Not the Token Woman

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Abstract

We examine gender diversity and its impact on earnings quality and firm performance and specifically whether a "token" woman benefits firms. We show firms with at least two female directors or two women in the top management team have significantly better earnings quality. No relation is documented with top management team diversity and performance but boards with two or more women have higher cash flow from operations; those with a token woman have lower cash flow from operations. Boards with higher percentages women have higher return on equity. Overall, gender diversity is associated with improved performance and earnings quality; tokenism is not.

Keywords: *Gender diversity, firm performance, earnings quality, earnings management, corporate governance*

1. Introduction

This study examines the role of board and management gender diversity in earnings quality and firm performance. The board of directors are tasked with resolving agency issues between managers and shareholders by replacing managers who do not add value and setting compensation to incentivise them to strive towards shareholders wealth maximisation (Jensen & Meckling, 1976). Different types of directors bring different beneficial resources to the firm (Hillman et al. 2000) since desirable director characteristics vary systematically with age, gender etc. (Carter et al. 2003). Gender diversity on the board may therefore play an important role in ensuring agency issues are limited and so maximise the quality of communications to shareholders and potentially firm performance. A diverse TMT also brings a diverse set of knowledge, skills and experience to the firm which may improve decision making and thus performance (Pfeffer & Salancik, 1978). This is particularly likely since the TMT are involved in everyday firm decision making and are thus more likely to be involved in earnings management decisions (to improve management pay) which would lower earnings quality.

Several countries have recognised the need for gender diversity on boards and top management teams and have set targets for organisations to meet in regards to such diversity. Specifically, the European Union has set a target of having 40% female non-executive directors in large organisations by 2020 whilst Germany recently introduced legislation mandating 30% gender diversity of non-executive directors from 2016. Norway, in turn, introduced a quota of 40% gender diversity in 2003 (for compliance by 2009) which has been met. In the case of Norway companies who do not comply with the quota face delisting. In the Australian environment, no gender quotas exist and the only guidance (from the ASX governance principles) requires companies to report on the action they have taken to promote board diversity and if their diversity has not increased, to advise why this is. A 2013 BlackRock report shows that whilst there was a small increase in the percentage of non-executive women on Australian boards (from 14.4 to 17.8 per cent) the speed of change was “at glacial pace”. Our study is therefore timely to add to the debate on gender diversity and to provide some evidence of its potential benefits.

Women are documented to be less likely to behave unethically in the workplace in order to gain financial rewards (Bernardi & Arnold, 1997; Krishnan & Parsons, 2008). Several studies have examined the role of diversity in firm performance and earnings quality with conflicting results (Adams & Ferreira, 2007; Almazan & Suarez, 2003; Krishnan & Parsons, 2008). Most of these, however, examine the benefits of boards with a "token" woman (that is, one woman on the board) and hardly any investigate diversity in the TMT. Specifically, studies typically operationalize board diversity through a dummy variable indicating that at least one female director serves on the board, or alternatively estimate the percentage of women on boards.[1] Whether a single woman on a corporate board or TMT, dominated by men who historically are part of the "old boys club" (Adams & Ferreira, 2009), will truly find a voice on the board and so influence decision making and board functioning remains an empirical question. The extant US literature, however, suggests that a single woman on the board is not associated with improved performance (Almazan & Suarez, 2003; Miller & Triana, 2009; Zahra & Stanton, 1988).

Nevertheless, Kanter (1977) shows that having two women in a meeting or organisation greatly improves the ability of these women to portray their views. These findings support that of Asch (1951) whose conformity experiments show that a lone individual is substantially more likely to conform to views of an otherwise unanimous group they believe to be incorrect. The likelihood of conformity is significantly lower when a second individual agrees with them. Therefore, a more appropriate measure of gender diversity on the board or TMT is whether there are enough women (i.e. two or more) to ensure they portray their views and fulfil their role.

In this paper, we are motivated to examine the association between diversity (implying having more than just a token women on the board / TMT) and earnings quality given firstly the premise that female directors ensure better oversight of managers (Adams et al. 2011) and more effective board communications to shareholders (Joy, 2008). Secondly, as the TMT is involved in day to day decision making; gender diversity may similarly play a role in ensuring good earnings quality. As such we also investigate whether truly diverse boards and TMTs outperform others. We suggest that the ability of female directors to serve on the board (by voicing their

[1] Whilst percentage of women on the board is likely a better measure than a simple diversity dummy, it can incorrectly signal diversity. That is, if there is one female director on a board of 4, this would be equivalent to 25% of the board being female, which is no different from having only one woman on the board.

opinions and influencing decision making) is more likely a function of a normalized board[2] (Asch, 1951) - one with at least two female directors. Similarly, TMT's with two or more women are more likely to be an environment where women can voice their opinions and so impact on performance. We examine these issues in the Australian context, where the prior literature is in its infancy and the market has several idiosyncrasies compared to the US. Briefly, approximately half of all Australian firms report a loss in any given year and this tendency to "underperform" might provide additional incentive to manage earnings. Further, a high percentage of listed Australian firms operate in the resource sector with many of these small firms in the early exploration stage, often strapped for cash, providing further incentives to manage earnings upwards. Substantial governance and disclosure-related differences therefore exist between the US and Australian environment and the role and impact of women and their monitoring of corporate boards are thus likely to differ between these two countries.

Our results confirm a positive relationship between diversity and earnings quality as well as with firm performance. These results suggest that whilst a "token" woman on the board is not associated with improved firm performance, a more gender diverse board (with two or more women) is. TMTs with more than two women also have significantly better earnings quality. In fact, boards with greater percentages of women earn 68 basis point (industry-adjusted) more in one-year-ahead return on equity and 25 basis points more in cash flow from operations. Boards with only a token woman earn, on average, 10 basis points less.

Our paper is positioned at the crossroads of three literature streams. The first relates to gender diversity and the benefits associated with having women on the board or TMT given they pay more attention to detail (Meyers-Levy, 1994), exhibit more independent thinking (Adams et al., 2011), are associated with a larger and more diverse number of alternatives being reviewed when making decisions (Carter et al., 2003) and bring different experiences and beneficial resources to the firm (Hillman et al., 2000; Hillman et al., 2007). The second relates to agency problems whereby management pursue their own interests instead of that of shareholders resulting in low earnings quality (Beatty & Harris, 1998) and poor financial performance (Agrawal &

[2] A normalized board in regards to gender diversity would be one where because there are more than one woman serving, women would no longer feel like they are the outside the group, or not really part of the board.

Knoeber, 1996). Finally, the third stream relates to resource dependence theory which suggests that different skills, knowledge and experience exist across sex, race, age etc. and that a mix of directors (managers) on the board (TMT) is therefore ideal (Hillman et al., 2000).

We compare and contrast to prior studies in the following ways. Krishnan and Parsons (2008) rank 353 Fortune 500 companies on the representation by women in top management to show that senior management gender diversity is positively associated with earnings quality. Srinidhi et al. (2011) in turn document that the presence of female directors is positively associated with earnings quality for US firms. We differ from these studies by examining the relation between gender diversity (not just having a token women, rather having at least two women on the board or TMT) and earnings quality in the Australian environment (which differs from the US in terms of regulation and disclosure quality) for both the board and TMT where the issue has not been examined to date. Adams and Ferreira (2009) employ a gender dummy and the percentage of women on the board to show that on average, gender diversity on US boards are negatively associated with performance. In the Australian context, Nguyen and Faff (2006) show a positive relation between having a token woman on the board and firm performance whilst Chapple and Humphrey (2013) document for their limited ASX300 sample that no association exists between diversity and performance. We build on these studies by employing a comprehensive sample of Australian firms to show that diversity (having more than one woman on the board/ TMT) is positively associated with performance and improved earnings quality. Taken together, we contribute to the extant literature by showing that gender diversity matters for firm performance whilst tokenism does not. We further show that gender diversity appears to be an effective measure to help mitigate agency problems as it is associated with improved earnings quality.

The rest of this paper is structured as follows: Section 2 outlines the background of the study and hypothesis development, Section 3 describes the data and method, Section 4 presents the results and discussions and Section 5 concludes.

2. Background and hypothesis development

2.1 Diversity, gender diversity and tokenism

With regards to corporate boards and TMTs, diversity can be defined as the inclusion of members who differ from others on the basis of background, race, education,

gender or experience (Herring, 2009). The aim of such diversity is to enrich perspectives and experience so as to allow improved monitoring and decision making (Cox, 1993). Better monitoring and decision making are in turn associated with lower agency costs (Jensen & Meckling, 1976). Several studies document the benefits of such diversified boards to corporations and shareholders (Carter et al. 2003; Smedley et al. 2004; Adams & Ferreira, 2009). Evidence on TMT diversity is scarcer but Krishnan and Parsons (2008) suggest they are associated with improved reporting quality in the US. Gender is one aspect of diversity that has received increased attention in recent times. Studies typically draw on agency theory (Jensen & Meckling, 1978), resource dependence theory (Pfeffer & Salancik, 1978) human capital theory (Becker, 1964) and psychological theories (Ashforth & Mael, 1989) to explain the potential role of diverse boards and TMTs.

Agency theory suggests that the role of the board is a monitoring one, aimed to resolve any issues caused by the separation of ownership and control inherent to listed firms by setting compensation contracts that realign principal and agent goals and replacing managers who do not add value (Mallin, 2004). Boards with a variety of experience, knowledge and views will likely be better equipped for such a monitoring role. Pfeffer and Salancik (1978)'s resource dependence theory propose that the board also serves as a link between the corporation and others to address environmental dependencies and that the benefits of such links includes the provision of resources and expertise as well as improved communications. Hillman et al. (2000) expand on resource dependence theory to relate to both the board and TMT and advocate that different types of directors/managers will bring different beneficial resources (and information sets) to the firm. As such, greater diversity on the board or TMT should provide greater knowledge, skills and experience (valuable resources) and so improve performance.

Women (whether directors or managers) assume different roles and bring diverse skills to the table compared to their male counterparts (Hillman et al. 2002). Human capital (organisations' combined human capability for problem solving) (Becker, 1964; Terjesen et al. 2009) should therefore be greater in gender diverse firms which will allow for greater problem solving potential and decision making. Agency theory, resource dependence theory and human capital theory therefore all predict that greater gender diversity may positively impact on firm performance and also monitoring ability (and thus earnings quality).

The social psychology theory of "social identity" (Ashworth & Mael, 1989) in contrast predicts that people seek to associate with others who are similar to them and that diversity on the board or TMT might create conflict and disharmony, limiting communication and cooperation. That is, individuals who are not part of the in-group (i.e. women) might be seen (by those in the in-group i.e. men) in a negative light lessening the extent to which existing members of the board/TMT are likely to cooperate and listen to those "outsider" views. Social identity theory therefore suggests that diverse boards or TMTs may be associated with poorer reporting quality and performance if it leads to groups incapable of making majority consensus decisions efficiently.

From a theoretical perspective there are thus differing views on whether gender diversity will enhance performance, decision making and monitoring or whether it will hinder these processes. From an empirical standpoint, innate differences between men and women relating to ethics (Bernardi & Arnold, 1997), risk-aversion (Jianakoplos & Bernasek, 2007), attention to detail (Meyers-Levy, 1994) and overconfidence (Barber & Odean, 2001; Lundeberg et al. 1992) exists. Specifically, women are shown to be more ethical and less likely to seek their own financial gain at the expense of others (Bernardi & Arnold, 1997). They are also risk-averse and even though some suggest expertise should level these differences, women who are financial experts are still more risk-averse than their male counterparts (Beckmann & Menkhoff, 2008). Women appear to avoid competition (Niederle & Vesterlund, 2007) and pay greater attention to detail whilst men commonly use heuristics in complex decisions to simplify information (Meyers-Levy, 1994). Men are found to be significantly more overconfident than women and this is especially true in areas of finance (Barber & Odean, 2001; Lundeberg et al. 1992). Daily and Dalton (2003) argue that women add unique perspectives, experiences and work styles when compared to their male counterparts and Pearce and Zahra (1991) further show increased board debates when women are present on the board. Men are also often perceived as having joined the board only as a matter of prestige and power and not because they believe they could add value to the organisation (Mace, 1971; Whisler, 1989).

Women therefore bring characteristics to teams (whether the board or top management) that differ substantially from that of their male counterparts. They might be better monitors particularly where greater attention to detail is required, act more

ethically and be less likely to make overconfident decisions. Gender diversity, however, will only benefit the company they serve when the views of these women are aired and when they feel free to express themselves.

Kanter (1977) shows that having at least two women in a meeting or organisation greatly improves the ability of these women to portray their views. This relates to Asch (1951)'s conformity studies which documents that a single individual, when faced with a view opposing that of the group, will be much less likely to confirm to this opposing view if they have one other person who shares theirs.

In Asch (1951)'s conformity studies, an experiment participant was placed in a room with seven confederates (who knew the true aim of the experiment). A simple task was assigned to all eight individuals whereby they were to read aloud which line (A, B or C) in the right card (see Figure 1) matched in length with the reference line in the first card. The confederates were all told beforehand to give the same incorrect answer and read this answer aloud before the participant announced theirs. Asch found that 75% of individual participants gave the same incorrect answer as the confederates, thus conforming to the majority view whilst aware that it was incorrect. In an extension to the experiment Asch advised one of the confederates (who read their answer before the participant) to read the correct answer (option C) and found that the rate of conformity of the participant to the incorrect answer dropped dramatically to an insignificant number.

[Insert Figure 1 about here]

These findings, applied to women on corporate boards and the TMT, suggest that a single woman is unlikely to air her views when they differ from the majority view. Whilst gender diversity therefore holds potential benefits to an organisation, we argue that the board or TMT would need more than one woman to realize these benefits.

2.2 Gender diversity and earnings quality

Earnings quality refers to the extent to which reported earnings are a true and fair reflection of the quality of the underlying accruals and cash flows (Dechow & Dichev, 2002). When earnings quality is high, investors have more accurate information upon which to base their valuation decisions. Agency problems, in turn, provide incentives

for managers to manage earnings, decreasing their quality (Beatty & Harris, 1998). In companies where the board fulfils its monitoring role appropriately, instances of earnings management are likely to be identified and rectified. This is because women pay more attention to their monitoring responsibilities and are as such better overseers of managers reporting (Adams & Ferreira, 2009). Organisational theory research further shows that gender diverse boards have more informed deliberations and discuss tougher issues than all-male boards (Clarke, 2005; Huse & Solberg, 2006; McInerney-Lacombe et al., 2008). It is therefore likely that corporate boards, where women feel comfortable to voice their opinions and call attention to any issues, are likely to be better monitors and so have lower incidences of earnings management.

Women are also shown to be more ethical and less likely to seek personal financial gain at the expense of others (Bernardi & Arnold, 1997; Krishnan & Parsons, 2008). The top management team differs from the board in that it is involved in the day to day running and decision making of the firm rather than existing in an oversight role. Earnings management decisions are made at the top management team level (rather than at the board level). A gender diverse top management team might therefore be less likely to engage in accruals-based earnings management. Gender diversity (both on the board and in top management) should therefore be positively associated with earnings quality.

Srinidhi et al. (2011) provide evidence to support this conjecture, documenting that earnings quality is higher for US firms with gender diverse boards whilst Krishnan and Parsons (2008) confirms gender diverse TMTs in US firms are associated with better earnings quality. The US environment, however, is characterised by stringent regulatory requirements aimed at improving disclosure (and thus earnings) quality and impose severe penalties for non-compliance (through the Sarbanes Oxley Act, 2002 for example). The US regulatory environment is therefore seen as being stricter than that of other countries (Adams, 2011), where much lower penalties (if any) exist for carelessness in monitoring and professional responsibilities. Australia, whilst being a developed country with good investor protection (La Porta et al., 2000) does not have the same penalties for non-compliance with disclosure requirements as the US (Law & Callum, 1997; Lee et al. 1995; Kent & Ung, 2003).[3]

[3] The prescriptive US Sarbanes Oxley Act (2002) involves severe penalties, including criminal charges, against management who provide misleading disclosures. In Australia, the provisions in CLERP9 are

Whilst strict regulation should ensure risk-averse women are less likely to manage earnings (to avoid prosecution); whether gender diversity is still positively associated with earnings quality when regulation is weaker, or not well implemented, is an empirical question.

We therefore examine the relation between gender diversity of both the board and top management team and earnings quality in Australia. We are particularly interested to determine whether gender diversity is associated with improved earnings quality. This discussion leads to our first hypothesis:

Hypothesis 1: Gender diversity is positively associated with earnings quality

2.3 Gender diversity and firm performance

As discussed earlier, women bring several potential benefits to the corporate boards and teams they serve. Adams and Ferreira (2009) find that a positive relationship exists between performance and board diversity only for those US firms with weak monitoring (i.e. poor governance). Brammer et al. (2009) also show an increased reputational effect for diverse boards and attribute this to improved relationships with key organisational stakeholders in such firms. Several studies, however, fail to find any financial benefit from a gender diverse board (Adams & Ferreira, 2007; Almazan & Suarez, 2003).

Whilst Boone and Hendricks (2009) show functional background diversity in TMTs are associated with improved firm performance they do not examine gender diversity. Talke et al. (2010) show TMT gender diversity improves US firm performance through innovation whereas Carpenter and Sanders (2002) simply documents a positive relation. Ferrier (2001) however, finds no significant relationship. The international evidence on gender diversity and performance is therefore mixed.

In the Australian context, Nguyen and Faff (2006) investigate the association between firm value, board size and gender diversity and show that the mere presence of women on the board is associated with higher firm value. Wang and Clift (2009) investigate board diversity in relation to firm performance and show that whilst larger firms have more female board members, gender and racial diversity does not

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not nearly as strict, for example, management are not required to sign-off on the quality of internal controls over financial reporting.

significantly influence performance. Top management team diversity has not been investigated in the Australian setting.

We suggest that the mixed findings with regards to board gender diversity and firm performance in prior literature stems mainly from an incorrect specification of what gender diversity entails. That is, rather than measuring the impact of a token woman (one woman), we propose, following Kanter (1977) and Asch (1951) that women will only be able to fully exert their influence when at least two women serve on the board or TMT. This discussion leads to our second hypothesis:

Hypothesis 2: A positive association exist between gender diversity and firm performance.

3. Data and method

3.1 Sample selection

Our sample selection process started with collection of diversity and other governance data from the SIRCA governance database for Australian listed firms over the period 2005 – 2010. Missing data were obtained either from Connect4 Boardroom or hand collected from firm financial statements. This yielded a sample of 5,510 firm-year observations. Next, all financial firms were excluded from the sample given their very different nature in regards to accruals (consistent with prior earnings quality studies such as Becker et al. (1998)) leaving 4,326 firm-year observations. The diversity data was then matched with financial data from the Aspect Huntley FinAnalysis database. Matching this data to performance measures produced a final sample for hypotheses relating to firm performance of 2,655 observations. Next firms with insufficient data to estimate earnings quality were eliminated and the trimmed dataset for hypotheses relating to earnings management therefore includes 2,215 firm-year observations.

3.2 Variable measurement

3.2.1 Gender diversity

Several measures of gender diversity are employed in this study. We follow other diversity studies (such as Adams & Ferreira, 2009; Brammer et al., 2009) in our first two measures of gender diversity – percentage of women on the board (*PFOB*) and a dummy variable, token (*TOKEN)*). The former is measured as the percentage of board members (at the end of the financial year) who are women whilst the latter is a

dichotomous variable with a value of one if one board member is female. Our third measure of gender diversity, *TWODIV*, is a dummy variable with a value of one if a firm has at least two women on the board and a value of zero otherwise. In terms of TMT diversity we employ the percentage of women on the TMT (*PTMT*), a "token" woman on the TMT dichotomous variable with a value of one if there is only one woman on the TMT and zero otherwise (*TOKENTMT*) and a dummy variable with a value of one if there are at least two women on the TMT and zero otherwise (*TWOTMT*).

3.2 2 Earnings quality

Earnings quality refers to the accuracy and completeness of firm financial disclosures. When managers manipulate earnings, they are unlikely to give a true picture of the firm's financial position and the quality of such earnings would therefore be low. Several studies use earnings management as a proxy for earnings quality (Bartov et al. 2000). Earnings consist of an accrual and cash flow component. Accruals have both a discretionary and non-discretionary component. Whilst the non-discretionary component stems from naturally occurring transactions in the normal course of business, discretionary accruals are decided upon by management given their judgement of the potential future cash flows to an organisation based on credit sales etc. Discretionary accruals are, however, also a commonly employed avenue through which earnings management takes place (Dechow et al. 1995). Firms with larger absolute levels of discretionary accruals are therefore considered to have low earnings quality. Discretionary accruals are therefore implemented as a proxy for earnings quality in this study. Its measurement is discussed in sections 3.2.2.1.

Based on the extant discretionary accrual literature, we identified two commonly employed measures to decompose accruals into its discretionary and non-discretionary components. These models are the "modified Jones model with book-to-market ratio and cash flows" as in Larcker and Richardson (2004) and the "modified Jones model with lagged ROA (return on assets)" as in Kothari et al. (2005). Each of these models is discussed in turn below.

3.2.2.1 Discretionary Accruals measures

Modified Jones model with book-to-market ratio and cash flow (MJBM)

The modified Jones model is an extension of the Jones (1991) model and aims to improve on criticisms of this model. Its estimation involved regressing variables on total accruals (as per equation (1) below) with discretionary accruals estimated as the residual from the regression.

$$TA_{it} = \beta_0 + \beta_1 \left(\frac{1}{AT_{it-1}}\right) + \beta_2(\Delta REV_{it} - \Delta AR_{it}) + \beta_3 PPE_{it} + \epsilon_{it} \quad (1)$$

where TA_{it} is total accruals of firm i, calculated as the difference between income before extraordinary items and operating cash flows for year *t* scaled by total assets. $AT_{it-1}$is assets at the beginning of the year; ΔREV_{it} is the change in sales from year *t-1* to *t* scaled by total assets; $\Delta AR_{it}$is the change in accounts receivable from year *t-1* to *t* scaled by total assets. PPE_{it} is gross property, plant and equipment scaled by total assets.

Criticism of the modified Jones model employed in Dechow et al. (1995) is aimed mainly at the potential measurement error associated with discretionary accruals. Larcker and Richardson (2004) therefore add the book-to-market ratio (BM) and operating cash flows (CFO) to the modified Jones model to control for expected growth in operations and current operating performance respectively. The model is specified as:

$$TA_{it} = \beta_0 + \beta_1 \left(\frac{1}{AT_{it-1}}\right) + \beta_2(\Delta REV_{it} - \Delta AR_{it}) + \beta_3 PPE_{it} + \beta_4 BM_{it} + \beta_5 CFO_{it} + \epsilon_{it} \quad (2)$$

where BM_{it} is book value of common equity over the market value of common equity. CFO_{it} is operating cash flows over total assets. All other variables are the same as defined above. Discretionary accruals is estimated as the absolute value of the residual from this regression.

Modified Jones model with lagged ROA (MLROA)

Following the Larcker and Richardson (2004) model, Kothari et al. (2005) propose that performance is potentially correlated with accruals. They therefore suggest that discretionary accrual models include a performance variable such as lagged return on assets (ROA). Their model is estimated as:

$$TA_{it} = \beta_0 + \beta_1\left(\frac{1}{AT_{it-1}}\right) + \beta_2(\Delta REV_{it} - \Delta AR_{it}) + \beta_3 PPE_{it} + \beta_4 ROA_{i\,t-1} + \epsilon_{it} \qquad (3)$$

where $ROA_{it}$is income before extraordinary items for year t over total accruals. All other variables are as previously defined.

Model coefficients for both methods are estimated from cross-sectional industry regressions by two-digit industry codes for each year using all observations available. A minimum of 10-observations for each two-digit industry code is required (Jones et al. 2008). Coefficients are estimated for each industry in each model and these coefficients are then included in the discretionary accruals models estimate for each firm. This allows for estimation of the residual from each equation which is our proxy for discretionary accruals (Jones et al. 2008). The absolute value of the residual is employed, consistent with prior literature, which suggests that higher values for earnings management proxies are indicative of earnings management and poor earnings quality.

3.2.3 Firm performance

Firm performance is measured as return on assets (*ROA*), return on equity (*ROE*) and cash flow from operations scaled by total assets (*CFTA*). Each of these measures is adjusted by subtracting the performance of the industry over the same year period and is thus industry-adjusted returns. This accounts for industry-specific events or characteristics that could drive returns. Return on assets (*ROA*) is estimated as net income before abnormal events divided by total assets whilst return on equity (*ROE*) is calculated as net income before abnormal events divided by total shareholders' equity (as in Carpenter & Sanders, 2002). Finally, cash flow from operations (*CFTA*) is estimated as cash flow from operations to total assets. It provides a measure of company economic performance which is unaffected by accrual accounting (Givoly & Hayn, 2000). Larger values of each of these variables are indicative of better performance.

3.3 Model specification

We examine whether gender diversity on both the board and TMT is associated with firm earnings quality and performance. We implement robust regression models with clustered standard errors (consistent with Petersen, 2009) and control for potential

endogeneity through a treatment effects models (for dichotomous independent variables of interest) or two-stage least squares estimation (for continuous independent variables of interest). These two procedures are discussed in further detail at the end of this section. Our first set of models regress gender diversity variables on earnings quality proxies to determine whether gender diverse firms have a significant variation from others in the extent of their earnings quality. This model can be specified as:

$$EQ_{it} = \beta_0 + \beta_1 DIVERSITY_{it} + \beta_2 BSIZE_{it} + \beta_3 PERF_{it} + \beta_4 SIZE_{it} + \beta_5 BM_{it} + \beta_5 GFC_{it} + \epsilon_{it} \quad (6)$$

where EQ_{it} is a proxy for earnings quality being a discretionary accruals measure. $DIVERSITY_{it}$ is a measure of firm gender diversity and includes either (i) the percentage of female directors on the board (*PFOB*), (ii) a dichotomous variable with a value of one if there is only one woman on the board (*TOKEN*), (iii) a female diversity dummy (*TWODIV*) with a value of one if there are at least two women on the board, (iv) the percentage of women in the top management team (PTMT), (v) a dichotomous variable with a value of one if there is only one woman on the TMT (TOKENTMT) , and (vi) a dummy variable with a value of one if there are at least two women in the TMT (TWOTMT). Our control variables include $BSIZE_{it}$, number of directors on the board, $PERF_{it}$ is firm performance (measured as industry-adjusted return of equity), $SIZE_{it}$ is the log of total assets proxying for firm size, BM_{it} is the book-to-market value of equity for each firm and GFC_{it} is a dummy variable with a value of one for the GFC (global financial crises) period, and zero otherwise. ϵ_{it} is the stochastic error term from the regression.

The second model, investigating the relation between gender diversity and firm performance is again an OLS (ordinary least squares) model with clustered standard errors and treatment effects or 2SLS to control for endogeneity. This model is estimated as:

$$PERF_{it} = \beta_0 + \beta_1 DIVERSITY_{it} + \beta_2 BSIZE_{it} + \beta_3 SIZE_{it} + \beta_4 BM_{it} + \beta_5 GFC_{it} + \epsilon_{it} \quad (7)$$

where $PERF_{it}$ is firm performance being either return on assets (*ROA*), return on equity (*ROE*) or cash flow from operations (*CFTA*), as previously defined. Other control variables are as in the first model.

3.3.1 Robust regression models, clustered standard errors, two-stage least squares estimations and treatment effect models.

Our analysis employs panel data to estimate how gender diversity impacts on earnings quality and firm performance. In such panel data sets, the residuals may be correlated across firms and time which could lead to biased OLS standard errors. Petersen (2009) shows that correct standard errors are produced (regardless of whether the effects are permanent or temporary) when clustering by firm and time. We therefore estimate all our regression models with clustered standard errors for firm and time.

A potential drawback, present in most governance studies, is that the decision to appoint a female director or management team member may be endogenous. We therefore need to control for such potential endogeneity. We do so in two different ways. First, for dichotomous endogenous variables (*TWODIV, TOKEN, TWOTMT, TOKENTMT*) a treatment effects model (Bharath et al. 2011; Greene 2000; Maddala, 1983) is implemented. This involves, in the first stage probit regression, regressing factors associated with the endogenous variable on it (called instrumental variables) in order to estimate a proposed value for the dichotomous endogenous variable. We employ board size (*BS*), number of employees (*EMP*), auditor (*ADT*) and book-to-market value (*BM*) as explanatory factors. The proposed value for the dichotomous variable is then employed in the second stage regression, which estimates the model of interest. Where diversity is represented by a continuous variable (*PFOB, PTMT*), we control for endogeneity by means of a two-stage least squares procedure with board size, number of employees, auditor, firm size and book-to-market value as instrumental variables.

4. Results and discussions

4.1 Descriptive statistics

Table 1 presents the descriptive statistics for our sample of 2,655 firm-years from 2005 - 2010[4]. 3.1% of all board directors are female, whilst 12.9% of sample firms had one woman on their board. 2.1% have at least two or more women. Some 5.56% of top management team members are women (11.5% of these have only a single

[4] As means and standard deviation values cannot be meaningfully interpreted for dichotomous variables (identifiable with a * in Table 1), we present only the percentage of sample firms with the particular characteristic.

token woman on the TMT) whilst at least 4.17% of teams have two or more women. In terms of our earnings quality (discretionary accrual) proxies, the modified Jones model with book-to-market ratio yields the highest average discretionary accrual measure (0.286), with the modified Jones with lagged ROA model's mean at (0.122). In terms of sample industry-adjusted firm performance, the mean performance measures are negative across two of the three measures employed. Specifically, return on equity (*ROE*) has a mean of -11.7% whilst that of cash flow from operations (*CFTA*) is -18.6%. Return on assets (*ROA*) has a positive mean of 7.7%. The average firm in our sample has $653,715,761 in assets, trades at a value above its book value (*BM*=0.828), has approximately 40 employees and has more than five members on their board.

[Insert Table 1 about here]

The correlation matrix (Table 2) reveals significant correlations between earnings quality measures (ρ = 0.575***) as well as between return on assets, return on equity (ρ = 0.714***), between TOKEN and PFOB (ρ = 0.712***), between TWODIV and PFOB (ρ = 0.552***) and between TOKENTMT and PTMT (ρ = 0.569***). These variables are not employed in any model simultaneously and therefore do not represent any concerns. Correlations larger than 0.5 are also observed between total assets and board size (ρ = 0.512***), number of employees (ρ = 0.756***) and auditor choice (ρ = 0.552***). The correlation between number of employees and board size (ρ = 0.481***) and auditor choice (ρ = 0.514***) is also relatively high. We therefore estimate variance inflation factors (VIF) in our models to determine whether multicollinearity is a concern. Results indicate all VIF figures are well below ten indicating such concerns are not warranted.

[Insert Table 2 about here]

Next, in untabulated t-tests, we compare all-male boards to those with at least one female director to determine whether any significant differences exist in earnings management or performance for these. Some 84% of sample firms have "all-male" boards. Comparing the extent of earnings quality (discretionary accruals) between these, we find no significant differences. That is, "all-male" boards do not have

significantly different earnings quality from those with at least one woman. In terms of performance, we find a significant (at the 1% level) difference between one-year ahead return on equity (*ROE*) for gender diverse boards (even if they have only one woman) than for male only boards. A similar result (significant at the 1% level) is also documented for one-year-ahead cash flow from operations (*CFTA*). There are no significant differences for return on assets (*ROA*).

Given that we argue more than just a token woman is needed on the board to ensure gender diversity has a positive impact on firm value and earnings quality, we next examine whether any significant differences exist between the earnings quality and performance of firms with at least two women on the board as opposed to others. We again find a statistically significant difference (for *CFTA* at the 1% level) between the performances of these firms, with those boards with at least two women outperforming others. Gender diverse boards (with at least two women) also have significantly (at the 10% level) lower discretionary accruals (both for *MLROA* and *MJBM*).

4.2 Gender diversity and earnings quality

The regression results from our first model, investigating the association between gender diversity and earnings quality, are presented in Tables 3 and 4. Table 3 presents the results for board diversity measures whilst that for top management team diversity is in Table 4.

Using the modified Jones model with book-to-market value (MJBM) discretionary accruals as proxy for earnings quality, we do not find any significant associations between board gender diversity and earnings quality (Table 3). That is, our percentage women on the board (*PFOB*) , "token" women (*TOKEN*) and having at least two women on the board (*TWODIV*) variables are all statistically insignificant. Larger boards appear more likely to have managed earnings whilst firms with high return on equity (performance) are significantly less likely to have managed earnings. There appears to be no significant difference in the incidence of earnings management in the pre and post-GFC periods.

The results from our second measure of discretionary accruals, *MLROA*, indicates that whilst there is no evidence of a significant relation between board gender diversity and earnings quality when employing percentage women on the board or token as proxies; *TWODIV* (having at least two women on the board) is

significant and negatively related to *MLROA* at the 5% level. In fact, the discretionary accruals of firms with at least two women on the board is lower by some 0.454 than those with only a token or no women on the board. This suggests that gender diversity is associated with a reduction in discretionary accruals (and thus better earnings quality) only when there are at least two women on the board, providing support for our first hypothesis. We also show that firms with better performance (in terms of industry-adjusted return on equity) are less likely to manage earnings (and have better earnings quality). Specifically, the discretionary accruals of firms with high ROE is lower by approximately 0.075. This finding is consistent with Srinidhi et al. (2011) who find a positive relation between the presence of female directors and earnings quality of US firms. Our finding provides evidence of the improved board monitoring ability of boards with more than just a 'token' female director. In fact, accrual-based earnings management appear lower when the board is diverse in terms of gender (and have more than just a token woman).

[Insert Table 3 about here]

Next, results from the investigation of TMT diversity in relation to earnings quality are presented in Table 4. The percentage of women in the TMT does not seem to be associated with either of the two discretionary accrual variables. That is, a higher percentage of women on the top management team are not associated with improved earnings quality. A very similar result is documented for firms with a token woman on the TMT. Turning to our third measure of TMT diversity, "*TWOTMT*", we document a significant and negative relation with both discretionary accrual proxies. This suggests that having at least two women on the top management team is significantly associated with better earnings quality. This result again supports our first hypothesis, that there is a relation between gender diversity and earnings quality; however, our results indicate that gender diversity only plays a positive role when there are at least two women on the TMT. Consistent with prior literature we further show that better performing firms have greater discretionary accruals (and thus lower earnings quality). This might be an endogenous relation though as the aim of earnings management (increasing discretionary accruals) is to have earnings appear higher than what they truly are.

[Insert Table 4 about here]

4.3 Gender diversity and firm performance

Our second regression model examines whether any relation exists between gender diversity and firm performance. We present the results for board diversity in Table 5 and that for TMT diversity in Table 6.

Our first performance measure, *ROA* is not significantly associated with any measure of board gender diversity. More interestingly it is not associated with the *GFC* period which is contrary to expectations as most firms had reduced performance in this period.

[Insert Table 5 about here]

We document a significant positive relation at the 1% level between the percentage of women on the board of directors and shareholders return (estimated by return on equity). This finding suggests that a greater proportion of women on the board of directors are associated with better returns to shareholders. The results for *CFTA* is even more expressive, as we document a significant and positive relation (at the 5% level) between performance and having at least two women on the board of directors and a significant and negative relation between having a token women on the board (at the 10% level). Taken together the findings suggest that whilst having a gender diverse board (with at least two women or greater proportions of women) is associated with improved performance, a token woman is associated with a reduction. This finding could therefore potentially explain why many prior studies do not find any relation between gender diversity and performance. It appears that only when a board is gender diverse (as opposed to having a single token women) are women positively associated with performance.

Findings for both *ROA* and *CFTA* confirm that larger boards are negatively associated with firm performance. In addition, larger firms perform better across all measures whilst high book-to-market value firms have significantly higher cash flow from operations. The *ROE* and *CFTA* of firms were significantly lower during the *GFC* period. Our findings therefore provide some support for hypothesis 2.

Next, we determine whether gender diversity in the TMT is associated with firm performance. The results from this estimation are presented in Table 6. Whilst our earlier findings documented a significant and positive relation between TMT diversity and earnings quality, we do not find any relation between TMT with firm performance. None of the three performance measures have a significant relation to any of our three TMT diversity proxies. Consistent with earlier findings, we confirm a negative relation between board size and performance, that is larger boards are likely to perform worse. In addition we show that larger firms and those with higher book-to-market values are likely to outperform others. A significant and negative relation is also documented between the GFC period and performance.

[Insert Table 6 about here]

4.4 Additional tests.

The average board in our sample has 5.61 members. Some boards, however, are very small with only one or two members. To eliminate any biased results obtained from including these "small" boards in our sample, we re-estimate our earnings quality and performance regressions with a reduced sample including only firms with a board with at least five members. The results (untabulated) overall remain qualitatively similar.

5. Summary and conclusions

This paper examined the impact of gender diversity (particularly gender diversity beyond a single token woman) on the board and TMT on earnings quality and firm performance. Our findings suggest that for gender diversity to truly impact on firms' performance and reporting quality, more than one woman is required. Whilst having a token woman on the board is not associated with improved earnings quality of firm performance, firms with two or more women on the board have both significantly better earnings quality (accruals-based) and performance (as captured by cash flows from operations/ total assets). Similarly, we show that a positive relation only exist between earnings quality and TMT diversity when there are at least two women on the management team. TMT diversity does not appear to impact on firm performance. Board gender diversity, beyond a single token woman is, however, associated with improved performance, whilst tokenism is not.

We contribute to the prior literature by showing that women on the board and TMT matter for both earnings quality and firm performance. We are the first to investigate tokenism and its impact on firm performance and reporting quality in the Australian environment. Specifically, Krishnan and Parsons (2008) rank a small sample of US Fortune 500 companies on the representation by women in top management to show that senior management gender diversity is positively associated with earnings quality. Srinidhi et al. (2011) show that the presence of female directors is positively associated with earnings quality for US firms. We extend these studies by examining the relation between gender diversity (not just having a token women, rather having at least two women) and earnings quality in the Australian environment (which differs from the US in terms of regulation and disclosure quality) where the issue has not been examined to date.

Adams and Ferreira (2009) show that on average, gender diversity on US boards is negatively associated with performance. In the Australian context, Nguyen and Faff (2006) show a positive relation between having a token woman on the board and firm performance whilst Chapple and Humphrey (2013) document for their limited ASX300 sample that no association exists. We build on these studies by employing a comprehensive sample of Australian firms to show that true diversity (having more than one woman on the board) is positively associated with performance and improved earnings quality. Taken together, we contribute to the extant literature by showing that gender diversity matters for firm performance whilst tokenism does not. We further show that gender diversity appears to be an effective measure to help mitigate agency problems as it is associated with improved earnings quality.

The implication of this study to investors and regulators is that gender diversity is important. Only on those boards and TMTs where diversity exists beyond tokenism do the positive influences on diversity translate to improved performance and earnings quality. Firms should therefore embrace gender diversity on boards and top management teams rather than having token women. Such findings support government and Australian Institute of Company Director's continued initiatives in improving women representation on the board in Australia where very few boards are truly gender diverse.

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Table 1: Board and Firm Characteristics – All firms

The table below provides the descriptive statistics for our sample consisting of 2,655 firm-year observations for a period of 6 years from 2005 to 2010. The table reports the mean, median and standard deviation of all model variables. Variables are as defined in the table. A * indicates that a particular variable is dichotomous and only the percentage of the sample with that characteristic (where value = 1) is presented under "mean".

Variables	Mean	Median	SD
Diversity			
% Women on the board (PFOB)	3.1%	0	0.077
% Women in the top management team (PTMT)	5.56%	0	0.115
* One female director only (TOKEN)	12.9%		
*At least two female directors (TWODIV)	2.1%		
*One women on TMT only (TOKENTMT)	11.5%		
*At least two women on the top management team (TWOTMT)	4.17%		
Earnings quality proxies			
Mod. Jones with BM discretionary accruals (MJBM)	0.286	0.131	0.499
Mod. Jones with lagged ROA discretionary accruals (MLROA)	0.122	0.077	0.143
Performance measures			
Return on equity (ROE)	-0.117	0.134	0.774
Return on assets (ROA)	0.077	0.173	0.880
Cash flow from operations/ Total assets (CFTA)	-0.186	-0.155	0.244
Firm characteristics			
Total assets ($)	$653,715,761	$106,060,0000	$1,530,747,146
Book-to-market value of equity (BM)	0.828	0.625	0.695
Board size	5.61	5	2.183
Number of employees (logged)	39.65	20.49	14.44
*Big4 Auditor (1=yes; 0=no)	47.1%		

Table 2: Correlation matrix

The table below presents the correlation coefficient table for the variables employed in this study. Where '*PFOB'* is the percentage women on the board; '*PTMT*' which is the percentage of women in the top management team; '*TOKEN*' is a dichotomous variable with a value of one when there is exactly one woman on the board; '*TOKENTMT*' is a dichotomous variable with a value of one when there is exactly one woman on the TMT and zero otherwise, '*TWODIV*' is a dichotomous variable with a value of one when there are two or more women on the board; '*TWOTMT*' is a dummy variable with a value of one if there are at least two women on the top management team and zero otherwise and. *'MJBM*' is an earnings quality proxy, as in Larcker and Richardson (2004) and so is *'MLROA'* as in Kothari et al. (2005). The performance measures *'ROA'* is industry-adjusted return on assets (performance measure); '*ROE*' is industry-adjusted return on equity whilst '*CFTA*' is industry-adjusted cash flow from operations scaled by total assets. Control variables include *LNTA'*- the log of total assets and a proxy for firm size; *'BM'* - the ratio of the book value of equity to market value of equity; *'BSIZE'* representing the number of directors on the board*; 'EMP'* – the log of the number of employees in the firm and '*ADT*' a dichotomous variable for auditor choice with a value of one if the auditor is a "big 4" auditor and zero otherwise.

	PFOB	PTMT	TOKEN	TOKENTMT	TWODIV	TWOTMT	MJBM	MLROA	ROA	ROE	CFTA	LNTA	BM	BSIZE	EMP	ADT
PFOB	1	0.196***	0.712***	0.093***	0.552***	0.177***	0.008	-0.008	0.009	0.019	0.009	0.107***	0.052***	0.106***	0.147***	0.069***
PTMT		1	0.140***	0.569***	0.093***	0.457***	-0.066***	-0.049**	-0.021	-0.059***	0.001	0.010	0.059***	0.029	0.001	0.020
TOKEN			1	0.115***	-0.056***	0.091***	0.040**	0.035*	0.010	0.054***	0.083***	0.245***	0.026	0.236***	0.262***	0.125***
TOKENTMT				1	0.049***	-0.084***	-0.007	-0.014	0.028*	0.031	0.072***	0.209***	-0.032*	0.119***	0.162***	0.094***
TWODIV					1	0.139***	-0.003	-0.011	0.027	0.010	0.041**	0.086***	0.013	0.151***	0.119***	0.064***
TWOTMT						1	0.002	-0.002	0.083***	0.071***	0.065***	0.133***	0.035*	0.095***	0.080***	0.112***
MJBM							1	0.575***	0.116***	0.186***	0.049**	0.166***	-0.058***	0.052**	0.112***	0.108***
MLROA								1	0.114***	0.181***	0.024	0.078***	-0.048**	0.036*	0.057**	0.048**
ROA									1	0.714***	0.152***	0.158***	0.001	0.025	0.058**	0.099***
ROE										1	0.264***	0.284***	-0.014	0.075***	0.180***	0.170***
CFTA											1	0.493***	0.142***	0.203***	0.428***	0.299***
LNTA												1	0.024	0.512***	0.756***	0.552***
BM													1	-0.032	0.002	-0.036
BSIZE														1	0.481***	0.276***
EMP															1	0.514***

Table 3: Impact of board gender diversity on earnings quality

The table below reports regressions of board of director gender diversity measures on earnings quality for our sample of 2,215 firm-year observations. The dependent variable here is discretionary accruals. Discretionary accruals are calculated in two ways: 'M*odified Jones discretionary accruals with book-to-market value*' or '*MJBM*' as in Larcker and Richardson (2004) and 'M*odified Jones discretionary accruals with lagged return on assets*' or '*MLROA*' as in Kothari et al. (2005). Each earnings quality metric is regressed on three board gender diversity proxies. These include '*PFOB*' which is the percentage of female directors on the board; '*TOKEN*' which is a dummy variable with a value of one if one female director serves on the board and zero otherwise and '*TWODIV*' which is a dummy variable with a value of one if there are at least two female directors on the board and zero otherwise. Control variables include '*BSIZE*' representing the number of directors on the board; '*PERF*' is the return on equity – a proxy for performance; '*SIZE*" is the log of total assets – a proxy for firm size; '*BM*' is the ratio of the book value of equity to market value of equity and '*GFC*' is a dichotomous variable with a value of one for any year during the GFC period and zero otherwise. T-statistics are reported in the parenthesis below the coefficient estimates.

Variable	MJBM	MJBM	MJBM	MLROA	MLROA	MLROA
PFOB	0.130			0.040		
	(0.86))			(0.33)		
TOKEN		-0.11			-0.089	
		(-0.41)			(-1.01)	
TWODIV			-0.419			-0.454
			(-0.81)			(-2.12**)
BSIZE	0.008	0.010	0.0012	0.002	0.004	0.006
	(1.88*)	(1.91*)	(1.82*)	(0.44)	(0.75)	(1.32)
PERF	-0.046	-0.046	-0.045	-0.075	-0.075	-0.074
	(-2.21**)	(-2.23**)	(-2.14**)	(-3.31***)	(-3.30***)	(-3.29***)
SIZE	-0.001	0.003	-0.001	-0.004	-0.002	-0.004
	(-0.06)	(0.26)	(-0.02)	(-0.55)	(-0.17)	(-0.48)
BM	-0.029	-0.027	-0.028	-0.013	-0.011	-0.013
	(-1.48)	(-1.54)	(-1.42)	(-1.13)	(-1.07)	(-1.10)
GFC	-0.071	-0.073	-0.073	-0.059	-0.061	-0.061
	(-0.40)	(-0.42)	(-0.41)	(-0.78)	(-0.81)	(-0.81)
Intercept	0.312	0.257	0.290	0.348	0.303	0.329
	(2.65***)	(2.57**)	(2.56**)	(2.82***)	(1.95*)	(2.51**)
Clustered SE	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR
Endogeneity	2SLS	Treatment Effects	Treatment Effects	2SLS	Treatment Effects	Treatment Effects
Industry	Adj return	Adj return	Adj return	Adj return	Adj return	Adj return
R^2	0.01	0.01	0.0431	0.023	0.031	0.032
N	2,215	2,215	2,215	2,215	2,215	2,215

Table 4: Impact of top management team gender diversity on earnings quality

The table below reports regressions of top management team gender diversity measures on earnings quality for our sample of 2,215 firm-year observations. The dependent variable here is discretionary accruals. Discretionary accruals are calculated in two ways: '*Modified Jones discretionary accruals with book-to-market value' or 'MJBM'* as in Larcker and Richardson (2004) and 'M*odified Jones discretionary accruals with lagged return on assets' or 'MLROA'* as in Kothari et al. (2005). Each earnings quality metric is regressed on three top management team gender diversity proxies. These include '*TOKENTMT*' which is a dummy variable with a value of one if there is only one woman on the TMT, '*TWOTMT*' which is a dummy variable with a value of one if there are at least two women on the top management team and zero otherwise and '*PTMT*' which is the percentage of women in the top management team. Control variables include '*BSIZE*' representing the number of directors on the board; '*PERF*' is the return on equity – a proxy for performance; '*SIZE*' is the log of total assets – a proxy for firm size; '*BM*' is the ratio of the book value of equity to market value of equity and '*GFC*' is a dichotomous variable with a value of one for any year during the GFC period and zero otherwise. T-statistics are reported in the parenthesis below the coefficient estimates.

Variable	MJBM	MJBM	MJBM	MLROA	MLROA	MLROA
PTMT	-0.284			-0.068		
	(-1.046)			(-0.772)		
TOKENTMT		-0.083			-0.032	
		(-1.144)			(-1.045)	
TWOTMT			-0.154			-0.103
			(-1.865*)			(-3.14***)
BSIZE	-0.002	-0.007	-0.001	-0.002	-0.003	-0.002
	(-0.433)	(-2.63***)	(-0.319)	(-0.607)	(-2.086**)	(-0.736)
PERF	0.092	0.094	0.099	0.066	0.084	0.079
	(2.054**)	(3.54***)	(2.91***)	(1.128)	(2.256**)	(2.07**)
SIZE	0.016	0.026	0.020	0.010	0.004	0.011
	(1.392)	(1.518)	(1.288)	(0.515)	(0.270)	(0.574)
BM	-0.018	-0.029	-0.019	-0.003	0.003	-0.003
	(-0.566)	(-1.532)	(-0.700)	(-0.074)	(0.069)	(-0.090)
GFC	-0.188	-0.173	-0.186	-0.058	-0.069	-0.056
	(-0.77)	(-0.764)	(-0.766)	(-0.740)	(-0.834)	(-0.721)
Intercept	0.059	-0.098	-0.016	-0.035	0.075	-0.048
	(0.226)	(-0.359)	(-0.052)	(-0.109)	(0.274)	(-0.156)
Clustered SE	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR
Endogeneity	2SLS	Treatment Effects	Treatment Effects	2SLS	Treatment Effects	Treatment Effects
Industry	Adj return	Adj return	Adj return	Adj return	Adj return	Adj return
R^2	0.032	0.041	0.040	0.020	0.032	0.029
N	2,215	2,215	2,215	2,215	2,215	2,215

Table 5: Impact of board gender diversity on firm performance (t+1)

The table below reports regressions of board gender diversity measures on firm performance for our sample of 2655 firm-year observations. The dependent variable here is firm performance which was calculated in three ways: Return on assets *'ROA'*, return on shareholders' equity *'ROE' and 'CFTA'* which is cash flow from operations scaled by total assets. Each performance metric is regressed on three board gender diversity proxies. These include *'PFOB'* which is the percentage of female directors on the board; *'TOKEN'* which is a dummy variable with a value of one if one female director serves on the board and zero otherwise and *'TWODIV'* which is a dummy variable with a value of one if there are at least two female directors on the board and zero otherwise. Control variables include *'BSIZE'* representing the number of directors on the board; *'SIZE'* is the log of total assets – a proxy for firm size; *'BM'* is the ratio of the book value of equity to market value of equity and *'GFC'* is a dichotomous variable with a value of one for any year during the GFC period and zero otherwise. T-statistics are reported in the parenthesis below the coefficient estimates.

Variable	$ROA_{t+1}1$	$ROA_{t+1}2$	$ROA_{t+1}3$	$ROE_{t+1}1$	$ROE_{t+1}2$	$ROE_{t+1}3$	$CFO/TA_{t+1}1$	$CFO/TA_{t+1}2$	$CFO/TA_{t+1}3$
PFOB	1.174			0.682			-0.109		
	(1.11)			(2.70***)			(-1.29)		
TOKEN		-2.11			-0.177			-0.097	
		(-1.22)			(-0.52)			(-1.81*)	
TWODIV			-7.71			0.385			0.251
			(-1.02)			(0.457)			(2.39**)
BSIZE	-0.069	-0.036	-0.011	0.002	0.006	0.001	-0.007	-0.006	-0.009
	(-1.65*)	(-1.61)	(-0.38)	(0.05)	(0.20)	(0.02)	(-2.04**)	(-1.62)	(-2.49**)
SIZE	0.113	0.173	0.123	0.086	0.093	0.088	0.064	0.066	0.063
	(2.55**)	(3.34***)	(2.89***)	(1.82*)	(1.66*)	(1.82*)	(14.12***)	(13.82***)	(14.08***)
BM	-0.529	-0.490	-0.517	-0.03	-0.023	-0.026	0.047	0.047	0.046
	(-1.34)	(-1.35)	(-1.35)	(-1.2)	(-0.95)	(1.06)	(4.52***)	(4.58***)	(4.57***)
GFC	1.15	1.114	1.117	-0.435	-0.438	-0.433	-0.030	-0.031	-0.029
	(0.76)	(0.74)	(0.75)	(-1.83*)	(-1.79*)	(-1.79*)	(-4.83***)	(-4.57***)	(-4.49***)
Intercept	-0.877	-1.89	-1.22	-1.44	-1.55	-1.45	-1.278	-1.318	-1.264
	(-0.78)	(-1.98*)	(-1.25)	(-1.89*)	(-1.74*)	(-1.85*)	(-18.34***)	(-17.11***)	(-18.37***)
Clustered SE	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR
Endogeneity	2SLS	Treatment Eff	Treatment Eff	2SLS	Treatment Eff	Treatment Eff	2SLS	Treatment Eff	Treatment Eff
Industry	Adj return	Adj return	Adj return	Adj return	Adj return	Adj return	Adj return	Adj return	Adj return
R^2	0.012	0.016	0.016	0.01	0.021	0.021	0.128	0.281	0.282
N	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655	2,655

Table 6: Impact of top management team diversity on performance (t+1)

The table below reports regressions of top management team gender diversity measures on firm performance for our sample of 2655 firm-year observations. The dependent variable here is firm performance which was calculated in three ways: Return on assets *'ROA', r*eturn on shareholders' equity *'ROE' and 'CFTA'* which is cash flow from operations scaled by total assets. Each earnings quality metric is regressed on three top management team gender diversity proxies. These include '*TOKENTMT*" which is a dummy variable with a value of one if there is only one woman on the TMT, '*TWOTMT*' which is a dummy variable with a value of one if there are at least two women on the top management team and zero otherwise and '*PTMT*' which is the percentage of women in the top management team. Control variables include *'BSIZE'* representing the number of directors on the board; *'SIZE'* is the log of total assets – a proxy for firm size; '*BM*' is the ratio of the book value of equity to market value of equity and '*GFC*' is a dichotomous variable with a value of one for any year during the GFC period and zero otherwise. T-statistics are reported in the parenthesis below the coefficient estimates.

Variable	$ROA_{t+1}1$	$ROA_{t+1}2$	$ROA_{t+1}3$	$ROE_{t+1}1$	$ROE_{t+1}2$	$ROE_{t+1}3$	$CFO/TA_{t+1}1$	$CFO/TA_{t+1}2$	$CFO/TA_{t+1}3$
PTMT	0.870			0.444			0.049		
	(1.435)			(0.717)			(0.527)		
TOKENTMT		-0.024			0.391			0.003	
		(-0.18)			(1.469)			(0.161)	
TWOTMT			0.880			-0.129			0.025
			(1.11)			(-0.414)			(1.117)
BSIZE	-0.111	-0.107	-0.121	-0.024	-0.080	-0.019	-0.007	-0.014	-0.009
	(-2.188**)	(-2.15**)	(-1.566)	(-0.501)	(-0.694)	(-0.525)	(-2.006**)	(-4.073***)	(-3.01***)
SIZE	0.162	0.145	0.191	0.084	0.121	0.083	0.067	0.075	0.070
	(4.24***)	(4.32***)	(2.65***)	(1.368)	(1.475)	(1.854*)	(7.87***)	(9.801***)	(12.22***)
BM	-0.686	-0.740	-0.681	0.051	-0.045	0.065	0.053	0.052	0.051
	(-1.422)	(-1.41)	(-1.267)	(13.47***)	(-0.965)	(9.45***)	(2.65***)	(2.627***)	(2.96***)
GFC	1.312	1.402	1.210	-0.367	-0.137	-0.360	-0.055	-0.035	-0.058
	(0.855)	(0.872)	(0.865)	(-1.484)	(-0.543)	(-1.877*)	(-2.68***)	(-1.797*)	(-4.56***)
Intercept	-1.544	-1.159	-2.02	-1.304	-1.815	-1.282	-1.342	-1.449	-1.381
	(-3.86***)	(-1.28)	(-2.55**)	(-1.54)	(-1.866*)	(-2.056**)	(-8.89***)	(-10.72***)	(-13.62***)
Clustered SE	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR	FIRM, YEAR
Endogeneity	2SLS	Treatment Eff	Treatment Eff	2SLS	Treatment Eff	Treatment Eff	2SLS	Treatment Eff	Treatment Eff
Industry	Adj return	Adj return	Adj return	Adj return	Adj return	Adj return	Adj return	Adj return	Adj return
R^2	0.023	0.023	0.025	0.010	0.01	0.01	0.158	0.174	0.176
N	2,850	2,850	2,850	2,850	2,850	2,850	2,850	2,850	2,850

Figure 1: Asch (1951) Line judgement task

Asch (1951) assigned a simple task to eight individuals whereby they were to read aloud which line (A, B or C) in the right card (see Figure 1) matched in length with the reference line in the first card. Whilst the first seven individuals were confederates, and were told to read the same incorrect answer, the experiment participant (who read their answers last) were then left to either conform with an obviously incorrect decision (in some 75% of cases) or to choose the correct and stand out as being different from the group.