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Chang Gong

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ECOLE DOCTORALE DE MANAGEMENT PANTHÉON-SORBONNE n° 559

## Essays on Empirical Corporate Finance

## Essais en Finance d'entreprise Empirique

Thèse de Doctorat présentée en vue de l'obtention  
du grade de docteur en sciences de gestion et du Management  
par

**Chang GONG**

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## **Abstract**

This dissertation contains three essays on empirical corporate finance.

In the first essay, I study the impact of CEOs with financial work experience, namely financial expert CEOs, on a firm's dynamic capital structure adjustments. By analysing a comprehensive data set, I find that financial expert CEOs adjust leverage faster toward their targets. After addressing potential endogeneity concerns and considering deviation levels and cash flow conditions, the results hold. Additionally, I find that this positive effect is stronger when those CEOs are more powerful. Further evidence points to the existence of two likely channels in which financial expert CEOs influence leverage adjustments: knowledge and ability. Overall, the results enhance our understanding of the managerial effects on corporate decisions and the dynamic trade-off theory of capital structure.

In the second essay, I find that financial expert CEOs underperform in M&A. CEOs with financial experience are bad bargainers and create fewer synergies with targets. They engage in fewer deals and prefer public targets. The results suggest that financial expertise comes at the expense of having expertise in other dimensions. Interestingly, when financial expert CEOs also have industry expertise, their financial expertise is the icing on the cake.

In the third essay, I examine the M&A behaviour of firms with female executives. Companies with female executives acquire greener targets than those with male executives. Female executives prefer less polluting private targets. I explore measures of firm environmental performance, such as total toxic releases, environmental penalties, emissions-related words in 10-K filings, and green innovations. The study suggests that women executives pay close attention to ecological concerns as they make financial decisions, especially when selecting targets for mergers and acquisitions. Female executives are more concerned about the environment than their male counterparts. Additionally, I do not find this prosocial behaviour at the expense of shareholders' value.

## Résumé

Ce mémoire contient trois essais sur la finance d'entreprise empirique.

Dans le premier essai, j'étudie l'impact des PDG ayant une expérience de la finance, à savoir les PDG experts en finance, sur les ajustements dynamiques de la structure du capital d'une entreprise. En analysant un ensemble complet de données, je constate que les PDG experts financiers ajustent plus rapidement le levier financier en fonction de leurs objectifs. Après avoir traité les problèmes d'endogénéité potentiels et pris en compte les niveaux d'écart et les conditions de trésorerie, les résultats se maintiennent. De plus, je constate que cet effet positif est plus fort lorsque ces PDG sont plus puissants. D'autres preuves indiquent l'existence de deux canaux probables par lesquels les PDG experts financiers influencent les ajustements de l'effet de levier: la connaissance et la capacité. Dans l'ensemble, les résultats améliorent notre compréhension des effets de la gestion sur les décisions des entreprises et de la théorie des compromis dynamiques de la structure du capital.

Dans le deuxième essai, je constate que les PDG experts en finance sont moins performants en matière de fusions et acquisitions. Les PDG ayant une expérience financière sont de mauvais négociateurs et créent moins de synergies avec les cibles. Ils s'engagent dans moins de transactions et privilégient les cibles publiques. Les résultats suggèrent que l'expertise financière se fait au détriment de l'expertise dans d'autres dimensions. Il est intéressant de noter que lorsque les PDG experts en finance ont également une expertise sectorielle, leur expertise financière est un véritable avantage.

Dans le troisième essai, j'examine le comportement en matière de fusions et acquisitions des entreprises dont les dirigeants sont des femmes. Les entreprises dont les dirigeants sont des femmes acquièrent des cibles plus écologiques que celles dont les dirigeants sont des hommes. Les femmes cadres préfèrent des cibles privées moins polluantes. J'explore diverses mesures de la performance environnementale des entreprises, telles que les rejets toxiques totaux, les pénalités environnementales, la terminologie relative aux émissions dans les documents 10-K et les innova-

tions vertes. L'étude suggère que les femmes cadres portent une attention particulière aux préoccupations écologiques lorsqu'elles prennent des décisions financières, notamment lorsqu'elles choisissent des cibles pour les fusions et acquisitions. Les femmes cadres ont tendance à être plus préoccupées par l'environnement que les hommes cadres. De plus, j'ai observé que ce comportement prosocial ne se faisait pas au détriment de la valeur des actionnaires.



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IT WAS THE MOST BEAUTIFUL SEASON IN PARIS when I wrote those words. I saw the sunshine casting on the school yard and passing through the window. I looked up and enjoyed the fascinating light and clouds and the pleasant breeze, with myriad thoughts in my head.

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# 0

## General Introduction



This dissertation consists of three essays examining topics in the field of corporate finance. These three essays constitute the next three chapters of this thesis, respectively. The aim of the dissertation is to heighten our understanding of managerial effects on corporate policies.

The first chapter examines the effect of the CEO's financial work experience on dynamic capital structure decisions. Based on the traditional view of the trade-off theory, a firm reaches its maximum value at optimal leverage, which balances the benefits and costs of debt. Recent empirical evidence supports the existence of a target leverage ratio (Hovakimian, Hovakimian, and Tehranian, 2004; Flannery and Rangan, 2006; Byoun, 2008). A survey from Graham and Harvey (2001) suggests that 81% of the CFOs in their sample confirm having a target range or "strict" target for firms' leverage. Ideally, a firm should adjust its leverage once it deviates from the optimal debt ratio. However, due to adjustment costs, there is a gap between the maximum borrower leverage ratio a firm can reach and its optimal debt ratio, and it is vital for a firm to take steps to compensate for deviations from its ideal debt ratio.

Some existing studies show that certain factors affect firms' ability to re-establish leverage (Byoun, 2008; Faulkender, Flannery, Hankins, and Smith, 2012; Warr, Elliott, Koëter-Kant, and Öztekin, 2012; Cook and Tang, 2010; Öztekin and Flannery, 2012). However, these factors, such as the firm's cash flows, equity mispricing, business cycles and macroeconomic conditions, are at the firm, industry, and market levels. Thus far, researchers have paid little attention to the effect of managers' characteristics on the speed of capital structure adjustment. Chapter 1 intends to close the gap, investigating whether CEOs' characteristics affect the speed at which they adjust leverage and how quickly they approach the target leverage ratio.

A sample of companies that belong to the S&P 1500 index is analysed. The results show that firms headed by financial expert CEOs adjust leverage to their annual targets up to 69% more rapidly, and their typical time-to-half leverage gaps is shortened to two years. The results are robust to alternative leverage measures and different econometric methods. This evidence lends strong support to the primary hypothesis that financial expert CEOs boost the speed of leverage adjustment.

An often-voiced concern for any analysis of CEO effects is the endogeneity problem of CEO appointments. In other words, the causality may reverse, and the firm's need for leverage adjustment may determine the choice of CEO. In order to address this concern, several methods are employed, including an analysis of the likely exogenous timing of a CEO turnover, propensity score matching techniques, and the instrumental variable approach. Specifically, the instrumental variable for the financial expert CEO dummy variable is the ratio of financial companies to the total number of companies in the area (two-digit ZIP code). In short, these additional results help mitigate the identification concerns and increase the confidence that CEOs with financial expertise adjust leverage faster towards target ratios.

The chapter goes one step further by considering two plausible mechanisms in support of this hypothesis: knowledge and ability. The knowledge channel shows whether financial expert CEOs are aware of financial theory in the first place, and the ability channel indicates whether they can apply financial theory in practice.

Although it might be difficult to differentiate those two channels, they can still be examined by different tests. The knowledge channel is examined by testing the speed of adjustment for over and under-levered firms. The intuition behind this

is that when financial expert CEOs observe a firm's leverage deviating from its targets, the ability channel helps them adjust the leverage, regardless of whether the deviation is over or under the leverage. However, the existing literature has shown that it is more costly for firms to be over-leveraged than under-leveraged (Byoun, 2008; Faulkender, Flannery, Hankins, and Smith, 2012). Financial expert CEOs who better understand the implications of being over-levered will have a stronger incentive to decrease leverage and thus act more responsive to leverage changes.

Next, the chapter examines the ability channel. Financial constraints may impede firms from re-balancing the leverage (Korajczyk and Levy, 2003). Presuming past experience in finance gives CEOs better access to the external capital market and networking; they should assist firms facing financial constraints in obtaining external financing, thus adjusting leverage to achieve targets faster. I conduct subsample analyses utilizing several financial constraint measures (including three popular indices: KZ, HP, and WW, as well as other characteristics of individual firms that may be associated with financial constraints, such as dividend dummy and firm size). The results support the hypothesis that the positive relationship between a CEO's financial experience and the speed of leverage adjustment is indeed more pronounced for highly financially constrained companies.

Further evidence also supports the financial expert CEO's ability channel. To the extent that financial expert CEOs' better networking and capital market access can help firms reduce information asymmetry, raise investor recognition, and increase visibility, their effect on the speed of leverage adjustment should be stronger for firms with high information asymmetry. To test this hypothesis, following the literature (Hong, Lim, and Stein, 2000; Copeland and Galai, 1983; Glosten and

Milgrom, 1985; Venkatesh and Chiang, 1986), two widely used proxies for information asymmetry are employed, namely analyst coverage and bid-ask spread. The results indicate that firms with high information asymmetry would benefit more from the services of CEOs who possess financial expertise. <sup>1</sup>

In the final set of analyses, the chapter examines whether a financial expert CEO has a more substantial effect on the speed of leverage adjustment when they are more powerful. A CEO who possesses greater decision-making power should have a greater tendency to imprint his/her characteristics on the leverage decisions (Cronqvist, Makhija, and Yonker, 2012); thus, the impact on leverage adjustment should be more significant. Based on prior literature (Adams, Almeida, and Ferreira, 2005; Ryan Jr and Wiggins III, 2004; Finkelstein, 1992), I choose three proxies for a CEO's power, namely CEO duality, tenure length, as well as CEO's stock ownership in the company. I find that the positive effect of the CEO's financial work experience on the speed of leverage adjustment is significantly higher when the CEO is also the chairman or founder, or when the CEO has worked in the current position for longer, or when the CEO has a greater stake in the company.

The second chapter addresses the role of the CEO's financial expertise in M&A. Prior literature suggests that managers' financial work experience is an essential factor in making firm policy decisions (Custódio and Metzger, 2014; Güner, Malmendier, and Tate, 2008; Huang, Jiang, Lie, and Yang, 2014). However, less is known about how CEOs' financial expertise affects mergers and acquisitions (M&A) outcomes. A firm's M&A deals are among its most important investments

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<sup>1</sup>One concern might be that knowledge channel can also help reduce information asymmetries through better communication with the markets. It could be true that not only similar work background but also a similar confine of knowledge mean the CEOs can speak the same language and communicate more effectively with outside financial practitioners. However, I think the dominant channel varies in different situations. In this context, the knowledge channel plays a supplementary role more than a core role.

There are two possible scenarios for how financial expertise plays a role in M&A. The first one is positive: financial expert CEOs have better financial knowledge and access to external capital markets (Custódio and Metzger, 2014; Güner, Malmendier, and Tate, 2008). To the extent of this bright side, there are two possibilities for their M&A propensity. On the one hand, they may make more M&A deals because they can use their network to identify more possible targets and help firms finance projects that otherwise would not have been sought after. On the other hand, they may make fewer M&A deals by dodging potential value-destroying targets. Either way, they will make better M&A decisions.

However, there is also a dark side to financial expert CEOs' role in M&A. First, financial expert CEOs may lack experience in the target industry. The literature indicates that unfamiliar targets in different industries mean higher costs in information collection (Di Giovanni, 2005; Portes and Rey, 2005). Custódio and Metzger (2013) further prove that industry expert CEOs are better deal bargainers and have synergy exploitation skills.

Thus, it is reasonable to expect that when making M&A decisions, financial expert CEOs limit their ability. As a result of the lack of industry-specific knowledge and connections in the industry, financial expert CEOs fail to evaluate targets in other industries comfortably. Moreover, firms with financial expert CEOs might have fewer viable choices of targets and unavoidably pass over some good targets. Besides, financial expert CEOs may also dislike doing M&A, for people may avoid doing things they are not good at. On average, financial expert CEOs lacking industrial expertise make worse and fewer M&A deals.

Second, firms led by CEOs with financial expertise seem to share some characteristics with those headed by entrenched managers: higher free cash flow along

with lower Tobin's Q (Custódio and Metzger, 2014). Financial expert CEOs, thus, are more likely to have classic free cash flow problems and cause agency conflicts. On the other hand, CEOs with financial expertise are younger and have shorter tenures than their peers without financial expertise. Thus, they have greater mobility. Meanwhile, prior research finds that firms hire directors for their acquisition experience, regardless of their acquisition quality (Harford and Schonlau, 2013; Grinstein and Hribar, 2004). Financial expert CEOs can be more visible and competitive in employment markets if they participate in takeover activities. Thus, financial expert CEOs may have a short horizon and be incentivised to sacrifice long-term value-increasing projects to pursue their personal needs. On average, financial expert CEOs with agency problems make worse and more M&A deals.

Results in Chapter 2 support the lack of experience hypothesis of the downside. Financial experts underperform in M&A. They create fewer synergies with their targets and are poor bargainers. In addition, they engage in fewer deals and prefer public targets. The findings indicate that the CEO's financial expertise comes at the expense of expertise in other dimensions. However, CEOs with financial expertise outperform those with neither financial nor industry expertise. When CEOs with financial expertise have industry knowledge, their financial expertise is the icing on the cake.

The analysis starts by examining the likelihood of firms with financial expert CEOs making acquisitions. *Ceteris paribus*, firms with financial expert CEOs are 9.3% less likely to make acquisitions. The endogeneity problem is a potential concern when interpreting these results. Firms might hire CEOs with financial work experience to implement particular corporate policies. Several methods are employed to address this concern, including propensity score matching techniques and

an instrumental variable approach. The instrumental variable is developed by calculating the proportion of financial companies within the total number of companies in the area (two-digit ZIP code). Previous studies show that the local labour market has a substantial impact on corporate board structure (Knyazeva, Knyazeva, and Masulis, 2013). Fahlenbrach, Low, and Stulz (2010) argue that CEOs prefer nearby firms, as the opportunity cost of their time is very high. Therefore, it is reasonable to believe that firms tend to interview and hire CEOs from nearby companies for the purposes of time-saving and networking. Finally, an additional test is conducted by looking at CEO's effect on M&A, which is less prone to endogeneity concerns: if a financial expert CEO is appointed to the firm for other purposes, he/she may first spend time on related tasks and not engage in M&A, possibly having more freedom to make M&A deals in later years. Excluding the effect of the early years (e.g., the first 2 – 3 years after the appointment of a CEO), the study finds that financial expert CEOs still engage in fewer M&A deals than their non-expert peers.

The next section in Chapter 2 examines market reactions to bids in order to evaluate acquisition decisions made by financial expert CEOs. As discussed before, both the bright side and downside roles of financial expert CEOs can lead to fewer M&A deals. On the one hand, financial expert CEOs can identify value-destroying deals and help firms dodge those bad deals. This means a lower likelihood of doing M&A, but they make better deals on average. On the other hand, financial expert CEOs may lack experience in the target industry. Custódio and Metzger (2013) prove that in the context of M&A, industry-specific knowledge plays a vital role. Corporate culture differs from industry to industry, and industry insiders can better estimate target value since they possess more information and connections.

Financial expert CEOs without enough industry experience might be disadvantaged in the M&A process.

Furthermore, M&A is usually value-destroying for acquirers, and there are uncertainty and information asymmetry in the environment surrounding M&A (Harford and Li, 2007). Financial expert CEOs may be aware of their deficient industry skills and the potential value destruction brought by M&A to shareholders. Consequently, they try to avoid making deals. This also lowers their likelihood of making M&A deals but yields less favourable market reactions around the acquisition announcements.

The analysis of 5,794 acquisition announcements conducted by S&P 1500 firms over 1992–2018 shows that the market reaction is less favourable toward acquisitions by firms with financial expert CEOs. Acquirer firms with a financial expert CEO have 0.33% lower three-day cumulative abnormal announcement returns (CARs) and 0.44% lower five-day CARs than firms without financial expertise. The three-day CARs loss translates into \$25 million in destroyed shareholder value for the average-market value acquirer in the sample.

A CEO plays a role in different stages of M&A: target selection, negotiation with the target, and post-deal integration. An acquirer's financial expert CEO might destroy shareholder value in each stage. According to the literature (Custódio and Metzger, 2013), there are two mechanisms by which financial expert CEOs destroy value: value capture and value creation.

Chapter 2 first tests financial expert CEOs' value-capture ability in an acquisition by examining premiums paid by financial expert and non-financial expert CEOs. The results suggest that, on average, financial expert managers pay lower premiums than their non-financial expert peers. There are two possible explana-



tions for the lower premiums. First, financial expert CEOs are good bargainers, or they help firms identify weaker bargaining partners. The other possibility is that they pay somewhat lower premiums for much worse targets. Following [Ahern \(2012\)](#), I calculate the difference in dollar gains between a target and acquirer, normalized by the sum of the acquirer's and the target's market cap 50 trading days before the announcement date. Results show that the target extracts higher relative dollar gains when the bidding CEOs are financial experts. These findings suggest that financial expert CEOs do worse in negotiating with a target. As a result, they fail to extract a greater proportion of the surplus. The lower premiums indicate that they undertake lower-value acquisitions on average.

Following the literature (see [Harford, Humphery-Jenner, and Powell, 2012](#); [Custódio and Metzger, 2013](#); [Field and Mkrtyan, 2017](#)), Chapter 2 measures an acquirer's value-creation ability using combined value-weighted abnormal announcement returns and finds evidence that financial expert CEOs create fewer synergies as compared to their non-financial expert counterparts. Alternatively, the study also looks at another frequently cited way to measure synergy: post-acquisition operating performance ([Field and Mkrtyan, 2017](#)). The results indicate that firms with financial expertise decline in operating performance following an acquisition. Overall, the above findings support the earlier results that firms with financial expert CEOs may fail to identify good-fit targets that would enable them to achieve synergy and growth expectations.

In sum, financial expert CEOs make fewer and worse deals. Although financial experience is usually regarded as a positive characteristic that helps firms improve their performance, the results reveal that acquirers' shareholders do not benefit from CEOs' financial experience. Further analysis is conducted to examine possible

explanations for the negative effects of financial expertise on M&A.

Previous literature indicates that in takeovers, CEOs with previous work experience within the target business outperform those who have been less exposed to the industry (Custódio and Metzger, 2013). As corporate culture differs from industry to industry, the lack of industry-specific experience may be a disadvantage and lead to poor M&A performance. For example, in the selection process, an acquirer must assess a target's products, technologies, customers, distribution channels, and cultural fit. In addition, in order to take a strong bargaining position, CEOs should also know the target's outside options and the true value of the target (Custódio and Metzger, 2013). Financial expert CEOs may have a deficient overview of the market environment, including competitors, customers, and suppliers. Moreover, they also lack inside industrial information and connections. Thus, financial expert CEOs fail to identify targets that are good fits and underperform in the negotiation process.

The following tests divide the entire sample into two subsamples: diversifying and non-diversifying deals. Following Custódio and Metzger (2013), a target-industry expert CEO variable is constructed, which examines industry expert CEOs who have worked in at least one company in that industry. By including the financial expert CEO, target-industry expert CEO and their interacted item in the regression, Chapter 2 is able to examine the effect of different expertise on CARs. The results show that the market reacts more positively to M&A announced by CEOs who have worked in at least one company in the target industry. While the coefficients for financial expert CEOs remain negative and significant, the coefficients for the interacted term between financial expertise and industry expertise are significantly positive. The presence of top management experience in a target

industry is associated with a 1.7% (1.5%) higher three-day (five-day) abnormal returns on average than the absence of that experience. To further understand the results, additional evidence is provided by comparing the performance between financial expert CEOs and CEOs who have neither financial nor industry expertise. The results show those non-expert CEOs perform significantly worse in M&A.

Similar results are found using the length of tenure as a proxy for industry experience in a subsample of non-diversifying deals. A CEO is considered to be industry-experienced if his or her tenure in a bidder company is above the median tenure. Financial expertise is especially beneficial when a CEO is more experienced in the current firm. This positive effect of financial expert CEOs disappears when considering diversifying deals. This mitigates the potential concern that a long tenure might not only be a proxy for industry expertise because CEOs may also gain other skills during their tenure.

To complete the analysis, Chapter 2 also examines the CEO's preference for targets. If financial expert CEOs are aware of their lack of access to information on the target industry, they are expected to prefer a target with less information asymmetry. Information on public targets is usually readily available to potential buyers. In contrast, acquirers must collect private information and incur higher information costs when buying a non-public target [Elnahas and Kim \(2017\)](#). Financial expert CEOs, therefore, prefer public targets and avoid private targets. The results show that financial expert CEOs engage more in public target deals and less in private deals.

Overall, the empirical results are consistent with the idea that there are complementarities between the different skills of CEOs. CEOs gain financial work experience at the expense of industry work experience, which plays a more vital

role in M&A. However, when financial expert CEOs gain industry expertise, their financial expertise is a precious asset and helps them make better deals. Meanwhile, CEOs with finance work experience understand their shortages and try to avoid destroying shareholder value. Thus, financial expert CEOs make worse and fewer M&A deals.

Chapter 3 focuses on the influence of the gender of a chief executive (CEO and CFO), on corporate decision-making in the context of Mergers and Acquisitions (M&A).

Previous studies have analysed psychological differences between women and men. For example, [Huang and Kisgen \(2013\)](#) determined that female executives are not as overconfident as their male counterparts are. [Weber, Blais, and Betz \(2002\)](#) suggest that women are more risk-averse than men in all domains except for social risk. The difference is also reflected in financial decisions. As compared to male managers, female managers invest in less risky assets ([Sunden and Surette, 1998](#); [Bernasek and Shwiff, 2001](#); [Agnew, Balduzzi, and Sunden, 2003](#)), make fewer acquisitions and issue less debt ([Huang and Kisgen, 2013](#)).

Besides, some researchers assert that female managers add more value to the firm than male managers do. [Weber and Zulehner \(2010\)](#) suggest that the presence of female leaders helps firms operate longer. More recent studies further argue that female managers help firms improve stock price informativeness, avoid operations-related lawsuits, and enhance the quality of board advice ([Adhikari, Agrawal, and Malm, 2019](#); [Gul, Srinidhi, and Ng, 2011](#); [Kim and Starks, 2016](#)).

Moreover, there is evidence to suggest that females are more reactive than males to social and emotional stimuli in many contexts (e.g. [Brody and Hall, 2008](#); [McManis, Bradley, Berg, Cuthbert, and Lang, 2001](#), Etc.), and women care more

about the social context (Croson and Gneezy, 2009). Given that environmental protection and climate change have become essential issues in our society, it is reasonable to believe female executives are more environmentally friendly and more influenced by their ecological awareness when making corporate decisions. A recent working study by Wang and Yu (2019) supports this hypothesis. They suggest that female CEOs are more environmentally friendly, and when they lead firms, they pollute less and are less penalized for environmental violations. Ginglinger and Gentet-Raskopf (2021) find that female directors have unique qualities, experiences, as well as preferences, and the presence of women on boards increases a firm's Environment and Social (E&S) performance.

Chapter 3 takes a closer look into how female executives' attention to environmental protection affects acquisitions. Specifically, it studies the types of acquisitions female executives make concerning the target's environmental attributes, for example, the target's toxic releases, environmental penalties, environment-related discussions in the 10-K filings, and innovations. M&A is a vital company investment activity that is closely related to the top executives. Although acquirer executives have clear incentives to focus exclusively on value creation for shareholders, their personal traits can still affect their decision-making. For example, prior literature maintains that entrenched managers tend to avoid private targets to preserve their entrenchment and avoid further internal scrutiny (Harford, Humphery-Jenner, and Powell, 2012).

Behavioural experiments show that male and female brains process prosocial and selfish behaviour differently. For women, prosocial actions trigger a more grounded reward signal, while male reward systems react more emphatically to egotistical conduct (Soutschek, Burke, Raja Beharelle, Schreiber, Weber, Kari-

pidis, Ten Velden, Weber, Haker, Kalenscher, et al., 2017). Given this evidence, it is reasonable to hypothesise that environment-related issues might be an essential factor for female executives when choosing potential targets. A database has been built for the study by merging data from several sources: pollution data from the U.S. Environmental Protection Agency (EPA), M&A data from Thomson One Banker, financial data from Compustat, the executive information from ExecuComp and BoardEx, 10-K filings data from SEC EDGAR, and finally patent data from Intellectual Property database.

Overall, the results show that firms with female executives acquire greener targets. First, female executives prefer private targets. They also prefer private equity-backed firms, which have been proven to be less polluting firms among private targets (Bellon, 2020). More direct evidence is provided by analysing numerous measures of firm pollution as dependent variables, such as environmental penalties, total toxic releases, and green innovations. Female executives acquire targets that have fewer toxic releases, receive fewer environmental penalties and issue more green patents. Furthermore, Chapter 3 also looks more closely into targets' environment-related issues in their 10-K filings and finds that firms with female executives acquire targets that mention fewer environment-related words in their 10-K filings. Shive and Forster (2020) prove that one extra instance of "greenhouse gas" in the 10-K is associated with a 2.09% increase in emissions. Thus, the negative coefficient on female executives shows that they avoid targets with more environment-related words, for they prefer less-polluting firms.

A potential concern is the endogeneity problem, which means that female executives may not be randomly assigned to firms. This selection bias problem comes from firms as well as executives. On the one hand, only boards of specific firms

might consider women as CFO or CEO. However, such an endogeneity concern may be minor to this study. Studying academic research and published articles, Wang and Yu (2019) suggest that environmental protection awareness is not a primary factor in executives' selection processes. On the other hand, female executives self-select themselves for CEO/CFO candidacy only for certain businesses. An observed fact is that those female executives are more unlikely to work in the highly polluting gas and oil industries, among others.<sup>2</sup>

The instrumental variable approach can be used to address the endogeneity issue. I use two instrumental variables. First, according to Huang and Kisgen (2013) and Sugarman and Straus (1988), the female executive dummy variable is instrumented by a state's level of gender status equality. The more favourable a state is on general female equality, the likelier it is that a firm headquartered in the state will have a female executive. Conversely, perhaps, more importantly, there is no evident reason for state-level gender equality directly affect target selection in a firm's acquisitions. Thus, this instrument plausibly satisfies the exclusion criterion.

Second, Cortés and Pan (2019) show that low-skilled immigration inflows induce young women to enter occupations with higher returns to overwork and shift women toward higher quantiles of the male wage distribution. Thus, I use the share of low-skilled immigration in the labour market as the second instrument. The intuition behind this is that states that receive a large influx of low-skilled immigrants have greater availability of market substitutes for household production, thus enabling highly-skilled women in these states to increase their market work (Cortes and Tessada, 2011). Therefore, if the firms are located in states with higher low-skilled immigration rates, there will be more females in the local labour market, and the

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<sup>2</sup>see, <https://www.mckinsey.com/industries/oil-and-gas/our-insights/how-women-can-help-fill-the-oil-and-gas-industrys-talent-gap>

firms will be more likely to hire female executives. Besides, the firm's acquisition decisions should not be related to the share of low-skilled workers, which allows us to address the identification problem.

The empirical results using both instrument variables support prior results that female executives acquire greener targets.

This dissertation contributes to several branches of the existing literature on corporate decision-making and managerial effects.

First, the empirical results in Chapter 1 supplement the trade-off theory of capital structure by showing how CEOs' characteristics, specifically their financial work experience, affect the movement toward target leverage ratios. Recent research on the determinants of dynamic leverage adjustments only focuses on the firm and macro variables. For example, [Cook and Tang \(2010\)](#) prove that the state of the macroeconomic conditions determines the leverage speed of adjustment. [Öztekin and Flannery \(2012\)](#) find that legal and financial traditions significantly correlate with firms' adjustment speeds. Adding to this strand of research, Chapter 1 proposes the CEO's financial expertise as a new and essential factor affecting leverage adjustment speeds.

The findings in Chapter 2 add to the emerging literature focusing on the relationship between M&A and top executives' personal traits. Several recent studies indicate that executives' backgrounds do matter. These personal traits include overconfidence ([Malmendier and Tate, 2008](#)), experience in a target firm's industry ([Custódio and Metzger, 2013](#)), gender ([Huang and Kisgen, 2013](#)), age ([Jenter and Lewellen, 2015](#)), military background ([Benmelech and Frydman, 2015](#)), and political ideology ([Elnahas and Kim, 2017](#)). To the best of my knowledge, this study is the first to look at the impact of financial expertise on acquisition decisions and



outcomes from the CEO's perspective.

Moreover, Chapters 1 and 2 extend the literature on the role of specialist CEOs. There has been a rising trend of hiring CEOs with diverse career backgrounds and industry experience in recent years. Their compensations are generally higher than those of CEOs with a one-dimension specialist (Crossland, Zyung, Hiller, and Hambrick, 2014; Custódio and Metzger, 2013; Frydman, 2019).

However, the consequences of hiring specialist CEOs are still ambiguous and somewhat debatable. Some empirical results suggest that generalists benefit shareholders (Betzer, Lee, Limbach, and Salas, 2020). Their broad expertise may improve organisational efficiency, such as reducing organisational communication costs (Ferreira and Sah, 2012), spurring firm innovation (Custódio, Ferreira, and Matos, 2019) and performing more complex tasks (Custódio and Metzger, 2013). Other studies suggest that specialists have deeper expertise; their specialisation is beneficial, especially when the coordination is good in the organisation (Ferreira and Sah, 2012).

My research enriches the literature by providing the two sides of specialists, especially financial experts. Chapter 1 shows that financial expert CEOs make better capital structure decisions and positively impact the speed of leverage adjustments. In contrast, chapter 2 provides another perspective on financial expert CEOs by showing that financial expert CEOs do not perform better in M&A.

Those results suggest that managers' expertise or skills play different roles when facing varied problems. Therefore, when firms evaluate CEO's expertise value, it may be helpful to analyse based on the strategic need of corporate policies. Besides, the complementarities between CEOs skills and other firm resources should also be noted.

Finally, the findings in Chapter 3 enrich the studies by studying how top executives' (CFO and CEO) gender affects corporate decisions. Previous psychology and finance literature indicates that the different characteristics result in different firm financial decisions by females and males. [Huang and Kisgen \(2013\)](#) find that women make fewer acquisitions and issue less debt. Other researchers suggest that women invest in less risky assets in their investment portfolios ([Sugarman and Straus, 1988](#); [Bernasek and Shwiff, 2001](#); [Agnew, Balduzzi, and Sunden, 2003](#)). Chapter 3 complements existing studies on female prosocial behaviours (see [Eckel and Grossman, 1998](#); [Babcock, Recalde, and Vesterlund, 2017](#); [Atif, Hossain, Alam, and Goergen, 2021](#); [Liu, 2018](#); [Ginglinger and Gentet-Raskopf, 2021](#), Etc.), and suggests that environmental protection is vital for female executives when making vital financial policies, specifically in the M&A target selection process. Furthermore, this prosocial and pro-ecological behaviour is not at the expense of shareholders' value. The finding in Chapter 3 is positive, not only for gender equality and the environment – but for businesses looking to improve their commitment to sustainability.

Overall, the three chapters emphasise the role of top executives in firms. A growing body of literature focuses on how the type and style of a CEO affect firm outcomes ([Malmendier and Tate, 2005](#); [Cronqvist, Makhija, and Yonker, 2012](#); [Custódio and Metzger, 2014](#); [Malmendier and Tate, 2015](#)). The work highlights the importance of the executive characteristics' effect on firm policies.

The following three chapters contain three empirical studies, which are structured and self-contained with their own sections of introduction, literature review, methodology, empirical findings, and conclusion. Chapter 4 concludes the entire thesis.

# 0

## Introduction Générale

Cette thèse se compose de trois essais examinant des sujets dans le domaine de la finance d'entreprise. Ces trois essais constituent respectivement les trois chapitres suivants de cette thèse. L'objectif de la thèse est d'améliorer notre compréhension des effets de la gestion sur les politiques des entreprises.

Le premier chapitre examine l'effet de l'expérience professionnelle financière du PDG sur les décisions de structure dynamique du capital. Selon la vision traditionnelle de la théorie des compromis, une entreprise atteint sa valeur maximale à un niveau d'endettement optimal, qui équilibre les avantages et les coûts de la dette. Des preuves empiriques récentes soutiennent l'existence d'un ratio de levier financier cible (Hovakimian, Hovakimian, and Tehranian, 2004; Flannery and Rangan, 2006; Byoun, 2008). Une enquête de Graham and Harvey (2001) suggère que 81% des directeurs financiers de leur échantillon confirment avoir une fourchette cible ou un objectif "strict" pour le levier financier des entreprises. Idéalement, une entreprise devrait ajuster son effet de levier lorsqu'elle s'écarte du ratio d'endettement optimal. Cependant, en raison des coûts d'ajustement, il existe un écart entre le ratio d'endettement maximal qu'une entreprise peut atteindre et son ratio d'endettement optimal, et il est vital pour une entreprise de prendre des mesures pour compenser les écarts par rapport à son ratio d'endettement idéal.

Certaines études existantes montrent que certains facteurs affectent la capacité des entreprises à rétablir l'effet de levier (Byoun, 2008; Faulkender, Flannery, Hankins, and Smith, 2012; Warr, Elliott, Koëter-Kant, and Öztekin, 2012; Cook and Tang, 2010; Öztekin and Flannery, 2012). Cependant, ces facteurs, tels que les flux de trésorerie de l'entreprise, la mauvaise évaluation des actions, les cycles économiques et les conditions macroéconomiques, se situent au niveau de l'entreprise, de l'industrie et du marché. Jusqu'à présent, les chercheurs ont ac-

cordé peu d'attention à l'effet des caractéristiques des dirigeants sur la vitesse d'ajustement de la structure du capital. Le chapitre 1 entend combler cette lacune, en cherchant à savoir si les caractéristiques des PDG influent sur la vitesse d'ajustement du levier financier et sur la rapidité avec laquelle ils se rapprochent du ratio de levier financier cible.

Un échantillon d'entreprises appartenant à l'indice S&P 1500 est analysé. Les résultats montrent que les entreprises dirigées par des PDG experts financiers ajustent leur levier financier à leurs objectifs annuels jusqu'à 69% plus rapidement, et que leur temps typique pour réduire de moitié les écarts de levier financier est réduit à deux ans. Les résultats sont robustes par rapport à d'autres mesures de l'effet de levier et à différentes méthodes économétriques. Ces résultats appuient fortement l'hypothèse principale selon laquelle les PDG experts financiers accélèrent l'ajustement de l'endettement.

Une préoccupation souvent exprimée pour toute analyse des effets du PDG est le problème de l'endogénéité des nominations du PDG. En d'autres termes, la causalité peut s'inverser, et les besoins de l'entreprise en matière d'ajustement de l'effet de levier peuvent déterminer le choix du PDG. Afin de répondre à cette préoccupation, plusieurs méthodes sont utilisées, y compris une analyse du moment probablement exogène de la rotation du PDG, des techniques d'appariement des scores de propension et l'approche de la variable instrumentale. Plus précisément, la variable instrumentale pour la variable muette du PDG expert financier est le ratio des sociétés financières par rapport au nombre total de sociétés dans la région (les deux premiers chiffres du code postal). En bref, ces résultats supplémentaires permettent d'atténuer les problèmes d'identification et d'accroître la confiance en le fait que les PDG experts en finances ajustent plus rapidement l'effet de levier vers

les ratios cibles. chapitre va plus loin en considérant deux mécanismes plausibles à l'appui de cette hypothèse : les connaissances et les capacités. Le canal de la connaissance montre si les PDG experts en finance sont conscients de la théorie financière en premier lieu, et le canal de l'aptitude indique s'ils peuvent appliquer la théorie financière dans la pratique. qu'il puisse être difficile de différencier ces deux canaux, ils peuvent néanmoins être examinés par différents tests. Le canal de la connaissance est examiné en testant la vitesse d'ajustement des entreprises sur- et sous-endettées. L'intuition sous-jacente est que, lorsque les PDG experts financiers observent que le levier d'une entreprise s'écarte de ses objectifs, le canal de la capacité les aide à ajuster le levier, que l'écart soit supérieur ou inférieur au levier. Cependant, la littérature existante a montré qu'il est plus coûteux pour les entreprises d'être surendettées que sous-endettées (Byoun, 2008; Faulkender, Flannery, Hankins, and Smith, 2012). Les PDG experts en finance qui comprennent mieux les implications d'un surendettement seront davantage incités à réduire l'effet de levier et agiront donc de manière plus réactive aux changements de l'effet de levier.

la suite, le chapitre examine le canal de la capacité. Les contraintes financières peuvent empêcher les entreprises de rééquilibrer le levier (Korajczyk and Levy, 2003). En supposant que l'expérience passée en finance donne aux PDG un meilleur accès au marché des capitaux externes et au réseautage ; ils devraient aider les entreprises confrontées à des contraintes financières à obtenir un financement externe, ajustant ainsi l'effet de levier pour atteindre les objectifs plus rapidement. Je réalise des analyses de sous-échantillon en utilisant plusieurs mesures de contraintes financières (dont trois indices populaires : KZ, HP, et WW, ainsi que d'autres caractéristiques des entreprises individuelles qui peuvent être associées aux contraintes

financières, telles que le dividende factice et la taille de l'entreprise). Les résultats soutiennent l'hypothèse selon laquelle la relation positive entre l'expérience financière d'un PDG et la vitesse d'ajustement de l'effet de levier est effectivement plus prononcée pour les entreprises à fortes contraintes financières. 'autres preuves soutiennent également le canal de la capacité du PDG expert financier. Dans la mesure où les meilleurs réseaux et l'accès au marché des capitaux des PDG experts financiers peuvent aider les entreprises à réduire l'asymétrie d'information, à accroître la reconnaissance des investisseurs et à augmenter la visibilité, leur effet sur la vitesse d'ajustement de l'effet de levier devrait être plus fort pour les entreprises présentant une forte asymétrie d'information. Afin de tester cette hypothèse, en suivant la littérature (Hong, Lim, and Stein, 2000; Copeland and Galai, 1983; Glosten and Milgrom, 1985; Venkatesh and Chiang, 1986), deux proxies largement utilisés pour l'asymétrie d'information sont employés, à savoir la couverture par les analystes et l'écart entre les cours acheteur et vendeur. Les résultats indiquent que les entreprises présentant une forte asymétrie d'information bénéficieraient davantage des services de PDG possédant une expertise financière. <sup>1</sup>

Dans la dernière série d'analyses, le chapitre examine si un PDG expert financier a un effet plus important sur la vitesse d'ajustement de l'effet de levier lorsqu'il est plus puissant. Un PDG qui possède un plus grand pouvoir de décision devrait avoir une plus grande tendance à imprimer ses caractéristiques sur les décisions relatives à l'effet de levier (Cronqvist, Makhija, and Yonker, 2012); l'impact sur l'ajustement

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<sup>1</sup>Une préoccupation pourrait être que le canal de la connaissance peut également contribuer à réduire les asymétries d'information par une meilleure communication avec les marchés. Il pourrait être vrai que non seulement des antécédents professionnels similaires, mais aussi un champ de connaissances similaire signifient que les PDG peuvent parler le même langage et communiquer plus efficacement avec les praticiens financiers extérieurs. Cependant, je pense que le canal dominant varie selon les situations. Dans ce contexte, le canal de la connaissance joue un rôle supplémentaire plus qu'un rôle central.

de l'effet de levier devrait donc être plus important. En suivant la littérature antérieure (Adams, Almeida, and Ferreira, 2005; Ryan Jr and Wiggins III, 2004; Finkelstein, 1992), je choisis trois indicateurs du pouvoir du PDG, à savoir la dualité du PDG, la durée du mandat, ainsi que l'actionnariat du PDG dans l'entreprise. J'ai observé que l'effet positif de l'expérience financière du PDG sur la vitesse d'ajustement de l'effet de levier est significativement plus élevé lorsque le PDG est également le président ou le fondateur, ou lorsque le PDG a travaillé plus longtemps à son poste actuel, ainsi que lorsque le PDG a une participation plus importante dans l'entreprise.

La littérature antérieure suggère que l'expérience professionnelle financière des dirigeants est un facteur essentiel dans la prise de décisions stratégiques de l'entreprise (Custódio and Metzger, 2014; Güner, Malmendier, and Tate, 2008; Huang, Jiang, Lie, and Yang, 2014). Cependant, on sait moins comment l'expertise financière des PDG affecte les résultats des fusions et acquisitions (F&A). Les opérations de fusion et d'acquisition d'une entreprise font partie de ses investissements les plus importants. Ainsi, le deuxième chapitre traite du rôle de l'expertise financière du PDG dans les fusions et acquisitions.

Il existe deux scénarios possibles quant au rôle de l'expertise financière dans les fusions et acquisitions. Le premier est positif : les PDG experts financiers ont de meilleures connaissances financières et un meilleur accès aux marchés de capitaux externes (Custódio and Metzger, 2014; Güner, Malmendier, and Tate, 2008). Dans la mesure de ce côté positif, il existe deux possibilités pour leur propension aux fusions et acquisitions. D'une part, ils peuvent réaliser davantage d'opérations de fusion et d'acquisition parce qu'ils peuvent utiliser leur réseau pour identifier davantage de cibles possibles et aider les entreprises à financer des projets qui,



autrement, n'auraient pas été recherchés. D'autre part, ils peuvent réaliser moins d'opérations de fusion et d'acquisition en évitant les cibles susceptibles de détruire de la valeur. Dans tous les cas, ils prendront de meilleures décisions en matière de fusions et acquisitions.

Cependant, le rôle des PDG experts financiers dans les M&A a aussi un côté sombre. Premièrement, les PDG experts financiers peuvent manquer d'expérience dans l'industrie cible. La littérature indique que des cibles peu familières dans des industries différentes impliquent des coûts plus élevés de collecte d'informations (Di Giovanni, 2005; Portes and Rey, 2005). Custódio and Metzger (2013) prouvent en outre que les PDG experts en industrie sont de meilleurs négociateurs d'accords et possèdent des compétences en matière d'exploitation des synergies.

conséquent, il est raisonnable de s'attendre à ce que lors de la prise de décisions M&A, les PDG experts financiers limitent leur capacité. En raison de leur manque de connaissances spécifiques à l'industrie et de leurs relations dans l'industrie, les PDG experts financiers ne parviennent pas à évaluer les cibles dans d'autres industries de manière confortable. De plus, les entreprises dont les PDG sont des experts financiers risquent d'avoir moins de choix viables de cibles et de passer inévitablement à côté de certaines bonnes cibles. En outre, les PDG experts en finance peuvent également ne pas aimer faire M&A, car les gens peuvent éviter de faire des choses pour lesquelles ils ne sont pas bons. En moyenne, les PDG experts en finance qui manquent d'expertise industrielle réalisent des opérations de M&A moins bonnes et moins nombreuses.

Deuxièmement, les entreprises dirigées par des PDG ayant une expertise financière semblent partager certaines caractéristiques avec celles dirigées par des managers enracinés : un flux de trésorerie disponible plus élevé et un Q de Tobin

plus faible (Custódio and Metzger, 2014). Les PDG experts en finance sont donc plus susceptibles d'avoir des problèmes classiques de cash-flow libre et de provoquer des conflits d'agence. D'autre part, les PDG ayant une expertise financière sont plus jeunes et ont des mandats plus courts que leurs homologues sans expertise financière. Ils sont donc plus mobiles. Parallèlement, des recherches antérieures ont montré que les entreprises embauchent les directeurs pour leur expérience en matière d'acquisition, indépendamment de la qualité de leur acquisition (Harford and Schonlau, 2013; Grinstein and Hribar, 2004). Les PDG experts financiers peuvent être plus visibles et plus compétitifs sur les marchés de l'emploi s'ils participent à des activités d'acquisition. Ainsi, les PDG experts financiers peuvent avoir un horizon court et être incités à sacrifier des projets d'augmentation de la valeur à long terme pour satisfaire leurs besoins personnels. En moyenne, les PDG experts financiers qui ont des problèmes d'agence réalisent des opérations de fusion et d'acquisition plus importantes et plus difficiles.

Les résultats du chapitre 2 confirment l'hypothèse du manque d'expérience de la baisse. Les experts financiers sont moins performants en matière de fusions et acquisitions. Ils créent moins de synergies avec leurs cibles et sont de mauvais négociateurs. En outre, ils s'engagent dans moins d'opérations et préfèrent les cibles publiques. Les résultats indiquent que l'expertise financière du PDG se fait au détriment de l'expertise dans d'autres dimensions. Cependant, les PDG ayant une expertise financière sont plus performants que ceux qui n'ont aucune expertise financière ou industrielle. Lorsque les PDG ayant une expertise financière ont une connaissance du secteur, leur expertise financière est la cerise sur le gâteau.

L'analyse commence par examiner la probabilité que les entreprises dont le PDG est un expert financier fassent des acquisitions. Ceteris paribus, les entreprises

dont le PDG est un expert financier sont 9,3% moins susceptibles de faire des acquisitions. Le problème de l'endogénéité est une préoccupation potentielle lors de l'interprétation de ces résultats. Les entreprises pourraient engager des PDG ayant une expérience financière pour mettre en œuvre des politiques d'entreprise particulières. Plusieurs méthodes sont utilisées pour résoudre ce problème, notamment les techniques d'appariement par score de propension et une approche par variable instrumentale. La variable instrumentale est développée en calculant la proportion de sociétés financières par rapport au nombre total de sociétés dans la zone (code postal à deux chiffres). Des études antérieures montrent que le marché du travail local a un impact substantiel sur la structure des conseils d'administration des entreprises (Knyazeva, Knyazeva, and Masulis, 2013). Fahlenbrach, Low, and Stulz (2010) affirment que les PDG préfèrent les entreprises proches car le coût d'opportunité de leur temps est très élevé. Par conséquent, il est raisonnable de croire que les entreprises ont tendance à interviewer et à embaucher des PDG d'entreprises proches pour gagner du temps et se constituer un réseau. Enfin, un test supplémentaire est effectué en examinant l'effet du PDG sur les fusions et acquisitions qui sont moins sujettes à des problèmes d'endogénéité: si un PDG expert en finance est nommé dans l'entreprise pour d'autres raisons, il/elle peut d'abord consacrer du temps à des tâches connexes et ne pas s'engager dans des fusions et acquisitions, ayant peut-être plus de liberté pour réaliser des opérations de fusion et acquisition dans les années suivantes. Si l'on exclut l'effet des premières années (par exemple, les deux ou trois premières années après la nomination d'un PDG), l'étude montre que les PDG experts financiers s'engagent toujours dans moins de fusions et acquisitions que leurs homologues non experts.

La section suivante du chapitre 2 examine les réactions du marché aux offres afin

d'évaluer les décisions d'acquisition prises par les PDG experts financiers. Comme nous l'avons vu précédemment, le rôle positif et négatif des PDG experts financiers peut entraîner une diminution des opérations de fusion et d'acquisition. D'une part, les PDG experts financiers peuvent identifier les opérations qui détruisent la valeur et aider les entreprises à éviter ces mauvaises opérations. Cela signifie que la probabilité de procéder à des fusions et acquisitions est moindre, mais qu'ils réalisent en moyenne de meilleures opérations. D'un autre côté, les PDG experts en finance peuvent manquer d'expérience dans le secteur cible. [Custódio and Metzger \(2013\)](#) prouvent que, dans le contexte des fusions et acquisitions, les connaissances spécifiques au secteur jouent un rôle essentiel. La culture d'entreprise diffère d'un secteur à l'autre, et les initiés du secteur peuvent mieux estimer la valeur de la cible car ils possèdent davantage d'informations et de relations. Les PDG experts en finance qui n'ont pas une expérience suffisante du secteur peuvent être désavantagés dans le processus de fusion et d'acquisition.

En outre, les fusions et acquisitions sont généralement destructrices de valeur pour les acquéreurs, et il existe une incertitude et une asymétrie d'information dans l'environnement entourant les fusions et acquisitions ([Harford and Li, 2007](#)). Les PDG experts en finance peuvent être conscients de leurs compétences sectorielles insuffisantes et de la destruction de valeur potentielle apportée par les fusions et acquisitions aux actionnaires. Par conséquent, ils essaient d'éviter de conclure des transactions. Cela réduit également leur probabilité de réaliser des fusions-acquisitions, mais entraîne des réactions moins favorables du marché lors de l'annonce des acquisitions.

L'analyse de 5 794 annonces d'acquisition effectuées par des entreprises du S&P 1500, sur la période 1992-2018, montre que la réaction du marché est moins favor-

able aux acquisitions réalisées par des entreprises dont le PDG est expert en finance. Les entreprises acquéreuses dont le PDG est un expert financier ont des rendements anormaux cumulatifs d'annonce (CAR) sur trois jours inférieurs de 0,33% et des CAR sur cinq jours inférieurs de 0,44% à ceux des entreprises sans expertise financière. La perte de RCA sur trois jours se traduit par une destruction de la valeur actionnariale de 25 millions de dollars pour l'acquéreur à valeur de marché moyenne de l'échantillon.

Un PDG joue un rôle dans différentes étapes des fusions et acquisitions : sélection de la cible, négociation avec la cible et intégration après la transaction. Le PDG expert financier d'un acquéreur peut détruire la valeur actionnariale à chaque étape. Selon la littérature ([Custódio and Metzger, 2013](#)), il existe deux mécanismes par lesquels les PDG experts financiers détruisent de la valeur : la capture de valeur et la création de valeur.

Le chapitre 2 teste d'abord la capacité des PDG experts financiers à capter la valeur lors d'une acquisition en examinant les primes payées par les PDG experts financiers et non experts financiers. Les résultats suggèrent qu'en moyenne, les dirigeants experts financiers paient des primes moins élevées que leurs homologues non experts financiers. Il y a deux explications possibles à ces primes plus faibles. Premièrement, les PDG experts en finance sont de bons négociateurs, ou bien ils aident les entreprises à identifier les partenaires de négociation plus faibles. L'autre possibilité est qu'ils paient des primes un peu moins élevées pour des cibles bien plus mauvaises. En suivant [Ahern \(2012\)](#), je calcule la différence de gains en dollars entre une cible et un acquéreur, normalisée par la somme des capitalisations boursières de l'acquéreur et de la cible 50 jours de bourse avant la date d'annonce. Les résultats montrent que la cible retire des gains relatifs en dollars plus élevés lorsque les PDG

de l'offre sont des experts financiers. Ces résultats suggèrent que les PDG experts en finance ont des performances moindres dans la négociation avec une cible. Par conséquent, ils ne parviennent pas à extraire une plus grande partie du surplus. Les primes plus faibles indiquent qu'ils entreprennent des acquisitions de moindre valeur en moyenne.

Conformément à la littérature (Harford, Humphery-Jenner, and Powell, 2012; Custódio and Metzger, 2013; Field and Mkrtchyan, 2017), le chapitre 2 mesure la capacité de création de valeur d'un acquéreur à l'aide des rendements anormaux d'annonce pondérés par la valeur combinée et démontre que les PDG experts financiers créent moins de synergies que leurs homologues non experts financiers. Alternativement, l'étude se penche également sur un autre moyen fréquemment cité pour mesurer la synergie : la performance opérationnelle post-acquisition (Field and Mkrtchyan, 2017). Les résultats indiquent que les entreprises dotées d'une expertise financière voient leur performance opérationnelle diminuer après une acquisition. Dans l'ensemble, les résultats ci-dessus confirment les résultats précédents selon lesquels les entreprises dont les PDG sont des experts financiers sont susceptibles de ne pas identifier les cibles adéquates qui leur permettraient de réaliser les synergies et les attentes en matière de croissance.

En résumé, les PDG experts en finance réalisent moins de transactions et celles-ci sont moins bonnes. Bien que l'expérience financière soit généralement considérée comme une caractéristique positive qui aide les entreprises à améliorer leurs performances, les résultats révèlent que les actionnaires des acquéreurs ne bénéficient pas de l'expérience financière des PDG. Une analyse plus approfondie est menée pour examiner les explications possibles des effets négatifs de l'expertise financière sur les fusions et acquisitions.

La littérature antérieure indique que, lors des reprises, les PDG ayant une expérience professionnelle antérieure au sein de l'entreprise cible obtiennent de meilleurs résultats que ceux qui ont été moins exposés au secteur (Custódio and Metzger, 2013). Étant donné que la culture d'entreprise diffère d'un secteur à l'autre, le manque d'expérience spécifique au secteur peut constituer un désavantage et entraîner de mauvaises performances en matière de fusions et acquisitions. Par exemple, dans le processus de sélection, un acquéreur doit évaluer les produits, les technologies, les clients et les canaux de distribution d'une cible, ainsi que l'adéquation culturelle. En outre, afin d'adopter une position de négociation forte, les PDG doivent également connaître les options extérieures de la cible et la valeur réelle de celle-ci (Custódio and Metzger, 2013). Les PDG experts en finance risquent d'avoir une vue d'ensemble déficiente de l'environnement du marché, notamment des concurrents, des clients et des fournisseurs. En outre, ils manquent également d'informations et de relations industrielles internes. Ainsi, les PDG experts en finance ne parviennent pas à identifier les cibles qui leur conviennent et ne sont pas aussi performants dans le processus de négociation.

Les tests suivants divisent l'ensemble de l'échantillon en deux sous-échantillons : les opérations diversifiantes et les opérations non diversifiantes. À la suite de Custódio and Metzger (2013), une variable PDG expert du secteur cible est construite, qui examine les PDG experts du secteur qui ont travaillé dans au moins une entreprise de ce secteur. En incluant le PDG expert financier, le PDG expert du secteur cible et leur élément interactif dans la régression, le chapitre 2 est en mesure d'examiner l'effet des différentes expertises sur le CAR. Les résultats montrent que le marché réagit plus positivement aux fusions et acquisitions annoncées par les PDG qui ont travaillé dans au moins une entreprise du secteur cible. Alors que

les coefficients pour les PDG experts en finance restent négatifs et significatifs, les coefficients pour le terme interactif entre l'expertise financière et l'expertise industrielle sont significativement positifs. La présence d'une expérience de la direction générale dans un secteur cible est associée à un rendement anormal sur trois jours (cinq jours) supérieur de 1,7% (1,5%) en moyenne à celui de l'absence de cette expérience. Pour mieux comprendre les résultats, des preuves supplémentaires sont fournies en comparant la performance entre les PDG experts financiers et les PDG qui n'ont aucune expertise financière ou sectorielle. Les résultats montrent que les PDG non experts obtiennent des résultats nettement moins bons en matière de fusions et acquisitions.

Des résultats similaires sont obtenus en utilisant la durée du mandat comme indicateur de l'expérience sectorielle dans un sous-échantillon d'opérations non diversifiées. Un PDG est considéré comme ayant de l'expérience dans le secteur si la durée de son mandat dans une entreprise soumissionnaire est supérieure à la durée médiane. L'expertise financière est particulièrement bénéfique lorsque le PDG est plus expérimenté dans son entreprise actuelle. Cet effet positif des PDG experts financiers disparaît lorsque l'on considère les opérations de diversification. Cela atténue la crainte potentielle qu'un long mandat ne soit pas seulement un indicateur de l'expertise sectorielle, car les PDG peuvent également acquérir d'autres compétences au cours de leur mandat.

Pour compléter l'analyse, le chapitre 2 examine également la préférence des PDG pour les cibles. Si les PDG experts financiers sont conscients de leur manque d'accès à l'information sur l'industrie cible, ils devraient préférer une cible présentant moins d'asymétrie d'information. Les informations sur les cibles publiques sont généralement facilement accessibles aux acheteurs potentiels. En revanche,



les acquéreurs doivent collecter des informations privées et supporter des coûts d'information plus élevés lorsqu'ils achètent une cible non publique (Elnahas and Kim, 2017). Les PDG experts en finance préfèrent donc les cibles publiques et évitent les cibles privées. Les résultats montrent que les PDG experts en finance s'engagent davantage dans des transactions avec des cibles publiques et moins dans des transactions privées.

Dans l'ensemble, les résultats empiriques sont cohérents avec l'idée qu'il existe des complémentarités entre les différentes compétences des PDG. Les PDG acquièrent une expérience professionnelle financière au détriment de l'expérience professionnelle industrielle, qui joue un rôle plus vital dans les fusions et acquisitions. Cependant, lorsque les PDG experts en finance acquièrent une expertise sectorielle, leur expertise financière est un atout précieux et les aide à conclure de meilleures transactions. Parallèlement, les PDG ayant une expérience professionnelle dans le domaine de la finance comprennent leurs lacunes et tentent d'éviter de détruire la valeur actionnariale. Ainsi, les PDG experts en finance réalisent des opérations de fusion et d'acquisition moins bonnes et moins nombreuses.

Le chapitre 3 se concentre sur l'influence du sexe du directeur général (CEO et CFO) sur la prise de décision des entreprises dans le contexte des fusions et acquisitions (F&A).

Des études antérieures ont analysé les différences psychologiques entre les femmes et les hommes. Par exemple, Huang and Kisgen (2013) ont déterminé que les femmes cadres ne sont pas aussi présomptueuses que leurs homologues masculins. Weber, Blais, and Betz (2002) suggèrent que les femmes sont plus réticentes au risque que les hommes dans tous les domaines, à l'exception du risque social. Cette différence se reflète également dans les décisions financières. Par rapport aux man-

agers masculins, les femmes managers investissent dans des actifs moins risqués (Sunden and Surette, 1998; Bernasek and Shwiff, 2001; Agnew, Balduzzi, and Sunden, 2003), font moins d'acquisitions et émettent moins de dettes (Huang and Kisgen, 2013).

En outre, certains chercheurs affirment que les femmes dirigeantes ajoutent plus de valeur à l'entreprise que les hommes. Weber and Zulehner (2010) suggèrent que la présence de femmes dirigeantes aide les entreprises à fonctionner plus longtemps. Des études plus récentes soutiennent en outre que les femmes dirigeantes aident les entreprises à améliorer l'information sur le cours des actions, à éviter les poursuites liées aux opérations et à améliorer la qualité des conseils d'administration (Adhikari, Agrawal, and Malm, 2019; Gul, Srinidhi, and Ng, 2011; Kim and Starks, 2016).

En outre, il existe des preuves suggérant que les femmes sont plus réactives que les hommes aux stimuli sociaux et émotionnels dans de nombreux contextes (e.g. Brody and Hall, 2008; McManis, Bradley, Berg, Cuthbert, and Lang, 2001, Etc.), et que les femmes se soucient davantage du contexte social (Croson and Gneezy, 2009). Étant donné que la protection de l'environnement et le changement climatique sont devenus des questions essentielles dans notre société, il est raisonnable de penser que les femmes cadres sont plus respectueuses de l'environnement et plus influencées par leur conscience écologique lorsqu'elles prennent des décisions d'entreprise. Une étude de travail récente de Wang and Yu (2019) soutient cette hypothèse. Ils suggèrent que les femmes PDG sont plus respectueuses de l'environnement et que lorsqu'elles dirigent des entreprises, elles polluent moins et reçoivent donc moins de pénalités pour violation des règles de protection de l'environnement. Ginglinger and Gentet-Raskopf (2021) constatent que les administratrices ont des qualités, des

expériences ainsi que des préférences uniques, et que la présence de femmes dans les conseils d'administration augmente la performance environnementale et sociale (E&S) d'une entreprise.

Le chapitre 3 examine de plus près la manière dont l'attention portée par les femmes cadres à la protection de l'environnement affecte les acquisitions. Plus précisément, il étudie les types d'acquisitions réalisées par les femmes cadres concernant les caractéristiques environnementales de la cible, par exemple, les rejets toxiques de la cible, les sanctions environnementales, les discussions sur l'environnement dans les documents 10-K ainsi que les innovations. Les fusions et acquisitions sont une activité d'investissement essentielle d'une entreprise qui est étroitement liée aux cadres supérieurs. Bien que les dirigeants de l'acquéreur soient clairement incités à se concentrer exclusivement sur la création de valeur pour les actionnaires, leurs traits de caractère personnels peuvent néanmoins affecter leur prise de décision. Par exemple, la littérature antérieure soutient que les dirigeants en place ont tendance à éviter les cibles privées pour préserver leur position et éviter un examen interne plus poussé (Harford, Humphery-Jenner, and Powell, 2012).

Des expériences comportementales montrent que les cerveaux masculins et féminins traitent différemment les comportements prosociaux et égoïstes. Pour les femmes, les actions prosociales déclenchent un signal de récompense plus fondé, tandis que les systèmes de récompense masculins réagissent de manière plus emphatique à un comportement égoïste (Soutschek, Burke, Raja Beharelle, Schreiber, Weber, Karipidis, Ten Velden, Weber, Haker, Kalenscher, et al., 2017). Compte tenu de ces éléments, il est raisonnable d'émettre l'hypothèse que les questions liées à l'environnement pourraient constituer un facteur essentiel pour les femmes cadres lors du choix de cibles potentielles. Une base de données a été construite pour cette

étude en fusionnant des données provenant de plusieurs sources: des données sur la pollution provenant de l'Agence américaine de protection de l'environnement (EPA), des données sur les fusions et acquisitions provenant de Thomson One Banker, des données financières provenant de Compustat, des informations sur les dirigeants provenant d'ExecuComp et de BoardEx, des données sur les dépôts 10-K provenant de SEC EDGAR, et enfin des données sur les brevets provenant de la base de données sur la propriété intellectuelle.

Globalement, les résultats montrent que les entreprises dont les dirigeants sont des femmes choisissent des cibles plus vertes. Premièrement, les femmes cadres préfèrent les cibles privées. Elles préfèrent également les entreprises financées par des fonds de capital-investissement, dont il a été prouvé qu'elles sont moins polluantes parmi les cibles privées (Bellon, 2020). Des preuves plus directes sont fournies par l'analyse de nombreuses mesures de la pollution des entreprises en tant que variables dépendantes, telles que les pénalités environnementales, les rejets toxiques totaux et les innovations vertes. Les femmes cadres acquièrent des cibles qui produisent moins de rejets toxiques, reçoivent moins de pénalités environnementales et émettent plus de brevets verts. En outre, le chapitre 3 examine de plus près les questions liées à l'environnement dans les documents 10-K des cibles et constate que les entreprises dont les dirigeants sont des femmes acquièrent des cibles qui mentionnent moins de mots liés à l'environnement dans leurs documents 10-K. Shive and Forster (2020) prouvent qu'une occurrence supplémentaire de "gaz à effet de serre" dans le 10-K est associée à une augmentation de 2,09% des émissions. Ainsi, le coefficient négatif des femmes dirigeantes montre qu'elles évitent les cibles comportant plus de mots liés à l'environnement, car elles préfèrent les entreprises moins polluantes.

Une préoccupation potentielle est le problème de l'endogénéité, ce qui signifie que les femmes cadres ne sont peut-être pas affectées de manière aléatoire aux entreprises. Ce problème de biais de sélection provient aussi bien des entreprises que des cadres. D'une part, seuls les conseils d'administration de certaines entreprises peuvent envisager de nommer des femmes au poste de directeur financier ou de PDG. Cependant, ce problème d'endogénéité peut être mineur pour cette étude. En étudiant les recherches universitaires et les articles publiés, [Wang and Yu \(2019\)](#) suggèrent que la sensibilisation à la protection de l'environnement n'est pas un facteur primordial dans les processus de sélection des cadres. D'autre part, les femmes cadres s'auto-sélectionnent pour la candidature au poste de PDG/FC uniquement pour certaines entreprises. Un fait observé est que ces femmes cadres sont plus peu susceptibles de travailler dans les industries gazières et pétrolières très polluantes, entre autres.

L'approche des variables instrumentales peut être utilisée pour résoudre le problème de l'endogénéité. J'utilise deux variables instrumentales. Tout d'abord, selon [Huang and Kisgen \(2013\)](#) et [Sugarman and Straus \(1988\)](#), la variable muette des cadres féminins est instrumentée par le niveau d'égalité du statut de genre d'un état. Plus un État est favorable à l'égalité générale des femmes, plus il est probable qu'une entreprise ayant son siège dans cet État aura une femme cadre. Inversement, et c'est peut-être plus important, il n'y a aucune raison évidente pour que l'égalité des sexes au niveau de l'État affecte directement la sélection des cibles dans les acquisitions d'une entreprise. Ainsi, cet instrument satisfait de manière plausible au critère d'exclusion.

Deuxièmement, [Cortés and Pan \(2019\)](#) montrent que les flux d'immigration peu qualifiés incitent les jeunes femmes à entrer dans des professions avec des rende-

ments plus élevés du surmenage et déplacent les femmes vers les quantiles supérieurs de la distribution des salaires masculins. Ainsi, j'utilise la part de l'immigration peu qualifiée sur le marché du travail comme deuxième instrument. L'intuition derrière cela est que les états qui reçoivent un grand afflux d'immigrants peu qualifiés ont une plus grande disponibilité de substituts du marché pour la production domestique, permettant ainsi aux femmes hautement qualifiées de ces états d'augmenter leur travail sur le marché (Cortes and Tessada, 2011). Par conséquent, si les entreprises sont situées dans des États où le taux d'immigration peu qualifiée est plus élevé, il y aura plus de femmes sur le marché du travail local, et les entreprises seront plus susceptibles d'embaucher des femmes cadres. En outre, les décisions d'acquisition de l'entreprise ne devraient pas être liées à la part de travailleurs peu qualifiés, ce qui nous permet de résoudre le problème d'identification.

Les résultats empiriques utilisant les deux variables instruments soutiennent les résultats antérieurs selon lesquels les femmes cadres acquièrent des cibles plus vertes.

Cette thèse contribue à plusieurs branches de la littérature existante sur la prise de décision des entreprises et les effets des cadres.

Premièrement, les résultats empiriques du chapitre 1 complètent la théorie du compromis de la structure du capital en montrant comment les caractéristiques des PDG, en particulier leur expérience professionnelle dans le domaine financier, affectent le mouvement vers des ratios de levier cibles. Les recherches récentes sur les déterminants des ajustements dynamiques du levier financier se concentrent uniquement sur les variables de l'entreprise et les variables macroéconomiques. Par exemple, Cook and Tang (2010) prouvent que l'état des conditions macroéconomiques détermine la vitesse d'ajustement du levier financier. Öztekin and Flannery (2012)

constatent que les traditions juridiques et financières présentent une corrélation significative avec la vitesse d'ajustement des entreprises. S'ajoutant à ce courant de recherche, le chapitre 1 propose l'expertise financière du PDG comme un nouveau facteur essentiel affectant les vitesses d'ajustement de l'effet de levier.

Les résultats du chapitre 2 s'ajoutent à la littérature émergente axée sur la relation entre M&A et les traits personnels des cadres supérieurs. Plusieurs études récentes indiquent que les antécédents des dirigeants ont de l'importance. Ces traits personnels comprennent l'excès de confiance (Malmendier and Tate, 2008), l'expérience dans le secteur de l'entreprise cible (Custódio and Metzger, 2013), le sexe (Huang and Kisgen, 2013), l'âge (Jenter and Lewellen, 2015), le passé militaire (Benmelech and Frydman, 2015) et l'idéologie politique (Elnahas and Kim, 2017). À ma connaissance, cette étude est la première à examiner l'impact de l'expertise financière sur les décisions et les résultats d'acquisition du point de vue du PDG.

En outre, les chapitres 1 et 2 élargissent la littérature sur le rôle des PDG spécialisés. Ces dernières années, on constate une tendance croissante à embaucher des PDG ayant des parcours professionnels et une expérience sectorielle diversifiés. Leurs rémunérations sont généralement plus élevées que celles des PDG ayant une spécialisation unidimensionnelle (Crossland, Zyung, Hiller, and Hambrick, 2014; Custódio and Metzger, 2013; Frydman, 2019).

Cependant, les conséquences de l'embauche de PDG spécialistes restent ambiguës et quelque peu discutables. Certains résultats empiriques suggèrent que les généralistes profitent aux actionnaires (Betzer, Lee, Limbach, and Salas, 2020). Leur vaste expertise peut améliorer l'efficacité organisationnelle, notamment en réduisant les coûts de communication organisationnelle (Ferreira and Sah, 2012), en stimulant l'innovation de l'entreprise (Custódio, Ferreira, and Matos, 2019) et

en exécutant des tâches plus complexes (Custódio and Metzger, 2013). D'autres études suggèrent que les spécialistes ont une expertise plus profonde ; leur spécialisation est bénéfique, surtout lorsque la coordination est bonne dans l'organisation (Ferreira and Sah, 2012).

Ma recherche enrichit la littérature en fournissant les deux côtés des spécialistes, en particulier les experts financiers. Le chapitre 1 montre que les PDG experts financiers prennent de meilleures décisions en matière de structure du capital et ont un impact positif sur la vitesse d'ajustement de l'effet de levier. En revanche, le chapitre 2 offre une autre perspective sur les PDG experts en finance en montrant que les PDG experts en finance ne sont pas plus performants en matière de M&A.

Ces résultats suggèrent que l'expertise ou les compétences des dirigeants jouent des rôles différents face à des problèmes variés. Par conséquent, lorsque les entreprises évaluent la valeur de l'expertise du PDG, il peut être utile de l'analyser en fonction du besoin stratégique des politiques d'entreprise. En outre, les complémentarités entre les compétences du PDG et les autres ressources de l'entreprise devraient également être notées.

Pour finir, les résultats du chapitre 3 enrichissent les études en étudiant comment le sexe des cadres supérieurs (directeur financier et PDG) affecte les décisions des entreprises. La littérature antérieure sur la psychologie et la finance indique que les différentes caractéristiques entraînent des décisions financières de l'entreprise différentes chez les femmes et les hommes. Huang and Kisgen (2013) constatent que les femmes font moins d'acquisitions et émettent moins de dettes. D'autres chercheurs suggèrent que les femmes investissent dans des actifs moins risqués dans leurs portefeuilles d'investissement (Sugarman and Straus, 1988; Bernasek and Shwiff, 2001; Agnew, Balduzzi, and Sunden, 2003). Le chapitre 3 complète



les études existantes sur les comportements prosociaux des femmes (see [Eckel and Grossman, 1998](#); [Babcock, Recalde, and Vesterlund, 2017](#); [Atif, Hossain, Alam, and Goergen, 2021](#); [Liu, 2018](#); [Ginglinger and Gentet-Raskopf, 2021](#), Etc.), et suggère que la protection de l'environnement est vitale pour les cadres féminins lors de l'élaboration de politiques financières vitales, en particulier dans le processus de sélection de la cible M&A. En outre, ce comportement prosocial et pro-écologique ne se fait pas au détriment de la valeur des actionnaires. La conclusion du chapitre 3 est positive, non seulement pour l'égalité des sexes et l'environnement - mais aussi pour les entreprises qui cherchent à améliorer leur engagement envers la durabilité.

Dans l'ensemble, les trois chapitres mettent l'accent sur le rôle des cadres supérieurs dans les entreprises. Un nombre croissant d'ouvrages se concentre sur la manière dont le type et le style d'un PDG affectent les résultats de l'entreprise : ([Malmendier and Tate, 2005](#); [Cronqvist, Makhija, and Yonker, 2012](#); [Custódio and Metzger, 2014](#); [Malmendier and Tate, 2015](#)). Ces travaux soulignent l'importance de l'effet des caractéristiques des dirigeants sur les politiques des entreprises.

Les trois chapitres suivants contiennent trois études empiriques, qui sont structurées et autonomes avec leurs propres sections d'introduction, de revue de la littérature, de méthodologie, de résultats empiriques et de conclusion. Le chapitre 4 conclut l'ensemble de la thèse.

*“And make sure that the capital structure we have in place is the right capital structure. I think that’s the reason that we’ve been successful.”*

Henry Kravis<sup>a</sup>

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<sup>a</sup>Co-founder of KKR Co. Inc., 1944-

# 1

## Financial expert CEOs and Speed of Leverage Adjustment

## 1.1 Introduction

BASED ON THE TRADITIONAL VIEW OF THE TRADE-OFF THEORY, a firm reaches its maximum value at the optimal leverage, which balances the benefits and costs of debt. Recent empirical evidence supports the existence of a target leverage ratio (Hovakimian, Hovakimian, and Tehranian, 2004; Flannery and Rangan, 2006; Byoun, 2008). A survey by Graham and Harvey (2001) suggests that 81% of CFOs in their sample confirm that they set a target range or a “strict” target for firms’ leverage. However, due to adjustment costs, there is a gap between a firm’s actual leverage and its optimal target, and a firm must take steps to offset deviations from its optimal debt ratios.

A few existing studies prove that particular factors affect the speed at which firms approach target leverage. At the firm level, Byoun (2008), Faulkender, Flannery, Hankins, and Smith (2012) find that the deviation from target leverage and cash flow realizations affect the speed with which firms approach target leverage. Warr, Elliott, Koeter-Kant, and Öztekin (2012) suggest that equity mispricing also plays an important role in leverage adjustments. At the macro or country level, Cook and Tang (2010) show that firms adjust their capital structure towards the target level faster under better macroeconomic conditions, while Halling, Yu, and Zechner (2016) document that business cycles will affect dynamic capital structure adjustments. Öztekin and Flannery (2012) determine that the transaction costs associated with a firm’s leverage adjustments are lower when the firm operates in a better institutional environment. Öztekin (2015) further proves that the quality of countries’ institutions significantly affects the speed of adjustments. However, these factors are at the firm, industry, and market levels. Researchers pay little

attention to the impact of the managers' characteristics on firms' capital structure adjustment speed. Recent studies show that firms with similar fundamentals often choose very different leverage ratios and managerial fixed effects play an important role in corporate decisions (Bertrand and Schoar, 2003; Malmendier, Tate, and Yan, 2011; Benmelech and Frydman, 2015; Malmendier and Nagel, 2011).

Motivated by this gap in the literature, I ask whether and how CEOs' characteristics influence the leverage adjustment speed.<sup>1</sup>

I construct a large sample of 2,631 firms with 5,478 CEOs' data during the period of 1992 - 2017. I use the standard partial speed of leverage adjustment model in the literature to calculate the annual speed of adjustment. To study the economic implications, I translate the adjustment speed into a half-life, or the time it takes to close half the gap between the firm's current and target leverage ratios. I find that firms with financial expert CEOs adjust to their targets annually by as much as 69% more rapidly, and their typical time to close half leverage gaps is shortened to two years from four years. The results are robust to alternative measures of leverage and estimators of leverage adjustment speed. Overall, this evidence lends strong support to the primary hypothesis that financial expert CEOs increase the speed of leverage adjustment.

An often-voiced concern for any analysis of CEO effects is the endogeneity problem of CEO appointments. In other words, the causality may be reversed, and firms' leverage adjustment needs may determine the CEO selection. I proceed with several approaches to address the concern. I first analyse the likely exogenous timing of a turnover. I look at a subsample of firms replacing a retiring CEO,

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<sup>1</sup>I choose CEOs as study groups because there is evidence showing that CEOs are vital for corporate decisions (Adams, Almeida, and Ferreira, 2005; Bennedsen, Kongsted, and Nielsen, 2008)

and the results hold in this subsample. Then, I employ propensity score-matching techniques. Considering the omitted variables concerns, I also take a further step by adding industry and more CEO-level variables into the propensity score-matching model. Finally, I further mitigate the concern of endogeneity by exploiting the instrumental variable approach. I use the ratio of the number of financial companies to the total number of companies in the area (two-digit ZIP code) as an instrument for the financial expert CEO dummy variable. Overall, the set of robustness tests helps mitigate the endogeneity concern and increases the confidence that financial expert CEOs adjust leverage faster towards target ratios.

I next examine two plausible channels underlying the hypothesis: knowledge and ability. Prior literature suggests that being over-levered is costlier than being under-levered (Byoun, 2008; Faulkender, Flannery, Hankins, and Smith, 2012). Consequently, if financial expert CEOs have better knowledge of capital structure, they should adjust leverage faster when the firm is over-levered. The empirical results support this hypothesis.

Second, I investigate the ability channel. Financial constraints may impede firms from rebalancing leverage due to the higher cost (Korajczyk and Levy, 2003). I hypothesise that past finance experience gives CEOs better access to the external capital market and networking. Therefore, financial expert CEOs are particularly valuable for financially constrained firms as they could help with obtaining external financing and thus adjusting leverage towards the target faster. Exploiting several financial constraint measurements (including three popular index measurements: KZ, HP, WW index, and some other firm characteristics which may be related to financial constraints, such as dividend dummy and firm size), I find evidence that the positive relationship between CEOs' financial experience and leverage

adjustment speed is indeed more pronounced for more financially constrained firms.

Next, I provide further evidence of the ability channel. Financial expert CEOs can help firms reduce information asymmetry, increase investor recognition, and improve firm visibility with better networking and access to the financial markets. Therefore, they could be more helpful to firms with high information asymmetry. Following the literature, I employ two widely used proxies to measure information asymmetry, namely analyst coverage and bid-ask spread (Hong, Lim, and Stein, 2000; Copeland and Galai, 1983; Glosten and Milgrom, 1985; Venkatesh and Chirang, 1986). The results lend strong support to the hypothesis that financial expert CEOs could help firms with high information asymmetry adjust leverage back to the optimal level faster.

In the final set of analyses, I investigate whether financial expert CEOs' positive effect on the speed of leverage adjustment is more pronounced when they are more powerful. CEOs who possess more decision-making power are expected to be more likely to imprint their characteristics on leverage decisions (Cronqvist, Makhija, and Yonker, 2012); thus, their positive effect on leverage adjustment should be stronger. Following the literature (Adams, Almeida, and Ferreira, 2005; Ryan Jr and Wiggins III, 2004; Finkelstein, 1992), I choose three proxies for a CEO's power, namely CEO title duality, tenure length, as well as CEO's stock ownership in the company. I find that the positive effect of the CEO's financial work experience on the speed of leverage adjustment is significantly higher when the CEO is also the chairman or founder, or when the CEO has worked in the current position for longer as well as when the CEO has a greater stake in the company.

I contribute a growing literature on capital structure and managerial effects. First, the empirical results supplement the trade-off theory by investigating how

CEOs' characteristics, and in particular their financial work experience, impact firms' capital structure decisions. Recent research on the determinants of dynamic leverage adjustments only focuses on the firm and macro variables. For example, [Cook and Tang \(2010\)](#) prove that the state of macroeconomic conditions determines the speed of leverage adjustment. [Öztekin and Flannery \(2012\)](#) determine that legal and financial traditions significantly correlate with firms' adjustment speeds. Adding to this strand of research, I propose the CEO's financial expertise as a new and essential factor which directly affects leverage adjustment speeds.

The findings also emphasise the value of specialist CEOs. A growing body of literature studies how the type and style of a CEO affect firm outcomes ([Malmendier and Tate, 2005](#); [Bertrand and Schoar, 2003](#)). The work seeks to highlight the importance of managerial effects on firm capital structure decisions. Recent studies indicate that general skills are becoming more welcomed over time; for example, firms pay higher to CEOs with general managerial skills gathered during lifetime work experience ([Custódio, Ferreira, and Matos, 2013](#)). However, I show that financial work experience positively affects leverage adjustment decisions.

I begin in Section 1.2 by setting forth the models and explaining the estimators. Section 1.3 presents the data and main summary statistics. Section 2.4 examines the impact of financial expert CEOs on leverage adjustment. Section 2.5 presents a series of robustness tests. Section 2.6 addresses the endogeneity and selection bias concerns. Section 2.7 explores two possible channels, and Section 1.8 performs some additional analysis. Finally, Section 1.9 concludes the paper.

## 1.2 Research Design and Estimation Method

### 1.2.1. Partial adjustment model of leverage

In a frictionless world, firms would move quickly back to their target leverage. However, in the presence of adjustment costs, firms may make partial adjustments toward the target leverage. To estimate the leverage adjustment speed, I use the standard partial speed of capital structure adjustment model (e.g. [Flannery and Hankins, 2013](#)) as follows:

$$Lev_{i,t+1} - Lev_{i,t} = \lambda(Lev^*_{i,t+1} - Lev_{i,t}) + \epsilon_{i,t+1} \quad (1.1)$$

where  $Lev_{i,t+1}$  and  $Lev^*_{i,t+1}$  denote the actual (observed) and target (unobserved) leverage for firm  $i$  at year  $t$ .  $\epsilon_{i,t+1}$  is the error term.  $\lambda$  is the estimated average annual speed of adjustment of the sample firms during my sample period. This coefficient is expected to lie between zero and one.

To deal with the unobserved target leverage in Eq.(1.1), I follow the literature (e.g. [Flannery and Rangan, 2006](#); [Byoun, 2008](#)) and measure the firm's target capital structure as a unique ratio determined by last year firm's characteristics that are related to the costs and benefits of leverage choices. The equation to estimate target leverage is given by:

$$Lev^*_{i,t+1} = \beta X_{i,t} \quad (1.2)$$

where  $X_{i,t}$  is a set of firm characteristics that appear regularly in the literature ([Fama and French, 2002](#); [Flannery and Rangan, 2006](#); [Elsas and Florysiak, 2015](#)), including firm size, profitability, tangibility, R&D expenses, growth opportunity,



and industry median debt ratio.<sup>2</sup> See Table 1.1 for the definitions of the variables.

I substitute target leverage in Eq.(1.2) into Eq.(1.1) and rearrange to give the following estimable dynamic panel data model:

$$Lev_{i,t+1} = (1 - \lambda)Lev_{i,t} + \lambda\beta X_{i,t} + v_{i,t+1} + \epsilon_{i,t+1} \quad (1.3)$$

in which I include  $v_{i,t+1}$  to capture the firm and year fixed effects.

### 1.2.2. *The impact of financial expert CEOs on the speed of leverage adjustment*

To examine whether financial expert CEOs materially affect the firm's dynamic capital structure decisions, I express the speed of adjustment as a function of the financial expert CEO dummy as follows:

$$\lambda = \lambda_0 + \gamma Financialexpert_{i,t} \quad (1.4)$$

where  $\lambda_0$  is the base leverage adjustment speed without considering the impact of the CEO's financial work experience.  $Financialexpert_{i,t}$  is a dummy variable.  $Financialexpert_{i,t} = 1$ , if the CEO is a financial expert CEO in year  $t$ , and 0 otherwise. The coefficient of  $Financialexpert_{i,t}$  is  $\gamma$ , which measures the impact of financial expert CEOs on the annual speed of adjustment from the end of year  $t$  to the end of year  $t + 1$ . By substituting Eq.(1.4) into (1.3), I obtain the baseline

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<sup>2</sup>Following the literature, I assume that the calculation of target leverage is based on the firm's characteristics which are related to the trade-off of the benefits and costs of using leverage. However, in the unreported test, I also include the financial expert CEO dummy as a determinant of target leverage, and the results remain consistent.

regression model:

$$\begin{aligned} Lev_{i,t+1} = & (1 - \lambda_0)Lev_{i,t} - \gamma Financialexpert_{i,t} * Lev_{it} \\ & + \gamma \beta Financialexpert_{i,t} * X_{i,t} + \lambda_0 \beta X_{i,t} + v_{i,t+1} + \epsilon_{i,t+1} \end{aligned} \quad (1.5)$$

where the coefficient of interest is  $-\gamma$ . If  $-\gamma$  is significantly negative,  $\gamma$  is positive, and it means financial expert CEOs would improve the firm's speed of adjustment toward target leverage.

### 1.2.3. Estimation method

Estimating Eq.(1.5) is econometrically challenging. First, the regression model is unbalanced panel data; second, the model includes a lagged dependent variable as a regressor; third, the dependent variable is fractional. Various estimation models have been proposed to examine the dynamic behaviour of corporate financial policy variables.

For example, pooled OLS estimator is widely used in early research. But it is biased and inconsistent because of the correlation between the fixed effects and the lagged dependent variable (Baltagi, Egger, and Pfaffermayr, 2013). The fixed-effects estimator eliminates the firm fixed effects; it still has a bias in the sample with relatively short time periods such as those in my data (Nickell, 1981). The widely used models in recent empirical studies are estimators using an instrumental variable for the lagged dependent variable, such as IV (Flannery and Rangan, 2006), the long-difference estimator by Hahn, Hausman, and Kuersteiner (2007), first-difference GMM (Arellano and Bond, 1991), and system GMM (Blundell and Bond, 1998). However, using parametric and non-parametric simulation



Elsas and Florysiak, 2015; Dang, Kim, and Shin, 2015) demonstrates that those estimators are unreliable and sensitive to the presence of unobserved heterogeneity, residual serial correlation, and the changes in control parameters. Moreover, these estimators do not take into account the fractional nature of the dependent variable.

Given the above limitations of the approaches, I apply the DPF estimator proposed by Elsas and Florysiak (2015) to yield an unbiased estimate for the standard partial adjustment model in the presence of a fractional dependent variable. DPF estimator is a maximum likelihood estimator which is based upon the work of Loudermilk (2007). Elsas and Florysiak (2011, 2015) further extend Loudermilk's 2007 method by allowing it to be used for unbalanced panel data. Elsas and Florysiak (2011, 2015) demonstrate that DPF outperforms alternative estimators when estimating the speed of leverage adjustment. For example, using Monte Carlo simulations, they find that for positive true SOA, the long-difference estimator overestimates the true speed of adjustment, with a magnitude of up to 50%, while the SYS-GMM estimator underestimates it in the 0 to 0.4 range and overestimates for the higher true SOA value. In resampling experiments, they prove that the DPF estimator always leads to unique SOA estimation results and makes it possible to compare SOA among different subsamples.

Furthermore, Iliev and Welch (2010) also present that the DPF estimator is the only one that always gives unique SOA estimates. Dang, Kim, and Shin (2015) examine the performance of various existing estimators by conducting simulation studies and verify their results in two empirical applications, on dynamic capital structure and cash holdings. They find DPF estimator to be the most appropriate and robust method when considering the impact of fractional dependent variables.

In the interest of more meaningful and unbiased results, I use the DPF estimator

for all SOA estimations in this study.<sup>3</sup>

## 1.3 Data and Descriptive Statistics

### 1.3.1. Data

I collect data from the ExecuComp database, which includes base information for CEOs of the S&P 1500 companies from 1992 to 2017. The companies are not only current firms listed in the S&P 1500 but also firms that were in the S&P 1500 at once in the sample period but left. Given the limited information on the background and characteristics of executives in ExecuComp, I engage in an extensive collection of biography data and then used the text analysis method to obtain CEOs' information, such as career path and educational background. The primary source is Bloomberg's biography information. However, many CEOs are not listed in Bloomberg. For these CEOs, I collect information from NNDB Mapper<sup>4</sup>, LinkedIn, firms' proxy statements, as well as cooperates' websites.

In order to get the financial and accounting data, I merge ExecuComp with Compustat and CRSP. Following previous research, I exclude samples that lie outside the scope of this research: financial firms (SIC 6000-6999) and regulated utility (SIC 4900-4999), whose capital decisions greatly differ from regular firms. As the dynamic panel regression includes lagged variables, I also exclude any firm with fewer than two consecutive years of data.

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<sup>3</sup>I also estimate the models using GMM estimators, which offer consistent results.

<sup>4</sup>The Notable Names Database (NNDB) is an online database of biographical details of over 40,000 people of note. NNDB describes itself as an "intelligence aggregator" of those it determines to be noteworthy but mainly to identify connections between people. It is run by Soylent Communications, a sole proprietorship that also ran the site rotten.com. (Source: [en.wikipedia.org/wiki/NNDB](http://en.wikipedia.org/wiki/NNDB))

The final sample has complete information for 29,618 firm-year observations of 2,631 firms and 5,478 CEOs.<sup>5</sup> Table 1.1 defines all variables; Table 1.2 presents summary statistics, and Table 1.3 shows the correlation matrix. Following [Elsas and Florysiak \(2015\)](#), I winsorize all variables, except for market leverage, at the 1st and 99th percentiles to avoid the influence of extreme observations.<sup>6</sup>

### 1.3.2. *CEO and firm characteristics*

Table 1.2, panel A, shows descriptive statistics of CEOs in my panel. I am interested in the effect of financial expert CEOs on the speed of adjustment. However, financial expertise is defined in different ways in the literature. Compared to a broader definition in previous studies ([Custódio and Metzger, 2014](#); [Güner, Malmendier, and Tate, 2008](#)), the definition of financial expertise in this study refers to those who have work experience in either banking or investment firms (two-digit SIC codes 60, 61, 62), or in a CFO role. I consider the definition from both the knowledge and leverage adjustment ability perspectives. First, survey evidence from [Graham and Harvey \(2001\)](#) suggests that 81% of the CFOs in their sample confirm that they set a target range or “strict” target for firms’ leverage. I believe that if a CEO had served as CFO before, he/she ought to possess a better knowledge of the benefits and costs associated with debt financing as well as the importance of target leverage. Secondly, it is reasonable to assume that the CEOs who have worked in banking or investment firms have better access to funds and more ability to raise them.

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<sup>5</sup>The number of usable observations varies by the analysis performed due to the availability of required data.

<sup>6</sup>“Following [Strebulaev and Yang \(2013\)](#), I define a firm in year  $t$  as a zero-leverage firm if, in year  $t$ , the outstanding amounts of both short-term debt ( $dltc$ ) and long-term debt ( $dltt$ ) equal zero. Consistent with the literature, there are around 11% zero-leverage firms in my sample. The results are robust to removing these firms from the sample.”

### **[Insert Table 1.2 near here]**

Based on the measure, 31.9% of CEOs are identified as financial experts. Looking at detailed finance experience, 23.2% of the CEOs have worked in financial firms, and 12.3% of the CEOs have been CFOs before. As for the CFO role, 8.4% of them were internally promoted to CEO afterwards.

Table 1.2, Panel A also shows other CEO parameter statistics. The CEOs are overwhelmingly male (97.7%). The typical CEO in my sample is 56 years old and has been in the company serving as CEO for seven years. Financial expert CEOs are a bit younger than non-financial expert CEOs and have a shorter tenure than their peers.

Panel B shows descriptive statistics for firms in my panel. The means scores for book leverage and market leverage are 23.5% and 20.7%, respectively. The average firm in the sample has book value assets of \$6 billion, a market-to-book ratio of 1.75, and an R&D ratio of 3.3%. Nearly half of the firms in the sample are rated for long-term debt.<sup>7</sup> As compared to their non-financial expert peers, financial expert CEOs work in more mature, larger, and higher-leverage firms.

### **[Insert Table 1.3 near here]**

The results of the correlational analysis among variables are displayed in Table 1.3. In agreement with previous studies, the correlation coefficient between the financial expert dummy and leverage is significantly positive. In addition, positive correlations are also found between financial expert dummies and firms' age,

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<sup>7</sup>Here, I follow literature to include a Rated dummy variable in the regression to capture firms' ability to access external capital markets (Flannery and Rangan, 2006; Elsas and Florysiak, 2015). In the unreported robustness tests, I also use rating categories as control variables, the results are consistent.

profitability, size, tangibility, industrial median leverage and public rating. Market-book ratio and R&D expense are negatively associated with the financial expert dummy. Furthermore, almost all variables report low pairwise correlations, which should mitigate the concern for multicollinearity.

In sum, financial expert CEOs differ from their non-financial expert counterparts in many respects. Both CEO-level and firm-level characteristics' descriptive statistics are consistent with prior literature.

## 1.4 Empirical Results

The baseline regression aims to examine whether financial expert CEOs affect firms' adjustment speed. Table 1.4 presents the regression estimates separately for book leverage and market leverage.

**[Insert Table 1.4 near here]**

First, I run the standard partial adjustment model. Columns (1) and (4) report the results. The coefficients of lagged leverage are 0.789 and 0.753, indicating that, on average, the firms' speed of leverage adjustment is 21% and 24.7% for book leverage and market leverage, respectively. These estimated results are consistent with most findings in the literature ([Flannery and Rangan, 2006](#); [Elsas and Florysiak, 2015](#)).

The results of the baseline regression in Eq.(1.5) are shown in columns (2) and (5). The variable of interest is the interaction item between the financial expert dummy and lagged leverage. I find negative and highly significant loadings at the 1% level. In column (2), the coefficient on lagged leverage implies that the base adjustment speed of the sample firms is 17.7%. At this rate, it takes



approximately four years to close half the gap between the firm's current and target leverage ratios. The estimated coefficient on the interaction item shows that firms' average adjustment speed increases nearly 69%. The results indicate that firms with financial expert CEOs close 29.9% (=17.7%+12.2%) of the gap between current and target leverage ratios within one year and that the typical firm's time to half leverage gaps is shortened to two years.

I next test whether the estimators are subject to the problem of "mechanical mean reversion" (Chang and Dasgupta, 2009), i.e., systematically indicating active adjustment when actually there is none. I report the estimated results from a subsample analysis, using only the middle 50% of observed leverage values. In columns (3) and (6), the relation between the speed of adjustment and financial expert CEOs is positive and significant. The positive effect of financial expert CEOs in the subsample on leverage rebalancing is even more significant than that in the entire sample, indicating that mean reversion in leverage is not the cause of the rapid adjustment speed.

In an unreported test, I further control for the financial expert dummy as a determining factor of target leverage. The coefficient estimates on the lagged leverage and the interaction item are qualitatively consistent with those presented in Table 1.4.

Overall, the above results strongly support the main hypothesis that financial expert CEOs have positive effects on the speed of leverage adjustment.

## 1.5 Robustness Tests

### 1.5.1. *Alternative econometric methods*

The results are robust to alternative econometric methods and leverage measures. Although I apply the newly proposed DPF estimator to have unbiased results, previous research estimates the speed of leverage adjustment in a variety of ways. Among the estimators, the two-step system generalized method of moments (SYS-GMM) by [Blundell and Bond \(1998\)](#) and the first-difference generalized method of moments (FD-GMM) by [Arellano and Bond \(1991\)](#) are the most widely used in empirical studies. Using these alternative estimation methods, I re-estimate the main regressions in Eq.(1.5) and report separately in the first four columns of Table 1.5 for book leverage and market leverage.

**[Insert Table 1.5 near here]**

### 1.5.2. *An alternative leverage measure*

I also make further adjustments to the leverage measures. [Faulkender, Flannery, Hankins, and Smith \(2012\)](#) suggest that tests of target adjustment models should focus on active adjustments because only active adjustment is associated with transaction costs. I decompose a firm's leverage adjustments into passive and active components by revising Eq.(1.2):

$$Lev_{i,t+1} - Lev_{i,t}^p = \lambda(Lev_{i,t+1}^* - Lev_{i,t}^p) + \epsilon_{i,t+1} \quad (1.6)$$

where  $Lev_{i,t}^p = \frac{D_{i,t}}{A_{i,t} + N_{i,t+1}}$ , represents the passive adjustments that are not related to transaction costs.  $D_{i,t}$  and  $A_{i,t}$  are defined the same as in Table 1.1.  $N_{i,t+1}$  is

the net income during the year  $t + 1$ . The partial adjustment model assumes that the firm starts to adjust leverage from the prior year's leverage. When the firm doesn't engage in capital market activities, all leverage adjustments are from the firm's posting of annual income to its equity account, and then the leverage at year  $t + 1$  would be  $Lev_t^p$ . As suggested by [Faulkender, Flannery, Hankins, and Smith \(2012\)](#) and [Yin and Ritter \(2020\)](#), I focus here only on book leverage, because it is straighter forward to decompose the active and passive pieces for book leverage.

The results of alternative leverage measure are reported in Table 1.5 column (5). Altogether, regardless of the estimators and leverage definitions, the estimated results are consistent with the previous findings using the original leverage ratios.

### *1.5.3. Additional controls for deviation level and cash flow conditions*

Prior literature suggests that deviation from target leverage and cash flow conditions play important roles in the speed of leverage adjustment. Over-levered firms and cash flow deficit firms make more aggressive changes in the capital structure ([Lemmon, Roberts, and Zender, 2008](#); [Byoun, 2008](#); [Faulkender, Flannery, Hankins, and Smith, 2012](#)).

To address whether the deviation level or cash flow conditions cause the financial expert CEOs' positive effect on leverage adjustment speed, I further include these two factors as determinants of speed of adjustment. Following [Byoun \(2008\)](#), I define a firm as a surplus firm when it has positive operating cash flows and as a deficit firm when the cash flows are negative. See details in Table 1.1.

**[Insert Table 1.6 near here]**

The regression results are separately presented in Table 1.6 for book leverage

and market leverage. The main result, e.g., the coefficient of the interaction term is negative and significant, remains unchanged. This indicates that financial expert CEOs make leverage adjustments faster towards the target regardless of the deviation level or cash flow condition.

#### *1.5.4. Other hypothesis*

Another concern is that the observed financial expert CEO's effect is, in fact, from the ex-CEO. To address this concern, I exclude the very first two years of a CEO. The motivation behind this is that the model measures the annual speed of adjustment. Thus, I could observe the financial expert CEO's effect change each year. If the ex-CEO's effect on the firm's leverage continues after his/her departure, the outcome should last at most two or three years, and the observed impact on the speed of leverage adjustment in the post-two-year subsample only reflects the result from the current CEOs. The unreported results show consistent results as the previous findings do.

## **1.6 Endogeneity Problem**

One crucial concern with the finding of the financial expert CEOs' positive effect on firms' leverage adjustment speed is the endogenous matching problem between CEOs and firms. In particular, the causality may be reversed, with firms that have a low speed of adjustment seeking financial expert CEOs. I denote this section to mitigate the endogeneity concern. First, I focus on firms with exogenous CEO turnovers. I then employ the propensity score matching approach and the instrumental variable approach.

### 1.6.1. CEO's "exogenous" turnovers

Following previous literature (Weisbach, 1995; Custódio and Metzger, 2014; Jenter and Lewellen, 2015), I analyse a subsample of firms in which the CEO's turnover is likely to occur for exogenous reasons. I classify turnovers as "more" exogenous when the current CEO retires at the mandatory retirement age of 65. While not all firms have this policy, there is evidence that most firms do (Weisbach, 1995). The idea is that if the CEO's turnover occurs for exogenous reasons, the choice of the new CEO is more likely random. Thus, the subsample analysis would help us better identify the financial expertise's effect.

**[Insert Table 1.7 near here]**

Table 1.7 shows the results separately in columns (1) and (2) for the book- and market-leverage. When I restrict the sample to retirement turnovers, the panel is reduced to 4,702 observations. Consistent with the previous findings, the coefficient estimate of the interaction item between the financial expert dummy and lagged leverage is still negative and significant.

### 1.6.2. Propensity score matching

Roberts and Whited (2013) show that, although matching might not solve the endogeneity and self-selection problems in every context, this approach can mitigate some biases caused by these problems. This method allows us to compare the speed of leverage adjustment of two matched groups which are similar in terms of firm characteristics, industry, and year. The only difference is that for one group, firms have financial expert CEOs (treatment group), and for the other group, firms have non-financial expert CEOs (control group).

To construct the matched sample, I first estimate a probit model to calculate the probability of firms having a financial expert CEO as a function of firms' characteristics and fixed effects. The dependent variable in the model is an indicator variable that equals one if the firm has a financial expert CEO in the given year, otherwise equals zero. For the independent variables, I follow [Custódio and Metzger \(2014\)](#). I use an array of firm characteristics, such as the proxies for the life cycle of firms like firm age, size and growth opportunities, Etc. All independent variables are lagged by one year. In addition to firm-level control variables, I require exact matching based on industry (Fama-French 48 industry classification) and year.

The probit regression results are tabulated in Panel A of Table 1.8. The coefficients of the explanatory variables are generally consistent with those in previous studies. For example, I find that larger and more mature firms and those with higher leverage ratios are more likely to have financial expert CEOs during the sample period.

**[Insert Table 1.8 near here]**

I then use the propensity scores calculated from the probit model to match each treatment firm with a similar control firm. Following [Abadie, Drukker, Herr, and Imbens \(2004\)](#), I conduct the matching using the nearest-neighbour matching estimator. A firm without financial expert CEOs can be matched to multiple firms with financial expert CEOs (matching with replacement).<sup>8</sup> By utilizing the procedure above, I identify matched firms without financial expert CEOs for 8,336 firms with financial expert CEO firms, thus generating a total of 14,140 and 14,119 firm years panel data separately for the book- and market-leverage.

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<sup>8</sup>The results are robust to unreported alternative matching criteria.

Panel B of Table 1.8 compares the characteristics of financial expert CEOs to those of matched firms without financial expert CEOs and firms with financial expert CEO. The results indicate that the firms are similar in many perspectives before the onset of the financial expert CEO's presence. Suggesting that these characteristics are unlikely to drive the difference in SOA after having financial expert CEOs.<sup>9</sup>

**[Insert Table 1.9 near here]**

Using the matched sample, I run the baseline model in Eq. (1.5). The results are shown in Table 1.9 columns (1) and (2). As expected, the coefficient on the interaction item remains negative and significant, which is consistent with the previous findings.

### 1.6.3. *Instrument variable approach*

I exploit the percentage of the number of financial companies (with two-digit SIC 60, 61, 62) to the total number of companies in the area (with 2-digit ZIP code), *Ratio*, as a source of exogenous variation in CEO selection. I believe that this variable satisfies the conditions necessary for a valid instrument. [Knyazeva, Knyazeva, and Masulis \(2013\)](#) show that the local director labour market substantially impacts corporate board structure. [Fahlenbrach, Low, and Stulz \(2010\)](#) further argue that CEOs prefer nearby firms as the opportunity cost of their time is very high. Therefore, firms tend to interview and hire CEOs from nearby companies. When

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<sup>9</sup>In an untabulated test, I run the probit model in Table 1.8 Panel A using only the matched sample. I find that none of the firm characteristics is significant in predicting the presence of a financial expert CEO, which enhances my confidence in the effectiveness of the matching procedure.

there are more financial companies nearby, firms are more likely to hire a financial expert CEO.<sup>10</sup>

In the primary model, I am interested in the interaction item that involves the endogenous regressor  $Financialexpert_{i,t}$ , which is also a dummy variable. Following [Wooldridge \(2015\)](#) and [Terza, Basu, and Rathouz \(2008\)](#), I implement a two-stage residual inclusion estimation approach. In the first stage, I estimate a probit model of the financial expert dummy on the instrument variable and other controls. In the second stage, I add the fitted residuals in the first stage as an additional regressor to Eq.(1.5). By using this approach, I take the binary nature of the endogenous variable into account and avoid endogeneity bias. One concern of the instrumental variable is that the ratio does not often change over time; thus, I include industry-fixed effects instead of firm-fixed effects for both stages. Table 1.10 shows the regression results.

**[Insert Table 1.10 near here]**

From columns (1) and (3), we can see that the proposed instrument  $Financialexpert_{i,t}$  is correlated with the presence of financial expert CEOs. As expected, the percentage of financial companies to the total number of firms in the area is positively related to the financial expert CEOs, with a robust t-statistic of 5.48 (book leverage) and 5.597 (market leverage). Columns (2) and (4) report the results of the primary model in Eq.(1.5). For brevity, I only report the final stage results. As

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<sup>10</sup>Empirical evidence on the influence of bank concentration on debt availability is mixed. [Berlin and Mester \(1999\)](#) show that firms in less concentrated credit markets are subject to greater financial constraints, while [D'Auria, Foglia, and Reedtz \(1999\)](#) and [Degryse and Ongena \(2005\)](#) find that greater bank market concentration raises the cost of bank financing. The opposing arguments and mixed empirical evidence mean that the influence of bank market concentration on firm leverage is basically an empirical question. Besides, [Gonzalez and González \(2008\)](#) suggest that the positive effect of bank concentration on a firm's leverage is more pronounced in countries with less stringent protection of property and creditor rights. Since my sample is US data, I believe the concern about the validity of IV could be mitigated to some extent.



shown in columns (2) and (4), the coefficient on financial expert and lagged leverage is negative and significant, consistent with previous findings.

#### 1.6.4. *Omitted variables concern*

One concern is that a CEO's financial expertise might be correlated with other characteristics. Therefore, I add age and a set of education dummies (MBA, Ph.D., Ivy League alumnus) controlling for educational background and talent into the propensity score matching model. I report the results in Appendices A. The results alleviate the concern that financial expertise's positive effect on leverage adjustment speed could occur by proxying for these CEO characteristics.

In conclusion, the additional results help mitigate endogeneity concerns and increase the confidence that financial expert CEOs adjust leverage faster towards targets.

## **1.7 Possible Channels of Financial Expert CEOs' Influence**

### 1.7.1. *Estimation models*

I next explore two possible channels through which the financial expert CEOs help firms adjust faster toward the target leverage: knowledge and ability. To investigate the two channels, I rewrite  $\gamma$ , the coefficient of  $Financialexpert_{i,t}$  in equation Eq.(1.4) to capture the impact of financial expert CEOs for different firms as follows:

$$\gamma = \gamma_0 + \delta Group \quad (1.7)$$

in which,  $\gamma_0$  is the base speed of leverage adjustment without considering sub-samples. The coefficient  $\delta$  measures the impact of financial expert CEOs on different groups. *Group* is a dummy variable, which indicates sub-samples based on different characteristics.

Then, I substitute Eq.(1.7) into Eq.(1.5) and rearrange to obtain the main regression model in this section:

$$\begin{aligned} Lev_{i,t+1} = & (1 - \lambda_0)Lev_{it} - \gamma_0 Financialexpert_{i,t} * Lev_{i,t} - \delta Group * Financialexpert_{i,t} * Lev_{i,t} \\ & + \gamma_0 \beta Financialexpert_{i,t} * X_{i,t} + \delta \beta Group * Financialexpert_{i,t} * X_{i,t} \\ & + \lambda_0 \beta X_{i,t} + v_{i,t+1} + \epsilon_{i,t+1} \end{aligned} \quad (1.8)$$

here, the coefficients of interest are  $-\gamma_0$  and  $-\delta$ . If they are negative and significant, then it suggests that financial expert CEOs are faster in the leverage speed adjustment, and this impact is even stronger among certain firms.

### 1.7.2. Knowledge channel

Financial expertise could help CEOs better understand accounting and finance and, thus, the importance of optimal capital structure. [Byoun \(2008\)](#) suggests being over-levered is costlier for firms. [Faulkender, Flannery, Hankins, and Smith \(2012\)](#) further prove that the estimated adjustment speeds are strikingly different for over- and under-levered firms. If it is a better understanding of capital structure

that drives the positive effect of financial expert CEOs on the speed of leverage adjustments, then such an effect should be stronger for over-levered firms.

**[Insert Table 1.11 near here]**

Table 1.11 shows the results separately for book and market leverage. Columns (1) and (2) present the results of estimating the model in equation (1.8). The coefficient estimate on the triple interaction item is negative and significant, with a value of -0.109 (-0.190) for the book (market) debt ratio. This provides evidence that financial expert CEOs are more motivated to adjust leverage back towards the target for over-levered firms, and the adjustment behaviour is in the firm's interest. As [Korteweg \(2010\)](#) suggests that the relationship between leverage deviation level and firm value is more significant for over-levered firms, the results show that financial expert CEOs may be aware of leverage's important effect on firm value and lower the debt faster than their non-financial expert peers.

One potential concern might be that over-leveraged firms are more likely to have financial expert CEOs. Thus, in an untabulated subsample analysis, I restricted the sample firms whose CEO turnover is likely to occur for exogenous reasons; here, the exogenous reason is retirement at the mandatory age of 65. The results are consistent.

### *1.7.3. Ability channel*

#### *1.7.3.1. Financial constraints and financial expert CEOs' impact*

Financial constraints can impede a firm's leverage adjustment speed. [Öztekın and Flannery \(2012\)](#) suggest that the speed adjustment for financially constrained firms should be lower than their non-financial constrained peers. Financial expert CEOs

are more valuable for financially constrained firms if their financial industry experience means better access to the external capital market. In other words, if financial expert CEOs can reduce a firm's external financing costs and make it easier for the firm to raise external funds, then their positive effect on SOA should be more pronounced for highly financially constrained firms. Testing the model requires separating firms according to financial constraints' conditions. I explore several measures of the degree of firm financial constraints to split the sample into two subsamples.

I first use three popular indices measures (Kaplan and Zingales, 1997; Whited and Wu, 2006; Hadlock and Pierce, 2010), which are based on linear combinations of observable firm characteristics. I split the full sample into "High" and "Low" groups by median index value, where the median is based on Fama and French industry definitions and firm-year. I also divide the sample based on two firm characteristics that may be related to financial constraints or adjustment costs: dividend dummy and firm size. These two variables are relevant: large firms have more access to the capital market and incur much lower costs of issuing debt or equity; firms with dividend payments are believed to be less financially constrained firms; otherwise, they would retain the income rather than paying dividends.

**[Insert Table 1.12 near here]**

The results are reported in Table 1.12. As expected, financial expert CEOs are positively associated with leverage adjustment speed both in high and low-financially constrained firms. More interestingly, the coefficient of the triple interaction item is negative and significant, indicating that financial expert CEOs' impact is more pronounced for more constrained firms. This finding shows that fi-

nancial expert CEOs are indeed more helpful in adjusting leverage when the firm's financial conditions are poor.

The CEO-firm matching concern also exists for this analysis. Financially constrained firms might prefer to hire a financial expert CEO to get access to the financing market. Thus, in an untabulated subsample analysis, I restricted the sample firms whose CEO turnover is likely to occur for exogenous reasons; here, the exogenous reason is retirement at the mandatory age of 65. Most of the estimated results are consistent.

#### *1.7.3.2. Information asymmetry and financial expert CEOs' impact*

I conduct further evidence to support the financial expert CEO's ability channel. With better access to the capital market, financial expert CEOs could help the firm reduce information asymmetry and thus make the firm more visible to market investors. Hence, if the positive effect of financial expert CEOs on the speed of leverage adjustment is driven by the ability channel, then these effects should be stronger for firms with high information asymmetry.

Following the literature, I employ two widely used proxies for information asymmetry: analyst coverage and bid-ask spread. [Hong, Lim, and Stein \(2000\)](#) show that firms with more analyst coverage produce more firm-specific information and transmit information faster. I argue that financial expert CEOs' positive effect on the speed of leverage adjustment should be stronger for firms with less analyst coverage. Prior literature shows that high bid-ask spread is related to high information asymmetry ([Copeland and Galai, 1983](#); [Glosten and Milgrom, 1985](#); [Venkatesh and Chiang, 1986](#)). A firm has high information asymmetry when its percentage bid-ask spread is higher than the industry year median value. I hypothesise that financial

expert CEOs adjust leverage faster towards the target capital structure for firms with high bid-ask spread.

**[Insert Table 1.13 near here]**

Table 1.13 shows the results. In columns (1) and (2), the information asymmetry indicator is the number of analysts, while in columns (3) and (4), the indicator is the percentage bid-ask spread. All of the regression results support the conjecture that financial expert CEOs could help firms with high information asymmetry adjust leverage back to the optimal leverage faster.

## **1.8 Further Analyses**

### *1.8.1. Duality, Tenure, Ownership and Financial expert CEOs*

If CEOs' financial work experience affects the firm's capital structure decisions, corporate governance structures may also play an important role. Specifically, more powerful CEOs are expected to imprint their characteristics on the leverage decisions more likely (Cronqvist, Makhija, and Yonker, 2012), and thus their positive effect on leverage adjustments should be stronger. In this section, I examine whether variations in CEOs' power levels result in different effects on financial expert CEOs.

Table 1.14 reports the results. First, I define the Duality variable, which equals one if the CEO is also the chair of the company's board of directors or founder of the company. Past literature argues that CEOs are more powerful when they are the chairman of the board or if they founded the firm. Then I run equation (1.8). Columns (1) and (2) show the results. The effect of the CEO's financial work experience on book leverage is significantly stronger when the CEO is also

the chairman or founder.

**[Insert Table 1.14 near here]**

Second, I examine another measure of CEOs' power, tenure. [Ryan Jr and Wiggins III \(2004\)](#) suggest that long-tenured CEOs have a stronger influence over the board and are, therefore, more powerful. I thus create a Long-Tenure variable, which is an indicator that equals one if the CEO's tenure in the current position is above the industry median. Columns (3) and (4) show the regression results. Again, when using book leverage as a dependent variable in column (3), the financial expert effect is significantly more pronounced for CEOs with longer tenure.

Finally, I construct an indicator variable High-Ownership, which equals one if the CEO's stock ownership is above the industry median. [Finkelstein \(1992\)](#) mention that CEOs with more stock ownership could exercise more discretion in making decisions. Columns (5) and (6) show the results, and I find that when CEOs have greater ownership of the company, their financial expert effect on book leverage adjustment is also more significant.

Overall, the shreds of empirical evidence are consistent with my hypothesis that financial expert CEOs affect leverage adjustment speed and that those effects are stronger when CEOs are more powerful.

## **1.9 Conclusion**

This paper seeks to contribute to the existing literature by studying CEOs with a finance career background. The study's results deepen and supplement the trade-off theory by indicating how CEOs' characteristics, specifically the financial work experience, impact the speed of moving towards the target leverage ratios. The findings of this research may inspire other researchers to explore the relationship between managers' behaviour and leverage and serve as a useful reference for future research.



**Table 1.1: Variable Definitions**

Panel A: CEO characteristics	
Variable	Definition
CFO Dummy	CEO who has experience in CFO role.
CEO Age	Age of CEO in years.
CEO Tenure	Number of years as CEO in the current position.
Duality Dummy	CEO who is also the chairman or founder of the firm.
Financial Firms Dummy	CEO who has experience in either banking or investment firms (two-digit SIC codes 60, 61 and 62).
Financial expert CEO	CEO who has experience in either banking or investment firms (two-digit SIC codes 60, 61 and 62), or in a CFO role.
Ownership	Ownership is from ExeComp item <i>shown_excl_opts_pct</i> . If missing, then calculate as $100 * \text{shown\_excl\_opts}/\text{csho} * 1000$ .
Ivy League	Dummy variable equals one if the CEO graduated from Ivy League college.
Male Dummy	Dummy variable equals one if the CEO is male.
MBA Dummy	Dummy variable equals one if the CEO has an MBA degree.
PhD Dummy	Dummy variable equals one if the CEO holds a doctoral degree.
Panel B: Firm characteristics	
Variable	Definition
Book Leverage	Ratio of total debt ( $dltt+dlc$ ) to book value of assets ( $at$ ).
Market Leverage	Ratio of total debt ( $dltt + dlc$ ) to market value of assets ( $prcc\_f * csho + dltt + dlc$ ).

Assets	Book value of assets ( <i>at</i> ).
Capex	Ratio of capital expenditures ( <i>capx</i> ) to book value of assets ( <i>at</i> ).
Depreciation	Depreciation expense divided by total assets ( <i>dp/at</i> ).
Dividend Dummy	Dummy variable equals one if the firm pays dividends ( <i>dvc</i> ) and zero otherwise.
Firm Size	Calculated as: $\text{Log}(at)$ .
Firm Age	Number of years between fiscal year ( <i>fyear</i> ) and CRSP listing year ( <i>listyear</i> ).
HP Index	Hadlock and Pierce (2010) index measure as following: $-0.737 * \text{Ln}(at) + 0.043 * \text{Ln}(at) * \text{Ln}(at) - 0.04 * \text{Firm Age}$ .
Industry Median	Median industry Market/Book leverage (excluding the instant firm) and calculated for each year based on the industry grouping in Fama and French (2002).
KZ Index	Kaplan and Zingales (1997) index measured as following: $-1.002(dp + id)/l.at - 39.368(dvc + dvp)/l.at - 1.315che/l.at + 3.139(dltd + dlc)/(dltd + dlc + seq) + 0.283(prc * shrout + at - ceq - txbd)/at$ .
Market to Book ratio (MB)	Calculated as: $(dltd(t) + dlc(t)) + pstkl + prcc\_f * csho/at$ .
Number of Analysts	Number of Analysts from I/B/E/S, calculated as $\text{log}(1 + \text{Number})$ .
Profitability	Ratio of earnings before interest and taxes ( <i>ib + xint + txt</i> ) to book value of assets ( <i>at</i> ).
Financial Deficit	Dummy variable equals one if $\text{Dividend} + \text{Investment} + \Delta \text{Working Capital} - \text{Operating Cash flow} < 0$ .

Percentage Bid-Ask Spread	Calculated as the annual bid-ask spread (from I/B/E/S) to stock price.
Ratio	The percentage of the number of financial companies (with two-digit SIC 60, 61, 62) to the total number of companies in the area (with 2-digit Zip code). Calculated as $\frac{\text{Num. of financial companies}}{\text{Total number of companies}}$
Rated Dummy	Dummy variable equals one for firms with public debt ratings ( <i>splticrm</i> )
R&D	Ratio of research and development expenditures ( <i>xrd</i> ) to book value of assets ( <i>at</i> ).
R&D Dummy	Dummy variable equals one for missing R&D expenses.
Tangibility	Ratio of net property, plant and equipment ( <i>ppent</i> ) to book value of assets ( <i>at</i> ).
WW Index	Whited and Wu (2006) index measured as follows: $(-0.091 * (ib + dp)/at) + (-0.062 * Dividend Dummy) + 0.021 * (dltt/at) + (-0.044 * Ln(at)) + 0.102 * Industry sales growth + (-0.035 * Sales growth)$

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**Table 1.2: Summary Statistics**

The sample consists of Compustat S&P 1500 firms for which CEO data are available from ExecuComp in 1992-2017 period. All 2,631 firms have at least two years' consecutive records. All variables except market leverage are winsorized at 1% and 99% values. The sample includes 29,618 firm-year observations on 5,478 CEOs.

Variable definitions are as defined in Table 1. \*\*\*p<0.001, \*\*p<0.05, \*p<0.1.

Panel A: Financial expert CEOs										
	Mean	p25	Median	p75	SD	N				
CFO Dummy	0.123	0	0	0	0.329	29,618				
Financial Firms Dummy	0.232	0	0	0	0.422	29,618				
Financial Expert CEO	0.319	0	0	1	0.466	29,618				
Panel B: CEO characteristics										
	Mean	p25	Median	p75	SD	N	Financial Expert	Non Financial Expert	Diff.	S.E.
CEO Age	56.244	51	56	61	8.250	29,577	55.884	56.412	-0.529***	0.103
CEO Tenure	7.224	2	5	10	7.112	27,913	6.685	7.480		0.091
CEO Ownership	2.222	0.100	0.348	1.300					-0.794***	
					5.299	28,875	1.586	2.519		0.067
Duality Dummy	0.560	0	1	1	0.496	29,618	0.585	0.553	-0.933***	0.006
Male Dummy	0.977	1	1	1	0.150	29,618	0.973	0.979	0.032***	0.006
									-0.006***	0.00
Panel C: Firm Characteristics										
	Mean	p25	Median	p75	SD	N	Financial Expert	Non Financial Expert	Diff.	S.E.
Book Leverage	0.235	0.079	0.220	0.344	0.189	29,618	0.258	0.225	0.033***	0.002
Market Leverage	0.207	0.045	0.158	0.305	0.201	29,618	0.234	0.194	0.039***	0.002
Assets	5912.499	504.388	1398.728	4448.000	13743.051	29,618	8225.78	4828.241	3397.538***	170.141
Capex	0.056	0.021	0.039	0.070	0.053	29,481	0.056	0.056	0.000	0.001
Depreciation	0.045	0.027	0.040	0.056	0.027	29,618	0.045	0.045	0.000	0.003
Deficit Dummy	0.211	0	0	0	0.415	29,405	0.221	0.210	0.094***	0.006
Firm Size	7.361	6.223	7.243	8.400	1.588	29,618	7.705	7.200	0.505***	0.020
Firm Age	20.47	9.000	18.000	31.000	13.85	28,961	22.553	19.513	-3.040***	0.174
Industry Median (Book)	0.203	0.135	0.206	0.267	0.097	29,618	0.214	0.198	0.016***	0.001
Industry Median (Market)	0.160	0.079	0.154	0.222	0.101	29,618	0.170	0.154	0.017***	0.001
MB	1.746	0.933	1.336	2.042	1.346	29,618	1.642	1.791	-0.149***	0.017
Number of Analysts	4.540	4.043	4.644	5.198	0.882	27,164	4.633	4.497	0.136***	0.011
Bid-Ask Spread	0.007	0.001	0.002	0.009	0.010	28,492	0.006	0.007	-0.001***	0.000
Profitability	0.078	0.041	0.090	0.141	0.130	29,618	0.082	0.076	0.006***	0.002
Rated Dummy	0.498	0.000	0.000	1.000	0.500	29,618	0.582	0.458	0.124***	0.006
R&D	0.033	0.000	0.003	0.040	0.058	29,618	0.025	0.036	-0.011***	0.001
R&D Dummy	0.360	0.000	0.000	1.000	0.480	29,618	0.406	0.338	0.068***	0.006
Tangibility	0.277	0.105	0.212	0.392	0.221	29,618	0.295	0.269	0.027***	0.003
KZ Index	396.9	174.4	293.6	484.9	387.7	24,025	373.834	407.588	33.754***	5.475
HP Index	-3.805	-4.290	-3.717	-3.317	0.622	28,961	-3.911	-3.756	-0.155***	0.008
WW Index	-0.357	-0.418	-0.355	-0.295	0.088	26,521	-0.376	-0.348	-0.028***	0.001

**Table 1.3: Correlation Matrix**

	Financial Expert	CFO	Book Leverage	Market Leverage	Firm Age	Profitability	MB	Depreciation	Firm Size	Tangibility	R&D	R&D Dummy	Rated Dummy	Ind_Median (Book)	Ind_Median (Market)
Financial Expert	1														
CFO	0.548***	1													
Book Leverage	0.081***	0.054***	1												
Market Leverage	0.091***	0.064***	0.776***	1											
Firm Age	0.102***	0.037***	0.043***	0.059***	1										
Profitability	0.021***	-0.020***	-0.127***	-0.287***	0.075***	1									
MB	-0.052***	-0.032***	-0.156***	-0.441***	-0.144***	0.309***	1								
Depreciation	-0.008	0.002	0.010***	0.109***	-0.062***	-0.200***	-0.078***	1							
Firm Size	0.148***	0.036***	0.262***	0.238***	0.367***	0.144***	-0.168***	-0.085***	1						
Tangibility	0.056***	0.030***	0.197***	0.239***	0.035***	0.012*	-0.160***	0.534***	0.140***	1					
R&D	-0.091***	-0.030***	-0.200***	-0.270***	-0.121***	-0.285***	0.315***	-0.005	-0.256***	-0.299***	1				
R&D Dummy	0.067***	0.058***	0.161***	0.206***	-0.022***	0.030***	-0.151***	0.108***	0.053***	0.264***	-0.420***	1			
Rated Dummy	0.115***	0.052***	0.355***	0.300***	0.275***	0.051	-0.191	0.007	0.055	0.170	-0.227	0.000	1		
Ind_Median(Book)	0.076***	0.049***	0.382***	0.363***	0.109***	0.030***	-0.199***	0.099***	0.203***	0.356***	-0.404***	0.281***	0.235***	1	
Ind_Median(Market)	0.078***	0.041***	0.333***	0.429***	0.096***	-0.019***	-0.303***	0.137***	0.186***	0.380***	-0.422***	0.326***	0.229***	0.865***	1

\*p &lt; 0.1, \*\* p &lt; 0.05, \*\*\* p &lt; 0.01

**Table 1.4: Speed of Adjustment Regression Results**

This table tests the impact of financial expert CEOs on SOA. The dependent variable in regression (1) - (6) is the ratio of leverage. Columns (1) and (4) show the results for the standard partial adjustment model without the interaction item. The regression model in columns (2)-(3) and (5)-(6) is as follows:

$$Lev_{i,t+1} = (1 - \lambda_0)Lev_{i,t} - \gamma Financialexpert_{i,t} * Lev_{i,t} + \gamma \beta Financialexpert_{i,t} * X_{i,t} + \lambda_0 \beta X_{i,t} + v_{i,t+1} + \epsilon_{i,t+1}$$

where  $Financialexpert_{i,t}$  is the dummy variable, if the CEO is defined as a financial expert in year  $t$ , then it equals one. Columns (3) and (6) report the results of estimating for only the middle 50% of observed leverage values. Half-life is defined as the time (in years) that it takes a firm to adjust back to the target leverage after a one-unit shock to  $\epsilon$ ,  $\ln(0.5)/\ln(1 - \lambda)$ . Variables are winsorized at 1% and 99% values and are defined as in Table (1.1). The T-statistic is shown in parentheses. \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01.

	(1)	(2)	(3)	(4)	(5)	(6)
		<i>BookLev<sub>i,t+1</sub></i>			<i>MarketLev<sub>i,t+1</sub></i>	
<i>Lev<sub>i,t</sub></i>	0.789*** (138.52)	0.823*** (124.87)	0.866*** (76.52)	0.753*** (114.90)	0.792*** (104.15)	0.855*** (64.59)
<i>Financialexpert<sub>i,t</sub> * Lev<sub>i,t</sub></i>		-0.122*** (-12.52)	-0.184*** (-9.55)		-0.141*** (-12.75)	-0.161*** (-7.10)
<i>Profitability<sub>i,t</sub></i>	0.014** (2.15)	0.018** (2.36)	0.056*** (5.20)	0.040*** (5.06)	0.055*** (5.96)	0.091*** (7.71)
<i>MB<sub>i,t</sub></i>	-0.001 (-1.54)	-0.000 (-0.51)	-0.003** (-2.30)	-0.002* (-1.85)	-0.000 (-0.49)	0.010*** (7.02)
<i>Depreciation<sub>i,t</sub></i>	0.110** (2.38)	0.078 (1.52)	0.061 (0.92)	-0.104* (-1.95)	-0.134** (-2.28)	-0.010 (-0.14)
<i>Firm Size<sub>i,t</sub></i>	0.007*** (5.88)	0.008*** (6.07)	0.008*** (4.88)	0.020*** (13.95)	0.019*** (13.31)	0.018*** (10.71)
<i>Tangibility<sub>i,t</sub></i>	0.018* (1.87)	0.029*** (2.86)	0.016 (1.29)	0.042*** (3.85)	0.054*** (4.56)	0.019 (1.40)
<i>R&amp;D Dummy<sub>i,t</sub></i>	0.002 (0.45)	-0.004 (-0.96)	0.001 (0.23)	-0.000 (-0.05)	-0.006 (-1.41)	-0.006 (-1.24)
<i>R&amp;D<sub>i,t</sub></i>	-0.052* (-1.77)	-0.079** (-2.56)	-0.153*** (-3.29)	-0.041 (-1.21)	-0.050 (-1.40)	-0.079** (-1.70)
<i>Industry Median<sub>i,t</sub></i>	0.029* (1.84)	0.012 (0.70)	-0.031 (-1.51)	0.009 (0.59)	-0.015 (-0.91)	-0.033* (-1.70)
<i>Rated Dummy<sub>i,t</sub></i>	-0.006** (-2.50)	0.010*** (3.64)	-0.013* (-4.27)	-0.003 (-1.11)	-0.006* (-1.94)	-0.010*** (-2.76)
<i>Profitability<sub>i,t</sub>*Financialexpert<sub>i,t</sub></i>		-0.011 (-0.82)	-0.035* (-1.55)		-0.054*** (-4.11)	-0.071*** (-3.38)
<i>MB<sub>i,t</sub>*Financialexpert<sub>i,t</sub></i>		-0.003* (-1.55)	0.000 (0.00)		-0.004** (-1.91)	-0.005** (-2.26)
<i>Depreciation<sub>i,t</sub>*Financialexpert<sub>i,t</sub></i>		0.090 (1.91)	0.105 (2.35)		0.094 (2.42)	0.082 (1.91)
<i>Firm Size<sub>i,t</sub>*Financialexpert<sub>i,t</sub></i>		(1.32) 0.001	(1.21) -0.000		(1.19) 0.002***	(0.86) 0.002*
<i>Tangibility<sub>i,t</sub>*Financialexpert<sub>i,t</sub></i>		(1.06) -0.028***	(-0.01) -0.016		(2.85) -0.028**	(1.79) -0.014
<i>R&amp;D Dummy<sub>i,t</sub>*Financialexpert<sub>i,t</sub></i>		(-2.82) 0.017***	(-1.37) 0.012***		(-2.48) 0.017***	(-1.07) 0.013**
<i>R&amp;D<sub>i,t</sub>*Financialexpert<sub>i,t</sub></i>		(4.31) 0.113***	(2.67) 0.126**		(3.77) 0.039	(2.57) 0.131**
<i>Industry Median<sub>i,t</sub>*Financialexpert<sub>i,t</sub></i>		(2.82) 0.071***	(2.28) 0.114***		(0.84) 0.084***	(2.20) 0.082***
<i>Rated Dummy<sub>i,t</sub>*Financialexpert<sub>i,t</sub></i>		(3.71) 0.012***	(4.78) 0.016***		(3.96) 0.010**	(3.30) 0.013**
		(3.14)	(3.50)		(2.18)	(2.46)
N	26536	26536	13494	26536	26536	13499
Year fixed effects	YES	YES	YES	YES	YES	YES
Firm fixed effects	YES	YES	YES	YES	YES	YES
Speed( $\lambda_0$ )	0.211	0.177	0.134	0.247	0.208	0.145
Adjusted Speed( $\lambda_0 + \gamma$ )		0.299	0.318		0.349	0.306
$\Delta$ AdjustmentSpeed%		68.927	137.313		67.788	111.034
Half-Life	2.925	3.558	4.818	2.443	2.972	4.425
Adjusted Half-Life		1.951	1.811		1.615	1.898

**Table 1.5: Robustness Test**

This table tests the impact of financial expert CEOs on SOA using the SYS-GMM and FD-GMM estimators. The leverage ratio is the dependent variable in regressions (1) - (5). In column (5), the leverage refers to active adjustment book leverage. The regression model is as follows:

$$Lev_{i,t+1} = (1 - \lambda_0)Lev_{i,t} - \gamma Financialexpert_{i,t} * Lev_{i,t} + \gamma\beta Financialexpert_{i,t} * X_{i,t} + \lambda_0\beta X_{i,t} + v_{i,t+1} + \epsilon_{i,t+1}$$

where  $Financialexpert_{i,t}$  is the dummy variable, if the CEO is defined as a financial expert in year  $t$ , then equals one. Half-life is defined as the time (in years) that it takes a firm to adjust back to the target leverage after a one-unit shock to  $\epsilon$ ,  $\ln(0.5)/\ln(1 - \lambda)$ . T-statistic results are shown in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

	(1)	(2)	(3)	(4)	(5)
	<i>BookLev<sub>i,t+1</sub></i>		<i>MarketLev<sub>i,t+1</sub></i>		<i>ActiveBookLev<sub>i,t+1</sub></i>
	SYS-GMM	FD-GMM	SYS-GMM	FD-GMM	DPF
<i>Lev<sub>i,t</sub></i>	0.896*** (41.47)	0.683*** (36.81)	0.863*** (39.88)	0.608*** (33.94)	0.793*** (110.88)
<i>Finacialexpert<sub>i,t</sub>*Lev<sub>i,t</sub></i>	-0.384*** (-10.89)	-0.194*** (-7.66)	-0.490*** (-14.00)	-0.226*** (-8.88)	-0.113*** (-10.60)
N	26536	26536	26536	26536	24012
<i>X<sub>i,t</sub></i> control	YES	YES	YES	YES	YES
<i>Finacialexpert<sub>i,t</sub>*X<sub>i,t</sub></i>	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES
Firm fixed effects	YES	YES	YES	YES	YES
Speed( $\lambda_0$ )	0.104	0.317	0.137	0.392	0.207
Adjusted Speed( $\lambda_0 + \gamma$ )	0.488	0.511	0.627	0.618	0.320
Half-Life	6.312	1.818	4.704	1.393	2.989
Adjusted Half-Life	1.035	0.969	0.703	0.720	1.797

## Table 1.6: Controlling for Deviation Level and Cash Flow Conditions

This table further includes deviation level and cash flow conditions as control variables. The dependent variable in the regression is the leverage ratio. The regression model is as follows:

$$\begin{aligned} Lev_{i,t+1} = & (1 - \lambda_0)Lev_{it} - \gamma Financialexpert_{i,t} * Lev_{i,t} \\ & + \delta_1 Over * Lev_{i,t} + \delta_2 Deficit * Lev_{i,t} + \gamma Financialexpert_{i,t} * X_{i,t} \\ & + \delta_1 \beta Over * X_{i,t} + \delta_2 \beta Deficit * X_{i,t} + \lambda_0 \beta X_{i,t} + v_{i,t+1} + \epsilon_{i,t+1} \end{aligned}$$

where *Over(Deficit)* is the dummy variable, if the firm is over-levered (cash flow deficit), then *Over(Deficit)* equals one. Half-life is defined as the time (in years) that it takes a firm to adjust back to the target leverage after a one-unit shock to  $\epsilon$ , calculated as  $\ln(0.5)/\ln(1 - \lambda)$ . T-statistics show in parentheses. \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01.

	(1) <i>BookLev<sub>i,t+1</sub></i>	(2) <i>MarketLev<sub>i,t+1</sub></i>
<i>Lev<sub>i,t</sub></i>	0.890*** (77.85)	0.886*** (63.32)
<i>Financialexpert<sub>i,t</sub> * Lev<sub>i,t</sub></i>	-0.074*** (-7.98)	-0.060*** (-5.76)
<i>Over * Lev<sub>i,t</sub></i>	-0.127*** (-8.74)	-0.237*** (-13.99)
<i>Deficit * Lev<sub>i,t</sub></i>	-0.065*** (-8.17)	-0.030*** (-3.37)
N	26344	26344
<i>X<sub>i,t</sub></i> controls	YES	YES
<i>Financialexpert<sub>i,t</sub> * X<sub>i,t</sub></i> controls	YES	YES
<i>Over<sub>i,t</sub> * X<sub>i,t</sub></i> controls	YES	YES
<i>Deficit<sub>i,t</sub> * X<sub>i,t</sub></i> controls	YES	YES
Year fixed effects	YES	YES
Firm fixed effects	YES	YES
Speed( $\lambda_0$ )	0.110	0.114
Adjusted Speed ( $\lambda_0 + \gamma$ )	0.184	0.174
Adjusted Speed ( $\lambda_0 + \gamma + \delta_1 + \delta_2$ )	0.376	0.441
Half-Life	5.948	5.727
Adjusted Half-Life	1.470	1.192



**Table 1.7: Sample “Exogenous” Turnover**

This table interprets the specification, that the sample is restricted to firms headed by CEOs who are succeeding a CEO who reached retirement age (65 years old). Column (1) shows the results for book leverage while (2) shows the results for market leverage. Half-life is defined as the time (in years) that it takes a firm to adjust back to the target leverage after a one-unit shock to  $\epsilon$ ,  $\ln(0.5)/\ln(1 - \lambda)$ . T-statistic results are shown in parentheses. \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01.

	(1)	(2)
	<i>BookLev<sub>i,t+1</sub></i>	<i>MarketLev<sub>i,t+1</sub></i>
<i>Lev<sub>i,t</sub></i>	0.814*** (47.89)	0.772*** (35.33)
<i>Financialexpert<sub>i,t</sub></i> $\Delta$ <i>Lev<sub>i,t</sub></i>	-0.176*** (-7.21)	-0.213*** (-6.78)
N	4702	4702
<i>Lev<sub>i,t</sub></i> control	YES	YES
<i>Financialexpert<sub>i,t</sub></i> $\Delta$ <i>Lev<sub>i,t</sub></i> control	YES	YES
Year fixed effects	YES	YES
Firm fixed effects	YES	YES
Speed ( $\lambda_0$ )	0.186	0.228
Adjusted Speed ( $\lambda_0 + \gamma$ )	0.362	0.441
Half-Life	3.368	2.679
Adjusted Half-Life	1.542	1.192

**Table 1.8: Propensity Score Modelling**

This table presents the estimation results of the probability of hiring financial expert CEOs and the difference in means of firm characteristics between the financial expert CEOs-firms and matched non-financial expert CEOs-firms. Panel A provides the estimation results of the probability of hiring financial expert CEOs on its determinants using a probit model. The dependent variable,  $Finacnailexpert_{i,t+1}$ , equals one if the firm's CEO is a financial expert for the given year and zero otherwise. In panel B, I examine the difference in means of firm characteristics between the financial expert CEOs-firms and matched non-financial expert CEOs-firms. I use the "closest one" replacement matched sample. Columns (1) and (3) show the results for book leverage while (2) and (4) show the results for market leverage.

Panel A: Propensity score modeling			Panel B: Difference in means after matching		
	(1)	(2)		(3)	(4)
	$Finacnailexpert_{i,t+1}$	$Finacnailexpert_{i,t+1}$			
Firm Age	0.007*** (9.36)	0.007*** (9.27)	Firm Age	-0.132 (-0.60)	-0.095 (-0.43)
Leverage	0.297*** (5.68)	0.401*** (7.32)	Leverage	0.002 (0.73)	0.004 (1.22)
Firm Size	0.083*** (10.87)	0.082*** (10.73)	Firm Size	0.009 (0.36)	0.001 (0.06)
Capex	-0.597** (-3.05)	-0.535*** (-2.72)	Capex	-0.001 (-0.61)	0.000 (0.21)
Dividend Dummy	0.051** (2.49)	0.061*** (3.01)	Dividend Dummy	0.003 (0.39)	-0.003 (-0.33)
Rated Dummy	0.006 (0.24)	0.002 (0.08)	Rated Dummy	-0.001 (-0.19)	-0.004 (-0.52)
Profitability	-0.010 (-0.13)	0.073 (0.87)	Profitability	-0.000 (-0.17)	0.002 (1.12)
Market-Book ratio	-0.006 (-0.74)	0.008 (1.00)	Market-Book ratio	0.010 (0.53)	0.006 (0.33)
R&D	-0.230 (-1.03)	-0.126 (-0.56)	R&D	0.000 (0.29)	-0.000 (-0.44)
N	25787	25787	N	14140	14119
Industry fixed effects	YES	YES			
Year fixed effects	YES	YES			

**Table 1.9: Propensity Score Matched Sample**

This table reports the estimates of the effect of hiring a financial expert CEO on the firm's speed of leverage adjustment in the sample including the firms with financial expert CEOs and their propensity score matched firms with non-financial expert CEOs. Column (1) shows the results for book leverage while (2) shows the results for market leverage. Half-life is defined as the time (in years) that it takes a firm to adjust back to the target leverage after a one-unit shock to  $\epsilon$ ,  $\ln(0.5)/\ln(1 - \lambda)$ . T-statistic results are shown in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

	(1)	(2)
	Full sample	Full sample
$Lev_{i,t}$	0.853*** (93.67)	0.824*** (78.56)
$Financialexpert_{i,t} \quad \Delta Lev_{i,t}$	-0.145*** (-12.65)	-0.175*** (-13.19)
N	14140	14119
$X_{i,t}$	YES	YES
$Financialexpert_{i,t} \quad \Delta Lev_{i,t} \text{control}$	YES	YES
Year fixed effects	YES	YES
Firm fixed effects	YES	YES
Speed $\lambda_0$	0.147	0.176
Adjusted Speed ( $\lambda_0 + \gamma$ )	0.292	0.351
$\Delta AdjustedSpeed\%$	98.639	99.432
Half-Life	4.360	3.581
Adjusted Half-Life	2.007	1.603

**Table 1.10: Instrumental Variable Approach**

This table reports the regression results of the two-stage residual inclusion estimation approach. The instrumental variable is *Ratio*, calculated by  $\frac{Num.offinancialcompanies}{Totalnumberofcompanies}$ . It measures the percentage of the number of financial companies (with two-digit SIC 60-62) to the total number of companies in the area (2-digit ZIP code). Columns (1)-(3) show the first-stage results while columns (2)–(4) show the results for second-stage results. Variables are winsorized at 1% and 99%. T-statistic results are shown in parentheses. \* p <0.1, \*\* p <0.05, \*\*\* p <0.01.

Dep.Var	(1)	(2)	(3)	(4)
	First Stage	Second Stage	First Stage	Second Stage
	<i>Financialexpert<sub>i,t+1</sub></i>	<i>BookLev<sub>i,t+1</sub></i>	<i>Financialexpert<sub>i,t+1</sub></i>	<i>MarketLev<sub>i,t+1</sub></i>
<i>Ratio</i>	0.179*** (5.48)		0.178*** (5.44)	
<i>Lev<sub>i,t</sub></i>	0.087*** (4.86)	0.869*** (125.81)	0.131*** (6.96)	0.803*** (99.02)
<i>Financialexpert<sub>i,t</sub> * Lev<sub>i,t</sub></i>		-0.034*** (-3.84)		-0.031*** (-3.02)
First-stage Residual		0.001 (0.11)		0.018* (1.66)
<i>Profitability<sub>i,t</sub></i>	0.010 (0.33)	-0.000 (-0.05)	0.043 (1.44)	0.013 (1.42)
<i>MB<sub>i,t</sub></i>	-0.005* (-1.82)	-0.001* (-1.76)	-0.000 (-0.18)	-0.006*** (-6.20)
<i>Depreciation<sub>i,t</sub></i>	-0.62 (-1.12)	0.087** (2.07)	-0.113 (-0.78)	-0.089* (-1.75)
<i>Firm Size<sub>i,t</sub></i>	0.035*** (13.760)	0.006*** (5.97)	0.035*** (13.76)	0.008*** (6.52)
<i>Tangibility<sub>i,t</sub></i>	-0.019 (-0.84)	0.015** (2.24)	-0.027 (-1.19)	0.040*** (4.73)
<i>R&amp;D Dummy<sub>i,t</sub></i>	0.004 (0.44)	0.004 (1.62)	0.002 (0.27)	0.007** (2.35)
<i>R&amp;D<sub>i,t</sub></i>	-0.059 (-0.72)	-0.059*** (-2.61)	-0.030 (-0.36)	-0.092*** (-3.33)
<i>Industry Median<sub>i,t</sub></i>	0.019 (0.25)	0.006 (0.39)	-0.035 (-0.56)	-0.003 (-0.21)
<i>Rated Dummy<sub>i,t</sub></i>	0.013* (1.68)	0.008*** (3.57)	0.011 (1.35)	0.011*** (4.04)
<i>Profitability<sub>i,t</sub>*Financialexpert<sub>i,t</sub></i>		-0.002 (-0.18)		-0.011 (-0.66)
<i>MB<sub>i,t</sub>*Financialexpert<sub>i,t</sub></i>		-0.001 (-0.70)		-0.002 (-0.99)
<i>Depreciation<sub>i,t</sub>*Financialexpert<sub>i,t</sub></i>		0.018 (0.28)		-0.015 (-0.20)
<i>Firm Size<sub>i,t</sub>*Financialexpert<sub>i,t</sub></i>		0.000 (0.07)		-0.001 (-0.93)
<i>Tangibility<sub>i,t</sub>*Financialexpert<sub>i,t</sub></i>		-0.013 (-1.57)		-0.020** (-1.99)
<i>R&amp;D Dummy<sub>i,t</sub>*Financialexpert<sub>i,t</sub></i>		0.008** (2.45)		0.007* (1.72)
<i>R&amp;D<sub>i,t</sub>*Financialexpert<sub>i,t</sub></i>		0.095** (2.56)		0.022 (0.49)
<i>Industry Median<sub>i,t</sub>*Financialexpert<sub>i,t</sub></i>		0.023 (1.31)		0.018 (0.89)
<i>Rated Dummy<sub>i,t</sub>*Financialexpert<sub>i,t</sub></i>		0.002 (0.52)		0.006 (1.25)
N	25982	23230	25982	23230
Industry fixed effects	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Speed( $\lambda_0$ )		0.131		0.197
Adjusted Speed ( $\lambda_0 + \gamma$ )		0.165		0.228
$\Delta$ Adjusted Speed%		25.954		15.736
Half-Life		4.937		3.159
Adjusted Half-Life		3.844		2.679

**Table 1.11: Financial Expert CEOs' Impact on Over- or Under-levered Firms**

This table tests financial expert CEOs' impact on SOA among over- or under-levered firms. The dependent variable in regressions (1) – (2) is the leverage ratio. The regression model is as follows:

$$\begin{aligned} Lev_{i,t+1} = & (1 - \lambda_0)Lev_{it} - \gamma_0 Financialexpert_{i,t} * Lev_{i,t} - \delta Over * Financialexpert_{i,t} * Lev_{i,t} \\ & + \gamma_0 \beta Financialexpert_{i,t} * X_{i,t} + \delta \beta Over * Financialexpert * X_{i,t} \\ & + \lambda_0 \beta X_{i,t} + v_{i,t+1} + \epsilon_{i,t+1} \end{aligned}$$

where *Over* is the dummy variable, if  $Lev_{i,t+1} - Lev_{i,t} < 0$ , then *Over* equals one. Control variables results are not displayed in the table for brevity. Half-life is defined as the time (in years) that it takes a firm to adjust back to the target leverage after a one-unit shock to  $\epsilon$ ,  $\ln(0.5)/\ln(1 - \lambda)$ . T-statistic is shown in parentheses. \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01.

	(1)	(2)
	Bookleverage	Marketleverage
	Full	FULL
<i>Lev<sub>it</sub></i>	0.826*** (124.61)	0.798*** (104.75)
<i>Financialexpert<sub>i,t</sub> * Lev<sub>it</sub></i>	-0.112*** (-5.88)	-0.083*** (-3.76)
<i>Over * Financialexpert<sub>i,t</sub> * Lev<sub>it</sub></i>	-0.109*** (-2.93)	-0.190*** (-4.37)
N	26536	26536
<i>X<sub>it</sub></i> controls	YES	YES
<i>Financialexpert<sub>i,t</sub> * Lev<sub>it</sub></i> controls	YES	YES
<i>Over * Financialexpert<sub>i,t</sub> * Lev<sub>it</sub></i> controls	YES	YES
Year fixed effects	YES	YES
Firm fixed effects	YES	YES
Speed ( $\lambda_0$ )	0.174	0.202
Adjusted Speed ( $\lambda_0 + \gamma_0 + \delta$ )	0.395	0.475
$\Delta$ Adjusted Speed%	127.000	135.100
Half-Life	3.626	3.072
Adjusted Half-Life	1.379	1.076

**Table 1.12: Financial Constraints and Financial Expert CEOs' Impact**

This table tests financial expert CEOs' impact on SOA among high and low financial constrained firms. The dependent variable in the regression is the leverage ratio. Panels A and B show the results separately for book and market leverage. Columns (1) - (5) show the results for full samples using five different financial constraint measurements. The regression model is as follows:

$$\begin{aligned} Lev_{i,t+1} = & (1 - \lambda_0)Lev_{it} - \gamma_0 Financialexpert_{i,t} * Lev_{i,t} - \delta High * Financialexpert_{i,t} * Lev_{i,t} \\ & + \gamma_0 \beta Financialexpert_{i,t} * X_{i,t} + \delta \beta High * Financialexpert * X_{i,t} \\ & + \lambda_0 \beta X_{i,t} + v_{i,t+1} + \epsilon_{i,t+1} \end{aligned}$$

where *High* is the dummy variable, defined as different financial constraint measurements. Control variable results are not displayed in the table for brevity. Half-life is defined as the time (in years) that it takes a firm to adjust back to the target leverage after a one-unit shock to ,  $ln(0.5)/ln(1 - \lambda)$ . Variables are winsorized at 1% and 99% values and are defined as in Table 1. T-statistic results are in parentheses. \* p <0.1, \*\* p <0.05, \*\*\* p <0.01.

Panel A: Book Leverage					
	(1)	(2)	(3)	(4)	(5)
	KZ	WW	HP	Dividend	Size
<i>Lev<sub>i,t</sub></i>	0.823*** (124.60)	0.884*** (114.71)	0.823*** (123.59)	0.823*** (124.86)	0.823*** (124.36)
<i>Financialexpert<sub>i,t</sub> * Lev<sub>i,t</sub></i>	-0.109*** (-8.64)	-0.119*** (-9.21)	-0.069*** (-5.53)	-0.086*** (-6.60)	-0.104*** (-8.54)
<i>High * Financialexpert<sub>i,t</sub> * Lev<sub>i,t</sub></i>	-0.026* (-1.81)	-0.085*** (-5.39)	-0.099*** (-6.32)	-0.061*** (-3.95)	-0.042*** (-2.70)
N	21089	23706	25940	26536	26536
<i>X<sub>i,t</sub> control</i>	YES	YES	YES	YES	YES
<i>Financialexpert<sub>i,t</sub> * Lev<sub>i,t</sub> control</i>	YES	YES	YES	YES	YES
<i>High * Financialexpert<sub>i,t</sub> * Lev<sub>i,t</sub> control</i>	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES
Firm fixed effects	YES	YES	YES	YES	YES
Speed ( $\lambda_0$ )	0.177	0.116	0.177	0.177	0.177
Adjusted Speed ( $\lambda_0 + \gamma_0 + \delta$ )	0.312	0.320	0.345	0.324	0.323
Half-Life	3.558	5.622	3.558	3.558	3.558
Adjusted Half-Life	1.854	1.797	1.638	1.770	1.777
Panel B: Market Leverage					
	(1)	(2)	(3)	(4)	(5)
	KZ	WW	HP	Dividend	Size
<i>Lev<sub>i,t</sub></i>	0.793*** (103.16)	0.845*** (96.37)	0.797*** (102.84)	0.794*** (104.19)	0.796*** (103.77)
<i>Financialexpert<sub>i,t</sub> * Lev<sub>i,t</sub></i>	-0.133*** (-12.10)	-0.105*** (-7.30)	-0.080*** (-5.83)	-0.093*** (-6.22)	-0.115*** (-8.55)
<i>High * Financialexpert<sub>i,t</sub> * Lev<sub>i,t</sub></i>	-0.023** (-2.20)	-0.147*** (-8.12)	-0.133*** (-7.46)	-0.085*** (-4.81)	-0.071*** (-3.98)
N	21089	23706	25940	26536	26536
<i>X<sub>i,t</sub> control</i>	YES	YES	YES	YES	YES
<i>Financialexpert<sub>i,t</sub> * Lev<sub>i,t</sub> control</i>	YES	YES	YES	YES	YES
<i>High * Financialexpert<sub>i,t</sub> * Lev<sub>i,t</sub> control</i>	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES
Firm fixed effects	YES	YES	YES	YES	YES
Speed ( $\lambda_0$ )	0.207	0.155	0.203	0.206	0.204
Adjusted Speed ( $\lambda_0 + \gamma_0 + \delta$ )	0.363	0.407	0.416	0.384	0.390
Half-Life	2.989	4.116	3.055	3.005	3.038
Adjusted Half-Life	1.537	1.326	1.289	1.431	1.402

**Table 1.13: Information Asymmetry and Financial Expert CEOs' Impact**

This table tests the impact of financial expert CEOs on SOA among high- or low-information asymmetry. The dependent variable in regression is the ratio of leverage. The regression model in columns (1) and (4) is as follows:

$$\begin{aligned} Lev_{i,t+1} = & (1 - \lambda_0)Lev_{it} - \gamma_0 Financialexpert_{i,t} * Lev_{i,t} - \delta High * Financialexpert_{i,t} * Lev_{i,t} \\ & + \gamma_0 \beta Financialexpert_{i,t} * X_{i,t} + \delta \beta High * Financialexpert * X_{i,t} \\ & + \lambda_0 \beta X_{i,t} + \nu_{i,t+1} + \epsilon_{i,t+1} \end{aligned}$$

where *High* is the dummy variable, which is measured using the firms' number of analysts or the percentage bid-ask spread. If the firm's information asymmetry is high, then *High* equals one. Control variables results are not displayed in the table for brevity. Half-life is defined as the time (in years) that it takes a firm to adjust back to the target leverage after a one-unit shock to  $\epsilon$ ,  $\ln(0.5)/\ln(1 - \lambda)$ . T-statistic is shown in parentheses. \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01.

	(1)	(2)	(3)	(4)
	Number of Analysts		Bid-Ask Spread	
<i>Lev<sub>i,t</sub></i>	<i>BookLev<sub>i,t+1</sub></i>	<i>MarketLev<sub>i,t+1</sub></i>	<i>BookLev<sub>i,t+1</sub></i>	<i>MarketLev<sub>i,t+1</sub></i>
	0.833***	0.807***	0.823***	0.794***
	(122.32)	(99.85)	(124.82)	(104.16)
<i>Financialexpert<sub>i,t</sub> * Lev<sub>i,t</sub></i>	-0.086***	-0.092***	-0.103***	-0.110***
	(-6.85)	(-6.25)	(-8.17)	(-7.14)
<i>High * Financialexpert<sub>i,t</sub> * Lev<sub>i,t</sub></i>	-0.045***	-0.083***	-0.037***	-0.057***
	(-2.94)	(-4.67)	(-2.59)	(-3.37)
N	24366	24366	25522	25522
<i>X<sub>i,t</sub></i> control	YES	YES	YES	YES
<i>Financialexpert<sub>i,t</sub> * Lev<sub>i,t</sub></i> control	YES	YES	YES	YES
<i>High * Financialexpert<sub>i,t</sub> * Lev<sub>i,t</sub></i> control	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Firm fixed effects	YES	YES	YES	YES
Speed ( $\lambda_0$ )	0.167	0.193	0.177	0.206
Adjusted Speed ( $\lambda_0 + \gamma_0 + \delta$ )	0.298	0.368	0.317	0.373
Half-Life	3.793	3.232	3.558	3.005
Adjusted Half-Life	1.959	1.511	1.818	1.485

**Table 1.14: Duality, Tenure, Ownership and Financial Expert CEOs**

This table tests the impact of powerful financial expert CEOs on SOA. The dependent variable in regressions (1) -(6) is the leverage ratio. The regression model is as follows:

$$\begin{aligned}
 Lev_{i,t+1} = & (1 - \lambda_0)Lev_{it} - \gamma_0 Financialexpert_{i,t} * Lev_{i,t} - \delta Powerful * Financialexpert_{i,t} * Lev_{i,t} \\
 & + \gamma_0 \beta Financialexpert_{i,t} * X_{i,t} + \delta \beta Powerful * Financialexpert * X_{i,t} \\
 & + \lambda_0 \beta X_{i,t} + v_{i,t+1} + \epsilon_{i,t+1}
 \end{aligned}$$

where *Powerful* refers to different CEO power indicators, namely *Duality*, *Long\_Tenure* and *High\_Ownership*. Other control variables' results are not displayed in the table for brevity. Half-life is defined as the time (in years) that it takes a firm to adjust back to the target leverage after a one-unit shock to  $\epsilon$ ,  $ln(0.5)/ln(1 - \lambda)$ .

T-statistic values are in parentheses. \* p <0.1, \*\* p <0.05, \*\*\* p <0.01.

Proxy of CEO's Power	(1)	(2)	(3)	(4)	(5)	(6)
	Duality		Long_Tenure		CEO's High_Ownership	
<i>Lev<sub>i,t</sub></i>	BookLev 0.822*** (124.78)	MarketLev 0.793*** (104.01)	BookLev 0.823*** (124.82)	MarketLev 0.793*** (104.00)	BookLev 0.824*** (124.70)	MarketLev 0.794*** (103.85)
<i>Financialexpert<sub>i,t</sub> * Lev<sub>i,t</sub></i>	-0.106*** (-8.52)	-0.128*** (-8.96)	-0.111*** (-9.96)	-0.139*** (-11.13)	-0.112*** (-9.52)	-0.137*** (-10.23)
<i>Powerful * Financialexpert<sub>i,t</sub> * Lev<sub>i,t</sub></i>	-0.031** (-2.10)	-0.024 (-1.43)	-0.030** (-2.17)	-0.006 (-0.37)	-0.025* (-1.72)	-0.012 (-0.75)
N	26536	26536	24975	24975	25882	25882
<i>X<sub>i,t</sub></i> control	YES	YES	YES	YES	YES	YES
<i>Financialexpert<sub>i,t</sub> * Lev<sub>i,t</sub></i> control	YES	YES	YES	YES	YES	YES
<i>Powerful * Financialexpert<sub>i,t</sub> * Lev<sub>i,t</sub></i> control	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES
Firm fixed effects	YES	YES	YES	YES	YES	YES
Speed ( $\lambda_0$ )	0.178	0.207	0.177	0.207	0.176	0.206
Adjusted Speed ( $\lambda_0 + \gamma_0 + \delta$ )	0.315	0.359	0.318	0.352	0.313	0.355
Half-Life	3.536	2.989	3.558	2.989	3.581	3.005
Adjusted Half-Life	1.832	1.559	1.811	1.598	1.846	1.581



*"Specialist only masters his own field."*

Yu Han<sup>a</sup>

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<sup>a</sup>Chinese poet and philosopher, 768 AD-824  
AD

# 2

## The Role of Financial Expert CEOs in Mergers and Acquisitions

## 2.1 Introduction

SINCE 1985, U.S FIRMS HAVE SPENT OVER \$349 TRILLION on more than 325,000 merger and acquisition transactions. The compound annual growth rate for the number of deals from 1985 to 2018 was 5.86%, while the value grew at 5.32%. Mergers and Acquisitions (M&A) comprises one of a firm's most essential investments.<sup>1</sup> However, empirical literature suggests that M&A is not a win-win game (Moeller, Schlingemann, and Stulz, 2005; Andrade, Mitchell, and Stafford, 2001; Asquith, 1983). While the combined impacts of mergers on both sides may be positive, acquiring shareholders often find themselves on the losing end. What affects CEO takeover decisions, and which kinds of CEOs create or destroy shareholder value?

In this study, I investigate the effects of CEOs' previous financial career on firms' M&A activities. Prior literature suggests that managers' financial work experience is an important factor in making firm policy decisions (Custódio and Metzger, 2014; Güner, Malmendier, and Tate, 2008; Huang, Jiang, Lie, and Yang, 2014). However, less is known about CEOs' financial expertise in the context of M&A activity.

I hypothesise two possible scenarios for how financial expertise plays a role in M&A. The first one is positive: financial expert CEOs have better financial knowledge and access to external capital markets (Custódio and Metzger, 2014; Güner, Malmendier, and Tate, 2008). To the extent of this bright side, there are two possibilities for their M&A propensity. On the one hand, they may make more M&A deals because they can use their network to identify more possible targets and help firms finance projects that otherwise would not have been sought after. On the

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<sup>1</sup>Statistic source: <https://imaa-institute.org/m-and-a-us-united-states/>

other hand, they may make fewer M&A deals by dodging potential value-destroying targets. Either way, they will make better M&A decisions.

However, there is also a dark side with financial expert CEOs. First, financial expert CEOs may lack experience in the target industry. [Custódio and Metzger \(2013\)](#) suggest that industry expert CEOs are better deal bargainers and have synergy exploitation skills. Financial expert CEOs may lack industry-specific knowledge and connections in the industry. As a result, financial expert CEOs may dislike doing M&A, for people may avoid doing things they are not good at. Meanwhile, they may also fail to identify good target candidates. On average, financial expert CEOs lacking industrial expertise make worse and fewer M&A deals.

Second, firms led by CEOs with financial expertise seem to share some characteristics with those headed by entrenched managers: higher free cash flow along with lower Tobin's Q ([Custódio and Metzger, 2014](#)). Financial expert CEOs, thus are more likely to have classic free cash flow problems and cause agency conflicts. On the other hand, CEOs with financial expertise are younger and have shorter tenures than their peers without financial expertise. Thus, they have greater mobility. Financial expert CEOs can be more visible and competitive in employment markets if they participate in takeover activities. Meanwhile, prior research finds that firms hire directors for their acquisition experience, regardless of their acquisition quality ([Harford and Schonlau, 2013](#); [Grinstein and Hribar, 2004](#)). Thus, financial expert CEOs may have a short horizon and be incentivised to sacrifice long-term value-increasing projects to pursue their personal needs. On average, financial expert CEOs with agency problems make worse and more M&A deals.

The findings support the lack of experience hypothesis of the downside. Financial experts underperform in M&A. They create fewer synergies with their targets

and are poor bargainers. In addition, they engage in fewer deals and prefer public targets. The findings indicate that the CEO's financial expertise comes at the expense of expertise in other dimensions. However, CEOs with financial expertise outperform those with neither financial nor industry expertise. When CEOs with financial expertise have industry knowledge, their financial expertise is the icing on the cake.

I start the analysis by analysing the likelihood of firms with financial expert CEOs making acquisitions. I identify CEOs from the ExecuComp database. This is a sample of 30,504 firm-years in Standard and Poor (S&P) 1500 firms from 1992-2018. I find a negative relation between the presence of financial expert CEOs and the firms' probability of making acquisitions. *Ceteris paribus*, firms with financial expert CEOs are 9.3% less likely to make acquisitions in the following year.

The endogeneity problem is a potential concern when interpreting these results. Firms might hire CEOs with financial work experience to implement particular corporate policies. I use several methods to address this concern. First, I adopt propensity score matching techniques. Then, I conduct an instrumental variable approach. The instrumental variable is developed by calculating the proportion of financial companies within the total number of companies in the area (two-digit ZIP code). Previous studies have shown that the local labour market has a substantial impact on corporate board structure ([Knyazeva, Knyazeva, and Masulis, 2013](#)). [Fahlenbrach, Low, and Stulz \(2010\)](#) argue that CEOs prefer nearby firms as the opportunity cost of their time is very high. Therefore, it is reasonable to believe that firms tend to interview and hire CEOs from nearby companies. Finally, I also conduct an additional test by looking at CEOs effect on M&A which are less prone to endogeneity concerns: if a financial expert CEO is appointed to the firm for

other purposes, she may first spend time on related tasks and not engage in M&A, possibly having more freedom to make M&A deals in later years. Excluding the effect of the early years (e.g., the first 2 – 3 years after the appointment of a CEO), the study finds that financial expert CEOs still engage in fewer M&A deals than their non-expert peers.

In the next step of the analysis, I examine the performance of M&A made by financial expert CEOs. As discussed before, both the bright side and downside roles of financial expert CEOs can lead to fewer M&A deals. On the one hand, financial expert CEOs can identify value-destroying deals and help firms dodge those bad deals. This means a lower likelihood of making M&A deals, but they make better deals on average. On the other hand, financial expert CEOs may lack experience in the target industry. [Custódio and Metzger \(2013\)](#) prove that in the context of M&A, industry-specific knowledge plays a vital role. Corporate culture differs from industry to industry, and industry insiders can better estimate target value since they possess more information and connections. Financial expert CEOs without enough industry experience might be at a disadvantage in the M&A process. Furthermore, M&A is usually value-destroying for acquirers, and there is uncertainty and information asymmetry in the environment surrounding M&A ([Hart and Zingales, 2017](#)). Financial expert CEOs may be aware of their deficient industry skills and the potential value destruction brought by M&A to shareholders. Consequently, they try to avoid making deals. This also lowers their likelihood of making M&A deals but yields less favourable market reactions around the acquisition announcements.

The analysis of 5,794 acquisitions announcements conducted by S&P 1500 firms, over 1992–2018, shows that the market reaction is less favourable toward acquisi-

tions by firms with financial expert CEOs. Acquirer firms with a financial expert CEO have 0.33% lower three-day cumulative abnormal announcement returns (CARs) and 0.44% lower five-day CARs than firms without financial expertise. The three-day CARs loss translates into \$25 million in destroyed shareholder value for the average-market value acquirer in the sample. One potential concern is that, in the sample, an acquirer's abnormal announcement returns are observed only for firms that decide to engage in deals. To control for such potential self-selection bias, I further employ a two-stage Heckman selection model (Heckman, 1979). Financial expert CEOs' negative effects on CARs remain.

A CEO plays a role in different stages of M&A: target selection, negotiation with the target, and post deal integration. An acquirer's financial expert CEO might destroy shareholder value in each stage. According to the literature (Custódio and Metzger, 2013), there are two mechanisms in which financial expert CEOs destroy value, namely, value capture and value creation mechanisms.

I first test financial expert CEOs' value-capture ability in an acquisition by examining premiums paid by financial expert and non-financial expert CEOs. The results suggest that, on average, financial expert managers pay lower premiums than their non-financial expert peers. There are two possible explanations for the lower premiums. First, financial expert CEOs are good bargainers, or they help firms to identify weaker bargaining partners. The other possibility is that they pay somewhat lower premiums for much worse targets. Following Ahern (2012), I further calculate the difference in dollar gains between a target and acquirer, normalized by the sum of the acquirer's and the target's market cap 50 trading days before the announcement date. Results show that the target extracts higher relative dollar gains when the bidding CEOs are financial experts. These findings

suggest that financial expert CEOs do worse in negotiating with a target. As a result, they fail to extract a greater proportion of the surplus. The lower premiums indicate that they undertake lower-value acquisitions on average.

I then investigate the value created by acquisitions. By analysing combined value-weighted abnormal announcement returns, which is the widely used test to measure an acquirer's value-creation ability (Harford, Humphery-Jenner, and Powell, 2012; Custódio and Metzger, 2013; Field and Mkrtchyan, 2017), I find evidence that financial expert CEOs create fewer synergies in comparison to non-financial expert CEOs. Alternately, I also look at another frequently cited way to measure synergy: post-acquisition operating performance (Field and Mkrtchyan, 2017). The results indicate that firms with financial expertise decline in operating performance following an acquisition. Overall, the above findings support the earlier results that firms with financial expert CEOs may fail to identify good-fit targets that would enable them to achieve synergy and growth expectations.

In sum, financial expert CEOs make fewer and worse deals. Although financial experience is usually regarded as a positive characteristic that helps firms improve their performance, the results reveal that acquirers' shareholders do not benefit from CEOs' financial experience. Further analysis is conducted to examine possible explanations for the negative effects of financial expertise on M&A.

Previous literature indicates that in takeovers, CEOs with previous work experience within the target business outperform those who are less exposed to the industry (Custódio and Metzger, 2013). As corporate culture differs from industry to industry, the lack of industry-specific experience may be a disadvantage in knowing the industry culture and thus result in poor M&A performance. For example, in the selection process, an acquirer must assess a target's products, technologies,

customers, channels of distribution, in addition to its cultural fit. Furthermore, in order to take a strong bargaining position, CEOs should also know the targets outside options and true target value (Custódio and Metzger, 2013). Financial expert CEOs may have a deficient overview of the market environment, including competitors, customers, and suppliers. Moreover, they also lack inside industrial information and connections. Thus, financial expert CEOs fail to identify targets that are good fits and underperform in the negotiation process.

I hypothesise that in the M&A context, industry-specific knowledge might play a more vital role than financial-specific knowledge, and the under-performance of financial experts in M&A is caused by a lack of inside industrial information and connections. However, their financial expertise can be the icing on the cake when they gain industry expertise.

To test the hypothesis, the entire sample is divided into two subsamples: diversifying and non-diversifying deals. Following Custódio and Metzger (2013), a target-industry expert CEO variable is constructed, which examines industry expert CEOs who have worked in at least one company in that industry. By including financial expert CEO, target-industry expert CEO and their interacted item in the regression, Chapter 2 is able to examine the effect of different expertise on CARs. The results show that the market reacts more positively to M&A announced by CEOs who have worked in at least one company in the target industry. While the coefficient for financial expert CEOs remains negative and significant, the coefficients for the interacted term between financial expertise and industry expertise are significantly positive. The presence of top management experience in a target industry is associated with a 1.7% (1.5%) higher three-day (five-day) abnormal returns on average than the absence of that experience.



To further understand the results, additional evidence is provided by comparing the performance between financial expert CEOs and CEOs who have neither financial nor industry expertise. The results show that while both financial expert CEO and non-expert CEO have negative effects on CARs, non-expert CEOs perform significantly worse in M&A.

Similar results are found by using the length of tenure as a proxy for industry experience in a subsample of non-diversifying deals. A CEO is considered to be industry-experienced if his or her tenure in a bidder company is above the median tenure. Financial expertise is especially beneficial when a CEO is more experienced in the current firm. This positive effect of financial expert CEOs disappears when considering diversifying deals. This mitigates the potential concern that a long tenure might not only be a proxy for industry expertise because CEOs may also gain other skills during their tenure.

I also do additional tests to investigate whether financial expert CEOs are less likely to have industry experience in the targets. I first look at diversifying deals. I observe that 29% of financial expert CEOs have industry experience, while 23.2% of non-financial experts have industry experience. The difference is significant at the 5% level. I believe that the unexpected results are caused by a selection problem, which means that only financial expert CEOs who also have industry expertise, will be more willing to engage in diversifying deals. As such, I go on to look at non-diversifying deals. As expected, I find that 24% of financial expert CEOs have industry work experience before they joined the present firm, while 30% of non-financial expert CEOs have industry experience. The difference is significant at 1%

I complete the analysis by examining CEO's preference for targets. If financial

expert CEOs are aware of their lack of access to information on targets' industries, they are expected to prefer a target with less information asymmetry. Information on public targets is usually readily available to potential buyers. In contrast, acquirers must collect private information and incur higher information costs when buying a non-public target (Elnahas and Kim, 2017). Financial expert CEOs, therefore, prefer public targets and avoid private targets. The results show that financial expert CEOs engage more in public target deals and less in private deals.

Overall, the empirical results are consistent with the idea that there are complementarities between the different skills of CEOs. CEOs gain financial work experience at the expense of industry work experience, which plays a more vital role in M&A. However, when financial expert CEOs gain industry expertise, their financial expertise is a precious asset and helps them make better deals. Meanwhile, CEOs with financial work experience understand their shortages and try to avoid destroying shareholder value. Thus, financial expert CEOs make worse and fewer M&A deals.

The paper relates to several strands of literature. First, this paper contributes to a growing body of literature on CEO characteristics and their impact on firm performance (Bertrand and Schoar, 2003; Malmendier, Tate, and Yan, 2011; Custódio and Metzger, 2014). I provide some new evidence for the influence of financial work experience on corporate policies.

The analysis complements emerging literature focusing on the relationship between M&A and top executives' personal traits. Several recent studies indicate that executives' backgrounds do matter. These personal traits include overconfidence (Malmendier and Tate, 2008), narcissism (Aktas, De Bodt, Bollaert, and Roll, 2016), experience in a target firm's industry (Custódio and Metzger, 2013),

gender (Huang and Kisgen, 2013), retirement age (Jenter and Lewellen, 2015), military background (Benmelech and Frydman, 2015), and political ideology (Elnahas and Kim, 2017). To the best of my knowledge, the study is the first to look at the impact of financial expertise on acquisition decisions and outcomes from the CEO perspective.

I also add to a body of literature by showing that CEOs play different roles from directors in a firm's essential investment decisions. Prior studies on financial expertise in the context of M&A mainly focus on directors who worked for the most active investment banks (Huang, Jiang, Lie, and Yang, 2014; Güner, Malmendier, and Tate, 2008). Following Custódio and Metzger (2014), I focus on CEOs' general financial expertise and look at large deals in which top executives play a more vital role. Unlike investment banker directors, who help firms make more and better deals, CEOs gain financial expertise at the expense of other expertise. The financial expertise of CEOs does not guarantee skills and performance in target selection or negotiation. They generally damage shareholder value in M&A.

This paper is organised as follows: Section 2.2 presents the data and the main summary statistics. Section 2.3 and Section 2.4 provide empirical evidence for financial expert CEOs' impact on acquisition probability and performance. Section 2.5 explores possible channels of value destruction. Section 2.6 presents an additional discussion of financial expert CEOs, and Section 2.7 concludes the paper.

## **2.2 Data and Descriptive Statistics**

### *2.2.1. CEO and firm data*

The data in this study are collected from multiple sources. I first construct a firm-year panel; to identify the current CEO for each firm in a given year, I extract data from ExecuComp, which covers the S&P 1500 firms from 1992 onward. The database includes companies which were once listed in index, and I collected data on over 2,600 firms. Since ExecuComp contains limited information on CEOs, to obtain background information and identify CEOs with financial work experience, I collect CEO biographies from several sources, including BoardEx, Bloomberg, SEC filings, companies' websites, NNBD Mapper. Then, I trace each CEO's career path and other characteristics, such as the educational background.

I further exclude all financial and utility firms (SIC 6000-6999 & 4900-4999), as they operate quite differently from regular firms. To obtain financial and stock data, I merge the data with Compustat and CSRP. I require that each company has non-missing data on main regression variables, and thus the initial sample is reduced to 30,504 firm-year observations with 5,464 unique CEOs and 2,628 firms.

### *2.2.2. Mergers and acquisitions data*

To examine the influence of financial expert CEOs on a firm's acquisition decisions, I collect deal information from the Thomson One Banker database. The initial sample includes all completed M&A done by U.S. public firms involving the public, private, and subsidiary targets from 1992 to 2018. I exclude acquirer firms with SIC codes 6000-6999 & 4900-4999. I require that the control must be transferred from the targets to the bidder after the transaction, which is to say that the percentage

of shares acquired by the acquirer is higher than 50%. Following the previous literature (Custódio and Metzger, 2013; Harford, 2005), I further require that a deal's transaction value be higher than 50 million. This criterion is essential because an acquirer's CEO might only actively participate in large deals (Malmendier and Tate, 2008; Elnahas and Kim, 2017). Then, I match each deal to a firm-year observation based on the announcement date of the acquisition. This procedure yields a total of 5,794 takeovers and 4,449 firm-years with at least one acquisition.

### 2.2.3. *Summary statistics*

All variable definitions are reported in Table 2.1. All continuous variables are winsorized at their 1st and 99th percentiles to reduce the influence of outliers. Table 2.2, Panel A, shows the descriptive statistics of CEOs. I define a financial expert as a CEO who has work experience in either banking or investment firms (with two-digit SIC codes, 60, 61, and 62) or who has served in a CFO role before. According to the measurement, 31.8% of CEOs were defined as financial experts. A more detailed look at CEO financial experience reveals that 22.9% of CEOs had previously worked in financial firms, and 12.5% of CEOs had been CFOs before.

**[Insert Table 2.2 near here]**

Table 2.2, Panel B, further shows other CEO-specific variables. A great majority of CEOs in the sample are male (97.3%). Their average age is 56 years old, and the average length of service in a company as CEO is over seven years. Consistent with prior studies (Custódio and Metzger, 2014), financial expert CEOs are slightly younger than non-financial expert CEOs, and they have shorter tenures than their peers. Panel C shows descriptive statistics for firms' corporate governance controls.

Financial expert CEOs are more likely to simultaneously serve as chairman and have larger but more independent boards and lower CEO equity ownership.

Panel D presents acquirer characteristics. Compared to non-financial expert CEOs, univariate tests predict that financial expert CEOs are more likely to work in larger, more mature firms with higher leverage. They may also tend to have classic free cash flow problems, for they hold higher free cash flow alongside lower Tobin's Q.

Finally, Panel E shows deal characteristics, revealing the differences between financial expertise and non-financial expertise. In total, there are 28% of deals that are diversifying in the sample. The fractions of public, private, and subsidiary targets are 26%, 37%, and 38%, respectively. About 22.3% of deals are paid for with equity, and 41.3% of deals are considered all-cash deals. Financial expert CEOs are more likely to acquire public targets, avoid personal targets, and are less likely than CEOs without financial expertise to finance a deal with equity.

**[Insert Table 2.3 near here]**

The results of correlational analysis among variables are displayed in Table 2.3. Almost all variables report low pairwise correlations, which should mitigate multicollinearity concerns.

## 2.3 Financial Expert CEOs and Merger Frequency

### 2.3.1. Baseline results

To explore the influence of CEOs' financial expertise on the likelihood of acquisitions, I analyse the following probit regression:

$$Pr(Deal_{i,t+1}) = \alpha_0 + \beta Financialexpert_{i,t} + \gamma X_{i,t} + v_{i,t} + \epsilon \quad (2.1)$$

The dependent variable  $Deal_{i,t+1}$  takes the value of one if the firm announces at least one successful acquisition in a given year; otherwise, the dependent variable takes the value of zero. The primary variable of interest is a dummy variable  $Financialexpert_{i,t}$  which equals one if the CEO is a financial expert; otherwise, the value is zero. Following prior literature (El-Khatib, Fogel, and Jandik, 2015), I further control for a set of known firm-level determinants of a firm's merger frequency, such as leverage and cash flow. I use Tobin's Q as a control for investment opportunities. In the untabulated robustness tests, I also include R&D expenses and capital expenditures as further controls. Since Harford (2005) shows that mergers occur in waves and are clustered within industries, I include industry times year dummies in all specifications.

Model 1 in Table 2.4 presents the results of the probit regression. The estimated coefficients of the control variables exhibit the expected signs. Firms with higher free cash flow, higher Tobin's Q, more extensive asset base, or higher profitability are more likely to make acquisitions. Firms with higher leverage are less likely to make deals. Turning to the variable of interest, I find that the coefficient of  $Financialexpert_{i,t}$  is -0.058, and it is significant at the 1% level. The effect on

acquisition likelihood is also economically meaningful. *Ceteris paribus*, firms with financial expert CEOs are 9.3% less likely to do M&A than other firms. To put the magnitude of the decrease in perspective, the marginal effect of having a financial expert CEO is about half the percentage of the marginal impact of a one standard deviation increase in a firm's leverage level in the prior year.

**[Insert Table 2.4 near here]**

Some studies reveal that CEO and corporate governance characteristics significantly affect a firm's takeover decisions (Custódio and Metzger, 2013; Bertrand and Schoar, 2003; Yim, 2013; Masulis, Wang, and Xie, 2007). I, therefore further add CEO and corporate governance variables and conduct the analysis on a size-reduced subsample for which I have available information. I first construct different proxies for CEO characteristics, such as educational background, age, tenure in the current position, and gender. To further control for the corporate governance effects, I include the Duality dummy variable, which equals one if a CEO also holds a chairman of the board position. Then, I include the Founder dummy variable, which indicates whether a CEO is also the founder of the firm and the CEO's ownership level in the firm. Finally, I control for board size and board independence.

The results are presented in Table 2.4 model 2. The sample size is reduced due to data availability. I find that firms with larger boards, older CEOs, and with CEOs who hold more ownership in the firm are less likely to make deals. In contrast, male CEOs and CEOs who hold MBA or Ph.D. degrees tend to make more deals. More importantly, the coefficient of financial expert CEOs remains negative and statistically significant at the 5% level. For an average firm in the sample, there is a 9.2% increase in acquisition likelihood when a firm has a financial



expert as CEO.

### 2.3.2. *Endogeneity problem*

While the results suggest that firms with financial expert CEOs are less likely to conduct acquisitions than firms without financial experts, a potential concern is the endogeneity due to selection bias. Financial expert CEOs might not be randomly allocated to firms.

#### 2.3.2.1. *Propensity score matching*

To address the potential endogeneity concern, I first adopt a propensity score matching approach. [Roberts and Whited \(2013\)](#) suggest that the matching approach can mitigate some biases caused by these problems. This method allows us to compare merger frequency between two indistinguishable groups in terms of firm characteristics, industry, and year. The only difference is that one hires financial expert CEOs (treatment group), and the other hires non-financial expert CEOs (control group).

I implement this procedure in two stages. I first estimate a probit model to determine the probability of firms having a financial expert CEO based on the characteristics of the firms and fixed effects. The dependent variable in the model is an indicator variable that equals one if the firm has a financial expert CEO in the given year, otherwise equals zero. Thus, firms can have multiple financial expert CEOs during the sample period. Follow [Custódio and Metzger \(2014\)](#). I include a set of variables as controls, such as the proxies for the life cycle of firms like firm age, size and growth opportunities, Etc. All independent variables are lagged by one year. I further require exact matching based on industry (Fama-French 48

industry classification) and year.

Panel A of Table 2.5 presents the probit regression results. The coefficients of the explanatory variables are generally consistent with those in previous studies. Firms run by financial experts tend to be older and larger and have higher leverage ratios.

**[Insert Table 2.5 near here]**

I then use the propensity scores calculated from the probit model to match each treatment firm with a similar control firm. Following [Abadie, Drukker, Herr, and Imbens \(2004\)](#), I conduct the matching using the nearest-neighbour matching estimator. A firm without financial expert CEOs can be matched to multiple firms with financial expert CEOs (matching with replacement).<sup>2</sup>

The final matching sample includes 15,170 observations. In the matching sample, I examine the characteristics' mean differences between the treated and control groups. Panel B shows no statistical difference between financial expert CEO firms and their matched firms. These results indicate that the firms are similar in main perspectives before the onset of the financial expert CEO's presence in the matched sample. Suggesting that these characteristics are unlikely to drive the difference in SOA after having financial expert CEOs.

**[Insert Table 2.6 near here]**

Using matched samples, I run the primary model in Eq.(2.1) again. The results are shown in Table 2.6; as expected, the coefficient for financial expert CEOs remains negative and significant, which is consistent with the previous findings. Furthermore, the marginal effects on the coefficient for financial expert CEOs in

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<sup>2</sup>The results are robust to unreported alternative matching criteria.

column (2) indicate that financial expert CEOs are 13.4% less likely to make acquisitions.

#### 2.3.2.2. *Instrumental variable approach*

To further support the findings, I create an instrumental variable for the presence of a financial expert CEO within a firm. I exploit the percentage of the number of financial companies (with two-digit SIC 60, 61, 62) to the total number of companies in the area (with 2-digit ZIP code) as an exogenous source variation in CEO selection. The instrumental variable is defined as *Ratio*. I believe that this variable satisfies the conditions necessary for a valid instrument. [Knyazeva, Knyazeva, and Masulis \(2013\)](#) show that the local labour market has a substantial impact on corporate board structure. [Fahlenbrach, Low, and Stulz \(2010\)](#) argue that CEOs prefer nearby firms as the opportunity cost of their time is very high. Therefore, it is reasonable to believe that firms tend to interview and hire CEOs from nearby companies for time-saving and for networking purposes. When there are more financial companies nearby, the firm is more likely to hire a CEO who is a financial expert. Second, firms' likelihood of doing M&A would be affected by an instrumental variable only through the channel of CEO selection.<sup>3</sup>

In the model, both the dependent variable and the interested endogenous regressor  $Financialexpert_{i,t}$  are dummy variables. Thus, I implement a recursive bivari-

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<sup>3</sup>One of the concerns is that the concentration of the financial industry will also affect M&A activities. Financial companies engage in M&A mainly in two ways. First, they provide advisory and financing services. Whether they work for acquirers or targets, the increased number of financial companies will improve services and thus help both sides complete deals. In this case, more banks would positively affect merger frequency, and thus, it would render the estimated coefficients for financial expert CEOs underestimated. Second, financial companies are the participants in a deal, meaning they might be both acquirers and targets. Since my study excludes the financial sectors, thus, the concern will be limited to situations when banks engage in diversifying deals. However, there is no convincing evidence showing that banks are more competitive than acquirer peers making non-banking acquisitions.

ate probit model suggested by Angrist and Krueger (2001) and Angrist (2001). This model assumes that the binary dependent and independent variables are each determined by latent linear models with joint error terms (Evans and Schwab, 1995). The probit equations for the financial expert CEO dummy variable and acquisition dummy variable are estimated simultaneously using the maximum likelihood method, in which the instrumental variable is used in the estimation model for the financial expert CEO's presence.<sup>4</sup> Using this approach, I take the endogenous variable's binary nature into account and avoid endogeneity bias.

In reporting the results for the first stage, we see in Table 2.7 column (1) that the proposed instrument is correlated with the presence of financial expert CEOs. As expected, the proportion of financial companies to the total number of firms in the area is positively related to the existence of financial expert CEOs, with a robust t-statistic of 4.93.

**[Insert Table 2.7 near here]**

Table 2.7 column (2) reports the bivariate probit results. In column (2), I present the estimates for the whole sample. As shown, the financial expert coefficient is again negative and significant at a 1% level, which is consistent with the previous findings. The marginal effect results reveal that financial expert CEOs are 32.9% less likely to make acquisitions than other firms. In columns (3) and (4), I also include CEO and governance controls. The results remain robust.<sup>5</sup>

<sup>4</sup>The latent linear model can be specified as follows:

$$\begin{aligned} y_1^* &= \gamma_1 X_1 + \epsilon_1, \quad y_1 = 1, \text{ for } y_1^* > 0 \\ y_2^* &= \gamma_2 X_2 + \beta y_1 + \epsilon_2, \quad y_2 = 1, \text{ for } y_2^* > 0 \end{aligned} \tag{2.2}$$

where,  $y_1$  and  $y_2$  represent the presence of financial expert CEOs in the acquisition activities, respectively.

<sup>5</sup>In an unreported test, I also estimate a three-stage procedure estimation suggested by Adams,

I do note that the coefficients for IV regressions are larger than the uninstrumented coefficients of our baseline regression. One possible explanation is that compliers include two groups for the instrumental variable (Ratio). First, the firms would not hire financial expert CEOs in an area with fewer financial experts. They should have higher searching/hiring costs for a financial expert CEO in the labour market. Second compliers include those firms who would definitely have a financial expert CEO if they could contact more financial expert candidates. They have such a strong willingness to hire a financial expert CEO. In other words, the subgroups whose hiring decisions are affected by the “Ratio” (IV) were constrained by the marginal cost of a financial expert CEO’s searching rather than by the lack of either desire or ability to benefit from having financial expert CEOs.

Therefore, due to the heterogeneity in the population, the local treatment effect at the margin for the excluded firms could exceed that of the population average treatment effect.

### 2.3.2.3. *Additional tests*

To further ensure that the results are not driven by CEO-firm matching problem, I conduct additional tests using M&A that are less prone to endogeneity concerns and present the results in Table 2.8. If a financial expert CEO is appointed to the firm for other purposes, he/she might first spend time on related tasks and not engage in M&A, possibly having more freedom to make M&A deals in later

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Almeida, and Ferreira (2009) and Angrist and Pischke (2008). In the first stage, I estimate a probit regression of the  $Financialexpert_{i,t}$  on the instrument variable and other controls. Then, I compute the fitted probabilities and regress on  $\widehat{Financialexpert}_{i,t}$  and other controls. In the last stage, I estimate merger frequency using the fitted value in the second stage as an instrument for the presence of financial expert CEOs. The full sample and subsample results confirm the negative effect of financial expert CEOs on acquirers’ deal propensity. However, the inference of the magnitude of the coefficient increases a lot to 67-69%.

years. Excluding the effect of the early years (e.g., the first 2 – 3 years after the appointment of a CEO), the study finds that financial expert CEOs still engage in fewer M&A deals than their non-expert peers. Table 2.8 shows the results. The coefficients on financial expert CEOs dummy are still negatively significant. The effects are comparable to what drives the main regression in Table 2.4. For example, in column (1), the coefficient on the financial expert CEO dummy is -0.049, statistically different at the 5% significance level. *Ceteris paribus*, firms with financial expert CEOs are 8% less likely to make an acquisition in the next two years. The results become even more pronounced when I further include CEO and corporate governance characteristics in column (2).

**[Insert Table 2.8 near here]**

In conclusion, the additional results help mitigate endogeneity concerns and increase the confidence that financial expert CEOs are less likely to make M&A deals than non-financial expert CEOs. However, whether these bids are value-increasing or -decreasing cannot be determined without further tests to measure the valuation consequences of bidding decisions. Next, I move on to evaluate these acquisition decisions by examining bidder stock price reactions to acquisition announcements.

## **2.4 Financial Expert CEOs and Market Reactions**

Financial expertise has traditionally associated knowledge of finance and networking in capital markets with value improvement and better managerial decisions, thereby implying that financial expert CEOs could play positive roles in takeovers. The idea would be that they engage in fewer and better M&A deals, for they successfully dodge value-destroying acquisitions. An alternative possibility is that

financial expert CEOs know the potential value destruction brought by M&A to shareholders, and they are also aware of their lack in skills in the industry or in conducting takeovers. Consequently, they try to avoid making deals. However, when they engage in deal-making, the lack of industry-specific knowledge or acquisition experience could lead to poor decision-making and value losses. Furthermore, they could also make deals to pursue their own personal benefits, yielding less favourable market reactions around the acquisition announcements.

#### 2.4.1. *Abnormal announcement returns*

I examine acquirers' abnormal announcement returns to evaluate market reactions on transactions made by financial expert CEOs. The regression equation is as follows:

$$CAR_{i,t+1} = \alpha_0 + \beta Financialexpert_{i,t} + \gamma X_{i,t} + \nu Z_{i,j,k} + \nu_{i,t} + \epsilon \quad (2.3)$$

Where  $CAR_{i,t+1}$  stands for acquirers' cumulative abnormal announcement returns for an acquisition. Prior literature suggests that though the information might leak out early or market reactions might be delayed, a three-day window is enough to capture announcement effects (Huang, Jiang, Lie, and Yang, 2014). Expanding the window beyond three days could capture more announcement effects, but it also introduces more noise. Nevertheless, I report both three-and five-day CARs, and the results are similar.

Following Custódio and Metzger (2013), I calculate  $CAR_{i,t+1}$  by three-factor

Fama-French model.<sup>6</sup> I estimate the model over a 255-day window ending 21 days prior to the announcement date using the CRSP value-weighted index as the market proxy.  $X_{i,t}$  includes a set of firm and CEO-level control variables. As suggested in the literature (Custódio and Metzger, 2013; Moeller, Schlingemann, and Stulz, 2004, 2005), I further include deal characteristics  $Z_{i,j,k}$ . M&A often occur in waves and are industrial clustered Harford (2005); thus, I also include industry times year dummies controlling for fixed effects in the regression.

In contrast to prior literature documenting either negative or insignificant returns to bidders (El-Khatib, Fogel, and Jandik, 2015; Andrade, Mitchell, and Stafford, 2001; Betton, Eckbo, and Thorburn, 2008), the study finds significant, positive average three-day acquirer CARs (0.45%) for the full sample. However, the market reaction to bidders with financial expert CEOs is markedly lower than the rest of the sample; among firms without financial expert CEOs, the average CARs is 0.59% (significant at 1%), whereas for firms with CEOs with financial expertise it is 0.17% (significant at 1%).

**[Insert Table 2.9 near here]**

Table 2.9 presents the results. The dependent variables in columns (1) and (2) are three-day CARs and five-day CARs, respectively. All coefficients for financial expert CEOs are significant at the 5% level. Firms with financial expert CEOs have nearly 33% lower three-day announcement returns than those with non-financial expert CEOs and 44% lower announcement returns based on five-day CARs. Given an average abnormal return of 0.45% for all acquisitions and an average market value of about \$7580 million, this effect is considerable in both relative and absolute

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<sup>6</sup>In the untabulated tests, the results are robust to alternative models of expected return, such as a market-adjusted model or market model.



terms. These results indicate that the market reacts negatively to deals led by financial expert CEO acquirers on average and suggests that financial experts make value-decreasing deals for bidding shareholders. For other control variables, the estimated coefficients are similar to those reported in earlier studies. Deals involving cash financing have higher announcement returns, whereas big deals and those financed with equity, are viewed less favourably by the market on average (Andrade, Mitchell, and Stafford, 2001).

#### 2.4.2. *Alternative interpretations*

One potential concern is that, in the sample, an acquirer's abnormal announcement returns are observed only for firms which decide to engage in deals. A firm's acquisition decisions might be influenced by management's expectations of an announcement's market reaction. To control for such potential self-selection bias, I employ a two-stage Heckman selection model (Heckman, 1979). In the first stage, I run an acquisition likelihood probit regression, as shown in Table 2.4, column (1). In the second stage, I add the Inverse Mills ratio, which is calculated from the first stage, as an independent variable in the estimation of acquirer announcement returns. Financial expert CEOs' negative effects on CARs remain, and they are reported in Table 2.9 columns (3) and (4). For other control variables, most estimated coefficients are similar to prior results except firm size, which was insignificant.

Another concern with using announcement returns is that they incorporate the stock market's assessment of more than just an acquirer's acquisition value. For example, they also include a reassessment of a bidder's stand-alone value, possibly reflecting the implication that internal growth opportunities are not as valuable as previously believed. Following Harford, Humphery-Jenner, and Powell (2012), I

solve the problem by excluding the first acquisition made by a given bidder. The assumption is that most of the information about the state of a bidder's internal growth opportunities is revealed at the announcement of its first bid; thus, dropping the first bid from the sample can provide us with a cleaner measure of a bid's effects on a bidder's value. I run the regression using the new sample, but for the sake of brevity, the results are unreported, and the inferences are unchanged.

In sum, the above test supports the hypothesis of a negative relationship between financial expert CEOs and acquisition announcement returns; in the next section, I seek to identify the value destruction sources I observed.

## **2.5 Sources of Value Destruction**

In this section, I explore the possible mechanisms through which financial expert CEOs destroy value. To complete a deal, a CEO plays a role in different processes: target selection, negotiation with a target, and combined companies' operation. In each process, an acquirer's financial expert CEO might underperform and destroy shareholder value. For example, in selecting a potential target, an acquirer must assess a target's products, technologies, customers, channels of distribution, and financials in addition to its cultural fit. Financial expert CEOs may lack industry-specific knowledge and have a deficient overview of the market environment, including competitors, customers, and suppliers. Thus, they may fail to identify targets which are good fits, and which would allow an acquirer to achieve its synergy and growth expectations.

Prior literature ([Jensen and Ruback, 1983](#); [Custódio and Metzger, 2013](#)) models the two main channels through which CEOs potentially operate: value creation and

value capture. Hence, I further investigate financial expert CEO performance in value creation and value capture separately and analyse whether financial expert CEOs at acquiring firms are worse at creating combined shareholder value or worse at capturing greater gains from target shareholders.

### *2.5.1. Value-capture ability*

I first examine financial expert CEOs' value-capture ability by looking directly at premiums paid. Premium is measured as an acquirer's offer price per share over a target's price per share one day or four weeks before the announcement date. To obtain premium data, I limit the sample to publicly listed target companies. In the sample, nearly 26% of deals have public targets, which provides us access to nearly 1,200 deals for analysis.

Table 2.10 reports the results. The dependent variables in the models are premiums paid to target shareholders. Both one-day and four-week premiums have negative coefficients, and I find the significance at a 10% level with a four-week premium. The results indicate that financial expert CEOs pay lower premiums to target shareholders. There are two possible explanations for this phenomenon. First, financial expert CEOs might be better at extracting a greater proportion of the surplus, which indicates either that they are good bargainers or that they help firms identify weaker bargaining partners. Another possibility is that, instead of excelling at bargaining, they undertake lower-value acquisitions on average.

**[Insert Table 2.10 near here]**

Next, I further use the relative gains of a target versus an acquirer for each dollar of market value to test whether financial expert CEOs are good bargainers or not.

I follow [Ahern \(2012\)](#) and calculate the difference in dollar gains between a target and acquirer, normalized by the sum of the acquirer's and the target's market cap 50 trading days before the announcement date. If financial expert CEOs' negative effects on premiums occur due to bargaining performance, then I would observe a negative relationship between financial expertise and a target's gains relative to its acquirer. If not, financial expert CEOs pay lower premiums because they undertake lower-value acquisitions on average.

In the last column in Table 2.10, I find a positive and significant (at a 5% level) result in the financial expert CEO coefficient. This finding is clear evidence that, despite lower premiums, financially experienced CEOs are not better bargainers. Target shareholders extract a greater proportion of the surplus. The results are consistent with the conjecture that financial expert CEOs lack valuable advantages and skills in negotiating with a target, including less access to industry information and the ability to process it.

### 2.5.2. *Value-create ability*

A widely used test to measure an acquirer's value-creation ability is the combined value-weighted abnormal announcement returns ([Harford, Humphery-Jenner, and Powell, 2012](#); [Custódio and Metzger, 2013](#); [Field and Mkrtchyan, 2017](#)). The combined CARs can be interpreted as a measure of the surplus created by an acquisition or a market's perceived synergies. As I calculate combined CARs using weights based on the market value 50 trading days before an acquisition announcement, the sample is again limited to public target deals. As shown in Table 2.11 column (1), I find evidence that financial expert CEOs create less surplus. Financial expert CEOs' effects on the three-day combined CARs are negative (-0.59%) and signifi-

cant at a 10% level. In the untabulated reports, I also calculate five-day combined CARs and obtain quite similar results.

**[Insert Table 2.11 near here]**

Since announcement returns reflect only market expectations, I also look at another frequently cited way to measure synergy, which is, post-acquisition operating performance. Following [Field and Mkrtchyan \(2017\)](#), I use the change in industry-adjusted ROA from one year before a deal announcement to one year after. Table 2.11 column (2) shows the results. The coefficient for financial expert CEOs is negatively related to the change in ROA. The results are significant at 1%, indicating that firms with financial expertise decline in operating performance following an acquisition. These findings support the earlier results that firms with financial expert CEOs tend to select worse deals.

In sum, I find that financial expert CEOs make fewer and worse deals. I have also identified possible channels through which financial expertise destroys value; firms with financial expert CEOs fail to help acquirers extract more surplus in negotiations and create fewer synergies.

## **2.6 Discussion**

Financial expertise has proved to play a positive role in firms, for example, it can offer firms better access to capital markets; however, this expertise may come at the expense of having less expertise or skills in other dimensions. The results reveal that acquirer shareholders do not seem to benefit from CEO's financial experience. This inspires us to further explore the role of financial expert CEOs in the context of M&A. In this section, I conduct additional analysis to discuss possible explanations

for the negative effects of financial expertise on M&A. I conjecture that financial expert CEOs may lack some critical expertise in M&A. However, when they gain the skills, their financial expertise can be the icing on the cake.

### *2.6.1. Financial expertise vs. Industry expertise*

Previous literature indicates that corporate culture differs from industry to industry. CEOs without enough industry experience appear to be at a disadvantage in negotiations (Custódio and Metzger, 2013). I conjecture that in the context of M&A, industry-specific knowledge might play a more vital role. The underperformance of financial experts in negotiating is caused by a lack of industry-specific knowledge and industry connections. However, their financial expertise could be an asset when they gain industry expertise.

Following Custódio and Metzger (2013), I construct a target-industry expert CEO variable and examine industry expert CEOs who have worked in at least one company in that industry. Note that the construction of an industry expert CEO variable is defined only for diversifying mergers. I, therefore, further differentiate between diversifying and non-diversifying deals. A deal is defined as a diversifying deal when an acquirer and a target differ in their Fama-French 12-industries classification. This broad categorisation ensures that the two companies involved in transaction diversification are unconnected. In the sample, 28.2% of deals are defined as diversifying. Of all diversifying acquisitions, about 25% are conducted by CEOs who had worked in the target industry, and 35% are conducted by CEOs with financial work experience.

I hypothesise that financial expert CEOs underperform in diversifying deals; however, when they have industry expertise, they perform better than non-financial

expert CEOs. The results are presented in Table 2.12 Panel A. Consistent with findings in Custódio and Metzger (2013), target-industry expert CEOs positively affect the performance of acquirers in diversifying deals. For both three-day and five-day CARs, the coefficients for financial expert CEOs remain negative and significant at 10% for three-day CARs. The coefficient on the interacted term is significant at 5% and 10%, respectively in columns (1) and (2). For financial expert CEOs, the presence of top management experience in a target industry is associated with a 1.7% (1.5%) higher three-day (five-day) abnormal return on average than the absence of that experience is. In unreported F-tests of coefficients for the financial expert CEO variable and the interaction item, I find that the overall effect on CARs is also significant and positive. In panel B, I also compare the performance between financial expert CEOs and CEOs who have neither financial expertise nor industry expertise. The results show that while both financial expert CEOs and non-expert CEOs have negative effects on CARs, non-expert CEOs perform significantly worse in M&A. The results indicate that CEOs gain financial work experience at the expense of industry work experience, which plays a more vital role in M&A. However, when financial expert CEOs gain industry expertise, they do perform better than their counterparts without such expertise.

**[Insert Table 2.12 near here]**

I then further investigate the hypothesis by looking at non-diversifying deals, which indicate that an acquirer and a target are in the same industry. I use tenure as a proxy for the experience that CEOs gain in the industry. A CEO is considered to be experienced if his or her tenure in a bidder company is larger than the median tenure. I hypothesise that financial expertise is particularly helpful when a CEO

is more experienced in their current firm. The results are presented in Table 2.13 Panel A. The coefficient on the interaction item is positive and significant. Again, in unreported F-tests of the coefficients for the financial expert CEO variable and the interaction item, I find that the overall effect on CARs is also significant and positive.

One potential concern is that long tenure might not only be used as a proxy for industry expertise because CEOs may also gain other skills during their tenure. Thus, I also investigate long-tenured CEOs' performance in diversifying deals. If long-tenured CEOs are more talented in general, they also perform better in diversifying deals. However, in Table 2.13 Panel B, I did not find such a positive effect of financial expert CEOs with long tenure in diversifying deals.

**[Insert Table 2.13 near here]**

The last concern is whether financial expert CEOs are less likely to have industry experience in target fields. I first look at diversifying deals. I observe that 28% of financial expert CEOs have industry experience, which is significantly 5% higher than non-financial experts. These results are inconsistent with the hypothesis that financial expert CEOs are less likely to be industry experts. However, one possible explanation is the selection problem, which means that financial expert CEOs who also have industry expertise will be more willing to diversify deals. Thus, I further look at non-diversifying deals. I define a CEO as an industry expert in non-diversifying deals when they have work experience in the current firm's industry. As expected, I find that 24% of financial expert CEOs have industry work experience before they joined the present firm, while 30% of non-financial expert CEOs have industry experience. The difference is significant at the 1% level.



Indeed, the result is consistent with the hypothesis that when financial expert CEOs gain industry expertise, their financial expertise is a precious asset and helps them make better deals than their non-financial expert CEOs counterparts.

### 2.6.2. *Target selection*

Prior literature reveals that CEO's target selection preference can also drive the outcomes observed in M&A (Morck, Shleifer, and Vishny, 1990; Harford, Humphery-Jenner, and Powell, 2012). Some researchers prove that public deals are more likely to decrease value (Fuller, Netter, and Stegemoller, 2002). If financial expert CEOs are aware of their lack of access to information on targets' industries, they are expected to prefer targets with less information asymmetry. Information on public targets is usually readily available to potential buyers. In contrast, acquirers must collect private information and incur higher information costs when buying a non-public target. Financial expert CEOs, therefore, prefer public targets and avoid private targets. The results in Table 2.14 prove this hypothesis.

**[Insert Table 2.14 near here]**

While the tests cannot exclude all potential competing behavioural explanations, they still shed light on them. The results are consistent with the idea that there are complementarities between various CEOs skills. Financial expert CEOs might lack industry-specific knowledge in a target industry and thus underperform in some deals. However, unlike entrenched or dictatorial CEOs, who make worse and more M&A deals to achieve their benefits, financial expert CEOs make worse and fewer M&A deals. CEOs with finance work experience seem to understand their shortfalls and seek to avoid destroying shareholder value.

## 2.7 Conclusion

Prior literature has examined how various CEO characteristics affect firm policies and performance. This paper provides novel empirical evidence on the role that financial expert CEOs play in a firm's M&A behaviour.

The results indicate that acquirer shareholders do not benefit from CEOs' prior career paths in finance since financial expert CEOs make fewer and worse deals. The results are robust after addressing endogeneity concerns. I also identify several potential channels of value destruction for acquirers by financial expert CEOs. First, I prove that acquirers with financial expert CEOs are unskillful bargainers. Second, I find that they create fewer synergies than non-financial expert CEOs.

Finally, further analysis reveals that, in the M&A context, financial expertise trumps industry expertise. There are complementarities between different CEO skills. Financial expert CEOs might lack industry-specific knowledge in a target industry and thus underperform in some deals; however, when they gain industry expertise, their financial expertise becomes all the more valuable. Furthermore, compared to non-financial expert CEOs, financial expert CEOs inappropriately avoid private targets.

However, unlike entrenched and dictatorial CEOs, who make more lower-quality M&A deals to achieve their benefits, and unlike overconfident CEOs, who overestimate their ability to generate returns and thus undertake more value-destroying M&A deals, financial expert CEOs make fewer M&A deals with lower quality. CEOs with financial work histories seem to understand their shortcomings and thus try to avoid doing M&A. It is also possible that the lack of industry expertise prevents them from finding more potential suitable targets.

In general, these results highlight the importance of CEO characteristics in

firm behaviour and suggest that only specialists master their fields. If firms make efforts to improve future acquisition outcomes, recruiting only CEOs with financial expertise may not be advantageous.

**Table 2.1: Variable Definitions**

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Panel A: Financial Expert Characteristics	
Variable	Definition
CFO Dummy	CEO who has experience in a CFO role.
Financial Firms Dummy	CEO who has experience in either banking or investment firms (two-digit SIC codes 60, 61 and 62).
Financial Expert CEO	CEO who has experience in either banking or investment firms (two-digit SIC codes 60, 61 and 62), or in a CFO role.

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Panel B: CEO Characteristics	
Variable	Definition
CEO Age	Age of CEO in years.
CEO Tenure	Number of years as CEO in the current position.
Ivy League	Dummy variable equals one if the CEO graduated from Ivy League college.
Male Dummy	Dummy variable equals one if the CEO is male.
Target-Industry Expert CEO	Dummy variable equals one if the acquirer's CEO has prior work experience in the target industry.
Acquirer-Industry Expert CEO	Dummy variable equals one if the acquirer's CEO has prior work experience in the current firm's industry.
Long Tenure	Dummy variable equals one if the CEO's tenure is above the median tenure.
MBA Dummy	Dummy variable equals one if the CEO has an MBA degree.
PhD Dummy	Dummy variable equals one if the CEO holds a doctoral degree.

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Panel C: Corporate Governance Controls	
Variable	Definition
Board Size	Number of directors on bidder's board.

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Board Independence	Dummy variable equals to one if over 60% of directors are independent, zero otherwise (Huang, Jiang, Lie, and Yang, 2014).
Chairman	Dummy variable equals one if the CEO also serves as the chairman.
Founder	Dummy variable equals one if the CEO is the founder.
CEO's Ownership	Ownership is from ExeuComp item <i>shown_excl_opts_pct</i> . If missing, then calculate as $100 * shown\_excl\_opts/csho * 1000$ .

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Panel D: Bidder Characteristics

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Book Leverage	Ratio of total debt ( <i>dltt+dlc</i> ) to book value of assets ( <i>at</i> ).
Cash Flow Measure	Operating cash flows ( <i>sale - cogs - xsga + dp</i> ) over ( <i>at</i> ).
Assets	Book value of assets ( <i>at</i> ).
Free Cash Flow	Operating income before depreciation ( <i>oibd</i> )-interest expense ( <i>xint</i> )-income tax( <i>txt</i> )-capital expenditures( <i>capx</i> ) scaled by total assets( <i>at</i> )
Firm Size	Calculated as: $\text{Log}(at)$ .
Firm Age	Number of years between fiscal year ( <i>fyear</i> ) and CRSP listing year ( <i>listyear</i> ).
Profitability	Ratio of earnings before interest and taxes ( <i>ib + xint + txt</i> ) to value of assets ( <i>at</i> )
Price-to-Earnings Ratio	Calculated as: $\text{prccf}/\text{eps}$ The percentage of the number of financial companies (with two-digit SIC 60, 61, 62) to the total number of companies in the area (with 2-digit Zip code). Calculated as $\frac{\text{Num. of financial companies}}{\text{Total number of companies}}$
Sales Growth	Calculated as: $(\text{sale} - l.\text{sale})/l.\text{sale}$

Tobin Q	Calculated as: $(at - ceq + prcc\_f * csho)/at$ .
<hr/>	
Panel E: Deal Characteristics	
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All Cash Deal	Dummy variable equals one if the deals are paid 100% in cash and zero otherwise.
Diversifying Dummy	Dummy variable equals one if the target and the acquirer differ in their Fama-French 12 –Industries classification.
Domestic Dummy	Dummy variable equals one if the target is a U.S. firm.
Public Dummy	Dummy variable equals one if the target is a public firm.
Private Dummy	Dummy variable equals one if the target is a private firm.
Relative Size	Transaction value / Acquirer market value of equity.
Subsidiary Dummy	Dummy variable equals one if the target's public status is subsidiary.
Stock Deal	Dummy variable equals one if the deals paid a positive fraction of the transaction value in stock and zero otherwise.
Transaction Value	Deal value in millions of dollars extracted from Thomson M&A database.

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Panel F: Deal Performance	
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CAR [-1:1]; CAR [-2:2]	Three-day (-1,1) or five-day (-2,2) cumulative abnormal return (%) calculated using Fama-French three factors model. The market model parameters are estimated using the return data or the period (-270, -21).

Combined CAR [-1:1]	The acquisition announcement returns of the bidder and the target are combined, using weights based on the market values 50 trading days prior to the acquisition announcement.
Change in ROA	Change in industry-median-adjusted ROA from one year before the acquisition announcement to one year after. ROA is defined as: $oibdp/at$ .
Premium	The offer price per share which is paid to the target shareholders over the price per share of the target stock 1 day, 1 week, or 4 weeks before the announcement.
Relative Gains	The relative gains by the target are calculated as the difference in dollar gains between the target and bidder, normalized by the sum of the acquirer's and target's market cap 50 trading days prior to the announcement date.

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**Table 2.2: Summary Statistics**

The sample consists of Compustat S&P 1500 firms with non-missing key variables data for which CEO data are available from ExecuComp in 1992-2018 period. All variables are winsorized at 1% and 99% values. The sample includes 30,504 firm-year observations on 5,464 CEOs. 4,449 firm-year with at least one acquisition. Variable definitions are as defined in Table 1. \*\*\*p<0.001, \*\*p<0.05, \*p<0.1.

Panel A: Financial Expert CEOs									
	Mean	p25	Median	p75	SD	N			
CFO Dummy	0.125	0	0	0	0.331	30,504			
Financial Firms Dummy	0.229	0	0	0	0.420	30,504			
Financial Expert CEO	0.318	0	0	1	0.466	30,504			
Panel B: CEO Characteristics									
	Mean	p25	Median	p75	SD	N	Financial Expert	Non Financial Expert	Diff.
CEO Age	55.681	51	56	60	7.161	30,463	55.308	55.855	-0.548***
CEO Tenure	7.225	2	5	10	6.943	28,747	6.713	7.466	-0.753***
Ivy League Dummy	0.192	0	0	0	0.394	30,504	0.231	0.174	0.056***
Male Dummy	0.973	1	1	1	0.161	30,504	0.969	0.975	-0.007***
MBA Dummy	0.194	0	0	0	0.396	30,504	0.238	0.174	0.064***
PhD Dummy	0.056	0	0	0	0.231	30,504	0.041	0.064	-0.023***
Panel C: Corporate Governance Controls									
	Mean	p25	Median	p75	SD	N	Financial Expert	Non Financial Expert	Diff.
Board Size	9.114	8	9	11	2.181	20,110	9.464	8.948	0.516***
Board Independence	0.857	1	1	1	0.350	19,579	0.867	0.853	0.014***
CEO's Ownership	2.192	0.101	0.349	1.300	5.255	29,767	1.571	2.481	-0.909***
Chairman	0.551	0	1	1	0.497	30,504	0.575	0.54	0.036***
Founder	0.032	0	0	0	0.175	30,504	0.012	0.041	-0.028***
Panel D: Bidder Characteristics									
	Mean	p25	Median	p75	SD	N	Financial Expert	Non Financial Expert	Diff.
Book Leverage	0.238	0.081	0.221	0.347	0.191	30,504	0.259	0.227	0.032***
Cash Flow Measure	0.184	0.128	0.177	0.237	0.103	30,504	0.185	0.183	0.002*
Firm Age	20.674	9	18	31	13.99	30,439	22.606	19.775	2.831***
Firm Size	7.387	6.247	7.271	8.425	1.593	30,504	7.725	7.229	0.496***
Free Cash Flow	0.038	0.012	0.049	0.085	0.094	30,504	0.04	0.037	0.003**
Profitability	0.078	0.041	0.090	0.141	0.129	30,504	0.082	0.076	0.005***
Tobin's Q	2.051	1.243	1.633	2.335	1.341	30,504	1.959	2.094	-0.135***
Panel E: Deal Characteristics									
	Mean	p25	Median	p75	SD	N	Financial Expert	Non Financial Expert	Diff.
All Cash Deal	0.413	0	0	1	0.493	5794	0.425	0.408	0.019
Acquirer-industry Expert CEO	0.280	0	0	1	0.449	4,162	0.244	0.296	-0.052***
Domestic Dummy	0.775	1	1	1	0.417	5794	0.775	0.775	0
Diversifying Dummy	0.282	0	0	1	0.450	5794	0.304	0.271	0.032***
Public Dummy	0.258	0	0	1	0.438	5794	0.29	0.242	0.048***
Private Dummy	0.365	0	0	1	0.482	5794	0.323	0.385	-0.062***
Relative Size	0.160	0.021	0.064	0.178	0.250	5780	0.155	0.163	-0.007
Subsidiary Dummy	0.377	0	0	1	0.485	5794	0.387	0.372	0.015
Stock Deal	0.223	0	0	0	0.416	5794	0.197	0.235	-0.039***
Target-industry Expert CEO	0.252	0	0	1	0.435	1,632	0.290	0.232	0.058***
Transaction Value	716.734	101.754	217.25	565	1453.066	5794	863.25	646.358	218.603***



**Table 2.3: Correlation Matrix**

Panel A: Firm Characteristics										
	Financial Expert CEO	Book Leverage	Cash Flow Measure	Firm Age	Firm Size	Free Cash Flow Profitability	Tobin's Q			
Financial Expert CEO	1									
Book Leverage	0.079***	1								
Cash Flow Measures	0.011	-0.035***	1							
Firm Age	0.094***	0.037***	0.005	1						
Firm Size	0.145***	0.264***	0.050***	0.364***	1					
Free Cash Flow Profitability	0.014*	-0.135***	0.621***	0.109***	0.150***	1				
Tobin's Q	-0.047***	-0.159***	0.374***	-0.126***	0.143***	0.656***	1			
					-0.147***	0.222***	0.310***	1		
Panel B: CEO Characteristics										
	Financial Expert CEO	CEO Age	CEO Tenure	Ivy League	Male Dummy	MBA	PhD			
Financial Expert CEO	1									
CEO Age	-0.036***	1								
CEO Tenure	-0.051***	0.407***	1							
Ivy League	0.067***	-0.021***	0.038***	1						
Male Dummy	-0.019**	0.044***	0.057***	-0.006	1					
MBA	0.076***	-0.068***	-0.069***	0.278***	0.024***	1				
PhD	-0.047***	0.027***	0.059***	0.063***	-0.020***	-0.044***	1			
Panel C: Governance Characteristics										
	Financial Expert CEO	Board Size	Board Independence	CEO's Ownership	Chairman	Founder				
Financial Expert CEO	1									
Board Size	0.111***	1								
Board Independence	0.019***	0.030***	1							
CEO's Ownership	-0.081***	-0.166***	-0.113***	1						
Chairman	0.033***	0.112***	0.056***	0.154***	1					
Founder	-0.076**	-0.091***	0.014*	0.174***	0.086***	1				
Panel D: Deal Characteristics										
	Financial Expert CEO	All Cash Deal	Domestic Dummy	Diversifying Dummy	Public Dummy	Private Dummy	Relative Size	Subsidiary Dummy	Stock Deal	Transaction Value
Financial Expert CEO	1									
All Cash Deal	0.018	1								
Domestic Dummy	-0.001	-0.011	1							
Diversifying Dummy	0.033*	0.009	-0.010	1						
Public Dummy	0.051***	0.059***	0.066***	-0.050***	1					
Private Dummy	-0.061***	-0.102***	0.031*	0.007	-0.447***	1				
Relative Size	-0.013	-0.143***	0.112***	-0.045***	0.211***	-0.170***	1			
Subsidiary Dummy	0.014	0.048***	-0.091***	0.038**	-0.458***	-0.590***	-0.021	1		
Stock Deal	-0.044***	-0.449***	0.138***	-0.045***	0.263***	0.011	0.328***	-0.249***	1	
Transaction Value	0.070***	-0.062***	0.072***	0.053***	0.326***	-0.218***	0.360***	-0.077***	0.233***	1

## Table 2.4: Regression Analysis of Acquisition Propensity

This table reports regression analysis results of the probability that a firm does at least one M&A in each year. The sample is described in Table 2.2 and 2.3. The dependent variable equals one if a firm completes at least one acquisition and zero otherwise. Column (1) reports the regular probit regression results and column (2) repeats the regular probit regression with additional controls for the chief executive officer and corporate governance characteristic. The limited availability of these additional control variables further reduces the sample size. All regressions control calendar year fixed effects times industry fixed effects. T-statistics are shown in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

	(1)	(2)
	$M\&A_{t+1}$	$M\&A_{t+1}$
Financial Expert CEO	-0.058*** (-2.82)	-0.060** (-2.36)
Book Leverage	-0.322*** (-5.89)	-0.377*** (-5.65)
Firm Size	0.181*** (29.54)	0.216*** (22.22)
Tobin's Q	0.065*** (8.44)	0.037*** (3.58)
Profitability	0.173 (1.62)	0.245* (1.78)
Free Cash Flow	0.962*** (6.34)	1.221*** (6.12)
Age		-0.009*** (-4.77)
Male		0.171** (2.40)
Tenure		0.002 (1.09)
MBA		0.127*** (4.37)
PhD		0.121** (2.36)
Ivy League		-0.003 (-0.10)
Ownership		-0.013*** (-3.96)
Board Size		-0.034*** (-4.97)
Board Independence		0.020 (0.56)
Duality		-0.013 (-0.49)
Founder		0.063 (1.01)
Intercept	-2.424*** (-45.23)	-1.923*** (-13.68)
N	27398	17261
Year*Industry fixed effects	YES	YES

**Table 2.5: Propensity Score Modelling**

This table presents the estimation results of the probability of hiring financial expert CEOs and the difference in means of firm characteristics between the financial expert CEOs-firms and matched non-financial expert CEOs-firms. Panel A provides the estimation results of the probability of hiring financial expert CEOs on its determinants using a probit model. The dependent variable,  $Finacnailexpert_{i,t+1}$ , equals one if the firm’s CEO is a financial expert for the given year and zero otherwise. In panel B, I examine the difference in firm characteristics between the financial expert CEOs-firms and matched non-financial expert CEOs-firms. I use the “closest one” replacement matched sample.

Panel A: Propensity Score Modelling		Panel B: Difference in means after matching	
	(1) <i>Finacnailexpert<sub>i,t+1</sub></i>		(2) Mean Difference
Book Leverage	0.353*** (7.83)	Book Leverage	-0.001 (-0.43)
Firm Size	0.090*** (15.79)	Firm Size	-0.004 (-0.15)
Firm Age	0.005*** (7.76)	Firm Age	0.039 (0.18)
Tobin’s Q	- 0.021*** (-3.14)	Tobin’s Q	-0.015 (-0.79)
Profitability	-0.184** (-2.12)	Profitability	0.002 (1.00)
Free Cash Flow	-0.103 (-0.89)	Free Cash Flow	0.000 (0.33)
		Sales Growth	-0.001 (-0.2)
		PE	-2.209 (-0.84)
N	27735	N	15170
Year*Industry fixed effects	YES		

**Table 2.6: Propensity Score Matched Sample**

This table reports probit regression analysis of the probability that a firm does at least one M&A in each year. The sample includes financial expert CEOs firms and their propensity score-matched non-financial expert CEOs firms. T-statistics are shown in parentheses. \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01.

	(1) <i>M&amp;A</i> <sub>t+1</sub>	(2) <i>M&amp;A</i> <sub>t+1</sub>
Financial Expert CEO	-0.063* (-1.78)	-0.088** (-1.99)
Book Leverage	-0.408*** (-4.41)	-0.477*** (-4.38)
Firm Size	0.173*** (17.62)	0.223*** (13.84)
Tobin's Q	0.045*** (3.13)	0.009 (0.44)
Profitability	0.104 (0.56)	-0.031 (-0.14)
Free Cash Flow	1.041*** (3.99)	1.540*** (4.49)
Age		-0.011*** (-3.28)
Male		0.067 (0.62)
Tenure		0.007* (1.87)
MBA		0.072 (1.52)
PhD		0.132 (1.37)
Ivy League		0.056 (1.18)
Ownership		-0.013** (-2.03)
Board Size		-0.032*** (-2.87)
Board Independence		-0.025 (-0.44)
Duality		-0.070 (-1.64)
Founder		-0.110 (-0.76)
Intercept	-2.252*** (-23.22)	-1.617*** (-6.83)
N	9762	6235
Year*Industry fixed effects	YES	YES

**Table 2.7: Instrumental Variable Approach**

This table reports the results of the recursive bivariate probit model. Column (1) shows the first-stage results. The instrumental variable in the first stage is the ratio of financial companies to the total number of companies in two-digit ZIP code areas. Column (2) reports the second-stage results. Columns (3) and (4) include CEO and corporate governance controls. All regressions include year fixed effects times industry fixed effects. T-statistic results are shown in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

	(1) First-Stage	(2) $Deal_{i,t+1}$	(3) $Deal_{i,t+1}$
<i>Ratio</i>	0.419*** (4.93)		
Financial Expert CEO		-1.396*** (-21.01)	-1.372*** (-17.86)
Book Leverage	0.239*** (-4.83)	-0.119** (-2.22)	-0.088 (-1.36)
Firm Size	0.117*** (20.49)	0.201*** (25.85)	0.206*** (17.90)
Tobin's Q	-0.0114** (-3.21)	0.028*** (3.93)	0.015* (1.73)
Profitability	0.258*** (3.26)	0.208** (2.39)	0.240** (2.21)
Free Cash Flow	-0.212** (-1.97)	0.717*** (5.06)	0.778*** (4.23)
Age			-0.006*** (-3.62)
Male			0.140*** (2.70)
Tenure			0.001 (0.43)
MBA			0.088*** (3.91)
PhD			0.088** (2.37)
Ivy League			-0.007 (-0.33)
Ownership			-0.009*** (-3.61)
Board Size			-0.022*** (-4.11)
Board Independence			0.009 (0.35)
Duality			-0.009 (-0.51)
Founder			0.051 (1.03)
Intercept	-1.411*** (-28.26)	-1.816*** (-15.89)	-1.460*** (-11.30)
N	24046	24046	16262
Year*Industry fixed effects	YES	YES	YES

**Table 2.8: Regression Analysis of Acquisition Propensity in Longer Time Windows**

This table reports regression analysis results of the probability that a firm does at least one M&A each year. The sample is described in Table 2.2 and 2.3. The dependent variable indicates that the firm does at least one M&A in year  $t+2$  or  $t+3$ . Columns (1) and (3) report the regular probit regression results. Columns (2) and (4) repeat the regular probit regression with additional controls for the chief executive officer and corporate governance characteristics. The limited availability of these additional control variables further reduces the sample size. All regressions include year fixed effects times industry fixed effects. T-values are reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	$M \&A_{t+2}$	$M \&A_{t+2}$	$M \&A_{t+3}$	$M \&A_{t+3}$
Financial Expert CEO	-0.049** (-2.30)	-0.056** (-2.12)	-0.039* (-1.77)	-0.070** (-2.50)
Intercept	-2.352*** (-41.84)	-1.977*** (-13.28)	-2.205*** (-37.39)	-1.862*** (-11.82)
N	24772	15496	22403	13821
Firm Controls	YES	YES	YES	YES
CEO Controls	NO	YES	NO	YES
Governance Controls	NO	YES	NO	YES
Year*Industry fixed effects	YES	YES	YES	YES

**Table 2.9: Acquirer Announcement Return Regressions**

This table reports the results of ordinary least squares regressions. The dependent variable is the acquirer's cumulative abnormal returns (in percentage), measured using the Fama-French three factors model. The dependent variables in columns (1) and (3) are three days CARs, and in columns (2) and (4) are five days CARs. Columns (3) and (4) present results from Heckman regression. All regressions include year fixed effects times industry (Fama-French 48 industry) fixed effects. T-values are reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	(-1,1)	(-2,2)	(-1,1)	(-2,2)
Financial Expert CEOs	-0.332** (-1.98)	-0.439** (-2.35)	-0.345* (-1.89)	-0.468** (-2.30)
Firm Size	-0.351*** (-6.00)	-0.384*** (-5.80)	-0.133 (-0.56)	-0.337 (-1.30)
Tobin's Q	-0.109 (-1.45)	-0.104 (-1.22)	0.014 (0.15)	-0.040 (-0.36)
Free Cash Flow	4.013** (2.51)	4.495** (2.56)	4.497** (2.24)	4.308** (1.96)
Cash Flow Measure	-1.784 (-1.50)	-1.861 (-1.40)	-1.900 (-1.48)	-2.318 (-1.60)
Book Leverage	0.798 (1.44)	0.740 (1.19)	0.768 (1.14)	1.149 (1.48)
Relative Deal Size	-0.017 (-0.03)	-0.193 (-0.30)	-0.220 (-0.35)	-0.520 (-0.75)
Stock Deal	-0.902*** (-3.16)	-0.904*** (-2.75)	-0.914*** (-3.07)	-0.910*** (-2.63)
All-cash Deal	0.384** (2.32)	0.415** (2.24)	0.369** (2.17)	0.317* (1.67)
Public	-1.035*** (-4.54)	-1.108*** (-4.27)	-0.990*** (-4.22)	-1.001*** (-3.75)
Subsidiary	0.640*** (3.50)	0.834*** (4.09)	0.547*** (2.91)	0.734*** (3.49)
Diversifying	0.089 (0.50)	0.107 (0.54)	0.034 (0.19)	0.007 (0.03)
Age	-0.153 (-0.98)	-0.031 (-0.18)	-0.131 (-0.80)	0.009 (0.05)
Age Squared	0.001 (0.97)	0.000 (0.17)	0.001 (0.81)	-0.000 (-0.01)
Tenure	0.061* (1.76)	0.034 (0.88)	0.063* (1.75)	0.042 (1.05)
Tenure Squared	-0.001 (-0.58)	0.001 (0.52)	-0.001 (-0.74)	0.000 (0.21)
Intercept	7.756* (1.81)	4.815 (1.01)	2.843 (0.46)	2.540 (0.37)
N	4767	4756	4397	4392
Inverse Mills ratio	NO	NO	YES	YES
Year*Industry fixed effects	YES	YES	YES	YES
R <sup>2</sup>	0.045	0.045	0.044	0.043

**Table 2.10: Financial Expert CEOs and Takeover Premium**

This table reports the results of OLS regression. The dependent variable is the takeover premium paid by acquirers measured as the offer price over the price per share of the target one day before the announcement in column (1); the offer price over the price per share of the target four weeks before the announcement in column (2); In column (3), the dependent variable is the relative gain of the target versus the acquirer for each dollar of market value. Relative gains are calculated by the difference in dollar gains between the target and the acquirer, normalized by the sum of the acquirer's and the target's market cap 50 trading days before the announcement date. All regressions include year fixed effects times industry fixed effects. T-values are reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1)	(2)	(3)
	1 day offer premium	4 weeks offer premium	Relative gains
Financial Expert CEO	-2.610 (-1.32)	-4.134* (-1.71)	0.768** (2.03)
Intercept	51.421*** (4.14)	60.741*** (3.65)	-3.884 (-0.35)
N	1184	1181	895
CEO Controls	YES	YES	YES
Firm Controls	YES	YES	YES
Deal Controls	YES	YES	YES
Year*Industry Fixed Effects	YES	YES	YES



**Table 2.11: Financial Expert CEOs and Synergies**

Column (1) presents an OLS estimation of combined acquisition announcement returns for both the target and acquirer from 1992-2018. The dependent variable is the combined acquirer and target three-day cumulative abnormal return, using weights based on market values of the target and acquirer 50 trading days before the acquisition announcement. Column (2) reports the change in the industry-median-adjusted ROA, in which the change in the ROA is calculated from one year before the acquisition announcement to one year after. All regressions include year fixed effects times industry fixed effects. T-values are reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1) Combined CAR	(2) ROA
Financial Expert CEO	-0.593* (-1.67)	-0.010*** (-2.71)
Intercept	2.169 (0.20)	-0.087 (-0.88)
N	926	729
CEO Controls	YES	YES
Firm Controls	YES	YES
Deal Controls	YES	YES
Year*Industry Fixed Effects	YES	YES

**Table 2.12: Target-Industry Expert CEOs and Financial Expert CEOs**

The table reports the results of the ordinary least squares regressions of the acquirer's cumulative abnormal returns (in percentage), calculated using the Fama-French three factors model. The sample is limited to the subsample for diversifying deals. For Panels A and B, the dependent variables in column (1) are three days CARs, and in column (2) are five-day CARs. The variable target-industry expert CEOs equals one if the CEO has prior work experience in the target's industry. The variable non-expert CEO equals one if the CEO is neither a financial expert nor an industry expert. All regressions include year fixed effects times industry fixed effects. T-values are reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

Panel A: Financial Expert CEO and Target-Industry Expert CEO	(1)	(2)
	(-1,1)	(-2,2)
Financial Expert CEO	-0.551*	-0.526
	(-1.70)	(-1.47)
Financial Expert CEO*Target-Industry Expert CEO	1.715**	1.517*
	(2.55)	(1.88)
Industry Expert CEO	1.174***	0.998**
	(2.81)	(2.03)
Intercept	8.498	0.200
	(1.16)	(0.02)
N	1333	1330
CEO Controls	YES	YES
Firm Controls	YES	YES
Deal Controls	YES	YES
Year*Industry Fixed Effect	YES	YES
Panel B: Financial Expert CEO and Non-expert CEO	(1)	(2)
	(-1,1)	(-2,2)
Financial Expert CEO	-0.849**	-0.762
	(-1.99)	(-1.53)
Non-expert CEO	-1.122***	-0.953*
	(-2.69)	(-1.94)
Intercept	8.044	-0.220
	(1.09)	(-0.03)
N	1333	1330
CEO Controls	YES	YES
Firm Controls	YES	YES
Deal Controls	YES	YES
Year*Industry Fixed Effect	YES	YES

**Table 2.13: Long Tenured Financial Expert CEOs**

The table reports the results of the ordinary least squares regressions of the acquirer's cumulative abnormal returns (in percentage), calculated using the Fama-French three factors model. Panel A analyses the subsample for diversifying deals, while Panel B uses the non-diversifying deals. For both panels, the dependent variable in column (1) is three-day CARs, and in column (2) is five-day CARs. The variable industry expert CEOs equals one if the CEO has prior work experience in the target's industry. Long Tenure's variable indicates the acquirer firm chief executive officer (CEO) whose tenure in the acquirer's industry is above the sample median. All regressions include year fixed effects times industry fixed effects. T-values are reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

Panel A: Non-Diversifying Deals	(1)	(2)
	(-1,1)	(-2,2)
Financial expert CEO	-0.913*** (-3.31)	-1.115*** (-3.64)
Financial expert CEO*Long Tenure	0.995** (2.49)	1.148*** (2.59)
Long Tenure	-0.379 (-0.93)	-0.456 (-1.02)
Intercept	8.173 (1.59)	7.049 (1.22)
N	3434	3426
CEO Controls	YES	YES
Firm Controls	YES	YES
Deal Controls	YES	YES
Year*Industry Fixed Effect	YES	YES
Panel B: Diversifying Deals	(1)	(2)
	(-1,1)	(-2,2)
Financial expert CEO	0.002 (0.01)	0.068 (0.15)
Financial expert CEO*Long Tenure	0.053 (0.09)	-0.195 (-0.29)
Long Tenure	-0.536 (-0.84)	-0.562 (-0.77)
Intercept	8.173 (1.59)	7.049 (1.22)
N	1333	1330
CEO Controls	YES	YES
Firm Controls	YES	YES
Deal Controls	YES	YES
Year*Industry Fixed Effect	YES	YES

**Table 2.14: Financial Expert CEOs and Target Type Selection**

This table reports the regression results of the Heckman two-stage model. The dependent variable in columns (1) - (3) is the binary variable with which one signifies that the target type in M&A is a public, private, or subsidiary one, respectively. All control variables are lagged year variables, and all regressions include year fixed effects times industry fixed effects. T-values are reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1)	(2)	(3)
	Public	Private	Subsidiary
Financial expert CEO	0.124*** (2.96)	-0.108*** (-2.64)	-0.003 (-0.07)
Book leverage	-0.409*** (-3.13)	-0.346*** (-2.80)	0.683*** (5.74)
Firm Size	0.158*** (9.16)	-0.157*** (-8.92)	0.012 (0.72)
Tobin Q	0.035** (2.40)	0.094*** (6.75)	-0.154*** (-9.10)
Profitability	-0.117 (-0.41)	-1.337*** (-4.70)	1.498*** (5.43)
Free Cash Flow	0.710** (2.07)	0.952*** (2.65)	-1.402*** (-4.17)
Inv. Mills	0.307*** (5.14)	-0.329*** (-5.56)	0.049 (0.86)
Intercept	-2.495*** (-11.51)	1.257*** (5.81)	-0.209 (-1.01)
N	5024	5024	5024
Year*Industry Fixed Effects	YES	YES	YES

*"We need the three W's – women, water and well-being."*

Muhtar A. Kent<sup>a</sup>

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<sup>a</sup>ex-CEO of Coca-Cola Company, 1952-

# 3

## Do Female Executives Acquire Greener Targets?

### 3.1 Introduction

IN RECENT YEARS, A GROWING BODY OF EVIDENCE shows THAT managerial fixed effects can explain a significant portion of the firm's practice variation (Bertrand and Schoar, 2003; Adams, Almeida, and Ferreira, 2005; Bennedsen, Kongsted, and Nielsen, 2008). Researchers have investigated some specific individual traits and personal characteristics, such as age, education, and early experience, that might drive managers' decision-making (Malmendier and Tate, 2005; Yim, 2013; Bernile, Bhagwat, and Rau, 2017).

In the meanwhile, more and more researchers study the differences between male and female behaviours. Some of these studies explain the psychological differences between women and men. For example, Huang and Kisgen (2013) find that female executives are less overconfident than their male counterparts. Weber, Blais, and Betz (2002) suggest that women are more risk-averse than men in all domains except social risk. The difference is also reflected in financial decisions. As compared to male managers, female managers invest in less risky assets (Sunden and Surette, 1998; Bernasek and Shwiff, 2001; Agnew, Balduzzi, and Sunden, 2003), conduct fewer acquisitions, and issue less debt (Huang and Kisgen, 2013).

Some researchers, moreover, assert that female managers add more value to a firm than men do. Weber and Zulehner (2010) suggest that the presence of female leaders helps firms operate for longer. Studies further argue that female managers help firms improve stock price informativeness, avoid operations-related lawsuits, and enhance the board's advisory quality (Adhikari, Agrawal, and Malm, 2019; Gul, Srinidhi, and Ng, 2011; Kim and Starks, 2016).

In this paper, I investigate female executives' (CEO and CFO) environmental

protection awareness in Mergers and Acquisitions (M&A) decisions. Previous literature suggests that females react more than men to social and emotional stimuli in many contexts (e.g. Brody and Hall, 2008; McManis, Bradley, Berg, Cuthbert, and Lang, 2001, etc.), and women care more about the social context (Croson and Gneezy, 2009). Given that environmental protection and climate change have become essential issues in society, it is reasonable to believe those female executives are more environmentally friendly and more influenced by their ecological awareness when making corporate decisions. A recent working study by Wang and Yu (2019) supports this hypothesis. They suggest that female CEOs are more environmentally friendly, and when they lead firms, they pollute less and receive fewer environmental penalties. Ginglinger and Gentet-Raskopf (2021) find that female directors have unique qualities, experiences, as well as preferences, and the presence of women on boards increases a firm's Environment and Social (E&S) performance.

I take a closer look into how female executives' tendency to protect the environment affects acquisitions. Specifically, I study the types of acquisitions female executives make in regard to the target's environmental attributes, for example, the target's toxic releases, environmental penalties, environment-related discussions in the 10-K filings as well as green innovations. M&A is a vital investment activity of a company closely related to its top executives. Although acquirer executives have clear incentives to focus exclusively on value-building for shareholders and thus make good deals, their personal traits can still affect their decision-making. For example, prior literature finds that target firms' public status is essential in the selection process. Entrenched managers tend to avoid private targets to preserve their entrenchment and avoid further internal scrutiny (Harford, Humphery-Jenner, and Powell, 2012).

Furthermore, behavioural experiments show that male and female brains process prosocial and selfish behaviour differently. For women, prosocial actions trigger a more grounded reward signal, while male reward systems react more emphatically to egotistical conduct (Soutschek, Burke, Raja Beharelle, Schreiber, Weber, Kari-[pidis](#), Ten Velden, Weber, Haker, Kalenscher, et al., 2017). Given this evidence, I hypothesise that pollution level may be an essential factor for female executives in choosing potential targets.

I first construct a database by merging data from several sources: pollution data from the U.S. Environmental Protection Agency (EPA), M&A data from ThomsonOneBanker, financial data from Compustat, executive information from ExecuComp and BoardEx, 10-K filings data from SEC EDGAR, and patent data from Intellectual Property database. I identify the differences between female and male executives in target selection. I find that firms with female executives acquire greener targets.

First, I observe that female executive prefers private targets. I then prove that they prefer private equity-backed firms, which have been proven to be the less polluting firms among private targets ([Bellon, 2020](#)). Then, more direct evidence is provided by analysing numerous measures of firm pollution as dependent variables, such as total toxic releases, environmental penalties, and green innovation. I determine that female executives acquire targets which release less toxic pollution, receive fewer environmental penalties and issue more green patents. I also look more closely into targets' environment-related discussions in their 10-K filings and find that firms with female executives acquire targets which mention fewer environment-related words in their 10-K filings. [Shive and Forster \(2020\)](#) prove that one extra instance of "greenhouse gas" in the 10-K is associated with



an 2.09% increase in emissions. Thus, the negative coefficient on female executives shows that they avoid targets with more environment-related words, for they prefer less polluted firms.

A potential concern is the endogeneity problem, which means that female executives may not be randomly assigned to firms. This selection bias problem comes from firms as well as executives. On the one hand, only boards of specific firms may consider women candidate for CFO or CEO. However, such an endogeneity concern may be minor to this study. By investigating academic research and publishing articles, [Wang and Yu \(2019\)](#) suggest that, in comparison to financial indicators, the non-financial outcome such as the awareness of environmental protection is not a factor worthy in executive selection. On the other hand, female executives may self-select themselves for CEO/CFO candidacy only for a certain business. An observed fact is that those female executives are more unlikely to work in the highly polluting gas and oil industries, among others.<sup>1</sup>

I deal with the issue of endogeneity by employing the instrumental variable approach. I use two instruments for female executives. First, following [Huang and Kisgen \(2013\)](#) and [Sugarman and Straus \(1988\)](#), I use the calibration of a state's level of gender status equality as an instrument. I conjecture that the friendlier a state is to women's equality generally, the more likely a firm headquartered in that state is to have a female executive. Conversely, and perhaps more importantly, there is no evident reason for state-level gender equality to directly affect target selection for a firm's acquisitions. As such, this instrument appears to satisfy the exclusion criterion. .

Second, [Cortés and Pan \(2019\)](#) show that low-skilled immigration inflows induce

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<sup>1</sup>see, <https://www.mckinsey.com/industries/oil-and-gas/our-insights/how-women-can-help-fill-the-oil-and-gas-industrys-talent-gap>

young women to enter occupations with higher returns to overwork and shift women toward higher quantiles of the male wage distribution. Thus, I use share of low-skilled immigration in the labour market as the second instrument. The intuition behind this is that states that receive a large influx of low-skilled immigrants have greater availability of market substitutes for household production, thus enabling highly-skilled women in these states to increase their market work (Cortes and Tessada, 2011). Therefore, if the firms are located in states with higher low-skilled immigration rates, there will be more females in the local labour market, and the firms will be more likely to hire female executives. Besides, the firm's acquisition decisions should not be related to the share of low-skilled workers, which allows us to address the identification problem.

The empirical results show that both instrumental variables are significantly related to hiring a female executive in the first stage. Second-stage results further confirm the previous findings.

The paper contributes to several branches of the existing literature. First, the paper provides supplementary evidence that female executives make more prosocial decisions as compared to male managers. Prior studies suggest that women are more selfless (Eckel and Grossman, 1998). Compared to men, women engage more in volunteer actions (Babcock, Recalde, and Vesterlund, 2017). The results further confirm that firms with female executives are more environmentally friendly.

Second, the study complements existing studies by studying how top executives' (CFO and CEO) gender affects corporate decisions. Previous psychology and finance literature finds that men are more overconfident and less risk-averse than women. These characteristics result in different firm financial decisions by females and males. Huang and Kisgen (2013) find that women make fewer acquisitions and

issue less debt. Other researchers suggest that women invest in less risky assets in their investment portfolios (Sugarman and Straus, 1988; Bernasek and Shwiff, 2001; Agnew, Balduzzi, and Sunden, 2003). The study suggests that environmental protection is vital for female executives when making financial policies, specifically in the M&A target selection process.

Third, I study the role of female executives in firms. Prior literature indicates that hiring female employees and managers is also in the firms' interest. Weber and Zulehner (2010) suggest that females help firms operate longer. Adhikari, Agrawal, and Malm (2019) find that firms with female managers avoid operations-related lawsuits. Gul, Srinidhi, and Ng (2011) assert that female directors improve stock price informativeness. Wang and Yu (2019) demonstrate that female CEOs improve the firm's environmental protection. The study proves that female executives have a greater awareness of environmental protection. Furthermore, I also find that this prosocial and pro-ecological behaviour is not at the expense of shareholders' value.

The rest of the paper is organised as follows: Section 3.2 presents the data; in Section 3.3, I provide the main empirical tests; in Section 3.4, I conduct additional tests to solve the endogeneity problem; in Section 3.5, I examine deal performance; and in Section 3.6, I sum up the conclusions.

## **3.2 Data and Descriptive Statistics**

### *3.2.1. Acquirers' executives and financial data*

Following Huang and Kisgen (2013), I focus on CEOs and CFOs. Prior evidence suggests that while CEOs play a vital role in a firm's major corporate decisions, CFOs also have a great influence on firms' activities, such as investment and fi-

nancing policies (Bertrand and Schoar, 2003; Frank and Goyal, 2007).

The initial data comes from ExecuComp, which contains companies once listed on the S&P 1500 index. The sample covers the period from 1993 to 2019. I further exclude all financial and utility firms (SIC 6000-6999 & 4900-4999), as they operate quite differently from regular firms. I identify CEOs following the database's classification, which means "CEOANN" equals "CEO". Then, I further identify CFOs with "CFOANN" equals to "CFO". Since item "CFOANN" only indicates CFO from 2006, I further identify CFOs based on the item "titleann" in ExecuComp. Following Jiang, Petroni, and Wang (2010), I use the following phrases to identify CFO in the annual title: CFO, chief financial officer, chief finance officer, treasurer, controller, and vice president-finance. If ExecuComp reports more than one CEO or CFO in the same year, I further check the 10-K filing and choose the executive reported in the annual report. For the remaining firm-year observations, I additionally collect data from BoardEx. Finally, I have 34,980 firm-year observations for which the name and gender of the executives are available.

To obtain financial and stock data, I merge the data with Compustat and CSRP. I require that each company has non-missing data on main regression variables, and thus the initial sample is reduced to 32,278 firm-year observations with 6,104 unique CEOs and 7,340 CFOs, 2790 firms.

The primary explanatory variable of interest is the presence of a female executive in the firm. Thus, the Female is a dummy variable that takes the value of 1 if the firm's CEO or CFO is a woman in a given fiscal year and 0 otherwise.

### 3.2.2. *Mergers and acquisitions data*

To examine the influence of female executives on a firm's acquisition decisions, I collect deal information from the Thomson One Banker database. The initial sample includes all completed M&A done by U.S. public firms involving public, private, and subsidiary targets from 1993 to 2019. I exclude acquirer firms with SIC codes 6000-6999 & 4900-4999. I require that the control be transferred from the targets to the bidder after the transaction, which is to say, the percentage of shares acquired by the acquirer is higher than 50%. Following the previous literature, I further require that a deal's transaction value be over 1 million dollars. Then, I match each deal to the firm-year sample in Section 3.2.1 based on the announcement date of the acquisition. Among those deals, 76.5% of the targets are U.S. firms, and I further limited the data sample to domestic deals. This procedure yields 6,782 deals in the final M&A sample.

### 3.2.3. *Target's environment performance data*

#### 3.2.3.1. *Emissions data*

Following [Shive and Forster \(2020\)](#), I obtained plant-year level emission and penalties data from the EPA's Enforcement and Compliance History Online (ECHO). This data set contains emissions, penalties and other information related to the environment on EPA-regulated facilities. I link plants and their parental firms and hand match firms' names in EPA to that of a target firm.

The Toxics Release Inventory (TRI) is a resource for learning about toxic chemical releases and pollution prevention activities reported by industrial and federal facilities. EPA includes TRI data from 1987 with 2,821,553 plant-year level obser-

vations. The data set covers 61,180 plants and 14,363 parental firms. I converted the data set into a firm-year level data set and manually matched the TRI firm names to the target firms.<sup>2</sup>

EPA enforcement data comes from the Integrated Compliance Information System for Federal Civil Enforcement Case Data (ICIS FEC). This data set contains information on informal and formal administrative cases and judicial cases. I obtain penalty amounts data. To assign a year to the case in ICIS FEC, I use the first data that the case was filed with the EPA to match. I use logarithms of all these measures to avoid the potential skewness problem.

#### 3.2.3.2. *SEC 10-K filings data*

To measure the target firm's environment-related issues, I extract information reported in 10-K filings. Prior literature shows that 10-K filings are the primary source of information for investors. The S.E.C. does not require firms to specifically disclose information related to emissions or the environment. However, managers might discuss environmental issues in the annual filings. Those environmental discussions can be found in several sections of the 10-K file. For example, according to the S.E.C. interpretive release, discussions related to climate change are usually presented in the Description of Business, Legal proceedings, Risk Factors and Management's discussion and analysis (M.D.A.). [Li \(2008\)](#), [Loughran and McDonald \(2014\)](#) analyse the number of words per sentence, syllables per word, and the file

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<sup>2</sup>I did not use the Greenhouse Gas Reporting Program (GHGRP) and Clean Air Markets program data. The former measures and collects air emissions data from more extensive facilities; the data has been collected since 2010. The latter data set includes data for the largest emitters and measures emissions of fine particles, ozone, sulphur dioxide, nitrogen oxides, mercury, and other significant air pollutants from 2007. Although this data set is generally considered the highest quality air emissions data according to the EPA's website, the limited data years resulted in a poor matching result with the target sample.

size. They suggest that those indicators help investors understand a firm's performance, business, and financial conditions. I thus expect that environment-related words can provide us with insight into targets' environmental performance.

I limited the sample to targets that file 10-K. Wang and Yu (2019), Shive and Forster (2020) create variables measuring the presence of language related to environmental awareness in 10-K filings, such as "climate change", "greenhouse gas", and "emissions". Sautner, van Lent, Vilkov, and Zhang (2020) adapt a machine learning method and identify the keywords that can capture exposure related to opportunity, physical, and regulatory shocks associated with climate change. Following the literature, I include three groups of words to reflect the environmental discussions of the firm. The first set of words includes broad climate terms, such as "climate change", "greenhouse gas", and "extreme weather". The second set of terms relates to the firm's climate goal and targets. Those terms include "sustainability", "E.S.G.", "social responsibility", "emission reductions", "net zero", and "zero emissions". Finally, I also measure the terms which indicate the firm's climate actions, such as "renewable energies", "carbon/environment footprint", "energy transition", and "carbon offsets". I first count the related terms in the 10-K each year for every group. I then create variables to indicate word frequency per every one hundred thousand words.

#### 3.2.3.3. *Patent data*

I collect data on patents granted in the United States from the Orbis Intellectual Property database provided by Bureau van Dijk (BvD). Following Cohen, Gurun, and Nguyen (2020), the IPC code is used to classify each patent into green or non-green. The classification is according to the guideline from the OECD environment

technology. This guideline reports the International Patent Classification (IPC) classes associated with environmentally friendly technologies in fields such as environmental management, water adoption, biodiversity protection, climate change mitigation, and greenhouse gas management.<sup>3</sup> The analysis of green patents will be based on the number of green patents granted per firm and the percentage of the firm's green patents to its total patent numbers.

#### 3.2.4. *Summary statistics*

All variable definitions are reported in Table 3.1. All continuous variables are winsorized at their 1st and 99th percentiles to reduce the influence of outliers.

Table 3.2, Panel A, shows descriptive statistics of female executives in the panel. Overall, 11% of firm-year observations are from female executives. The majority of female executives serve in the CFO role.

#### **[Insert Table 3.2 near here]**

Table 3.2, Panel B, further presents the bidder's characteristics. Compared to male executives, univariate tests predict that female executives are more likely to work in larger, more mature firms. [Huang and Kisgen \(2013\)](#) suggest that larger companies are more visible, and therefore directors or managers of those firms might be more careful not to discriminate in hiring and promotion decisions. They also hold more cash and prefer lower leverage. The firms with female executives have higher free cash flow alongside a higher Tobin's Q. This mitigates the concern about the potential agency problem. An additional point is that, when the CEO serves as the board chairman, it is less likely for the firm to have a female executive.

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<sup>3</sup>See [Haščič and Migotto \(2015\)](#) for detailed descriptions of environmental-related patents' identification.



Panel C presents the targets' environment-related performance. The univariate results indicate that acquirer firms with female executives have different propensities when bidding on the targets. For example, the targets acquired by females release fewer toxic emissions.

Finally, Panel D shows deal characteristics, showing the differences between M&A conducted by male and female executives. The fractions of public, private, and subsidiary targets are 20%, 45%, and 35%, respectively. Female executives prefer cash deals and are less likely to finance a deal with equity than male executives are.

**[Insert Table 3.3 near here]**

The results of correlational analysis among variables are displayed in Table 3.3. Almost all variables report low pairwise correlations, which should mitigate multicollinearity concerns.

### **3.3 Empirical Results**

#### *3.3.1. Empirical methodology*

To explore the influence of executives' gender on target selection in acquisitions, I analyse the following empirical specification:

$$Pr(Deal_{i,j,k}) = \alpha_0 + \beta Female_i + \gamma X_{j,k} + \lambda X_{i,j,k} + v_{i,t} + \epsilon \quad (3.1)$$

Where  $Deal_{i,j,k}$  stands for deal characteristics to a bidder  $j$  and target  $k$  conducted by executive  $i$ . The dependent variable  $Deal_{i,j,k}$  could be one of the toxic releases,

penalty amounts, an indicator of whether issue SEC filing, etc. The primary variable of interest is a dummy variable ( $Female_i$ ) that equals one if an executive is female; otherwise, the value is zero. I further include a set of firm characteristics which have been documented to affect acquisition decisions and emissions (e.g. Harford, 1999; Shive and Forster, 2020), such as leverage and firm size. I also use Tobin's Q as a control for investment opportunities. Harford (2005) shows that mergers occur in waves and that they are clustered within industries, so I include industry times year dummies in all specifications. The detailed definitions of all variables are in Table 3.1.

### 3.3.2. *Target's listing Status*

I examine female executives' preference for target listing status in a multivariate setting. Literature indicates that the behaviour of firms with different listing statuses is varied. Hart and Zingales (2017) prove that private firms will more often make prosocial decisions. Shive and Forster (2020) further study the impact of listing status on environmental externalities. They provide further evidence that, compared to public firms, private firms are less likely to pollute and incur EPA penalties. If female executives act more in the interest of environmental protection, they will prefer private targets and avoid public targets.

Following Harford, Humphery-Jenner, and Powell (2012), I use a two-step Heckman procedure that controls the selection inherent in a bidder choosing to bid. In the first step, the selection equation controls for the female dummy variable. I then include control variables, such as the bidder's industry concentration (Herfindahl-Hirschman Index), cash holdings scaled by total assets, the number of previous deals size, book leverage, profitability and Tobin's Q. The results are presented in

Table 3.4.

Columns (1) and (2) show that firms' female executives have a significantly lower fraction of public targets, all else equal. I did not find those female executives have a significant preference for subsidiary targets in column (3).

**[Insert Table 3.4 near here]**

To find more evidence, I collect the ownership data of those private targets. [Bellon \(2020\)](#) documents that PE ownership leads to pollution reduction. I thus divide private targets into independent privates and sponsor-backed privates. Coefficients in column (4) suggest that female executives tend to acquire more private sponsor-backed firms, indicating that female executives acquire less polluted targets. Another important piece of evidence is that the magnitude of the coefficient on the interested variable-Female also increased, compared to it in column (2), which again strengthens the belief that female executives choose greener targets.

While I cannot conclusively determine the motivations of female executives, this set of results is consistent with the conjecture that, compared to male executives, female executives prefer greener targets. However, on the other hand, the target listing status selection may simply be profit-maximizing decisions in M&A. Some researchers prove that public deals are more likely to decrease in value ([Fuller, Netter, and Stegemoller, 2002](#)). Female executives may have fewer agency problems and make decisions to benefit shareholders. Thus, I study other direct measures of pollution data from the U.S. Environmental Protection Agency (EPA) to obtain more direct evidence.

### 3.3.3. *Target's emission and penalties*

This section examines the target firms' emission and penalties data from the EPA website. Table 3.5 columns (1) and (2) present the regression results that link executives' gender and target releases. The dependent variable in column (1) is the firm's total toxic releases. I define total toxic releases as the total quantity of toxic chemicals released on-site at all facilities of the firm plus the total amount of toxic chemicals reported as transferred to off-site locations for release or disposal. In column (2), the dependent variable is a dummy variable. I regard the target as a more polluted firm when the firm's releases exceed the industry median. The dependent variable High-TTR will equal one; otherwise, the dependent variable equals zero.

#### **[Insert Table 3.5 near here]**

The estimated coefficients for the Female variable indicate a negative and significant relationship between the acquirer female executive and the target's total toxic releases. The results are also economically meaningful. Specifically, the results in column (1) suggest that the target firm chosen by an acquirer's female executive has 35% lower total toxic releases than the target chosen by a male executive. The coefficient in column (2) further indicates that female executives are 49.5% less likely to acquire highly polluting targets.

Table 3.6 column (1) presents the effects of acquirers' female CEOs on the target's number of EPA penalties, whereas Table 3.6 column (2) presents their effects on the penalty amounts. In both regressions in Table 3.6, the estimated coefficients for Female enter negatively. Female executives choose targets with a significantly lower number of penalties.

**[Insert Table 3.6 near here]**

#### 3.3.4. *Target's environmental discussion in the 10-K form*

The above empirical analyses showed that a female executive significantly acquires targets with fewer emissions in terms of total toxic releases. I further investigate the target firm's environment-related discussions in the 10-K form, apart from the measurable indicators.

An article in TIME magazine suggested that general terms relating to climate change had already crept in 10-K filings by 2012.<sup>4</sup> I believe that the specific terms relating to corporate climate goals and initiatives in 10-K filings have recently become part of companies' thought processes regarding the environmental crisis. There are two possibilities for the presence of environment-related words in the 10-K form. First, the environmental discussions may reflect firms' growing awareness of the need for environmental protection. Second, firms speak of environmental terms because they are highly polluting firms and thus discuss risk factors in pollution or climate change in the filings. Therefore, the relationship between female executives and the target's environmental discussion is unknown.

The results are presented in Table 3.7. In columns (1) and (2), I find a negative correlation between the acquirer's female executives and the target's mention of the environment-related terms in the 10-K. The number of environment-related words in the 10-K form will be marginally lower by 1.95% for a target acquired by female executives.

**[Insert Table 3.7 near here]**

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<sup>4</sup>see, <https://time.com/6166171/companies-financial-documents-climate-change/>

As mentioned in the above discussion, one possible interpretation of these results is that polluting firms have more exposure to climate change risk. Thus, they mention environmental issues on the form to discuss how the firm may be affected by potential future regulations. [Shive and Forster \(2020\)](#) support the results. They prove that one extra instance of “greenhouse gas” in the 10-K is associated with an 2.09% increase in emissions. Thus, the negative coefficient on female executives shows that they avoid targets with more environment-related words, for they prefer less polluted firms with fewer environmental risk factors.

### 3.3.5. *Target’s patent*

Firms’ patents are vital signs of innovation, and no firm or industry in the world economy is unaffected by innovation ([Cohen, Gurun, and Nguyen, 2020](#)). In this section, I examine specifically the green patents issued by targets. Green patents can potentially lessen environmental problems. These patents are classified into various broad environmental technology categories, for example, environmental management, water-related adaptation technologies, biodiversity protection and ecosystem health, climate change mitigation technologies related to energy generation, and waste-water treatment or waste management. I examine both the total number of green patents issued by a firm and the ratio of green patents to the total number of patents as measurements.

**[Insert Table 3.8 near here]**

Table 3.8 shows the results. The limitation of patent data reduces the sample size. However, I can still find a significant positive coefficient for the variable “Female”. Compared to their male peers, female executives are more likely to

acquire targets with more green patents or a higher percentage of green patents to total patents.

### 3.4 Identification Concerns

One potential concern is that female executives are not randomly assigned to firms. The systematic differences between firms with male and female executives could lead to the results [Huang and Kisgen \(2013\)](#). For purposes of this section, I adopt an instrumental variable approach to mitigate potential endogeneity concerns. My first instrument is based on a previous study that calibrates a state's gender status equality ([Huang and Kisgen, 2013](#); [Sugarman and Straus, 1988](#)).

[Sugarman and Straus \(1988\)](#) evaluate the 51 U.S. states and assign each one a score for gender status equality. I conjecture that the more favourable a state is to women's equality, the more likely a firm headquartered in that state is to have a female executive. This variable should not directly affect the firm's target choice but correlate with the presence of female executives of the firm headquartered in that state. Since the interested variable-Female, is a dummy variable, I implement a two-stage residual inclusion estimation following [Wooldridge \(2002\)](#) and [Terza, Basu, and Rathouz \(2008\)](#). In the first stage, I estimate a probit of the Female on the instrument variable and other controls. In the second stage, I add fitted residuals in the first stage as an additional regressor and rerun the primary regression. Using this approach, I take the binary nature of the endogenous variable into account and avoid endogeneity bias.

**[Insert Table 3.9 near here]**

Panels A, B, C, D and E in Table 3.9 show the regression results separately for

listing status, PE ownership, emissions, penalties, and SEC filing. By reporting the results for the first stage, I see from column (1) in each Panel that the instrumental variable correlates with the higher gender equality scores of the state where it is headquartered. For example, in panel A, the coefficient on the gender equality variable is significant at 1%, suggesting a strong positive relationship between state-level gender equality and the presence of a female executive.<sup>5</sup>

Panel A columns (2) - (4) and panel B column (2) report the results of the primary model in Table 3.4. As shown in column (2) of both panels, the coefficients on instrumented females are again positive and significant, consistent with the previous findings. The results in Panels C and D also remain robust. However, I cannot find significant results when analysing the green patents; one potential explanation is that the IV is a state-level variable and did not change over time, and the patent sample size is not big enough.

The second instrument is the share of lower-skilled immigrants in the labour market. [Cortés and Pan \(2019\)](#) show that low-skilled immigration inflows induce young women to enter occupations with higher returns to overwork and shift women toward higher quantiles of the male wage distribution. Thus, in states with a large influx of low-skilled immigrants, there are more market substitutes for household production, allowing highly-skilled women to increase their market work ([Cortés and Tessada, 2011](#)). If the firms are located in states with higher low-skilled immigration rates, there will be more females in the local labour market, and the firms will be more likely to hire female executives. Following [Cortés and Pan \(2019\)](#), I

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<sup>5</sup>In unreported tests, following [Roodman \(2007\)](#), I first add the instrument to the second stage to test the validity of the instrument variable. Then, I test the instrument variable's weakness through the use of first-stage diagnostics such as those from the linear two-stages model. Although their theoretical grounding does not fully carry over the first-stage probit model, the test results can still be cited as indicative.



extract US Census Integrated Public Use Microdata Samples from [ipums.org](http://ipums.org) (see Ruggles, Alexander, Genadek, Goeken, Schroeder, Sobek, et al., 2010) to measure the concentration of low-skilled immigrants among states.

**[Insert Table 3.10 near here]**

Table 3.10 shows the results using the second IV. The empirical results in the first stage indicate that firms located in a state with a higher share of low-skilled immigrants are more likely to hire a female executive. Second-stage results further confirm the previous findings.

### **3.5 Female Executive and Market Reaction**

To evaluate the impact of female executives on mergers and acquisitions activities, I examine the announcement returns associated with those transactions. If female executives prefer prosocial deals to shareholder value, I might find female executive firm transactions to have worse market reactions than those of male executive firms.

The regression equation is as follows:

$$CAR_{i,j,k} = \alpha_0 + \beta Female_i + \gamma X_{j,k} + v_{i,t} + \epsilon \quad (3.2)$$

where  $CAR_{i,j,k}$  stands for acquirers' cumulative abnormal announcement returns to a bidder  $j$  and target  $k$  conducted by CEO  $i$ . I calculated both three-day and five-day windows to capture announcement effects.

Following prior literature (Custódio and Metzger, 2013; Huang and Kisgen, 2013), I calculate CAR by the three-factor Fama-French model. I estimate the model over a 255-day window ending 21 days prior to the announcement date

using the CRSP value-weighted index as the market proxy. As suggested in the literature (Custódio and Metzger, 2013; Moeller, Schlingemann, and Stulz, 2004), I include a set of firm and deal-level control variables. M&A often occurs in waves and is clustered by industry (Harford, 2005); thus, I also include industry times year dummies to control for fixed effects in the regression.

**[Insert Table 3.11 near here]**

Table 3.11 presents the results. The dependent variables in columns (1) and (2) are three-day CARs and five-day CARs, respectively. Most coefficients on control variables document consistent results (Andrade, Mitchell, and Stafford, 2001). However, the study finds neither positive nor negative effects on returns. These results suggest that female executives did not sacrifice shareholder value when conducting M&A.

### **3.6 Conclusion**

In addition to the previously documented differences between female and male firm leaders, this paper offers novel empirical evidence on the role that gender plays in a firm's M&A behaviours.

There are two main empirical results in the paper. First, on average, female executives acquire greener targets. I provide several pieces of evidence to support the conclusion; for instance, I measure the target's environmental performance by examining listing status, toxic releases, environmental penalties, 10-K forms texts and green patents. Second, I confirm that female executives' prosocial behaviour is not at the cost of shareholder value by investigating the abnormal announcement returns.

Overall, these results highlight the importance of executives' gender differences in firm behaviour and indicate that the environmental issue has been considered when making M&A decisions.

There are still remaining questions for further work. For example, this study is silent on the possible channels of females' prosocial behaviours. Given the growing number of female leaders in firms and the recent surge of climate change impact, I believe that it would be interesting to further investigate why female executives offer society positive externalities.

**Table 3.1: Variable Definitions**

Variable	Definition
Panel A: Independent Variable	
Female Dummy	Dummy variable equals one if the CEO or CFO is female.
Panel B: Dependent Variables	
CAR [-1:1]; CAR [-2:2]	Three-day (-1,1) or five-day (-2,2) cumulative abnormal return (%) calculated using Fama-French three factors model. The market model parameters are estimated using the return data for the period (-270, -21).
Green Patent	The number of green patents for patent-issued firms.
Green Patent Ratio	The ratio of firm's green patents to the firm's total number of patents.
Number Of Penalties	Target's number of penalties received in the sample. Number of penalties in each year is calculated by $\log(1 + \text{number of deferral enforcement cases with penalty record})$ . The penalties include both federal penalties and state/local penalties.
Number of Environment-related Words	The number of environment-related words, which appear in the SEC 10-K filing.
Frequency of Environment-related Words	The number of environment-related words in SEC 10-K filing for every one hundred thousand words.
High_TTR	Dummy variable equals one if target toxics releases are higher than the sample industry median value.
Public Dummy	Dummy variable equals one if target is a public firm.
Private Dummy	Dummy variable equals one if the target is a private firm.

Private-Sponsor	Indicator variable for firms with equity ownership that is untraded on an exchange and that is controlled by a private equity firm.
Total Penalty Amounts	The average value of target's penalty amounts in the sample. Penalty amounts are calculated by log (1+federal penalty amounts plus state/local penalty amounts).
Total Toxic Releases	Target's average total toxics releases in the sample period before it was acquired. Total Toxics releases are calculated by log (1+ total on-site release and the total off-site release) (kilo pounds)
Subsidiary Dummy	Dummy variable equals one if the target's public status is subsidiary.

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Panel C: Control Variables

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All Cash Deal	Dummy variable equals one if the deals are paid 100% in cash and zero otherwise.
Book Leverage	Ratio of total debt ( $dltt+dlc$ ) to book value of assets ( $at$ ).
Cash Flow Measures	Operating Cash flows ( $sale - cogs - xsga + dp$ ) over ( $at$ ).
Cash Holdings	Cash and marketable securities ( $che$ ) scaled by total assets ( $at$ ).
Diversifying Dummy	Dummy variable equals one if the target and the acquirer differ in their Fama-French 12 -Industries classification.
Free Cash Flow	Operating income before depreciation ( $oibd$ )-interest expense ( $xint$ )-income tax( $txt$ )-capital expenditures( $capddx$ ) scaled by total assets( $at$ ).
Firm Size	Calculated as: $Log(at)$ .

Firm Age	Number of years between fiscal year ( <i>fyear</i> ) and CRSP listing year ( <i>listyear</i> ).
Gender Equality	Overall gender equality index based on economic, political, and legal performance (Sunden and Surette, 1998)
Low-skilled Immigrants	State-level share of low-skilled immigrants in the labour force (Cortés and Pan, 2019)
Profitability	Ratio of earnings before interest and taxes ( $ib + xint + txt$ ) to value of assets ( $at$ ).
PPE	Ratio of net plant, property, and equipment ( $ppent$ ) to value of assets value( $at$ ).
Revenues	The logarithm of total annual revenues ( $revt$ ).
Stock Deal	Dummy variable equals one if the deals that paid a positive fraction of the transaction value with stock and zero otherwise.
Relative Size	Transaction value / Acquirer market value of equity.
Tobin Q	Calculated as: $(at - ceq + prcc\_f * csho)/at$ .
Transaction Value	Deal value in millions of dollars taken from the Thomson M&A database.

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**Table 3.2: Summary Statistics**

The sample consists of Compustat S&P 1500 firms with non-missing firm characteristics controls in the main regression for which CEO data are available from ExecuComp in the 1993-2019 period. All variables are winsorized at 1% and 99% values. The sample in Panel A and B includes 32,278 firm-year observations on 6,104 CEOs and 7,340 CFOs. 3,538 firm-year with at least one acquisition. The sample in Panels C and D is limited to M&A conducted by the above-mentioned firms. Variable definitions are as defined in Table 1. \*\*\*p<0.001, 0.05\*\*p<0.05, \*p<0.1.

Panel A: Female Executives									
	Mean	p25	Median	p75	SD	N			
CEO Female Dummy	0.029	0	0	0	0.168	32,278			
CFO Female Dummy	0.085	0	0	0	0.278	32,278			
Female Dummy	0.110	0	0	0	0.312	32,278			
Panel B: Bidder Characteristics									
	Mean	p25	Median	p75	SD	N	Female Executive	Male Executive	Diff.
Book Leverage	0.244	0.082	0.225	0.356	0.197	32,278	0.222	0.246	-0.024***
Firm Size	7.378	6.241	7.278	8.421	1.607	32,278	7.464	7.368	0.096***
Free Cash Flow	0.036	0.011	0.049	0.085	0.0972	32,278	0.049	0.035	0.014***
Profitability	0.074	0.038	0.087	0.138	0.131	32,278	0.081	0.073	0.008***
Tobin's Q	2.042	1.231	1.623	2.334	1.329	32,278	2.117	2.033	0.084***
Cash Holdings	0.149	0.028	0.085	0.209	0.168	32,278	0.172	0.146	0.025***
Firm Age	20.39	8	18	31	14.34	32,270	20.78	20.34	0.441*
PPE	0.274	0.100	0.206	0.389	0.224	32,248	0.252	0.277	-0.025***
Revenue	7.292	6.223	7.235	8.343	1.611	32,229	7.433	7.274	0.159***
Cash Flow Measure	0.180	0.125	0.174	0.233	0.103	30,483	0.184	0.179	0.005***
Panel C: Target Environmental-related Variables									
	Mean	p25	Median	p75	SD	N	Female Executive	Male Executive	Diff.
Frequency of Environment-related Words	2.551	0	0	0	10.73	1,455	0.745	2.705	-1.960*
Number of Environment-related Words	2.863	0	0	0	10.95	1,455	1.102	3.013	-1.911*
Number of Penalties	2.242	1.681	2.159	2.813	0.748	688	1.817	2.241	-0.424**
Total Penalty Amounts	5.252	4.069	4.988	6.682	1.971	627	5.307	5.232	-0.075
Total Toxic Releases	2.306	0.438	0	1	2.03	504	1.611	2.365	0.754**
High_TRR	0.466	0	0	1	0.499	504	0.282	0.482	0.200**
Green Patent	0.084	0	0	0	0.581	395	0.383	0.05	-0.333***
Green Patent Ratio	0.004	0	0	0	0.027	395	0.014	0.003	-0.011**
Panel D: Deal Characteristics									
	Mean	p25	Median	p75	SD	N	Female Executive	Male Executive	Diff.
All Cash Deal	0.393	0	0	1	0.488	6,782	0.438	0.388	0.049**
Diversifying Dummy	0.286	0	0	1	0.452	6,782	0.280	0.287	-0.007
Public Dummy	0.199	0	0	0	0.399	6,782	0.188	0.200	-0.013
Private Dummy	0.452	0	0	1	0.498	6,782	0.470	0.450	0.020
Subsidiary Dummy	0.349	0	0	1	0.477	6,782	0.342	0.350	-0.007
Relative Size	0.110	0.011	0.038	0.113	0.194	6,782	0.116	0.110	0.007
Stock Deal	0.349	0	0	1	0.477	6,782	0.181	0.219	-0.038**

**Table 3.3: Correlation Matrix**

This table displays the correlational analysis among variables. Variable definitions are as defined in Table 3.1.

Panel A: Acquirers' Firm Characteristics										
	Female	Book Leverage	Firm Size	Free Cash Flow	Profitability	Tobin's Q	Cash holdings	Firm Age	PPE	Cash Flow Measures
Female	1									
Book Leverage	-0.038***	1								
Firm Size	0.019***	0.266***	1							
Free Cash Flow	0.046***	-0.125***	0.170***	1						
Profitability	0.020***	-0.113***	0.158***	0.675***	1					
Tobin's Q	0.020***	-0.149***	-0.142***	0.200***	0.280***	1				
Cash Holdings	0.047***	-0.335***	-0.312***	-0.081***	-0.107***	0.381***	1			
Firm Age	0.010	0.027***	0.357***	0.124***	0.090***	-0.110***	-0.172***	1		
PPE	-0.035***	0.199***	0.136***	-0.264***	0.011*	-0.184***	-0.367***	0.031***	1	
Cash Flow Measures	0.016**	-0.024***	0.066***	0.631***	0.707***	0.346***	-0.130***	0.025***	0.231***	1

  

Panel B: Target Environment-related Variables									
	Female	Frequency of Environment-related Words	Number Of Environment-related Words	Number of Penalties	Total Penalty Amounts	Total Toxic Releases	Green Patent	Green Patent Ratio	
Female	1								
Frequency	-0.045	1							
# Of Environment-related Words	-0.033	0.855***	1						
Number Of Penalties	-0.089*	-0.227	-0.462***	1					
Total Penalty Amounts	-0.051	-0.360*	-0.129	0.279***	1				
Total Toxics Releases	-0.099*	0.046	0.082	0.034	-0.014	1			
Green Patent	0.173***	0.107*	0.083	0	0	0.003	1		
Green Patent Ratio	0.123*	0.019	0.006	0	0	-0.022	0.676***	1	

  

Panel C: Deal Characteristics								
	Female	All Cash Deal	Diversifying	Public	Private	Relative Size	Subsidiary	Stock Deal
Female	1							
All Cash Deal	0.029*	1						
Diversifying	-0.004	-0.017	1					
Public	-0.009	0.062***	-0.048***	1				
Private	0.012	-0.106***	0.020	-0.453***	1			
Relative Size	0.010	-0.078***	-0.050***	0.231***	-0.191***	1		
Subsidiary	-0.004	0.058***	0.020	-0.365***	-0.665***	0.006	1	
Stock Deal	-0.026*	-0.421***	-0.034**	0.259***	0.012	0.242***	-0.230***	1

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$



**Table 3.4: Female Executives and Target's Listing Status**

This table examines the target's listing status of acquirers who make at least one acquisition. The dependent variable in column (1) is the dummy variable that equals one if the target is a public firm. Similarly, the dependent variables in columns (2) and (4) are private and subsidiary target indicators. In column (3), the sample is limited to private targets and the dependent variable is an indicator variable for firms that are controlled by a private equity firm. Following [Huang, Jiang, Lie, and Yang \(2014\)](#), all models use a Heckman procedure to control self-selection into making more than one bid. Female is a dummy variable which takes the value of one if the CFO or CEO in a given year is female and zero otherwise. The other control variables are defined in Table 3.1. All regressions include the fixed effects of year times industry. Variables are winsorized at 1% and 99%. T-values are reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	Public	Private	Private-Sponsor	Subsidiary
Female	-0.107*	0.111**	0.257***	-0.038
	(-1.67)	(2.00)	(2.98)	(-0.67)
Book Leverage	-0.128	-0.448***	0.313*	0.590***
	(-1.11)	(-4.44)	(1.86)	(5.83)
Firm Size	0.230***	-0.197***	0.019	0.023**
	(17.71)	(-16.27)	(0.97)	(1.99)
Tobin's Q	0.039***	0.019	-0.058***	-0.065***
	(3.17)	(1.63)	(-3.23)	(-4.78)
Profitability	-0.728***	-0.128	-0.511	0.677***
	(-3.17)	(-0.65)	(-1.59)	(3.30)
Free Cash Flow	0.696**	0.280	1.554***	-0.685**
	(2.20)	(1.03)	(2.96)	(-2.51)
Firm Age	0.004***	-0.004***	0.009***	0.002
	(2.77)	(-3.48)	(4.24)	(1.46)
Inv. Mills	0.291***	-0.649***	-0.192**	0.471***
	(4.60)	(-11.05)	(-2.11)	(7.88)
Intercept	-3.353***	2.508***	-0.644**	-1.230***
	(-18.72)	(15.27)	(-2.50)	(-7.65)
N	6782	6782	2738	6782
Year*Industry Fixed Effects	YES	YES	YES	YES
R <sup>2</sup>	6.5%	6.8%	2.6%	3.8%

**Table 3.5: Female Executives and Target's Toxic Releases**

This table examines the relationship between targets' emissions and the gender of the acquirer's executives. The dependent variable in column (1) is the target total toxic releases. The dependent variable in column (2) is a dummy variable that equals one if the target's releases are higher than the year-industry median releases. Female is a dummy variable which takes a value of one if the CFO or CEO in a given year is female and zero otherwise. The other control variables are defined in Table 3.1. All regressions include fixed effects of the year times industry. Variables are winsorized at 1% and 99%. T-values are reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1) Total Toxic Releases	(2) High_TTR
Female	-0.807*** (-2.70)	-0.573** (-2.54)
Book Leverage	0.088 (0.14)	0.283 (0.70)
Firm Size	-0.028 (-0.17)	-0.103 (-0.96)
Revenue	0.203 (1.19)	0.191* (1.65)
PPE	2.399*** (3.68)	0.849** (2.53)
Firm Age	-0.007 (-1.14)	-0.005 (-1.30)
Tobin's Q	0.032 (0.45)	0.041 (0.86)
Cash Holdings	1.386* (1.67)	0.900 (1.55)
Intercept	0.330 (0.57)	-0.937** (-2.45)
N	504	504
Year*Industry Fixed Effects	YES	YES
R <sup>2</sup>	6.9%	3.1%

**Table 3.6: Female Executives and Target's Enforcement Penalties**

This table examines the relationship between the gender of the acquirer's executives and targets' emissions and environmental penalties. The dependent variable in column (1) is the total number of federal and local penalties. The dependent variable in column (2) is the total amount of federal and local penalties. Female is a dummy variable taking a value of one when the CFO or CEO in a given year is female and zero otherwise. The other control variables are defined in Table 3.1. All regressions include year times industry fixed effects. Variables are winsorized at 1% and 99%. T-values are reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1) Number of Penalties	(2) Penalty Amounts
Female	-0.217** (-2.29)	-0.352 (-1.57)
Book Leverage	-0.385* (-1.82)	-0.445 (-0.82)
Firm Size	0.018 (0.31)	-0.052 (-0.33)
Revenue	-0.167*** (-2.64)	0.125 (0.67)
PPE	-0.566*** (-2.83)	2.968*** (4.93)
Firm Age	0.007*** (3.47)	0.010* (1.86)
Tobin's Q	-0.005 (-0.21)	-0.116 (-1.60)
Cash Holdings	0.317 (1.03)	1.408 (1.49)
Intercept	3.521*** (19.71)	4.068*** (6.86)
N	688	627
Year*Industry Fixed Effects	YES	YES
R <sup>2</sup>	10.8%	7.1%

**Table 3.7: Female Executives and Target’s Environment-related Discussions in 10-K Filings**

This table examines the relationship between the targets’ environmental activities reflected in the 10-K filing and the gender of the acquirer’s executives. The sample is limited to the targets who file the 10-K in EDGAR. The dependent variable in column (1) is the number of environment-related words in the SEC 10-K form. The dependent variable in column (2) is the number of words in every one hundred thousand words. Female is a dummy variable taking a value of one when the CFO or CEO in a given year is female and zero otherwise. The other control variables are defined in Table 3.1. All regressions include fixed effects of the year times industry. Variables are winsorized at 1% and 99%. T-values are reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1) Number of Words	(2) Frequency of Words
Female	-1.954*** (-3.33)	-1.742*** (-3.78)
Book Leverage	-3.756** (-2.54)	-2.362 (-1.64)
Firm Size	2.109*** (4.14)	1.246*** (3.30)
Revenue	-1.987*** (-4.75)	-1.540*** (-4.79)
PPE	-0.434 (-0.21)	-3.921*** (-2.65)
Firm Age	0.070*** (3.23)	0.105*** (5.06)
Tobin’s Q	-0.003 (-0.02)	0.133 (1.39)
CashHoldings	-6.952*** (-3.20)	-8.428*** (-3.63)
Intercept	1.827 (1.17)	4.376*** (2.70)
N	1455	1455
Year*Industry Fixed Effects	YES	YES
R <sup>2</sup>	3.1%	3.2%

**Table 3.8: Female Executives and Target's Green Patents**

This table examines the relationship between the targets' environmental activities reflected in the patents issued and the gender of the acquirer's executives. The sample is limited to targets which have been issued at least one patent. The dependent variable in column (1) is the number of green patents. The dependent variable in column (2) is the ratio of green patents to the total firm patent number. The other control variables are defined in Table 3.1. All regressions include fixed effects of year times industry. Variables are winsorized at 1% and 99%. T-values are reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1) Green Patent	(2) Green Patent Ratio
Female	0.375* (1.82)	0.011* (1.79)
Book Leverage	-0.104 (-1.00)	-0.005 (-0.56)
Firm Size	0.018 (0.42)	0.002 (0.52)
Revenue	-0.027 (-0.64)	-0.003 (-0.58)
PPE	-0.080 (-0.47)	0.022 (1.07)
Firm Age	0.004* (1.90)	0.000 (0.32)
Tobin's Q	0.034 (1.03)	-0.001 (-0.70)
Cash Holdings	-0.525** (-2.05)	-0.015** (-2.16)
Intercept	0.248* (1.80)	0.008* (1.83)
N	393	393
Year*Industry Fixed Effects	YES	YES
R <sup>2</sup>	7.3%	4.5%

**Table 3.9: Instrument Variables Estimation (Gender Equality)**

This table presents the two-stage residual IV model regression results. Column (1) reports the results from the first-stage probit regressions with the female dummy as the dependent variable. Instrumented Female is the fitted value of the female indicator from first-stage regressions. The instrumental variable in the first stage is the state-level gender equality index proposed by [Sugarman and Straus \(1988\)](#). The dependent variable in column (1) is the total target toxic releases. The dependent variable in column (2) is a dummy variable that equals one if the target's releases are higher than the year-industry median releases. Definitions of other variables can be found in Table 3.1. All regressions include year fixed effects times industry fixed effects. T-statistic results are shown in parentheses. \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01.

	Panel A:					Panel B:	
	(1)	(2)	(3)	(4)		(1)	(2)
	First Stage	Second Stage				First Stage	Second Stage
	Female	Public	Private	Subsidiary		Female	Private-Sponsor
Instrumented Female		-0.414	1.084***	-1.144***	Instrumented Female		1.273***
		(-0.67)	(3.14)	(-2.89)			(2.69)
Book Leverage	-0.375***	-0.149	-0.368***	0.471***	Book leverage	-0.203	0.192
	(-2.66)	(-1.20)	(-3.51)	(3.94)		(-0.99)	(0.85)
Firm Size	0.072***	0.233***	-0.201***	0.036***	Firm Size	0.003	0.213***
	(4.40)	(17.11)	(-16.72)	(2.93)		(0.11)	(8.38)
Tobin's Q	-0.014	0.038***	0.019*	-0.062***	Tobin's Q	-0.049*	0.015
	(-0.78)	(3.14)	(1.69)	(-4.54)		(-1.96)	(0.72)
Profitability	0.024	-0.732***	-0.109	0.621***	Profitability	-0.267	-0.896**
	(0.09)	(-3.19)	(-0.56)	(3.09)		(-0.71)	(-2.16)
Free Cash Flow	1.720***	0.785**	0.020	-0.316	Free Cash Flow	1.129*	2.192***
	(3.99)	(2.17)	(0.07)	(-1.01)		(1.68)	(3.02)
Firm Age	-0.004**	0.004**	-0.004***	0.001	Firm Age	-0.003	-0.002
	(-1.98)	(2.45)	(-2.88)	(0.73)		(-0.91)	(-0.86)
Gender Equality	0.011***				Gender Equality	0.015***	
	(3.81)					(3.38)	
Intercept	-3.288***	-3.384***	2.539***	-1.345***	Intercept	-2.020***	-3.294***
	(-12.10)	(-18.41)	(15.69)	(-8.42)		(-7.36)	(-9.94)
N	6782	6782	6782	6782	N	2738	2738
Year*Industry Fixed Effects	YES	YES	YES	YES	Year*Industry Fixed Effects	YES	YES

**Table 3.9: Instrument Variables Estimation (continued)**

This table presents the two-stage residual IV model regression results. Column (1) reports the results from the first-stage probit regressions with the female dummy as the dependent variable. Instrumented Female is the fitted value of the female indicator from the first-stage regressions. The instrumental variable in the first stage is the state-level gender equality index proposed by [Sugarman and Straus \(1988\)](#). The dependent variable in column (2) is the target total toxic releases. The dependent variable in column (3) is a dummy variable that equals one if the target's releases are higher than the year-industry median releases. Definitions of other variables can be found in Table 3.1. All regressions include year fixed effects times industry fixed effects. Variables are winsorized at 1% and 99%. T-statistic results are shown in parentheses. \* p <0.1, \*\* p <0.05, \*\*\* p <0.01. \* p <0.1, \*\* p <0.05, \*\*\* p <0.01.

Panel C	(1)	(2)	(3)
	First Stage	Second Stage	
	Female	Total Toxic Releases	High_TT
Instrumented Female		-0.862*** (-2.91)	-0.583** (-2.57)
Book Leverage	-0.786 (-1.38)	0.175 (0.28)	0.346 (0.85)
Firm Size	-0.344** (-2.24)	0.012 (0.08)	-0.075 (-0.70)
Revenue	0.369** (2.28)	0.159 (0.93)	0.160 (1.39)
PPE	0.738 (1.42)	2.358*** (3.60)	0.819** (2.44)
Firm Age	0.001 (0.16)	-0.007 (-1.14)	-0.005 (-1.30)
Tobin's Q	-0.136* (-1.68)	0.044 (0.63)	0.050 (1.05)
Cash Holdings	0.917 (1.10)	1.244 (1.50)	0.801 (1.39)
Gender Equality	0.027** (2.44)		
Intercept	-2.762*** (-3.35)	0.276 (0.48)	-0.976** (-2.55)
N	504	504	504
Year*Industry Fixed Effects	YES	YES	YES

**Table 3.9: Instrument Variables Estimation (continued)**

This table presents instrumental variable estimation results. Columns (1) and (3) report the results from the first-stage regressions with the female dummy as the dependent variable. Instrumented Female is the fitted value of the female indicator from the first-stage regressions. The instrumental variable in the first stage is the state-level gender equality index proposed by [Sugarman and Straus \(1988\)](#). The dependent variable in column (2) is the number of penalties. The dependent variable in column (4) is the total amount of penalties. Definitions of other variables can be found in Table 3.1. All regressions include year fixed effects times industry fixed effects. Variables are winsorized at 1% and 99%. T-statistic results are shown in parentheses. \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01.

Panel D	(1)	(2)	(3)	(4)
	First Stage	Second Stage	First Stage	Second Stage
	Female	Number of Penalties	Female	Number of Penalties
Instrumented Female		-0.233** (-2.44)		-0.401* (-1.68)
Book Leverage	-0.068 (-0.13)	-0.384* (-1.81)	-0.147 (-0.29)	-0.416 (-0.77)
Firm Size	-0.488*** (-2.91)	0.034 (0.59)	-0.436** (-2.52)	-0.028 (-0.18)
Revenue	0.560*** (3.04)	-0.185*** (-2.94)	0.517*** (2.73)	0.099 (0.54)
PPE	0.835 (1.38)	-0.583*** (-2.91)	0.692 (1.10)	2.954*** (4.90)
Firm Age	0.002 (0.41)	0.007*** (3.44)	-0.002 (-0.25)	0.010* (1.82)
Tobin's Q	0.073 (1.07)	-0.009 (-0.35)	0.091 (1.35)	-0.122* (-1.66)
Cash Holdings	1.238 (1.57)	0.267 (0.87)	1.203 (1.44)	1.367 (1.45)
Gender Equality	0.024** (2.48)		0.026*** (2.77)	
Intercept	-3.385*** (-4.85)	3.531*** (19.77)	-3.399*** (-4.81)	4.053*** (6.82)
N	688	688	627	627
Year*Industry Fixed Effects	YES	YES	YES	YES



**Table 3.9: Instrument Variables Estimation (continued)**

This table presents instrumental variable estimation results. Column (1) reports the results from the first-stage regressions with the female dummy as the dependent variable. Instrumented Female is the fitted value of the female indicator from the first-stage regressions. The instrumental variable in the first stage is the state-level gender equality index proposed by [Sugarman and Straus \(1988\)](#). The dependent variable in column (2) is the number of environment-related words on the SEC 10-K form. The dependent variable in column (3) is the number of such words in every one hundred thousand words. Definitions of other variables can be found in Table 3.1. All regressions include year fixed effects times industry fixed effects. Variables are winsorized at 1% and 99%. T-statistic results are shown in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Panel E	(1)	(2)	(3)
	First Stage	Second Stage	
	Female	Number of words	Frequency
Instrumented Female		-2.008*** (-3.38)	-1.810*** (-3.83)
Book Leverage	-0.303* (-1.82)	-3.657** (-2.48)	-2.272 (-1.58)
Firm Size	0.037 (0.82)	2.098*** (4.13)	1.236*** (3.28)
Revenue	0.004 (0.08)	-1.988*** (-4.75)	-1.540*** (-4.79)
PPE	0.001 (0.00)	-0.405 (-0.20)	-3.895*** (-2.64)
Firm Age	-0.003 (-1.63)	0.071*** (3.28)	0.106*** (5.09)
Tobin's Q	-0.053*** (-3.28)	0.012 (0.11)	0.146 (1.54)
Cash Holdings	0.170 (0.92)	-7.031*** (-3.23)	-8.496*** (-3.65)
Gender Equality	0.010*** (2.92)		
Intercept	-1.914*** (-9.28)	1.691 (1.08)	4.252*** (2.63)
N	1455	1455	1455
Year*Industry Fixed Effects	YES	YES	YES

**Table 3.10: Instrument Variables Estimation (Share of Low-skilled Immigrants)**

This table presents the two-stage residual IV model regression results. Columns (1) in Panel A and Panel B report the results from the first-stage probit regressions with the female dummy as the dependent variable. Instrumented Female is the fitted value of the female indicator from first-stage regressions. The instrumental variable in the first stage is the state-level share of low-skilled immigrants in the labour force (Cortés and Pan, 2019). The dependent variable in Panel A column (2) is the dummy variable that equals one if the target is a public firm. Similarly, the dependent variables in columns (3) and (4) are private and subsidiary target indicators. In Panel B, column (2), the sample is limited to private targets and the dependent variable is an indicator variable for firms that are controlled by a private equity firm. Following Huang and Kisgen (2013), all models use a Heckman procedure to control self-selection into making more than one bid. Female is a dummy variable which takes the value of one if the CFO or CEO in a given year is female and zero otherwise. All regressions include year-fixed effects times industry fixed effects. T-statistic results are shown in parentheses. \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01.

	Panel A:					Panel B:	
	(1) First Stage	(2)	(3) Second Stage	(4)		(1) First Stage	(2) Second Stage
	Female	Public	Private	Subsidiary		Female	Private-Sponsor
Instrumented Female		-1.087** (-2.13)	0.400*** (2.80)	-0.114 (-0.72)	Instrumented Female		0.255 (1.37)
Book leverage	-0.431*** (-2.88)	-0.219* (-1.69)	-0.427*** (-4.22)	0.585*** (5.75)	Book leverage	-0.659*** (-2.76)	0.313* (1.86)
Firm Size	0.083*** (4.73)	0.231*** (15.54)	-0.200*** (-16.53)	0.024** (2.05)	Firm Size	0.070** (2.45)	0.019 (0.97)
Tobin's Q	-0.005 (-0.24)	0.031** (2.26)	0.019* (1.67)	-0.065*** (-4.78)	Tobin's Q	-0.029 (-0.91)	-0.058*** (-3.22)
Profitability	0.118 (0.39)	-0.746*** (-3.37)	-0.123 (-0.63)	0.675*** (3.29)	Profitability	-0.394 (-0.92)	-0.511 (-1.59)
Free Cash Flow	1.968*** (4.23)	1.084*** (2.63)	0.201 (0.74)	-0.663** (-2.40)	Free Cash Flow	1.809** (2.27)	1.554*** (2.95)
Firm Age	-0.002 (-1.24)	0.003* (1.77)	-0.004*** (-3.33)	0.002 (1.42)	Firm Age	-0.003 (-0.95)	0.009*** (4.24)
Low-skilled Immigrants	0.034*** (4.24)				Low-skilled Immigrants	0.020* (1.72)	
Intercept	-3.156*** (-11.60)	-3.323*** (-16.03)	2.536*** (15.50)	-1.240*** (-7.66)	Intercept	-3.024*** (-7.32)	-0.643** (-2.50)
N	5181	5181	5181	5181	N	2232	2232
Year*Industry Fixed Effects	YES	YES	YES	YES	Year*Industry Fixed Effects	YES	YES

**Table 3.10: Instrument Variables Estimation (continued)**

This table presents the two-stage residual IV model regression results. Column (1) reports the results from the first-stage probit regressions with the female dummy as the dependent variable. Instrumented Female is the fitted value of the female indicator from the first-stage regressions. The instrumental variable in the first stage is the state-level share of low-skilled immigrants in the labour force (Cortés and Pan, 2019). The dependent variable in column (2) is the target total toxic releases. The dependent variable in column (3) is a dummy variable that equals one if the target's releases are higher than the year-industry median releases. All regressions include year fixed effects times industry fixed effects. Variables are winsorized at 1% and 99%. T-statistic results are shown in parentheses. \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01. \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01.

Panel C	(1)	(2)	(3)
	First Stage	Second Stage	
	Female	Total Toxic Releases	High_TTR
Instrumented Female		-0.804*** (-2.72)	-0.573** (-2.53)
Book Leverage	-0.269 (-1.60)	0.268 (0.43)	0.405 (0.98)
Firm Size	0.025 (0.578)	-0.036 (-0.22)	-0.104 (-0.96)
Revenue	0.009 (0.21)	0.199 (1.16)	0.185 (1.59)
PPE	-0.120 (-0.81)	2.487*** (3.76)	0.896*** (2.63)
Firm Age	-0.002 (-1.04)	-0.009 (-1.36)	-0.006 (-1.52)
Tobin Q	-0.054*** (-3.33)	0.040 (0.56)	0.049 (1.03)
Cash holding	0.094 (0.51)	1.375 (1.63)	0.863 (1.46)
Low Skilled Immigrants	0.031*** (3.58)		
Intercept	-1.571*** (-10.16)	0.310 (0.54)	-0.961** (-2.50)
N	492	492	492
Year*Industry Fixed Effects	YES	YES	YES

**Table 3.10: Instrument Variables Estimation (continued)**

This table presents instrumental variable estimation results. Column (1) reports the results from the first-stage regressions with the female dummy as the dependent variable. Instrumented Female is the fitted value of the female indicator from the first-stage regressions. The instrumental variable in the first stage is the state-level share of low-skilled immigrants in the labour force (Cortés and Pan, 2019). The dependent variable in column (2) is the number of environment-related words on the SEC 10-K form. The dependent variable in column (3) is the number of such words in every one hundred thousand words. Definitions of other variables can be found in Table 3.1. All regressions include year fixed effects times industry fixed effects. Variables are winsorized at 1% and 99%. T-statistic results are shown in parentheses. \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01.

Panel D	(1)	(2)	(3)
	First Stage	Second Stage	
	Female	Number of words	Frequency
Instrumented Female		-1.431** (-2.56)	-0.896** (-2.52)
Book Leverage	0.403 (1.20)	-1.046 (-0.91)	0.873 (0.96)
Firm Size	0.030 (0.34)	1.540*** (3.48)	0.569** (2.43)
Revenue	0.091 (1.07)	-1.396*** (-3.88)	-0.830*** (-4.15)
PPE	-0.120 (-0.41)	3.261* (1.78)	0.450 (0.47)
Firm Age	-0.005 (-1.24)	0.025 (1.38)	0.050*** (3.40)
Tobin's Q	-0.076** (-2.47)	-0.058 (-0.54)	0.064 (0.84)
Cash Holdings	0.248 (0.61)	-1.146 (-0.89)	-1.503 (-1.43)
Low-skilled Immigrants	0.068*** (3.80)		
Intercept	-2.403*** (-6.53)	-0.706 (-0.58)	1.388 (1.23)
N	1437	1437	1437
Year*Industry Fixed Effects	YES	YES	YES

**Table 3.10: Instrument Variables Estimation (continued)**

This table examines the relationship between the targets' environmental activities reflected in the patents issued and the gender of the acquirer's executives. The sample is limited to targets which have been issued at least one patent. The instrumental variable in the first stage is the state-level share of low-skilled immigrants in the labour force (Cortés and Pan, 2019). The dependent variable in column (2) is the number of green patents. The dependent variable in column (3) is the ratio of green patents to the total firm patent number. All regressions include fixed effects of year times industry. Variables are winsorized at 1% and 99%. T-values are reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

Panel E	(1)	(2)	(3)
	First Stage	Second Stage	
	Female	Green Patent	Green Patent Ratio
Instrumented Female		0.427*	0.011*
		(1.91)	(1.84)
Book Leverage	-0.153	-0.106	-0.006
	(-0.29)	(-0.98)	(-0.58)
Firm Size	0.244	0.017	0.003
	(1.33)	(0.45)	(0.53)
Revenue	0.001	-0.013	-0.003
	(0.00)	(-0.33)	(-0.53)
PPE	0.676	0.053	0.026
	(1.16)	(0.37)	(1.18)
Firm Age	-0.014*	0.003	-0.000
	(-1.93)	(1.32)	(-0.04)
Tobin's Q	-0.149	0.026	-0.001
	(-1.58)	(0.87)	(-0.96)
Cash Holdings	0.875	-0.338*	-0.011*
	(1.24)	(-1.77)	(-1.91)
Low-skilled Immigrants	0.064*		
	(1.91)		
Intercept	-3.320***	0.170	0.006
	(-4.47)	(1.46)	(1.43)
N	384	384	384
Year*Industry Fixed Effects	YES	YES	YES

**Table 3.11: Acquirers' Announcement Return Regressions**

This table reports the results of ordinary least squares regressions. The dependent variable is the acquirer's cumulative abnormal returns (in percentage), measured using the Fama-French three factors model. The dependent variables in columns (1) are three-day CARs, and five-day CARs in column (2). All regressions include year fixed effects times industry fixed effects. T-values are reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

	(1)	(2)
	(-1,1)	(-2,2)
Female	-0.315 (-1.25)	-0.460 (-1.64)
Firm Size	-0.282*** (-6.32)	-0.303*** (-5.84)
Tobin's Q	0.098* (1.92)	0.057 (0.96)
Free Cash Flow	5.875*** (4.43)	7.981*** (5.11)
Cash Flow Measures	-3.241*** (-2.95)	-4.590*** (-3.56)
Book Leverage	2.084*** (4.33)	2.421*** (4.41)
Relative Size	0.274 (0.39)	-0.103 (-0.14)
Stock Deal	-0.080 (-0.33)	-0.024 (-0.09)
All Cash Deal	0.584*** (3.79)	0.635*** (3.65)
Public	-1.339*** (-5.99)	-1.253*** (-4.96)
Subsidiary	0.690*** (4.24)	0.838*** (4.56)
Diversifying	-0.159 (-1.02)	-0.210 (-1.19)
Intercept	2.040*** (4.45)	2.166*** (4.07)
N	5954	5954
Year*Industry Fixed Effects	YES	YES

# 4

## General Conclusion

This thesis aims to investigate managerial characteristics' effects on corporate performance empirically.

The first chapter purports to fill in gaps in the existing literature by examining CEOs with a finance background. Study results contribute to trade-off theory by providing insight into how CEO characteristics such as financial work experience, affect the movement toward target leverage ratios. Policymakers can in turn better evaluate financial expert candidates by analysing their impact on dynamic capital structure adjustment. This research may serve as a valuable reference for future research by motivating others to investigate the relationship between managerial behaviour and leverage.

The second chapter provides additional novel empirical evidence on the role that financial expert CEOs play in a firm's Mergers and Acquisitions (M&A) behaviour. In contrast to the bright side of CEO financial expertise discussed in the first chapter, the results in the second one indicates that acquirer shareholders do not benefit from CEOs' prior finance career paths since financial expert CEOs make fewer and worse deals. Potential channels of value destruction for acquirers by financial expert CEOs are identified. First, acquirers with financial expert CEOs are unskilful bargainers. Second, they create fewer synergies than non-financial expert CEOs. Further exciting evidence suggests that in the context of M&A, industry expertise trumps financial expertise. The findings show that there are complementarities between various CEO skills. Financial expert CEOs may lack industry-specific knowledge in a target industry and thus underperform in some deals; however, their financial expertise becomes all the more valuable when they gain industry expertise.

In sum, chapter one and two explore the role of financial expertise in firm



decision making and policies. The results suggest that only specialists master their fields. The conclusion can be drawn that recruiting CEOs with specific expertise may be advantageous for firms wishing to improve general performance.

The third chapter examines the influence of the fundamental biological difference on top executives, specifically, the gender of a chief executive (CEO and CFO), on corporate decision-making in M&A. In addition to previously documented differences between female and male firm leaders, this chapter provides novel empirical evidence on the role that gender plays in a firm's M&A behaviour. There are two main empirical results. First, on average, female executives acquire greener targets. Secondly, female executives' prosocial behaviour is not at the expense of shareholder value when investigating abnormal announcement returns. This study highlights the significance of gender differences in executive behaviour and indicates that environmental concerns are more considered by female executives when making M&A decisions.

In conclusion, this dissertation explores the relationship of managerial characteristics to firm behaviour. Conceptually, this dissertation contributes to the study of the heterogeneity of corporate policies and the determinants of firm performance.

A

Some extra stuff

## **A.1 Chapter 1**

**Table A1: Propensity Score Matching Includes CEOs' Characteristics**

This table presents the estimation results of the probability of hiring financial expert CEOs and the difference in means of firm and CEO characteristics between the financial expert CEOs- firms and matched non-financial expert CEOs-firms. Panel A provides the estimation results of the probability of hiring financial expert CEOs on its determinants using a probit model. The dependent variable,  $Financialexpert_{i,t+1}$ , equals one if the firm's CEO is a financial expert for the given year and zero otherwise. In panel B, I examine the difference in means of firm characteristics between financial expert CEOs firms and matched non-financial expert CEOs firms. I use the "closest one" replacement matched sample. Column (1) and (3) show the results for book leverage while (2) and (4) show the results for market leverage.

Panel A: Propensity score modeling			Panel B: Difference in means after matching		
	(1)	(2)		(3)	(4)
	$Financialexpert_{i,t+1}$	$Financialexpert_{i,t+1}$			
Firm Age	0.007*** (9.48)	0.007*** (9.33)	Firm Age	0.099 (0.44)	0.178 (0.80)
Leverage	0.293*** (5.83)	0.392*** (7.13)	Leverage	0.001 (0.35)	-0.001 (-0.27)
Firm Size	0.084*** (12.76)	0.081*** (1.44)	Firm Size	0.007 (0.29)	0.016 (0.64)
Capex	-0.641*** (-3.26)	-0.581*** (-2.95)	Capex	0.001 (0.63)	-0.000 (-0.28)
Dividend Dummy	0.061*** (3.00)	0.072*** (3.51)	Dividend Dummy	-0.002 (-0.25)	-0.000 (-0.00)
Rated Dummy	0.006 (0.24)	0.005 (0.22)	Rated Dummy	0.007 (0.93)	-0.006 (-0.82)
Profitability	-0.005 (-0.06)	0.078 (0.93)	Profitability	-0.002 (-0.93)	0.002 (1.17)
Market to Book	-0.008 (-1.06)	0.005 (0.66)	Market to Book	-0.015 (-0.77)	-0.016 (-0.83)
R&D	-0.338 (-1.50)	-0.237 (-1.04)	R&D	-0.001 (-1.12)	-0.000 (-0.63)
Age	-0.008*** (-0.702)	-0.008*** (-7.00)	Age	0.072 (0.57)	0.150 (1.17)
MBA Dummy	0.173*** (7.82)	0.173*** (7.85)	MBA Dummy	0.008 (1.23)	0.001 (0.09)
PhD Dummy	-0.125*** (-3.48)	-0.125*** (-3.48)	PhD Dummy	0.005 (1.54)	0.003 (0.96)
Ivy league Dummy	0.117*** (5.29)	0.116*** (5.25)	Ivy league Dummy	0.006 (0.87)	0.004 (0.65)
N	25759	25759	N	14053	14017
Industry fixed effects	YES	YES			
Year fixed effects	YES	YES			

**Table A2: Propensity Score Matching Includes CEOs' Characteristics (continued)**

This table reports the estimates of the effect of hiring a financial expert CEOs on firm's speed of leverage adjustment in the sample including the financial expert CEOs firms and their propensity score matched non-financial expert CEOs firms. Column (1) shows the results for book leverage, while (2) shows the results for market leverage. Half-life is defined as the time (in years) that it takes a firm to adjust back to the target leverage after a one-unit shock to  $\epsilon$ ,  $\ln(0.5)/\ln(1 - \lambda)$ . T-statistic results are shown in parentheses. \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01.

	(1)	(2)
	Full sample	Full sample
$Lev_{i,t}$	0.856*** (98.21)	0.840*** (82.55)
$Financialexpert_{i,t} * Lev_{i,t}$	-0.155*** (-13.80)	-0.200*** (-15.16)
N	14053	14017
$X_{i,t}$ control	YES	YES
$Financialexpert_{i,t} * X_{i,t}$ control	YES	YES
Year fixed effects	YES	YES
Firm fixed effects	YES	YES
Speed ( $\lambda_0$ )	0.144	0.160
Adjusted Speed ( $\lambda_0 + \gamma$ )	0.299	0.360
$\Delta$ Adjusted Speed%	107.639	125.000
Half-Life	4.458	3.976
Adjusted Half-Life	1.951	1.553

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