

# GENDER-DIVERSE BOARDS GET BETTER PERFORMANCE ON MERGERS AND ACQUISITIONS

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## Abstract

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In recent years, the composition of boards, particularly the appointment of female directors to the boardroom has attracted significant political and social debate. Despite several studies that have examined links between the representation of women on boards and the corporate performance, research on the board gender diversity in merger contexts is limited. We assess whether the presence of women on corporate boards affects merger and acquisition (M&A) performance. Using acquisition bids by public Canadian companies during 2012-2017, we find that an increasing number of female directors in acquiring companies is associated with an enhanced merger performance and a reduced bid premium. After controlling for gender diversity on executive teams, the value added by having women on boards is particularly noticeable when acquiring firms have few women in the executive teams, and where overconfidence is prevalent. Thus, there is a substitutive relation between gender diversity on the board and gender diversity on the executive team.

**Keywords:** Board Gender Diversity, Executive Team, Merger and Acquisition, Value Creation, Managerial Overconfidence, Attitude Towards Risk, Lack of Fit Model

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## 1. INTRODUCTION

Most studies have found merger and acquisition (M&A) performance less than encouraging. In fact, M&As appear to destroy value for acquiring shareholders more often than they create it, and the value destruction continues long into the future (Bradley, Desai, & Kim, 1988; Cai & Vihj, 2007; Harford, Humphery-Jenner, & Powell, 2012; Alexandridis, Fuller, Terhaar, & Travlos, 2013). In a recent study, Alexandridis, Antypas, and Travlos (2017) present evidence that M&As post-2009 seem to create more value for acquiring firm shareholders than ever before. Nonetheless, close to 50% of M&As continue to lose money for acquiring shareholders, with losses of up to US\$1 billion per transaction. Even so, M&A activity is on the rise. According to Forbes Magazine, "2019 could look even better" as analysts expect M&A activity to increase significantly.

In this paper, we investigate whether board gender diversity affects bidding behaviors in M&As, and enhances acquiring firms' performance. Our motivation stems from the growing literature documenting a positive link between women in a leadership position and firm performance. For example, using a sample of Norwegian firms, Yang, Riepe, Moser, Pull, and Terjesen (2019) show a negative link between a greater female representation on firm boards and firm risks. The appointment of women on corporate boards also appears to improve financial reporting quality. Chen, Eshleman, and Soileau (2016) get strong empirical evidence for a negative link between a gender-diverse board and internal control issues. They show that even one female board member could reduce the likelihood of internal control problems. We contribute to this literature by examining the role of gender diversity in the context of M&As. Further,

unlike most studies, which focus on the role of women on boards, we study gender at the executive level as well.

Several authors consider that CEO hubris played an important role in value-destroying M&As (Roll, 1986; Hayward & Hambrick, 1997; Hayward, 2007; Harford, Humphery-Jenner, & Powell, 2012; Claxton, Owen, & Sadler-Smith, 2013; Zollo & Meier, 2008). Hubris refers to some excessive pride, excessive confidence in ones' ability to do something, and narcissism. It may be innate, or it can develop with successes and praise received during a manager's career. Hubris inflates managers' self-image and perceptions of their ability. Adopting the reinforcement sensitivity theory, Foster, Shenesey, and Goff (2009), Foster, Reidy, Misra, and Goff (2011) found that narcissists are inclined to make risky decisions because of the heightened perceptions of benefits. In an M&A context, managerial overconfidence/hubris leads to an overly optimistic view of the synergy, resulting in frequent M&A, high bid premium, and thereby in poor performance for the acquiring firm (Roll, 1986; Hayward & Hambrick, 1997; Hayward, 2007; Harford, Humphery-Jenner, & Powell, 2012; Claxton, Owen, & Sadler-Smith, 2013; Zollo & Meier, 2008).

M&A systematically requires the approval of the board of directors. Given the general tendency of men being more overconfident than women, M&A offers a unique research context for examining whether board gender diversity can make a difference to M&As' decision. Actually, most studies show women to be less confident than men, and more risk-averse than men (Barber & Odean, 2001; Levi, Li, & Zhang, 2014). Whereas men are seen to exhibit a greater tendency to invest in risky projects and to make risky choices compared with women (Bogan, Just, & Dev, 2013; Byrnes, Miller, & Schafer, 1999).

These results are consistent with the role congruity theory of prejudice towards female leaders (Eagly & Karau, 2002) and the lack of fit model (Heilman, 2001) that state a lack of congruency between the stereotypical feminine characteristics and the stereotypical image of a successful leader. However, under the hubris hypothesis, the traits required to an effective leader such as overconfidence, self-reliance, or excessive pride that are often associated with stereotypical masculine characteristics are assumed to have detrimental effects on M&A performance. Thus, a question that is raised is whether a gender-diverse board helps mitigate the adverse effect of managers' overconfidence in an M&A context. If women have more cautious behaviors, and if they are more likely to caution against an overly optimistic assessment, a gender-diverse board may act differently from a male-dominated one in selecting M&As projects. In our case, we focus on the effect of women on boards on the deal's characteristics, specifically, on (i) on the premium paid to target, and therefore (ii) on the performance of the acquiring firm.

We examine a sample of 210 completed Canadian domestic M&As for the period 2012-2017. We find a negative and significant association between the fraction of female directors on a corporate board and the bid premium level when the proportion of women in the executive team of the acquiring firm is low. In terms of economic significance, each additional female director on an acquiring firm board reduces the premium by 3.02%

when executive teams are less gender diverse. More importantly, each additional female director on an acquiring firm board increases the bidder returns by 2.96 %. We provide new evidence adding to the finding by Levi, Li, and Zhang (2014), and Chen, Crossland, and Huang (2016) on an association between gender diversity and corporate decisions. These papers are among the few works examining the effect of board gender diversity on M&As' characteristics.

The rest of the paper is organized as follows. Section 2 is a review of the literature on gender diversity. Section 3 describes the methodology and the sample. We present our results in Section 4. Section 5 summarizes and concludes.

## 2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Our research is driven by a growing literature showing that men and women behave differently. Women are generally found to be more risk-averse than men, and to behave more ethically than men (Dowling & Aribi, 2013; Chen, Eshleman, & Soileau, 2016). These differences in behavioral characteristics between men and women can arguably improve decision-making by bringing diverse insights and perspectives into the decision-making process. We focus on the implication of female board representation on a firm-level strategic decision.

### 2.1. Board gender diversity matters

Existing literature suggests that board gender diversity can give rise to various beneficial organizational outcomes. The closest prior studies to this paper are Dowling and Aribi (2013), Levi, Li, and Zhang (2014), and Chen, Crossland, and Huang (2016). They examine the relationship between female director representation on corporate boards and M&As' intensity and risk in terms of propensity to initiate acquisition bid, the size of the transaction, and the size of the bid premium. Using a UK M&A sample initiated by FTSE 100 companies over the years 2000-2011, Dowling and Aribi (2013) find that greater female representation on boards is linked to a lower level of acquisitiveness. Examining M&A bids by S&P 1500 companies during 1997-2009, Levi, Li, and Zhang (2014) report that not only a more gender-diverse board is associated with a lower propensity to initiate bids, but also with lower bids premiums. Additionally, Chen, Crossland, and Huang (2016) document that firms with greater female board representation tend to engage in smaller size transactions.

In these papers, the main drivers of differences in investment decision-making between male and female directors appear to be the attitudes towards risk and levels of overconfidence. As it was mentioned, M&A activity intensity may be driven by some kind of biased beliefs of overconfident managers overestimating their ability to manage acquisitions, the probability of success, and the synergy gains (Roll, 1986; Hayward & Hambrick, 1997). The observed differences in bidding behaviors in M&As are consistent with the argument that, as women have more cautious behaviors, gender diversity promotes board monitoring effectiveness. These results suggest that female

representation on corporate boards attenuates executives and directors overly optimistic views of the M&As outcomes, resulting in higher quality decisions.

Consistent with these views, studies have recognized that female representation on corporate boards is negatively associated with risk-taking (Yang et al., 2019; Chen, Leung, Song, & Goergen, 2019; Huang & Kisgen, 2013). Analyzing gender diversity at the executive level, Huang and Kisgen (2013) find that male and female executives are significantly different in financing and acquisition decisions. Men executives are found to be linked to a range of risky decisions. They undertake more acquisitions and issue debt more frequently than their female counterparts do.

Chen et al. (2019) show that female board representation promotes some prudent attitude within board members when confronted with such risky decisions. They examine whether female board representation explains the cross-sectional heterogeneity in firm performance during the financial crisis of 2007-2009 and find that female directors adopt less aggressive strategies, and undertake better M&A. However, they argue that this link exists only in industries with high overconfidence prevalence. In other words, female board representation improves board dynamics. As female directors avoid excessive risk, a more gender-diverse board is positively linked with a reduced level of firm exposure to financial risk, which thereby improves firm performance. Indeed, they show that firms that have male-dominated boards exhibit a significant drop in financial performance during the financial crisis.

Yang et al. (2019) promote the same idea. They focus on the causal effects of the Norwegian gender-balancing board on various performance outcomes for firms. It should be noted that Norway is among the first country to mandate board gender quotas in listed firms. They show a negative effect of the reform regarding gender-balancing quota on systematic risk as well as on idiosyncratic risk. Taken together, these papers suggest that female directors exhibit some behavioral traits and attitudes that keep firms away from risky decisions that impair firm value.

Somewhat different findings are contained in Arun, Almahrog, and Ali Aribi (2015), Zalata, Ntim, Choudhry, Hassanein, and Elzabar (2019), and Chen, Eshleman, and Soileau (2016) which examine the effect of gender diversity on some opportunistic behaviors impairing earning quality. Using a sample of 1 220 UK firms from FTSE 350 index during the period 2005-2011, Arun, Almahrog, and Ali Aribi (2015) provide evidence for the impact of female directors on the quality of financial reporting. They show that firms with a board that is more gender-diverse follow conservative accounting practices. Those firms are also less likely to engage in income-increasing earnings management that enables managers to meet performance targets and thereby increase fraudulently their remuneration package. Their results suggest that female representation on boards enhances board effectiveness to deter managers' ability to pursue strategies that advance their interests at the expense of shareholders.

In related work, Zalata et al. (2019) provide similar evidence. Based on a sample of 7450 US firm-year observations over the period 2007 to 2014,

they find evidence suggesting that female directors exert more stringent monitoring than male directors do. Thus, females on corporate boards are more likely to deter opportunistic behaviors than males, which in turn, contribute to improving earnings quality. Using a sample of 4267 US firm-year observations from 2004 to 2013, Chen, Eshleman, and Soileau (2016) also report strong evidence on a positive link between female board representation and control mechanisms quality. Their results show that firms having a higher percentage of female board representation are less likely to have internal control issues, thereby mitigating managerial opportunism, fraud opportunity, and financial misstatements, regardless of whether or not they sit on the audit committee. Fan, Jiang, Zhang, and Zhou (2019) provide recent evidence consistent with female directors being better monitors. They show that banks with a greater number of women directors are less likely to manipulate earnings. However, contrary to Chen, Eshleman, and Soileau (2016) who find that even one female board member could reduce the likelihood of internal control problems, they argue that the number of female directors must reach a certain threshold to enable them to induce significant change.

## 2.2. Hypothesis development

In contrast to these findings, some works find negative associations between board gender diversity and firm performance (Adams & Ferreira, 2009; Usman, Zhang, Farooq, Makki, & Dong, 2018), while some researchers suggest that gender-diverse board does not outperform male-dominated one in monitoring activities. For instance, Adams and Ferreira (2009) find that the average effect of gender diversity on firm performance is negative. Usman et al. (2018), in their parts, find that greater female representation on board is associated with CEO power because female directors tend to go along with management. Some researchers suggest that a gender-diverse board does not outperform a male-dominated one in monitoring activities. Sila, Gonzalez, and Hagendorff (2016), for example, provide evidence that female directors are not more risk-averse than their male counterparts. Chapple and Humphrey (2014) do not find evidence of any relation between diversity and firm performance.

We explore whether conflicting results in prior research stem from interactions between gender diversity on the board and the executive team. As one of the most important corporate investment decisions, M&As systematically require the approval of the board of directors to ensure that transactions are in the best interest of shareholders. However, the influence of the executive team on the M&As process cannot be ignored. In this paper, we argue that gender diversity on both the board and the executive team will influence decision-making in M&A contexts.

Based on our review of the existing literature regarding gender diversity in corporate contexts, men and women behave differently. Women are found to be more cautious, to show less overconfidence, and to behave more ethically than men in a variety of firm-level strategic decisions. The board of directors plays an essential role in protecting and promoting shareholders' interests. A key benefit of gender diversity on the board of directors is the improved quality of board

decision-making by bringing in these different and even conflicting behavioral characteristics, resulting in positive business outcomes (Yang et al., 2019; Chen et al., 2019; Arun, Almahrog, & Ali Aribi, 2015; Zalata et al., 2019; Chen & Gaviou, 2016; Fan et al., 2019).

If this were to be the case, board female representation would be particularly important for firms where women are underrepresented in the management team, and where, overconfidence is more likely to be prevalent. As a gender-diverse manager team and a male-dominated one do not show the same attitude towards risk, nor the same level of overconfidence (Huang & Kisgen, 2013), the stringent monitoring by female directors may be less apparent when managers are not inclined to make decisions that increase the level of firm exposure to risks. Therefore, unlike most studies, which focus on the role of women on boards, we study gender at the executive level as well as they are involved through all the stages of the M&A. We argue that in an M&A context, female board representation matters for a male-dominated manager team where overconfidence is more prevalent.

As discussed earlier, management hubris (narcissism, overconfidence) is among the main underlying causes of value destruction for acquiring companies. In an M&A context, hubristic behavior leads managers to overestimate the synergy expected from the transaction, and to underestimate the downside risk, leading to overbidding (Roll, 1986). Accordingly, overconfident CEOs are more likely to pay a high premium. It can be expected, therefore, that acquiring firms with female members on the board pay a significantly lower premium compared with male-dominated ones when overconfidence among managers team is prevalent. Our first research hypothesis is then stated as follows:

*Hypothesis 1 (H1): Female board representation is negatively related to the bid premiums when the proportion of female executives is low.*

As overconfident managers tend to overestimate their ability to manage acquisitions and to generate returns, M&As driven by managerial overconfidence are more likely to result in poor performance for the acquiring firm. We argue that gender-diverse board keeps firms away from these risky decisions that impair firm value, and hypothesize that:

*Hypothesis 2 (H2): Female board representation is positively related to the acquiring firm*

*performance when the proportion of female executives is low.*

The bid premium will be higher when the proportion of female executives is low (i.e. the executive team is less diverse). Conversely, the acquirer return will be lower when the proportion of female executives is low. We argue that gender-diverse boards help mitigate these adverse effects of managers' overconfidence, and expect a negative correlation between gender diversity on boards and bid premium, a positive correlation between gender diversity on boards and acquirer returns. The value added by having women on boards will be noticeable when the proportion of female executives is low.

### 3. DATA AND METHODOLOGY

We use the Securities Data Corporation (SDC) Platinum Database to identify deals by Canadian public companies between January 1, 2012, and December 31, 2017. A total of 332 M&A deals were announced over the time-period. The SDC database provides data on the announcement date, the completion date, the deal attitude, the acquisition mode, the method of payment, the toehold, and the fraction of ownership sought in the deal. The focus of our analysis, however, is on the board and executive team gender diversity that we collected from the BoardEx database. These deals are thus matched with the BoardEx database to gather board and executives team characteristics. Firm characteristics and stock returns are retrieved from Compustat.

Selection criteria used in generating our sample includes:

1. The transaction is completed not later than the end of 2018.
2. The sum of the toehold and the percentage ownership acquired in the deal is more than 50%.
3. Both the target and the acquiring firms are headquartered in Canada.
4. Both the acquiring firm and target firm are publicly traded.
5. The bid premium is available; otherwise, the data needed to calculate the bid premium must be available.

Our final M&A sample consists of 210 acquisition bids that fit these criteria over the time-period. Table 1 reports the sample composition by years and by sectors of activity.

**Table 1.** M&As sample composition (2012-2017)

<b>Panel A: Incidence of M&amp;As by year</b>				
<i>Year</i>	<i>All</i>	<i>%</i>	<i>Acquiring firm has at least one woman director</i>	<i>%</i>
2012	27	12.86%	20	74.07%
2013	43	20.48%	36	83.72%
2014	47	22.38%	41	87.23%
2015	48	22.86%	46	95.83%
2016	34	16.19%	30	88.24%
2017	11	5.24%	10	90.91%
Total	210	100.00%	183	87.14%
<b>Panel B: Incidence of M&amp;As by industry sector</b>				
<i>Industry</i>	<i>All</i>	<i>%</i>	<i>Acquiring firm has at least one woman director</i>	<i>%</i>
Mining	123	58.57%	108	87.80%
Oil and gas; Petroleum refining	39	18.57%	34	87.18%
Investment and commodity firms	20	9.52%	17	85.00%
Others (sectors with less than 5 M&As)	28	13.33%	24	85.71%
	210	100.00%	183	87.14%

Panel A reports the incidence of M&As announced and completed from 2012 to 2017. The year 2015 has the highest number of M&As. It is interesting to note that from 2012 to 2017, the number of acquiring firms having at least one woman on board saw an increase of 19%.

### 3.1. Empirical models

Because the proportion of female directors is hypothesized to affect the bid premium as well as the acquirer performance depending on the

$$\begin{aligned} \text{Bid Premium} = & \delta_0 + \delta_1 \text{Female director} + \delta_2 \text{Low proportion female in ET} \\ & + \delta_3 \text{Female director} \times \text{Low proportion female in ET} + \delta_4 \sum \text{governance characteristics} \quad (1) \\ & + \delta_5 \sum \text{acquirer characteristics} + \delta_6 \sum \text{deal characteristics} + \varepsilon \end{aligned}$$

The bid premium reflects the difference between the offer price and the target-firm's closing stock price prior to the first M&A announcement date. Following Aktas, de Bodt, and Roll (2010), Levi, Li, and Zhang (2014), and Jurich and Walker (2019), we used the bid premium relative to the price four

differential proportion of female executives, we model its effect through an interaction term between our measures of gender diversity on boards and of managers' team after controlling for these variables' direct effects. Following prior research, we control for governance, acquiring firm, and deal characteristics that could affect M&A characteristics and outcomes.

For *H1*, which examines the association of the proportion of female directors and the bid premium paid to the target shareholders, the empirical model is specified as follows:

weeks prior to the M&A announcement, as reported in the SDC database.

For studying the effect of board diversity on M&A performance, we deploy the following multiple linear regression model.

$$\begin{aligned} \text{M\&A performance} = & \delta_0 + \delta_1 \text{Female director} + \delta_2 \text{Low proportion female in ET} \\ & + \delta_3 \text{Female director} \times \text{Low proportion female in ET} + \delta_4 \sum \text{governance characteristics} \quad (2) \\ & + \delta_5 \sum \text{acquirer characteristics} + \delta_6 \sum \text{deal characteristics} + \varepsilon \end{aligned}$$

Following prior similar research, we measured the acquiring firm performance (*H2*) with the cumulative abnormal returns (CAR). We adopted an event-study methodology to estimate CAR around the deal announcement. No consensus has emerged among existing M&A studies about the length of the event window for calculating CARs (for a review, refer to Yaghoubi, Yaghoubi, Locke, & Gibb, 2016a, 2016b). We then followed Brown and Warner (1985) and assessed an eleven-day event window (-5, +5) with the announcement date as day 0 and an estimation period over the window (-244, -6) relative to the announcement date. As a benchmark, we used the S&P/TSX composite index. The abnormal return  $AR_{it}$  for firm  $i$  on day,  $t$  is the actual return  $R_{it}$  minus the expected return  $E(R_{it})$  using a market model. The daily abnormal returns calculated over the entire the event window are then cumulated to obtain  $CAR_{it}$ .

$$CAR_{it} = \sum_{t=-5}^{+5} AR_{it} \quad (3)$$

where,  $AR_{it} = R_{it} - E(R_{it})$ ; and  $R_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}}$ .

$$E(R_{it}) = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (4)$$

where  $R_{mt}$  is the rate of return of a market index on day  $t$ .

The measures of all independent and control variables are discussed in detail in the following subsections.

### 3.2. Board and senior managers characteristics

The main variables of interest in our analysis are the gender diversity of senior managers, and directors sitting on the board. The BoardEx database is our primary source of director and manager information. We collect data in the year just prior to the first M&A announcement. The director data usually includes a gender prefix indicating the gender of the director. Based on previous studies on board gender diversity (Levi, Li, & Zhang, 2014; Dowling & Aribi, 2013), we used the number of female directors in a given firm-year divided by the total board size as a measure of female board representation.

We also obtain senior managers' profiles including name and role in the company from the BoardEx database. When the gender is not clear, we seek additional information in company annual reports, the company web site, or if necessary, through other data sources such as Bloomberg or social media platforms. The proportion of female executives is the ratio of female senior managers to all senior managers working in a given year. Unlike Krishnan and Parsons (2008) who ranked the gender senior management into quartiles and compared earnings quality for companies in the highest and the lowest quartiles, we created a dummy variable that takes the value of 1 if the proportion of female executives is lower than the mean and 0 otherwise.

In robustness tests, we used an alternative proxy based on the Blau index which is widely used in previous research (Owen & Temesvary, 2018; Aggarwal, Jindal, & Seth, 2019). The Blau index is defined as  $(1 - \sum_{g=1}^2 p_g^2) \times 100$  where  $p_g$  is the proportion of executives that belong to the gender category  $g$ . Since there are only two categories (male

and female), the maximum diversity will occur when the index takes the value 0.5. Lower values of the Blau index indicate that an executive team is dominated by a single gender. We divided the sample into two groups based on the mean value of the Blau index of the executive team. We then created a dummy variable that takes the value of 1 if the Blau index is below the mean and 0 otherwise.

### 3.3. Control variables

We include a set of control variables that potentially affect the quality of M&A, hence the bid premium paid to target shareholders and the acquirer performance. All of our control variables have been taken from similar previous studies. This allows comparability with prior findings. We first control for corporate governance quality. Prior work has shown that M&As are more likely to create value when acquiring firms are well-governed. We then include several commonly used measures of corporate board characteristics including board size, board independence, and CEO duality (Levi, Li, & Zhang, 2014; Dowling & Aribi, 2013). Board size is the number of directors serving on the corporate board. Board independence is the proportion of directors who are not corporate executives. CEO duality is a dummy variable that equals one if the CEO is also the chairman of the board, and zero otherwise.

We consider two additional categories of variables that are commonly found to be correlated with M&A performance: acquirer characteristics and

deal characteristics (Rodríguez, Espejo, & Cabrera, 2007; Masulis, Wang, & Xie, 2007; Cai & Sevilir, 2012). Acquirer characteristics that we control for are Tobin's Q, leverage, and cash holdings, all of which are measured at the fiscal year-end before the acquisition announcement. Tobin's Q is the market value of total assets divided by the book value of total assets. Leverage is total debt divided by total assets. Cash holdings are cash and short-term investments divided by the book value of total assets. Deal characteristics that we control for are the relative size of the transaction, diversification, and method of payment. The relative size of the transaction is deal value scaled by the asset of the acquiring firm. Deal value is from SDC and represents the total value of the consideration paid by the acquirer, excluding fees and expenses. Diversification is a dummy variable that takes the value of 1 if the acquiring and the target companies belong to the same industry sector and 0 otherwise. The two firms belong to the same industry sector if they have a two-digit SIC code in common. Method of payment, which distinguishes between stock offers and all other offers, equals one if payment is made solely in terms of stock and zero otherwise.

### 4. FINDINGS

Table 2 shows the summary statistics of our M&As sample which consists of 210 deals announced and during the period 2012–2017 and completed not later than the end of 2018.

**Table 2.** Summary statistics of the merger and acquisition sample

	<i>N</i>	<i>Mean</i>	<i>Median</i>	<i>Std. dev.</i>
CAR	210	0.013	0.014	0.182
Premium 4 weeks	210	53.197	33.025	96.687
Female director	210	14.833	14.286	8.497
Female director dummy	210	0.871	1.000	0.335
CEO duality	210	0.314	0.000	0.465
Board size	210	7.967	7.000	2.731
Board independence	210	58.373	66.667	22.576
Female in executive position	210	21.049	17.262	21.493
All men executive team	210	0.257	0.000	0.438
Low proportion of female in ET	210	0.581	1.000	0.4958
Blau index for executive team	210	0.240	0.269	0.181
Percentage sought	210	94.667	100.000	15.840
Stock payment	210	0.638	1.000	0.482
Diversification	210	0.138	0.000	0.346
Deal value versus asset	210	18.346	1.110	97.789
Tobin's Q	210	1.866	1.164	2.611
Leverage	210	13.992	6.627	17.907
Cash holdings	210	18.981	9.038	24.040

Our results show that the mean cumulative market model abnormal returns (CAR) to acquiring firms obtained in the eleven-day window around the announcement date (-5, +5) is positive and significant (1.3%,  $p < 0.01$ ). This trend is consistent with the evidence presented by Dutta, MacAulay, and Saadi (2011) for Canadian M&A deals that occurred from 1997 to 2005. By contrast, the mean premium paid to acquire target firms for our sample, 53.197%, is far above the corresponding mean, 31.58%, in André, Khalil, and Magnan (2007). It should be noted that the two samples are not directly. Their M&A involved Canadian public firms as targets, but acquirers were not necessarily Canadian firms. While the highest final offer premium within our sample is

921.25% (not tabulated), the premium in their M&A sample ranges from -14.85% to 514.50%. Additional tests show that the mean and median premiums in our sample are significantly lower and in line with their findings when acquiring firms have more gender-diverse boards. Besides, our mean premium concurs with previous findings in the United States market (Fralich & Papadopoulos, 2018), and particularly in multiple bidder contests (Eckbo, 2009).

In terms of governance characteristics, the average corporate board consists of 7.96 members of which 58.373% are independent. These numbers are lower than those reported by Levi, Li, & Zhang (2014) for bidder companies and by Chen et al. (2019). The mean board size in Levi, Li, and Zhang

(2014) is 11.28, of which 67.5% are independent. Chen et al. (2019) in their part show a mean of 9.368 board members of which 72.6% are independent. However, Canadian firms might not be comparable in size to US firms. We also looked at the CEO duality (i.e. the CEO also serving as chairperson of the board), 31.40% of the companies within our sample firms have the role of chairperson filled by the CEO. Referring to the findings of prior research, the duality of positions varies considerably from one research to another. Our finding is lower than the 37% mean reported by Chen and Gavius (2016) for the post-IFRS period, but higher than the 25.23% in Fan et al. (2019).

The percentage of board seats occupied by women within our sample is 14.83%, corresponding approximately to one out of seven board members being a woman. It is slightly lower than those reported by MacDougal, Valley, Aziz, Dick, Kim, Lastman, Traore, and Bettel (2018) in their fourth annual comprehensive report on diversity disclosure practices relating to women in leadership roles by TSX-listed companies. They show that women held 16.4% of the total board seats among companies providing diversity disclosure practices for 2018. Of the 210 M&A among our sample, 183 (87.14%) have at least one woman on the board. The average Blau index (24%) indicates low gender diversity on the executive team; it is far from the perfect heterogeneity. However, the average percentage of executive positions held by women within our sample (21%) is higher than reported by MacDougal et al. (2018) (15.8%) in the same study. Moreover, while 36% of their sample firms have no women in executive positions, the mean is 25.7% within our sample. This result suggests that roughly two-thirds

of acquiring firms in our sample have at least one female in an executive position. However, the proportion of women in the executive team is below the mean in 58.10% of our sample firms.

Moving onto transaction characteristics, the 210 acquiring firms sought, on average, 94.67% of the target shares. Thus, most of the acquiring firms in our sample held no target shares prior to the announcement of the deal but sought to hold a majority of the outstanding target shares. A quick look at the table reveals that in 63.8% of the case, transaction payments are made solely in common stock (134 deals out of 210). Table 2 also reveals that 13.8% of acquiring firms in our M&A sample bought outside their industry. The average ratio of the deal value to the acquirer's assets stands at 18.35%.

Turning to acquiring firm characteristics, the average Tobin's Q is 1.866 indicating that on average, the market value of an acquiring firm in our sample is greater than the value of its recorded assets. Other studies reported similar mean, including Levi, Li, and Zhang (2014) with a mean of 1.891, Dowling and Aribi (2013) with 1.78 or Chen et al. (2019) with 1.930. The book leverage is 13.99%. The average cash holdings ratio of acquiring firms is nearly 19%. This ratio represents the cash reserves or short-term investments in proportion to assets.

#### 4.1. Board and executive gender and acquisition performance

We start our empirical investigation by conducting difference-in-difference tests to evaluate whether gender diversity affects significantly financial decisions.

**Table 3.** Board and executive gender, and acquisition performance

	Women on board		Women in executive team	
	Low	High	Low	High
CAR	-0.073	0.025**	-0.043	0.031***
Premium	64.935	33.332**	61.263	42.012*
Observations	132	78	122	88

Note: \*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%.

Table 3 indicates that the premium paid to target is 31.60% ( $p < .05$ ) higher for acquiring firms with less gender-diverse boards (i.e. the proportion of women on board is below the mean of 14.83%) than from ones with more gender-diverse boards. M&As made by acquiring firms with more gender-diverse boards have announcement returns approximately 0.10% ( $p < .05$ ) higher than those made by ones with less gender-diverse boards. We get a similar result at the executive level. Acquiring firms with less gender-diverse executive teams (i.e. the proportion of women within the executive team is below the mean of 21.05%) pay about 19.25% higher premium than acquiring firms with more gender-diverse executive teams, the difference is statistically significant at the 10% level.

Further, M&As made by acquiring firms with more gender-diverse executive teams have announcement returns approximately 0.07% ( $p < .01$ )

higher than those with less gender-diverse ones. These findings strongly indicate a negative relationship between the gender diversity of both boards and executive teams and the level of the bid premium, and thereby the M&A performance. Additional tests based on multivariate regression analyses will be conducted to empirically evaluate how gender diversity at the board level interact with gender diversity at the executive level on M&A decisions.

#### 4.2. Gender diversity and premium paid to target firms

Table 4 presents the results for our hypothesis relating to the impact of board and executive team gender diversity on the premium paid to target firms. Results support our earlier findings under Table 3.

**Table 4.** Predicting bid premium from board and executive team diversity

Variables	Coefficients
Constant	-0.679*
Female director	-0.009
Low proportion female in executive team (ET)	2.202***
Female director X low proportion female ET	-0.129***
CEO duality	0.077
Board size	0.085***
Board independence	0.011**
Stock payment	-0.531***
Sought	0.008
Diversification	0.013
Transaction value versus asset	0.014
Tobin's Q	0.008
Leverage	0.084
Cash holdings	-0.008
N	210
Adjusted R <sup>2</sup>	0.213

Note: \*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%. Dependent variable is premium to offer price to target closing stock price 4 weeks prior to the announcement date.

Acquiring firms that have few women in executive positions pay 2.202% higher premium than acquiring firms with gender-diverse executive teams. The coefficient of the measure of gender diversity of the acquiring board (female director) is negative but statistically insignificant. This result is not consistent with the finding in Levi, Li, and Zhang (2014). However, the proportion of female directors becomes negatively and significantly associated with the size of the bid premium when there are few women in executive teams. Actually, the coefficient of the interaction between the measure of gender diversity of the acquiring board (female director) and gender diversity of the acquiring executive team (low proportion female in ET) is negative and significant ( $\beta = -0.129$ ;  $p < .01$ ). Accordingly, when executive teams are less gender diverse, each 12.5% representation of female director on the board of acquiring firms, corresponding to approximately one female director, reduces the premium by 3.02% ( $3.02\% = 12.5 \times 0.129/53.179$  where 53.179% is the sample mean bid premium as shown in Table 2), mitigating adverse effects of executive teams' overconfidence.

Consistent with *H1*, our results suggest that the stringent monitoring by female directors may be less apparent when managers are not inclined to make decisions that increase the level of firm exposure to risks. As a male-dominated executive team is more willing to offer a higher premium than a more gender-diverse one, the presence of women on the board is particularly needed when women are underrepresented in the executive team. We interpret it as a substitutive relation between gender diversity on the board and gender diversity on the executive team.

Our results are in line with the tokenism and the critical mass theory suggesting that a critical mass of at least two female directors is necessary to influence decision-making (Torchia, Calabrò, & Huse, 2011). However, the effect of gender diversity may not be noticeable after a certain threshold or critical mass. Indeed, the benefit of having women on boards may not be visible when women in executive teams are in a sufficient number, and consequently when overconfidence is not prevalent.

Looking at control variables, the board size is positively and significantly associated with the bid

premium level ( $\beta = .085$ ;  $p < .01$ ). This is consistent with some findings in the extant literature that argue that small boards tend to play a weaker monitoring role than large boards. Indeed, the potential for poorer communication and coordination between members increases with the board size (Jensen, 1993). Our result does not show that board independence leads to better firm performance. In fact, we document a positive and significant relationship between board independence and bid premium ( $\beta = 0.011$ ;  $p < .05$ ). This is consistent with some previous findings (Fracassi & Tate, 2012; Dutta & Jog, 2009). Consistent with the finding in Levi, Li, and Zhang (2014), we found a negative relation between stock payment and bid premium. However, this is not consistent with the overvaluation hypothesis of Myers and Majluf (1984).

#### 4.3. Gender diversity and acquiring firm's performance

Table 5 presents the ordinary least square regression results where the dependent variable is the cumulative abnormal returns of the acquiring firms.

Results indicate that the gender diversity of the board and the executive team is statistically related to the financial success of M&As. Acquiring firms with less gender-diverse executive teams earn significantly lower stock returns compared with ones having more gender-diverse executive teams ( $\beta = -0.060$ ;  $p < .01$ ). Board gender diversity on the acquiring firm, as measured by the proportion of female directors, is positively and significantly associated with the acquiring firm return ( $\beta = 0.00308$ ;  $p < .01$ ). In terms of economic significance, each 12.50% representation of female director on the board of acquiring firms, corresponding to approximately one female director, increases the acquiring firm return by 2.96% ( $2.96\% = 12.5\% \times 0.00308/0.013$  where 1.3% is CAR to acquiring firms obtained in the eleven-day window around the announcement date as shown in Table 2).



**Table 5.** Predicting acquiring performance from board and executive team diversity

Variables	Coefficients
Constant	0.047
Female director	0.003**
Low proportion female in executive team (ET)	-0.060**
Female director X low proportion female ET	0.036
CEO duality	-0.055
Board size	0.051
Board independence	-0.001**
Stock payment	0.052
Premium 4 weeks	-0.006***
Sought	-0.044
Diversification	0.030
Transaction versus asset	0.031
Tobin's Q	-0.076
Leverage	0.022
Cash holdings	-0.031
N	210
Adjusted R <sup>2</sup>	0.276

Note: \*\*\* significant at 1%, \* significant at 5%. Dependent variable is the market model cumulative abnormal returns of acquiring firms over a (-5, +5) window.

The coefficient estimate on the interaction between the measure of gender diversity of the acquiring board (female director) and gender diversity of the acquiring executive team (low proportion female in ET) is statistically insignificant. H2 is partially supported. However, the results offer support for the view in previous research that gender diversity on boards offers firms various benefits including efficient monitoring, and high-quality decision-making (Zalata et al., 2019; Chen et al., 2019).

#### 4.4. Additional investigation

To check the robustness of the positive correlation between gender diversity on boards and executive teams and the M&A success, we re-estimate the models using an alternative measure of gender diversity of the executive team which is based on the Blau Index.

As discussed earlier, we created a dummy variable that takes the value of 1 if the Blau index of

the executive team is below the mean and 0 otherwise. As reported in Table 6, the proportion of female directors remains negatively and significantly associated with the bid premium ( $\beta = -0.0348$ ;  $p < .01$ ). It is also positively and significantly associated with the acquiring firm return ( $\beta = 0.004$ ;  $p < .01$ ). Neither the bid premium nor the cumulative abnormal return is significantly associated with the proportion of female directors when the proportion of women in the executive team is low. We do not find support for a substitutive effect between gender diversity on the board and the gender diversity on the executive team. Nevertheless, results in Table 6 support our earlier findings under Tables 4 and 5, and are in line with previous findings that show that gender diversity promotes some prudent attitude within board member and enhances its effectiveness (Arun, Almahrog, & Ali Aribi, 2015; Zalata et al., 2019). Taken together, our results suggest that gender diversity can arguably result in better M&A decisions, and therefore in better M&A performance.

**Table 6.** M&A success and board and executive team diversity

Variables	Premium coefficients	CAR coefficients
Constant	-0.648	0.053
Female director	-0.034***	0.004***
Low proportion female in executive team (ET)	0.048	0.028
Female director X low proportion female ET	0.002	0.083
CEO duality	0.061	-0.045
Board size	0.110***	0.073
Board independence	0.009**	-0.001**
Stock payment	-0.066	0.088
Premium 4 weeks		-0.007***
Sought	0.008	-0.016
Diversification	0.057	0.051
Transaction value versus asset	0.015	0.051
Tobin's Q	0.006	-0.07
Leverage	0.018***	-0.005
Cash holdings	-0.002	-0.022
N	210	210
Adjusted R <sup>2</sup>	0.201	0.278

Note: \*\*\* significant at 1%, \*\* significant at 5%.

## 5. CONCLUSION

The paper provides an empirical examination of the impact of the gender diversity of both boards and executive teams on M&A decisions and success. Our results support the idea that men and women behave differently. Men seem to be overconfident and to have an optimistic view of the synergy resulting in high bid premium. In fact, our results show that acquiring firms that do not have any women in executive positions pay more premium than those with a gender-diverse executive team. Similarly, we show that M&A driven by a male-dominated executive team is more likely to destroy acquiring firm value than the one that is driven by a gender-diverse executive team.

Female directors appear to keep firms away from adverse effects of the executive team overconfidence, resulting in value-creating deals. In terms of economic significance, each additional female director on an acquiring firm board increases the bidder returns by 2.96%. This can be explained by the fact that as female directors show more prudence and less hubris in their decisions, their presence lessens the board inclination to take excessive risks. Female directors seem to bring different perspectives to the board and to improve board dynamics.

Our results highlight a more nuanced interpretation of the benefit of having women on the board. The value added by gender diversity in the boardroom seems particularly noticeable when the acquiring firm has a male-dominated executive team. Indeed, acquiring firms with female members on the board pay significantly lower premium compared with male-dominated one when overconfidence among the executive team is prevalent. Indeed, each additional female director on an acquiring firm board reduces the premium by 3.02% when executive teams are less gender diverse. The stringent monitoring by female directors may be less apparent

when managers are not inclined to make decisions that increase the level of firm exposure to risks. Therefore, there is evidence for a substitutive effect between gender diversity on the board and the gender diversity on the executive team. Useful nuanced insights can thus be gained by considering board gender diversity and executive team gender diversity jointly.

We acknowledge some limitations. Although we sought to explore the effect of the interaction between gender diversity on board and on the executive team, we acknowledge that we do not have data regarding senior managers who are actively involved in M&As decisions. Besides, we do not control for women director skills, leadership capabilities, and talent. Drawing from our models, future research could examine whether differences in M&A success stem from profiles of women appointed to board or from the unique behavioral characteristics that make them more capable in certain contexts.

Appointing women to the board is a voluntary act in Canada. Thus, our findings may not be generalizable to M&A in other countries, particularly those which adopted laws mandating a board gender quota for listed firms such as Norway, France, and Italy. However, whatever the context is, a diverse board might signal its understanding of the business environment. As gender diversity is one of the social responsibility dimensions on which the firm is evaluated by its stakeholders, future research could examine board gender diversity in the context of legitimacy and the firm's corporate social responsibility.

Another limitation regards the non-inclusion of sexual minority groups (gay, lesbian, and transgender). Yet open disclosure of one's sexual orientation is getting more and more common, this information is hardly available. Future research could include non-binary individuals (i.e. genders other than male or female).

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