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IPO Price Formation and Board Gender Diversity

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Abstract

Using a sample of U.S. IPOs from 2000–2019, we show that IPOs with at least one female director experience significantly greater underpricing on the first trading day. The effect is not attributable to the previously documented determinants of underpricing or other firm or director characteristics. The underpricing effect is the strongest after 2010—when pressures were placed on firms to diversify their boards—and the effect is mitigated in the very last years of the sample—where we find that gender-diverse board IPOs realize greater offer price revisions and final offer prices, relative to non-diverse board IPOs. The dynamic relation between board gender diversity and IPO price formation coincides with the timing of the diversity campaigns of BlackRock, State Street, and Vanguard, suggesting that investor demand for board gender diversity was not fully incorporated into IPO offer prices until this demand was widely publicized.

Keywords: Initial Public Offerings, Going Public Process, Board Gender Diversity, Underpricing, Investment Banks, Corporate Governance

JEL Classifications: G24, G30, J16

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1. Introduction

Studying how board gender diversity impacts firm value is an important research question. In recent years, investors, regulators, and practitioners worldwide have demanded an increase in female representation on corporate boards (Srinidhi et al., 2011; Moody's, 2019; Gormley et al., 2023). In particular, several of the largest institutional investors—BlackRock, State Street, and Vanguard—have publicly communicated their preference for gender-diverse board firms, claiming that they make portfolio holding decisions based on female director representation and other socially relevant metrics (Gormley et al., 2023). This preference for board gender diversity is a relatively recent phenomenon, and the empirical relation between board gender diversity and firm valuations continues to be a hotly debated issue (Eckbo et al., 2022). A major hindrance to the inferences drawn from prior research is that board composition is endogenously determined (Hermalin and Weisbach, 2003), making it difficult to isolate the effects of board composition on outcomes of interest.

In this paper, we examine how board gender diversity affects firm value during the initial public offering (IPO) process, when outside investors explicitly provide information about their valuations of the firm. The IPO process offers a unique setting to study the impact of gender diversity on firm valuations. When a company decides to go public, an initial price range is set for the company's stock, and then the underwriters begin the book-building process (Willenborg et al., 2015). During book-building, the underwriters gather information from potential investors about their interest in the firm's stock, and this information is used to set the final IPO offer price and allocate shares to the initial investors (Blankespoor et al., 2017). On the first day a stock is publicly traded, it is common for the price to rise substantially (Ritter and Welch, 2002), which is referred to as underpricing. As a company's fundamental value is unlikely to have changed over the first trading day, underpricing suggests that not all information about investors' preferences for the stock was incorporated into the offer price, resulting in the issuing firm having unrealized IPO proceeds.

The underpricing phenomenon makes the IPO setting an especially useful context to study the preferences investors reveal for certain firm characteristics, such as board composition. Investor preferences for board gender diversity could impact IPO underpricing for at least two reasons. First, Benveniste and Spindt (1989) suggest that investors who are optimistic about the company's value may not want to disclose this information to the underwriter during book-building because they do not want the offer price to increase. To incentivize these investors to truthfully reveal their valuations, underwriters must reward them through favorable share allocations, and they must commit to only partially adjusting the offer price upward. We refer to this as the *partial adjustment* hypothesis, as underwriters are able to, at least partially, incorporate the heightened demand for the firm's shares into the IPO price.

Second, investment banks might not price gender-diverse board firms appropriately in the IPO process if they do not know that some investors have specific preferences for board gender diversity or if they do not believe gender diversity is value-relevant. For example, the comparable firms they use to match on financial characteristics may not be appropriate matches based on gender diversity. Investment banks might also systematically undervalue gender-diverse board IPOs if (mostly male) investment bankers are more likely to socialize with male board members, causing them to underestimate the value of the female board members that they do not know. Mispricing could also occur if explicit or implicit biases against women are present, which have been documented previously among financial institutions (Thébaud and Sharkey, 2015; Egan et al., 2017; Cozarenco and Szafarz, 2018). Finally, mispricing may result if investment bankers, relying on existing client contacts, fail to identify and reach out to new investors interested in board gender diversity, as an emphasis on diversity is a relatively new phenomenon. We refer to this as the *neglected demand* hypothesis. Importantly, focusing on IPO underpricing reduces concerns about reverse causality, as it is unlikely that the potential for underpricing during the IPO process *causes* firms to put women on the board.[1]

[1] In line with this notion, we find the average female director has served on the board for three years prior to the IPO, further reducing the concern that women are added to the board shortly before the IPO as a form of window-dressing.

In our sample of 2,421 U.S. IPOs from 2000–2019, we first show that board gender diversity is positively related to underpricing. This effect is economically meaningful and statistically significant across the entire sample period, suggesting that gender-diverse board IPOs realize underpricing that is 2.5–4.3 percentage points greater than that realized by non-diverse board IPOs. This equates to gender-diverse board IPOs missing out on approximately $8–$16 million more in IPO proceeds. These results are robust to controlling for the previously documented determinants of underpricing and a host of possible confounding factors that may jointly affect board gender diversity and underpricing, such as industry classification, firm age, VC involvement, and firm size (Loughran and Ritter, 2004; Butler et al., 2014). Additionally, the underpricing effect is not attributable to differences in profitability, growth opportunities, CSR scores, director experience, or other aspects of board diversity, such as ethnic, racial, and age diversity.[2] The positive relation between board gender diversity and IPO underpricing is robust to the use of entropy balancing, which is a generalized form of propensity score matching. Furthermore, we provide evidence that our inferences are unlikely to be confounded by omitted variables bias by computing the Impact Threshold for a Confounding Variable (ITCV) (Frank, 2000; Larcker and Rusticus, 2010). Taken together, we find robust evidence that gender-diverse board IPOs realize significantly greater underpricing than non-diverse board IPOs.

Both the partial adjustment hypothesis and the neglected demand hypothesis suggest that underpricing is caused by excess investor demand for board gender diversity. If the underpricing effect is driven by investor demand for gender-diverse board firms, we would only expect to see the underpricing effect emerge in years when a sufficiently large number of investors have preferences for board gender diversity. In 2010, the SEC started requiring public companies to disclose the role that diversity considerations play when they select directors.[3] We posit that this likely

[2]We acknowledge that other dimensions of director diversity—such as race, ethnicity, age, and experience—are also worthy of study. However, we choose to keep the focus of our study on board gender diversity, while controlling for these other dimensions, because laws, regulations, and the petitions of investors have largely focused on increasing board gender diversity, suggesting that this is the dimension in which we are most likely to observe impacts on firm value.

[3]Several large pension funds, including CalPERS and CalSTRS, wrote letters in support of this regulation (see Footnote 116 in https://www.sec.gov/rules/final/2009/33-9089.pdf). After this mandate went into

increased investors' preferences for gender-diverse board firms, as these firms would be less likely to experience scrutiny and sanctions. As such, we estimate the effects of board gender diversity on IPO underpricing separately for IPOs before and after 2010. We find that gender-diverse and non-diverse board IPOs have very similar levels of underpricing in the 2000–2009 period, but then the underpricing of gender-diverse board IPOs significantly exceeds that of non-diverse board IPOs in the 2010–2019 period. This suggests that an increase in investor demand for board gender diversity in the most recent decade contributes to the underpricing effect. When we consider more granular timing subsamples, we find that the effect is almost entirely driven by IPOs in the 2010–2014 period—before the big three institutional investors publicized their preferences for board gender diversity (Gormley et al., 2023)—whereas the underpricing effect is negligible in the 2015–2019 period, when their preferences were widely known. This dynamic relation between board gender diversity and IPO underpricing lends support to the neglected demand hypothesis, as investors likely had private diversity preferences in the early 2010s that were not incorporated into IPO pricing, but then these preferences were worked into IPO pricing once they were made public.

The partial adjustment hypothesis suggests that if investors invited to the book-building process disclose their preferences for board gender diversity, either explicitly or by oversubscribing to the IPO shares, underwriters should at least partially adjust the offer price upwards to account for this excess demand. Prior research has found that factors like operating performance and internet classification affect early-stage IPO pricing, such as the revision from the initial file price to the final offer price (Bartov et al., 2002; Willenborg et al., 2015; Blankespoor et al., 2017). Using the full sample of IPOs, we do not find evidence that gender-diverse board IPOs experience significantly different initial file prices, offer price revisions, or final offer prices, relative to non-diverse board IPOs. However, when considering IPOs across different time subsamples, some insightful patterns emerge. Specifically, in the last years of the sample period, when the big three institutional investors had publicized their preferences for diversity, gender-diverse board IPOs

effect, there were several prominent IPOs that did not initially include women on their board—specifically, Facebook (2012) and Twitter (2013)—creating a good deal of controversy for the firms (see https://www.theguardian.com/commentisfree/2013/oct/11/twitter-ipo-women-board).

realize greater offer price revisions and final offer prices, relative to non-diverse board IPOs. In contrast, we do not observe such effects in the 2010–2014 period, when the underpricing effect is the greatest. This suggests that the partial adjustment hypothesis is not a likely explanation for the observed underpricing effect, as it does not appear that investors with a preference for board gender diversity were revealing that preference during the book-building process in the early 2010s.

We expect that the increased demand for shares of gender-diverse board IPOs is driven by institutional investors, as several major investors have publicized their preference for diversity (Gormley et al., 2023), and not by retail investors, as prior research suggests these investors are relatively indifferent to corporate social and governance concerns (Moss et al., 2020). Since we do not have access to IPO share allocation books, we do not know for certain which investors received IPO allocations and which bought shares on the first day of trading. As an alternative, we estimate the relation between IPO board gender diversity and subsequent institutional ownership, based on ownership reports filed shortly after the IPO. We find that board gender diversity was not significantly associated with institutional ownership in the 2000–2009 period but it was in the 2010-2019 period. This is true when considering all institutional investors and specifically when considering the big three, BlackRock, State Street, and Vanguard. Furthermore, the positive association in the most recent decade is strongest when focusing on institutional investors most likely to value board gender diversity (Pan et al., 2022; Mkrtchyan et al., 2023). This suggests that institutional investor demand for board gender diversity has increased over time, likely contributing to the observed underpricing effect.

Our results indicate that investors, especially institutional investors, have preferences for board gender diversity that have not always been fully captured in IPO valuations. To assess what might drive these preferences for gender-diverse board IPOs, we estimate the relation between board gender diversity and several long-term outcomes associated with firm performance and risk. We find some evidence that, in the most recent decade, gender-diverse board IPOs realize significantly greater accounting performance (i.e., industry- and size-adjusted return-on-assets). However, we

are cautious in drawing strong inferences from these results, as the empirical relations are sensitive to the time horizons considered and as prior empirical evidence that correlates board gender diversity to firm value is quite mixed. Furthermore, when we consider risk-related outcomes, such as future accounting restatements and future lawsuits, we do not find any differences in outcomes between gender-diverse board and non-diverse board firms. So, while expectations of future firm performance may be one factor that contributes to investors' demand for board gender diversity, other non-pecuniary factors may also be at play. For instance, if investors view workplace gender parity as an ethical imperative, they may attribute a lower cost of capital to firms with greater board gender diversity (see Renneboog et al. (2007) for more discussion about investors factoring ethics into their investment decisions).

Our findings contribute to multiple strands of literature in finance and accounting on IPO pricing. Prior work has considered the impact of operating performance, perceptions of management, and earnings quality on the pricing of IPOs (Boulton et al., 2011; Willenborg et al., 2015; Blankespoor et al., 2017), and others have focused on the effects of regulations and legal mandates on IPO performance (Barth et al., 2017; Dambra et al., 2018; Byard et al., 2021). We contribute to this literature by focusing on the increasingly important topic of female representation on corporate boards, finding robust evidence that board gender diversity impacts IPO underpricing. Other research has examined the relation between board diversity and IPO performance in international markets (Handa and Singh, 2015; Eriksen and Särnmo Åberg, 2019; Teti and Montefusco, 2021), but none document a significant effect. This suggests either that investors in these markets do not place a premium on gender diversity or, if they do, underwriters efficiently incorporate the premium into the IPO's offer price. Reutzel and Belsito (2015) use two years of data on U.S. IPOs (1997 and 2007) and find evidence of a positive relation between female director representation and underpricing in 1997. They show that this relation is insignificant in 2007, which aligns with our finding of an insignificant relation between board gender diversity and underpricing in the 2000–2009 period. Their sample is limited to only two years of data, and the timing of their sample does

not overlap with the diversity campaigns of the most influential institutional investors, which is an important contribution of our analysis and discussion.

A second contribution of our paper is related to understanding how investors' preferences are incorporated into the IPO price formation process. Whereas traditional models of IPO underpricing focus on private information about future cash flows (Benveniste and Spindt, 1989), we are among the first to suggest that non-pecuniary preferences, such as a preference for board gender diversity, can also impact underpricing. In addition, our results indicate that it can often take considerable time for some of the preferences of investors to be fully incorporated into firm valuations, especially if there is uncertainty regarding the connection between those preferences and performance outcomes. Given the recent backlash against diversity, equity, and inclusion initiatives in the United States, it is likely that preferences for and against board gender diversity are still evolving. As such, it will be important for researchers to continue to study how these preferences impact IPO pricing outcomes.

Our findings also connect more broadly to the literature on the relation between investor preferences and firm value. Over the past decade, institutional investors and firms have placed increased emphasis on stakeholder value maximization, diversity, and other CSR-related topics (Graham, 2022). We show in this paper that one such factor, board gender diversity, matters in corporate financing because large institutional investors, and perhaps others, believe it is important. While it remains unclear as to whether gender-diverse boards are actually more effective at increasing firm cash flows, it is clear that the premium placed on diversity by some investors, especially institutional investors, has the potential to lower the cost of capital of gender-diverse board firms. In this way, our findings relate to those in Pástor et al. (2022), who show that the demand of ESG investors for green stocks lowers the cost of capital for greener firms. Our IPO setting allows us to directly compare differences in the valuations of stocks due to diversity. By showing that this difference is unrelated to profitability or other characteristics associated with cash flows, we can

make a strong case for the argument that board gender diversity can lower a firm's cost of capital, at least at the time the firm goes public.

2. Data Construction

To analyze the effects of board gender composition on IPO price formation, we use a sample of 2,421 U.S. IPOs from 2000–2019. We use the IPO data on Jay Ritter's website as the starting point for building out our sample of IPOs. Our study requires us to have data on the gender composition of each firm at the time of its IPO. For some firms, we are able to gather this information from the Kenney-Patton Firm and Management IPO Databases (Kenney and Patton, 2017), which include biographical data from IPO prospectuses.[4] For IPOs not included in the Kenney-Patton databases, we manually collect director biographical information from IPO prospectuses in S-1 filings. We were able to collect board gender composition data for 2,536 IPOs. IPOs for which board gender composition data was not available in S-1 filings were nearly all foreign F-1 filers, which are generally incorporated outside the United States, influencing the fiduciary duties placed upon their directors.[5]

We merge our IPO sample with data from Thomson One, SDC, and IPO Scoop, which provide us with information about the initial file price, price adjustment, offer price, and underpricing of each IPO, and which allow us to identify the underwriters involved in underwriting the IPO and other IPO characteristics. We remove firms for which the CEO is female, as the presence of female CEOs makes it difficult to specifically isolate the effect of (non-CEO) director gender diversity on

[4]The Kenney-Patton databases cover only emerging growth IPOs. This designation excludes IPOs from the following types of firms and filings: mutual funds, real estate investment trusts (REITs), asset acquisition or blank check companies, foreign F-1 filers, and all spin-offs and other firms that are not true emerging growth firms (such as firms formed purely to acquire other firms). Removing non-emerging growth companies could be considered important because the role of directors in these companies is likely substantially different than in emerging growth companies. Directors function as monitors—ensuring managers pursue shareholders' interests—and advisors—to help management make the best real investment and operating decisions (Sandvik, 2020). Non-emerging growth companies, like shell companies, mutual funds, and blank check companies do not make typical real investment and operating decisions, so the value and influence of directors in these companies is likely to be different from those in emerging-growth companies. Our main inferences are similar if we restrict our analyses to only include IPOs from the Kenney-Patton databases.

[5]Examples of these F-1 filers are I-Mab (incorporated in Cayman Islands), LIZHI INC. (incorporated in Cayman Islands), and Xyratex. (incorporated in Bermuda).

IPO price formation. We note, though, that our results are essentially unchanged when we keep these firms in the sample and include a control for CEO gender in our regression specifications. This leads to a final sample of 2,421 IPOs with issue dates from January 1st, 2000 to December 31st, 2019.[6]

We identify the gender composition of IPO firms' board of directors using the biographical information on each director provided in a firm's IPO prospectus. We search the biographies for gendered titles (e.g., Mr., Mrs., and Ms.) and for gendered pronouns (e.g., He and She), and we use these labels to classify individual directors as either male or female. In some instances, no gendered titles or pronouns are present in a biography, and in some cases both types of gendered words are present (e.g., when a biography mentions a director and their spouse). In these instances, we manually inspect the biographies and, in some cases, use Bloomberg, LinkedIn, or other search engines to fill in missing gender data. We also use first names to identify the gender of directors for whom we cannot find information elsewhere. For each IPO, we create a variable called *Gender-Diverse*, which equals one if there is at least one woman on the board, and zero otherwise.

Figure 1a shows the year-by-year trends in the number of IPOs in our sample. The solid line captures the total number of U.S. IPOs each year, whereas the dotted line captures the number of IPOs for which we were able to collect board gender diversity data. The year 2000 marked the high point, as this was at the height of the dot-com bubble, and we observe a dearth of IPOs in 2008 and 2009, at the trough of the Great Recession. Figure 1b shows that the fraction of IPOs with gender-diverse boards was the smallest in 2005 and 2011, and that it has (almost) monotonically increased since 2011. This increase in female representation on the boards of IPO firms is likely due to several factors, including the SEC's 2010 requirement that public companies disclose the role that diversity considerations play when they select directors, along with other external pressures to increase board gender diversity.

[6]We end our our sample in 2019, so as to avoid IPOs that were impacted by the COVID-19 global pandemic.

Table 1 displays summary statistics for the 2,421 IPOs in our sample, of which 857 (35%) have gender-diverse boards. The average level of underpricing is 14.02%, which means that for the typical IPO, the stock price at the close of the first day of trading is 14% greater than the offer price. This level of underpricing is consistent with the underpricing levels documented in other studies (Willenborg et al., 2015; Blankespoor et al., 2017). The average amount of unrealized proceeds due to underpricing is $30.62 million, the average offer price is $14.44, and the average midpoint of the initial file price range is $15.03.

Table 1 also displays summary statistics for the control variables used in our analyses. The main controls we use in our regression analyses are the fifteen robust determinants of IPO underpricing identified by Butler et al. (2014): *ln(Sales)*, *Offer Price Revision*, *ln(News)*, *Total Debt / Assets*, *IB Market Share*, *Avg. Underpricing*$_{[-30,-1]}$, *Avg. Price Revision*$_{[-30,-1]}$, *Prior Market Return*, *ln(Ret / Off)*, *Offer Revision Flag*, *ln(Industry Mkt / Sales)*, *ln(Offer Cap. / Sales)*, *Avg. Industry Ret.*$_{[-30,-1]}$, *Std. Industry Ret.*$_{[-30,-1]}$, and *Avg. NASDAQ Ret.*$_{[-30,-1]}$ (these and all other variables are defined in Appendix A). Each of these variables had been proposed as a determinant of underpricing in prior studies of IPO pricing, and the authors use a set of five methodologies to classify these determinants as robust: the extreme bounds approach (EBA), the best subset approach, the least absolute shrinkage and selection operator (Lasso) approach, the weighted average least squares (WALS) approach, and the Bayesian Model Averaging (BMA) approach. We report summary statistics for these variables under the header "Main Controls" in Table 1. In the year leading up to its IPO, the average firm in our sample realizes log sales of 2.79 million, experiences a change in offer price of -3%, and has a total debt to assets ratio of 0.24.[7]

We also control for several of the other measures that Butler et al. (2014) show to be significant determinants of IPO underpricing in some of the models they employ, as well as the controls mentioned in Loughran and Ritter (2004). We report summary statistics for these variables under the header "Additional Controls" in Table 1. At the time of its IPO, the average firm in our sample has

[7] In our regression analyses, missing values for control variables are replaced with zeros, and we include dummy variables into the specifications to indicate that values are missing in the raw data.

log assets of 5.28 and is 10.5 years old. In addition, 52% of the IPOs are backed by VC funding, 15% are internet stocks, 21% are considered technology companies, and 64% are listed on the NASDAQ stock exchange. We also tabulate summary statistics for several other control variables used in our analyses, including underwriter centrality measures, firm financial information, and director characteristics. The rightmost column of Table 1 reports differences in the mean values between gender-diverse board IPOs and non-diverse board IPOs, with the p-values from corresponding difference-in-means tests denoted by asterisks attached to the difference estimates. The inclusion of these controls in our empirical tests substantially reduces concerns regarding omitted variables bias, as they explicitly control for the significant determinants of underpricing documented in the prior literature, some of which may also be correlated with board gender diversity.

3. Effect of Board Gender Diversity on IPO Price Formation

As detailed in the Introduction, board gender diversity will impact IPO underpricing if investors have preferences for gender-diverse boards that are not fully incorporated into the offer price of the IPO. We begin by presenting evidence of a positive relation between board gender diversity and IPO underpricing, and we test whether the relation has changed over time. We then estimate the relation between board gender diversity and other stages of the IPO price formation process to assess whether the hypotheses are supported by the data. Next, we present evidence to suggest that institutional investor demand drives the underpricing effect, and we discuss the association between board gender diversity and several long-term performance and risk-related outcomes.

3.1. Board Gender Diversity and Underpricing

We begin by regressing an IPO firm's issue date underpricing on an indicator variable, *Gender-Diverse*, that equals one if the firm's board has at least one woman on it, and zero otherwise. In most specifications, we include the fifteen robust determinants of underpricing identified by Butler et al. (2014), represented by X_i. In some specifications, we include year fixed effects, λ_t, and industry fixed effects, γ_j, and additional control variables in X_i. We estimate the following model using ordinary least squares:

$$\text{Underpricing}_i = \alpha + \beta_1 \text{Gender-Diverse}_i + \beta X_i + \lambda_t + \gamma_j + \varepsilon_i. \quad (1)$$

The univariate results are displayed in Column (1) of Table 2. The estimate on *Gender-Diverse* is 4.316, and it is statistically significant at the 1% level. In Column (2), we include the controls from Butler et al. (2014) into the model, and we continue to estimate a positive, significant coefficient of 2.623 (p-value < 0.05). These results show that the positive relation between board gender diversity and IPO underpricing is not attributable to other previously documented determinants of underpricing.

3.1.1. Robustness: Additional Controls

In Column (3), we include controls for industry (based on two-digit SIC codes), the year of the IPO, and a host of additional firm, IPO, and director characteristics.[8] We include 9 additional controls that Butler et al. (2014) show to be determinants of underpricing using either the least absolute shrinkage and selection operator (Lasso) approach or the weighted average least squares (WALS) approach: *ln*(*Assets*), *ln*(*Off / Out*), *Amended Offer Revision*, *Selling Fee / Proceeds*, *Pure Primary Dummy*, *Std. Underpricing*$_{[-30,-1]}$, *Std. Price Revision*$_{[-30,-1]}$, *Std. NASDAQ Ret.*$_{[-30,-1]}$, and *NASDAQ Dummy*.

We also include the following controls, which are motivated by the prior literature (Hanley, 1993; Loughran and Ritter, 2002; Cornelli and Goldreich, 2003; Loughran and Ritter, 2004): *ln*(*Firm Age*), *Top Tier Underwriter*, *Share Overhang*, *VC Dummy*, *Internet Dummy*, *Tech Dummy*, and *Market Capitalization*. These controls are meant to capture latent constructs that might simultaneously impact board gender diversity and underpricing. For example, younger firms have historically realized greater levels of underpricing than older firms, especially in the late 1990s and early 2000s (Loughran and Ritter, 2004). If firm age impacts the firm's access to director labor markets, e.g., if more mature firms have better access to a wide variety of directors due to the additional time the firm's leaders have had to establish such connections, then firm age may jointly

[8] Our results are very similar if we use industry-by-year fixed effects or if we also include state fixed effects.

impact underpricing and board gender diversity. As another example, internet stocks and technology companies generally have greater female representation on their boards, and these firms tend to incur more underpricing (Bartov et al., 2002), so we control for *Internet Dummy* and *Tech Dummy*.

We also include an array of director characteristic controls that are meant to capture director ability, experience, and education, as well as other aspects of board diversity, like age and ethnicity. We do this by parsing through director biographies in each IPO prospectus to identify the age and educational attainment of each director. We use the skillset taxonomy of Adams et al. (2018) to count the number of skills possessed by each director, and we use the length of each director's biography as a proxy for their overall experience level. We then create board-level variables that capture the average and standard deviation values of directors' age, number of skills, biography lengths, Master's degree attainment, and Doctorate degree attainment. Finally, we follow Flam et al. (2023) and use data from List Service Direct to identify the ethnicity, religion, and primary-language of the directors,[9] and we create board-level variables that capture the presence of directors from specific ethnic, religious, and primary-language groups. We also create board-level variables that capture the variations in these characteristics, which allow us to proxy for other dimensions of board diversity. We control for the average network centrality of all the underwriters of the IPO, *Avg. Centrality*, and the centrality of the lead underwriter, *Lead Centrality*.[10] Finally, we follow Glushkov et al. (2018) and control for various measures of the firm's profitability, growth opportunities, leverage, and liquidity in the year leading up to its IPO.

All these controls are included in the model used in Column (3) of Table 2. The estimate on *Gender-Diverse* continues to be significant at 5% level. The magnitude of the coefficient in Column (3), 2.556, is very similar to that in Column (2), and the R-squared terms in both specifications range from 30%–39%, suggesting that very little additional explanatory power comes from adding

[9] We were only able to receive this data for a subset of the directors in our sample.

[10] These are based on the *Degree* measure discussed by Bajo et al. (2016).

controls beyond the 15 robust determinants of underpricing documented in Butler et al. (2014). As such, we prioritize the specification in Column (2) in most of our subsequent tests.[11]

3.1.2. Robustness: Entropy Balancing

A natural concern when estimating the effects of board gender diversity on corporate outcomes is that firms that choose to have gender-diverse boards may differ from those that choose not to in ways that directly impact the outcomes of interest. While a careful selection of control variables can help mitigate omitted variables bias, more can be done to improve the comparability of gender-diverse board firms and non-diverse board firms. To do this, we perform the entropy balancing procedure proposed by Hainmueller (2012), which is a generalization of propensity score matching. The procedure weights the data to achieve ex ante covariate balance, adjusting for random and systematic inequalities in the variable distributions between the treatment and control groups. Entropy balancing is more flexible than other matching methods, as the estimated weights vary smoothly, allowing all data to be retained and improving efficiency.[12] The covariates that we use to balance the treatment group (gender-diverse board IPOs) and control group (non-diverse board IPOs) are all the control variables used in Column (2). We tabulate the pre- and post-weighting values of these covariates in Table A.1 in Appendix A, showing that whereas treatment and control groups differ across several observable characteristics before the balancing procedure is applied (specifically, *IB Market Share*, *ln(Ret / Off)*, *ln(Offer Cap./Sales)*, *Std. Industry Ret.*$_{[-30,-1]}$, and *Avg. NASDAQ Ret.*$_{[-30,-1]}$), they do not significantly differ along these dimensions after the balancing procedure. We re-estimate Equation (1) using the entropy-balanced sample and all of the previously mentioned control variables, and we tabulate the results in Column (4) of Table 2. The estimate on *Gender-Diverse* continues to be significant at the 5% level, with a point estimate of 2.508. These results suggest that, when matching gender-diverse and non-diverse

[11] We note that two singleton observations are omitted from the estimations in Column (3), due to the inclusion of year and industry fixed effects, which further motivates the priority we give to the specification in Column (2).

[12] Entropy balancing has been used in other studies in accounting and finance (LaViers et al., 2022; Mkrtchyan et al., 2023).

board IPOs based on their ex ante characteristics, gender-diverse board IPOs realize significantly greater underpricing than do non-diverse board IPOs.[13]

3.1.3. Robustness: Impact Threshold for a Confounding Variable

To further assuage the concern that our results are driven by omitted variables bias, we calculate the impact threshold for a confounding variable (ITCV), which estimates the impact of an omitted confounding variable necessary to invalidate an inference for a regression coefficient (Frank, 2000; Larcker and Rusticus, 2010). This approach also assesses how strongly an omitted variable has to be correlated with the outcome and the predictor of interest to invalidate or sustain the inference. We compute the impact threshold for *Gender-Diverse* in our main specification in Column (2) of Table 2. The estimated impact of an omitted variable would have to be 0.012 to invalidate the inferred relation between *Gender-Diverse* and underpricing. For comparison, the impact values from the control variables in the specification are nearly all below 0.003. These tests suggest that the impact of an omitted confounding variable necessary to invalidate our inference would have to be four or more times larger than the impact of most of the other regressors. Assuming we have included a reasonable set of control variables into our regression specification, this greatly reduces the concern that the estimated relation between board gender diversity and IPO underpricing is simply due to omitted variables bias.

3.1.4. Economic Impacts of the Underpricing Effect

Taken together, the results in Table 2, coupled with the various robustness tests we conduct, provide strong evidence that gender-diverse board IPOs realize significantly greater underpricing than do non-diverse board IPOs. This relation is not due to an omitted variables bias stemming from other known determinants of underpricing, other aspects of board diversity, other aspects of board experience and skill, industry differences, or financial fundamentals. The robustness of the rela-

[13] We only have CSR score data for 1,053 of our sample IPOs, but when we re-estimate the models with the inclusion of a control for the firm's CSR score, the magnitude of the coefficient on *Gender-Diverse* ranges from 3.851–4.641, and it remains significant at the 1%–5% level. The robustness of our results when controlling for CSR scores suggests that the relation between board gender diversity and underpricing is not due to the environmental "greenness" of the firm.

tion when controlling for all these factors and when using an entropy-balanced sample offers compelling evidence that board gender diversity leads to increased IPO underpricing. When controlling for possible confounding factors, the magnitude of the estimates implies that gender-diverse board IPOs realize underpricing that is 2.51–2.62 percentage points greater than non-diverse board IPOs, representing an increase in underpricing of 18%–19% relative to the sample average reported in Table 1 (e.g., 2.51 / 14.02 = 0.179).[14] Additionally, the similarity of the results when including or excluding additional controls suggests that our inferences are not likely impacted by bad controls problems.

Though IPO underpricing is a widely documented phenomenon, this paper is the first to document that gender-diverse board IPOs experience even *greater* underpricing. The significant increase in underpricing realized by gender-diverse board IPOs relative to non-diverse board IPOs begs the question as to how much additional money these diverse board firms miss out on due to underpricing. To estimate this, we follow Loughran and Ritter (2002) and create the variable *Unrealized Proceeds*, measured as the price change from the offer price to the closing first-day market price, multiplied by the number of shares issued. We then re-estimate our regression models with *Unrealized Proceeds* as the dependent variable. As shown in Table A.2, we find that gender-diverse board IPOs incur approximately $7.8–$15.9 million more in unrealized proceeds than do non-diverse board IPOs.

3.2. Board Gender Diversity and Underpricing Across Time

If the observed gender diversity underpricing effect is driven by investors' preferences for firms with female representation on their boards, then we would expect the effect to be greater in years when these preferences are stronger. In 2010, the SEC started requiring public companies to disclose the role that diversity considerations play when they select directors. We posit that this

[14] If we re-estimate the main regression models using—instead of the dummy *Gender-Diverse*—a variable that captures the fraction of the board that is represented by female directors, *Fraction Female*, we find that going from a fully male board to a fully female board would lead to increased underpricing of 6.1–10.2 percentage points. The *Gender-Diverse* measure provides more tractable inferences and is more applicable to what we observe in real-world settings, which is why we prioritize it.

likely increased investors' preferences for gender-diverse board firms, as these firms would be less likely to experience scrutiny and sanctions. To explore this, we plot in Figure 2a the unconditional mean levels of underpricing for gender-diverse and non-diverse board IPOs. The underpricing of gender-diverse and non-diverse board IPOs is quite similar in the 2000–2009 period. Then in the first years of the 2010s, the average underpricing of gender-diverse board IPOs jumps upward, whereas the underpricing level of non-diverse board IPOs stays relatively stable. As such, we test whether the aggregate underpricing effect is significantly different in the 2010–2019 period than it is in the 2000–2009 period.

Table 3 reports these comparisons of effects across time. In Column (1), we re-estimate our main specification among only IPOs in the 2000s, which includes controls for the robust determinants of underpricing documented in Butler et al. (2014). In Column (2), we use only IPOs in the 2010s. The coefficient on *Gender-Diverse* is small and insignificant in Column (1), whereas it is large and statistically significant at the 5% level in Column (2). The magnitude of the coefficient in Column (2) indicates that gender-diverse board IPOs in the 2010s realize greater underpricing of 3.4 percentage points, relative to non-diverse board IPOs. In Column (3), we use the full sample of IPOs and include the interaction between *Gender-Diverse* and *(2010–2019)*, which equals one for IPOs in the 2010s, and zero otherwise. The estimate on *Gender-Diverse* $\times$ *(2010–2019)* in Column (3) is positive, but it is not significant. Taken together, the trends in Figure 2a and the results in Table 3 provide clear evidence that the observed underpricing effect is almost entirely driven by IPOs in the 2010–2019 period, when investor demand for board gender diversity has been substantial.

As a first step in determining whether the underpricing effect is consistent with the partial adjustment hypothesis or the neglected demand hypothesis, we examine whether the underpricing effect is present throughout the entire 2010–2019 period, or if it changed when BlackRock, State Street, and Vanguard publicized their demand for gender-diverse board firms in 2017 (Gormley et al., 2023). If it is present throughout the entire decade, even after the diversity campaigns of

the big three investors, then it is likely not due to underwriters being unaware of the demand that investors have for board gender diversity. If, however, the effect is only present in the years before the diversity campaigns, this would be more consistent with underwriters neglecting to incorporate investor demand for board gender diversity into the IPO price. In Columns (4)–(7) of Table 3, we re-estimate our main specification in four five-year subperiods: 2000–2004, 2005–2009, 2010–2014, and 2015–2019. We find that the underpricing effect is largely confined to the 2010–2014 time period, where the estimate on *Gender-Diverse* of 6.945 is statistically significant at the 1% level. In Column (8), we used the full sample of IPOs and include interactions of the three latter period indicators with *Gender-Diverse*. The positive and significant coefficient on *Gender-Diverse* $\times$ *(2010–2014)* shows that the gender diversity underpricing effect is significantly greater in the 2010–2014 period than it is in the benchmark period. We arrive at similar conclusions if we split the 2010–2019 IPOs into those before the Big Three diversity campaigns (2010–2016) and those after the campaigns (2017–2019). Specifically, the magnitude of the board gender diversity underpricing effect is 5.680 in the 2010–2016 period (with a t-statistic of 4.015), whereas it is -0.652 in the 2017–2019 period (with a t-statistic of -0.217). The dynamic relation between board gender diversity and IPO underpricing provides preliminary evidence in support of the neglected demand hypothesis, as investors had diversity preferences in the early 2010s that were not fully incorporated into IPO pricing, but then these preferences were worked into IPO pricing once they were made public.

3.3. Board Gender Diversity and Early-Stage IPO Price Formation

To further delineate between the partial adjustment and neglected demand explanations for the observed underpricing effect, we consider the impact of board gender diversity on the other outcomes of the IPO price formation process. Specifically, we consider the midpoint of the initial file price range, the adjustment between this midpoint and the final offer price, and the final offer price itself. The partial adjustment hypothesis argues that investor demand for board gender diversity should be (at least partially) incorporated into these early stage prices in the years in which we observe the underpricing effect.

In Table 4, we re-estimate our main regression specifications using alternative dependent variables that capture the earlier stages of IPO price formation process. We consider the initial file price of the IPO (i.e., the mid-point of the initial file price range) in Panel A, the percent change in price from the initial file price to the offer price in Panel B, and the final offer price of the IPO in Panel C. When using the full sample of IPOs, across all years from 2000–2019, we do not find evidence of a significant relation between board gender diversity and any of earlier stage IPO pricing outcomes. If the partial adjustment hypothesis explained the full sample underpricing effect, we would at least expect to see a positive relation between board gender diversity and offer price revisions in Panel B. Instead, all the point estimates are small, negative, and imprecise. This finding further suggests that the partial adjustment hypothesis is not a likely explanation of our main findings.

To further leverage the early stage IPO pricing values to test our hypotheses, we estimate the relation between board gender diversity and early stage IPO pricing outcomes in ten-year and five-year subsamples of the data. The specifications used in Table 5 are analogous to those used in Table 3, albeit with different dependent variables: initial file price of the IPO in Panel A, the percent change in price from the initial file price to the offer price in Panel B, and the final offer price of the IPO in Panel C. In Panel A, we find limited evidence that board gender diversity impacts the initial file price of the IPO. In Panel B, we estimate insignificant relations in all subperiods except for the 2015–2019 period, in which we estimate a positive relation between board gender diversity and the IPO's offer price revision. This effect is significant at the 10% level, and it suggests that in the last years of our sample, when preferences for diversity had been widely publicized, underwriters, knowing these preferences, were able to incorporate them into the offer price.

The dynamic nature of this relation between board gender diversity and offer price revisions is illustrated in Figure 2b, where we can see that offer price revisions are almost always smaller for gender-diverse board firms, until the last five years of the sample period, where they become larger, relative to non-diverse board firms. This notion of underwriters beginning to incorporate

gender diversity preferences into offer prices is further supported by the results in Panel C of Table 5, where we estimate a positive and significant (at the 5% level) relation between board gender diversity and IPO final offer prices in the 2015–2019 period. That we do not observe such effects in the 2010–2014 period, when the underpricing effect is the greatest, suggests that the partial adjustment hypothesis is not a likely explanation for the observed underpricing effect, as it does not appear to be the case that investors with a private preference for board gender diversity are revealing that preference during the book-building process. Instead, that information only appears to be incorporated into offer prices once diversity preferences are widely publicized.

The significant relation between board gender diversity, underpricing, and other IPO pricing outcomes prompts the question as to whether overall firm value at the time of IPO is affected by board gender diversity. To examine this, we re-estimate the specifications that consider the effects of board gender diversity across time, using as the dependent variable a proxy for firm value, which equals the final offer price times the number of shares outstanding on the IPO date. In general, we do not find evidence of a significant relation between board gender diversity and firm value, both in the full sample of IPOs and when considering ten- and five-year subsets of the data (untabulated). There is one exception to this, though. In the 2010–2014 subsample, we estimate a negative and significant relation between board gender diversity and firm value (p-value < 0.010). This finding is consistent with the results in Table 3, which show that the greatest underpricing effect occurs in the 2010–2014 period. Taken together, these results suggest that gender-diverse board firms were undervalued, on average, in the 2010–2014 period.

3.4. Which Investors Demand the Shares of Gender-Diverse Board IPOs?

Given that several institutional investors have been highly outspoken about their preferences for increased board gender diversity (Gormley et al., 2023), we expect that their demand for the shares of gender-diverse board IPOs contributes to the observed underpricing effect. Retail traders, in contrast, are thought to be relatively indifferent to corporate social and governance concerns (Moss et al., 2020), so it seems unlikely that they would drive up the share price of gender-diverse board

stocks on the firms' first trade day more so than non-diverse board stocks. As we do not have access to IPO share allocation books, we cannot know for certain which investors received IPO shares and which drove up the share price on the first day of trading. As a first alternative, we estimate the relation between board gender diversity at the time of the IPO and subsequent institutional ownership, based on ownership reports filed shortly after the IPO.

In Table 6, we re-estimate our main regression specifications in various subperiods using alternative dependent variables that capture various dimensions of institutional ownership. In Panel A, we consider the ownership of all institutional investors, where the dependent variable equals the fraction of a firm's shares owned by institutional investors according to the first ownership report after the IPO. In Panel B, we consider the ownership of BlackRock, State Street, and Vanguard, and in Panel C, we consider the ownership of Democratic-leaning institutional investors, which is motivated, in part, by the inequality-aversion measure used by Pan et al. (2022). We use this state-based ideological leaning measure because there is ample survey evidence that suggests Democratic-leaning individuals are more likely to support and push for greater female representation in leadership roles.[15]

The results in Column (1) of Panel A show that, in the 2000–2009 period, the institutional ownership of gender-diverse board firms was no different than that of non-diverse board firms. In the 2010–2019, however, in Column (2), we estimate a positive and significant relation between *Gender-Diverse* and institutional ownership. The significant coefficient on the interaction term in Column (3) indicates that the institutional ownership of gender-diverse board IPOs, relative to non-diverse board IPOs, increased significantly across the two time periods. We estimate similar effects in Panel B when focusing solely on the ownership of BlackRock, State Street, and Vanguard. These

[15]For instance, a 2017 Pew study found that 69% of Democrats (but only 26% of Republicans) said the U.S. hadn't gone far enough when it comes to giving women equal rights (https://www.cbsnews.com/texas/news/partisan-gap-gender-equality/). A 2023 Pew study found that 78% of Democratic-leaning workers say focusing on DEI at work is a good thing, compared with 30% of Republican-leaning workers (https://www.pewresearch.org/social-trends/2023/05/17/diversity-equity-and-inclusion-in-the-workplace/). Similarly, a recent article in Forbes discussed the greater representation of female elected officials within the Democratic party, relative to the Republican party (https://www.forbes.com/sites/kellydittmar/2023/03/21/democrats-lead-republicans-in-gender-parity-new-research-shows/).

findings are consistent with the view the institutional shareholders, but not retail investors, have increased their demand of gender-diverse board IPOs in the recent decade, and that it is this positive demand that contributes to the observed underpricing effect.[16] Furthermore, the results in Panel C show that the positive association between board gender diversity and institutional ownership in the most recent decade is strongest when we focus on institutional investors who are the most likely to be supportive of increased gender diversity.[17] These findings highlight the role that investors' ideological leanings can have on investment decisions, similar to the findings in Pan et al. (2022), who show that "inequality averse" institutional investors rebalance their portfolios towards (away from) stocks of firms with relatively low (high) CEO pay ratios, which are perceived as indicators of within firm pay inequality (LaViers et al., 2022).

To further explore the effect of institutional investor demand on IPO underpricing, we estimate the relation between institutional ownership and underpricing. To do this, we regress the IPO's underpricing on the fraction of the firm's shares owned by institutional investors according to the first ownership report filed after the IPO. We find that institutional ownership is positively and significantly related to underpricing in the 2010–2014 period (p-value < 0.050, untabulated). This is true both when we control for board gender diversity and when we omit this control from the specification. While these results further help us establish the positive relation between institutional investor demand for IPO shares and underpricing, they need to be interpreted with caution, as the institutional ownership variable is based on the first ownership report *after* IPO. So, in these we are regressing underpricing on *future* institutional ownership. While future institutional ownership may be a good proxy for the level of institutional ownership on the IPO date, we cannot know for sure which investors owned the firm's shares on the date of the IPO. As such, we are cautious to not draw too strong of an inference from these tests.

[16] We plot the time trends in institutional ownership and big-three ownership in Figure 3a and Figure 3b, respectively.

[17] In contrast, we do not estimate a significant relation between IPO board gender diversity and the ownership of institutional investors who are less likely to be inequality-averse (untabulated).

4. Drivers of Investor Demand and Alternative Explanations

In Section 3, we presented robust evidence that gender-diverse board IPOs realize significantly greater underpricing than do non-diverse board IPOs. The dynamic time trends of the effect suggest that the underpricing is largely due to the demand of institutional investors for gender-diverse board firms, which increased throughout the 2010s and become highly publicized towards the end of the decade. In this section, we investigate what might be contributing to investors' demand for gender-diverse board shares, and we consider several alternative explanations for the observed effect.

4.1. Future Profitability and Value-Destroying Events

One hypothesis as to why institutional investors value gender-diverse boards is that female directors add value above and beyond what their male counterparts contribute—that is, there are direct cash flow consequences to women being on boards. For example, gender-diverse boards could act as a substitute mechanism for corporate governance that would otherwise be weak (Gul et al., 2011). Alternatively, if female leaders are less overconfident or more risk-averse than male leaders (Ge et al., 2011; Carter et al., 2017), then having more women on the board may reduce negative consequences such as over-investment and excessive risk-taking. Furthermore, diverse leadership may send a positive signal about a firm's ability to attract and retain a diverse talent pool of employees (Athey et al., 2000) or attract customers, especially if the media focuses attention on a firm's lack of gender diversity. In addition, employee responses to a firm's stance on diversity can meaningfully influence worker morale (Mkrtchyan et al., 2024). Hence, this explanation would suggest that investment banks may not fully incorporate these possible cash flow benefits of gender diversity into the offer price, leading to underpricing.[18]

If there are cash flow benefits to firms from having gender-diverse boards, then gender-diverse board firms are likely to have superior operating performance. Hence, we examine the effect of board gender diversity on the long-run accounting performance of the firms after the IPO. To

[18] BlackRock, State Street, and Vanguard have all articulated the belief that board gender diversity increases the effectiveness of the board, which could lead to improved corporate performance.

measure accounting performance, we estimate each firm's industry- and size-adjusted return on assets (ROA) two years after the IPO. We regress these ROA values on the same models used in our time trends analyses, where we focus on IPOs in decade and five-year subsamples. The results of these estimations are displayed in Panel A of Table 7. We estimate a small and statistically insignificant point estimate on *Gender-Diverse* in Column (1), which covers the 2000–2009 period, but we estimate a positive and significant estimate in Column (2), which covers the 2010–2019 period. Moreover, the effect in the latter decade is significantly greater than the effect in the earlier decade, as indicated by the positive and significant coefficient on the interaction term in Column (3). When we consider the effects in the five-year subperiods, we see that the coefficients in the two earliest periods are insignificant, whereas as effect is significant at the 10% level in the 2010–2014 period, precisely when we observe the main underpricing effect. These results suggest that the future accounting performance of firms with gender-diverse boards at the time of IPO may been significantly greater than that of non-diverse board firms. If this out-performance was anticipated by investors, then it may have been the expectation of superior performance that drove the excess demand for the shares of gender-diverse board firms on the first trade day after IPO. We are cautious in our interpretation of these results, though, as they are only significant at the 10% level and as we do not find significant effects when considering ROA at different time horizons (e.g., one, three, or four years after IPO). This suggests other mechanisms are likely at play.

An alternate channel through which female directors might add value to the board is by preventing rare, value-destroying events such as accounting restatements and class action lawsuits. The mitigation of potentially harmful events will not necessarily show up in operating performance, but it may still benefit firm value. To test this, we gather data from the Audit Analytics database to identify instances of restatements incurred by the firm and class action lawsuits filed against the company. For each IPO in our sample, we sum up the number of accounting restatements incurred by the firm in the five years after IPO, and we sum up the number of instances in which the firm was named as a defendant in a class action lawsuit in the five years after IPO. We then separately set the accounting restatement and lawsuit variables as the dependent variables in our models. The

results in Panel B of Table 7 show that board gender diversity at the time of IPO is not significantly related to the number of future accounting restatements incurred by the firm. Similarly, the results in Panel C suggest that gender-diverse board firms are no more or less likely to be the defendants in class action lawsuits. While we do not find evidence that board gender diversity leads to a significant reduction in the likelihood that value-destroying events occur, it is still possible that investors' expectations regarding this relation could contribute to their demand for the shares of gender-diverse board firms on the first trade day after IPO.

4.2. Accounting for Index Inclusion

One possible explanation for the underpricing effect may be that certain institutional investors have to purchase the shares of firms that are included in major stock indices. For example, if a firm is expected to enter the S&P 1500 after its IPO, then certain investors, including those that are not issued IPO shares, may have to buy up shares of the firm's stock. If index inclusion is correlated to board gender diversity—e.g., because large, successful firms have more slack to diversify their boards of directors—then the observed underpricing effect may be driven by buy-pressure that is due to index inclusion, and not to board gender diversity.

To account for this possibility, we test the sensitivity of our main findings when excluding the IPOs of firms that appear in certain major stock indices shortly after IPOs. Using BoardEx data, we are able to identify whether firms are included in the Dow Jones Industrial Average, the S&P 500, or the S&P 1,500. In Table A.3, we re-estimate our main specifications, using the full sample of IPOs from 2000–2019, wherein we exclude IPOs of firms in the Dow Jones Industrial Average (Panel A), in the S&P 500 (Panel B), or in the S&P 1,500 (Panel C). Across all columns and panels, we continue to estimate positive, statistically significant coefficients on *Gender-Diverse*. This indicates that the observed underpricing effect is not simply due to the buy-pressure placed on investors who are required to own the shares of firms in certain stock indices.[19]

[19]We also find that our results hold when we retain the full sample of IPOs and include index inclusion indicator variables as controls in our main specifications.

4.3. IPOs in Hot, Neutral, and Cold Markets

Another consideration is whether the underpricing effect is strongest during hot, neutral, or cold IPO markets. The causes and effects of hot versus cold issuance markets have interested researchers for several decades (Ritter, 1984; Loughran and Ritter, 1995; Bayless and Chaplinsky, 1996). For instance, Lowry and Schwert (2002) show that periods of high IPO underpricing often lead to high subsequent IPO volume. To determine whether the relation between board gender diversity and underpricing is affected by the hotness of the IPO market, we follow Helwege and Liang (2004) and classify time periods as having hot or cold IPO markets based on monthly averages of the number of IPOs scaled by new business formations for each month in the sample. We classify a month as having a hot IPO market if the ratio of IPOs to business formations is in the top quartile of the monthly sample distribution. Months are classified as having cold IPO markets if the ratio is in the bottom quartile. The remaining months are classified as being in neutral IPO markets. Based on this classification, 1,075 of the 2,421 IPOs in our sample are classified as hot, 1,142 are classified as neutral, and 204 are classified as cold.

We begin by adding indicator variables into our main regression specifications to control for whether a given IPO occurs in a hot or cold market, relative to a neutral market. We display the results of these regressions in Panel A of Table A.4. The point estimates on *Gender-Diverse* continue to be positive and statistically significant at either the 1% or 5% level. In Panel B, we re-estimate our main specifications after removing IPOs in cold markets from the sample, and we find that our results change very little. Then in Panel C, we remove IPOs that occur in neutral markets, and we find that the coefficients on *Gender-Diverse* increase by about one percentage point in all specifications (e.g., an increase from 4.5 to 5.5), and the estimates continue to be statistically significant. Taken together, the results in Table A.4 indicate that our findings are robust when accounting for the hotness of the IPO market.

4.4. Market efficiency

Next we examine whether the observed underpricing effect is followed by additional excess returns in the weeks following the IPO, a test of whether markets are efficient on the first day of trading. If markets overreacted on the first day of trading, the diversity effect may well disappear in the following weeks. In contrast, if institutional investors are superior investors because they have better information about future cash flows, excess returns should increase. To test this, we measure the buy-and-hold abnormal returns realized by investors who purchase the IPO firm's shares on the first trading date and hold for five, ten, or twenty-five days. We use the value-weighted CRSP market index as the benchmark to measure abnormal returns. We then use these short-run return values as the dependent variables in regression specifications that mimic those used previously. We report the results in Table A.5. The coefficients on *Gender-Diverse* are negative and statistically significant in the 2000–2009 period in Panels A and B, but they are statistically insignificant in the 2010–2019 period in all three panels, as well as in the more granular 2010–2014 and 2015–2019 subperiods. The null effects on 5-, 10-, and 25-day post-IPO BHARs in the years in which we observe a statistically significant gender diversity underpricing effect suggest that there are no meaningful stock price reversals or drifts following the initial trade day underpricing. This indicates that investor demand for gender-diverse board shares is efficiently worked into the stock price on the first day of trading.

4.5. Board Gender Composition as Potential Window-Dressing

A final consideration is whether firms use board gender diversity opportunistically at the time of the IPO to attract attention from institutional investors. We consider whether firms add female directors to the board in anticipation of an IPO. We use directors' biographies provided in the IPO prospectuses to identify when directors were first appointed to the board. We find that the average male director has served on the board of directors for 3.75 years, and the average female director has served on the board of directors for 3.36 years at the time of the IPO.[20] The difference between

[20]We have this data for about half of the IPOs in our sample, specifically those covered by the Kenney-Patton Firm and Management IPO Databases (Kenney and Patton, 2017).

these averages is not statistically significant. This suggests that firms with gender-diverse boards at the time of the IPO are unlikely to be placing women on the boards of directors immediately before their initial public offering.

5. Conclusion

In this paper, we document a gender diversity effect in the level of underpricing for U.S. IPOs over the past decade. IPOs with at least one woman on the board are significantly more underpriced than IPOs with all-male boards. The results are economically significant: over the last decade, firms with gender-diverse boards experience a 3.4 percentage point larger level of underpricing, resulting in, on average, $12.8 million more in unrealized IPO proceeds. These results are robust when we use an entropy-balanced sample and when we control for a wide array of possible confounding factors that may jointly affect board gender diversity and underpricing, which substantially reduces omitted variables bias concerns.

The effect appears to be driven by excess institutional investor demand, as the effect is strongest in the 2010–2014 period, when new pressures were placed on firms to diversify their boards, and as the effect is attenuated in the 2015–2019 period, when institutional investor demand for board gender diversity was highly publicized. We do not find evidence in support of the partial adjustment hypothesis, as board gender diversity is unrelated to the early stages of the price formation process in the period when the underpricing effect is the greatest. Instead, we find evidence in support of the neglected demand hypothesis, which suggests that underwriters may have been initially unaware of the preferences that investors had for gender-diverse board firms.

We find some empirical support for the notion that investor demand for board gender diversity may have been related to cash flow considerations. For example, over the two year period subsequent to the IPO, we find that gender-diverse board firms realize significantly greater industry- and size-adjusted return on assets, relative to non-diverse board firms. We are cautious in the inferences that we draw from these results, though, as the positive relation between board gender diversity and ROA is quite sensitive to the time horizon chosen for the performance analysis. We also find

no evidence that gender-diverse board firms incur a different frequency of value-destroying events such as future accounting restatements or class action lawsuits.

Investor demand for greater board gender diversity is a relatively recent phenomenon (Gormley et al., 2023), which may explain why the underpricing effect does not show up in the early 2000s. One possible explanation for the demand shift could be that investors have become more comfortable with diversity following the increase in the experience levels of female board members in recent years. However, we find that the underpricing effect is robust when controlling for director experience, educational attainment, and skillsets. We also do not find any evidence that firms opportunistically change the gender composition of their boards to attract attention from institutional investors. Our results suggest that investor demand for gender-diverse board firms may be due to preferences that are unrelated to corporate performance, similar to the non-monetary benefits that investors enjoy from owning more ethical stocks (Renneboog et al., 2007).

A final takeaway is that, over the past decade, institutional investors and firms have placed increased emphasis on stakeholder value maximization, diversity, and other CSR-related topics (Graham, 2022). There is a considerable debate in both the academic literature and the popular press on whether these issues are value-relevant. Our results show that one such factor, board gender diversity, appears to matter in corporate financing because large institutional investors, and perhaps others, believe it is important. At the same time, though, recent backlash against the diversity, equity, and inclusion of efforts of organizations suggests that preferences for and against board gender diversity are likely still evolving. As such, additional research is necessary to understand how investor preferences for organizational design elements, such as board composition, get worked into firm valuations.

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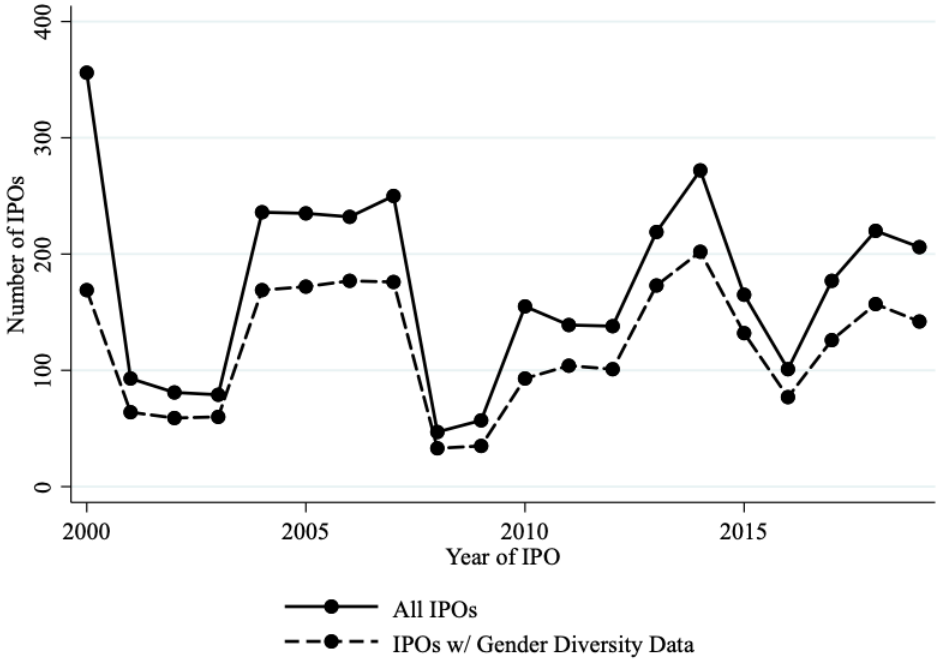
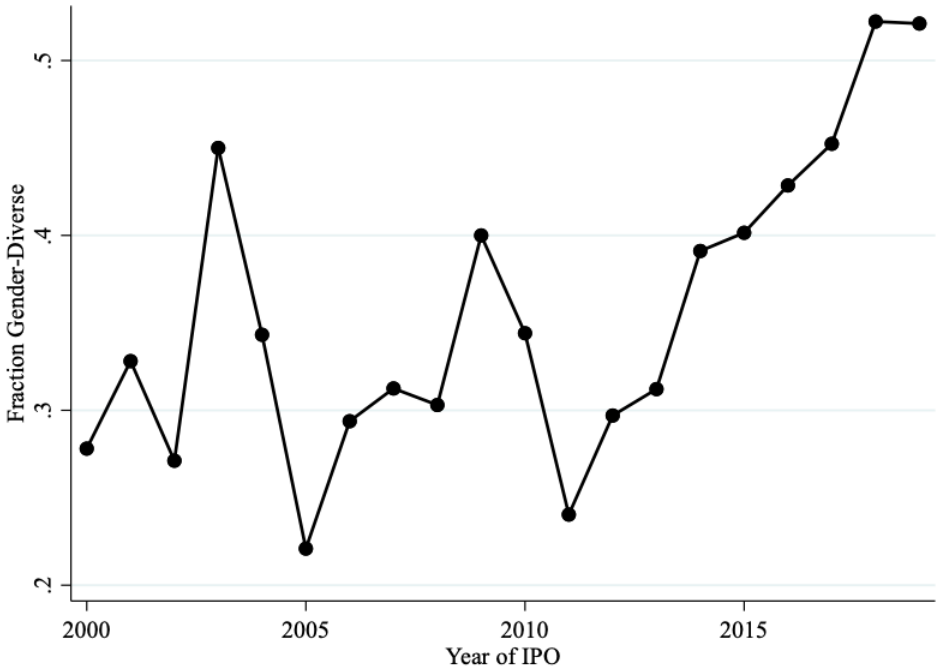
Figure 1: IPO Trends Over Time

(a) Number of IPOs



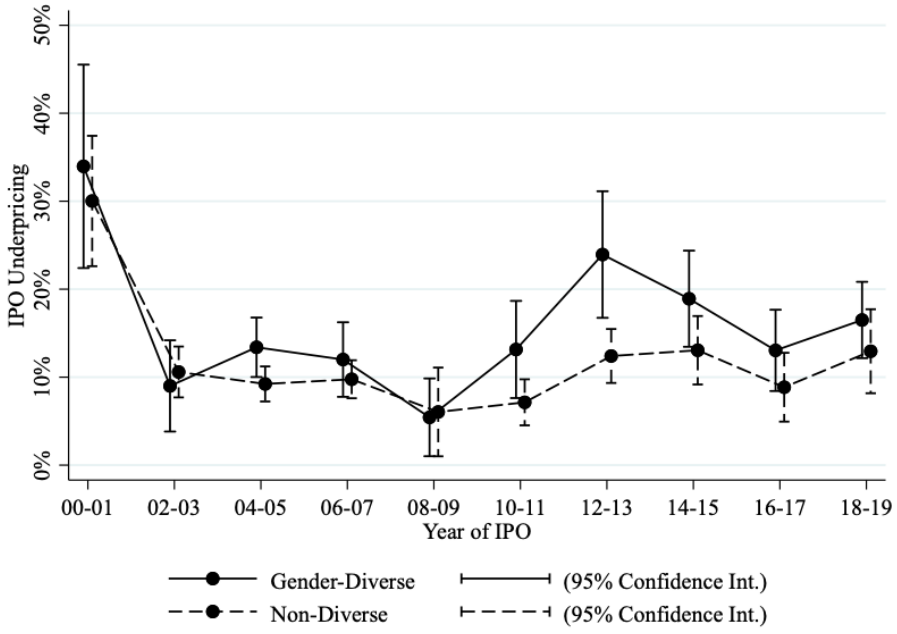
(b) Fraction of Gender-Diverse Board IPOs



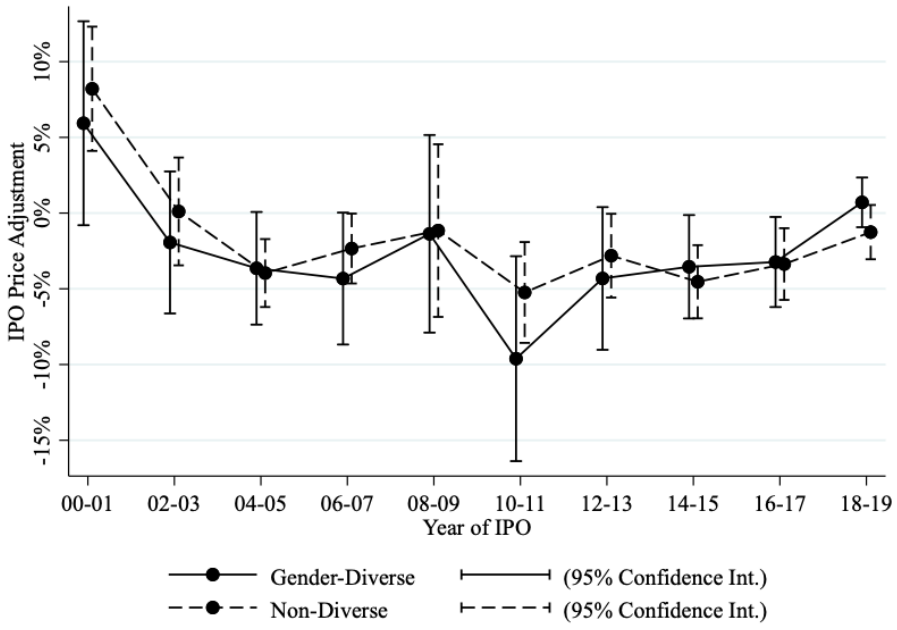
Notes: Figure (a) displays trends in the number of IPOs in our sample each year. Figure (b) displays trends in the fraction of IPOs with gender-diverse boards each year. IPOs are defined as having a gender-diverse board if at least one woman serves on the board at the time of the IPO.

Figure 2: Trends in IPO Underpricing and Offer Price Revisions by Board Gender Diversity

(a) Trends in IPO Underpricing



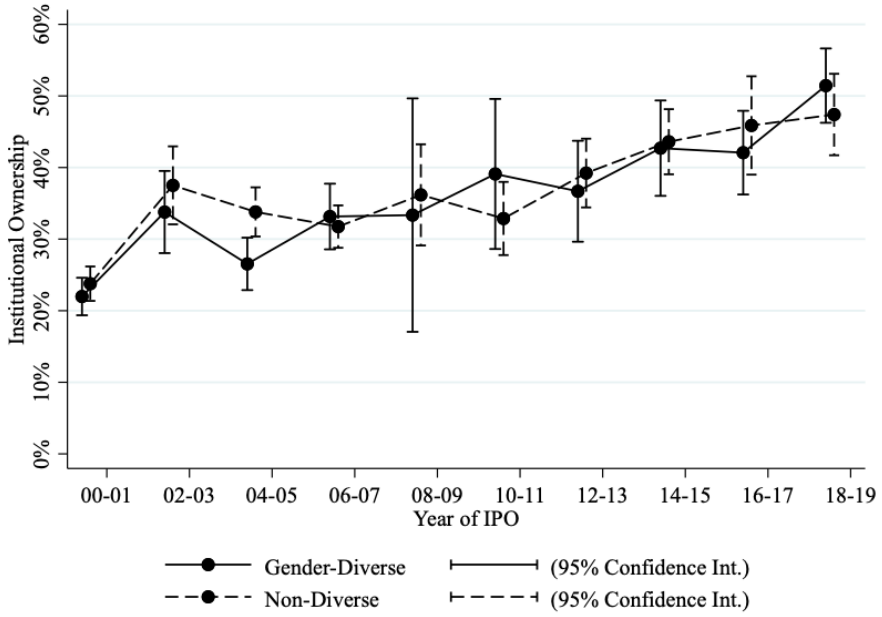
(b) Trends in IPO Offer Price Revisions



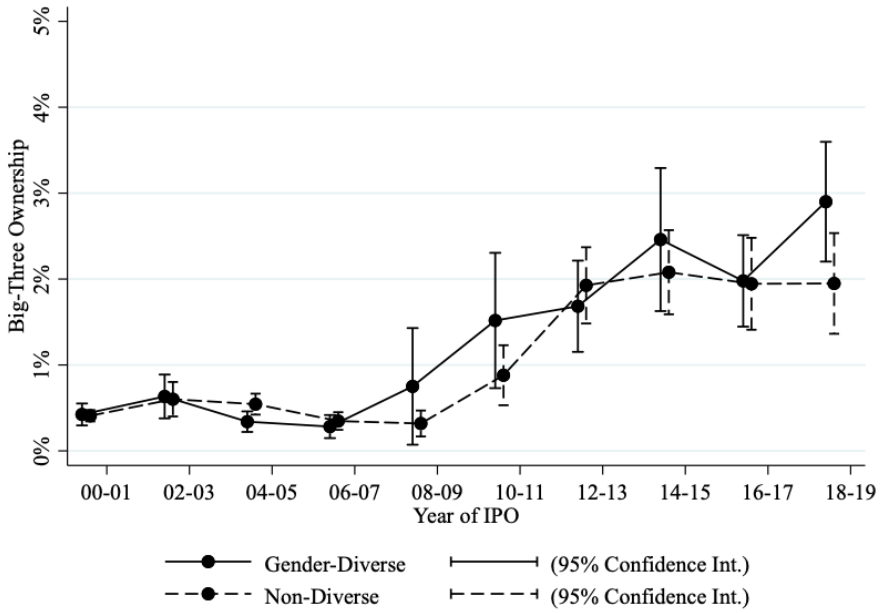
Notes: Figure (a) plots the unconditional mean levels of underpricing for gender-diverse and non-diverse board IPOs across time, along with 95% confidence intervals. Figure (b) plots the unconditional mean levels of offer price revisions for gender-diverse and non-diverse board IPOs across time, along with 95% confidence intervals. IPOs are bucketed into two-year bins to limit noise in the years in which relatively few IPOs occur. IPOs are defined as having a gender-diverse board if at least one woman serves on the board at the time of the IPO.

Figure 3: Trends in Institutional Ownership by Board Gender Diversity

(a) Trends in Institutional Ownership



(b) Trends in Big-Three Ownership



Notes: Figure (a) plots the unconditional mean levels of institutional ownership according to the first post-IPO ownership reports for gender-diverse and non-diverse board IPOs across time, along with 95% confidence intervals. Figure (b) plots the unconditional mean levels of big-three (BlackRock, State Street, and Vanguard) ownership according to the first post-IPO ownership reports for gender-diverse and non-diverse board IPOs across time, along with 95% confidence intervals. IPOs are bucketed into two-year bins to limit noise in the years in which relatively few IPOs occur. IPOs are defined as having a gender-diverse board if at least one woman serves on the board at the time of the IPO.

Table 1
Summary Statistics

	N	Mean	Std. Dev.	25%	50%	75%	Diff.
Main Regressor and Outcomes							
Gender-Diverse	2,421	0.35	0.48	0.00	0.00	1.00	
Underpricing	2,421	14.02	27.12	0.00	5.00	21.05	4.32***
Unrealized Proceeds	2,331	30.62	137.81	0.00	5.13	27.78	15.85***
Offer Price	2,421	14.44	6.42	10.00	14.00	17.50	0.43
Initial File Price	2,314	15.03	5.97	11.50	15.00	17.00	0.19
Main Controls							
ln(Sales)	2,309	2.79	4.58	2.06	4.35	5.65	-0.25
Offer Price Revision	2,314	-0.03	0.19	-0.12	0.00	0.07	0.00
ln(News)	2,314	1.16	1.69	0.00	0.00	2.77	-0.12
Total Debt / Assets	2,304	0.24	0.58	0.00	0.08	0.35	-0.03
IB Market Share	2,303	0.13	0.25	0.01	0.02	0.09	-0.03***
Avg. Underpricing$_{[-30,-1]}$	2,418	0.14	0.11	0.07	0.12	0.18	0.00
Avg. Price Revision$_{[-30,-1]}$	2,418	-0.02	0.08	-0.06	-0.02	0.02	0.00
Prior Market Return	2,421	0.01	0.03	-0.01	0.01	0.03	0.00
ln(Ret / Off)	2,144	1.22	0.62	0.87	1.28	1.60	0.14***
Offer Revision Flag	2,315	-0.05	0.09	-0.08	0.00	0.00	0.00
ln(Industry Mkt / Sales)	2,310	7.69	2.60	6.32	7.97	9.61	0.07
ln(Offer Cap./Sales)	2,178	2.77	4.19	0.35	1.46	3.04	0.43**
Avg. Industry Ret.$_{[-30,-1]}$	2,421	0.07	0.25	-0.07	0.08	0.21	0.01
Std. Industry Ret.$_{[-30,-1]}$	2,421	1.13	0.56	0.77	1.00	1.30	-0.07***
Avg. NASDAQ Ret.$_{[-30,-1]}$	2,421	0.06	0.24	-0.06	0.09	0.20	0.02**
Additional Controls							
ln(Assets)	2,310	5.28	1.86	4.36	5.22	6.37	0.13*
ln(Firm Age)	2,032	2.35	1.02	1.79	2.30	2.89	0.10**
Top Tier Underwriter	2,315	0.31	0.46	0.00	0.00	1.00	0.09***
Share Overhang	2,110	2.58	2.55	1.10	2.26	3.45	0.16
VC Dummy	2,134	0.52	0.59	0.00	0.00	1.00	0.12***
Internet Dummy	2,133	0.15	0.71	0.00	0.00	0.00	0.00
Tech Dummy	2,421	0.21	0.41	0.00	0.00	0.00	-0.01
NASDAQ Dummy	2,175	0.64	0.48	0.00	1.00	1.00	0.08***
Market Capitalization	2,296	0.20	1.02	0.00	0.00	0.00	-0.06
Std. Underpricing$_{[-30,-1]}$	2,414	0.23	0.14	0.14	0.19	0.29	0.00
Std. Price Revision$_{[-30,-1]}$	2,415	0.17	0.09	0.12	0.16	0.20	-0.01***
Std. NASDAQ Ret.$_{[-30,-1]}$	2,421	0.01	0.01	0.01	0.01	0.01	0.00***
ln(Off / Out)	2,147	0.03	0.07	0.00	0.00	0.02	0.00
Amended Offer Revision	2,263	-0.02	0.13	-0.08	0.00	0.06	0.00
Selling Fee / Proceeds	1,145	1.81	1.64	1.23	1.40	1.42	0.14
Pure Primary Dummy	2,315	0.73	0.44	0.00	1.00	1.00	-0.01

Summary Statistics (continued)

	N	Mean	Std. Dev.	25%	50%	75%	Diff.
Centrality and Ownership Variables							
Avg. Underwriter Centrality	2,421	0.18	0.14	0.07	0.17	0.28	0.03***
Lead Underwriter Centrality	2,421	0.20	0.15	0.06	0.17	0.30	0.04***
Percent Inst. Own	2,038	0.37	0.28	0.18	0.31	0.51	0.01
Percent Big Three	2,038	0.01	0.03	0.00	0.00	0.02	0.00***
Financial and CSR Controls							
Operating CF / CAPEX	2,294	107.67	3,635.70	-14.23	-0.46	1.82	1,735.59
Operating ROA	1,597	0.74	51.41	-0.48	0.03	0.13	-2.06
R&D / Assets	2,310	0.16	0.54	0.00	0.01	0.16	0.02
PPE / Assets	2,271	0.17	0.23	0.02	0.06	0.21	-0.06***
Total Debt / Assets	2,304	0.24	0.58	0.00	0.08	0.35	-0.03
Debt / EBITDA	2,249	1.26	26.40	0.00	0.00	1.60	1.39
Debt / NWC	2,023	-1.82	99.99	0.00	0.00	0.51	1.94
Current Ratio	2,029	8.33	109.96	1.40	2.62	6.01	-2.75
Quick Ratio	2,012	8.13	110.43	1.12	2.30	5.75	-2.67
Cash Ratio	2,033	7.36	109.86	0.37	1.49	5.10	-2.59
CSR Score	1,053	10.48	1.16	10.00	11.00	11.00	0.43***
Director Characteristics							
Fraction Female	2,421	0.06	0.11	0.00	0.00	0.13	0.16***
Avg. Director Age	2,376	53.09	5.53	49.38	53.11	56.80	0.42*
Avg. Director Skills	2,389	2.53	1.07	1.75	2.45	3.25	0.12***
Avg. Director Bio. Length	2,389	943.87	353.92	689.86	895.73	1158.73	11.01
Avg. Directors with Doctorate	2,389	0.16	0.19	0.00	0.11	0.25	0.04***
Avg. Directors with Masters	2,389	0.27	0.23	0.05	0.25	0.43	0.01
Std. Director Age	2,334	8.94	3.05	6.90	8.96	10.96	-0.11
Std. Director Skills	2,386	1.37	0.50	1.04	1.33	1.67	0.03
Std. Director Bio. Length	2,386	317.55	175.79	197.59	281.02	394.41	-9.16
Std. Directors with Doctorate	2,386	0.25	0.22	0.00	0.32	0.46	0.04***
Std. Directors with Masters	2,386	0.35	0.21	0.20	0.45	0.52	0.02**
Std. Ethnicity	1,500	2.70	1.48	1.97	2.87	3.76	-0.17**
Std. Religion	1,500	3.27	1.10	3.02	3.58	3.95	-0.09
Std. Language	1,500	1.39	2.52	0.00	0.00	2.24	0.05

Notes: This table displays summary statistics of the IPO, firm, and director characteristics of the IPOs in our sample. The rightmost column reports differences in the mean values between gender-diverse board IPOs and non-diverse board IPOs, with the *p*-values from corresponding difference-in-means tests denoted by *, **, and *** for statistical significance at the 10%, 5%, and 1% levels, respectively. Variables are defined in Appendix A.

Table 2
Effect of Board Gender Diversity on IPO Underpricing

	Standard Sample			E-Balanced
	(1)	(2)	(3)	(4)
Gender-Diverse	4.316***	2.623**	2.556**	2.508**
	(3.106)	(2.506)	(2.384)	(2.058)
ln(Sales)		-0.136	-0.289	-0.514
		(-0.625)	(-0.940)	(-1.190)
Offer Price Revision		66.414***	39.695***	37.642***
		(7.349)	(4.574)	(4.660)
ln(News)		0.727**	-0.977**	-0.919*
		(2.306)	(-2.031)	(-1.685)
Total Debt / Assets		-1.576**	0.088	0.319
		(-2.140)	(0.129)	(0.436)
IB Market Share		-1.573	0.626	-1.319
		(-0.651)	(0.178)	(-0.337)
Avg. Underpricing$_{[-30,-1]}$		36.669***	-17.120*	-22.277*
		(5.040)	(-1.655)	(-1.944)
Avg. Price Revision$_{[-30,-1]}$		-22.360**	-10.188	-8.125
		(-2.267)	(-1.171)	(-0.999)
Prior Market Return		-19.417	-26.124	-15.938
		(-0.825)	(-0.951)	(-0.455)
ln(Ret / Off)		8.156***	3.800**	4.942***
		(8.779)	(2.318)	(2.725)
Offer Revision Flag		-0.100	-0.984***	-1.060***
		(-0.993)	(-6.715)	(-6.574)
ln(Industry Mkt / Sales)		-0.330	0.232	0.133
		(-1.359)	(0.879)	(0.425)
ln(Offer Cap./Sales)		0.254	0.256	0.153
		(1.329)	(1.125)	(0.472)
Avg. Industry Ret.$_{[-30,-1]}$		1.701	-0.517	-1.440
		(0.891)	(-0.295)	(-0.651)
Std. Industry Ret.$_{[-30,-1]}$		-0.250	-0.158	0.491
		(-0.257)	(-0.104)	(0.288)
Avg. NASDAQ Ret.$_{[-30,-1]}$		0.092**	0.114**	0.115**
		(2.148)	(2.464)	(2.012)
All Additional Controls			✓	✓
Adj. R-Square	0.005	0.307	0.385	0.375
Observations	2,421	2,421	2,419	2,419

Notes: The dependent variable in all columns is an IPO's underpricing on the first trading date. The focal regressor is the indicator variable *Gender-Diverse*. Column (1) present results from the univariate regression of underpricing on board gender diversity. In Columns (2)–(4), we control for the 15 robust determinants of underpricing identified by Butler et al. (2014). In Columns (3)–(4), we also control for industry and year fixed effects, as well as 33 additional determinants of underpricing, director characteristics, and firm characteristics, including those mentioned by Loughran and Ritter (2004), along with 13 ethnic group controls, 11 religious group controls, 34 primary-language group controls, and the 9 financial controls mentioned by Glushkov et al. (2018). Column (4) uses an entropy-balanced sample following the procedure in Hainmueller (2012). Standard errors are clustered by industry-year, using two-digit SIC code industry classifications. *t*-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix A.

Table 3
Effect of Board Gender Diversity on IPO Underpricing Across Time

	Decade Splits			Five-Year Splits				
	2000–2009	2010–2019	All Years	2000–2004	2005–2009	2010–2014	2015–2019	All Years
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender-Diverse	0.855	3.424**	0.678	0.770	0.836	6.945***	0.112	0.931
	(0.617)	(2.300)	(0.461)	(0.329)	(0.624)	(3.731)	(0.050)	(0.357)
Gender-Diverse × (2010–2019)			3.443					
			(1.589)					
Gender-Diverse × (2005–2009)								-0.681
								(-0.229)
Gender-Diverse × (2010–2014)								6.903**
								(2.188)
Gender-Diverse × (2015–2019)								0.111
								(0.031)
ln(Sales)	-0.610	-0.025	-0.150	-1.066	-0.298	-0.444	0.091	-0.150
	(-1.417)	(-0.106)	(-0.688)	(-0.729)	(-1.196)	(-1.579)	(0.258)	(-0.688)
Offer Price Revision	75.222***	56.960***	66.413***	82.006***	60.855***	55.092***	64.632***	66.890***
	(6.071)	(6.210)	(7.382)	(4.994)	(6.195)	(4.803)	(7.669)	(7.517)
ln(News)	0.372	3.405**	0.656*	-0.208	1.047**	0.333	5.204**	0.562
	(0.843)	(1.984)	(1.686)	(-0.281)	(2.238)	(0.145)	(2.265)	(1.408)
IB Market Share	0.371	-5.294**	-1.717	-2.754	3.311	-6.112	-5.382*	-2.259
	(0.093)	(-2.182)	(-0.677)	(-0.439)	(1.104)	(-1.598)	(-1.900)	(-0.859)
Total Debt / Assets	-0.580	-2.102***	-1.533**	-2.773	-0.628	-2.306***	-2.379	-1.445*
	(-0.520)	(-2.809)	(-2.037)	(-1.026)	(-0.664)	(-3.535)	(-0.677)	(-1.850)
Avg. Underpricing$_{[-30,-1]}$	47.393***	3.441	36.853***	45.862***	-9.745	13.411	-9.490	32.485***
	(7.238)	(0.426)	(4.959)	(5.099)	(-0.813)	(1.466)	(-0.766)	(4.706)
Avg. Price Revision$_{[-30,-1]}$	-34.940***	-4.461	-22.899**	-42.137***	20.951	-12.043	15.073	-20.145**
	(-2.654)	(-0.462)	(-2.228)	(-2.694)	(1.617)	(-1.061)	(0.873)	(-1.968)
Prior Market Return	-41.344	14.234	-20.038	-95.125*	1.908	-25.445	33.993	-26.635
	(-1.412)	(0.391)	(-0.827)	(-1.925)	(0.077)	(-0.531)	(0.502)	(-1.076)
ln(Ret / Off)	9.523***	7.187***	8.181***	11.035***	5.291***	7.909***	7.038***	8.180***
	(5.911)	(6.232)	(8.748)	(4.163)	(4.349)	(5.927)	(4.077)	(8.815)
Offer Revision Flag	-0.193	-0.025	-0.103	-0.169	-0.113	0.023	-0.080	-0.099
	(-1.536)	(-0.218)	(-1.021)	(-1.243)	(-0.777)	(0.155)	(-0.507)	(-1.003)
ln(Industry Mkt / Sales)	-0.033	-0.420	-0.327	-0.019	-0.157	-0.720**	0.101	-0.265
	(-0.116)	(-1.194)	(-1.385)	(-0.035)	(-0.553)	(-2.042)	(0.163)	(-1.133)
ln(Offer Cap./Sales)	-0.049	0.237	0.241	-0.051	-0.329	0.471	-0.111	0.242
	(-0.113)	(1.133)	(1.281)	(-0.038)	(-1.475)	(1.420)	(-0.396)	(1.251)
Avg. Industry Ret.$_{[-30,-1]}$	-2.985	5.600**	1.624	-2.958	-3.997	7.271*	3.332	1.647
	(-1.150)	(2.108)	(0.846)	(-0.612)	(-1.471)	(1.756)	(1.149)	(0.874)
Std. Industry Ret.$_{[-30,-1]}$	0.362	-2.803**	-0.253	2.185	-1.709	-1.083	-3.592*	-0.368
	(0.366)	(-2.171)	(-0.271)	(1.274)	(-1.651)	(-0.730)	(-1.734)	(-0.417)
Avg. NASDAQ Ret.$_{[-30,-1]}$	0.124**	0.020	0.094**	0.169**	0.043	0.089	-0.056	0.103**
	(2.352)	(0.335)	(2.117)	(2.453)	(1.033)	(1.061)	(-0.615)	(2.264)
Adj. R-Square	0.395	0.255	0.307	0.389	0.402	0.341	0.189	0.310
Observations	1,114	1,307	2,421	521	593	673	634	2,421

Notes: The dependent variable in all columns is an IPO's underpricing on the first trading date. We control for the 15 robust determinants of underpricing mentioned by Butler et al. (2014) in all specifications. We run separate regressions for IPOs in the 2000s and the 2010s in Columns (1) and (2), respectively. In Column (3), we interact the *Gender-Diverse* indicator with an indicator equal to one for deals in the 2010s, *(2010–2019)*. In Columns (4)–(7), we run separate regressions for IPOs in different five-year subsamples. And in Column (8) we interact the *Gender-Diverse* indicator with indicators equal to one for deals in the separate five-year subsamples. Standard errors are clustered by industry-year, using two-digit SIC code industry classifications. *t*-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix A.

Table 4
Effect of Board Gender Diversity on Other IPO Outcomes

Panel A: Initial File Price

	Standard Sample			E-Balanced
	(1)	(2)	(3)	(4)
Gender-Diverse	0.189	0.039	-0.156	-0.224
	(0.738)	(0.157)	(-0.614)	(-0.786)
Butler et al. (2014) Controls		✓	✓	✓
All Additional Controls			✓	✓
Adj. R-Square	-0.000	0.185	0.355	0.337
Observations	2,314	2,314	2,311	2,311

Panel B: Offer Price Revision

	Standard Sample			E-Balanced
	(1)	(2)	(3)	(4)
Gender-Diverse	-0.003	-0.008	-0.001	-0.000
	(-0.384)	(-1.191)	(-0.250)	(-0.023)
Butler et al. (2014) Controls		✓	✓	✓
All Additional Controls			✓	✓
Adj. R-Square	-0.000	0.390	0.609	0.615
Observations	2,314	2,314	2,311	2,311

Panel C: Offer Price

	Standard Sample			E-Balanced
	(1)	(2)	(3)	(4)
Gender-Diverse	0.429	0.044	-0.101	-0.133
	(1.486)	(0.180)	(-0.414)	(-0.488)
Butler et al. (2014) Controls		✓	✓	✓
All Additional Controls			✓	✓
Adj. R-Square	0.001	0.291	0.460	0.444
Observations	2,421	2,421	2,419	2,419

Notes: The dependent variable in Panel A is the mid-point of the initial file price range. The dependent variable in Panel B is the percent change in price from the mid-point of the initial file price range to the final offer price, and the dependent variable in Panel C is the final offer price. The focal regressor is the indicator variable *Gender-Diverse*. In Columns (2)–(4), we control for the 15 robust determinants of underpricing identified by Butler et al. (2014). In Columns (3)–(4), we include year fixed effects and industry fixed effects and 33 additional determinants of underpricing, director characteristics, and firm characteristics, including those mentioned by Loughran and Ritter (2004), along with 13 ethnic group controls, 11 religious group controls, 34 primary-language group controls, and the 9 financial controls mentioned by Glushkov et al. (2018). Column (4) uses an entropy-balanced sample following the procedure in Hainmueller (2012). Standard errors are clustered by industry-year, using two-digit SIC code industry classifications. *t*-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix A.

Table 5
Effect of Board Gender Diversity on Other IPO Outcomes Across Time

Panel A: Initial File Price

	Decade Splits			Five-Year Splits				
	2000–2009	2010–2019	All Years	2000–2004	2005–2009	2010–2014	2015–2019	All Years
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender-Diverse	-0.421	0.335	-0.474	-0.198	-0.590	0.170	0.464	-0.372
	(-1.176)	(1.060)	(-1.348)	(-0.387)	(-1.422)	(0.352)	(1.401)	(-0.686)
Gender-Diverse × (2010–2019)			0.939**					
			(2.021)					
Gender-Diverse × (2005–2009)								-0.226
								(-0.329)
Gender-Diverse × (2010–2014)								0.519
								(0.730)
Gender-Diverse × (2015–2019)								1.212*
								(1.896)
Butler et al. (2014) Controls	✓	✓	✓	✓	✓	✓	✓	✓
Adj. R-Square	0.181	0.211	0.187	0.143	0.322	0.168	0.296	0.187
Observations	1,033	1,281	2,314	515	518	666	615	2,314

Panel B: Offer Price Revision

	Decade Splits			Five-Year Splits				
	2000–2009	2010–2019	All Years	2000–2004	2005–2009	2010–2014	2015–2019	All Years
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender-Diverse	-0.006	-0.008	-0.007	-0.019	0.007	-0.027	0.013*	-0.018
	(-0.562)	(-0.926)	(-0.661)	(-1.266)	(0.501)	(-1.631)	(1.737)	(-1.121)
Gender-Diverse × (2010–2019)			-0.001					
			(-0.084)					
Gender-Diverse × (2005–2009)								0.023
								(1.063)
Gender-Diverse × (2010–2014)								-0.006
								(-0.263)
Gender-Diverse × (2015–2019)								0.027
								(1.497)
Butler et al. (2014) Controls	✓	✓	✓	✓	✓	✓	✓	✓
Adj. R-Square	0.413	0.397	0.390	0.364	0.511	0.396	0.415	0.391
Observations	1,033	1,281	2,314	515	518	666	615	2,314

Panel C: Offer Price

	Decade Splits			Five-Year Splits				
	2000–2009	2010–2019	All Years	2000–2004	2005–2009	2010–2014	2015–2019	All Years
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender-Diverse	-0.317	0.280	-0.342	-0.385	-0.159	-0.129	0.715**	-0.580
	(-1.020)	(0.832)	(-1.112)	(-0.784)	(-0.420)	(-0.228)	(2.227)	(-1.242)
Gender-Diverse × (2010–2019)			0.720					
			(1.578)					
Gender-Diverse × (2005–2009)								0.457
								(0.744)
Gender-Diverse × (2010–2014)								0.393
								(0.548)
Gender-Diverse × (2015–2019)								1.564***
								(2.695)
Butler et al. (2014) Controls	✓	✓	✓	✓	✓	✓	✓	✓
Adj. R-Square	0.318	0.292	0.292	0.267	0.426	0.276	0.342	0.293
Observations	1,114	1,307	2,421	521	593	673	634	2,421

Notes: The dependent variable in Panel A is the mid-point of the initial file price range. The dependent variable in Panel B is the percent change in price from the initial file price to the final offer price, and the dependent variable in Panel C is the final offer price. The specification structure is analogous to that in Table 3. Standard errors are clustered by industry-year, using two-digit SIC code industry classifications. *t*-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix A.

Table 6
Effect of Board Gender Diversity on Institutional Ownership Across Time

Panel A: Ownership of all Institutional Investors

	Decade Splits			Five-Year Splits				
	2000–2009	2010–2019	All Years	2000–2004	2005–2009	2010–2014	2015–2019	All Years
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender-Diverse	-0.013	0.040**	-0.012	-0.024*	0.000	0.037	0.008	-0.028*
	(-1.097)	(2.082)	(-0.974)	(-1.897)	(0.006)	(1.496)	(0.273)	(-1.957)
Gender-Diverse × (2010–2019)			0.053**					
			(2.306)					
Gender-Diverse × (2005–2009)								0.035
								(1.334)
Gender-Diverse × (2010–2014)								0.055*
								(1.858)
Gender-Diverse × (2015–2019)								0.048
								(1.556)
Butler et al. (2014) Controls	✓	✓	✓	✓	✓	✓	✓	✓
Adj. R-Square	0.179	0.110	0.141	0.209	0.153	0.101	0.129	0.163
Observations	1,068	1,103	2,171	578	490	590	513	2,171

Panel B: Ownership of the Big Three Institutions

	Decade Splits			Five-Year Splits				
	2000–2009	2010–2019	All Years	2000–2004	2005–2009	2010–2014	2015–2019	All Years
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender-Diverse	-0.000	0.005**	-0.000	0.000	-0.000	0.003	0.005	0.000
	(-0.224)	(2.281)	(-0.214)	(0.107)	(-0.595)	(1.356)	(1.431)	(0.309)
Gender-Diverse × (2010–2019)			0.005**					
			(2.222)					
Gender-Diverse × (2005–2009)								-0.001
								(-0.914)
Gender-Diverse × (2010–2014)								0.002
								(0.877)
Gender-Diverse × (2015–2019)								0.006
								(1.547)
Butler et al. (2014) Controls	✓	✓	✓	✓	✓	✓	✓	✓
Adj. R-Square	0.079	0.080	0.146	0.086	0.111	0.035	0.117	0.157
Observations	1,068	1,103	2,171	578	490	590	513	2,171

Panel C: Ownership of Democratic-Leaning Institutional Investors

	Decade Splits			Five-Year Splits				
	2000–2009	2010–2019	All Years	2000–2004	2005–2009	2010–2014	2015–2019	All Years
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender-Diverse	-0.014	0.038**	-0.014	-0.025*	-0.001	0.033	0.017	-0.031**
	(-1.143)	(2.061)	(-1.139)	(-1.932)	(-0.030)	(1.246)	(0.676)	(-2.137)
Gender-Diverse × (2010–2019)			0.057**					
			(2.524)					
Gender-Diverse × (2005–2009)								0.037
								(1.411)
Gender-Diverse × (2010–2014)								0.061**
								(2.020)
Gender-Diverse × (2015–2019)								0.059**
								(2.085)
Butler et al. (2014) Controls	✓	✓	✓	✓	✓	✓	✓	✓
Adj. R-Square	0.184	0.084	0.112	0.213	0.160	0.080	0.096	0.124
Observations	1,068	1,103	2,171	579	489	590	513	2,171

Notes: The dependent variable in Panel A is the institutional ownership of the firm's shares. The dependent variable in Panel B is the fraction of the firm's shared that are owned by Vanguard, State Street, and BlackRock. The dependent variable in Panel C is the fraction of the firm's shares that are owned by institutional investors with headquarters in Democratic-leaning states. The specification structure is analogous to that in Table 3. Standard errors are clustered by industry-year, using two-digit SIC code industry classifications. *t*-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix A.

Table 7
Effect of Board Gender Diversity on Future Performance Across Time

Panel A: Accounting Performance

	Decade Splits			Five-Year Splits				
	2000–2009	2010–2019	All Years	2000–2004	2005–2009	2010–2014	2015–2019	All Years
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender-Diverse	0.047	0.415*	0.068	0.142	-0.015	0.348*	0.388	0.103
	(0.569)	(1.880)	(0.744)	(0.922)	(-0.383)	(1.758)	(1.459)	(0.660)
Gender-Diverse × (2010–2019)			0.381*					
			(1.898)					
Gender-Diverse × (2005–2009)								-0.058
								(-0.319)
Gender-Diverse × (2010–2014)								0.320
								(1.234)
Gender-Diverse × (2015–2019)								0.376
								(1.106)
Butler et al. (2014) Controls	✓	✓	✓	✓	✓	✓	✓	✓
Adj. R-Square	0.115	0.061	0.051	0.127	0.155	0.127	0.001	0.050
Observations	998	1,191	2,189	493	505	637	554	2,189

Panel B: Accounting Restatements

	Decade Splits			Five-Year Splits				
	2000–2009	2010–2019	All Years	2000–2004	2005–2009	2010–2014	2015–2019	All Years
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender-Diverse	0.047	-0.019	0.045	0.024	0.075	0.003	-0.005	0.016
	(1.526)	(-0.625)	(1.492)	(0.617)	(1.600)	(0.063)	(-0.141)	(0.416)
Gender-Diverse × (2010–2019)			-0.069*					
			(-1.652)					
Gender-Diverse × (2005–2009)								0.059
								(1.011)
Gender-Diverse × (2010–2014)								-0.017
								(-0.289)
Gender-Diverse × (2015–2019)								-0.031
								(-0.586)
Butler et al. (2014) Controls	✓	✓	✓	✓	✓	✓	✓	✓
Adj. R-Square	0.036	0.028	0.037	0.001	0.064	0.020	0.022	0.042
Observations	1,114	1,307	2,421	521	593	673	634	2,421

Panel C: Lawsuits

	Decade Splits			Five-Year Splits				
	2000–2009	2010–2019	All Years	2000–2004	2005–2009	2010–2014	2015–2019	All Years
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender-Diverse	-0.018	0.034	-0.032	-0.012	-0.024	0.069	0.052	0.003
	(-0.334)	(0.667)	(-0.590)	(-0.145)	(-0.306)	(0.893)	(0.912)	(0.038)
Gender-Diverse × (2010–2019)			0.080					
			(1.099)					
Gender-Diverse × (2005–2009)								-0.067
								(-0.578)
Gender-Diverse × (2010–2014)								0.123
								(1.063)
Gender-Diverse × (2015–2019)								0.033
								(0.324)
Butler et al. (2014) Controls	✓	✓	✓	✓	✓	✓	✓	✓
Adj. R-Square	0.053	0.058	0.054	0.106	0.009	0.088	0.047	0.062
Observations	1,114	1,307	2,421	521	593	673	634	2,421

Notes: The dependent variable in Panel A is the firm's industry- and size-adjusted return on assets two years after the IPO. The dependent variable in Panel B is the firm's number of future accounting restatements up to five years after the IPO. The dependent variable in Panel C is the firm's number of lawsuits up to five years after the IPO. The specification structure is analogous to that in Table 3. Standard errors are clustered by industry-year, using two-digit SIC code industry classifications. *t*-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix A.

A. Appendix: Variable Definitions and Additional Analysis

Variable Definitions

Variable	Definition	Source
Main Regressor and Outcomes		
Gender-Diverse	This equals one if there is at least one woman on the board, and zero otherwise.	Kenney-Patton
Underpricing	The percentage change in the price of a share of stock on the first trading date of the IPO from offer to close.	Thomson One/SDC
Unrealized Proceeds	The price change from the offer price to the closing first-day market price, multiplied by the number of shares issued (in $ millions).	Thomson One/SDC
Offer Price	The final offer price of the IPO.	Thomson One/SDC
Mid-Point of Initial File Price Range	The initial file price of the IPO, or the mid-point between the low price and the high price of the initial file price range.	Thomson One/SDC
Main Controls		
ln(Sales)	Equal to the natural logarithm of the firm's sales.	Compustat
Offer Price Revision	We follow Hanley (1993) and measure this as the percent difference between the expected offer price and the actual offer price, where the expected offer price is equal to the mid-point of the file price range.	Thomson One/SDC
ln(News)	Equal to the natural log of one plus the number of unique new articles published about the company in the six months prior to the IPO. We begin with the values provided by Butler et al. (2014), and then we fill in missing observations using a query of Google News archives.	Google News
Total Debt / Assets	Long-term debt plus debt in current liabilities divided by assets.	Compustat
IB Market Share	This equals the ratio between the proceeds that went to lead investment bank and the total proceeds from the IPO (sum of all markets).	Thomson One/SDC
Avg. Underpricing$_{[-30,-1]}$	The average IPO first trading day return in the 30 days prior to the IPO issue date.	Thomson One/SDC
Avg. Price Revision$_{[-30,-1]}$	The average *Offer Price Change* of IPOs in the 30 days prior to the IPO issue date.	Thomson One/SDC
Prior Market Return	Buy-and-hold return of the equal-weighted CRSP market index in the three weeks leading up to the IPO date using daily data. Our results are very similar if we instead use the value-weighted CRSP market index.	CRSP
ln(Ret / Off)	Equal to the natural log of one plus the number of secondary shares retained divided by the total number of shares offered (sum of all markets).	Thomson One/SDC
Offer Revision Flag	Equals the *Offer Price Change* if the *Offer Price Change* < 0; otherwise it equals zero.	Thomson One/SDC
ln(Industry Mkt / Sales)	The rolling 12-month average of the industry market value to sales ratio where market value is equal to the firm's first closing share price multiplied by the number of shares of stock outstanding. IPOs are assigned to one of the 49 Fama-French industries using SIC codes.	Compustat
ln(Offer Cap. / Sales)	The natural log of the offer price times the number of shares outstanding, divided the annual value of firm sales.	Thomson One/SDC
Avg. Industry Return$_{[-30,-1]}$	The average return in a given industry in the 30 days prior to the IPO issue date based on Fama-French industry returns. IPOs are assigned to one of the 49 Fama-French industries using SIC codes.	Ken French Website
Std. Industry Return$_{[-30,-1]}$	The standard deviation of the returns in a given industry in the 30 days prior to the IPO issue date based on Fama-French industry returns. IPOs are assigned to one of the 49 Fama-French industries using SIC codes.	Ken French Website
Avg. NASDAQ Return$_{[-30,-1]}$	The average NASDAQ composite return in the 30 days prior to the IPO issue date.	CRSP
Additional Controls		
ln(Assets)	Equal to the natural logarithm of the firm's assets.	Compustat
ln(Firm Age)	Equal to the natural log of one plus the age of the firm in years (i.e., the number of years between the issue date and the founding date).	Jay Ritter's Website
Top-Tier Underwriter	Equal to one if the lead underwriter is either Goldman Sachs, Morgan Stanley, or JP Morgan, and zero otherwise. This designation is motivated by materials on Jay Ritter's website.	Thomson One/SDC
Share Overhang	Our overhang variable is the same as that in Bradley and Jordan (2002), which equals the ratio of retained shares to the public float (i.e., retained shares to issued shares).	Thomson One/SDC
VC Dummy	Equal to one if the firm has venture capital funding, and zero otherwise. From Jay Ritter's November 16th, 2020 IPO database.	Jay Ritter's Website
Internet Dummy	Equal to one if the firm is an internet-based company, and zero otherwise. From Jay Ritter's November 16th, 2020 IPO database.	Jay Ritter's Website
Tech Dummy	Following Loughran and Ritter (2004), equal to one if the firm's SIC code is one of the following: 3571, 3572, 3575, 3577, 3578, 3661, 3663, 3669, 3671, 3672, 3674, 3675, 3677, 3678, 3679, 3812, 3823, 3825, 3826, 3827, 3829, 3841, 3845, 4812, 4813, 4899, 7371, 7372, 7373, 7374, 7375, 7378, 7379, and zero otherwise.	CRSP
NASDAQ Dummy	Equal to one if the IPO is listed on NASDAQ as defined by a CRSP exchange code equal to 3, and zero otherwise.	CRSP

Market Capitalization	Equal to the firm's first closing share price multiplied by the number of shares of stock outstanding. For firms with dual-class shares, we use data on the number of shares outstanding in Thomson One.	Thomson One/SDC
Std. Underpricing$_{[-30,-1]}$	The standard deviation of the IPO first trading day returns in the 30 days prior to the IPO issue date.	Thomson One/SDC
Std. Price Revision$_{[-30,-1]}$	The standard deviation of the *Offer Price Changes* of IPOs in 30 days prior to the IPO issue date.	Thomson One/SDC
Std. NASDAQ Return$_{[-30,-1]}$	The standard deviations of the NASDAQ composite returns in the 30 days prior to the IPO issue date based on Fama-French industry returns.	CRSP
ln(Off / Out)	Equal to the natural log of one plus the number of secondary shares offered divided by the total number of shares outstanding.	Thomson One/SDC
Amended Offer Revision	The percent difference between the amended offer price and the actual offer price, where the amended offer price is equal to the average of the highest and lowest prices in the amended file price range.	Thomson One/SDC
Selling Fee / Proceeds	Equal to the total selling concession divided by the total proceeds of the IPO.	Thomson One/SDC
Pure Primary Dummy	Equal to one if the SDC variable "prim shs as % of shs ofrd – sum of all mkts" equals 100, and zero otherwise.	Thomson One/SDC
Ownership Variables		
Percent Inst. Own	Equal to the fraction of a firm's shares owned by institutional investors in the first ownership report after the firm's IPO.	Thomson Reuters
Percent Big Three Own	Equal to the fraction of a firm's shares owned by either BlackRock, State Street, or Vanguard in the first ownership report after the firm's IPO.	Thomson Reuters
Ownership of Democratic-Leaning Investors	Equal to the fraction of a firm's shares that are owned by institutional investors with headquarters in Democratic-leaning states. This is based on the most recent (up to that point in time) general election voting outcomes of the states in which institutional investors are headquartered.	Thomson Reuters
Financial and CSR Controls		
Operating CF / CAPEX	Cash flow income before extraordinary items divided by capital expenditures.	Compustat
Operating ROA	Operating income after depreciation divided by lagged assets.	Compustat
R&D / Assets	Research and development expenditures divided by assets.	Compustat
PPE / Assets	Total net property, plant, and equipment divided by assets.	Compustat
Debt / EBITDA	Long-term debt divided by assets.	Compustat
Debt / NWC	Long-term debt divided by the difference between current assets and current liabilities.	Compustat
Current Ratio	Current assets divided by current liabilities.	Compustat
Quick Ratio	Current assets minus inventories, divided by current liabilities.	Compustat
Cash Ratio	Cash and short-term investments divided by current liabilities.	Compustat
CSR Score	We compile firm-year CSR scores using the Kinder, Lydenberg, and Domini Research & Analytics (KLD) data. To capture a firm's average level of corporate social responsibility post-IPO, we take the average of the firm's CSR score in the year of its IPO and the two subsequent years.	KLD
Director Characteristics		
Fraction Female	Equal to the number of female directors on the board divided by the board size.	Kenney-Patton
Avg. Director Age	The average age of the directors on the board in a given year.	Kenney-Patton
Avg. Director Skills	We identify director skillsets using the taxonomy of Adams, Akyol, and Verwijmeren (2018) and by searching the prospectus biographies for the strings listed therein. The authors identify twenty different skills commonly held by directors, so our number of skills variable takes on discrete values from zero to twenty. We then consider the average number of skills possessed by the directors on the board in a given year.	Kenney-Patton
Avg. Director Bio. Length	The average number of characters, including spaces, in the directors' IPO prospectus biographies for the directors on the board in a given year.	Kenney-Patton
Avg. Directors with Doctorate	The number of directors on the board with a Doctorate degree, divided by the total number of directors on the board.	Kenney-Patton
Avg. Directors with Master's	The number of directors on the board with a Masters degree, divided by the total number of directors on the board.	Kenney-Patton
Avg. Ethnicity$_i$	Number of directors on the board in ethnic group i, divided by the total number of directors on the board. We classify directors in one of thirteen different ethnic groups based on the ethnic encoding process of List Service Direct, which uses directors' first, middle, and last names to determine the most likely ethnicity of the director.	List Service Direct
Avg. Religion$_i$	Number of directors on the board in religious group i, divided by the total number of directors on the board. We classify directors in one of eleven different religious groups based on the ethnic encoding process of List Service Direct, which uses directors' first, middle, and last names to determine the most likely religion of the director.	List Service Direct

Avg. Language$_i$	Number of directors on the board in primary-language group i, divided by the total number of directors on the board. We classify directors in one of thirty-four different primary-language groups based on the ethnic encoding process of List Service Direct, which uses directors' first, middle, and last names to determine the most likely primary-language of the director.	List Service Direct
Std. Director Age	The standard deviation of the ages of the directors on the board in a given year.	Kenney-Patton
Std. Director Skills	We identify director skillsets using the taxonomy of Adams, Akyol, and Verwijmeren (2018) and by searching the prospectus biographies for the strings listed therein. The authors identify twenty different skills commonly held by directors, so our number of skills variable takes on discrete values from zero to twenty. We then take the standard deviation of the number of skills possessed by the directors on the board in a given year.	Kenney-Patton
Std. Director Bio. Length	The standard deviation of the number of characters, including spaces, in the directors' IPO prospectus biographies for the directors on the board in a given year.	Kenney-Patton
Std. Directors with Doctorate	The standard deviation of the number of directors on the board with a Doctorate degree.	Kenney-Patton
Std. Directors with Master's	The standard deviation of the number of directors on the board with a Master's degree.	Kenney-Patton
Std. Ethnicity	The standard deviation of the ethnicities of the directors, where directors are classified into one of thirteen different ethnic groups based on the ethnic encoding process of List Service Direct, which uses directors' first, middle, and last names to determine the most likely ethnicity of the director.	List Service Direct
Std. Religion	The standard deviation of the religions of the directors, where directors are classified into one of eleven different religious groups based on the ethnic encoding process of List Service Direct, which uses directors' first, middle, and last names to determine the most likely religion of the director.	List Service Direct
Std. Language	The standard deviation of the ethnicities of the directors, where directors are classified into one of thirty-four different primary-language groups based on the ethnic encoding process of List Service Direct, which uses directors' first, middle, and last names to determine the most likely primary-language of the director.	List Service Direct
Other Variables		
Post	Equal to one if the IPO issue date is on or after January 1st, 2010, and zero otherwise.	Thomson One/SDC
Return on Assets	Industry- and size-adjusted income before extraordinary items divided by total assets at the start of the year.	Compustat
Number of Future Restatements	For each IPO in our sample, we sum up the number of accounting restatements incurred by the firm in the five years after IPO.	Audit Analytics
Number of Future Lawsuits	For each IPO in our sample, we sum up the number of instances in which the firm was named as a defendant in a class action lawsuit in the five years after IPO.	Audit Analytics
n-Day Post-IPO BHAR	Buy-and-hold daily returns over n days (i.e., the product of one plus the daily return) less the return on the value-weighted CRSP market index over the same time period.	CRSP
Industry	Based on two-digit SIC code classifications.	Compustat

Table A.1
Entropy Balancing Statistics

Before Weighting

	Gender-Diverse			Non-Diverse		
	Mean	Variance	Skewness	Mean	Variance	Skewness
ln(Sales)	2.457	20.780	-1.087	2.666	19.570	-1.173
Offer Price Revision	-0.0206	0.0428	0.8986	-0.0132	0.0399	1.327
ln(News)	1.004	2.643	1.417	1.047	2.679	1.201
Total Debt / Assets	0.2269	0.4887	13.440	0.258	0.4139	13.07
IB Market Share	0.1105	0.0562	2.699	0.1422	0.0734	2.178
Avg. Underpricing$_{[-30,-1]}$	0.1409	0.0115	1.631	0.1422	0.0124	1.803
Avg. Price Revision$_{[-30,-1]}$	-.01023	0.0086	1.345	-0.0058	0.0106	1.439
Prior Market Return	0.0088	0.0012	0.0181	0.0089	0.0012	-0.2103
ln(Ret / Off)	1.184	0.4849	-0.0979	0.9934	0.5028	0.0677
Offer Revision Flag	-4.770	81.580	-2.357	-4.517	70.360	-2.283
ln(Industry Mkt / Sales)	7.434	8.976	-0.8181	7.232	8.874	-0.8793
ln(Offer Cap./Sales)	2.856	16.840	1.498	2.368	15.750	1.499
Avg. Industry Ret.$_{[-30,-1]}$	0.0740	0.0712	0.9413	0.0703	0.0710	0.3269
Std. Industry Ret.$_{[-30,-1]}$	1.105	0.3016	2.700	1.188	0.3915	2.383
Avg. NASDAQ Ret.$_{[-30,-1]}$	7.940	698.0	-0.3676	5.629	749.5	-0.7161

After Weighting is Applied to the Non-Diverse Group

	Gender-Diverse			Non-Diverse		
	Mean	Variance	Skewness	Mean	Variance	Skewness
ln(Sales)	2.457	20.780	-1.087	2.455	21.81	-1.073
Offer Price Revision	-0.0206	0.0428	0.8986	-0.0206	0.0389	0.6166
ln(News)	1.004	2.643	1.417	1.004	2.563	1.269
Total Debt / Assets	0.2269	0.4887	13.440	0.2271	0.2502	12.49
IB Market Share	0.1105	0.0562	2.699	0.1106	0.0543	2.725
Avg. Underpricing$_{[-30,-1]}$	0.1409	0.0115	1.631	0.1409	0.0111	1.667
Avg. Price Revision$_{[-30,-1]}$	-.01023	0.0086	1.345	-0.0102	0.0088	1.577
Prior Market Return	0.0088	0.0012	0.0181	0.0088	0.0010	-0.1066
ln(Ret / Off)	1.184	0.4849	-0.0979	1.183	0.4995	-0.0113
Offer Revision Flag	-4.770	81.580	-2.357	-4.767	74.97	-2.223
ln(Industry Mkt / Sales)	7.434	8.976	-0.8181	7.433	8.473	-0.8596
ln(Offer Cap./Sales)	2.856	16.840	1.498	2.856	18.08	1.411
Avg. Industry Ret.$_{[-30,-1]}$	0.0740	0.0712	0.9413	0.0740	0.0583	0.0682
Std. Industry Ret.$_{[-30,-1]}$	1.105	0.3016	2.700	1.106	0.2985	2.801
Avg. NASDAQ Ret.$_{[-30,-1]}$	7.940	698.0	-0.3676	7.927	618.2	-0.2805

Notes: This table displays unweighted and weighted summary statistics of the covariates used in our entropy balancing procedure. Missing values are replaced with zeros, and indicators that the value is originally missing are included. Before weighting is applied to the non-diverse group, the following mean values differ between the diverse and non-diverse groups (at the 10% level or less): *IB Market Share*, *ln(Ret / Off)*, *ln(Offer Cap./Sales)*, *Std. Industry Ret.*$_{[-30,-1]}$, and *Avg. NASDAQ Ret.*$_{[-30,-1]}$. After weighting is applied to the non-diverse group, there are no statistically significant differences in mean values between the two groups. All variables are defined in Appendix A.

Table A.2
Effect of Board Gender Diversity on Unrealized IPO Proceeds

	Standard Sample			E-Balanced
	(1)	(2)	(3)	(4)
Gender-Diverse	15.854**	15.071**	8.400**	7.813*
	(2.095)	(2.007)	(2.037)	(1.957)
ln(Sales)		8.781***	2.379	2.211
		(3.367)	(1.490)	(1.185)
Offer Price Revision		176.963***	50.872	32.082
		(4.158)	(1.429)	(0.888)
ln(News)		-0.084	1.352	2.405
		(-0.051)	(0.431)	(0.737)
Total Debt / Assets		4.128	9.205**	8.628**
		(1.377)	(2.373)	(2.185)
IB Market Share		-5.418	23.940**	12.340
		(-0.765)	(2.211)	(0.824)
Avg. Underpricing$_{[-30,-1]}$		36.009	-19.029	-45.818
		(1.504)	(-0.406)	(-0.793)
Avg. Price Revision$_{[-30,-1]}$		-112.934*	-128.985*	-136.199
		(-1.883)	(-1.700)	(-1.562)
Prior Market Return		-317.503	-354.975	-420.445
		(-1.297)	(-1.421)	(-1.309)
ln(Ret / Off)		-1.197	-5.430	-8.672
		(-0.152)	(-0.585)	(-0.677)
Offer Revision Flag		-0.500	-2.886***	-3.296***
		(-1.055)	(-2.932)	(-2.779)
ln(Industry Mkt / Sales)		1.343*	3.525*	3.811
		(1.861)	(1.865)	(1.623)
ln(Offer Cap./Sales)		7.711***	3.200**	2.928*
		(3.172)	(2.141)	(1.787)
Avg. Industry Ret.$_{[-30,-1]}$		-9.507	-13.371	-16.851
		(-1.212)	(-1.449)	(-1.420)
Std. Industry Ret.$_{[-30,-1]}$		-3.493	-16.704	-20.255
		(-1.386)	(-1.555)	(-1.298)
Avg. NASDAQ Ret.$_{[-30,-1]}$		0.360***	0.442**	0.429*
		(3.031)	(2.247)	(1.829)
All Additional Controls			✓	✓
Adj. R-Square	0.003	0.078	0.154	0.148
Observations	2,331	2,331	2,328	2,328

Notes: The dependent variable in all columns is an IPO's unrealized proceeds, measured as the price change from the offer price to the closing first-day market price, multiplied by the number of shares issued. The focal regressor is the indicator variable *Gender-Diverse*. Column (1) present results from the univariate regression of unrealized proceeds on board gender diversity. In Columns (2)–(4), we control for the 15 robust determinants of underpricing identified by Butler et al. (2014). In Columns (3)–(4), we also control for industry and year fixed effects and all of the additional previously mentioned control variables. Column (4) uses an entropy-balanced sample following the procedure in Hainmueller (2012). Standard errors are clustered by industry-year, using two-digit SIC code industry classifications. *t*-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix A.

Table A.3
Robustness of the Effect of Board Gender Diversity on IPO Underpricing (Index Inclusion)

Panel A: Removing Dow Jones Industrial Average Firms

	Standard Sample			E-Balanced
	(1)	(2)	(3)	(4)
Gender-Diverse	4.256***	2.612**	2.550**	2.503**
	(3.067)	(2.493)	(2.376)	(2.052)
Butler et al. (2014) Controls		✓	✓	✓
All Additional Controls			✓	✓
Adj. R-Square	0.005	0.306	0.384	0.374
Observations	2,419	2,419	2,417	2,417

Panel B: Removing S&P 500 Firms

	Standard Sample			E-Balanced
	(1)	(2)	(3)	(4)
Gender-Diverse	4.269***	2.606**	2.521**	2.475**
	(3.074)	(2.491)	(2.363)	(2.041)
Butler et al. (2014) Controls		✓	✓	✓
All Additional Controls			✓	✓
Adj. R-Square	0.005	0.306	0.385	0.375
Observations	2,415	2,415	2,413	2,413

Panel C: Removing S&P 1,500 Firms

	Standard Sample			E-Balanced
	(1)	(2)	(3)	(4)
Gender-Diverse	3.951***	2.224**	2.311**	2.217*
	(2.712)	(2.070)	(2.034)	(1.748)
Butler et al. (2014) Controls		✓	✓	✓
All Additional Controls			✓	✓
Adj. R-Square	0.004	0.312	0.382	0.375
Observations	2,217	2,217	2,215	2,215

Notes: The dependent variable in all columns is an IPO's underpricing on the first trading date. The focal regressor is the indicator variable *Gender-Diverse*. Column (1) present results from the univariate regression of underpricing on board gender diversity. In Columns (2)–(4), we control for the 15 robust determinants of underpricing identified by Butler et al. (2014). In Columns (3)–(4), we also control for industry and year fixed effects and all of the additional previously mentioned control variables. Column (4) uses an entropy-balanced sample following the procedure in Hainmueller (2012). In Panel A, we remove IPOs of firms that appear in the Dow Jones Industrial Average after the firm's IPO, and in Panel B (Panel C) we remove IPOs of firms that appear in the S&P 500 (S&P 1,500) after the firm's IPO. Standard errors are clustered by industry-year, using two-digit SIC code industry classifications. *t*-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix A.

Table A.4
Robustness of the Effect of Board Gender Diversity on IPO Underpricing (Hot vs. Cold IPOs)

Panel A: Controlling for Hot and Cold IPOs

	Standard Sample			E-Balanced
	(1)	(2)	(3)	(4)
Gender-Diverse	4.551***	2.683**	2.530**	2.452**
	(3.336)	(2.556)	(2.372)	(2.019)
Cold IPO	-2.443	-1.027	0.680	1.879
	(-1.585)	(-0.754)	(0.503)	(1.094)
Hot IPO	3.634*	0.619	-1.376	-0.936
	(1.813)	(0.607)	(-1.187)	(-0.687)
Butler et al. (2014) Controls		✓	✓	✓
All Additional Controls			✓	✓
Adj. R-Square	0.011	0.306	0.385	0.375
Observations	2,421	2,421	2,419	2,419

Panel B: Removing Cold IPOs

	Standard Sample			E-Balanced
	(1)	(2)	(3)	(4)
Gender-Diverse	4.395***	2.580**	2.536**	2.451*
	(2.881)	(2.252)	(2.211)	(1.920)
Butler et al. (2014) Controls		✓	✓	✓
All Additional Controls			✓	✓
Adj. R-Square	0.005	0.310	0.384	0.375
Observations	2,217	2,217	2,213	2,213

Panel C: Removing Neutral IPOs

	Standard Sample			E-Balanced
	(1)	(2)	(3)	(4)
Gender-Diverse	5.587***	3.563**	3.729**	3.543**
	(2.614)	(2.508)	(2.359)	(2.133)
Butler et al. (2014) Controls		✓	✓	✓
All Additional Controls			✓	✓
Adj. R-Square	0.007	0.378	0.442	0.453
Observations	1,279	1,279	1,274	1,274

Notes: The dependent variable in all columns is an IPO's underpricing on the first trading date. The focal regressor is the indicator variable *Gender-Diverse*. Column (1) present results from the univariate regression of underpricing on board gender diversity. In Columns (2)–(4), we control for the 15 robust determinants of underpricing identified by Butler et al. (2014). In Columns (3)–(4), we also control for industry and year fixed effects and all of the additional previously mentioned control variables. Column (4) uses an entropy-balanced sample following the procedure in Hainmueller (2012). In Panel A, we add indicator variables to control for whether the IPO occurs in a cold or hot IPO market, with neutral market IPOs as the omitted category. In Panel B (Panel C) we remove cold (neutral) IPOs. Standard errors are clustered by industry-year, using two-digit SIC code industry classifications. *t*-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix A.

Table A.5
Effect of Board Gender Diversity on Post-IPO Market Efficiency Across Time

Panel A: 5-Day Post-IPO Buy-and-Hold Abnormal Returns

	Decade Splits			Five-Year Splits				
	2000–2009	2010–2019	All Years	2000–2004	2005–2009	2010–2014	2015–2019	All Years
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender-Diverse	-1.280**	0.086	-1.335**	-1.246	-1.253	-0.217	0.125	-1.400
	(-1.983)	(0.057)	(-2.049)	(-1.154)	(-1.519)	(-0.325)	(0.041)	(-1.346)
Gender-Diverse × (2010–2019)			1.464					
			(0.961)					
Gender-Diverse × (2005–2009)								0.164
								(0.124)
Gender-Diverse × (2010–2014)								1.003
								(0.822)
Gender-Diverse × (2015–2019)								1.553
								(0.556)
Butler et al. (2014) Controls	✓	✓	✓	✓	✓	✓	✓	✓
Adj. R-Square	0.011	-0.003	-0.001	0.005	0.036	0.011	-0.020	-0.001
Observations	1,029	1,143	2,172	507	522	617	526	2,172

Panel B: 10-Day Post-IPO Buy-and-Hold Abnormal Returns

	Decade Splits			Five-Year Splits				
	2000–2009	2010–2019	All Years	2000–2004	2005–2009	2010–2014	2015–2019	All Years
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender-Diverse	-2.655***	0.575	-2.666***	-3.461**	-1.958**	0.017	0.651	-3.324**
	(-3.297)	(0.220)	(-3.278)	(-2.596)	(-2.078)	(0.016)	(0.126)	(-2.567)
Gender-Diverse × (2010–2019)			3.281					
			(1.321)					
Gender-Diverse × (2005–2009)								1.335
								(0.837)
Gender-Diverse × (2010–2014)								3.084*
								(1.820)
Gender-Diverse × (2015–2019)								3.620
								(0.787)
Butler et al. (2014) Controls	✓	✓	✓	✓	✓	✓	✓	✓
Adj. R-Square	0.026	-0.004	0.000	0.017	0.042	0.015	-0.019	0.001
Observations	1,029	1,142	2,171	507	522	617	525	2,171

Panel C: 25-Day Post-IPO Buy-and-Hold Abnormal Returns

	Decade Splits			Five-Year Splits				
	2000–2009	2010–2019	All Years	2000–2004	2005–2009	2010–2014	2015–2019	All Years
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender-Diverse	-1.800	3.251	-1.626	-0.448	-3.118**	0.636	4.756	-0.373
	(-1.113)	(0.553)	(-0.998)	(-0.144)	(-2.255)	(0.365)	(0.408)	(-0.133)
Gender-Diverse × (2010–2019)			4.886					
			(0.890)					
Gender-Diverse × (2005–2009)								-2.589
								(-0.833)
Gender-Diverse × (2010–2014)								1.692
								(0.480)
Gender-Diverse × (2015–2019)								4.192
								(0.413)
Butler et al. (2014) Controls	✓	✓	✓	✓	✓	✓	✓	✓
Adj. R-Square	0.032	-0.009	-0.006	0.033	0.089	0.006	-0.023	-0.006
Observations	1,028	1,140	2,168	506	522	617	523	2,168

Notes: The dependent variable in Panels A, B, and C is the firm's 5-day, 10-day, and 25-day buy-and-hold abnormal returns, respectively, following the IPO date. The specification structure is analogous to that in Table 3. Standard errors are clustered by industry-year, using two-digit SIC code industry classifications. *t*-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix A.

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