Master's Thesis

Board Composition and Acquirer Returns of Family Firms: Evidence from India

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Abstract

Corporate governance serves as a system that separates ownership and managerial control. However, for family-owned firms, the line between these two decisions is blurred as the owners prioritise the non-financial objectives of preserving family control and socioemotional wealth (SEW). This research identifies socioemotional wealth (SEW) as a crucial aspect in strategic decisions for family-owned businesses, specifically in India, and how various board characteristics play an essential role. Drawing on a dataset of 2115 firm-year observations spanning over the period of 2005 to 2019 from India, findings reveal that family firms are risk-averse towards M&A transactions, and some board characteristics, nevertheless, can lessen this risk aversion. The study finds that higher promoter ownership reduces the likelihood of M&A activity. Specifically, firms with promoter ownership above the median are 8.34 percentage points less likely to undertake M&A, significant at the 99% level. Larger boards, more independent directors, and higher female representation decrease M&A likelihood by 50.29, 17.64, and 47.92 percentage points, respectively. Age diversity increases M&A likelihood by 2.71 percentage points, while CEO duality shows minimal impact. An event study of M&A announcements shows that larger boards reduce five-day cumulative abnormal returns by 3.17%, whereas independent directors increase them by 5.69%. An age-diverse board decreases M&A returns by 0.33%. Higher female director proportions reduce returns by 3.32%, and CEO duality decreases returns by 0.58%. We used the Control Function Approach, fixed effects, and residual mapping tests to address endogeneity, confirming that most variables were not significantly endogenous except for CEO duality. Robustness checks affirmed result consistency, including negative binomial regression and different event windows. Our findings suggest that balanced, diverse, and independent boards can align SEW goals with firm growth, providing valuable insights for policymakers and stakeholders to enhance corporate governance in family firms in India.

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1. Introduction

In its pure essence, corporate governance is required for the distinction of ownership and the managerial control of an entity to secure the return of investment for the suppliers of finance of this firm. What happens when the owners are in power and influence the decisions? When owners, especially in family businesses, have a large amount of authority, the company's strategic choices are frequently influenced by a mix of non-financial and financial goals. Because of this dual emphasis, there may be exceptional governance dynamics where protecting family power, legacy, and socioemotional wealth (SEW) becomes crucial.

Gomez-Mejia et al. (2007) were the first to define the concept of Socioemotional Wealth, or SEW in the context of the non-financial value derived from a business entity, particularly in the context of family owned entities. Davila et al. (2023) describe it as "non-financial aspects of the firm that meet the family's affective needs, such as identity, the ability to exercise family influence, and the perpetuation of the family dynasty." ("Family firm heterogeneity on CSR approach: A socio-emotional (SEW ...") This concept is used in empirical research to explain the intangibility of emotional benefits that family members gain from their business. According to the first study done on SEW by Gomez-Mejia et al. (2007), socioemotional wealth influences decisions that a family-owned business makes, especially regarding risk. Naturally, one can assume that family firms prioritize factors beyond pure profit when deciding on high-risk strategic opportunities.

Mergers and acquisitions (M&A) pose risks for entities with concentrated ownership. A risky decision can weaken the majority shareholders' control (Caprio et al., 2011). Family-owned businesses often face limited resources available for expansion, so undertaking M&As is particularly challenging for them (Chen et al., 2009; Mishra & McConaughy, 1999). Therefore, family firms tend to be more cautious about undertaking risks with strategic transactions. Contradictorily, M&A for a family-owned firm can mean that the ownership concentration is diluted. This dilution disrupts their control over the company and changes the company culture, which can be an adversary to the SEW (Deephouse & Jaskiewicz, 2013). Consequently, family-owned firms are often more hesitant to pursue high-risk investments such as mergers and acquisitions (M&A), prioritizing the preservation of their legacy and identity over rapid growth.

Family-controlled businesses may be more concerned about protecting their interests than maximizing profits for all shareholders, especially when legal safeguards for outside investors are weak (Young et al., 2008). These concerns can lead to disputes among the family member shareholders and external shareholders because their goals are not necessarily aligned. This is a well-known issue in business called a 'principal-principal conflict.' Additionally, family shareholders can act more risk-averse when evaluating external growth opportunities, which might be prioritized over shareholder returns (Chen et al., 2009). However, research suggests that a firm's internal governance structure, particularly the board of directors and its characteristics can prove to be instrumental in alleviating a crucial role this risk aversion (Zahra & Sharma, 2004).

Research conducted by Hegde et al. (2020) points out that Indian family businesses stand out for their exceptionally prominent level of family involvement. On average, family members hold a controlling stake of 51% in businesses in India. This is a significantly lower percentage compared to other regions – 38% in Europe, 18% in the US, and just 6% in Japan (Hegde et al., 2020). Research suggests that public family firms, on average, may achieve more robust performance compared to private family businesses and firms, and publicly traded non-family firms (Sreaer & Thesmar, 2007). This could be attributed to family firm’s emphasis on long-term focus on sustainable growth and emotional commitment to aligning interest with long-term shareholders (Davila et al., 2022; Bagel & Troege, 2019).

While there is literature addressing ownership concentration and M&As in India, the research on the impact of board composition in family firms on M&As is notably sparse, especially in India. Raithatha and Ladkani (2022) have studied the board attributes of family firms that can lead to risk aversion towards M&As. They emphasize like the number of board members, autonomy of directors, and frequency of engagement of the board, amongst many, which impact the decision of M&A undertaken by family firms. However, their research provides insight only into the decision-making processes behind takeover activities undertaken by family businesses, rather than examining the profitability of these acquisitions as reflected in stock returns on the announcement day. Meanwhile, Bhaumik and Selarka (2012) examine presence of block holders and how it influences the company’s performance following a merger. They utilize event study methodology to conclude that both family ownership and business groups result in post-merger

performance improvement. Nevertheless, the study does not consider board characteristics and composition.

Therefore, in this research paper, I aim to study the influence of certain board attributes and composition in family-owned businesses and firms on the announcement day returns for the acquirer using event study analysis, especially in Indian firms. Given the prevalence of family-owned businesses in India, evaluating the M&A landscape using an approach that incorporates family firms and their board composition is necessary. This will advance our understanding of the factors influencing family businesses' M&A activities, the role of the board of directors, and how their characteristics affect M&A decisions and investment returns, thereby making a significant contribution to the existing body of research.

I undertake this study by collecting a sample of 2115 firm-year observations from India's mergers and acquisitions in the time period from 2005 to 2019. The key results of the empirical tests show that family firms are risk-averse to undertaking M&A activity. However, specific board characteristics, such as age diversity and gender diversity, CEO duality, size and ratio of external directors, mitigate the risk aversion behaviour by the majority shareholders. I also analysed the board characteristics in the classified family firms and how they affect the announcement returns from these M&A transactions, measured by cumulative abnormal returns (CAR) over five days.

The findings reveal that the number of directors on the board size is inversely related to the M&A likelihood and announcement returns, as is the number of female directors on the board. CEO duality shows inconclusive results for M&A likelihood and negative results with the announcement returns. A board with larger proportion of independent directors is more unlikely to undertake M&A and show positive announcement returns. Finally, age diversity corresponds to greater chance of M&A activity and positive announcement returns. The implications for the results are all verified with previous works of literature and discussed in the Results and Discussion section.

I also undertake cautionary robustness checks such as negative binomial regression and event studies with different window periods for cumulative abnormal returns. Additional tests, such as robustness, are discussed later, as well as alternative fixed effects, residuals analysis, clustered errors, and a pairwise correlation analysis in the Summary Statistics and Additional Tests and Robustness Checks section.

The result of this research extends the overall governance and M&A literature for India. The study also underscores the importance of board characteristics in shaping the strategic outcomes and decisions for family firms, where there is tension between optimal decision-making and SEW maximisation. The results of this study form a foundation for developing strategies that can enhance the strategic decision-making and financial accomplishment of family-owned firms. The implications of the results are multifaceted, offering valuable insights for practitioners, researchers, and policymakers interested in family firms and their governance. It is recommended that additional studies be performed to examine such relationships in different environments and find additional components that may contribute to family-run companies' long-term expansion and prosperity.

The remaining sections of the paper are organised in this order: in Section 3, I present the literature review and construct hypothesize predictions based on the various board characteristics. The fourth Section focusses further into the process for data collecting and creation. Section 5 discusses the summary statistics. Section 6 covers the regression findings and their consequences. Section 7 covers the extra tests and robustness checks, while Section 8 provides the conclusion and points for discussion.

2. Literature Review and Hypotheses Construction

This research's primary empirical tests are designed to investigate the subsequent research questions:

1. To what extent are the board characteristics of the acquirer related to the likelihood of undertaking acquisitions in family firms in India?
2. Can acquiring family firms with specific board characteristics and composition get better post-merger returns in India?

To address the above research questions, I have formulated the subsequent hypotheses derived from the literature done before.

According to Raithatha and Ladkani (2022), India's high average family ownership makes family firms more risk-aversive towards M&A deals, which may threaten their SEW. As a result, even when family enterprises have prospective M&A possibilities, they are less inclined to pursue them because it reduces their ownership concentration and control over the company. Soluk et al.

(2021) also provide a birds-eye conclusion of how family firms exhibit aversive behaviour to undertake any opportunities, preferring stability.

The paper by Chrisman et al. (2004) studies the costs that come with agency conflicts between family and non-family businesses and finds that family ownership gives firms higher likelihood of undertaking objectives that may be referred to as agency problems from the perspective of non-family firms. Their finding also indicates that non-family companies benefit better from strategic planning than family-owned companies, who might be making decisions oriented more towards the firm's SEW than through inorganic growth opportunities. Schulz et al. (2001) propose that family involvement in ownership structure enhances the agency problems that are usually linked to private ownership, such as inefficient asset utilisation through poor investments and high operating costs due to abnormal compensations. Caprio and Barontini (2005) verify that family firms have control-enhancing mechanisms in their ownership structure, which also leads to a lower valuation of the firms.

More specifically, the conflict can also be discussed under the term of principal-principal conflict between minority shareholders and controlling shareholders. Peng and Sauerwald (2013) highlight that this type of conflict is very prominent in developing countries because of the concentrated ownership and not-so-strong regulation and rights for the minority shareholders. This is relevant to India's developing corporate landscape and regulation system. Controlling shareholders are incentivised to maintain control over the firm as they can expropriate the benefits (Shleifer & Vishny, 1997). Hence, forgoing growth opportunities that might hinder the concentration and percentage of ownership.

Additionally, the following works of literature also find results that align with the aversive behaviour of family firms towards M&As. Shim and Okamuro (2010) studied merger decisions of companies owned majorly by families in Japan. Their results show the likelihood to merge for family-owned entities is marginally less than that of non-family ones. Hence, concluding that non-family entities benefit marginally better from mergers than family-owned companies. Family firms are also often characterised as financially conservative, with a preference for internal funds over external funding, which is commonly required for mergers (Sah et al., 2021). Faccio and Masulis (2005) back this preference of payment by internal funds by highly concentrated firms in their paper by studying the choice of payments in European firms.

Rani et al. (2018), in their research paper of 150 Indian mergers, show that acquiring firms have negative abnormal returns, alluding to an overall attitude of mergers being value-destroying in the Indian economy. Aside from the dilution of control, ownership and SEW value, situations of the acquirer, not the technological expertise and capital, are also highly likely, especially in a developing country such as India (Raithatha & Ladkani, 2022). Hence, we hypothesise that:

Hypothesis 1. Family firms are less inclined to engage in M&A deals than non-family counterparts.

Walsh and Seward (1990) classify concentrated ownership as an internal form of governance mechanism and institutions such as boards of directors as an external form of governance mechanism in the principal-principal conflict. As a result, the importance of the function that the board plays in high-ownership concentrated firms is highlighted. The board monitors and advises the firm, especially regarding strategic business decisions, to maximise shareholder value (Bravo et al., 2018; Baysinger & Butler, 1985). Thus, I consider specific board characteristics in family firms that can make family firms more open or averse to M&A activity. These include the number of directors of the board, independence of the board, duality of CEO's position, number of female directors on the board and age diversity of directors. I also analyse whether specific characteristics are associated with positive or negative announcement returns for the M&As.

Previously, Raithatha and Ladkani (2022) have hypothesised specific board characteristics concerning the likelihood of the firm undertaking the M&A transaction. The paper by Defrancq et al. (2020) tests for board characteristics and composition-related variables and how they affect acquirer's cumulative abnormal return(CAR) over a certain time period. A paper by Bhaumik and Selarka (2012) also utilises firm-level data from India and conducts an event study analysis to study whether ownership concentration improves M&A outcomes. Masulis et al. (2007) also undertake an event study of M&A about takeover provisions and utilise OLS regression methodology. Therefore, with this study, I combine the conclusions derived from the test for the likelihood, and the announcement returns for the acquiring family firms.

3.1 Board Size

In theory, board size should be limited to avoid coordination issues amongst the directors and free-riding problems, making decision-making efficient and agreeable terms in shorter periods. According to Cheng's (2008) analysis of 1,252 US-listed companies, companies with larger boards

perform more consistently. This aligns with the theory that larger boards must let go of efficient decision-making methods to make decisions within a limited period. Guest (2009) finds a significant negative link between board size and corporate profitability (measured by return on assets), Tobin's Q, and return on stock market equity, when examining the function of board size in the United Kingdom. Older but influential literature by Huther (1996) concludes that boards with a larger number of directors can be ineffective as supervisors for firms.

Suppose boards with lesser number of directors are more productive in their strategies and decisions while complying with the SEW maintenance under a family firm. In that case, they are expected not to undertake M&A transactions. Larger boards give a greater depth of expertise and abilities The range of knowledge and experience, as well as access to various outside resources and networks provided by larger boards, can relieve this anxiety and make them less hesitant to engage in M&A, which, in the absence of such consultants and specialists, would impose excessive strain on their SEW (Raithatha & Ladkani, 2022). Therefore, the hypothesis can be that a board with higher number of directors on the board increases the chance of M&A activity. As for the returns from M&A activity for family firms with larger boards, we expect negative announcement returns because the market may perceive a large board as inefficient and creating an uncertain future for the firm (Yermack, 1996; Cheng, 2008; Guest, 2009). Another economic reason for the same could be that investors perceive the firm as successful under a particular family, and M&A is a loss of momentum for the continued success of the firm.

However, there is a wide presence of contradictory literature against a smaller board size. A paper by Defrancq et al. (2020) postulates that larger boards could "provide more qualitative strategic counsel to management", thus leading to more efficient and value-creating M&A decisions. Dalton and Dalton (2005) found that a larger board can enhance the variety of directors available in terms of board characteristics of female directors, directors from different generations and professional backgrounds. Consequently, a finding that defies these hypotheses may also be well explained by pertinent literature, so it should not come as a surprise.

Hypothesis 2.a. Family businesses with larger boards are more inclined to engage in mergers and acquisitions.

Hypothesis 2.b. Acquiring family firms with a greater board size corresponds to negative M&A announcement returns.

3.2 Board Independence

Outsider directors or independent directors are the ones not affiliated to the firm or the firm's executive team. Their independence allows them to have a better supervisory role over the firm's decisions and ensure the maximisation of equity holder's worth (Bertoni et al., 2017). They are also seen as an efficient addition to the firm's board (Fama & Jensen, 1983). More importantly, in a family firm, independent directors, through their advisory role from an outsider's perspective and unbiased evaluation, can help create successful takeovers with positive gains.

Therefore, with substantial independence on the board, the family firms can lower the aversion towards M&As as they provide enhanced monitoring. They might not always comply with the SEW value maximisation of the concentrated group of shareholders, but rather the minority shareholders. Thus, if a family corporation has a larger proportion of external directors on its board, it is more likely to pursue a takeover opportunity.

Due to this efficient and unbiased decision-making, the market perception tends to be positive for firms with independent directors. As a result, the immediate investor reaction to the news of the takeover should generate positive market value for the family company. Given the orientation towards SEW, the market might also perceive the M&A under an independent to be a value-creating merger (Fama & Jensen, 1983). Hence, our hypotheses 3.a and 3.b are given below. Contradictorily, directors on a board are appointed by the shareholders and managers. An opposing result could mean that external directors are conditioned to be conservative to risk-taking, which is comparable to the managers, and carry the perspective of M&As being SEW value dilution (Anderson et al., 2004; Maury, 2006; Rani et al., 2018).

Hypothesis 3a. Family-owned companies with more independent directors have a higher likelihood of undertaking M&A deals.

Hypothesis 3b. Acquiring family firms with more external directors leads to with greater takeover announcement returns.

3.3 CEO Duality

According to theory, if the CEO and chairperson are not two separate roles on a board, it takes away from the independence of the firm, as perceived by the market. The separation should bring in the idea of value maximising of all the shareholders and not just the majority shareholders. Therefore, a CEO in the dual position of a chairperson will also be risk-averse to M&A activity. This is because the CEO might hold more power over decision-making, which amplifies agency

problems in favour of the majority shareholders (Finkelstein, 1992). Furthermore, in circumstances when the chief executive officer is a family member, they are paid more and are more inclined to maximise SEW objectives for the business than take up strategic growth chances (Chen et al., 2021).

Any M&A activity undertaken by family firms with CEO duality will also bring negative announcement returns from the market's perspective; the board's independence is compromised. Masulis et al. (2007), firms with CEO duality bring in negative announcement returns for the acquirer, and Defrancq et al. (2020) also predict negative announcement returns for CEO duality. Hence, our hypotheses 4.a and 4. b.

Considering the Indian regulatory landscape, the Securities and Exchange Board of India (SEBI) recommends that the top 500 listed companies separate the role of CEO and chairperson. However, according to a 2022 article by Rudresh Mandal, it might be argued that the SEBI's recommendation to split the CEO and chairperson roles was unnecessary as previous research suggests that "the independence status of the chairperson is not a material indicator of firm performance or governance quality" (Mandal, 2022, para. 6). The article reported extensive opposition to the separation mandate that preceded the now voluntary ruling. The report expressly states that the restrictions created a hurdle to the potential successors of family-operated companies in India, which account for 300 of the top 500 listed corporations.

It is worth noting that even though Defrancq et al. (2021) predict a negative relation, they do not find any significant evidence. However, they conclude that in Europe, the founder of someone from the family owners takes on the dual position. Brickley et al. (1998) also found a minimal effect on dual position of CEO in their study of board vigilance.

Hypothesis 4a. Family businesses with dual CEO roles are less inclined to pursue merger and acquisition transactions.

Hypothesis 4b. Acquirers with the same individual in charge of both CEO and director responsibilities had poorer mergers and acquisitions CAR returns.

3.4 Board Gender Composition

According to Arch (1993), men are more inclined to view dangerous circumstances as challenges that need involvement, whereas women perceive them as dangers that should be avoided. This aligns with family firms wishing to maximise their SEW by being risk-averse and

conservative regarding significant strategic decisions. Additionally, women exhibit less success-oriented assurance in the face of uncertainty, which lowers their likelihood of overconfidence.

According to research by Levi et al. (2014), firms with a larger share of female directors are less inclined make acquisitions and seek M&As. In addition, their inclination to pay lesser takeover premiums suggests that women are less overconfident. Moreover, this lack of overconfidence might influence the board to be averse to M&As. Therefore, these boards with a higher share of female member may also be better equipped to stop management-initiated purchases that destroy value. Research through change According to Adams and Ferreira (2009), CEO turnover is higher in gender-diverse firms because boards that are diversified are more likely to consider CEOs accountable for poor market performance. The market, therefore, sees a gender-diverse board's takeovers as ones that create value and, thus, higher announcement returns.

Hypothesis 5.a. Acquiring family firms with higher portion of female members on the board are less inclined to undertake M&A transactions.

Hypothesis 5.b. Acquiring family firms with higher portion of female members on the board is related to better M&A announcement returns.

3.5 Age Diversity

Diversity in the age groups of the board directors brings in risk appetite from the energetic and younger directors, leading the board in the direction of more growth opportunities through expansions and takeovers (Ararat et al., 2015). At the same time, the older generation balances out the risk appetite with experience, conservative decisions and caution. According to this study, in India's NIFTY 500 index of the market, on average, people 60 years and older make up 59% of all the board directors and, therefore, a majority[1]. According to Grund and Westergård-Nielsen (2008), older individuals often have a deeper understanding of essential markets and intra-firm structures, and they are less familiar with new technologies and produce fewer original ideas. More youthful individuals, on the other hand, are more adept at new technology and can generate greater variety of ideas. In most cases, higher performance requires both types of human capital.

Hence, family-run businesses will be better inclined to undertake M&As if there is wider age range on the board of directors. Previous works of research has also found that age diversity and manager group performance are positively linked, which is highly likely to be translated to a

[1] Indian_Boards_Structure_and_Breadth.pdf (independentdirectorsdatabank.in)

group performance of directors (Hope Pelled et al., 1999; Kilduff et al., 2000). The market perception about the value creation from M & A of an acquirer with a diverse board can also be positive since it positively impacts performance. Hence, our hypotheses are as follows:

Hypothesis 6.a. Family firms with more age diversity are likelier to undertake M&A activity.
Hypothesis 6.b. Family firms with more age diversity on their boards experience better M&A CAR yields.

3. Methodology

a. Data

The firm-level database was gathered from 2005 to 2019 from LSEG's Refinitiv Eikon for Merger and Acquisition Deal Screener (SDC Financial Database). This period of data is taken as is more likely to be complete from 2005 onwards, and 15 years of data captures sufficient trends before and after the 2008 crisis. By collecting data before 2020, we avoid the 2020 COVID-19 pandemic anomalies. I filtered the database primarily by the country requirement of India, and finance related, and utility companies were omitted from the dataset. It was ensured that all the deals in the sample were filtered out by the requirement of 25% or more stake acquired in their respective M&A deal. This allows the database to consist of more strategic deals, as there is a possibility for the holder the right to block special board resolutions (Raithatha & Ladkani, 2022). Additionally, I added columns to get additional data on identifiers, stock prices and any other required data. LSEG also holds data from India's National Stock Exchange, among the country's largest stock exchanges.

The financial annual statement data was collected from the Compustat Global database, which contains data for India. Key identifiers, such as Global Company Key (GVKey), SEDOL, and International Security Identification Number (ISIN), were also acquired to help merge the databases. The main financial variables were acquired from the variables for the control variables in our test for Tobin’s Q, Total Assets, return on assets, Tobin's Q, and Leverage, as seen in Tables A.1 and A.2, showing the Variables definitions.

The Board Member data for board characteristics analysis is taken from Board Ex "Rest of the World" on Wharton Research Data Services (WRDS). As defined in Table A.1, the variables

were all available in this database but for the Average Director age. Therefore, I decided to replace it with Standard Deviation of Age, which can represent age diversity in the board of directors. Defrancq et al. (2020) use this measure for age diversity in their study of the traits of the board of directors on M&A profitability.

Finally, WRDS has an Event Study Tool, which is also available for international markets. I used this program to calculate the cumulative abnormal returns (CAR) for the acquiring businesses in the dataset based on ISIN. For the primary regression testing, I utilise the [-2, +2] window, which adds abnormal returns to the event window. This will be crucial for our event study methodology, explained in the Empirical Strategy Section.

Utilising Stata, all four databases were cleaned for missing values and duplicate observations. I first merged the SDC M&A database with the financials data from Compustat according to the year and the critical identifier ISIN. Then, I merged this combined database with the Board Ex data, again using the ISIN and year. Finally, I merged the merged databases with the Event Study database, utilising ISIN and the dates input for the data collection.

The original dataset consisted of 4900 firm-year observations. However, I had to drop the rest of the values due to the variable construction processes and stock prices being only available for 2115 firm-year observations. The stock price was used to compute the Market Value of Equity, which is the product of number of outstanding shares and the price of the stock on the eleventh trading day prior to the takeover news (Masulis et al., 2007). Primarily, the stock price on the SDC database was only available for one week prior and only for half of the observations. Therefore, the final dataset consists of 2115 firm years and 145 unique firms from 2005 to 2019.

As aforementioned, Hegde et al. (2020) finds that around 51% of firm stakes are owned by family owners. In their data sample, Raithatha and Ladkani (2022) also found a remarkably close figure of 51.99% family firms. Similarly, our database also shows 52.9% of family-owned companies. A family-owned firm's ownership is measured through the promoters' median level of ownership. Like previous literature, I use many family ownership definitions to analyse which fits the model best, as explained in the Variable Construction section (4. b).

The paper by Raithatha and Ladkani (2022) also uses Refinitiv Eikon to get a sample of 2789 firm observations. However, the authors also had access to CMIE Prowess for stock return

data, which I need access to; hence, the sample size variance depends on the available LSEG stock return data and Compustat data. Additionally, their paper uses a different event study methodology, lowering comparability. On the other hand, the event study methodology publication by Defrancq (2020) has a sample size of about 2230, which is comparable to ours, allowing us to determine that our observations are adequate for the entire set of empirical tests.

b. Variable Construction

M&A deal dummy serves as the primary dependent variable for the logit regression tests. If the company has M&A activity in year t, it is denoted as 0, otherwise, the dummy is one. The primary dependent variable for the event study test, which undertakes an OLS regression, is the cumulative abnormal returns (CAR [-2, +2]), from the stock prices over a 5-day window of the merger announcement, downloaded from the Event Study Tool.

The family firm explanatory variables are based on family firm ownership and the degree to which a business is classified as a family firm. For this, I constructed three dummy variables and used one continuous variable. A firm is defined as family-owned if the promoter's ownership or holding of the firm's total shares exceeds the given cut-offs of above median, above 25% and 50%. They form the Models I-III in our baseline regression, respectively. For Model VI, I have also considered the continuous variable of Promoter's Ownership, giving us the percentage of promoter's ownership in each firm without any cut-offs. The definitions for all the family firm variables are given in Table A.1.

In order to calculate the board characteristics, I started by taking the logarithm of the number of directors on the board. The logarithm is used to normalise this variable's distribution, stabilising the variance and making the data more homoscedastic. The degree of independence of the board is calculated as the number of the members on the board according to the firm. Similarly, the Board Gender Composition is defined as the ratio of female members on the board, based on the business and year. CEO duality is constructed using the classifications of CEOs who also have the role of Chairperson. Finally, Age Diversity represents standard deviation of the age of the acquirer's board directors.

For the acquirer's control variables, starting with the size of the firm, I use the annual Total Assets extracted from Compustat and take the natural logarithm of it to scale it to have a more normal distribution. As aforementioned, the Market Value of Equity is the product of number of

outstanding shares and the share price one week before the merger announcement date. Tobin's Q used as a control variable because it represents an organization's market valuation relative to its price of substitution, capturing market expectations about future profitability and opportunities (Lang & Stulz, 1994). It is derived by dividing the market value of assets over the firm's book value. Leverage is computed as the book value of debt divided by the market value of the assets. The return on assets can be calculated by dividing EBITDA by total assets. Finally, utilising the target status, we create three dummies to determine whether the target in the merger is classified as the status of public firm, private or a subsidiary target similar to Masulis et al. (2007).

c. Empirical Strategy

I follow two separate methodologies to evaluate our two distinct types of hypotheses utilising an unbalanced panel of M&A deals from 2005 to 2019. The first is the logistic regression for the baseline regression with control variables, and the second is a logistic regression to connect family ownership with board characteristics. The variables for the same can be seen in the Table A.1.

Logit regression can be employed when the variable of analysis is a binary variable, in our case the M&A deal variable. The dependent variable (M&A Deal) will be coded as one if a firm has executed at least one acquisition deal within a given year and 0 if none were undertaken in that year. This is based on the research by Raithatha and Ladkani (2022) and involves estimating the likelihood of family firms undertaking M&A transactions; I used their methodology of logistic regression. Additionally, logistic regressions are widely used for their simple interpretation and computational simplicity, increasing comparability (Greene, 2012; Hosmer et al., 2013).

For the logistic regression, since we are dealing with unbalanced panel data, I will use time-fixed effects based on year, hence, year-fixed effects. Time-fixed effects make our model more robust since it avoids endogeneity arising from time-invariant omitted variables. It also removes the year-to-year variation of the model. Additionally, as the literature uses industry fixed effects, I use the “Acquirer's Industry” classification from the SDC database (Defrancq et al., 2020). Industry fixed effects remove the within-industry variation and enhance the overall robustness of the relationships. To reduce the possibility of endogeneity issues resulting from the simultaneous determination of the M&A decision, the regression considers the lagged values of all independent

and control variables. The logistic regression findings are analysed using the average marginal effects (AME) tabulated in the Appendix.

The primary independent variable is Family Ownership, which is also a dummy for the entity being a family-owned or not. The equation for the first baseline logistic regression is given as follows, where X represents a vector of control variables (*see* Table A.1):

$$M\&ADeal_i = \beta_0 + \beta_1 FamilyOwnership_i + \gamma X_i + \varepsilon_i \quad \textbf{(1)}$$

To test the hypothesis for the likelihood of M&A transactions about the board composition of the family firm, similar to the literature, I aim to use equation (2) given below. The board characteristics will include size of the board, number of outsider directors, CEO duality, ratio of female directors, and the age diversity of the board.

$$M\&ADeal_i = \beta_0 + \beta_1 FamilyOwnership_i + \beta_2 FamilyOwnership_i * BoardCharacteristic_i + \beta_3 Board\ Characteristic_i + \gamma X_i + \varepsilon_i \quad \textbf{(2)}$$

The third test is the Event Study methodology, using Ordinary Least Squares (OLS) regression. An event study helps analyse an event's repercussion on a firm's value. Event study helps isolate the effect of the merger announcement from any other unrelated events with robustness and clear insights. The abnormal returns are calculated by subtracting the actual returns during event window and the estimated expected returns, as seen in equation (3.1). Equation (3.2) shows how the abnormal returns are cumulated over the 5-day window or a [-2, +2] window, where t=0 is the day of the announcement of the merger. A 5-day will capture the immediate market reaction to the initial stock price change while minimising the risk of capturing unrelated noise from unrelated events or information. It is also a standard practice in event studies, allowing comparability and consistency across different studies (Kothari & Warner, 2007). The risk model used for estimation is the Market Adjusted Model (MAR). *Abnormal return* is defined as "the difference between a stock's daily return and the country market's return (Pinnuck, 2004). It assumes that beta equals one[2].

[2] https://wrds-www.wharton.upenn.edu/pages/get-data/compustat-capital-iq-standard-poors/compustat/global-daily/fundamentals-annual/?saved_query=4418410

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt}) \quad \textbf{(3.1)}$$

$$CAR_i = \sum_{t=-2}^{2} AR_{it} \quad \textbf{(3.2)}$$

Defrancq et al. (2020) utilise this methodology to undertake similar research on board characteristics on the acquirer's cumulative abnormal returns. Their empirical strategy utilises a 3-event day window or [-1, +1] window. Another study by Masulis et al. (2007) undertakes event study methodology for M&A announcement day returns as well, considering board characteristics. However, they utilise a 5-day window for the announcement event. To better capture the change in abnormal stock returns, I use the 5-day window, or the [-2, +2]. The 3-day windows and 10-day windows are used as a robustness check in Section 7.

I regress CAR on the board characteristics of family firms that have undertaken M&A in our dataset, using OLS regression, similar to Masulis et al. (2007). However, instead of their research's antitakeover provisions, I inserted the family firm median dummy variable, as well as the interactive variables between family ownership and board characteristics. Equation (3.3) displays the regression equation, and Table A.2 lists the factors utilised in the third regression.

$$CAR_i = \beta_0 + \beta_1 Family\ Ownership_i + \beta_2 Board\ Characteristics_i + \beta_3 (Family\ Ownership_i \times Board\ Characteristics_i) + \gamma X_i + \epsilon_i \quad \textbf{(3.3)}$$

Finally, to perform a robustness check, I do two additional regressions. The primary one is negative binomial regression. The second one is the OLS regression for the Event Study with two different windows. The other robustness tests include Fixed Effects and its alternatives, residuals check, and clustered errors check. I expand on the same in Section 7 for Additional Tests and Robustness Checks.

4. Summary Statistics

Table 1 displays the dataset's descriptive statistics, displaying the mean, standard deviation, and quartile values for our sample of 2115 firm-year observations and 145 unique firms. The

summary data compare to earlier study papers and literature (Defrancq et al., 2021; Raithatha & Ladkani, 2022).

Table 2 presents the pairwise correlation among the variables utilised across all three regressions to address multicollinearity issues. The correlations are all small, which implies very weak correlations and that the regression models should not suffer from multicollinearity. The only pairs showing high correlations are Promoters Ownership, FF 50, FF 25 and FF Median, but that is because these measures are substitutes for each other, derived from the Promoters Ownership percentage. This is negligible as the further tests only use the measure which is the most significant and has a sound coefficient strength.

Table 1

Descriptive statistics of the sample

Variables	Mean	Std. Dev.	P50	P25	P75	*N*
M&A Deal	0.6813	0.4661	1	0	1	2115
CAR [-2, +2]	0.002486	0.05654	0.002635	-0.02726	0.310642	2029
Promoters Ownership	51.1822	18.456	52.9	35.32	65.9	2115
FF Median	0.4960	0.5001	0	0	1	2115
FF 25	0.9381	0.2411	1	1	1	2115
FF 50	0.5674	0.4956	1	0	1	2115
Board Size	2.3707	0.2765	2.3979	2.1972	2.4849	2115
Board Independence	0.5121	0.1775	0.5	0.4286	0.6	2115
CEO Duality	0.0288	0.1674	0	0	0	2115
Board Gender Composition	0.9156	0.0782	0.917	0.875	1	2115
Age Diversity	9.0598	2.8288	9	6.9	11.2	2115
Firm Size	13.0146	2.3309	12.5977	11.4059	14.2001	2115
Market Value of Equity	9045872	1.74E+07	2333794	339254.6	1.05E+07	2115
Tobin's Q	77.3157	240.7444	14.3486	0.5219	46.5848	2115
Leverage	19.0998	86.8643	0.2680	0.04745	0.4441	2115
Public Target	0.1551	0.3621	0	0	0	2115
Private Target	0.3764	0.4846	0	0	1	2115
Subsidiary Target	0.3721	0.4835	0	0	1	2115
Return on Assets	0.1465	0.0883	0.1251	0.08739	0.18801	2115

Table 2

Pairwise Correlations

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 CAR	1																
2 FF Median	0.0691	1															
3 FF 25	0.0538	0.2514	1														
4 FF 50	0.0881	0.8621	0.2915	1													
5 Promoters Ownership	0.0951	0.8358	0.5102	0.8457	1												
6 Board Size	-0.1274	-0.0765	-0.0065	-0.0808	-0.0507	1											
7 Independent Board Members	0.0483	-0.0046	-0.0698	0.0442	-0.0155	-0.0152	1										
8 CEO Duality	0.0007	0.0299	-0.0159	0.0164	0.0005	-0.0268	-0.0142	1									
9 Board Gender Composition	-0.0193	0.1248	-0.0073	0.1218	0.101	0.1305	-0.091	0.0027	1								
10 Age Diversity	-0.0323	-0.0021	-0.0457	-0.0248	-0.0655	-0.0071	0.0169	0.0587	0.0403	1							
11 Firm Size	0.0122	0.146	-0.0561	0.1503	0.0967	0.118	-0.0064	-0.0257	0.1602	-0.0357	1						
12 Tobin's Q	-0.0365	-0.083	0.0334	-0.0888	-0.0563	-0.0302	-0.0421	0.0052	-0.2699	-0.0476	-0.2952	1					
13 Leverage	-0.1364	-0.0228	0.0583	-0.0061	-0.0268	-0.0415	-0.0162	0.0319	0.0492	0.1238	-0.1112	0.3454	1				
14 Public Target	0.0166	-0.0354	-0.0239	0.0012	-0.0152	0.0534	0.0901	0.0045	0.2033	-0.0039	0.0489	0.0034	0.0701	1			
15 Private Target	-0.0016	0.0093	-0.0341	-0.0373	-0.0271	0.0072	-0.1106	0.0159	-0.0375	0.0878	-0.0689	0.0092	0.0469	-0.3276	1		
16 Subsidiary Target	0.013	0.0103	0.104	0.0439	0.0509	-0.0545	0.0594	-0.0216	-0.1842	0.0009	0.0064	0.0292	-0.0737	-0.3175	-0.609	1	
17 Return on Assets	0.0521	0.0054	-0.0193	0.0315	-0.0059	-0.059	-0.074	-0.019	0.0474	-0.0648	-0.1655	0.1226	-0.1383	0.0866	0.1179	-0.0598	1

5. Regression Results

In the following section, I discuss the outcomes of the three regressions and their implications. The first two are logistic regressions, while the third is an OLS regression for the Event Study. I have supported all the implications with relevant literature.

For logistic regression, the coefficients are not directly interpretable; they can only explain the log-odds changes. Therefore, I first conclude on the coefficient sign and then give a conclusion based on the average marginal effects, which shows "the change in probability of the dependent variable for one unit change in the independent variable" (Perraillon, 2019). The model shows McFadden's Pseudo R2, a goodness of fit measure for logit regression, where values between 0.2 and 0.4 denote a good fit. Even though Pseudo R^2 values are not directly interpretable, it is a good sign that they are consistent with the paper by Raithatha & Ladkani (2022). Average Marginal Effects are the average of the marginal effects computed for each observation in the sample (Perraillon, 2019). The marginal effects are presented in Tables A.3 and A.4 in the Appendix. Additionally, all the conclusions are derived under the ceterus paribus.

5.1 Baseline Regression

The Table 3 shows the outcomes for the baseline regression, with four family firm classification measures making the four models (I-VI). According to Model I, firms are classified as family-owned firms if their promoter shareholdings exceed the median ownership level. Modell II and III classify firms as family firms if their promoter shareholding exceeds the 25% or 50% cut-off level. Finally, Model IV is the continuous variable of promoter shareholdings.

Looking at the findings for the first regression analysis, we can see that all the measures for the family firm ownership are negatively related to the M&A deal dummy. This is in line with the Hypothesis 1. This means that if the company is classified as a family owned, it has a negative likelihood of undertaking an M&A deal. The implication is that family firms with significant promoter control are more risk-averse towards M&A transactions that can disrupt their firm. This aligns well with the empirical evidence found in previous literature by Raithatha and Ladkani (2022), Feldman et al. (2019), and Basu et al. (2008).

For firms classified as family firms, if their promoters' ownership is above the median level (FF Median), the probability of undertaking M&A decreases by 8.34 percentage points compared

to non-family firms. This negative effect or reduced likelihood is significant at a 99% confidence interval. The statistical significance and the larger magnitude of the reduced likelihood make our median family firm classification the most robust measure.

For firms classified as family firms, if their promoter's ownership is 25% or more (FF 25), they have a reduced likelihood of engaging in M&A activity by 9.38 percentage points in comparison to the firms classified as not owned by families, which have less than 25% promoter shareholdings. This result is significant at a 95% confidence level. Though the coefficient of the reduced likelihood is of high magnitude, it is captured mainly by a more significant number of firms are classified due to the only 25% cut-off.

Firms classified as family firms if their promoter shareholdings are 50% or more (FF 50) have a 5.36 percentage points of reduced likelihood of undertaking M&A activity. This negative relation is significant at a 95% confidence interval. For the continuous variable of Promoter Ownership or Model VI, firms with a one-unit increase in promoter shareholdings or ownership leads to a reduced likelihood of engaging in M&A activity by 0.24 percentage points. This negative relation is significant at a 99% confidence interval.

The negative association arises from the family firms' unwillingness to disrupt their control over the firm regarding the dilution of shareholdings, decisions, and culture. Raithatha and Ladkani (2022) find similar results, and Claessens et al. (2002) also conclude the same. Research carried out by Bertrand et al. (2002) also concludes that family-owned entities exhibit a lower propensity for M&A activities because family owners often prioritise maintaining control and preserving family legacy over pursuing growth through acquisitions.

The motivation for retaining control over the firm comes from Socio-Emotional Wealth (SEW), as outlined by Gomez-Mejia et al. (2011). Additionally, a merger could mean that new managerial positions and new owners are taking opposing strategic decisions, disruptive to the SEW and any social ties that the family firm might have in their community, suppliers and customers (Miller et al., 2009; Martynova & Renneboog, 2009).

In the context of India, studies by Nashier and Gupta (2012) find the importance of Indian family firms preferring control over their firm, which could be diluted or lost after an M&A transaction. Additional concerns are the cultural integration and complexity of managing post-

acquisition integration. According to Chahal and Sharma (2022), family-owned businesses in India frequently prioritise financial stability over the risks associated with M&A transactions.

Profitable firms, defined by the Return on Assets, have a higher likelihood of undertaking M&A activity. This is observed when the return on assets measure shows a positive coefficient. All the coefficients for Return on Assets are significant at a 99% confidence interval. Looking at average marginal effects, the likelihood ranges around 90.13, 93.71, 93.44, and 91.89 percentage points for Model I, II, III and IV, respectively. Rhodes-Kropf and Viswanathan (2004) outline in their study that higher profitability firms, especially those measured by return on assets, are more inclined to participate in M&A activity. Another study concludes that firms with higher profitability indicators are more probable to engage in acquisitions and pursue more significant and disruptive transactions than less profitable firms (Harford, 2005).

The results also show a positive relationship between Tobin's Q and likelihood of involvement in M&A transactions. The relation achieves statistical significance at a 90% confidence interval. The range of percentage point increases for likelihood is around 0.02. Tobin's Q signifies that as a company's market perception of value increases, they are more likely to undertake merger and acquisition activity. It is most likely due to the company being valued based on valuable growth potential. This conclusion is consistent with the broader studies, which links greater Tobin's Q to more investment, as companies with stronger potential for growth are inclined to invest in expanding the operations (Lang & Stulz, 1994).

Leverage shows a positive coefficient value for all four models, with a 99% confidence level of statistical significance. This is contradictory to the literature done before. However, the implications could be that higher leverage can give firms higher financial flexibility and better capacity to approach the growth opportunities in store (Bradley et al., 1988). This explanation is backed by a study by Lemmon and Zender (2010), who explain that leverage firms not only pursue acquisitions through financial flexibility but also to improve operational capacity.

The target's status as a public, private, or as a subsidiary entity is directly associated with the possibility of the firm engaging in an M&A deal. However, a firm is more likely and more significantly willing to undertake an M&A transaction if the target is a subsidiary. This comes from the higher magnitude of the average marginal effects ranging from 6.14, 6.44, 5.99, and 6.37, across the regressions I, II, III and IV, respectively, and is statistically significant at 90% confidence

level. The implications for this can be justified by previous studies and literature, where subsidiary targets can enhance the acquirer's competitive positioning and give a better market share (Martynova & Renneboog, 2008).

Finally, the firm size variable is inversely correlated to the likelihood of completing an M&A, as seen from the sign of the coefficient. These outcomes have a statistical significance of 95% confidence level for Model I and a 99% confidence level for Models II-IV. The AME analysis suggests the likelihood of a firm participating in M&A activity decreases by an average of 1.2 percentage points. The economic reasoning for this could be that larger organisations have a lower likelihood of engaging in merger and acquisition deals for a variety of reasons, including declining marginal returns from acquisitions, integration issues, increased regulatory scrutiny, a focus on internal growth, and risk aversion (Harford and Jarrad, 1999; Rossi et al., 2004). Masulis et al. (2007) research does a similar M&A analysis and finds a negative coefficient for firm size.

Table 3

This table showcases logit regression result (N= 2115). The dependent variable is a M&A deal dummy variable, which takes value 1 if a firm has undertaken M&A in a given year. Standard errors are mentioned in parentheses. Variable definitions are in Table 1.

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

	(I)	(II)	(III)	(IV)
FF Median	-0.5173***			
	(0.1311)			
FF_25		-0.5778**		
		(0.2660)		
FF_50			-0.3308**	
			(0.1301)	
Promoters Ownership				-0.01498***
				(0.003396)
		Control Variables		
Firm Size	-0.07176**	-0.08498***	-0.07675***	-0.07586***
	(0.02954)	(0.02941)	(0.02955)	(0.02945)
Tobin's Q	0.001371*	0.001547**	0.001416*	0.001417*
	(0.0007442)	(0.0007731))	(0.0007575)	(0.0007504)
Leverage	0.004677***	0.004549***	0.004577***	0.004494***
	(0.001489)	(0.001519)	(0.001494)	(0.001487)
Public Target	0.1927	0.2088605	0.2027909	0.2253486
	(0.2549)	(0.2548)	(0.2547)	(0.2562)
Private Target	0.3453	0.3350417	0.313868	0.3497589
	(0.2221)	(0.2218)	(0.2211)	(0.2231)
Subsidiary Target	0.3806*	0.3970*	0.3700*	0.3964*
	(0.2089)	(0.2091)	(0.2081)	(0.2099)
Return on Assets	5.5904***	5.7708***	5.7636***	5.7167***
	(1.06228)	(1.06639)	(1.06343)	(1.06322)
Constant	-12.63312	-12.27308	-12.47685	-11.95966
	(750.4008)	(611.4183)	(609.6089)	(608.4691)
Industry and Year FE	Yes	Yes	Yes	Yes
Pseudo R^2	0.1954	0.1909	0.1915	0.1972

5.2 Logistic Regression on Board Characteristics

The results for the logistic regression on board characteristics and family ownership can be observed in Table 4. I run two different regressions per board characteristics, one with only the board characteristic measure and the second one with the interactive variable of promoter ownership signifying family-owned firms and the board characteristic measure FF Median. All the models are numbered from (I)-(X) and run with year- and industry-fixed effects. Additionally, Pseudo R2 values are consistent with previous literature (Raithatha & Ladkani, 2022). The average marginal effects are tabulated in Table A.4 in the Appendix.

5.2.1 Board size

In model I, family ownership, as measured by the above median level of promoter's shareholding, is inversely associated to the likelihood of undertaking any takeover activity at a magnitude similar to the previous baseline regression. Board size, evaluated by taking the logarithmic value of the actual number, is positively related to the likelihood of a firm undertaking M&A activity. Both the coefficients are significant at a 99-percentage confidence interval. The average marginal effects show that growth in board size by one unit leads to an 18.73 percentage point rise of likelihood of participating in M&A activity.

Model II is the regression with the interaction variable of family ownership and size of the board, measured for family firms with larger or smaller board sizes. From the negative sign of the coefficient, it can be concluded that bigger board sizes in family firms can mean less likely to participate in an M&A activity. All the coefficients are significant at a 99% confidence interval. According to the AME analysis, an additional unit in a family firm's board size can reduce the firm's likelihood of engaging in M&A activity by 50.29 percentage points.

The results indicate that larger boards might increase M&A activity, similar to family-owned firms. This could be because the coordination issues and free-riding problems persist, leading to inefficient decisions about not undertaking M&As. Additionally, the importance of prioritising SEW and controlling the firm also influences the board's decision not to undertake M&A activities, as, in the end, the majority shareholders have voted for the board.

5.2.2 Board Independence

The Board Independence variable measures the proportion of independent directors on the board. A greater proportion of independent directors on the board makes companies less

resistant towards mergers and acquisitions. The coefficient is also statistically significant at the 99% confidence level. According to the AME analysis, increasing director independence in a firm improves the likelihood of engaging in M&A activity by 27.62 percentage points.

In terms of the interaction term, representing independence on the board of a family corporation is associated with a lower likelihood of M&A activity. Hence, they are less likely to partake. While this is significant only at a 90% confidence interval, it is contradictory to our hypothesis. The marginal effects analysis shows that independence in family firms can decrease M&A activity by 17.64 percentage points. Therefore, regarding this study, we reject Hypothesis 3, which states that more independence leads to a firm being more open to takeover activity.

The implications for the same are, however, visible in previous literature. A study done by Anderson et al. in 2004 examines the function of independent directors in family-owned firms and finds that although more autonomous boards are generally associated with better governance, their influence in family firms can sometimes limit strategic risk-taking, including M&A activity. Another study by Maury (2006) provides further evidence that despite the independence of the board in the family-owned firm, they are more risk-averse and in agreement with the promoter's direction of decision-making. An alternate reason for the same could be the perceived characteristics of M&A as value-destroying (Rani et al., 2018).

5.2.3 CEO duality

In Model V, having a dual position for the CEO and chairman positions is directly related to the M&A attitude of a corporation. Through the average marginal effects, we can observe that if a firm has a dual CEO position, the probability of the firm taking an M&A transaction increases by 1.35 percentage points. The interaction term analysis shows that family firms with CEOs in dual positions are also positively associated with a higher likelihood of undertaking takeover activity. However, the average marginal effects analysis only shows an increase in M&A activity likelihood by 0.03 percentage points for CEOs in dual positions.

The CEO duality model V and model VI results are insignificant, with very high p-values. This is contradictory to the hypothesis and previous literature, especially the one done by Raithatha and Ladkani (2022). Therefore, we reject Hypothesis 4.a. From the economic reasoning point of view, a study done by Peng and Jiang (2010) suggests that family firms with CEO duality could pursue M&A activity more, as there is a more "centralised control." Finkelstein and D'Aveni (1994)

similarly find a minimal effect and conclude that it could result from a balance between CEO duality's positive and negative effects on M&A activity, not alluding to an inevitable conclusion.

5.2.4 Board Gender Composition

For our primary regression for the board gender diversity component, the coefficient is inversely correlated to the likelihood of mergers and acquisitions transactions. The outcome is statistically significant in the 99% confidence interval. Regarding the magnitude interpretation, an increase in the gender diversity of a board, as measured by the board's ratio female directors, leads to a decrease in affinity for M&A activity by 157 percentage points.

The regression with the interaction term, thus family firms with a greater ratio of female directors, is also a negatively related to the likelihood of M&A transaction. The result is significant at 90% confidence level. The marginal effects analysis shows that when the gender ratio increases by an additional unit, there is a drop in the probability of M&A activity by 47.92 percentage points. Hence, boards with more female directors in a family firm mean they are more averse to M&A transactions.

We do not reject it as it is in line with Hypothesis 5. a. This can be backed up by previous literature mentioning larger number of female members on the board are more careful with strategic decisions such as M&As (Huang & Kisgen, 2013). This could also stem from the fact that acquisitions for acquirers can be value-destroying. Gonzalez and Hagendorff (2016) discovered in their study on boardroom female representation and business risk that gender diversity is related with lower and more conservative firm risk.

5.2.5 Age Diversity

Model IX shows that age diversity, as measured by the board's standard deviation, is inversely related to the likelihood of undertaking mergers and acquisitions activity. The result is significant at 99% confidence interval. The marginal effects show 1.14 percentage point decrease in M&A transactions if there is higher deviation in the ages of the board members.

The interaction term regression in Model X shows that family firms with higher age diversity positively correlate with the likelihood of partaking in M&As. The result is statistically significant at 99% confidence interval. The AME analysis show that an increase in the board's age diversity leads to an increased likelihood of M&A activity by 2.71 percentage points.

The results from Model X are consistent with our Hypothesis 6. a. and previous literature. The reasoning is that age diversity, which brings variance in perspectives on the board, can lead to more strategic decisions such as M&As (Carter et al., 2010). Age diversity can also make boards more active and capture every opportunity to capitalise on growth opportunities such as acquisitions (Knippenberg et al., 2004; Harford, 2005).

Table 4

This table presents the logistics regression results for the Board Characteristics and Family Firm hypotheses. The dependent variable is a dummy variable which takes value 1 if a firm has undertaken M&A in a given year, 0 otherwise. Standard errors are mentioned in parenthesis. Variable definitions are in Table A.1. *p< 0.1, **< 0.05, ***p< 0.01

	I	II	III	IV	V	VI	VII	VIII	IX	X
FF_median	-0.5331***	7.08014***	-.5104***	0.03759	-0.5172***	-0.5172***	-0.609274**	2.256	-0.5123***	-2.09073***
	(0.1322)	(1.1435)	(0.1324)	(0.3932)	(0.1311)	(0.1323)	0.1357	(1.7733)	(0.1314)	(0.4570)
Board Size	1.1753***	2.8287***								
	(0.2699)	(0.3777)								
FF_median* Board size		-3.2497***								
		(0.4859)								
Board Independence			1.7342***	2.2512***						
			(0.3914)	(0.5291)						
FF_median*Board indep				-1.1082*						
				(0.7495)						
CEO duality					0.08343	0.08247				
					(0.3358)	(0.5101)				
FF_median* CEO duality						0.001687				
						(0.6769)				
Board Gender Composition							-10.1741***	-8.7541***		
							(1.3015)	(1.5459)		
FF_median* Gender Comp								-3.1021*		
								(1.9152)		
Age Diversity									-0.07142***	-0.1728***
									(0.02349)	(0.03721)
FF_median*Age Diversity										0.1699***
										(0.04687)
Constant	-15.5105	-18.3619	-14.11692	-14.2277	-12.6326	-12.6326	-2.9744	-5.3328	-12.09845	-11.499
	(605.5569)	(614.0899)	(604.4503)	(609.8896)	(750.3981)	(750.3975)	(606.4295)	(959.9202)	(749.1828)	(753.6131)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry and Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.2035	0.2232	0.204	0.2049	0.1954	0.1954	0.224	0.2251	0.1994	0.205

5.3 Event Study Results

The findings for the Event Study analysis are presented in Table 5. For the Event Study, I ran OLS regression for every board characteristic modelled from I to X. The dependent variable is the cumulative abnormal returns (CAR) over a 5-day period. The explanatory variable is the median measure of family ownership again and the respective board characteristics. Family firm ownership is positively associated to the dependent variable of announcement returns; therefore, family firms receive positive returns on their M&A announcements.

5.3.1 Board Size

Model I illustrates that the size of the board of directors is negatively related to announcement returns. For one unit increase in board size, the announcement returns for the firm decrease by 3.54 per cent. For the interaction term in model II, we can observe a unit increase in the board size of a family firm; the M&A returns decrease by 3.17 per cent. Both results are statistically significant at a 99% confidence level. This is in line with our Hypothesis 2.b.

Yermack (1996) found a negative relationship among board size and Tobin's Q, hence their performance. Cheng (2008) studied board size and found more significant variability associated with corporate performance, hence more uncertainty about the performance and lower returns on announcements. Guest (2009) also shows an opposing relationship between firm performance and bigger boards due to coordination inefficiencies, hence the lower announcement returns.

5.3.2 Board Independence

The board independence variable shows a positive relation with the announcement returns; a rise in the share of independent directors on the board causes a rise in announced returns of 1.3%. This is statistically significant at a 90% confidence interval. The interaction term from model VI also captures a positive relation. An increase in the share of outside directors who serve on family-owned companies boards increases M&A announcement returns by 5.69 percent, which is statistically significant at the 99% confidence level.

This is consistent with our Hypothesis 3.b. Previous literature also finds evidence for favourable market reception to takeover announcements due to the board's independence as they bring more transparency and reduce information asymmetry (Schmidt & Fahlenbrach, 2017). Ferreira and Kerchmaier (2013) suggest from their findings that governance effects include better

and effective decision-making and better monitoring, thus, a better market reaction to announcements.

5.3.3 CEO duality

CEOs in dual positions have a negligible effect on the M&A announcement returns, as seen in model V, with only 0.015 per cent and no statistical significance. Model VI, where we can observe CEO duality in family-owned firms, is negatively associated with to announcement returns, with a magnitude of 0.58 per cent and, again, no significance. Hence, the dual position of the CEO can bring adverse announcement effects to family firms; therefore, we accept Hypothesis 4.b.

Defrancq et al. (2021) study also found the general insignificance of CEO duality in relation to M&A announcement returns. Bhagat and Black (2002) suggest in their paper that CEO duality means suboptimal decision-making and overall performance, hence suboptimal outcomes, which is reflected in the poor market reaction. Shleifer and Vishny (1997), through their survey article, conclude that CEO duality removes the independent monitoring factor and could lead to the market perception that CEOs make decisions in their interests and not to maximise shareholder value.

5.3.4 Board Gender Composition

Higher number of female board members is inversely related to M&A announcement returns. A unit increase in diversity led to a 3.76 per cent decrease in announcement returns. The coefficient of this finding is statistically significant at a 90% confidence level. As for the interaction term, meaning gender diversity in family firms, the effect is augmented. Thus, a unit increase in gender diversity ratio in family firms means a 3.32 per cent decrease in announcement returns. The results are not significant.

This contradicts our hypothesis; therefore, we reject the hypothesis 5. a. However, this is consistent with previous literature. Buachoom et al. (2023) state that as female directors bring in more close supervisory roles, this can lead to slowed decision-making and, hence, conservative business strategies. Huang and Kisgen (2013) find that presence of female members of the board do not favour M&A decisions, the market also reacts against the firm when they make these decisions. Chen et al. (2013) conclude that family-owned companies' focus on SEW and control can result in conservative decisions, which the presence of female directors can further enhance.

5.3.5 Age Diversity

As seen in model IX, age diversity hurts announcement returns, 0.0498 per cent, to be exact. This is a small result. In model X, we can see the interaction term to specify age diversity in family firms. Here, the effect is a 0.329 per cent decrease in announcement returns if the family firm has an age-diverse board. The statistical significance for the same is at a 99% confidence level. Therefore, we reject the hypothesis 6. b.

Gul et al. (2011) find that age diversity can also cause slow decision-making due to coordination issues that arise from variance in risk appetite and strategy. Dagsson and Larsson (2011) and Sutarti et al. (2021) back this notion by concluding that age diversity in a board can increase conflicted decision-making and lead to potential losses in strategic decisions like M&A.

Table 5

This table presents the OLS regression results for the Board Characteristics and M&A returns hypotheses. The dependent variable is Cumulative abnormal return for acquirer shareholders over the 5 day, [-2, +2] event window, with day 0 being the M&A announcement date. Standard errors are mentioned in parenthesis. Fixed effects are included as the data is in panel format. Variable definitions are in Table 2. *p< 0.1, **< 0.05, ***p< 0.01

	I	II	III	IV	V	VI	VII	VIII	IX	X
FF_median	0.01207***	0.08674***	.0126075***	-0.01670**	0.01254***	0.0126932***	0.01249***	0.05209*	0.01270***	0.04281***
	(0.002714)	(0.02231)	(0.002739)	(0.007808)	(0.002742)	(0.002769)	(0.00274)	(0.03167)	(0.002746)	(0.008866)
Board Size	-0.03536***	-0.02149***								
	(0.005503)	(0.006857)								
FF_median* Board size		-0.03169***								
		(0.009398)								
Board Independence			0.01301*	-0.01107						
			(0.007308)	(0.009440)						
FF_median*Board indep				0.05691***						
				(0.01421)						
CEO duality					0.0001548	0.003396				
					(0.006948)	(0.01051)				
FF_median* CEO duality						-0.005765				
						(0.01402)				
Board Gender Composition							-0.03763*	-0.02078		
							(0.02373)	(0.02726)		
FF_median* Gender Comp								-0.04317		
								(0.03439)		
Age Diversity									-0.0004978	.001265*
									(0.0005022)	(0.0007032)
FF_median* Age Diversity										-0.003289***
										(0.0009214)
Constant	0.1858***	0.1573***	0.08297***	0.09086***	0.09413***	0.09425***	0.13221***	0.1152***	0.09864***	0.09208***
	(0.03193)	(0.03295)	(0.02951)	(0.02946)	(0.02886)	(0.02887)	(0.03753)	(0.03989)	(0.02921)	(0.02918)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry and Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.2294	0.2339	0.2143	0.2207	0.213	0.2131	0.214	0.2147	0.2134	0.2185
Adjusted R^2	0.2036	0.2078	0.1879	0.1942	0.1866	0.1862	0.1876	0.1879	0.187	0.1919

6. Additional Tests and Robustness Checks

6.1 Addressing Endogeneity

Endogeneity can appear in empirical models like our logit and OLS models when the explanatory variables such as Family Firm (FF Median) and the board characteristics can also be correlated to the error term. This can lead to inconsistent coefficient estimates, which might be an effect of omitted variables, mismeasurement or reverse causality (Woolridge, 2010). Therefore, I undertake a few measures, such as the Control Function Approach, alternative fixed effects, and a residual mapping test to control for the same.

Endogeneity tests usually involve instrument variables to check for omitted variable bias or correlation to the error term. However, due to time constraints and database limitations, I needed help finding robust instrumental variables that were complete for the dataset. Previous literature has used "business affiliation" and "family firm's fraction of industry sales" as instrumental variables (Raithatha & Ladkani, 2022, p. 14). Therefore, the control function approach, alternative fixed effects, and residual mapping serve as alternatives that can test for endogeneity without the instrumental variables. This can limit the robustness of the results, but the alternative tests show consistent results. Therefore, it is recommended that endogeneity testing methodologies with instrumental variables be undertaken as a scope for further research.

6.1.1 Control Function Approach

First introduced by Hausman (1978), the control function approach allows one to test for endogeneity in a two-step method. The first step involves acquiring the residuals by regressing the suspicious endogenous dependent variables on the exogenous variables (Hausman, 1978). The next step involves including residuals in the primary regression model and checking for the significance of the residual in this model's results. Insignificant residual means the model is unlikely to suffer from endogeneity issues.

I run the tests for the baseline regression, where the FF Median is our explanatory variable for the likelihood of M&A activity. The p-value for the residuals comes as 0.975, which makes it highly insignificant, dismissing any suspicions of endogeneity. For the second regression involving the family firms and their board characteristics, I ran the two-step test for the interaction models: Models II, IV, VI, VIII, and IX. The p-values for the residuals for all the models are 0.980, 0.636, 0.002, 0.516, and 0.110, respectively. Therefore, the residual for CEO duality is only significant,

making it susceptible to endogeneity. However, this issue of endogeneity can be caused by the high likelihood of mismeasurement of the variable or by India's regulatory landscape regarding the duality position.

Additionally, we conclude that CEO duality as a variable needs revision, also mentioned in Section 7, Conclusion. Finally, for the event study regression, I run the tests for the models II, IV, VI, VIII and X similarly. The p-values for the residuals are 0.214, 0.204, 0.153, 0.130, and 0.138 respectively. Thus, there is no high likelihood of endogeneity in the third regression either.

6.1.2 Fixed Effects

Since I am analysing a panel dataset, using fixed effects to control for unobserved heterogeneity is essential. This is because it could lead to endogeneity. The fixed effects also help solve the issue of omitted variable bias, where some variables could be correlated with dependent and explanatory but are not included (Woolridge, 2010). For the time-fixed effects, I use year-fixed effects, similar to the study by Raithatha and Ladkani (2022). I utilise industry fixed effects, with the mid-industry classification from the SDC database defined as determined by SIC codes, NAIC codes, and the overall firm business description. [3]. he 2014 study by Bruyaka et al. also utilises this classification for their study on M&As and strategic complementarity.

National Industry Classification (NIC) is specifically for India, as SIC codes are used for global-level data. Raithatha and Ladkani (2022) also utilised the NIC codes. Therefore, I use the India-level classification for industry fixed-effects as a robustness check for industry fixed-effects. The coefficient signs are the same for all the results from Table 3 to Table 5. As the NIC codes had to be found through an independent database, the list needed to be completed for our dataset; therefore, the observations were limited to 1656. However, achieving the same coefficient values and signs is a good sign.

6.1.3 Residuals

Residual scatterplot analysis is done to verify the regression model for issues such as outliers and heteroscedasticity (Gujrati, 2009). For the explanatory variables, the scatterplots were symmetrical, with only a few outliers. This means that residuals are distributed around zero in a balanced manner and do not display significant skewness. Additionally, the residuals are all almost

[3] http://mergers.thomsonib.com/td/DealSearch/help/nidef.htm.

distributed between -5 and 5, with few outliers, thus a reasonable range. Finally, I could not observe any patterns or shapes in the graph, making it more randomly distributed. Therefore, there are no significant issues of omitted variable bias or endogeneity.

6.2 Clustered Errors

Clustering standard errors is important in panel data to see if the observations within the same cluster are correlated (Woolridge, 2010). As a robustness check for correlation, I clustered the errors according to the Firm IDs (ISIN and SEDOL), as the previous literature has done. After running the three main regressions with clustered standard errors, I found that the coefficient values and significance remained in a similar range as the actual results. The only difference was in the constant, which is insignificant for our analysis as we focus on the coefficients.

6.3 Negative Binomial Regression

As a test for robustness for the first two logistic regressions, I utilise negative binomial regression with the same dependent variables and interaction terms of the explanatory variables as the results from Table 6. Previous literature carries out this (Raithatha & Ladkani, 2022). Before running the regression, I tested for the dispersion of the model, where the alpha was 4.31e-11, which is very close to zero. Therefore, we can conclude that the model has negligible dispersion, or equidispersion, meaning the variance is equal to the mean, and confidently proceed with our negative binomial regression.

The findings are shown in Table 6. Board size hurts the likelihood of M&A and activity, as observed previously. Gender and Age diversity measures also show the same coefficient values as before, hence the same relationships. CEO duality does not result in the same coefficient sign but has no significance. Interestingly, board independence has a favourable influence, which is consistent with past research; nevertheless, this contradicts the actual results from the logistic regression.

6.4 Different Event Windows

As a robustness test for the Event Study regressions, I also evaluate the CARs with two different event window periods. The first one is done with the smaller window of 3 days, [-1, +1]. Table 7 shows the findings for models numbered I through V. All the coefficients' signs are in the same direction as the [-2, +2] CAR model. The absolute values of the coefficients are marginally

smaller, though the difference is not substantial. The p-values have increased slightly, but most stay in the same range of significance—the R2 is also consistent with the previous model.

Models VI to X in Table 7 showcase the CAR calculated over the event window of 10 days [-5, +5]. For this model, the sign of the coefficients of the results aligns with the results from the [-2, +2] CAR model. The absolute values have varied more since the event window is doubled in days. The p-values have increased for variables; therefore, the significance has also dropped respectively—the R^2 is corresponds with the preceding models.

Previous research carried out by Defrancq et al. (2020) also re-runs the models with more oversized event windows and finds consistent results with slightly lower significance. They conclude that more oversized event windows lead to more news releases being captured in the CARs, hence " introducing noise into the measure."

6.5 Addressing Sample Bias

Studying M&A transactions inherently brings the risk of the final sample consisting of only firms that have a size big enough and have been a part of the industry for a period long enough to stabilise them to undertake M&A. Another bias is that the firms that are financially sound to undertake M&As are included in the sample. There are ways to mitigate sample bias with sample selection bias models, but due to the time constraint, it is out of the scope of this research. Therefore, it is essential to keep in mind the limitation that sample studies a particular sample of M&A carried out by Indian firms with the restriction of 25% or more stake transacted. Thus, the implications of this study's results cannot apply to the Indian firm's population.

Table 6

This table tabulates the outcomes for negative binomial regression results. The dependent variable is the merger and acquisitions (M&A) deal dummy. Standard errors are presented in the parentheses. Variable definitions in Table A.1. *p< 0.1, **< 0.05, ***p< 0.01

	I	II	III	IV	V
FF median	1.2859**	-0.1456*	-0.1424**	0.5342	-0.3738**
	(0.5326)	(0.07642)	(0.06434)	(0.7052)	(0.2038)
Board Size	0.5128***				
	(0.1593)				
FF Median * Board Size	-0.5994**				
	(0.2225)				
Board Independence		0.3161*			
		(0.1646)			
FF Median * Board Independence		0.01346			
		(0.07991)			
CEO duality			0.04291		
			(0.2416)		
FF Median * CEO duality			-0.02274		
			(0.3256)		
Gender Composition				-1.7761**	
				(0.5986)	
FF Median * Gender Comp				-0.7487	
				(0.7677)	
Age Diversity					-0.03277*
					(0.01585)
FF Median * Age Diversity					0.02643
					(0.02139)
Constant	-18.9362	-18.7857	-18.5302	-16.7679	-18.3264
	(1481.114)	(2115.002)	(2155.008)	(2155.008)	(2155.009)
Controls	Yes	Yes	Yes	Yes	Yes
Industry and Year FE	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.0655	0.0636	0.0626	0.0666	0.0636

Table 7

This table presents the OLS regression results for the Board Characteristics and M&A returns hypotheses. The dependent variable is Cumulative abnormal return for acquirer shareholders over the 3-day, [-1, +1] event window, and 10-day, [-5, +5] event window with day 0 being the M&A announcement date. Standard errors are mentioned in parenthesis. Fixed effects are included as the data is in panel format. Variable definitions are in Table 2. *p< 0.1, **< 0.05, ***p< 0.01

	I	II	III	IV	V	VI	VII	VIII	IX	X
FF_median	0.05499***	-0.007446	0.008762***	0.0005503	0.02146***	0.1731***	-0.01549	0.01686***	0.0409	0.0471***
	0.020004	0.007099	0.002484	0.028507	0.007997	0.0323	0.01094	0.003838	0.04376	0.01272
Board Size	-0.02276***					0.006913				
	0.006158					0.009365				
FF_median* Board size	-0.01984**					-0.06675***				
	0.008442					0.01371				
Board Independence		-0.000716					0.01476			
		0.008596					0.01294			
FF_median*Board indep		0.03102**					0.06295***			
		0.01288					0.01983			
CEO duality			0.003224					-0.01545		
			0.009228					0.0143		
FF_median* CEO duality			-0.005144					0.01327		
			0.0124					0.01901		
Board Gender Composition				-0.02316					-0.023	
				0.0247					0.03747	
FF_median* Gender Comp				0.008756					-0.02614	
				0.03096					0.04773	
Age Diversity					0.001302**					0.0001917
					0.000624					0.0009923
FF_median* Age Diversity					-0.001421**					-0.003223**
					0.0008289					0.001333
Constant	0.1034***	0.03379	0.04007	0.06339**	0.03223	0.07934*	0.05648	.08152**	0.1051*	0.09066**
	0.02922	0.02603	0.02543	0.03567	0.02578	0.04394	0.03886	.03812	0.05388	0.03871
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry and Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.266	0.2514	0.2477	0.2481	0.2495	0.2776	0.2758	0.2654	0.2654	0.269
Adjusted R^2	0.2398	0.2247	0.2209	0.2212	0.2227	0.2511	0.2492	0.2384	0.2385	0.2422

7. Conclusion

In this research, I investigated how Socioemotional Wealth (SEW) affects a family firm's risk-aversive behaviour, strategic decisions and decisions to undertake growth opportunities. The research also underlines how the board and their distinctive traits may assist offset the risk-averse attitude that exclusively prioritises the majority shareholders, which falls under the principal-principal conflict. I specifically discuss the correlation between family-owned companies and board characteristics in the context of mergers and acquisitions, which are a critical strategic business decision that involves dilution of ownership concentration, increased risk appetite, and other takeover goals that typically are inconsistent with the preservation of SEW.

I present evidence by gathering a dataset of mergers and acquisitions in India from 2005 to 2019, which is a rising country with one of the highest levels of family ownership in businesses. The first part of this research studies the likelihood of undertaking M&A activity by firms classified as family-owned if they are above the median level, 50%, and 25% of promoter ownership, with continuous promoter ownership holding as the fourth model. The empirical research reveals an inverse relationship between promoter ownership (indicating family ownership) and the likelihood of engaging in merger and acquisition activity, as expected by previous literature. If the promoter's holding is above the sample median, firms classified as family-owned companies are inversely related to M&A activity by 8.34 percentage points, significant at a 99% significance level. Finally, I address the model's control variables.

The second regression for specific board characteristics that might encourage or discourage the family firms from approaching M&A activity. There is a considerable association between higher number of board members, greater autonomy of members, and gender and age diversity. A larger board size in a family firm is associated with a decreased likelihood of M&A activity by 50.29 percentage points. A higher ratio of external directors on the board of a family reduces the likelihood of M&A activity by 17.64 percentage points. A larger ratio of female members on a family company’s board leads to a 47.92 percentage points decrease in the likelihood of M&A activity. Age diversity in a family-owned entity’s directors is associated with an increased likelihood of M&A activity by 2.71 percentage points. CEO duality in a family firm's board only shows a 0.03 percentage point increased likelihood of M&A activity with low significance.

The third part of the analysis employs event study techniques to examine the impact of specific board characteristics on acquirer returns from M&A transactions. The empirical evidence indicates that larger boards, CEO duality, and a higher percentage of female board members result in negative announcement returns. In contrast, a greater percentage of independent directors and increased age range result in positive announcement returns. A larger family firm board is linked to a 3.17 percent decline in the 5 day cumulative abnormal returns surrounding the takeover announcement. A larger share of outsider members on a family company's board leads to a 5.69% rise in announcement day returns. An age-diverse board in a family firm leads to a decrease in M&A returns by 0.33 per cent. All of the findings are statistically significant at the 99% confidence criterion. Findings regarding gender diversity and CEO duality are not significant. A larger ratio of female directors on a family firm's boardroom leads to a 3.32 percent drop in M&A announcement returns. CEO duality in a family firm is associated with decreased M&A announcement returns by 0.58 per cent.

The implications of our results allude to the identification of an internal governance structure in family businesses, especially regarding the board of directors. The implications are pertinent to the governance structure of family firms as well as to various stakeholders, including investors, minority shareholders, policymakers, and state regulators. The study gives an in-depth insight into balancing the SEW goals and the optimum decisions for the family firms. The insights for the board characteristics signify the role of specific characteristics in a board member that might help align SEW maximisation and growth of the firm—the empirical results present evidence in favour of more age-diverse and independent boards. Age diversity and independence on the board in a family can bring dynamic decision-making that can increase strategic decisions and promote the firm's growth. Meanwhile, gender diversity brings enhanced monitoring of the board and management, which can be utilised as a governance mechanism to increase risk aversion. Despite the minimal results, the empirical models for CEO duality allude towards separating the roles for better performance in the firm.

Studying the CARs around the announcement day gives quantitative evidence for the market's perception regarding the firm's decision and its decision-making board of directors. The study's findings advocate for greater openness across the executive committee and minority stakeholders in order to avoid favouring the actions of the majority shareholders, who are the family. The market

prefers smaller boards, a larger number of autonomous members, and the decentralisation of CEO and chairperson responsibilities due to enhanced investor trust, through more robust governance measures. Hence, these implications extend to the policymakers in India, who can utilise the empirical findings to create policies and regulations that incentivise family firms to hire a board that is balanced, diverse, and independent of prioritising majority shareholders. The research, therefore, contributes not only to the corporate governance and M&A literature in India but also addresses a majority of the firms in the Indian market, as they make up around 51%-52% of all the companies.

It is vital to highlight that the analysis of CEO duality in the board repetitively yielded insignificant results with an impactful coefficient. This outcome suggests a limitation in the measure of CEO duality, as it was derived secondarily from the role name of the board director. Additionally, the summary statistics indicate a low incidence of CEO duality within the sample. This low incidence may be attributed to regulatory complications discussed in the literature review. For future research, it is recommended to identify a more accurate measure or to utilise a sample with a higher prevalence of CEO duality positions. This also calls for a recommendation to increase the overall sample size to improve the empirical evidence captured by this research. Unfortunately, this study was limited by the limited access to comprehensive databases.

As a result, the board of directors, with its unique qualities, plays an essential function in lowering family firms' risk aversion in order to preserve SEW. Despite the significant insights, we can identify various limitations and how they can act as a scope for further research. Defrancq et al. (2021) argue that "while we cannot completely rule out reverse causality, we think this worry may be significantly reduced by looking at important strategic choices like M&As". Despite this assurance, I address endogeneity through three different methods. The control function approach allowed the dismissal of endogeneity through insignificant residuals, except for the CEO duality model in the second regression, which suggests further revision. Residual scatterplot analysis showed no significant endogeneity issues either. Finally, using National Industry Classification, alternate industry fixed effects yield similar and consistent coefficients, confirming the robustness of fixed effects that usually avoid endogeneity.

Finally, I run negative binomial regression as a robustness check for the logistic regressions, to show consistent significance and coefficient signs. As a robustness check for the event study, I

run the OLS regression with two different lengths of windows to calculate cumulative abnormal returns. In addition, I re-run the tests with clustered errors, and a pairwise correlation analysis to eliminate multicollinearity. The sample is limited to large, financially stable Indian firms involved in M&A, which may introduce sample selection bias. It is recommended that future research should use sample selection bias models to mitigate this limitation.

For further research, the sample size could also be extended and enhanced to account for cross-cultural acquisitions, to understand the diversifying aspect of the M&A landscape. With a country with a rich and complex culture like India's, which is integrated in family values and their businesses, the study could be expanded to their risk aversiveness to cross cultural and cross border takeovers. One possible aspect affecting family companies' conduct also can be regulatory obstacles. Future studies might examine how various legislative frameworks affect the governance and strategy of family businesses.

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9. Appendix

Table A.1

Variable definitions for Logistic Regression and Negative Binomial Regression Models

Variable	Definitions
Panel A: Dependent Variable	
M&A Deal	Dummy, 1 if a firm has executed at least one M&A deal within a given year, and 0 if no deals were undertaken
Panel B: Explanatory Variables	
FF Median	Dummy, 1 if firm's promoter holdings are more than the median, 0 otherwise
FF 50	Dummy, 1 if firm's promoter holdings are more than 50%, 0 otherwise
FF 25	Dummy, 1 if firm's promoter holdings are more than 25%, 0 otherwise
Promoters' ownership	Percentage of shares held by promoters in the firm
Board Size	Natural logarithm of number of board members
Board Independence	Proportion of outside directors on the board
CEO Duality	Dummy, 1 is CEO is also a chair member of board, 0 otherwise
Board Gender Composition	Proportion of female directors on the board
Age Diversity	Standard deviation of the age of the acquirer board members
Panel C: Control Variables (X)	
Firm Size	Log of book value of total assets
Market Value of Equity	Number of shares outstanding multiplied by the stock price at one week prior to announcement date.
Tobin's Q	Market value of assets over book value of assets
Leverage	Book value of debts over market value of total assets
Public target	Dummy, 1 if target is a public firm, 0 otherwise
Private target	Dummy, 1 if target is a private firm, 0 otherwise
Subsidiary Target	Dummy, 1 if target is a subsidiary, 0 otherwise
Return on assets	Acquiror EBITDA/ total assets

Table A.2

Variable definitions for the Event Study methodology analysis with OLS regression

Variable	Definitions
	Panel A: Dependent Variable
CAR	Cumulative abnormal return for acquirer shareholders across the [-2, +2] event window, with day 0 being the M&A announcement date
	Panel B: Explanatory Variables
FF Median	Dummy variable, 1 if firm has promoter holdings of more than the industry median
FF 50	Dummy variable, 1 if firm has promoter holdings of more than 50%, 0 otherwise
FF25	Dummy variable, 1 if firm has promoter holdings of more than 25%, 0 otherwise
Promoters Ownership	Percentage of shares held by Indian promoters
	Panel C: Board Characteristics of Acquirer
Board Size	Natural logarithm of number of board members
Board Independence	Proportion of outside directors on the board
CEO duality	Dummy, 1 is CEO is also a chair member of board, 0 otherwise
Board Gender Composition	Proportion of female directors on the board
Age Diversity	Standard deviation of the age of the acquirer board members
	Panel D: Control Variables (X)
Firm Size	Log of book value of total assets
Market Value of Equity	Number of shares outstanding multiplied by the stock price at the 11th trading day prior to announcement date.
Tobin's Q	Market value of assets over book value of assets
Leverage	Book value of debts over market value of total assets
Public target	Dummy, 1 if target is a public firm, 0 otherwise
Private target	Dummy, 1 if target is a private firm, 0 otherwise
Subsidiary Target	Dummy, 1 is target is a subsidiary, 0 otherwise
Return on assets	Acquirer EBITDA/ total assets

Table A.3

This table showcases the average marginal effects results of the baseline logit regression for the variables (N= 2115). The dependent variable is a dummy variable, which takes value 1 if a firm has undertaken M&A in a given year. Standard errors are mentioned in parentheses. Variable definitions are in Table 1. *p < 0.1, **p < 0.05, ***p < 0.01

	(I)	(II)	(III)	(IV)
FF Median	-0.08341***			
	(0.02083)			
FF_25		-0.09382**		
		(0.04301)		
FF_50			-0.05363***	
			(0.02096)	
Promoters Ownership				-0.002470***
				(0.0005355)
		Control Variables		
Firm Size	-0.01157**	-0.01379***	-0.01244***	-0.01219***
	(0.004734)	(0.004734)	(0.004757)	(0.0047)
Tobin's Q	0.0002211*	0.0002512**	0.0002296*	0.0002278*
	0.0001199	(0.0001253)	(0.0001227)	(0.0001205)
Leverage	0.000754***	0.0007386***	0.0007421***	0.0007223***
	0.002385	(0.0002452)	(0.0002406)	(0.0002375)
Public Target	0.03107	0.03391	0.03288	0.03622
	(0.04106)	(0.04134)	(0.04125)	(0.04115)
Private Target	0.055677	0.05440	0.05089	0.05622
	(0.03571)	(0.03592)	(0.03577)	(0.03576)
Subsidiary Target	0.06136	0.06446*	0.05998*	0.06372*
	(0.03359)	(0.03386)	(0.03364)	(0.03364)
Return on Assets	0.9013***	0.9371***	0.9344***	0.9189***
	(0.1671)	(0.1687)	(0.168)	(0.1666)
Industry and Year FE	Yes	Yes	Yes	Yes
Pseudo R^2	0.1954	0.1909	0.1915	0.1972

Table A.4

This table presents the average marginal effects results of the logistic regression for the board characteristics variables (N= 2115). The dependent variable is a dummy variable, which takes value 1 if a firm has undertaken M&A in a given year. Standard errors are mentioned in parentheses. Variable definitions are in Table 1.

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

	I	II	III	IV	V	VI	VII	VIII	IX	X
FF_median	-0.08499***	1.0957***	-0.0813***	0.005984	-0.08338***	-0.08339***	-0.09427**	0.3485	-0.08208***	-0.3329***
	(0.02076)	(0.1703)	(0.02079)	(0.06260)	(0.02082)	(0.02102)	(0.02058)	(0.2736)	(0.02075)	(0.07157)
Board Size	0.1873***	0.4378***								
	(0.0423)	(0.05534)								
FF_median* Board size		-0.5029***								
		(0.07189)								
Board Independence			0.2762***	0.3584***						
			(0.06128)	(0.08304)						
FF_median*Board indep				-0.1764*						
				(0.1192)						
CEO duality					0.01345	0.01329				
					(0.05414)	(0.08223)				
FF_median* CEO duality						0.0002721				
						(0.1092)				
Board Gender Composition							-1.5742***	-1.3524***		
							(0.1902)	(0.2318)		
FF_median* Gender Comp								-0.4792*		
								(0.2952)		
Age Diversity									-0.01145***	-0.02751***
									(0.003731)	(0.005822)
FF_median*Age Diversity										0.02706***
										(0.07391)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry and Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.2035	0.2232	0.204	0.2049	0.1954	0.1954	0.224	0.2251	0.1994	0.205