	-1.380	-0.010
Board size	9.896	7.870	2.026	28.900	0.214
Asset volatility	0.080	0.091	-0.010	-10.650	-0.081
Firm age	19.760	18.549	1.211	4.763	0.036
Cash holdings	0.169	0.187	-0.018	-5.467	-0.042
Payouts	312.003	76.497	235.506	11.093	0.084
Asset growth	0.163	0.172	-0.009	-1.422	-0.011
Net working capital	0.039	0.103	-0.063	-18.905	-0.142
Retained earnings	0.157	0.226	-0.069	-2.353	-0.018

Table 3. The Determinants of Director-Firm Matches

The table shows the results from a probit regression. The dependent variable is a dummy variable taking on the value 1 if the type of finance experience stated in the headline is represented on the board (with the dependent variable in the first column indicating any type of experience). The coefficients show the marginal effect of a unit increase in the independent variable on the probability of having the finance experience indicated, rather than the probit coefficients themselves. All regressions include industry dummies corresponding to the Fama-French 48 industries. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively. All variables are defined in Appendix A.

	(1)	(2)	(3)	(4)
	Finance experience	Commercial banking	Investment banking	Other finance experience
Log assets	0.011*** [10.240]	0.061*** [26.410]	0.026*** [16.300]	0.025*** [14.440]
Log Q	0.016*** [5.230]	0.042*** [5.610]	0.041*** [8.180]	0.003 [0.510]
ROA	-0.027** [-2.180]	-0.082** [-2.460]	-0.126*** [-5.760]	-0.030 [-1.260]
Asset volatility	0.043* [1.670]	-0.486*** [-7.330]	0.039 [0.890]	-0.013 [-0.270]
Firm age	0.000 [0.700]	0.002*** [6.400]	0.000* [1.680]	0.001*** [4.910]
Capital expenditures	-0.155*** [-6.980]	-0.277*** [-4.210]	-0.413*** [-10.740]	-0.562*** [-12.380]
R&D	-0.054** [-2.430]	-0.522*** [-8.630]	-0.117*** [-2.930]	-0.206*** [-4.840]
Asset growth	-0.006* [-1.730]	-0.051*** [-6.220]	-0.013** [-2.280]	-0.032*** [-5.530]
Retained earnings	-0.001 [-1.230]	-0.015*** [-7.680]	-0.003*** [-2.650]	-0.005*** [-3.670]
Observations	14,776	16,943	16,894	16,976
Q	0.000	0.000	0.000	0.000
Pseudo-R ²	0.145	0.145	0.121	0.114

Table 4. Overall Finance Experience and Financial Policy: Cash Holdings and Book Leverage

The table shows the results from the baseline regression, where the natural logarithm of cash holdings, and leverage, respectively, are regressed on the percentage of board members who have prior finance experience. All regressions include year dummies. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively. All variables are defined in Appendix A.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cash holdings				Leverage			
% of finance directors	-0.224*** [-4.680]	-0.132 [-1.070]	-0.133 [-1.080]	-0.142 [-1.140]	0.044*** [7.200]	0.038** [2.170]	0.038** [2.160]	0.037** [2.120]
Average director age	0.013 [0.420]	-0.101* [-1.890]	-0.098* [-1.810]	-0.085 [-1.540]	-0.025*** [-5.740]	-0.019** [-2.420]	-0.017** [-2.130]	-0.015* [-1.930]
Average director age squared	0.000 [-0.770]	0.001* [1.660]	0.001 [1.580]	0.001 [1.480]	0.000*** [5.660]	0.000** [2.290]	0.000** [2.010]	0.000* [1.930]
Average tenure	0.007** [2.540]	0.000 [-0.050]	-0.001 [-0.060]	-0.008 [-0.700]	-0.002*** [-5.840]	0.001 [0.680]	0.001 [0.860]	0.000 [0.070]
Log assets	-0.055*** [-7.760]	-0.261*** [-8.350]	-0.268*** [-8.360]	-0.268*** [-8.350]	0.009*** [9.580]	0.019*** [3.810]	0.017*** [3.350]	0.016*** [3.340]
Log Q	0.399*** [20.170]	0.277*** [8.670]	0.268*** [8.120]	0.269*** [8.140]	-0.003 [-0.660]	-0.006 [-1.180]	-0.011** [-2.150]	-0.011** [-2.150]
Leverage	-1.563*** [-24.600]	-0.809*** [-6.230]	-0.811*** [-6.220]	-0.814*** [-6.230]				
Cash flow	0.001*** [20.050]	0.001*** [15.780]	0.001*** [15.790]	0.001*** [15.810]	0.000*** [-4.070]	0.000 [-0.300]	0.000 [-1.030]	0.000 [-1.040]
Asset volatility	3.488*** [14.580]	1.528*** [6.750]	1.527*** [6.710]	1.526*** [6.710]	-1.006*** [-26.210]	-0.533*** [-11.980]	-0.550*** [-12.390]	-0.550*** [-12.380]
Net working capital	-0.863*** [-16.400]	-0.523*** [-6.050]	-0.537*** [-6.240]	-0.534*** [-6.200]				
R&D	3.367*** [19.910]	-1.035*** [-2.900]	-0.950*** [-2.660]	-0.941*** [-2.640]	-0.256*** [-8.870]	-0.158*** [-2.620]	-0.119* [-1.940]	-0.118* [-1.920]
Capital expenditures	-3.158*** [-12.700]	-2.255*** [-8.130]	-2.265*** [-8.160]	-2.265*** [-8.160]	-0.286*** [-7.740]	-0.156*** [-3.420]	-0.159*** [-3.490]	-0.159*** [-3.500]
Dividend dummy	-0.242*** [-10.340]	0.038 [0.780]	0.036 [0.750]	0.036 [0.740]	-0.055*** [-17.560]	-0.040*** [-5.880]	-0.039*** [-5.720]	-0.039*** [-5.730]
Firm age			0.001 [0.040]	0.003 [0.090]			0.000 [0.070]	0.000 [0.120]
Asset growth			0.016 [0.670]	0.016 [0.650]			0.023*** [6.120]	0.023*** [6.090]
Retained earnings			0.014** [2.550]	0.014*** [2.590]			0.000 [0.190]	0.000 [0.200]
Average age of first director position				0.009 [1.130]				0.001 [1.010]
Ppe					0.069*** [10.710]	0.052*** [3.280]	0.063*** [3.940]	0.063*** [3.930]
ROA					-0.129*** [-6.970]	-0.138*** [-5.350]	-0.138*** [-5.230]	-0.138*** [-5.220]
Observations	17,198	17,325	17,325	17,325	17,198	17,325	17,325	17,325
R-squared	0.580	0.149	0.150	0.150	0.397	0.086	0.091	0.091
Industry*Year dummies	Yes	No	No	No	Yes	No	No	No
Industry dummies	Yes	No	No	No	Yes	No	No	No
Firm fixed effects	No	Yes	Yes	Yes	No	Yes	Yes	Yes

Table 5. Types of Finance Experience and Financial Policy: Cash Holdings and Book Leverage

The table shows the results from regressing cash holdings and leverage, respectively, on the proportion of different types of finance directors. All regressions include year dummies. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively. All variables are defined in Appendix A.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cash holdings				Leverage			
% of commercial banking directors	-0.375*** [-6.850]	-0.376*** [-2.590]	-0.371** [-2.560]	-0.374*** [-2.580]	0.021*** [3.060]	-0.014 [-0.740]	-0.014 [-0.720]	-0.014 [-0.740]
% of investment banking directors	0.095** [2.150]	-0.046 [-0.360]	-0.047 [-0.370]	-0.050 [-0.390]	0.030*** [5.140]	0.042** [2.540]	0.041** [2.480]	0.041** [2.460]
% of other finance experience directors	-0.082* [-1.670]	0.044 [0.360]	0.043 [0.350]	0.039 [0.310]	0.010 [1.480]	0.013 [0.860]	0.013 [0.870]	0.013 [0.830]
Average director age	0.004 [0.120]	-0.103* [-1.910]	-0.100* [-1.840]	-0.087 [-1.570]	-0.024*** [-5.570]	-0.019** [-2.370]	-0.017** [-2.090]	-0.015* [-1.870]
Average director age squared	0.000 [-0.400]	0.001* [1.710]	0.001 [1.630]	0.001 [1.530]	0.000*** [5.480]	0.000** [2.250]	0.000** [1.970]	0.000* [1.890]
Average tenure	0.006** [2.090]	-0.001 [-0.100]	-0.001 [-0.100]	-0.008 [-0.740]	-0.002*** [-5.730]	0.001 [0.640]	0.001 [0.820]	0.000 [0.010]
Log assets	-0.055*** [-7.710]	-0.259*** [-8.310]	-0.266*** [-8.300]	-0.266*** [-8.290]	0.009*** [9.280]	0.019*** [3.890]	0.017*** [3.440]	0.017*** [3.420]
Log Q	0.394*** [19.990]	0.277*** [8.700]	0.269*** [8.150]	0.270*** [8.170]	-0.003 [-0.810]	-0.006 [-1.170]	-0.011** [-2.140]	-0.011** [-2.140]
Leverage	-1.564*** [-24.640]	-0.813*** [-6.260]	-0.815*** [-6.250]	-0.817*** [-6.260]				
Cash flow	0.001*** [19.990]	0.001*** [15.760]	0.001*** [15.770]	0.001*** [15.790]	0.000*** [-4.050]	0.000 [-0.300]	0.000 [-1.020]	0.000 [-1.030]
Asset volatility	3.407*** [14.280]	1.518*** [6.720]	1.516*** [6.680]	1.515*** [6.680]	-1.004*** [-26.150]	-0.533*** [-12.020]	-0.550*** [-12.420]	-0.550*** [-12.420]
Net working capital	-0.858*** [-16.310]	-0.525*** [-6.070]	-0.539*** [-6.250]	-0.536*** [-6.210]				
R&D	3.263*** [19.280]	-1.053*** [-2.950]	-0.970*** [-2.710]	-0.961*** [-2.690]	-0.254*** [-8.810]	-0.159*** [-2.630]	-0.120* [-1.960]	-0.119* [-1.940]
Capital expenditures	-3.054*** [-12.280]	-2.252*** [-8.100]	-2.262*** [-8.130]	-2.262*** [-8.130]	-0.291*** [-7.840]	-0.155*** [-3.410]	-0.159*** [-3.480]	-0.158*** [-3.480]
Dividend dummy	-0.222*** [-9.480]	0.040 [0.820]	0.038 [0.790]	0.038 [0.790]	-0.054*** [-17.340]	-0.040*** [-5.840]	-0.039*** [-5.680]	-0.039*** [-5.690]
Firm age			0.001 [0.040]	0.003 [0.080]			0.000 [0.080]	0.001 [0.130]
Asset growth			0.016 [0.650]	0.015 [0.630]			0.023*** [6.110]	0.023*** [6.090]
Retained earnings			0.013** [2.460]	0.013** [2.500]			0.000 [0.190]	0.000 [0.200]
Average age of first director position				0.009 [1.140]				0.001 [1.080]
Ppe					0.069*** [10.650]	0.053*** [3.370]	0.065*** [4.040]	0.064*** [4.020]
ROA					-0.128*** [-6.850]	-0.138*** [-5.320]	-0.138*** [-5.200]	-0.138*** [-5.200]
Observations	17,198	17,325	17,325	17,325	17,198	17,325	17,325	17,325
R-squared	0.581	0.150	0.151	0.151	0.397	0.087	0.092	0.092
Industry*Year dummies	Yes	No	No	No	Yes	No	No	No
Industry dummies	Yes	No	No	No	Yes	No	No	No
Firm fixed effects	No	Yes	Yes	Yes	No	Yes	Yes	Yes

Table 6. Types of Finance Experience and Financial Policy: Payouts and Capital Expenditures

The table shows the results from regressing (the log of) total payouts and capital expenditures, respectively, on the proportion of different types of finance directors. All regressions include year dummies. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively. All variables are defined in Appendix A.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Payouts				Capital expenditures			
% of commercial banking directors	0.275*** [2.900]	0.533** [2.170]	0.542** [2.230]	0.540** [2.240]	0.003* [1.720]	0.000 [-0.070]	0.000 [-0.030]	0.000 [-0.030]
% of investment banking directors	-0.135 [-1.550]	-0.065 [-0.340]	-0.064 [-0.340]	-0.041 [-0.220]	-0.001 [-0.360]	-0.004 [-1.090]	-0.004 [-1.080]	-0.004 [-1.070]
% of other finance experience directors	0.015 [0.160]	-0.347* [-1.900]	-0.369** [-2.020]	-0.376** [-2.040]	-0.009*** [-5.240]	0.002 [0.470]	0.002 [0.520]	0.002 [0.510]
Average director age	0.183** [2.130]	0.295** [2.530]	0.242** [2.080]	0.251** [2.160]	-0.004*** [-3.250]	-0.008*** [-3.570]	-0.008*** [-3.410]	-0.008*** [-3.450]
Average director age squared	-0.001** [-2.030]	-0.002** [-2.340]	-0.002* [-1.900]	-0.002* [-1.910]	0.000*** [2.710]	0.000*** [3.700]	0.000*** [3.530]	0.000*** [3.600]
Average tenure	0.015*** [3.230]	-0.021* [-1.720]	-0.025** [-2.110]	-0.033*** [-2.770]	0.000 [0.840]	0.000 [0.790]	0.000 [0.880]	0.000 [0.500]
Log assets	1.082*** [76.550]	1.001*** [13.640]	1.049*** [13.950]	1.052*** [14.020]	0.000* [-1.760]	0.002** [2.450]	0.002** [2.330]	0.002** [2.320]
Log Q	0.463*** [4.940]	0.008 [0.080]	0.079 [0.890]	0.081 [0.900]	0.009*** [8.800]	0.010*** [7.550]	0.010*** [7.090]	0.010*** [7.080]
Leverage	-1.660*** [-9.970]	-0.557** [-2.070]	-0.441 [-1.600]	-0.444 [-1.610]	-0.017*** [-8.040]	-0.013*** [-3.250]	-0.014*** [-3.330]	-0.014*** [-3.300]
Cash flow	0.035 [1.130]	0.019 [0.690]	0.018 [0.660]	0.019 [0.680]	-0.005*** [-19.520]	-0.004*** [-9.810]	-0.004*** [-9.820]	-0.004*** [-9.790]
Asset volatility	-5.570*** [-6.210]	-4.121*** [-4.460]	-3.887*** [-4.170]	-3.856*** [-4.140]	0.071*** [7.960]	0.008 [0.830]	0.006 [0.620]	0.006 [0.620]
Net working capital	-0.223 [-1.350]	0.011 [0.040]	-0.017 [-0.060]	-0.024 [-0.080]	-0.007*** [-3.720]	0.009** [2.390]	0.008** [2.300]	0.009** [2.350]
R&D	1.732** [2.560]	1.548 [0.980]	1.213 [0.760]	1.307 [0.820]	-0.028*** [-4.080]	0.034** [2.260]	0.039*** [2.600]	0.039*** [2.640]
Capital expenditures	-4.453*** [-6.850]	-0.368 [-0.590]	-0.208 [-0.340]	-0.212 [-0.350]				
Dividend dummy					-0.010*** [-13.660]	-0.005** [-2.340]	-0.005** [-2.290]	-0.005** [-2.360]
Firm age			0.155** [2.520]	0.152** [2.470]			-0.004*** [-3.760]	-0.004*** [-3.730]
Asset growth			-0.457*** [-6.660]	-0.457*** [-6.660]			0.002* [1.790]	0.002* [1.800]
Retained earnings			0.013 [0.440]	0.013 [0.450]			0.000 [1.270]	0.000 [1.310]
Average age of first director position				-0.034** [-2.530]				-0.001* [-1.650]
Ppe	0.234*** [2.920]	0.653*** [3.690]	0.437** [2.410]	0.455** [2.510]	0.067*** [40.040]	0.029*** [7.530]	0.031*** [7.770]	0.031*** [7.770]
ROA	6.685*** [12.580]	3.803*** [7.010]	3.699*** [6.930]	3.685*** [6.890]	0.101*** [17.010]	0.074*** [7.820]	0.074*** [7.810]	0.074*** [7.830]
Observations	9,559	9,624	9,624	9,624	17,198	17,325	17,325	17,325
R-squared	0.709	0.297	0.306	0.307	0.600	0.188	0.190	0.190
Industry*Year dummies	Yes	No	No	No	Yes	No	No	No
Industry dummies	Yes	No	No	No	Yes	No	No	No
Firm fixed effects	No	Yes	Yes	Yes	No	Yes	Yes	Yes

Table 7. Finance Experience, Financial Policy, and Financial Constraints

The table shows the results from a series of split-sample regressions, wherein the firms have been divided into financially unconstrained and constrained on a year-by-year basis. A firm is considered unconstrained (constrained) if it has an SA index below (above) the sample median (the measure comes from Hadlock and Pierce (2009)). The dependent and independent variables are defined as before. All regressions include year dummies. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Cash Holdings								
	Unconstrained				Constrained			
% of commercial banking directors	-0.333*** [-3.840]	-0.383* [-1.860]	-0.381* [-1.850]	-0.384* [-1.870]	-0.423*** [-5.410]	-0.197 [-1.000]	-0.191 [-0.970]	-0.191 [-0.970]
% of investment banking directors	0.013 [0.180]	-0.071 [-0.410]	-0.071 [-0.410]	-0.076 [-0.450]	0.124* [1.950]	-0.033 [-0.190]	-0.030 [-0.170]	-0.030 [-0.180]
% of other finance experience directors	-0.074 [-0.920]	0.168 [0.960]	0.165 [0.950]	0.166 [0.960]	-0.067 [-0.970]	-0.060 [-0.340]	-0.064 [-0.360]	-0.064 [-0.360]
Average director age	-0.016 [-0.260]	-0.131 [-1.460]	-0.131 [-1.460]	-0.129 [-1.450]	0.040 [0.970]	-0.026 [-0.350]	-0.017 [-0.230]	-0.017 [-0.230]
Average director age squared	0.000 [0.300]	0.001 [1.450]	0.001 [1.440]	0.001 [1.400]	0.000 [-1.260]	0.000 [0.180]	0.000 [0.060]	0.000 [0.070]
Average tenure	-0.006 [-1.390]	-0.014 [-1.180]	-0.013 [-1.160]	-0.011 [-0.910]	0.024*** [4.990]	0.029** [2.040]	0.029** [2.020]	0.029** [1.990]
Log assets	-0.021* [-1.800]	-0.320*** [-5.940]	-0.324*** [-5.750]	-0.323*** [-5.730]	-0.066*** [-5.810]	-0.173*** [-4.440]	-0.194*** [-4.850]	-0.194*** [-4.830]
Log Q	0.370*** [8.840]	0.269*** [4.040]	0.266*** [3.870]	0.266*** [3.870]	0.404*** [14.850]	0.285*** [8.340]	0.265*** [7.580]	0.265*** [7.580]
Leverage	-1.487*** [-13.850]	-0.676*** [-3.540]	-0.685*** [-3.590]	-0.684*** [-3.590]	-1.518*** [-17.450]	-0.923*** [-5.530]	-0.940*** [-5.610]	-0.940*** [-5.610]
Cash flow	0.038 [1.030]	0.024 [1.170]	0.024 [1.150]	0.024 [1.140]	0.008 [0.980]	-0.005 [-0.670]	-0.007 [-0.900]	-0.007 [-0.900]
Asset volatility	3.359*** [7.120]	1.728*** [3.900]	1.719*** [3.890]	1.715*** [3.890]	3.280*** [10.920]	0.971*** [3.840]	0.938*** [3.680]	0.939*** [3.680]
Net working capital	-0.998*** [-8.900]	-0.999*** [-5.190]	-0.994*** [-5.150]	-0.996*** [-5.170]	-0.849*** [-13.000]	-0.391*** [-4.010]	-0.411*** [-4.190]	-0.410*** [-4.200]
R&D	4.901*** [13.410]	-1.866*** [-2.900]	-1.875*** [-2.910]	-1.865*** [-2.930]	2.591*** [12.000]	-0.988** [-2.480]	-0.821** [-2.040]	-0.820** [-2.060]
Capital expenditures	-5.163*** [-10.390]	-2.305*** [-4.690]	-2.288*** [-4.660]	-2.265*** [-4.620]	-2.157*** [-6.390]	-2.347*** [-6.870]	-2.353*** [-6.870]	-2.353*** [-6.870]
Dividend dummy	-0.243*** [-7.190]	-0.032 [-0.530]	-0.031 [-0.510]	-0.029 [-0.470]	-0.215*** [-5.300]	0.164** [2.280]	0.166** [2.310]	0.166** [2.320]
Firm age			0.019 [0.520]	0.019 [0.530]			0.010 [0.070]	0.011 [0.070]
Asset growth			0.019 [0.450]	0.019 [0.440]			0.057** [2.000]	0.057** [2.000]
Retained earnings			-0.003 [-0.370]	-0.004 [-0.420]			0.018*** [2.910]	0.018*** [2.910]
Average age of first director position				0.012 [1.140]				-0.001 [-0.060]
Observations	8,617	8,651	8,651	8,651	8,544	8,637	8,637	8,637
R-squared	0.557	0.150	0.150	0.150	0.605	0.099	0.101	0.101
Industry*Year dummies	Yes	No	No	No	Yes	No	No	No
Industry dummies	Yes	No	No	No	Yes	No	No	No
Firm fixed effects	No	Yes	Yes	Yes	No	Yes	Yes	Yes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel B: Leverage								
	Unconstrained				Constrained			
% of commercial banking directors	0.029*** [3.120]	0.011 [0.450]	0.011 [0.460]	0.011 [0.470]	0.021* [1.890]	-0.029 [-1.010]	-0.029 [-1.010]	-0.029 [-1.010]
% of investment banking directors	0.020** [2.440]	0.059** [2.520]	0.059*** [2.590]	0.060*** [2.590]	0.042*** [4.740]	0.014 [0.640]	0.015 [0.650]	0.015 [0.670]
% of other finance experience directors	0.002 [0.250]	0.003 [0.130]	0.002 [0.100]	0.002 [0.090]	0.032*** [3.060]	0.001 [0.040]	0.000 [0.000]	0.000 [0.000]
Average director age	-0.019** [-2.490]	0.007 [0.470]	0.007 [0.520]	0.007 [0.510]	-0.018*** [-2.840]	-0.027*** [-2.730]	-0.024** [-2.510]	-0.023** [-2.360]
Average director age squared	0.000** [2.360]	0.000 [-0.500]	0.000 [-0.540]	0.000 [-0.530]	0.000*** [2.820]	0.000*** [2.620]	0.000** [2.420]	0.000** [2.210]
Average tenure	-0.002*** [-3.710]	0.001 [0.950]	0.002 [1.070]	0.001 [0.960]	-0.002*** [-3.040]	0.000 [-0.280]	0.000 [-0.240]	0.000 [0.040]
Log assets	0.000 [-0.090]	0.000 [0.010]	-0.002 [-0.210]	-0.002 [-0.220]	0.025*** [14.080]	0.034*** [5.090]	0.030*** [4.330]	0.030*** [4.390]
Log Q	-0.016** [-2.230]	-0.022** [-2.450]	-0.027*** [-2.950]	-0.027*** [-2.950]	0.007 [1.470]	-0.002 [-0.340]	-0.007 [-1.210]	-0.007 [-1.190]
Cash flow	0.007 [1.060]	0.009 [1.500]	0.009 [1.560]	0.009 [1.550]	0.002 [1.100]	0.003 [1.190]	0.002 [1.080]	0.002 [1.080]
Asset volatility	-1.030*** [-14.350]	-0.531*** [-7.140]	-0.547*** [-7.400]	-0.546*** [-7.400]	-0.921*** [-18.550]	-0.504*** [-9.270]	-0.514*** [-9.550]	-0.515*** [-9.580]
R&D	-0.469*** [-7.830]	-0.079 [-0.520]	-0.080 [-0.530]	-0.081 [-0.530]	-0.129*** [-3.620]	-0.172*** [-2.620]	-0.134** [-2.010]	-0.138** [-2.070]
Capital expenditures	-0.207*** [-3.600]	-0.106 [-1.610]	-0.105 [-1.590]	-0.105 [-1.600]	-0.391*** [-6.790]	-0.134** [-2.320]	-0.137** [-2.390]	-0.134** [-2.340]
Dividend dummy	-0.059*** [-13.560]	-0.027*** [-2.920]	-0.025*** [-2.600]	-0.025*** [-2.600]	-0.037*** [-6.450]	-0.040*** [-4.040]	-0.039*** [-3.990]	-0.039*** [-3.960]
Firm age			0.002 [0.540]	0.002 [0.540]			0.009 [0.310]	0.008 [0.280]
Asset growth			0.028*** [4.700]	0.028*** [4.700]			0.018*** [3.800]	0.018*** [3.760]
Retained earnings			-0.006** [-2.300]	-0.006** [-2.290]			0.003 [1.430]	0.003 [1.420]
Average age of first director position				0.000 [-0.350]				0.002 [1.410]
Ppe	0.047*** [5.470]	0.027 [1.430]	0.040** [2.110]	0.040** [2.110]	0.113*** [9.440]	0.097*** [3.950]	0.106*** [4.320]	0.106*** [4.350]
ROA	-0.044 [-0.970]	-0.200*** [-3.120]	-0.184*** [-2.930]	-0.185*** [-2.940]	-0.160*** [-5.810]	-0.174*** [-4.710]	-0.177*** [-4.760]	-0.178*** [-4.760]
Observations	8,617	8,651	8,651	8,651	8,544	8,637	8,637	8,637
R-squared	0.452	0.088	0.098	0.098	0.435	0.101	0.106	0.107
Industry*Year dummies	Yes	No	No	No	Yes	No	No	No
Industry dummies	Yes	No	No	No	Yes	No	No	No
Firm fixed effects	No	Yes	Yes	Yes	No	Yes	Yes	Yes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel C: Payouts							
	Unconstrained				Constrained			
% of commercial banking directors	0.229*** [2.590]	0.404 [1.510]	0.441* [1.700]	0.442* [1.700]	0.335 [1.180]	0.819 [1.140]	0.755 [1.040]	0.709 [0.990]
% of investment banking directors	-0.157* [-1.740]	0.095 [0.470]	0.067 [0.340]	0.074 [0.370]	0.036 [0.160]	-0.419 [-0.920]	-0.436 [-0.960]	-0.436 [-0.970]
% of other finance experience directors	-0.036 [-0.360]	-0.339* [-1.660]	-0.369* [-1.830]	-0.372* [-1.840]	-0.139 [-0.530]	-0.368 [-0.780]	-0.386 [-0.820]	-0.335 [-0.710]
Average director age	0.165** [2.130]	0.184 [1.460]	0.148 [1.170]	0.149 [1.170]	0.117 [0.510]	0.273 [0.990]	0.225 [0.830]	0.247 [0.950]
Average director age squared	-0.001** [-2.100]	-0.001 [-1.360]	-0.001 [-1.070]	-0.001 [-1.060]	-0.001 [-0.340]	-0.002 [-0.860]	-0.002 [-0.700]	-0.002 [-0.690]
Average tenure	-0.008 [-1.450]	-0.027** [-2.000]	-0.028** [-2.160]	-0.031** [-2.280]	0.055*** [3.530]	-0.015 [-0.440]	-0.030 [-0.870]	-0.057* [-1.650]
Log assets	1.068*** [76.130]	1.052*** [11.630]	1.072*** [11.880]	1.072*** [11.880]	1.078*** [22.540]	1.010*** [7.030]	1.137*** [7.600]	1.136*** [7.690]
Log Q	0.680*** [7.150]	0.235** [2.130]	0.280*** [2.590]	0.280*** [2.600]	0.236 [1.290]	-0.254 [-1.640]	-0.136 [-0.910]	-0.138 [-0.920]
Leverage	-1.938*** [-10.810]	-0.544* [-1.730]	-0.443 [-1.370]	-0.444 [-1.370]	-1.175*** [-3.170]	-0.507 [-0.970]	-0.287 [-0.560]	-0.276 [-0.550]
Cash flow	-0.289 [-1.580]	0.068 [1.340]	0.063 [1.250]	0.064 [1.260]	-0.005 [-0.110]	0.024 [0.760]	0.026 [0.840]	0.027 [0.890]
Asset volatility	-7.460*** [-7.230]	-5.876*** [-6.310]	-5.639*** [-6.140]	-5.636*** [-6.140]	-2.295 [-1.180]	-1.801 [-0.980]	-1.684 [-0.920]	-1.512 [-0.830]
Net working capital	0.269 [1.460]	-0.251 [-0.770]	-0.315 [-0.980]	-0.319 [-1.000]	-0.647* [-1.870]	0.489 [0.970]	0.406 [0.820]	0.412 [0.840]
R&D	-0.130 [-0.130]	-1.500 [-0.860]	-1.489 [-0.840]	-1.468 [-0.830]	3.334*** [2.990]	5.953* [1.850]	5.027 [1.580]	5.361* [1.700]
Capital expenditures	-4.557*** [-6.000]	-0.973 [-1.280]	-0.784 [-1.050]	-0.783 [-1.050]	-5.202*** [-3.690]	1.427 [1.420]	1.410 [1.500]	1.363 [1.440]
Firm age			0.153** [2.470]	0.152** [2.450]			-0.401 [-0.520]	-0.428 [-0.570]
Asset growth			-0.294*** [-3.990]	-0.294*** [-3.980]			-0.659*** [-5.110]	-0.666*** [-5.160]
Retained earnings			0.048* [1.650]	0.048* [1.650]			-0.042 [-0.770]	-0.042 [-0.770]
Average age of first director position				-0.009 [-0.710]				-0.097** [-2.430]
Ppe	0.281*** [3.120]	0.665*** [3.100]	0.502** [2.280]	0.506** [2.290]	0.111 [0.500]	0.631 [1.610]	0.308 [0.790]	0.375 [0.950]
ROA	6.420*** [10.680]	3.670*** [6.050]	3.507*** [5.960]	3.499*** [5.920]	7.228*** [8.040]	3.989*** [4.190]	3.987*** [4.280]	4.010*** [4.380]
Observations	6,416	6,448	6,448	6,448	3,119	3,152	3,152	3,152
R-squared	0.789	0.377	0.383	0.384	0.612	0.182	0.195	0.201
Industry*Year dummies	Yes	No	No	No	Yes	No	No	No
Industry dummies	Yes	No	No	No	Yes	No	No	No
Firm fixed effects	No	Yes	Yes	Yes	No	Yes	Yes	Yes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel D: Capital expenditures							
	Unconstrained				Constrained			
% of commercial banking directors	0.005** [2.430]	0.007 [1.040]	0.007 [1.070]	0.007 [1.100]	0.001 [0.400]	0.000 [-0.050]	0.000 [-0.040]	0.000 [-0.050]
% of investment banking directors	-0.011*** [-5.540]	-0.007 [-1.350]	-0.007 [-1.400]	-0.007 [-1.340]	0.003 [1.400]	-0.002 [-0.280]	-0.002 [-0.280]	-0.002 [-0.300]
% of other finance experience directors	-0.007*** [-3.240]	0.009 [1.490]	0.009 [1.600]	0.009 [1.560]	-0.007*** [-2.650]	-0.009 [-1.460]	-0.009 [-1.460]	-0.009 [-1.450]
Average director age	-0.002 [-0.910]	-0.003 [-0.890]	-0.003 [-0.790]	-0.003 [-0.810]	-0.003* [-1.660]	-0.006** [-2.060]	-0.006** [-2.020]	-0.006** [-2.080]
Average director age squared	0.000 [0.640]	0.000 [0.970]	0.000 [0.870]	0.000 [0.920]	0.000 [1.200]	0.000** [2.100]	0.000** [2.070]	0.000** [2.140]
Average tenure	0.001*** [6.200]	0.000 [1.180]	0.000 [1.170]	0.000 [0.790]	0.000 [-0.280]	0.001 [1.640]	0.001* [1.650]	0.001 [1.430]
Log assets	0.000 [0.630]	0.004** [2.400]	0.004** [2.420]	0.004** [2.390]	0.001*** [2.830]	0.003** [2.230]	0.003** [1.970]	0.003* [1.910]
Log Q	0.001 [0.630]	0.006** [2.550]	0.006** [2.300]	0.006** [2.300]	0.012*** [9.450]	0.011*** [7.350]	0.011*** [6.980]	0.011*** [6.970]
Leverage	-0.011*** [-3.710]	-0.009 [-1.630]	-0.009 [-1.600]	-0.010 [-1.610]	-0.022*** [-6.950]	-0.013** [-2.560]	-0.014*** [-2.620]	-0.013** [-2.570]
Cash flow	-0.003*** [-3.720]	-0.006*** [-5.080]	-0.006*** [-4.990]	-0.006*** [-4.910]	-0.005*** [-15.390]	-0.003*** [-7.400]	-0.003*** [-7.350]	-0.003*** [-7.340]
Asset volatility	0.081*** [5.300]	0.041*** [2.770]	0.038*** [2.640]	0.038*** [2.640]	0.053*** [4.580]	-0.025** [-2.130]	-0.026** [-2.170]	-0.025** [-2.140]
Net working capital	-0.016*** [-5.130]	0.000 [0.070]	0.000 [0.000]	0.000 [0.010]	0.000 [0.150]	0.012*** [2.660]	0.011*** [2.660]	0.012*** [2.700]
R&D	-0.008 [-0.750]	-0.013 [-0.410]	-0.008 [-0.250]	-0.008 [-0.260]	-0.028*** [-3.170]	0.057*** [3.200]	0.059*** [3.280]	0.059*** [3.350]
Dividend dummy	-0.006*** [-6.200]	-0.003 [-1.180]	-0.003 [-1.170]	-0.003 [-1.220]	-0.013*** [-10.140]	-0.004 [-1.560]	-0.004 [-1.550]	-0.004 [-1.580]
Firm age			-0.003*** [-3.270]	-0.003*** [-3.280]			0.001 [0.200]	0.002 [0.240]
Asset growth			0.002 [1.560]	0.002 [1.570]			0.001 [0.730]	0.001 [0.760]
Retained earnings			0.000 [1.020]	0.000 [1.070]			0.000 [0.660]	0.000 [0.680]
Average age of first director position				-0.001 [-1.220]				0.000 [-1.260]
Ppe	0.057*** [24.070]	0.027*** [5.470]	0.028*** [5.700]	0.028*** [5.650]	0.080*** [26.580]	0.031*** [5.400]	0.032*** [5.490]	0.032*** [5.480]
ROA	0.137*** [11.130]	0.113*** [6.090]	0.114*** [6.040]	0.113*** [6.030]	0.086*** [11.300]	0.058*** [5.380]	0.057*** [5.360]	0.057*** [5.380]
Observations	8,617	8,651	8,651	8,651	8,544	8,637	8,637	8,637
R-squared	0.675	0.224	0.226	0.227	0.638	0.152	0.152	0.152
Industry*Year dummies	Yes	No	No	No	Yes	No	No	No
Industry dummies	Yes	No	No	No	Yes	No	No	No
Firm fixed effects	No	Yes	Yes	Yes	No	Yes	Yes	Yes

Table 8. Overall Finance Experience and Firm Performance

The dependent variable in columns (1) through (6) is the natural logarithm of Q, and in columns (7) through (12) the return on assets. The main independent variable of interest is the proportion of board members with prior finance experience. All regressions include year dummies. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively. All variables are defined in Appendix A.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Q				ROA							
	OLS	Firm fe	OLS	Firm fe	OLS	Firm fe	OLS	Firm fe	OLS	Firm fe	OLS	Firm fe
% of finance directors	0.076*** [4.080]	0.016 [0.310]	0.074*** [4.100]	0.017 [0.330]	0.076*** [4.300]	0.002 [0.050]	0.006 [1.470]	-0.001 [-0.130]	0.009** [2.270]	0.000 [0.000]	0.014*** [3.630]	0.000 [0.010]
Log assets	-0.003 [-1.190]	-0.109*** [-9.200]	0.001 [0.400]	-0.125*** [-10.270]	-0.003 [-1.250]	-0.140*** [-12.010]	0.009*** [15.130]	0.007** [1.980]	0.010*** [16.340]	0.008** [2.480]	0.007*** [11.630]	0.006* [1.670]
Leverage	-0.442*** [-16.680]	-0.401*** [-8.690]	-0.370*** [-14.020]	-0.357*** [-7.810]	-0.372*** [-14.310]	-0.381*** [-8.670]	-0.072*** [-11.550]	-0.084*** [-7.380]	-0.065*** [-10.450]	-0.079*** [-6.960]	-0.060*** [-9.160]	-0.081*** [-6.970]
R&D	1.515*** [16.690]	-0.163 [-0.690]	1.541*** [17.300]	-0.082 [-0.350]	1.843*** [20.990]	0.388* [1.770]	-0.603*** [-24.320]	-0.603*** [-9.340]	-0.601*** [-24.330]	-0.629*** [-9.580]	-0.497*** [-19.970]	-0.573*** [-8.770]
Ppe			-0.248*** [-15.970]	-0.229*** [-5.570]	-0.143*** [-9.380]	-0.076** [-1.970]			0.004 [1.120]	0.017 [1.470]	0.011*** [2.860]	0.028** [2.500]
Capital expenditures			2.443*** [24.300]	1.502*** [11.420]	2.057*** [20.660]	1.330*** [10.490]			0.483*** [18.700]	0.312*** [9.470]	0.437*** [17.330]	0.293*** [8.980]
Asset growth					0.256*** [20.040]	0.246*** [19.110]					0.019*** [6.800]	0.020*** [7.170]
Retained earnings					0.022*** [8.830]	0.016*** [6.170]					0.014*** [17.510]	0.005*** [6.160]
Average age of first director position					0.004*** [5.060]	0.003 [1.350]					0.000* [1.900]	0.000 [-0.790]
Observations	17,198	17,325	17,198	17,325	17,198	17,325	17,198	17,325	17,198	17,325	17,198	17,325
R-squared	0.372	0.148	0.400	0.170	0.430	0.227	0.296	0.094	0.328	0.112	0.370	0.129
Industry*Year dummies	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Industry dummies	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No

Table 9. Types of Finance Experience and Firm Performance

The table shows the results from regressing firm performance on the proportion of directors on the board with the indicated type of finance experience. Panel A uses the natural logarithm of Q as the dependent variable, whereas Panel B uses the return on assets. All regressions include year dummies. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively. All variables are defined in Appendix A.

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Q						
	Commercial banking		Investment banking		Other finance experience	
	OLS	Firm fe	OLS	Firm fe	OLS	Firm fe
% of finance directors	0.042** [2.220]	0.027 [0.530]	0.113*** [6.730]	0.004 [0.070]	0.018 [0.940]	-0.036 [-0.730]
Log assets	-0.003 [-1.010]	-0.140*** [-12.040]	-0.003 [-1.400]	-0.140*** [-11.980]	-0.002 [-0.730]	-0.140*** [-12.010]
Leverage	-0.367*** [-14.160]	-0.380*** [-8.680]	-0.375*** [-14.520]	-0.381*** [-8.670]	-0.365*** [-14.090]	-0.380*** [-8.650]
Ppe	-0.147*** [-9.610]	-0.077** [-1.980]	-0.135*** [-8.890]	-0.076** [-1.960]	-0.145*** [-9.540]	-0.076* [-1.950]
Capital expenditures	2.052*** [20.590]	1.330*** [10.500]	2.036*** [20.470]	1.330*** [10.490]	2.057*** [20.640]	1.330*** [10.500]
R&D	1.852*** [21.040]	0.389* [1.770]	1.809*** [20.620]	0.388* [1.770]	1.842*** [20.960]	0.389* [1.770]
Asset growth	0.257*** [20.090]	0.246*** [19.100]	0.254*** [19.910]	0.246*** [19.110]	0.257*** [20.070]	0.246*** [19.110]
Retained earnings	0.022*** [8.710]	0.016*** [6.180]	0.022*** [8.950]	0.016*** [6.170]	0.022*** [8.700]	0.016*** [6.150]
Average age of first director position	0.004*** [5.310]	0.003 [1.340]	0.004*** [4.720]	0.003 [1.350]	0.004*** [5.230]	0.003 [1.390]
Observations	17,198	17,325	17,198	17,325	17,198	17,325
R-squared	0.430	0.227	0.431	0.227	0.430	0.227
Industry*Year dummies	Yes	No	Yes	No	Yes	No
Industry dummies	Yes	No	Yes	No	Yes	No

	(1)	(2)	(3)	(4)	(5)	(6)
Panel B: ROA						
	Commercial banking		Investment banking		Other finance experience	
	OLS	Firm fe	OLS	Firm fe	OLS	Firm fe
% of finance directors	-0.001 [-0.260]	0.003 [0.240]	0.012*** [3.160]	-0.004 [-0.350]	0.011*** [2.730]	-0.004 [-0.310]
Log assets	0.007*** [12.030]	0.006* [1.670]	0.007*** [11.810]	0.006* [1.650]	0.007*** [12.020]	0.006* [1.670]
Leverage	-0.058*** [-8.940]	-0.081*** [-6.970]	-0.059*** [-9.130]	-0.080*** [-6.940]	-0.059*** [-9.020]	-0.080*** [-6.960]
Ppe	0.011*** [2.740]	0.028** [2.500]	0.012*** [2.990]	0.028** [2.470]	0.011*** [2.720]	0.028** [2.510]
Capital expenditures	0.437*** [17.320]	0.293*** [8.980]	0.435*** [17.240]	0.293*** [8.970]	0.439*** [17.360]	0.293*** [8.980]
R&D	-0.499*** [-19.870]	-0.573*** [-8.770]	-0.501*** [-20.060]	-0.573*** [-8.770]	-0.495*** [-19.900]	-0.573*** [-8.760]
Asset growth	0.019*** [6.820]	0.020*** [7.170]	0.018*** [6.730]	0.020*** [7.180]	0.019*** [6.850]	0.020*** [7.170]
Retained earnings	0.014*** [17.390]	0.005*** [6.160]	0.014*** [17.500]	0.005*** [6.160]	0.014*** [17.500]	0.005*** [6.150]
Average age of first director position	0.000** [2.030]	0.000 [-0.790]	0.000* [1.800]	0.000 [-0.770]	0.000** [2.080]	0.000 [-0.770]
Observations	17,198	17,325	17,198	17,325	17,198	17,325
R-squared	0.369	0.129	0.369	0.129	0.369	0.129
Industry*Year dummies	Yes	No	Yes	No	Yes	No
Industry dummies	Yes	No	Yes	No	Yes	No

Appendix A

Table A1. Variable Definitions and Sources

Variable	Definition	Source
Age	The age of the director	Capital IQ
Age of first board position	The start year of a professional's first director position minus his or her birth year	Capital IQ
Asset growth	The ratio of the closing book value of assets to the opening value, minus one	COMPUSTAT
Asset volatility	The standard deviation of the monthly stock return during the fiscal year times the ratio of market capitalization to the market value of assets	COMPUSTAT, CRSP
Board size	The total number of directors	Capital IQ
Capital expenditures	The ratio of capital expenditures to total assets	COMPUSTAT
Cash flow	The ratio of earnings before interest, tax, depreciation and amortization to property, plant and equipment	COMPUSTAT
Cash holdings	The ratio of cash and short-term investments to total assets	COMPUSTAT
Dividend dummy	A dummy variable that takes on the value one if the firm pays dividends and zero otherwise	COMPUSTAT
Financial constraints	A dummy variable that takes on the value one if a firm has an SA index above the sample median in the given year, and zero otherwise	COMPUSTAT
Firm age	The fiscal year minus the first year for which the firm has data on COMPUSTAT	COMPUSTAT
Leverage	The ratio of long-term debt to total assets	COMPUSTAT

Net working capital	The ratio of net current assets minus cash to total assets minus cash	COMPUSTAT
Payouts	The sum of total dividends and share repurchases	COMPUSTAT
Property, plant and equipment (Ppe)	The ratio of property, plant and equipment to total assets	COMPUSTAT
Q	The ratio of total assets plus the market value of equity minus the book value of equity to total assets	COMPUSTAT
R&D	The ratio of research and development expenses to total assets	COMPUSTAT
Retained earnings	The ratio of retained earnings to common equity	COMPUSTAT
Return on assets (ROA)	The ratio of earnings before interest, taxes, depreciation and amortization to total assets	COMPUSTAT
Tenure	The fiscal year minus the director's start year	Capital IQ
Total assets	The book value of total assets	COMPUSTAT

Appendix B. Finance Experience Measure

The S&P Capital IQ People Intelligence database contains two parts used in determining if a director has finance experience or not. First, it contains the *Professional Table*, which is a panel data set covering many of the positions held by the over 4.5 million professionals in the database, as well as some information pertaining to the positions, such as the function the professional had in the firm, and whether or not he or she was a board member. Second, it contains the *Person Biography Table*, which describes every professional's experience in detail in a text field (see Table B1 for an example).

In a first step, for each position, the professional table was analyzed to see if a director has had any finance-related roles previously in the data set. A finance-related role is here, in line with Custódio and Metzger (2012b), defined as either having a finance-related role (accountant, CFO, treasurer or vice president of finance), being in a banking or investment firm (firms with the 2-digit SIC codes 60 through 62), or being in a large auditing firm (PWC, Deloitte, Ernst & Young, KPMG, Arthur Anderson, Coopers, Peat Marwick, or Touche Ross).

However, the information extracted from the professional table is incomplete in two ways. First, the table does not contain every job a person ever had, thus potentially excluding early financially related jobs that a person had. Second, a professional may have worked in a financial capacity without falling into the definition used above, by, for instance, being in charge of risk management or mergers and acquisitions at a large firm, or working at a lower level within a firm's finance department. Therefore, in a second step, the person biography table is analyzed to find additional sources of finance experience. Using this approach, a person is said to have finance experience if the biography contains any of the words or phrases in Table B2. These were found by ranking the most frequently occurring words and phrases in the biographies and qualitatively assessing whether or not they pertain to finance experience by reading the biographies of a random sample of individuals where the words occurred.

In a final step, the finance experience of an individual is further mapped into three subcategories; commercial banking, investment banking, and other finance experience.¹² This was

¹ These groups are similar to the ones used in previous research. For instance, Güner et al. (2008) use five groups; commercial bankers, investment bankers, executives of non-bank financial corporations, financial executives and accountants, and finance professors. However, as the impact of the latter three were largely insignificant in their paper, and the groups do not differ in any way relevant to this study, these three groups have been merged into one for the purpose of this study.

straightforward for the experience extracted from the professional table, and for some of the keywords. For the ambiguous keywords, the words occurring most frequently before and after them were analyzed, and a qualitative assessment was made. For instance, “investment” may either be mapped into investment banking if it is followed by “bank”, or into other finance experience if it is preceded by “real estate”.

Table B1 shows an example of the procedure. This individual was deemed to have investment banking experience since 1976, and other finance experience since 1994.³

² From Table B2, it is clear that the definition of investment banking is rather broad, and includes positions within fields such as private equity and asset management.

³ The issue of timing was mostly solved by programming in Stata but had to be done manually in some cases.

Table B1. Example of the Mapping Procedure

The table shows an example of a biography found in the Capital IQ database. The bolded words are the keywords from Table B2 that are used in determining the professional's finance experience.

Ms. Theresa M. Stone serves as an Executive Vice President and Treasurer of Massachusetts Institute of Technology. Ms. Stone served as the **Chief Financial Officer** of Jefferson-Pilot Corp. since November 2001 and served as its Executive Vice President since July 1, 1997. She served as the President of Jefferson-Pilot Communications Company (JPCC) since July 1, 1997 and Lincoln **Financial** Media Company since July 1, 1997 and again since April 2006. She served as a Treasurer of Jefferson-pilot Corporation since November 2001. She served as Chief Executive Officer and President of Jefferson Pilot **Financial Insurance** Company. She joined Jefferson Pilot Financial Insurance Company in July 1997 from Chubb Life **Insurance** Company of America, where she served as the President and Chief Executive Officer from 1994 to 1997. She served as an Executive Vice President of The Chubb Corporation from 1995 to 1997. Prior to joining The Chubb Corporation as Senior Vice President in 1990. She served as a Principal with **Morgan Stanley & Company, Inc.**, where she was an Investment **Banker** from 1976 to 1990 and advised clients primarily in the **insurance** industry on financial and strategic matters. She serves as Vice Chairman of the Federal Reserve **Bank** of Richmond. She serves as a Trustee of Boston Symphony Orchestra Inc. and Massachusetts Institute of Technology. She has been Director of **American International Group, Inc.** since May 15, 2013. She serves as a Trustee of the University of North Carolina at Greensboro. She serves board positions with the United Way of Greensboro and the Wellesley College Business Leadership Council. She served as a Director of Duke Energy Corporation from 2005 to July 27, 2012, Florida Progress Corporation since July 13, 2005 and Burlington Industries, Inc. since April 1994. She served as an Independent Director of Progress Energy Inc. from July 13, 2005 to July 2012. Since 1997, she served on the Board of the Massachusetts Institute of Technology. She served on the Board of the Margaretten Corporation, Forward Greensboro, and the New Hampshire Historical Society. Ms. Stone received a Bachelor's Degree in French literature from Wellesley College in 1966 and a Master's Degree in Management from the Sloan School of Management at the Massachusetts Institute of Technology in 1976.

Table B2. List of Keywords for Finance Experience Measure

The table lists all the words and phrases that – under certain conditions described in this appendix – if found in the directors' biographies indicate that the director has finance experience. The second column shows how many times the keyword occurs in the biographies of all the professionals used in this study. The third column shows which type of finance experience that the director's experience may subsequently be mapped into.

Keyword	Number of occurrences	Type of finance experience
financial	24,766	Commercial banking, investment banking, other finance experience
bank	15,868	Commercial banking, investment banking
capital	13,063	Investment banking, other finance experience
investment	10,321	Investment banking, other finance experience
finance	9,806	Commercial banking, investment banking, other finance experience
chief financial officer	9,577	Commercial banking, investment banking, other finance experience
fund	6,604	Investment banking, other finance experience
insurance	5,939	Other finance experience
banking	4,810	Commercial banking, investment banking
equity	3,865	Investment banking
securities	2,483	Investment banking
financial services	2,374	Investment banking
investor	2,220	Investment banking, other finance experience
credit	1,764	Commercial banking, investment banking
capital partners	1,731	Investment banking
investment banking	1,708	Investment banking
private equity	1,594	Investment banking
venture capital	1,465	Investment banking
bancorp inc	1,457	Commercial banking
asset management	1,273	Investment banking

mergers and acquisitions	1,141	Investment banking
corporate finance	1,109	Investment banking
capital management	1,098	Investment banking
financial group	1,047	Commercial banking, other finance experience
fund inc	1,040	Investment banking
bancshares inc	855	Commercial banking
investment management	839	Investment banking
capital llc	835	Investment banking
capital group	707	Investment banking
financing	675	Commercial banking, investment banking
venture partners	667	Investment banking
risk management	666	Other finance experience
management company	635	Investment banking
capital corporation	576	Investment banking
portfolio manager	539	Investment banking
chief investment officer	513	Investment banking, other finance experience
investing	509	Investment banking, other finance experience
fund complex	503	Investment banking
capital corp	468	Investment banking
capital inc	379	Investment banking, other finance experience
capital partners llc	376	Investment banking
financial services inc	367	Commercial banking, investment banking, other finance experience
capital management llc	347	Investment banking
banking group	318	Commercial banking, investment banking
citigroup inc	303	Commercial banking, investment banking
bank corp	291	Commercial banking, investment banking

goldman sachs & co	277	Investment banking
securities inc	271	Investment banking
banks inc	253	Commercial banking, investment banking
investment partners	231	Investment banking
goldman sachs group	208	Investment banking
finance group	206	Commercial banking, investment banking
investors inc	201	Investment banking, other finance experience
merrill lynch & co	192	Investment banking
equity group	191	Investment banking
financial services group	191	Commercial banking, other finance experience
fund lp	190	Investment banking
asset management inc	179	Investment banking
investment group	176	Investment banking
carlyle group	175	Investment banking, other finance experience
bankshares inc	174	Commercial banking
investment corporation	169	Investment banking
investment corp	163	Investment banking
blackstone group	156	Investment banking
capital management inc	150	Investment banking
jpmorgan chase & co	149	Commercial banking, investment banking
bank corporation	147	Commercial banking, investment banking
morgan stanley & co	146	Investment banking
capital partners lp	144	Investment banking
bank of america corporation	141	Commercial banking, investment banking
capital lp	135	Investment banking
capital ltd	134	Investment banking, other finance experience
euronext inc	132	Other finance experience

american international group inc	131	Other finance experience
kravis roberts & co	130	Investment banking
capital management lp	129	Investment banking
investment banking group	128	Investment banking
finance corp	123	Commercial banking, investment banking, other finance experience
lehman brothers inc	122	Investment banking
mortgage corporation	116	Commercial banking
asset management llc	115	Investment banking
private equity group	114	Investment banking
investors llc	110	Investment banking
financial partners	107	Commercial banking, investment banking
trading company	107	Investment banking
bear stearns & co	104	Investment banking
bank inc	104	Commercial banking
mortgage company	103	Commercial banking
finance inc	102	Commercial banking, other finance experience
bank ltd	100	Commercial banking
cme group	100	Other finance experience
equity partners llc	100	Investment banking
investment manager	99	Investment banking, other finance experience
capital market	46	Investment banking, other finance experience

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The Role of Finance Experience in Mergers and Acquisitions

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Abstract

The aim of this thesis is to examine the role that directors with finance experience play in mergers and acquisitions. A sample of 2,547 U.S. transactions made between 1994 and 2013 is used to test three hypotheses. First, it is hypothesized and shown that firms with a high proportion of financially experienced directors are more likely to make a transaction than those with a low proportion. However, contrary to the second hypothesis, no relationship is found between the presence of directors with finance experience and short-term cumulative abnormal returns. Still, in accordance with the third hypothesis, the fraction of financially experienced directors is, up to a certain point, positively associated with long-term buy-and-hold abnormal returns. Together, the results suggest that there is an optimal mix of directors with and without finance experience, and the findings are robust to changes in horizon. However, they are not robust to changes in methodology, and given the methodological issues associated with long-horizon tests, the results should be interpreted with caution.

Keywords: finance experience, mergers and acquisitions, event study, abnormal returns

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1. Introduction

Previous research has suggested that finance experience is a valued quality among directors. For instance, Finance experience has been found to be associated with higher director compensation (Fedaseyeu, Linck and Wagner, 2013), and the appointment of financial experts is followed by a positive market reaction (Defond, Hann and Hu, 2005). However, the question of why it is beneficial to have finance experience remains largely unanswered. One of the tasks that the board of directors is involved in is to monitor and advise in mergers and acquisitions (M&A). Therefore, this study aims to examine the role that finance experience plays in M&A transactions.

A sample of 2,547 transactions made by S&P 1500 firms between 1994 and 2013, as well as a comprehensive measure of directors' finance experience, is used to analyze three areas. First, using a probit model, firms with financially experienced directors¹ are found to be more likely to make a transaction in the first place, and, on average, participate in more transactions. This is particularly true if a very high proportion of the board directors possess finance experience. This finding is consistent with the theory found in previous literature that firms with financially experienced directors have better access to capital, thus enabling them to do more deals.

Second, using a classic event-study framework, no relationship between the presence of financially experienced directors on the acquirer's board and short-term abnormal returns is found.

Third, financially experienced directors are found to be positively associated with long-term abnormal returns using the characteristic-based matching approach. Furthermore, a piecewise regression suggests that this positive relationship is driven by lower proportions of financially experienced directors, and that there are diminishing returns to hiring more of them. Paired with the results of the first section, this result supports the notion that there is an optimal proportion of directors with finance directors, and that too many such directors may lead to overinvestment. These findings hold for all horizons that are examined. However, the significance disappears when using the calendar-time portfolio approach instead. As the methodological issues of long-horizon tests are well-documented, a degree of caution should be exercised when interpreting the results.

This study sheds further light on the role that finance experience on the board of directors plays for firms, thereby filling a gap in the current body of research. In addition to this,

¹ Phrases such as “directors with finance experience” and “financially experienced directors” are used interchangeably throughout the thesis. A precise definition is given in section 3.2 and in the appendices.

two main contributions are made. First, analysts and other market participants gain knowledge on another factor that is worth taking into account when a deal is announced, namely, the background of the directors on the acquirer's board. Second, firms gain insights on the value of hiring directors with a background in finance, and the possible downside of hiring too many of them.

The remainder of the paper is structured in the following way. Section 2 gives further background and motivation for the study, before outlining the previous research that exists in related areas. Finally, it states the three hypotheses that are tested later in the paper. Section 3 describes the data used in the study, whereas section 4 explains the methodology used to test the hypotheses. Section 5 presents and analyzes the results of the tests. Section 6 concludes.

2. Previous Literature

The aim of this thesis is to examine the relationship between the presence of finance experience on the board of directors and M&A transactions. This is of interest for at least three reasons. First, previous researchers have found evidence suggesting that finance experience is valued in the market place. Defond et al. (2005) find a positive market reaction to the appointment of accounting financial experts to the audit committee of firms' board of directors, while the results of Fedaseyeu et al. (2013) indicate that finance experience is positively associated with director compensation.

Second, although the literature is somewhat inconclusive, with some researchers failing to find any relation between board composition and firm performance (Bhagat and Black, 1999), while others point out the endogeneity issues that such studies suffer from (Adams, Hermalin and Weisbach, 2010), there is some evidence of a positive relationship between financially experienced directors and firm performance. Agrawal and Chadha (2005) find that independent directors with financial expertise provide valuable oversight of firms' reporting practices, and that firms with such directors have a lower probability of earnings restatements. Moreover, Kvistrum (2014) finds a weakly positive association between the presence of finance directors and firm performance, as measured by the return on assets and Tobin's Q. This is driven by the presence of directors with investment banking experience in particular.

Third, monitoring and advising in M&A is one of the tasks that the board of directors is often involved in (Byrd and Hickman, 1992; Mkrtchyan, 2012). Sometimes, directors will oppose a transaction put forward to the board, trying to act in the interest of the shareholders (Hirshleifer and Thakor, 1994).

In summary, finance experience is seemingly something that firms are rewarded for having on the board of directors, and something that directors themselves are compensated for having. Moreover, financially experienced directors seem to exert a positive influence on firms in terms of higher firm performance. As M&A is one of the tasks that the board of directors is involved in, it is interesting to study whether or not this is one of the channels through which financially experienced directors exert said positive influence, by examining the difference in performance after transactions between those firms that have a high proportion of financially experienced directors, and firms with a low proportion. It is also reasonable that M&A is something that financially experienced directors are better at. Either they might have previous experience from transactions (for instance, at an investment bank), or they might have a generally high business acumen, thus being able to, for example, find targets with which the firm can

generate more synergies. However, the role that finance experience on the board of directors plays in M&A transactions has not been extensively studied. This paper aims to fill this gap in the literature.

This study ties into two strands of literature. First, it is related to the research that examines the role of other director characteristics and aspects of board composition, such as the number of independent directors that a firm has. Second, it is related to papers that examine how finance experience is associated with aspects of a firm's operations, such as financial policy. The next sections will outline these areas of literature, before the last section forms the hypotheses that will be tested in this paper.

2.1. Studies of Board Composition

Although the research on directors' finance experience is limited, many researchers have studied the role that board composition and director characteristics plays in a firm. While these papers are somewhat peripherally related to the study conducted in this paper, they help establish the fact that board composition and director characteristics matter for a firm. This section will start broadly, before focusing in on papers that examine board composition in an M&A context, which are more closely related to this study.

Klein (1998) finds evidence of a weakly positive association between the presence of at least one outside director and firm performance. This adds to the findings of Baysinger and Butler (1985), who also study the relationship between the proportion of outside independent directors and firm performance, and find a mildly positive lagged effect. Furthermore, they find that there are diminishing returns to having a greater degree of board independence, suggesting that there might be an optimal mix of inside and outside directors. Pfeffer (1972) gives further support to this theory by finding that firms that deviate from an empirically estimated equation of optimal board structure underperform their industry peers.

Turning to board size as the focus of study, Yermack (1996) finds a negative relationship between board size and firm value. The interpretation is that smaller boards are more efficient, and that incremental costs arise when boards grow, in particular from being small to being of medium size.

Another area that has been studied is that of busy boards. Fich and Shivdasani (2006) define busy boards as those where a majority of the outside directors hold three or more board positions. They find that busy boards are negatively associated with profitability and market-to-book ratios.

Some researchers have looked at similar board and director characteristics in the context of M&A. Using a sample of 128 transactions between the years 1980 and 1987 and an event-study framework, Byrd and Hickman (1992) find that bidders with a majority of independent outside directors have higher abnormal returns around the announcement date. The relationship is further found to be nonlinear, meaning that the relationship becomes negative at very high proportions of independent outside directors. Thus, this study is in line with the aforementioned papers that suggested an optimal level of outside directors.

Schonlau and Singh (2009) instead study the relationship between board networks and long-run merger performance. The evidence suggests that well-connected firms have higher buy-and-hold abnormal returns following a merger. They interpret their findings as evidence that board networks have an impact on both the decision to acquire and the post-merger performance. In another paper on board connectivity, Cai and Sevilir (2012) find that announcement returns are higher when the target and acquirer either share a common director directly, or a director from each firm serves on the same third board.

2.2. Studies of Finance Experience

Another field of literature consists of those papers that examine the role of finance experience in particular. This section will summarize the findings first on a CEO level, and then on a board level, with a focus on the papers that examine M&A specifically.

Some researchers have chosen to study finance experience in the context of the CEO rather than the board of directors. For instance, Custódio and Metzger (2012b) find that firms whose CEO has a background within finance are associated with lower cash holdings and higher financial leverage. Their interpretation is that such CEOs are more financially sophisticated. Furthermore, the findings are also consistent with the theory that financial-expert CEOs are endogenously matched to firms at a later stage in the life cycle.

While it is not restricted to finance experience, a relevant paper that establishes a connection between industry experience and M&A performance is that of Custódio and Metzger (2012a). They find that acquirers have higher abnormal returns around the announcement date of a takeover when the CEO has previous experience in the target firm's industry. The authors argue that this is because of the industry-expert CEOs' higher negotiation skills as well as their ability to capture a larger proportion of the merger surplus.

Many researchers have also studied finance experience, financial expertise, and, perhaps most commonly, the presence of bankers on a board level. Stearns and Mizruchi (1993) find that

the type of financing that a firm obtains is related to the type of financial institution that is represented on the firm's board. For instance, the presence of investment bankers is found to be negatively associated with the use of short-term debt. In a similar study, Booth and Deli (1999) find that having commercial bankers on the board of directors is positively associated with aggregate firm debt. Since the result holds for unaffiliated commercial bankers but not affiliated ones, their interpretation is that the bankers supply debt market expertise rather than monitor the loans directly. The results of Byrd and Mizruchi (2005) also indicate that non-lending bankers provide expertise for distressed firms. However, they further find that the presence of lending bankers is negatively associated with a firm's debt ratio, and that these lenders exercise more of a monitoring role.

Güner, Malmendier and Tate (2008) analyze how the financial expertise of a firm's board directors is related to several corporate decisions. They define the different types of financial experts based on the directors' current employment. They find that the presence of commercial bankers is associated with higher external funding and lower investment cash flow sensitivity.

In a next step, which is particularly relevant for this study, Güner et al. (2008) study the relationship between directors with financial expertise and acquisitions. Using a sample of 526 deals, they first find a negative relationship between the presence of investment bankers and cumulative abnormal returns, as measured by the difference between raw returns and the CRSP value-weighted index returns over a five-day event window. Furthermore, when computing buy-and-hold returns in the three years before and after the deal announcement, they find that acquirers with investment bankers on the board of directors underperform firms without investment bankers. Moreover, the post-merger performance for these firms is worse than the pre-merger performance. These results hold both for raw and abnormal returns. The conclusion that Güner et al. draw is that investment bankers are associated with worse acquisitions.

Finally, Mkrtchyan (2012) studies the effect of directors' prior acquisition expertise on acquisition performance. Using the number of acquisitions a director has partaken in as a manager or director of another firm in the past as a measure of acquisition experience, she shows that directors' experience is positively related to five-day, market-adjusted cumulative abnormal returns.

2.3. Hypotheses

Using the research outlined in previous sections as a starting point, three hypotheses will be tested in this paper. The first hypothesis examines whether or not the presence of financially

experienced directors is associated with the probability of participating in a merger or acquisition. The second hypothesis concerns the relationship between directors with finance experience and short-term M&A performance. The aim of the third hypothesis is to study the relationship between finance directors and long-term M&A performance. The hypotheses are stated, and motivations are given, in the next three sections. For all three hypotheses, only acquiring firms are considered. While it would be interesting to study target firms as well, especially with regard to abnormal returns, many other researchers have only studied acquirers (Byrd and Hickman, 1992; Custódio and Metzger, 2012a).

2.3.1. Finance Experience and Deal Probability

Regardless of whether or not firms with financially experienced directors do better or worse after a merger or acquisition, it is interesting to study whether or not they are more likely to do a deal in the first place. Since some studies have found that firms with finance directors are associated with higher leverage (Booth and Deli, 1999) and lower financial constraints (Kvistrum, 2014), these firms may be able to execute attractive deals that other firms cannot. On the other hand, the greater access to capital may lead to overinvestment and a tendency to undertake value-destroying projects (Güner et al., 2008). A first hypothesis is therefore stated as follows:

H₁: Firms with a higher proportion of financially experienced directors are more likely to do a merger or acquisition, ceteris paribus.

Technically, a two-sided test is performed. It may, for example, be the case that potential targets are placed under higher scrutiny in firms with many financially experienced directors.

2.3.2. Finance Experience and Short-Term Performance

The most commonly used method of analyzing performance in an M&A context is to employ a short-run event study. If the market is efficient, security prices should at any time fully reflect all available information (Fama, 1970). Thus, if firms with (a higher proportion of) financially experienced directors have a positive influence on the success of M&A, this should theoretically be reflected in security prices immediately after the announcement of a deal.

The literature described in previous sections suggests that directors' characteristics matter, and that firms with financially experienced directors in particular differ from other firms in terms of financial policy, for instance. Since we know that M&A is another area in which the board of directors is involved, it is reasonable to theorize that firms with finance directors differ in this regard as well.

The two papers most similar to this study found opposing results; Güner et al. (2008) found that investment bankers are associated with worse acquisitions, whereas Mkrtchyan (2012) found that directors who have participated in deals before are associated with better acquisitions. However, the focus of this study is slightly different from both of these papers. While Güner et al. focus on directors who are currently also working as bankers, and Mkrtchyan is concerned with previous deal exposure specifically, this paper uses a broader definition of finance experience that includes many different types of financial work, not just the ones used in the two papers above. Thus, this paper is more related to financial expertise in a more general sense than to the role of monitoring or previous deals that the director may have worked on. With this in mind, I deem it more likely that a higher proportion of financially experienced directors is associated with high short-term performance following the announcement of a deal. The second hypothesis is therefore stated, in its alternative form, as follows:

H₂: Firms with a higher proportion of financially experienced directors have higher short-term abnormal returns following the announcement of a transaction than firms with a lower proportion, ceteris paribus.

The reason I choose to state the hypothesis in terms of the proportion of financially experienced directors is that given the rather broad definition of finance experience, most firms in the sample have at least one director with finance experience.² The fraction has also been used in other papers on board independence (Byrd and Hickman, 1992). Finally, given that the previous literature is somewhat inconclusive, I technically perform a two-sided test here as well, that is, I do not exclude the possibility that abnormal returns are actually lower for firms with more finance directors.³

2.3.3. Finance Experience and Long-Term Performance

Although the previous section argued that if firms with many finance directors are, for instance, better at choosing targets, this should be reflected in security prices upon deal announcement, it may still be the case that financially experienced directors exert a positive influence long after the merger, as synergies are realized over time. Indeed, previous studies have found evidence of delayed stock price reactions for years after the merger (Kothari and Warner, 1997). Thus, it is interesting to study the long-term performance following a transaction as well. The third hypothesis is therefore stated as follows:

² See Table 1 below.

³ Short-term abnormal returns will be defined more formally in section 4.

H₃: Firms with a higher proportion of financially experienced directors have higher long-term abnormal returns following the announcement of a transaction than firms with a lower proportion, ceteris paribus.

The reasoning, however, is the same as in the previous section. If a relationship is found either in the short term or the long term, the nature of the relationship will then be analyzed further. If that is the case, it would be interesting to further test if the relationship between the proportion of financially experienced directors and abnormal returns is linear or not.

3. Data

The data collection process for this study consisted of three parts. First, all S&P Composite 1500 firms between the years 1994 and 2013 were identified, and financial data was collected for them. Second, all directors who sat on the boards of these firms during the sample period were identified, and information about their background and experience was gathered. Third, data on all relevant M&A transactions that these firms conducted during the period was collected. The final sample used for the main part of the analysis thus consists of 2,547 observations, each representing a transaction made by one of the sample firms.

Summary statistics for these three parts are found in Table 1 and will be described further in the three sections below. In a final section, a critical discussion of the reliability of the data is held.

3.1. Firm Data

First, fundamental data, which is later used as control variables in the regression analysis, was collected from the Compustat database. Second, security price data for each firm was collected from CRSP in order to compute daily and monthly returns around the transaction.

Summary statistics on a firm level are found in Panel A of Table 1. The average book value of assets in the sample is USD 13.6 billion, which is somewhat higher than in comparable studies (Güner et al., 2008). The reason might be, as is explained below, that the sample is restricted to those firms that have made rather sizeable transactions. Moreover, some of the larger firms occur several times in the sample as they have made several transactions during the sample period. Indeed, the average number of deals during the period is almost ten.⁴ The average book leverage, on the other hand, is 19 percent, which is roughly in line with that of studies such as Custódio and Metzger (2012b).

3.2. Director Data

The directors that sat on the board of the sample firms were identified, and information about them was collected, using the S&P Capital IQ People Intelligence Database. This database contains both a data set consisting of many of the professionals' positions, as well as extensive biographies of these professionals.

⁴ If every S&P 1500 firm made ten transactions, the total sample size would be much larger than 2,547. The reason for this lower sample size is that many firms did not make any deals fulfilling the criteria described in section 3.3.

Table 1. Summary Statistics

The table shows summary statistics for the key variables used in this thesis. Panel A shows firm characteristics, Panel B shows director characteristics, Panel C shows deal characteristics, and Panel D shows the number of transactions by year. All variables are defined in the appendix.

Panel A: Firm characteristics						
Variable	N	Mean	25th. Pctl.	Median	75th. Pctl.	Std. Dev.
Total assets	2,547	13,671.340	1,046.882	2,987.700	12,061.070	30,178.870
Log Q	2,547	0.738	0.327	0.612	1.030	0.556
Cash flow	2,547	0.145	0.099	0.140	0.188	0.085
Leverage	2,547	0.191	0.042	0.171	0.293	0.163
Number of deals	2,547	9.587	3.000	5.000	10.000	15.471
Panel B: Director characteristics						
Finance experience on board (%)	2,547	0.670	0.556	0.679	0.800	0.185
Majority finance experience dummy	2,547	0.784	1.000	1.000	1.000	0.412
Average age	2,547	58.266	55.250	58.667	61.733	4.904
Average tenure	2,547	7.253	4.900	7.000	9.267	3.364
Average age of first board position	2,547	48.311	48.221	48.221	49.042	2.800
Panel C: Deal characteristics						
Transaction value (TV)	2,547	1,000.571	101.000	212.837	549.000	4,114.822
Relative size	2,547	0.594	0.019	0.069	0.202	9.861
TV / assets	2,547	0.216	0.028	0.092	0.231	0.435
TV / equity	2,547	0.512	0.058	0.194	0.513	2.251
Private target	2,547	0.481	0.000	0.000	1.000	0.500
Public target	2,547	0.517	0.000	1.000	1.000	0.500
Subs. target	2,547	0.002	0.000	0.000	0.000	0.044
Stock deal	2,547	0.318	0.000	0.000	1.000	0.466
All-cash deal	2,547	0.398	0.000	0.000	1.000	0.490
Panel D: Transactions by year						
Year	All	Diversifying	Fraction			
1994	33	10	30.30%			
1995	84	19	22.62%			
1996	108	28	25.93%			
1997	126	37	29.37%			
1998	152	42	27.63%			
1999	195	44	22.56%			
2000	188	34	18.09%			
2001	115	22	19.13%			
2002	125	21	16.80%			
2003	132	26	19.70%			
2004	159	32	20.13%			
2005	169	43	25.44%			
2006	159	38	23.90%			
2007	166	54	32.53%			
2008	126	38	30.16%			
2009	94	26	27.66%			
2010	141	36	25.53%			
2011	127	35	27.56%			
2012	147	48	32.65%			
2013	1	0	0.00%			
Total	2,547	633	24.85%			

First, basic information such as the director's age was collected. Second, a measure of finance experience was constructed for each director. This was done in two steps. In the first

step, all previous positions of the directors in the sample were analyzed to see if they have previously worked within the financial sector, or worked in a financial capacity at a non-financial firm. In the second step, the directors' biographies were analyzed by searching for keywords that indicate finance experience (such as “mergers and acquisitions” or “investment banking”). In doing so, the aim was to identify finance experience that might not have been identified in the first step (either because the position described in the biography is not in the Capital IQ data set, or because financial work was done by a professional in a non-financial position at a non-financial firm). The keywords used to indicate finance experienced are given in Table A2. A more detailed description of the construction of the finance experience measure is also given in Kvistrum (2014).⁵

Summary statistics on a director level are provided in Panel B of Table 1. The average director in the sample is 58 years old, has held his or her position for seven years, and obtained his or her first board position at the age of 48. This is within the range of values found in previous papers such as Custódio and Metzger (2012b) and Fedaseyeu et al. (2013).

Turning to the finance experience measure, which is a key part of this study, the average board has 67 percent of directors with finance experience. Moreover, 78 percent of all firms have a majority of financially experienced directors. This is somewhat higher than in other studies for two reasons. First, a broader, more comprehensive, definition of finance experience is used. Second, while some studies (Güner et al., 2008) only look at directors' current employment, this study also includes prior experience.

3.3. Transaction Data

Having identified all S&P firms during the sample period, and dropped those that either had missing financial or professional data, transaction data was collected for the remaining sample using the SDC Platinum database from Thomson Reuters. Following Custódio and Metzger (2012a), a transaction is included in the sample if it meant a transfer of control (i.e., the acquirer's share in the target went from below 50% to above 50%),⁶ if the transaction value was higher than USD 50 million, and if both the target and acquirer are U.S. firms. This amounts to the aforementioned 2,547 transactions, with corresponding firm and director data.

Panel C of Table 1 shows summary statistics on a transaction level. Similar to Custódio and Metzger (2012a), the average transaction value in the sample is around USD 1 billion.

⁵ Unlike Kvistrum (2014), the measure in this paper is not further divided into subcategories of finance experience.

⁶ Divestments, where the share went from above 50% to below 50%, are not included in the study.

Around 40 percent of the transactions involve only cash, while 32 percent involve stocks as payment. Moreover, the targets are rather evenly divided between private and public firms, with only a few subsidiary targets.

Furthermore, Panel D of Table 1 gives details about the number of transactions included in the sample by year. Apart from the beginning and the ending of the sample, the transactions are quite evenly distributed during the period. The fraction of diversifying transactions in a given year varies between around 15 and 30 percent. A transaction is defined as diversifying if the target and the acquirer do not share the same Fama-French 12-industry classification.

3.4. Discussion of Data

The quality of a study is only as good as its data allows. As described in the previous sections, four primary sources of data have been used. Fundamental financial data is collected from Compustat, security price data is retrieved from CRSP, director data is taken from the S&P Capital IQ People Intelligence Database, and deal data comes from the SDC Platinum database. Additional data on the three Fama-French factors used in the analysis has been collected from Kenneth R. French's website. While no database is flawless and can, for instance, be subject to misreporting or accounting errors, these databases have been used extensively by other researchers, and are therefore deemed to be reliable. As the databases contain common identifiers, they could easily be merged into a final data set.⁷ The risk of error during this process is considered to be small.

Another part of the data collection process is the choice of sample, both in terms of firms and time period. The firms are taken from the S&P 1500 index. While there may be biases related to the rebalancing of the index, this sample has been used in many other papers, and is overall deemed to be of high quality. The time period used is also comparable to that of other studies. Moreover, in unreported results, tests have been made on subsets of the sample period, and the results have been qualitatively similar for the whole period, making it less likely that the findings in this paper are driven by a temporary relationship.

A potential source of error is the construction of variables used in the analysis that do not come directly from the data sources. Financial measures such as leverage and Tobin's Q have been constructed using the same definitions that other researchers have used, lending this study

⁷ All statistical and data work in this study has been done using the software Stata.

legitimacy. There are, however, two measures or areas that are slightly more intricate, namely the construction of abnormal returns and the construction of the finance experience measure.

The measurement of abnormal returns is a field of study on its own. While short-horizon tests are generally well-specified and prone to less errors (Kothari and Warner, 2006), the exact specification in terms of estimation period, event period and model of expected returns differs from paper to paper. The specification in this paper does, however, follow what I have considered to be common practice in the field. Moreover, robustness tests have been performed, thereby trying to mitigate risks of data mining or choice of a particularly favorable specification. Long-horizon tests are even more difficult from an econometric standpoint (Ang and Zhang, 2011). Even more rigorous robustness tests have therefore been performed, and the methodology, again, follows that of previous researchers. The methodology will be described in more detail in section 4, and a critical discussion and problematization of the results will follow later in the paper.

A final potential source of error is the finance experience measure used in this study. As finance experience has not been studied extensively in the past, there is no established definition of it in the literature. Although some subjective judgment had to be used during the keyword analysis, the measure used in this study has been subject to rigorous testing and manual controls, and the risk of human error is deemed to be low. Moreover, in unreported tests, an alternative measure has been used (that of Custódio and Metzger (2012b)), and the results are qualitatively similar.

However, there is still the question of validity, that is, whether or not the measure captures what it is supposed to capture. It is difficult to know exactly what qualities directors have obtained from their previous work within the finance industry. While no adjustment has been made for this concern, it has been taken into consideration during the interpretation of the results. Furthermore, the results are interesting regardless of what inherent quality in a director they actually capture, as they tell us something about the implications of having previously worked in a financial capacity.

In summary, the quality of the data used in this study is considered to be high, as the databases, measures and methodology have been used by previous researchers. However, as there are methodological issues with the measurement of abnormal returns in particular, and as the construction of the finance experience measure may be problematic, a certain degree of caution should (and will) be used in interpreting the results of this paper.

4. Methodology

In this section, the methodology used to test the three hypotheses stated above is described. Section 4.1 outlines the test on finance experience and deal probability, while section 4.2 describes the tests of short-term M&A performance. The last section goes into detail about the long-horizon tests.

4.1. Deal Probability

To test the first hypothesis, which concerns the relationship between finance experience and the probability of completing an M&A transaction, a probit model is used. This is similar to the methodology of Kroszner and Strahan (2001).

First, all firms that were part of the S&P 1500 index during the sample period (1994 to 2013) are again identified. A dummy variable taking on a value of one if the firm has made a transaction (that meets the criteria described in section 3.3), that is, if the firm is part of the final sample, is constructed. This dummy is the dependent variable in the following probit equation:

$$\Pr(\text{Transaction} = 1|X) = \Phi(X'\beta) \quad (1)$$

Here, X is a set of independent variables including, most importantly, a measure of finance experience, as well as the logarithm of total assets, the logarithm of Tobin's Q , cash flow, book leverage, return on assets, asset volatility, firm age, R&D expenditure, and retained earnings. From the probit regression, the marginal effects can be derived, showing the effect of a unit increase of the independent variable on the probability of having made a transaction.

4.2. Short-term Performance

To test the short-term performance following a merger or acquisition, an event-study framework is used. Event studies examine the behavior of security prices around corporate events. The general idea is to isolate the effect of the event on security price performance (Kothari and Warner, 2006).

The procedure is as follows. Before abnormal returns can be calculated, a model of normal returns must be specified. These are the expected returns unconditional on the event but conditional on other information such as the way in which a security covaries with the market. The normal return parameters are typically obtained for each security during an estimation window prior to the event. In this paper, the following market model is used:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (2)$$

In (2), R_{it} is the (daily) return for security i at time t and R_{mt} is, in this study, the return for the CRSP value-weighted index. The market model has been chosen for two reasons. First, while there are more elaborate expected return models such as the Fama and French (1993) three-factor model, Mackinlay (1997) argues that the gains from using additional factors are limited. Second, the market model has been used frequently in empirical work.⁸ Following Custódio and Metzger (2012a), a 255-day estimation window ending 21 days before the deal announcement is used.

After the parameters from the expected return model in equation (2) have been obtained, abnormal returns can be calculated as follows:

$$\widehat{AR}_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt} \quad (3)$$

Next, cumulative abnormal returns are computed for each firm as the sum of the abnormal returns in the days around the event:

$$\widehat{CAR}_i(-2,2) = \sum_{t=-2}^2 \widehat{AR}_{it} \quad (4)$$

Here, a five-day event window around the announcement date is used.⁹

Once cumulative abnormal returns, which are used as my performance measure, have been obtained for each firm and transaction, the final step is to test the relationship between these and the proportion of financially experienced directors on the firm's board. This is done using a regression framework, wherein the cumulative abnormal returns are regressed on the proportion of finance directors, as well as a set of control variables.¹⁰ The estimation is done using the following regression equation:

$$CAR_{ij} = \alpha_1 + \alpha_2 FinExp_{ij} + \alpha_3 X_{ij} + \lambda_c + \lambda_t + \varepsilon_{ij} \quad (5)$$

Above, CAR_{ij} are the aforementioned cumulative abnormal returns for firm i and transaction j ,¹¹ while $FinExp_{ij}$ denotes the proportion of financially experienced directors. X_{ij} is a set of control variables including the logarithm of total assets, the logarithm of Tobin's Q , cash flow,

⁸ See, for instance, Byrd and Hickman (1992) and Mkrtchyan (2012).

⁹ This event window is used by Güner et al. (2008) and Mkrtchyan (2012), among others.

¹⁰ The same type of framework is used by Byrd and Hickman (1992), Güner et al. (2008) and Custódio and Metzger (2012a).

¹¹ This notation comes from the fact that some firms in the sample have made several transactions.

book leverage, relative size of the acquirer, average director age, squared average director age, average director tenure, squared average director tenure, and a set of dummy variables indicating if the transaction is diversifying, if the deal involved a payment in stocks, if the deal was paid in all cash, if the target was public, and if the target was private. λ_c and λ_t are industry and year fixed effects, respectively. This specification largely follows Custódio and Metzger (2012a). All regressions (in this section and henceforth) control for heteroskedasticity.¹²

4.3. Long-term Performance

The general idea of long-horizon tests is the same as tests on a shorter horizon: abnormal returns are calculated as the difference between actual returns and normal returns. However, long-horizon tests are more sensitive, as even small errors in the expected return model make a big difference when compounded over longer horizons (Kothari and Warner, 2006). Furthermore, Lyon, Barber and Tsai (1999) document three sources of bias that long-run tests may suffer from, namely survivor bias, rebalancing bias, and skewness bias.

Two main methods for measuring long-term performance in event studies have been used in the literature; the characteristic-based matching approach and the calendar-time portfolio approach (Kothari and Warner, 2006). Since the result of this study may be sensitive to the choice of methodology, both of these methods have been used.¹³ They are therefore described in turn in the next two sections.

4.3.1. The Characteristic-Based Matching Approach

The characteristic-based matching approach has been advocated by Barber and Lyon (1997) and has been used extensively in previous research.¹⁴ The idea is to compare the buy-and-hold return of a firm following an event with the buy-and-hold return of a portfolio of comparable non-event firms based on similar characteristics.

Following Custódio and Metzger (2012a), all S&P 1500 firms that are not part of the sample are divided into 25 portfolios formed on book-to-market and size quintiles in each month. In the month before deal announcement, each event firm is matched to one of these portfolios. The buy-and-hold abnormal return (BHAR) is the difference between the event firm's

¹² Signs of heteroskedasticity are found using the test of Breusch and Pagan (1979).

¹³ However, the main analysis is conducted using the characteristic-based matching approach, while the calendar-time portfolio approach is used more as a robustness test. The reason is that previous papers most similar to this study (Custódio and Metzger, 2012a) have used the former.

¹⁴ See Hirshleifer, Lim and Teoh (2009), Schonlau and Singh (2009), and Custódio and Metzger (2012a).

return and that of the matching portfolio in the following T months, where T is varied between 12 and 60 months:

$$BHAR_{ij}(t, T) = \prod_{t=1}^T (1 + R_{it}) - \prod_{t=1}^T (1 + R_{Bt}) \quad (6)$$

In (6), R_{it} is the monthly return of the event firm i in month t and R_{Bt} is the return of the matching portfolio.

Finally, similar to section 4.2, the buy-and-hold abnormal returns are regressed on the proportion of directors with finance experience that the event firm has in the month prior to the transaction:

$$BHAR_{ij}(t, T) = \alpha_1 + \alpha_2 FinExp_{ij} + \alpha_3 X_{ij} + \lambda_c + \lambda_t + \varepsilon_{ij} \quad (7)$$

$BHAR_{ij}(t, T)$ is defined as above and the independent variables are defined as in section 4.2.

4.3.2. The Calendar-Time Portfolio Approach

The calendar-time approach has been championed by Fama (1998) and used in empirical work by, for example, Loughran and Ritter (1995), Brav and Gompers (1997), and Schonlau and Singh (2009).

For each month, a portfolio is constructed consisting of all firms that have (in this case) made a transaction in the past T months, where T in this study is varied from 12 to 60 months. The value-weighted portfolio excess return is then calculated and regressed on the three Fama-French factors as follows:¹⁵

$$R_{pt} - R_{ft} = \alpha_p + \beta_p (R_{mt} - R_{ft}) + s_p SMB_t + h_p HML_t + \varepsilon_{pt} \quad (8)$$

Above, R_{pt} is the return in month t of the above portfolio, R_{ft} is the risk-free rate, R_{mt} is the market return, and SMB_t and HML_t are the two additional Fama-French factors. Abnormal performance is measured by (the statistical significance of) α_p (Kothari and Warner, 2006).

Following the methodology of Brav and Gompers (1997), the relationship between finance experience and long-term performance is tested by constructing portfolios and running

¹⁵ Excess returns are calculated using the 1-month treasury bill rate. This rate, along with the Fama-French factors, are obtained from Kenneth R. French's website.

regression (8) first for firms with a minority of financially experienced directors, and second, for firms with a majority of such directors, and comparing the alphas of the two.

5. Results

In this section, the results pertaining to the three hypotheses are presented in turn, before a final section discusses the wider implications of the results as well as possible problems that they may suffer from.

An initial analysis is made in Table 2, wherein descriptive statistics are provided, separately, for those firms that have a majority of financially experienced directors, and those that do not. This will be referred to further in the next sections, but in short, there seems to be a statistically significant difference between the two groups of firms in terms of number (as well as the overall presence) of deals made, long-term buy-and-hold abnormal returns, transaction value (both in absolute and relative terms), and the all-cash deal dummy mentioned previously.

Table 2. Summary Statistics by Finance Experience

The table shows the differences between firms that have a majority of financially experienced directors, and those that do not, for the indicated variables. The second and third columns denote the mean values for the two groups, while the last three columns denote, respectively, the difference, the t-statistic and the correlation with a dummy variable taking on the value 1 if the board has a majority of financially experienced directors. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels for a two-sided t-test. All variables are defined in the appendix.

	Mean values				Correlations
	Majority finance directors	Minority finance directors	Difference	t-stat	Majority finance directors
Deal dummy	0.629	0.467	0.163	20.125***	0.151
Number of deals	2.535	1.184	1.351	20.754***	0.156
Short-term CAR	0.006	0.015	-0.009	-1.432	-0.029
Long-term BHAR	-0.128	-0.276	0.148	2.650***	0.059
Transaction value (TV)	1,123.510	555.224	568.286	2.874***	0.057
Relative size	0.690	0.245	0.445	0.938	0.019
TV / assets	0.203	0.263	-0.060	-2.877***	-0.057
TV / equity	0.493	0.584	-0.091	-0.845	-0.017
Private target	0.491	0.445	0.046	1.928*	0.038
Public target	0.508	0.552	-0.044	-1.839*	-0.036
Subs. target	0.002	0.004	-0.002	-0.998	-0.020
Stock deal	0.313	0.338	-0.025	-1.113	-0.022
All-cash deal	0.414	0.338	0.077	3.265***	0.065

5.1. Finance Experience and Deal Probability

Before studying the relationship between the presence of finance directors and M&A performance, I examine whether or not firms with a high proportion of financially experienced directors are, on average, more likely to make a transaction in the first place.

Starting with Table 2, the proportion of S&P 1500 firms that have made a transaction during the sample period is much higher for firms with a majority of financially experienced

directors. Moreover, these firms also make more than twice as many transactions on average. Both of these findings are highly statistically significant.

The relationship is analyzed further in Table 3 using a set of probit regressions.¹⁶¹⁷ In column (1), the key independent variable of interest is a dummy variable taking on the value 1 if a majority of the directors on a firm's board have finance experience. This confirms the findings of Table 2. Even controlling for other factors such as size, firms with boards that consists of more than 50 percent financially experienced directors are, on average, more likely to make a transaction.

The second column uses the proportion of financially experienced directors as the independent variable. The highly statistically significant relationship remains, suggesting that it is not just a question of whether or not a firm's board has more or less than 50 percent finance directors, but rather the likelihood of doing a transaction increases with the proportion of financially experienced directors.

Following Byrd and Hickman (1992), column (3) of Table 3 uses different fractions of finance directors as independent variables.¹⁸ We first see that a low proportion of finance directors is associated with a lower deal probability. This is, however, not statistically significant. As more directors are added, the probability of a deal increases, as shown by the significant positive relationship of the second and third variable.

A reason for this finding might be that firms with a high proportion of financially experienced directors have a greater access to capital. This is consistent with previous findings that finance experience on the board of directors is associated with lower financial constraints (Kvistrum, 2014).

¹⁶ This table shows the marginal effects of the independent variables on the dependent variable, rather than the probit coefficients themselves.

¹⁷ The sample size is much higher in this test than in other tables in the study. The reason is that it includes firms that have not made any transactions (and are thus not part of the final sample described in section 3). The sample size is comparable to that of Kvistrum (2014).

¹⁸ Following their methodology, the three variables in Table 3 were constructed as follows. *% of finance directors (0-40)* equals the fraction of finance directors if the fraction for a firm is less than 0.4, and 0.4 otherwise. *% of finance directors (40-60)* equals 0 if the fraction is less than 0.4, it equals the fraction minus 0.4 if the fraction is between 0.4 and 0.6, and 0.6 otherwise. *% of finance directors (60-100)* equals the fraction minus 0.6 if the fraction is above 0.6, and 0 otherwise.

Table 3. Finance Experience and Probability of Mergers and Acquisitions

The table shows the results from a probit regression. The dependent variable is a dummy variable taking on the value 1 if the firm has made a transaction during the year, and 0 otherwise. The table does not show the probit coefficients per se but the marginal effect of a unit increase in the independent variable on the probability of the firm having made a transaction. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively. All variables are defined in the appendix.

	(1)	(2)	(3)
Majority finance experience	0.096*** [12.490]		
% of finance directors		0.249*** [14.640]	
% of finance directors (0-40)			-0.098 [-1.550]
% of finance directors (40-60)			0.237*** [3.730]
% of finance directors (60-100)			0.399*** [11.420]
Log assets	0.094*** [33.360]	0.093*** [33.200]	0.095*** [33.630]
Log Q	0.032*** [3.480]	0.030*** [3.320]	0.033*** [3.590]
Cash flow	0.125* [1.710]	0.136* [1.870]	0.121* [1.660]
Leverage	0.190*** [8.260]	0.178*** [7.770]	0.171*** [7.470]
ROA	-0.015 [-0.170]	-0.032 [-0.350]	-0.026 [-0.280]
Asset volatility	0.145* [1.720]	0.134 [1.590]	0.127 [1.510]
Firm age	-0.001* [-1.790]	0.000 [-1.440]	0.000 [-1.390]
R&D	0.395*** [5.110]	0.392*** [5.070]	0.381*** [4.930]
Retained earnings	0.004* [1.720]	0.004* [1.790]	0.004* [1.800]
Observations	17,086	17,086	17,086
Q	0.133	0.136	0.138
Pseudo-R ²	0.000	0.000	0.000

There is, however, a possible problem of endogeneity with regard to the results in this section. It is not clear from the probit model employed above whether directors with finance experience influence firms to make more M&A transactions, or if firms that are more likely to

make transactions in the first place have a tendency to hire such directors.¹⁹ The latter theory is reasonable if these directors have skills that are useful to have on the board during a transaction. Thus, the logical next question is whether or not these firms also make better transactions. This will be analyzed in the next two sections.

5.2. Finance Experience and Short-Term Performance

The second hypothesis stated that firms with a higher proportion of financially experienced directors have higher short-term abnormal returns following the announcement of a transaction than firms with a lower proportion. Table 2 shows the difference in short-term cumulative abnormal returns between firms with a majority of financially experienced directors and firms with a minority of such directors. We see that while the cumulative abnormal returns are positive on average for both groups, the sample of firms with a minority of finance directors actually have a slightly higher mean. This is in line with the findings of Güner et al. (2008), where the presence of investment bankers was negatively associated with abnormal returns. However, unlike their findings, the difference between the two groups in Table 2 is not statistically significant.

The hypothesis is tested more formally using a regression framework in Table 4 where the dependent variable is cumulative abnormal returns, and one of the independent variables is the proportion of financially experienced directors on a firm's board. In the first three columns, the coefficient is negative, whereas the coefficient is positive in the last specification where more control variables are added. However, as the coefficient is neither statistically nor very economically significant in any of the regressions, no evidence of a relationship between finance experience and short-term M&A performance can be said to have been found.

¹⁹ In unreported tests, the results hold when using a logit and a regression model as well. However, these models, too, suffer from problems of endogeneity.

Table 4. Finance Experience and Short-term Cumulative Abnormal Returns

The table shows the results from a regression of cumulative abnormal returns (CARs) on the proportion of financially experienced directors on a firm's board of directors. The CARs come from an event study and have been estimated using a (CAPM) market model and a five-day event window. All regressions include industry-year dummies. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Cumulative Abnormal Returns			
% of finance directors	-0.012 [-0.750]	-0.007 [-0.480]	-0.004 [-0.260]	0.002 [0.110]
Diversifying	0.022*** [3.230]	0.021*** [3.170]	0.020*** [3.070]	0.020*** [2.970]
Log assets		-0.009*** [-5.060]	-0.010*** [-5.320]	-0.011*** [-5.770]
Log Q		0.000 [-0.030]	0.005 [0.730]	0.008 [1.160]
Cash flow		0.066 [1.630]	0.034 [0.820]	0.015 [0.350]
Leverage		0.062*** [3.080]	0.058*** [2.840]	0.059*** [2.900]
Relative deal size			0.000 [-0.510]	0.000 [-0.430]
Stock deal			-0.024*** [-3.060]	-0.024*** [-3.040]
All-cash deal			0.003 [0.420]	0.003 [0.460]
Public target			0.037 [0.540]	0.034 [0.500]
Private target			0.035 [0.520]	0.033 [0.490]
Average director age				0.002 [0.210]
Average director age squared				0.000 [-0.060]
Average director tenure				0.003 [1.120]
Average director tenure squared				0.000 [-0.950]
Observations	2,417	2,417	2,417	2,417
R-squared	0.139	0.143	0.149	0.152
Industry*Year dummies	Yes	Yes	Yes	Yes

While not the main focus of study, a few things can be said about the control variables used in Table 4. First, the variables are very stable in that both the size of the coefficients and their significance change very little throughout the different specifications. Second, most of them are in line with previous literature. In accordance with Güner et al. (2008), diversifying

transactions are positively associated with cumulative abnormal returns, and statistically significant. Moreover, as in Custódio and Metzger (2012a), there is a significant negative relationship between stock-only deals and performance, as well as between acquirer size and performance, and a significantly positive association between leverage and abnormal returns. Finally, as in their paper, adding director characteristics such as age and tenure, which is done in the fourth column, does not add much explanatory power.

Since no relationship between the presence of financially experienced directors and cumulative abnormal returns is found, the second hypothesis cannot be rejected.²⁰ There are a few possible reasons for this result. First, it may simply be the case that directors do not exert much influence on M&A, or, to the extent that they do, that other qualities than finance experience are more important.²¹ Perhaps operational roles such as that of the CEO or CFO are more important in a transaction.

Second, the lack of a significant relationship may be due to issues of methodology. Many different choices could have been made in terms of expected return model, estimation and event window. However, in unreported tests, the results are qualitatively similar regardless of these factors.

A third explanation is that analysts and other market participants do not pay much attention to whether or not the board members of the acquiring firm have finance experience. If that is the case, firms with a higher proportion of financially experienced directors might not experience a particularly positive stock market reaction upon announcement. This seems plausible, as directors' prior experience, at least as defined in this study, is not easily observable. If financially experienced directors do exert a positive influence on M&A, but the market does not react to this, it would be a violation of the semi-strong form efficient market hypothesis, which states that all public information relevant for the formation of security prices is reviewed (Fama, 1970). However, if director experience is not readily publicly available, and thus considered private, it may merely violate the strong form hypothesis, wherein all relevant information is considered.

²⁰ That is, the null hypothesis that there is no relationship between the two.

²¹ Such as target industry expertise, as found by Custódio and Metzger (2012a).

Since no relationship between finance experience and short-term M&A performance is found even in the baseline specification of Table 4, additional robustness tests seem less useful.²² Therefore, I move on to examine whether or not there is a relationship on a longer horizon.

5.3. Finance Experience and Long-Term Performance

Table 2 shows the difference in three-year buy-and-hold abnormal returns, constructed as per the description in Section 4.3.1, between firms with a majority and a minority of financially experienced directors. Looking at these averages, firms with a minority of finance directors seem to underperform the firms with a majority of finance directors with a large and statistically significant margin. Indeed, while the abnormal returns are negative for both groups, the returns of the majority firms are not nearly as low.

Figure 1 takes the analysis one step further by giving a visual representation of the buy-and-hold returns for the two groups following a transaction. In the first panel, raw buy-and-hold returns are shown. Starting from around 18 months following the event, the majority firms seem to clearly outperform the minority firms. Moreover, as seen in Panel B, this result holds for abnormal returns, calculated using the characteristic-based matching approach, as well.

Figure 1. Finance Experience and Long-term Performance

The figures show, respectively, the raw and abnormal buy-and-hold returns for the five years following a transaction. The abnormal return for each firm has been computed by subtracting the return of a matching portfolio based on size and book-to-market ratio. The sample is divided into those firms that have a majority of financially experienced directors, and those that do not.

1 A. Raw Buy-and-Hold Returns

1 B. Buy-and-Hold Abnormal Returns



²² In fact, unreported robustness tests were performed. No relationship was found in these tests either.

In Table 5, these three-year buy-and-hold abnormal returns are regressed on the proportion of financially experienced directors. The preliminary findings from Table 2 and Figure 1 then seem to hold. There is a highly statistically significant positive relationship between the two variables. What is more, the relationship remains stable both statistically and economically as more control variables are added. Thus, it does seem like the presence of (more) finance directors is associated with better long-term M&A performance.

Examining the other independent variables briefly, most of them are robust to changes in specification, and the coefficients are qualitatively similar to those of the short-horizon test in Table 4. However, while the coefficient for book leverage is still positive and very significant, the diversifying dummy and the logarithm of assets change signs and lose their significance when studying this longer horizon. Interestingly, average director age is now positively associated with buy-and-hold abnormal returns, whereas the coefficient for squared age is negative, suggesting a concave relationship with performance.

The results of Table 5 suggests that the second (null) hypothesis can be rejected. In other words, firms with a higher proportion of financially experienced directors have higher long-term abnormal returns following the announcement of a transaction than firms with a lower proportion, *ceteris paribus*. A possible reason for this, as discussed earlier, is that the market does not pay attention, or underreacts, to the presence of finance directors on the acquirer's board when a deal is announced, and only adjusts its expectations over time.

Table 5. Finance Experience and Long-term Buy-and-Hold Abnormal Returns

The table shows the results from regressing 36-month buy-and-hold abnormal returns (BHARs) on the proportion of directors with finance experience. The BHARs were calculated using a characteristic-based matching approach whereby the return from a portfolio matched on size and book-to-market ratio was subtracted from the raw buy-and-hold returns of each event firm in the 36 months following the announcement of the transaction. All regressions include industry-year dummies. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively. All variables are defined in the appendix.

	(1)	(2)	(3)	(4)
	Buy-and-Hold Abnormal Returns			
% of finance directors	0.402*** [3.470]	0.377*** [3.230]	0.386*** [3.300]	0.382*** [3.230]
Diversifying	-0.074 [-1.460]	-0.075 [-1.480]	-0.077 [-1.510]	-0.079 [-1.530]
Log assets		0.018 [1.280]	0.014 [1.020]	0.009 [0.640]
Log Q		0.050 [1.000]	0.070 [1.370]	0.087* [1.660]
Cash flow		0.011 [0.040]	-0.100 [-0.340]	-0.194 [-0.640]
Leverage		0.391** [2.530]	0.365** [2.340]	0.371** [2.380]
Relative deal size			0.002 [0.610]	0.002 [0.600]
Stock deal			-0.079 [-1.320]	-0.079 [-1.330]
All-cash deal			0.019 [0.340]	0.015 [0.280]
Public target			0.239 [0.440]	0.244 [0.450]
Private target			0.222 [0.410]	0.226 [0.420]
Average director age				0.220*** [2.810]
Average director age squared				-0.002*** [-2.800]
Average director tenure				-0.010 [-0.450]
Average director tenure squared				0.001 [0.500]
Observations	2,017	2,017	2,017	2,017
R-squared	0.365	0.367	0.369	0.371
Industry*Year dummies	Yes	Yes	Yes	Yes

To delve deeper into the relationship between finance experience and M&A performance, Table 6 shows the results from a piecewise regression that follows the methodology of Byrd and Hickman (1992), where the three-year buy-and-hold abnormal returns are regressed on the

variables denoting different fractions of financially experienced directors that were introduced in section 5.1.

Table 6. Fraction of Finance Directors and Long-term Buy-and-Hold Abnormal Returns

Following Byrd and Hickman (1992), the table shows the results from a piecewise regression wherein 36-month buy-and-hold abnormal returns (BHARs) are regressed on different fractions of directors with finance experience. The BHARs were calculated using a characteristic-based matching approach whereby the return from a portfolio matched on size and book-to-market ratio was subtracted from the raw buy-and-hold returns of each event firm in the 36 months following the announcement of the transaction. All regressions include industry-year dummies. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively. All variables are defined in the appendix.

	(1)	(2)	(3)	(4)
	Buy-and-Hold Abnormal Returns			
% of finance directors (0-40)	2.213*** [4.100]	2.164*** [3.980]	2.158*** [3.960]	2.025*** [3.690]
% of finance directors (40-60)	0.772* [1.780]	0.722* [1.650]	0.744* [1.700]	0.811* [1.820]
% of finance directors (60-100)	-0.186 [-0.900]	-0.189 [-0.910]	-0.181 [-0.880]	-0.191 [-0.920]
Diversifying	-0.068 [-1.350]	-0.071 [-1.400]	-0.071 [-1.410]	-0.073 [-1.430]
Log assets		0.010 [0.730]	0.007 [0.480]	0.003 [0.210]
Log Q		0.055 [1.110]	0.075 [1.470]	0.089* [1.700]
Cash flow		-0.055 [-0.190]	-0.160 [-0.550]	-0.239 [-0.790]
Leverage		0.369** [2.400]	0.344** [2.220]	0.348** [2.240]
Relative deal size			0.002 [0.580]	0.002 [0.560]
Stock deal			-0.080 [-1.340]	-0.079 [-1.330]
All-cash deal			0.008 [0.150]	0.005 [0.100]
Public target			0.345 [0.650]	0.346 [0.650]
Private target			0.323 [0.600]	0.323 [0.600]
Average director age				0.201** [2.560]
Average director age squared				-0.002*** [-2.570]
Average director tenure				-0.009 [-0.400]
Average director tenure squared				0.001 [0.530]
Observations	2,017	2,017	2,017	2,017
R-squared	0.373	0.375	0.376	0.378
Industry*Year dummies	Yes	Yes	Yes	Yes

The positive relationship between finance experience and long-term performance remains in this specification, which can be seen as a sign of robustness. Furthermore, the table suggests that there are diminishing returns to having many financially experienced directors. While having up to 40 percent of financially experienced directors is positively associated with long-term abnormal returns with a high statistical and economical significance, the impact of having an additional 20 percent is weaker, albeit still positive. Having more than 60 percent of finance directors is even associated with worse abnormal returns; however, this relationship is not statistically significant. These findings are consistent with previous research that has suggested that there is an optimal board composition (Byrd and Hickman, 1992; Baysinger and Butler, 1985). One interpretation is that by hiring too many directors that, for instance, come from the finance industry, firms may not hire enough directors with other valuable skills and experiences (such as industry experts).

This result is particularly interesting when paired with the results of section 5.1. Earlier in the paper, it was found that the probability of partaking in a merger or acquisition is particularly high at very high proportions of finance directors. This section, on the other hand, suggests that a low proportion of financially experienced directors is associated with higher abnormal returns, but that the incremental effect of adding many such directors is eventually negative. One possible interpretation is that firms whose boards consist almost exclusively of directors with prior finance experience are involved in too many transactions, some of which are value-destroying rather than value-creating. A reason for this, as briefly discussed earlier, might in turn be that such firms have a greater access to capital, enabling them to make more transactions than what is perhaps optimal.

To further test the robustness of the results by making sure that the findings in the previous two tables are not due to a particularly favorable choice of event window, Table 7 replicates Table 5, using the full set of control variables, at different horizons. The table shows that the findings are indeed robust to changes in horizon. The significance is roughly the same at all horizons, suggesting that the abnormal returns might stabilize after a certain period of time, perhaps when the target has been fully integrated with the acquirer and possible synergies have been realized. Indeed, this is consistent with Panel B of Figure 1, where the buy-and-hold abnormal returns do seem to become stable after about a year, even if they fluctuate throughout the rest of the period.

Table 7. Finance Experience and Long-term Buy-and-Hold Abnormal Returns: Different Event Windows

The table shows the results from regressing buy-and-hold abnormal returns (BHARs) on the proportion of directors with finance experience, using event windows of different lengths. The BHARs were calculated using a characteristic-based matching approach whereby the return from a portfolio matched on size and book-to-market ratio was subtracted from the raw buy-and-hold returns of each event firm. All regressions include industry-year dummies. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively. All variables are defined in the appendix.

	(1)	(2)	(3)	(4)
	Buy-and-Hold Abnormal Returns			
	12 Months	18 Months	24 Months	60 Months
% of finance directors	0.202** [2.500]	0.190* [1.870]	0.196** [2.050]	0.313** [2.440]
Diversifying	-0.040 [-1.140]	-0.084* [-1.920]	-0.058 [-1.400]	-0.039 [-0.700]
Log assets	0.002 [0.160]	-0.001 [-0.080]	0.006 [0.480]	0.027* [1.670]
Log Q	0.076** [2.050]	0.055 [1.200]	0.039 [0.910]	0.038 [0.680]
Cash flow	0.092 [0.440]	-0.306 [-1.160]	-0.030 [-0.120]	-0.475 [-1.460]
Leverage	0.314*** [3.000]	0.226* [1.710]	0.358*** [2.860]	0.262 [1.520]
Relative deal size	-0.001 [-0.570]	-0.002 [-0.920]	-0.002 [-1.270]	0.003 [0.680]
Stock deal	-0.130*** [-3.160]	-0.183*** [-3.550]	-0.116** [-2.390]	-0.013 [-0.210]
All-cash deal	-0.060* [-1.650]	-0.083* [-1.800]	-0.022 [-0.490]	0.051 [0.840]
Public target	0.144 [0.460]	0.170 [0.400]	0.125 [0.320]	0.801 [1.490]
Private target	0.164 [0.520]	0.154 [0.360]	0.135 [0.340]	0.791 [1.470]
Average director age	0.030 [0.550]	0.112* [1.670]	0.089 [1.400]	0.260*** [2.970]
Average director age squared	0.000 [-0.490]	-0.001 [-1.630]	-0.001 [-1.360]	-0.002*** [-2.990]
Average director tenure	-0.016 [-1.040]	-0.038** [-1.990]	-0.018 [-1.000]	-0.029 [-1.190]
Average director tenure squared	0.001 [0.670]	0.002* [1.650]	0.001 [0.710]	0.002 [1.050]
Observations	2,443	2,337	2,230	1,679
R-squared	0.292	0.162	0.209	0.195
Industry*Year dummies	Yes	Yes	Yes	Yes

Given the statistical issues with long-horizon tests discussed in section 4, the second hypothesis is also tested using the calendar-time portfolio approach. The result from this test is

presented in Table 8. Monthly excess returns for portfolios consisting of all firms with a majority and a minority, respectively, of finance directors, that have made a transaction in the past T months, where T is indicated by the column heading, are regressed on the three Fama-French factors. The key variable of interest is the intercept, as it represents the return not explained by the three factors. We see that the portfolio of firms with a minority of financially experienced directors seems to underperform firms with a majority of finance directors regardless of event window, as the intercepts for the former group is consistently lower. However, as none of the intercepts are statistically significant, the result should be interpreted with caution, and it cannot be said that the finding is as strong, if at all present, as when using the characteristic-based matching approach.

That the results do not hold up very well using this second methodology suggests that the relationship between finance experience and long-term performance might not be very robust. This is line with Fama (1998), who claims that most long-term return anomalies (if the findings in this paper can be labelled as such) disappear with changes in technique. However, the lack of significance may also be due to low statistical power, which some researchers claim that these tests suffer from (Kothari and Warner, (2006; Ang and Zhang, 2011).

In summary, a positive and statistically significant relationship between the proportion of financially experienced directors and long-term M&A performance is found. Moreover, further tests show that there seems to be diminishing returns from having more finance directors after a certain point. This is consistent with the theory that there is an optimal mix of directors with and without finance experience. It is also consistent with the interpretation that the market may underreact when firms with financially experienced directors announce deals, and only adjust its expectations over time. These results are robust to changes in horizon but not to changes in methodology, as the statistical significance disappears using the calendar-time portfolio approach, even if the result using this approach is qualitatively similar. Overall, there does seem to be a relationship, in accordance with the third alternative hypothesis. However, due to the lack of robustness, the results should be interpreted with caution.

Table 8. Finance Experience and Calendar-Time Portfolio Returns

The table shows the long-run performance of firms with a majority of finance directors, and firms with a minority of finance directors, respectively, using the calendar-time portfolio approach. For each month, a portfolio is constructed consisting of all firms that have made a transaction in the past T months (where T varies according to the column heading). The average return for this portfolio is then regressed on the three Fama-French (1993) factors. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
Panel A: Majority Finance Directors					
	12 Months	18 Months	24 Months	36 Months	60 Months
Intercept	-0.001 [-0.800]	0.001 [0.440]	0.000 [-0.120]	0.001 [0.350]	0.001 [0.590]
MktRF	1.010*** [30.580]	0.976*** [31.010]	0.949*** [33.590]	0.895*** [17.600]	0.887*** [18.260]
SMB	-0.061 [-1.150]	-0.051 [-1.020]	-0.041 [-0.850]	-0.023 [-0.490]	-0.039 [-0.890]
HML	-0.362*** [-7.290]	-0.331*** [-7.540]	-0.303*** [-7.420]	-0.272*** [-5.520]	-0.248*** [-5.400]
Observations	252	252	252	252	252
R-squared	0.830	0.848	0.826	0.787	0.801
Panel B: Minority Finance Directors					
	12 Months	18 Months	24 Months	36 Months	60 Months
Intercept	-0.003 [-1.320]	-0.002 [-0.850]	-0.002 [-1.040]	-0.002 [-1.060]	-0.001 [-0.370]
MktRF	1.171*** [16.020]	1.168*** [17.840]	1.159*** [17.030]	1.131*** [20.360]	1.088*** [24.590]
SMB	0.367*** [3.420]	0.430*** [4.560]	0.483*** [5.340]	0.465*** [5.670]	0.538*** [7.290]
HML	-0.328*** [-3.080]	-0.221** [-2.400]	-1.020 [-1.020]	0.020 [0.250]	0.103 [1.520]
Observations	240	246	252	252	252
R-squared	0.726	0.745	0.745	0.766	0.789

5.4. Further Discussion

In this final section, three concerns are raised regarding the methodology used and the results obtained in this study, namely, the construction of the finance experience measure, the measurement of abnormal returns, and issues of endogeneity.

There are a few possible caveats related to the finance experience measure. As no definition of finance experience has been widely accepted in the research community, it is difficult to be certain that the measure used in this paper is the best one. The measure in this paper is more inclusive than those used in other studies, and to some extent relies on personal judgment and manual work. However, following diligent reviews, I deem the risk of error in its construction to be very limited. Moreover, I believe that the risk of including previous financial work done by directors that may not be relevant in the context of M&A to be outweighed by the

benefits from including relevant experiences that previous studies may have missed. Furthermore, unreported tests show that the results presented in this paper are not very sensitive to reasonable changes in the definition of finance experience.²³

Even so, it is not clear what qualities financially experienced directors possess that might make them better at M&A-related decision making. Is it the ability to better choose targets that lead to higher synergies? Is it the competence needed to better integrate the two companies following a merger? Is it the capability to decide that a company needs to grow externally, through an acquisition, in the first place? These possible explanations are all consistent with the findings of this study, but future studies that delve deeper into the nature of finance experience on the board of directors are encouraged.

The second concern has to do with the measurement of M&A performance in this paper. Many researchers have pointed out the methodological difficulties associated with long-horizon tests in particular (Kothari and Warner, 2006; Ang and Zhang, 2011). These issues are acknowledged in this study, and while not fully resolved, have been alleviated by using both of the competing methods most commonly advocated and used in the literature. Unfortunately, a statistically significant positive relationship between a firm's proportion of financially experienced directors and long-term abnormal returns was found only using the characteristic-based matching approach, whereas the relationship was weakly positive but insignificant using the calendar-time portfolio approach. It could be the case that the relationship is weak, or, at worst, does not actually exist. However, it could also be the case that the second method is misspecified or lacks sufficient statistical power. As both tests point in the same direction, but only one is statistically significant, I choose to believe that there is a relationship. However, the result should be interpreted with caution.

Third, as in most studies within empirical finance, it is worth discussing possible issues of endogeneity. While the risk of reverse causality should be less severe in the event-study framework employed in this paper, as abnormal returns per se are not likely to affect the proportion of finance directors, it is a valid concern that financially experienced directors may be hired by firms that are more likely to make successful transactions due to variables that are omitted in my regressions. Moreover, these directors might be hired by firms with a higher proclivity to participate in M&A, rather than be the cause of the firms' higher deal probability. All in all, these issues are worth having in mind when interpreting the results. This paper has aimed

²³ The results were qualitatively similar using the measure from Custódio and Metzger (2012b).

to establish a correlation between finance experience and deal probability, as well as finance experience and M&A performance. However, no definitive statements about causality are made.

To reiterate, a degree of caution should be exercised when interpreting the results of this study due to the issues addressed above. However, the reliability and validity of the study is ultimately considered to be high. The data and methodology has been described in a way that makes it possible to replicate the study, and the same results should in that case be obtained. Furthermore, while there are methodological issues associated with the study, all tests have been performed following previous researchers. Therefore, the study is considered to be a valid contribution to the existing body of literature.

6. Conclusion

The aim of this thesis has been to examine the role that finance experience on the board of directors plays in M&A. Three hypotheses have been tested. First, firms with financially experienced directors are more likely to make a transaction, especially if the proportion of such directors on the board is very high. Second, no relationship was found between the presence of financially experienced directors and short-term cumulative abnormal returns around the announcement of a transaction. Third, the proportion of financially experienced directors was found to be positively associated with long-term abnormal returns. Moreover, the results suggest that there are diminishing returns to hiring more finance directors, as the relationship at a certain point turns negative.

Taken together, the findings suggest that the market might not pay attention, or at least underreact, to the board composition of the acquirer upon the announcement of the deal, and only adjust its expectations over time, as synergies between the target and acquirer are realized. An implication of this is that the market is perhaps not entirely efficient. Another implication of the results is that there may be an optimal mix of directors with and without finance experience. Moderate levels of financially experienced directors may lead to more successful transactions, whereas too many such directors lead to overinvestment, and, consequently, value-destroying transactions.

The key result of this thesis, which is the positive relationship between the presence of financially experienced director and long-term M&A performance, is robust to changes of horizon, but not to changes of methodology. Moreover, the methodological issues of long-horizon tests have been well documented by previous researchers and thus, the results should be interpreted with caution.

However, the study is ultimately considered to be a reliable and valid contribution to the body of research, and its key implications are twofold. First, given the positive post-announcement drift of the security prices of firms with financially experienced directors, market participants may want to pay more attention to the board composition of the acquiring firm upon announcement of a deal. Second, the study gives firms a better understanding of which type of directors that it might be beneficial to hire.

Several interesting areas are left to examine. First, it would be interesting to study which other fields of a firm's operation that financially experienced directors might influence, such as the success of IPOs, or a firm's risk of default. Second, the nature of the directors' finance

experience, such as the qualities that a director might gain from working within the field of finance, needs to be better understood. Third, it would be useful to gain knowledge on whether the findings of this paper are transferable to other geographical markets, or to smaller firms. Future researchers are welcomed to answer these questions.

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Appendix

Table A1. Variable Definitions

In this table, all the variables used in the study are defined, and the source from which they were obtained is given. The construction of the variables largely follows Custódio and Metzger (2012a, 2012b).

Variable		Definition	Source
(Average) Age		The director's age	Capital IQ
(Average) Age of first board position		The start year of a professional's first board position minus his or her birth year	Capital IQ
All-cash deal		A dummy variable taking on the value 1 if the deal was paid in full with cash, and 0 otherwise	SDC Platinum
Asset volatility		The standard deviation of the monthly stock return during the fiscal year times the market capitalization divided by the market value of assets	COMPUSTAT, CRSP
Buy-and-Hold Returns (BHARs)	Abnormal	The difference between the (in the baseline case three-year) buy-and-hold return of the event firm and a portfolio of firms matched on size and book-to-market ratio following the deal announcement. See also section 4.2.	CRSP, SDC Platinum
Cash flow		Earnings before interest, tax, depreciation and amortization divided by property, plant and equipment	COMPUSTAT
Cumulative Returns (CARs)	Abnormal	Five-day cumulative abnormal returns calculated using a market model and a 255-day estimation window ending 21 days before the deal announcement	CRSP, SDC Platinum
Diversifying		A dummy variable taking on the value 1 if the target and the acquirer do not share the same Fama-French 12-industry classification, and 0 otherwise	SDC Platinum

Finance experience	A director who (a) has held a finance-related role (accountant, CFO, treasurer or vice president of finance); (b) has worked at a banking or investment firm (firms with the 2-digit SIC codes 60 through 62); (c) has worked at a large auditing firm (PWC, Deloitte, Ernst & Young, KPMG, Arthur Anderson, Coopers, Peat Marwick, or Touche Ross); or (d) has a biography that contains any of the keywords in Table A2.	Capital IQ
Firm age	The fiscal year minus the first year where the firm has data in COMPUSTAT	COMPUSTAT
Leverage	Long-term debt divided by total assets	COMPUSTAT
Number of deals	The number of transactions, fulfilling the criteria in section 3.3, that a sample firm has made during the sample period	SDC Platinum
Private target	A dummy variable taking on the value 1 if the target is private, and 0 otherwise	SDC Platinum
Public target	A dummy variable taking on the value 1 if the target is public, and 0 otherwise	SDC Platinum
(Log) Q	Total assets plus the market value of equity minus the book value of equity, divided by total assets	COMPUSTAT
R&D	Research and development expenses divided by total assets	COMPUSTAT
Relative size	The transaction value divided by the acquirer's market capitalization	SDC Platinum
Retained earnings	Retained earnings divided by common	COMPUSTAT

	equity	
Return on assets (ROA)	Earnings before interest, taxes, depreciation and amortization divided by total assets	COMPUSTAT
Stock deal	A dummy variable taking on the value 1 if deal was paid in part with stocks, and 0 otherwise	SDC Platinum
Subsidiary target	A dummy variable taking on the value 1 if the target is a subsidiary, and 0 otherwise	SDC Platinum
(Average) Tenure	The fiscal year minus the start year of the director	Capital IQ
Total assets	The book value of a firm's total assets	COMPUSTAT
Transaction value (TV)	The value of the transaction in USD millions	SDC Platinum

Table A2. List of Finance Experience Keywords

The table shows a list of the keywords that indicate that a director has finance experience if found in his or her biography from the Capital IQ database. The second column shows the number of times the keyword or key phrase occurs in the original sample of directors sitting on the board of the sample of S&P 1500 firms.

Keyword	Number of occurrences
financial	24,766
bank	15,868
capital	13,063
investment	10,321
finance	9,806
chief financial officer	9,577
fund	6,604
insurance	5,939
banking	4,810
equity	3,865
securities	2,483
financial services	2,374
investor	2,220
credit	1,764
capital partners	1,731
investment banking	1,708
private equity	1,594
venture capital	1,465
bancorp inc	1,457
asset management	1,273
mergers and acquisitions	1,141
corporate finance	1,109
capital management	1,098
financial group	1,047
fund inc	1,040
bancshares inc	855
investment management	839

capital llc	835
capital group	707
financing	675
venture partners	667
risk management	666
management company	635
capital corporation	576
portfolio manager	539
chief investment officer	513
investing	509
fund complex	503
capital corp	468
capital inc	379
capital partners llc	376
financial services inc	367
capital management llc	347
banking group	318
citigroup inc	303
bank corp	291
goldman sachs & co	277
securities inc	271
banks inc	253
investment partners	231
goldman sachs group	208
finance group	206
investors inc	201
merrill lynch & co	192
equity group	191
financial services group	191
fund lp	190
asset management inc	179
investment group	176

carlyle group	175
bankshares inc	174
investment corporation	169
investment corp	163
blackstone group	156
capital management inc	150
jpmorgan chase & co	149
bank corporation	147
morgan stanley & co	146
capital partners lp	144
bank of america corporation	141
capital lp	135
capital ltd	134
euronext inc	132
american international group inc	131
kravis roberts & co	130
capital management lp	129
investment banking group	128
finance corp	123
lehman brothers inc	122
mortgage corporation	116
asset management llc	115
private equity group	114
investors llc	110
financial partners	107
trading company	107
bear stearns & co	104
bank inc	104
mortgage company	103
finance inc	102
bank ltd	100
cme group	100

equity partners llc	100
investment manager	99
capital market	46
