Economics Bulletin

Volume 35, Issue 2

Does board diversity matter? Evidence from the market reaction to directors' departures.

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Abstract

Previous studies that have examined the impact of board diversity on firm financial performance have yielded conflicting results. One of the main challenges for studies looking at the impact of diverse directors stems from the fact that firm financial performance and board of director composition may be endogenously determined. In this paper, we propose an innovative approach to the problem of endogeneity. By analyzing the reaction of the stock market when a diverse director's departure is announced, we can examine investors' perceptions of the importance of changes in board diversity. Our results show that investors value gender diversity among directors; however, we are unable to conclude that investors value ethnic diversity among directors.

Citation: Etienne Redor, (2015) "Does board diversity matter? Evidence from the market reaction to directors' departures.", *Economics Bulletin*, Volume 35, Issue 2, pages 1434-1442
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Submitted: April 16, 2015. **Published:** June 09, 2015.

1. Introduction

The relationship between the diversity of corporate boards and firm financial performance has attracted the attention of scholars around the world. Nevertheless, research efforts have focused mainly on the impact of gender diversity; questions pertaining to the impact of ethnic diversity have been largely neglected. Even so, empirical studies have not revealed a clear relationship between the presence of diverse directors and firm financial performance.

With respect to gender diversity, some studies demonstrate that gender diversity enhances performance (Carter *et al.* 2003, Erhardt *et al.* 2003, Campbell and Minguez-Vera 2010, Kang *et al.* 2010, Adams *et al.* 2011, Pathan *et al.* 2011, Vafaei *et al.* 2012). Others document either no impact or a negative impact (Zahra and Stanton 1988, Shrader *et al*. 1997, Farrell and Hersch 2005, Randoy *et al.* 2006, Smith *et al.* 2006, Bøhren and Strøm 2007, Rose 2007, Francoeur *et al.* 2008, Adams and Ferreira 2009, Wang and Clift 2009, Carter *et al.* 2010, Dobbin and Jung 2011, Ahern and Dittmar 2012, Lückerath-Rovers 2013, Matsa and Miller 2013). Research on the impact of diversity in the broader sense (gender and ethnic diversity) has also generated conflicting results. Thus, Zahra and Stanton (1988) and Carter *et al.* (2010) find no relationship between the percentage of females and ethnic minorities on the board and firm financial performance, while Erhardt *et al.* (2003) find a significant positive link between these two variables. Similarly, Carter *et al.* (2003) find a significant positive relationship between the percentage of ethnic minority directors on the board and Tobin's Q.

Some researchers have attributed these divergent conclusions to the difficulty of fully controlling for endogeneity. In response, some studies adopted the event study methodology and looked at the stock market reaction to the announcement of the appointment of diverse directors (Farrell and Hersch 2005, Campbell and Minguez-Vera 2010, Kang *et al.* 2010). However, these studies also generated conflicting results because these announcements were often made at the same time that firms were publishing a lot of other corporate information (*e.g.,* annual reports or a proxy statements) (Adams *et al.* 2011). Thus, it has been very difficult to isolate the impact of the new director appointment from the impact of the other news released in the proxy statement or in the annual report.

This paper makes several contributions to the existing literature on this topic. First, instead of using the market reaction to the *announcement* of a new director, this paper looks at the market reaction to the announcement of a director's *departure*. Thus, if investors value diverse directors, we should observe a negative market reaction at the announcement of their departure. This approach is superior to the previous event studies carried out in this field because it can capture the market reaction to a change in the board diversity without capturing the impact of other news released in the proxy statement or in the annual report. Second, it adds to the scant empirical evidence regarding the value investors give to ethnically diverse directors. To date, there is no evidence that the market reacts to changes in board ethnic diversity. Third, this article expands our knowledge of the impact of director's departures on shareholder wealth. Although Agrawal and Chen (2008), Brown and Maloney (1999), and Gupta and Fields (2009) each investigated the impact of the resignation of outside directors on shareholder wealth, to the best of our knowledge, this paper is the first to analyze the impact of the departure (voluntary or involuntary) of diverse directors on shareholder wealth.

The remainder of the paper is organised as follows. Section 2 develops hypotheses about the market reaction at the announcement of the departure of diverse directors. Section 3 presents the data and the methodology. Section 4 shows the event study results while section 5 concludes.

2. Hypotheses development

The existing theoretical and empirical literature suggests arguments both in favor of and against board diversity. Some studies suggest that including women on corporate boards offers many unique benefits, including access to valuable resources and connections (Daily *et al.* 1999, Stiles 2001), increased creativity and innovation (Miller and del Carmen Triana 2009) and greater board independence (Bilimoria and Huse 1997, Bilimoria and Wheeler 2000). On the other hand, diversity can also cause integration problems (Westphal and Milton 2000, Milliken and Martins 1996), communication problems (Forbes and Milliken 1999, Ferreira 2010) and slower decision-making processes (Hambrick *et al*. 1996). It would seem reasonable to conclude that the benefits and challenges attributed to increased female participation on corporate boards would be similar to the benefits and challenges generated by ethnically diverse directors, although no study has demonstrated this. In order to reconcile these inconsistent theories, we consider herein the reaction of investors to the announcement of diverse board member departures. If investors value the contribution of diverse directors, we should observe a negative market reaction at the announcement of a diverse director's departure.

Hypothesis 1a: Publicly-listed firms experience negative abnormal returns when they announce the departure of women directors.
Hypothesis 1b: Publicly-listed firms experience negative abnormal returns when they announce the departure of non-Caucasian directors.

If the contribution of diverse directors is more problematic than beneficial, we should observe a positive market reaction at the announcement of a diverse director's departure.

Hypothesis 2a: Publicly-listed firms experience positive abnormal returns when they announce the departure of women directors.
Hypothesis 2b: Publicly-listed firms experience positive abnormal returns when they announce the departure of non-Caucasian directors.

Finally, if the advantages of board diversity are not significantly greater than the difficulties of integration, no significant market reaction should be observed at the announcement of a diverse director's departure.

Hypothesis 3a: Publicly-listed firms experience no significant abnormal returns when they announce the departure of women directors.
Hypothesis 3b: Publicly-listed firms experience no significant abnormal returns when they announce the departure of non-Caucasian directors.

3. Data and Methodology

This study uses a standard financial event study method. The valuation effect of firm *i* on day *t* is measured by the abnormal returns, $AR_{i,t}$, calculated as the actual returns, $R_{i,t}$ minus expected returns:

$$AR_{i,t} = R_{i,t} - E(R_{i,t})$$

An Ordinary Least Square (OLS) Market Model was used to calculate expected returns. As in many other event studies we use a 100 day estimation window (-111, -11) and a 21 day event window (-10, 10), with 0 representing the event day (Campbell and Minguez-Vera 2010). The average abnormal return was defined as follows:

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{i,t}$$

where *N* is the size of the sample. Finally, we sum the average abnormal returns across days to calculate the cumulative average abnormal returns, $\mathrm{CAAR}_{(T_1,T_2)}$, where T_1 and T_2 are the actual days in the event period. The expression is the following:

$$\mathrm{CAAR}_{(T_1,T_2)} = \sum_{t=T_1}^{T_2} \mathrm{AAR}_t$$

Statistical significance is based on Z statistics calculated according to the standardized prediction errors method given in the appendix in Dodd and Warner (1983).

In order to carry out the event study, we collected all announcements of director departures by S&P 100 firms that occurred from 2004 to 2013. To do this, the relevant proxy statements for each firm belonging to the S&P 100 index were obtained from the Securities and Exchange Commission website. In doing this, we were able to determine the exact composition of the 100 boards of directors and to follow the day-to-day changes between 2004 and 2013.

Public companies must file a Form 8-K, or current report, with the SEC generally within four days of any event that could materially affect a company's financial position or the value of its shares. Therefore, to obtain, the exact date of the announcement of the departure we used Forms 8-Ks.

We have systematically excluded multiple departures (when at least two directors left on the same date) because of the empirical impossibility of isolating the impact of the individual directors, CEO departures (in most of cases a CEO is also a director of his or her firm) because the market reaction is expected to be higher for CEO departures than for non CEO departures, short term directors (those who served for less than one year on the board), and anticipated departures (for example, mandatory retirements) as the market may have adjusted to this development already. Although this greatly reduced the number of observations, it guaranteed a non-biased sample.

Table 1: Number of departures according to their gender (final sample).

	Female directors		**Male directors**		**Total**	
Year	**Number**	**(%)**	**Number**	**(%)**	**Number**	**(%)**
2004	4	18.18%	18	81.82%	22	8.06%
2005	5	11.63%	38	88.37%	43	15.75%
2006	3	9.38%	29	90.63%	32	11.72%
2007	3	11.54%	23	88.46%	26	9.52%
2008	3	8.82%	31	91.18%	34	12.45%
2009	6	20.00%	24	80.00%	30	10.99%
2010	7	23.33%	23	76.67%	30	10.99%
2011	2	10.00%	18	90.00%	20	7.33%
2012	0	0.00%	14	100.00%	14	5.13%
2013	2	9.09%	20	90.91%	22	8.06%
TOTAL	35	12.82%	238	87.18%	273	100%

We choose the S&P 100 Index, which is a sub-set of the S&P 500 index, because it measures the performance of large cap companies in the United States. Its constituents represent about 57% of the market capitalization of the S&P 500 and almost 45% of the market capitalization of the US equity markets. This process identified a total of 273 departures, affecting 92 different firms. Our sample includes all unanticipated departures, whether voluntary (resignations) or involuntary (death). The distribution per year of the final sample is shown in Tables 1 and 2.

Over the course of the years 2004-2013, 35 female directors left their positions on corporate boards, while and 238 male directors left. Since approximately 81% of corporate board positions are held by men, one would expect the number of male directors leaving their positions to be higher than the number of female directors doing so. More specifically, according to Catalyst (2014), in 2014, female directors only 19.2% of the board positions of Fortune 500 firms, while 3.6% of Fortune 500 firms had no female directors at all. In the United States, therefore, there still remains minimal representation of women among directors, and consequently, the number of departures is lower for women than for men.

Similarly, the number of Caucasian directors' departures is higher than the number of non-Caucasian directors' departures since Caucasians hold most of the board seats on US companies. Between the years 2004 and 2013, 48 non-Caucasian directors left their positions while 238 Caucasian directors left.

Table 2: Number of directors' departures according to their ethnicity (final sample).

	Non-Caucasian directors		**Caucasian directors**		**Total**	
Year	**Number**	**(%)**	**Number**	**(%)**	**Number**	**(%)**
2004	4	18.18%	18	81.82%	22	8.06%
2005	11	26.19%	31	73.81%	42	15.38%
2006	1	3.13%	31	96.88%	32	11.72%
2007	5	19.23%	21	80.77%	26	9.52%
2008	5	15.15%	28	84.85%	33	12.09%
2009	3	10.00%	27	90.00%	30	10.99%
2010	7	23.33%	23	76.67%	30	10.99%
2011	4	20.00%	16	80.00%	20	7.33%
2012	4	28.57%	10	71.43%	14	5.13%
2013	4	16.67%	20	83.33%	24	8.79%
TOTAL	48	17.58%	225	82.42%	273	100.00%

4. Results

From Table 3, it can be seen that, on the date of the announcement of a female director's departure, firms experience significant negative abnormal returns (at the 1 % level) suggesting that shareholders react negatively to the announcement of a female director's departure. This illustrates that investors tend to value female directors. Interestingly, our results show a significant positive market reaction (at the 5 % level) on the day of the announcement of a male director's departure. Thus, investors view the departure of a male director positively. As a result, we conclude that investors react significantly more negatively to the announcement of a female director's departure than to the announcement of a male director's departure (the difference is significant at the 1 % level).

Similar results were obtained for different event windows around the announcement date. In most cases, the cumulative abnormal returns calculated for several days around the announcement of a female director's departure are significantly negative and the cumulative abnormal returns calculated for several days around the announcement of a male director's departure are insignificant. Thus, although investors react negatively to the announcement of a female director's departure, no significant market reaction is observed around the announcement of a male director's departure. Frequently, the difference in the market reaction between a female director's departure and a male director's departure is statistically significant. These results are consistent with our *Hypothesis 1a* but not with our *Hypotheses 2a* and *3a* and are in line with Kang *et al.* (2010) and Adams *et al.* (2011) who document a positive market reaction at the announcement of the appointment of a female director.

Table 3: Cumulative average abnormal returns for different event windows.

	Female directors (35 observations)		**Male directors (238 observations)**		**Difference (273 observations)**	
Event window	**Cumulative abnormal returns**	**Z statistic**	**Cumulative abnormal returns**	**Z statistic**		**Z statistic**
0	-0.67***%	-2.515	0.22**%	2.165	0.89***%	3.115
(-1;0)	-0.46*%	-1.605	0.11%	0.686	0.57*%	1.737
(0;+1)	-0.51*%	-1.586	0.09%	0.763	0.60%*%	1.754
(0;+10)	-1.55**%	-2.066	0.14%	0.474	1.69**%	2.098

*, **, ***: Significance at the 10%, 5% and 1% levels, respectively.

Conversely, we find no significant market reaction at the announcement of a non-Caucasian director's departure on the day of the announcement or for different event windows around the announcement date. Moreover, in most cases, we failed to find significant differences between non-Caucasian and Caucasian directors' departures. The only event window for which we observed significant differences is (0;+10). Overall our results are not consistent with our *Hypothesis 1b* and our *Hypothesis 2b* but are consistent with our *Hypothesis 3b*.

Table 4: Cumulative abnormal returns for different event windows.

	Non-caucasian directors (48 observations)		**Caucasian directors (225 observations)**		**Difference (273 observations)**	
Event window	**Cumulative abnormal returns**	**Z statistic**	**Cumulative abnormal returns**	**Z statistic**		**Z statistic**
0	0.06%	0.225	0.11%	1.101	0.06%	0.203
(-1;0)	0.25%	0.802	-0.01%	-0.059	0.26%	0.738
(0;+1)	-0.06%	-0.219	0.03%	0.266	0.10%	0.164
(0;+10)	-1.52**%	-2.211	0.23%	0.781	1.75**%	-2.340

**: Significance at the 5% levels.

To further test *Hypothesis 1a*, we analyzed how the number of female directors remaining on the board after the departure of a female director impacts the market reaction when the departure is announced. If diverse directors are valuable to firms, we should observe a more negative market reaction at the announcement of the departure of a female director when the number of female directors remaining on the board is low.

Table 5: Market reaction at the announcement of a female director's departure according to the number of female directors in office after a female director's departure.

	Number of female directors in office after a female director's departure					Critical mass test	
	0	1	2	3	>3	<3	≥3
Market reaction at the announcement of a female director's departure	-0.99***%	-0.96***%	-0.55***%	0.04%	0.67%	-0.86***%	0.11%
Z statistic	-1.995	-1.977	-2.891	0.136	0.442	-2.713	0.487
Difference						-0.98**%	
Z statistic						-2.487	
Observations	3	18	7	3	4	28	7

*, **, ***: Significance at the 10%, 5% and 1% levels, respectively.

Table 5 confirms this *Hypothesis 1a* since it shows a significant market reaction (at the 1% level) when there are fewer than three female directors serving on the board after a female director's departure, but no significant market reaction when there are three or more female directors. Consistent with the Critical Mass Theory (Kanter 1977, Konrad *et al.* 2008, Torchia *et al.* 2011), according to which women are more likely to be heard by other directors if there are at least three women on a given board, we show a strong negative market reaction when there are fewer than three female directors after the female director's departure (significant at 1% level) and no significant market reaction when there are at least three female directors after the female director's departure. The difference is significant at the 5 % level.

5. Conclusion

Many countries around the world are enacting gender quotas to increase female representation on boards. These gender quotas have unquestionably caused an increase in female board participation. Nevertheless, there are arguments for and against the presence of women on boards, making it difficult to predict a priori the impact of board gender diversity. Therefore, it is important to empirically examine how shareholders react to changes in board diversity.

A number of studies have investigated this issue, but have yielded conflicting results largely because they cannot successfully resolve the endogeneity problem. In this paper, by looking at the market reaction to the announcement of a diverse director's departure, we have been able to overcome the endogeneity problem, and have demonstrated that there is a strong negative market reaction at the announcement of the departure of a female director. Moreover, the results indicate that shareholders react more negatively to the announcement of a female director's departure than to the announcement of a male director's departure. Finally, we show that the magnitude of the market reaction depends on the number of women remaining on the board after the departure of a female director. Of particular note, and consistent with Critical Mass Theory, we show that the market reaction is significantly more negative when fewer than three women remain on the board.

While this study responds to the need to expand our knowledge on this issue, we cannot conclude that board ethnic diversity has a positive impact on firm performance since we observe no significant market reaction at the time of ethnic minority directors' departure and no differences in the market reactions between the departure of Caucasian directors and non-Caucasian directors.

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