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Do Board Diversity and Gender Quotas Affect Firm Value? Evidence from California Assembly Bill No. 979

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Abstract

We analyze the stock market reaction and returns for California-headquartered companies following the announcement of AB 979 (California Assembly Bill 979) that was signed into effect on September 30th, 2020. AB 979 requires public firms headquartered in California to meet board gender and diversity quotas by December 31st, 2021. Cumulative abnormal returns in a [-1, +1] event window average a 0.98% abnormal return as benchmarked against all publicly traded firms and a 1.29% abnormal return when benchmarked against our control group (of firms headquartered outside of California). California headquartered firms with exclusively male boards had a larger cumulative abnormal return when compared to the firms with more diverse boards, but the difference was not statistically significant. Our results suggest that markets perceive publicly held corporations to benefit from board diversification regardless of their current board composition.

1. Introduction

California's Senate Bill 826, implemented in 2018, and Assembly Bill 979, implemented in 2020, were motivated by the profound lack of females and underrepresented communities on publicly held corporate board of directors (SB 826, 2018, AB 979, 2020). Both bills aim to accelerate and incentivize corporate board diversity in California and across the U.S. This paper provides new insights into the market reaction regarding more stringent diversity quotas for publicly held firms headquartered in California.

The main motivations of this paper are to: 1) assess market perception of the economic value of board diversity, 2) assess potential differences in market perception of board diversity given a current all-male board, and lastly 3) to understand any difference in market perception relative to the prior implementation of SB 826.

While the U.S. doesn't have a federal national board diversity quota, or the necessary public data to track diversity, several states have implemented gender and/or diversity quotas to increase representation on publicly held boards. To date, five states have implemented quotas including California, Illinois, Maryland, New York, and Washington. Seven additional states are currently considering proposed diversity quotas (Delloite, 2022). The U.S. and markets at large are seeing growing pressure to increase diversity, particularly in leadership positions. In the past two years Goldman Sachs, Vanguard, State Street, and BlackRock have all released public statements about using their proxy votes to increase diversity (Delloite, 2022). The House of Representatives introduced *The Improving Corporate Governance Through Diversity Act of 2021* in February 2021 requiring "certain issuers of securities to disclose the racial, ethnic, and gender composition of their boards of directors and executive officers, as well as the status of any of those directors and officers as veterans" (H.R. 1277). In August 2021, the SEC approved Nasdaq's Board Diversity Rule requiring companies listed on the US exchange to "publicly disclose board-level diversity statistics using a standardized template; and have or explain why they do not have at least two diverse directors."(Delloite, 2022). While global and national pressure for board diversity have moved slowly, California has taken the lead in the U.S. by

implementing state level board quota regulations. The first effort to regulate board diversity is the introduction of SB 826 in 2018 and AB 979 in 2020.

AB 979 rides the coat tails of SB 826 with higher female board member quotas (relative to board size) and introduces new diversity quotas (non-relative to board size). The bill also includes a follow up clause requiring more diversity seats in relation to the overall board size to be met by 2022.

Using a control sample of 163 firms headquarter in California and 163 treatment firms headquartered outside of California matched using composite matching score (described in section 4.2) we find cumulative abnormal returns (CAR) that show a statistically and economically significant return for firms affected by AB 979. CARs are benchmarked against both our sample control group and Center for Research in Security Prices (CRSP) database firms. Using a [-1, +1] event window surrounding the signing of the bill we observe a 1.29% and 0.98% abnormal return for our control sample when compared to the sample control group and CRSP group, respectively. This suggests markets perceive diversification of corporate boards as value adding. We do not see statistically significantly different CARs for firms with all-male boards when benchmarked against non-all-male boards affected by AB 979, though the magnitude of the effect is positive and large.

This study differs from past research, specifically a paper authored by D. Greene et al in 2020, in several ways. First, our paper broadens the event window to [-1,+1] as opposed to [0] to capture information leakage and event aftershock. Our paper then focuses on cumulative abnormal returns over the market as a whole rather than GAP[1] scores as in Greene et al 2020. Our paper utilized composite matching scores (CMS) to match treatment and control firms. CMS take SIC code, MCAP, price, ROE, CR, and D/E into account whereas previous research matches firms based on board composition, GAP score, and reported sales. Lastly, our paper focuses on AB 979 which imposes diversity regulation on firms as opposed to gender regulations which may provoke a different market reaction. We see a negative market reaction in both Greene et al, 2000 and Hwang et al., 2019 with hypothesis that this reaction is due to a

[1] Greene et al, "…define Gap as the difference between the number of female directors needed to comply with SB 826 by the end of 2021 and the number on the board prior to the signing of SB 826. For the 24 firms with more female directors than required by the mandate, we set Gap to zero".

significant lack of qualified female directors. We believe the qualified director constraint hypothesis does not affect our study as California's Secretary of State reports only 24% of affected firms in compliance with SB 826 in the first year while 42% of firms were in compliance with AB 979 in the first year. These findings suggest there is more scope for diverse board members than strictly female board members. We believe this, and a broader event window, maybe a major contributors to the positive market reaction we find. This paper gives new insights into market perception of board diversity mandates and its impact of firms' value.

Although we find economically and statistically significant CARs in our event window surrounding the signing of AB 979, the objective of the bill is not necessarily to increase firm value but rather to increase diversity, representation, and economic opportunity for under-represented communities. As such, this paper measures the market response to the bill and the perceptions of investors on how diversity will affect their firm, not the effectiveness of the bill itself.

2. Literature review:

Corporate boards of directors have long been identified as the apex of corporate governance systems (Fama & Jensen, 2022). It is well known that corporate boards have a significant influence on the success or failure of corporations. Board structure, corporate board policy, and it's impacts on firm performance have garnered the attention of researchers and corporate leadership alike over the past serval decades. Recent studies show a strong correlation between director stock ownership and positive corporate performance (Bhagat & Bolton, 2019) as well as age diversity on boards and a positive firm performance (Fernández-Temprano & Tejerina-Gaite, 2020). More importantly regarding the work of this paper, there is a sizeable literature on board diversity and its impact on long-term firm financial performance which find significant positive correlation (Carter et al., 2003; Erhardt et al., 2003). Benefits of diverse boards are cited to include lower volatility and better performance. Diverse boards are also associated with more R&D spending and more efficient innovation processes (Bernile et al.,2018), which suggests the market should perceive diversity as a value-adding factor. Carter et al., 2003 also show, "Firms with two or more women directors are larger ($26.5 billion in

total assets versus $5.0 billion), have larger boards (12.7 directors versus 8.9 directors), have more annual meetings (8.2 versus 7.2), and have a greater proportion of minority directors (8.6% versus 2.9%). Firms with two or more women directors also perform better, as measured by Tobin's Q (1.58 versus 1.03) or return on assets (5.2% versus 2.5%)." We see general firm value increases for board with women in the European Union as well. Isidro and Sobral's 2015 paper shows that while higher female representation on boards might not directly affect a firms value, it is positively correlated with firm perfomance regarding return on assets and return on sales. Campbell and Minguez-Vera, 2008 find simlar results in Spain in their 2008 study using panel data analysis showing that gender diversity on firms listed on the Blau and Shannon indices have a positive effect on firm value.

Though general board structure and board diversity are well known to add value to firms, there are varying findings regarding market reactions to past diversity quotas imposed in the U.S. The closest study to this paper, (Greene et al., 2020) shows a negative reaction to the original diversity quota bill in California, SB 826. The study uses a 1-day event window at day [0] on September 30th, 2018, to assess the market reaction to the signing of the bill. Their findings show announcement returns averaging -1.2% in the given event window. The paper cites costly compliance given directors salary if the board size increases, shortage of female director labor supply, and a general market distaste for government-imposed regulations. However, the general practice in finance event study research is to use a window surrounding the event to capture information leakage and event aftershock. If we utilize a [0] event window, we also find a negative market reaction, similar to D. Greene et al. Our approach allows us to capture the full market reaction rather than only the date of the event itself. Our results also may differ due to more access to general diversity for firms to recruit, differing matching and abnormal returns methodology, and potentially a changing market sentiment to diversity quotas.

3. SB-826 and AB-979 background

In effort to accelerate and incentivize corporate board diversity, California Governors Brown and Newsom, have signed and implemented progressively more stringent regulations regarding board composition for publicly held corporations headquartered (foreign or domestic) in the

state. On September 30th, 2018, then California governor Jerry Brown signed Senate Bill 826 ("SB 826"), requiring all publicly traded firms headquartered in California to have at least one female board member serving on the firms' board of directors by the end of 2019. SB-826 set the stage for Assembly Bill 979 ("AB 979") signed into effect September 30th, 2020 requiring publicly held firms headquartered in California to further increase board diversity. AB 979 requires firms with 5 directors to have a minimum of 2 female directors, firms with 6 or more directors to have a minimum of 3 female directors, and all firms to have a minimum of one director from an underrepresented community by the end of the 2021 calendar year. AB-979 further requires more stringent board diversity quotas by the end of calendar year 2022 with firms with, "…more than 4 but fewer than 9 directors to have a minimum of 2 directors from underrepresented communities, and such a corporation with 9 or more directors to have a minimum of 3 directors from underrepresented communities" by the end of 2022 (AB 979, 2020). SB-826 claims the implementation will, "… boost the California economy, improve opportunities for women in the workplace, and protect California taxpayers, shareholders, and retirees, including retired California state employees and teachers whose pensions are managed by CalPERS and CalSTRS." (SB 826, 2018). The bill cites various private sector and public sector studies as evidence to their claims. AB 979 cites severe underrepresentation of, "black, African American, Hispanic, Latino, Asian, Pacific Islander, Native American, Native Hawaiian, or Alaska Native, or who self-identifies as gay, lesbian, bisexual, or transgender" board members in publicly held firms headquartered in California, though the bill doesn't claim as robust of an economic benefit as compared to SB-826 (SB 826, 2018).

Both SB-826 and AB-979 have monetary penalties for non-compliant firms. Companies that fail to comply will be fined $100,000 for the first violation and $300,000 for subsequent violations. These fines are not necessarily proportional to firm size, rather they remain the same regardless of market capitalization, net income, and/or current ratio. To achieve compliance, corporations have the option to either add a board seat or filling a vacant seat. Additionally, a director can satisfy both the underrepresented community quota and female quota if the individual meets both criteria. Each firm can have multiple violations in a calendar year as violations are counted for each board position gone unfilled by a female or

underrepresented population. For a board with 6 or more directors, failure to have at least 3 female director and one board member from an underrepresented community would result in a $1,000,000 annual fine (total of 4 violations). Firms are required to self-report annually through completing and submitting California's Publicly Traded Corporate Disclosure Statement to the Secretary of State within 150 days of the corporations' end of fiscal year.

California's Secretary of State is responsible for reporting and publishing annual findings including the number of corporations in compliance with the law. The California Secretary of State *Women on Board March 2020* and *Women on Board March 2021* reports found increasing female representation in the two years after the implementation of SB 826 with a 63% increase in compliance from 2019 to 2020 and a 10% increase in compliance from 2020 to 2021. General compliance rates increase from 2019 to 2020 from 24% of firms in compliance in 2019 to 39% of firms in compliance in 2020. Compliance rates decrease to 26% regarding female board representation due to increased quotas in 2021. In the first year of implementation and tracking of AB 979, 716 total firms are reported to be impacted with 42% (301 firms) in compliance within the first year.

4. Sample description and summary statistics

4.1. Sample and key variables

AB 979 only has direct implications for public corporations listed on major exchanges whose principal executive offices are located in California. To identify firms impacted as well as a control group (unaffected by AB 979), we used Compustat 2020 annual data. Our original dataset has 1,124 firms headquartered in CA and 6,389 firms headquartered outside of CA. We removed firms with missing headquarter information as well as firms with assets, liabilities, current asset, current liabilities less than zero. This reduces our data set to 482 treatment firms and 2,748 control firms. We further restrict the dataset to firms with net income present (negative or positive NI), a share price greater than $5.00, shares outstanding greater than 0, and finally firms with listed industry codes. Lastly, we removed any firms with assets equal to liabilities as we are valuing equity performance. This brings our sample size down to 394 treatment firms and 1,849 control firms

To better understand potential valuation differences between firms with females currently on their board and those with all male boards, we use ExecuComp data from the Compustat database to gain more information on general board composition, including gender. We find data for the 163 treatment firms and 944 control firms in ExecuComp. Obtaining board composition data allows us to assess potential differences in market reactions by companies with boards that already have gender diversity vs boards without gender diversity[2]. After preparing our dataset, we match our treatment firms to control firms which will later provide a benchmark group in our CARs analysis. We use Composite Score Matching (described in section 4.2) to match CA headquartered firms to non-CA headquartered firms.

We utilize standard financial metrics provided by Compustat as variables in our cross-sectional regression analysis. In particular, we set market capitalization (MCAP) equal to price times current shares outstanding, debt to equity (D/E) equal to total liabilities over assets minus liabilities, return on equity (ROE) equal to net income divided by book to equity, and current ratio (CR) equal to current assets over current liabilities.

4.2 Composite Score Matching

After narrowing our sample size to 163 treatment firms, we then matched these firms to control firms using composite score matching (CMS). To match firms headquartered in California with the control group, we used the first two digits of the SIC code for the firm industry classification. We then use averaged market capitalization, price, return on equity, current ratio, and debt to equity to further match firms. In particular, we estimate the following equation:

$$CMS = \sum_{k=1}^{5} \left[\frac{Y_k^{Treat} - Y_k^{Control}}{(Y_k^{Treat} + Y_k^{Control})/2} \right]^2$$

Where Y_k represents one of the California firms (treatment) averaged: MCAP, price, ROE, CR, D/E. For each treatment firm we select a control firm that has the smallest CMS score. The

[2] Unfortunately, there is very little current data about board composition in terms of diversity required through AB 979, i.e., black, African American, Hispanic, Latino, Asian, Pacific Islander, Native American, Native Hawaiian, or Alaska Native, or who self-identifies as gay, lesbian, bisexual, or transgender. Given this lack of data, we use gender as a proxy variable.

matching without replacement process is iterated until each treatment firm is matched with a similar control firm. Efficacy of the CMS process is discussed in section 4.4.

4.3 Market abnormal returns and cumulative abnormal returns

In our final sample, we convert price and market capitalization to log variables to normalize the distribution. Our final sample size is composed of 326 firms, 163 control and 163 treatment firms. Finally, we set the event date to September 30, 2020, the day the bill was formally signed, passed, and implemented. We analyze market abnormal returns (MAR) and cumulative abnormal returns using Eventus in a [-1,+1] event window. We selected a [-1,+1] event window as it captures the potential information leakage on the day before the event, the reaction on the day of the signing of the bill, and any market aftershock. We then estimate adjusted market abnormal returns for both treatment and control firms' stocks as follows:

$$MAR_{i,t} = R_{i,t} - R_{m,t}$$

where $R_{i,t}$ is the return on equity *i* on day *t* and $R_{m,t}$ is the market return value-weighted across CRSP securities on day *t*. We then calculate the market model returns using the following equation:

$$E[R_{i,t}] = \beta_0 + \beta_1 R_{m,t}$$

where the parameter estimates, β_0 and β_1, are estimated in the period ending 46 days before the event date with a maximum of 255 days and a minimum of 3 days. These event window parameters follow standard finance event study windows. We are then able to estimate the market model abnormal returns for each company's equity during the event window using the following equation:

$$(MM)\ AR_{i,t} = R_{i,t} - E[R_{i,t}]$$

The abnormal returns found are then cumulated over a [-1,+1] event windows. The cumulative abnormal returns for each model are estimated as the sum of the abnormal (or raw) returns for a given stock over an event window as follows:

$$CAR_{t,T}^{i} = \sum_{t=1}^{T} AR_t$$

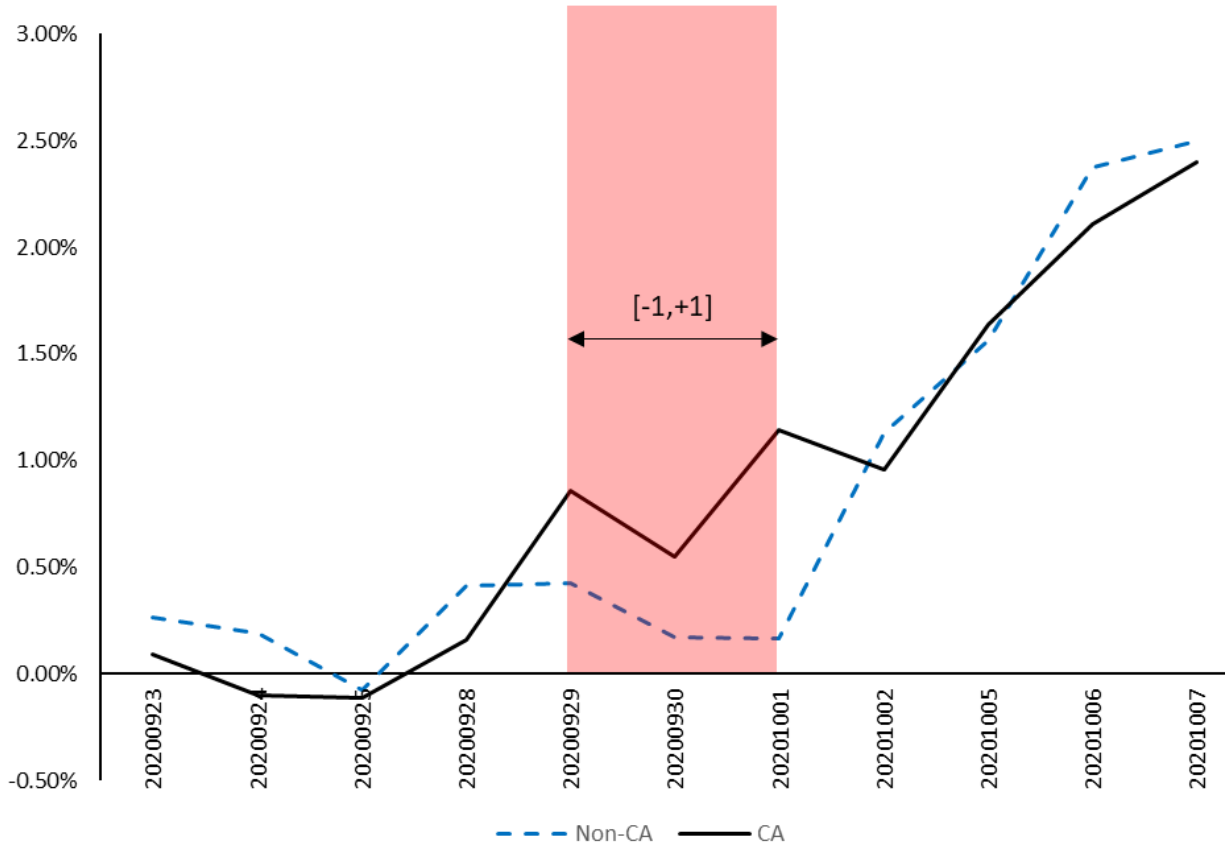
Our results show the CARs for treatment and control groups as well as treatment firms with all male boards and treatment firms without all male boards.

Figure 1 below depicts the value-weighted[3] market adjusted CARs for both treatment and control firms. The figure shows control and treatment firms cumulative abnormal returns over a [-5, +5] event window surrounding the date of AB 979's signing, September 30th, 2020, and benchmarks them against firms in the CRSP database. The blue dashed line shows the CARs for non-California headquartered firms while the solid black line shows CARs for California headquartered firms. The red vertical bar highlights the [-1,+1] event window our study focuses on. In the [-1,+1] event window, we observe treatment firms CARs increasing, and control firms CARs decreasing around the event date.

We selected a [-1,+1] event window to capture pre-event information leakage and any post event date market reaction. Our [-5, +5] event window figure below shows similar trends in control and treatment firms up until the day before and after the signing of AB 979. Our results differ from those shown in D. Greene et al. 2020's findings from SB 826 and we believe the event window chosen is the reason for this difference. D. Greene et al utilize a [0] event day window which only captures the day of the bill signing. We don't believe this captures the full reaction and may not accurately reflect the market's reaction to the signing of the SB 826.

[3] Value-weighted is weighted based on firm market capitalization

Figure 1. Market Adjusted CARs around AB 979
Value-weighted market adjusted cumulative abnormal returns for treatment and control firms in the 11 day event window [-5,+5] around AB 979.



4.4 Summary Statistics

Table 1.

Summary statistics

Panel A. Treatment Firms

	Mean	S.D.	p25	Median	p75
Price	$137.42	$216.89	$29.76	$69.38	$148.53
MCAP	5.84	20.18	0.18	0.51	2.78
ROE	0.08	1.08	0.00	0.11	0.25
CR	3.36	4.97	1.36	2.14	4.02
D/E	1.74	6.28	0.51	1.00	1.93
# of Board Members	5.16	1.17	5.00	5.00	6.00
% Male on Board	86.10%	17.58%	80.00%	90.00%	100.00%

Panel B. Control Firms

	Mean	S.D.	p25	Median	p75
Price	$105.07	$108.02	$36.33	$67.55	$132.55
MCAP	3.06	12.68	0.20	0.51	1.99
ROE	0.13	0.24	0.01	0.11	0.19
CR	2.43	1.59	1.43	1.89	2.87
D/E	1.74	2.02	0.61	1.22	2.31
# of Board Members	5.31	0.96	5.00	5.00	6.00
% Male on Board	85.04%	15.42%	80.00%	83.33%	100.00%

Panel C. Difference in Means (Treatment - Control)

	Diff	t-stat
Price	$32.35	1.70
MCAP	2.78	1.49
ROE	-0.05	-0.60
CR	0.93	2.26
D/E	0.00	0.00
# of Board Members	-0.15	-1.24
% Male on Board	1.06%	0.58

Table 1 provides summary statistics for all 326 firms in our sample. Panel A gives summary statistics for firms headquartered in CA and affected by AB 979 while Panel B gives summary statistics for control firms headquarter outside of CA and that are unaffected by AB

979. The final panel, Panel C, shows the difference between the two groups. the comparison is done across variables including equity price, firm market capitalization, return on equity, credit ratio, debt to equity, number of board members, and percentage of male board members. Our summary statistics show treatment firms have a higher average stock price and, on average, $2.78B greater market capitalization, however, the difference is not statistically significant. We see similar return on equity, debt to equity ratio, and number or board members, and percentage of male board members between the two groups.

We do see a significant difference in current ratios with California firms averaging 0.93 greater than non-California firms, suggesting CA firms have a better ability to meet short term obligations and may have more liquidity than non-CA firms. We see similar results looking at the medians of each firm's summary statistics though it does appear that CA firms generally have higher percentages of males on their corporate boards. The lack of statistical significance in our differences in means give us confidence that our composite matching score results are accurately matched. Looking at the median of the control firms and treatment firms further increases our confidence in our matching. We see minor differences in our variables across the median in both groups.

Table 2 shows our variable correlation matrix. The correlation coefficients are listed in black while the p-value associated with the correlation coefficients are list in blue. We don't see any statistical significance in any of the variable's relationships leading us to believe our regression model will not suffer from multicollinearity.

Table 2.

Correlation Matrix

	Treat	Price	MCAP	ROE	CR	D/E	# of Board Members	% Male on Board
Treat	1.0000							
Price	0.0943	1.0000						
	0.0892							
MCAP	0.0823	0.3671	1.0000					
	0.1380	<.0001						
ROE	-0.0331	0.0970	0.0792	1.0000				
	0.5512	0.0803	0.1538					
CR	0.1248	-0.0421	-0.0459	-0.0030	1.0000			
	0.0242	0.4493	0.4091	0.9572				
D/E	-0.0001	-0.0059	0.0165	-0.7623	-0.0989	1.0000		
	0.9990	0.9158	0.7662	<.0001	0.0744			
# of Board Members	-0.0689	0.0240	0.0134	0.0058	-0.2043	0.0322	1.0000	
	0.2148	0.6661	0.8102	0.9167	0.0002	0.5618		
% Male on Board	0.0323	-0.0118	-0.0930	0.0218	-0.0287	-0.0416	-0.0150	1.0000
	0.5614	0.8317	0.0936	0.6952	0.6061	0.4542	0.7867	

5. Empirical results:

Table 3.

CARs for Treatment and Control Firms

Model [Window]	*Treat*	*Control*	*Difference (Treat - Control)*
MAR[-1,+1]	0.98%	-0.31%	1.29%
	2.86	-1.40	3.17
MM[-1,+1]	0.62%	-0.52%	1.14%
	1.91	-2.48	2.95

Table 3 shows CARs for treatment and control groups in our event window. The difference between the treatment and control groups CARs can be found in the far column. CAR values are listed in black while the p-value associated with the CAR values are list in blue. In our cumulative abnormal returns analysis, our market adjusted abnornmal results show treatment firms performed 0.98% better than the CRSP benchmark and 1.29% better than the control group within a [-1, +1] event window around the signing of AB 979 on September 30th, 2020. The control group averages -0.31% returns in the same window but doesn't show statistical

significance. Our market model abnormal returns show similar results with a 0.62% abnormal return for treatment firms and a -0.52% abnormal return for control firms. The difference shows a 1.14% market model abnormal return with a test statistic of 2.95.

5.1 Cross-Sectional Regressions Analysis

Lastly, we estimate a cross-sectional regression to compare treatment and control groups. We run this regression to control for other firm level characteristics that may be contributing to CARs. We estimate the regression using the formula that follows:

$$CAR_{i,t\{-1,+1\}} = \alpha + \beta_1 Treat_i + \beta_2 log(price)_i + \beta_3 \log(MCAP)_i + \beta_4 ROE_i + \beta_5 CR_i + \beta_6 DE_i + \beta_7 \#boardmembers_i + \varepsilon_i$$

where CAR is the dependent variable and is the value-weighted market model cumulative abnormal returns in the day leading up to, the day of, and the day after the signing of AB 979. $Treat_i$ represents the dummy variable which is equal to 1 for treated firms and zero for the control group, $log(price)_i$ is the log of the firms' equity price. $\log(MCAP)_i$ is the log of each firms' market capitalization. ROE_i represents the firms' return on equity. CR_i is the firms' credit ratio. DE_i is the firms' debt to equity ratio. $\#boardmembers_i$ represents the number of board members the firm has, and finally ε_i is the error term. The regression data includes the 163 treatment and 163 matched control firms used in the CARs analysis. The variable $Treat_i$ is the dummy variable set equal to 1 when a firm is headquartered in CA. The coefficient on the $Treat_i$ variable is a coefficient of interest in the regression results in Table 4. We control for equity price, market capitalization, return on equity, current ratio, debt to equity, and number of board members.

In column 1 of Table 4, we present results using market adjusted returns (MAR) and in column 2 we present market model (MM) results. MAR's shows returns based on average return of the treatment group minus the overall market return while MM relies on estimated expected returns based on CAPM and market risk premium. We find that MARs for treatment firms are statistically significantly higher at the 1% level. This model estimates 1.31% higher market abnormal returns for treatment firms in a [-1,+1] event window relative to the control group. In this regression, we also see slight significance for a negative contribution for current

ratio and number of board members. The significance is at the 10% level. This could be because larger firms have higher quotas to meet to satisfy AB 979. About 4% of the variance in our dependent variable is explained by this model.

Table 4.

Regression model – treatment vs control

	MAR[-1, +1]	MM[-1, +1]
	[1]	[2]
Treat	0.0131***	0.0117***
	(3.15)	(2.95)
LN(Price)	0.0013	0.0005
	(0.45)	(0.18)
LN(MCAP)	-0.0012	-0.0010
	(-0.86)	(-0.72)
ROE	0.0003	-0.0006
	(0.08)	(-0.16)
CR	-0.0009*	-0.0009**
	(-1.90)	(-2.18)
D/E	-0.0003	-0.0004
	(-0.53)	(-0.65)
# of Board Members	-0.0055*	-0.0043
	(-1.75)	(-1.43)
Constant	0.0337	0.0269
	(1.34)	(1.11)
Robust SE	Yes	Yes
Adj. R2	0.0419	0.0301
N	326	326

***, *, * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. T-statistics are reported in parentheses obtained from robust standard errors.

We observe similar results for the MM with 1.17% abnormal return for treatment firms relative to control group firms, significant at the 1% level. We see slightly more significance in current ratio with a -0.09% contribution with each unit increase at the 5% significance level. Unlike the MAR model, we do not see any significance in the number of board members variable.

The majority of our control variables, (equity price, market capitalization, return on equity, debt to equity) do not show statistical significance. This suggests the CARs for our treatment firms in our event window are correlated with the news of the passage of AB 979.

5.2 Heterogeneity with respect to existing board diversity

The final cross-sectional regression we estimated looks at differences in cumulative abnormal returns between treated and control group firms, depending on the board composition, proxied by gender. The regression is estimated using the formula that follows:

$$CAR_{i,t\{-1,+1\}} = \alpha + \beta_1 Treat_i + \beta_2 FullMale_i + \beta_3 (Treat_i \times FullMale_i) + \beta_4 log(price)_i + \beta_5 \log(MCAP)_i + \beta_6 ROE_i + \beta_7 CR_i + \beta_8 DE_i + \beta_9 \#boardmembers_i + \varepsilon_i$$

Where $Treat_i$ represents the dummy variable for treatment vs control firms, $FullMale_i$ is also a dummy variable that accounts for boards with all male boards. $(Treat_i \times FullMale_i)$ is the interaction variable between treatment firms and boards with all males. $log(price)_i$ is the log of the firms equity price. $\log(MCAP)_i$ is the log of each firms' market capitalization. ROE_i represents the firms' return on equity. CR_i is the firms' credit ratio. DE_i is the firms' debt to equity ratio. $\#boardmembers_i$ represents the number of board members the firm has, and finally ε_i is the error term. The coefficient on the interaction term $Treat_i \times FullMale_i$ is the coefficient of interest in the regression results in Table 5. We add the interaction term to evaluate the differential effect of the bill between treatment firms will all male boards and those with males and females on their boards. Significance in the interaction term would suggest there was a stronger market reaction (positive or negative) to the signing of AB 979 for firms with all male boards than to firms with more diverse boards. We control for all male boards, equity price, market capitalization, return on equity, current ratio, debt to equity, and number of board members.

In column 1 of Table 5, we present results using market adjusted returns (MAR) and in column 2 we present market model (MM) results. We see significance, though minor, in both the $Treat_i$ variable and the CR variable. This minor significance suggests that treatment firms that did not have fully male boards experienced slightly higher CARs around the event date. We see this in both the market adjusted model and the market. Specifically, we see treatment firms have 0.82% greater equity prices in our event window in our MAR model and 0.79% in our MM model. These figures show us the premium CA treatment firms are experiencing compared to CRSP listed firms over the same event window.

Table 5.

Regression Model – Board composition

	MAR[-1, +1]	MM[-1, +1]
	[1]	[2]
Treat	0.0082*	0.0079*
	(1.67)	(1.69)
Full_Male	0.0021	0.0022
	(0.49)	(0.52)
Treat x Full_Male	0.0094	0.0073
	(1.25)	(1.01)
LN(Price)	0.0015	0.0007
	(0.52)	(0.24)
LN(MCAP)	-0.0010	-0.0008
	(-0.69)	(-0.58)
ROE	-0.0001	-0.0010
	(-0.03)	(-0.24)
CR	-0.0007*	-0.0008**
	(-1.73)	(-2.02)
D/E	-0.0003	-0.0004
	(-0.53)	(-0.65)
# of Board Members	-0.0047	-0.0037
	(-1.55)	(-1.25)
Constant	0.0255	0.0199
	(1.03)	(0.84)
Robust SE	Yes	Yes
Adj. R2	0.0477	0.0331
N	326	326

We don't see any statistical significance in our variable of interest, $Treat_i \times FullMale_i$ leading us to believe there is no significant difference in market reaction to AB 979 for boards that are exclusively male. This variable shows the premium difference between treatment firms with all male boards and those with women and men on their board. Though our regression doesn't show statistical significance, the difference is economically significant at 0.73% contribution to treatment firm CARs with all male boards. This may suggest all male boards have a greater opportunity to increase market perception of firm value through diversifying their corporate board. Given the lack of data on board composition regarding general diversity,

we use gender as a proxy. The economic magnitude and positive coefficient in our interaction variable may suggest that with more diversity data, CARs may expose more statistical significance in this interaction term.

We also observe a -0.07% contribution to equity price for each unit increase in current ratio for our MAR model and a -0.08% contribution in our MM. The majority of our control variables, (all male boards, equity price, market capitalization, return on equity, debt to equity, and number of board members) do not show statistical significance. This suggests the CARs associated with treatment firms in our event window are correlated with the news of the passage of AB 979.

6. Conclusion:

We examine the stock market reaction and returns for California headquartered firms surrounding the announcement of California Assembly Bill 979. AB 979 which was signed into effect September 30th 2020, requires publicly held firms headquartered in California to further increase board diversity.

To examine the stock market reaction to the signing of AB 979 we calculate cumulative abnormal returns for CA headquartered firms over a [-1,+1] event window around the signing of the bill. We find a positive cumulative abnormal return of 0.98% when benchmarking against the market CRSP listed firms and a 1.29% CAR benchmarked against matched peer firms headquartered outside of California. Our positive and statistically significant cumulative abnormal returns for CA headquartered firms in a [-1,+1] event window suggests the market see's this legislation and diversity quotas for corporate boards as adding value to firms.

We also look at heterogeneity with respect to existing board diversity. We do not find a statistically significant difference in market reactions to boards with all male boards vs boards with male and female members, though we find that the difference has a large magnitude. Hence, we believe our results may have economic significance. This means the market may perceive AB 979 impositions as more value adding for companies with boards composed of all males.

Further research could include the long-term effects of this legislation on firm value and overall firm performance. There is also potential in looking at market reactions to states outside

of CA that have put similar mandates on public firms. Understanding market reactions and long-term firm performance of firms in states with board diversity quotas would allow us to better set broad policy that may have empirical economic incentives. Results from this paper suggest diversity benefits firms and shareholder value, providing incentive for firms to prioritize diversity on their board and perhaps throughout the firm.

References

A.B. 979, 2020, Chapter 316, 2020 Reg. Sess. (CA. 2020). https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB979

Bernile, G., Bhagwat, V., & Yonker, S. (2018). Board diversity, firm risk, and corporate policies. *Journal of Financial Economics*, *127*(3), 588–612. https://doi.org/10.1016/j.jfineco.2017.12.009

Bhagat, S., & Bolton, B. (2019). Corporate governance and firm performance: The sequel. *Journal of Corporate Finance*, *58*, 142–168. https://doi.org/10.1016/j.jcorpfin.2019.04.006

Campbell, K., & Mínguez-Vera, A. (2008). Gender Diversity in the Boardroom and Firm Financial Performance. *Journal of Business Ethics*, *83*(3), 435–451. https://doi.org/10.1007/s10551-007-9630-y

Carter, D. A., Simkins, B. J., & Simpson, W. G. (2003). Corporate Governance, Board Diversity, and Firm Value. *The Financial Review*, *38*(1), 33–53. https://doi.org/10.1111/1540-6288.00034

Delloite. (2022). *Gx-ccg-women-in-the-boardroom.pdf*.

Erhardt, N. L., Werbel, J. D., & Shrader, C. B. (2003). Board of Director Diversity and Firm Financial Performance. *Corporate Governance*, *11*(2), 102–111. https://doi.org/10.1111/1467-8683.00011

Fama, E. F., & Jensen, M. C. (2022). *Separation of Ownership and Control*. 26.

Fernández-Temprano, M. A., & Tejerina-Gaite, F. (2020). Types of director, board diversity and firm performance. *Corporate Governance: The International Journal of Business in Society*, *20*(2), 324–342. https://doi.org/10.1108/CG-03-2019-0096

Greene, D., Intintoli, V. J., & Kahle, K. M. (2020). Do board gender quotas affect firm value? Evidence from California Senate Bill No. 826. *Journal of Corporate Finance, 60*, 101526. https://doi.org/10.1016/j.jcorpfin.2019.101526

Isidro, H., & Sobral, M. (2015). The Effects of Women on Corporate Boards on Firm Value, Financial Performance, and Ethical and Social Compliance. *Journal of Business Ethics*, *132*(1), 1–19. https://doi.org/10.1007/s10551-014-2302-9

S.B. 826, 2018, Chapter 3954, 2018 Reg. Sess. (CA. 2018). https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB826