

Bond University
Research Repository



The role of board gender on the profitability of insider trading

Zhong, Tian; Faff, Robert; Hodgson, Allan; Yao, Lee J.

Published in:
International Journal of Accounting and Information Management

DOI:
[10.1108/IJAIM-03-2013-0020](https://doi.org/10.1108/IJAIM-03-2013-0020)

Licence:
Other

[Link to output in Bond University research repository.](#)

Recommended citation(APA):
Zhong, T., Faff, R., Hodgson, A., & Yao, L. J. (2014). The role of board gender on the profitability of insider trading. *International Journal of Accounting and Information Management*, 22(3), 180-193.
<https://doi.org/10.1108/IJAIM-03-2013-0020>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

For more information, or if you believe that this document breaches copyright, please contact the Bond University research repository coordinator.

Board gender and the profitability of insider trading

Abstract

Purpose – This paper examines the impact of female board membership on the profitability of corporate insider purchases.

Design/methodology/approach – We use a classic event study approach. We measure abnormal returns around the insider purchase events. We further analyze the cross-sectional variation of this market impact in terms of female board membership, controlling for a range of other factors.

Findings – We find a strong positive market reaction in the aggregated data and after decomposing transactions according to gender, we find that the profitability of female directors is statistically indistinguishable from their male counterparts. Additionally, we find evidence that with more females sitting on the board, the profitability of the male directors decreases— but the profitability of their female counterparts does not.

Originality/value – Our findings suggest that having females on the board, increases corporate governance of male directors. The results also suggest that female directors are no less inclined to exploit the asymmetric information advantage provided by board membership.

Keywords: Board gender; Insider trading; Corporate governance

JEL Classification: G14; G34

Article Classification: Research paper

1. Introduction

This paper examines the impact of female board membership on the profitability of corporate insider trading. The interaction between gender and corporate insider trading is a specific extension of the relation between gender diversity and firm performance.¹ If a board with more females is associated with stronger corporate governance (Nguyen and Faff, 2006-7; Adams and Ferreira 2009), it could be that corporate insider trading will be less prominent or that insiders are less inclined to undertake “exploitative” personal rent seeking opportunities in those companies. Further if female executives lead via trust rather than a hierarchical approach (Klenke 2003; Trinidad and Normore, 2005) then this type of management style might also affect inside trading behavior. Overall, for gender-diverse boards we investigate whether female directors, either themselves or through their influence on the board, seek to constrain insiders who wish to profit by their access to asymmetric information.

Our paper makes a twofold contribution to the literature. First, the study is novel in decomposing insider trading activities according to gender and examining the influence of gender-diverse boards through the interaction between gender and corporate insider trading. Second, we further explore female behavior by examining their influence over the trading activity of male directors, which is an important extension to the current debate that board gender diversity is associated with improved corporate governance of a firm.

¹ The evidence is mixed – refer to Section 2.2 for details.

Our main findings are as follows. We find strong baseline evidence that there is positive market reaction to directors' purchases, both statistically and economically. When our sample is partitioned into male and female transactions we find that the market reacts positively to both types of transactions, but statistically there is no difference in their profitability. We further find that the greater the number of females who sit on the board, the lower the insider trading profitability of male board members.

The remainder of this paper is organized as follows. Section 2 provides a literature review of both insider trading and board gender diversity, and outlines our hypotheses. Section 3 presents the empirical framework, while Section 4 reports the results. Section 5 concludes the paper, discussing the implications and directions for future research.

2. Brief literature review and hypothesis development

2.1 Insider trading

It has been argued that insider trading increases the informational efficiency of the market by expanding the existing information set held by investors through trading that either increases or reduces prices (John and Mishra 1990; Zhang 2001; and Chau and Vayanos, 2008). An opposing view is the belief that price changes, induced by inside trading represents rent extraction by corporate insiders, which in turn, has a detrimental impact on investor confidence. In addition, according to this opposing line of argument there is increased asymmetric insider trading and a fall in trading

liquidity for external traders which results in a decrease in market efficiency (Fishman and Hagerty, 1995).

Although the definition of insider trades applied across these papers lacks uniformity, collectively their results strongly suggest that insiders can detect and exploit mispricing in their company's own securities, especially in the case of insider buy transactions. For example, Finnerty (1976) documents a post-trading first month excess return of 4.69% for insider buys and -1.35% for insider sells.

The second wave of empirical research into the performance of insider trading is characterized by larger datasets and decomposition of corporate insider trading in various ways. For example, Seyhun (1986) decomposes insider trading activities according to different categories of insiders and finds that directors are more informed about the firm's operating and future prospects than other insiders. Similarly, Jenter (2005) demonstrates that top managers tend to use personal trading to reflect a contrarian view on their firm's value; for instance, potentially undervalued firms experience net insider buying. Several other studies categorized insider transactions according to market microstructure factors.²

Empirical evidence shows that excess returns from insider purchases are significantly higher than for insider sales (Lakonishok and Lee, 2001; Fildmuc et al, 2006; Rozanov, 2009). Hence, the purchase of shares by directors is commonly treated as a strong positive information signal about the future prospects of the firm. In contrast, a sell transaction is "clouded" by directors offloading shares received as

² Chung and Charoenwong (1998) initiated the debate by suggesting that market makers tend to set bigger spreads for large insider transactions.

part of their salary package or engaging in portfolio rebalancing, and thus insider selling is regarded as containing information of low price signaling value (Lakonishok and Lee, 2001; Fidrmuc et al, 2006).

Thus, an insider purchase is more likely to convey new information to the market, compared to an insider sell. In addition, the signaling effect of insider purchases is stronger than insider sells, since directors also put their own wealth at stake and bear the cost of holding an undiversified portfolio.

A more recent extension of this area of research has considered the effect of external mechanisms in conveying the information contained in inside trades. For example, Wang (2011) shows that transient institutional investors (i.e. informed outside traders) increase their next quarter's trading after insider's trade. Further, after controlling for firm and accounting variables, their lagged trading effectively reduces the 12-month hedge returns by approximately 3-4%. Similarly, Rogers et al. (2013) show that the speed of price adjustment is positively related to the extent of media coverage of insider "Form 4" filings i.e. immediate media coverage increases the speed of price adjustment. In yet another important recent addition to the literature, Cohen et al. (2012) "decode" insider information by disentangling "routine" from "opportunistic" trades.

Hence, there is little doubt that insiders have access to valuable asymmetric knowledge and that they exploit this information to secure material profits. Accordingly, the question we pose is: how does the internal structure of the board affect insider trading activities and, in particular, how important is gender in the

governance mix?

2.2 Board gender diversity

Recent research suggests that women on boards change the group dynamics of communication, interpersonal interaction, and decision-making in a positive way. This leads to more creative, innovative, and nontraditional decisions and better board performance (McInerney-Lacombe, Bilimoria, and Salipante, 2008). In contrast, Lau and Murnighan (1998) contend that women on the board, with more diverse opinions and critical thinking, might cause decision-making to be slower and less effective. Given the complex social psychology of boards, it is not surprising that the empirical evidence is mixed.

Addressing the problem of joint-endogeneity, Carter, et al (2010) employ a two-stage least squares regression on a sample of Fortune 1000 firms for the year 1997 to test the relationship between firm performance (Tobin's Q) and board gender diversity. Two measures of diversity are used: percentage of women on the board and a dummy variable indicating female presence. They find gender diversity has a positive impact on firm value.

Farrell and Hersch (2005) employ a Poisson regression to analyze data from Fortune 1000 firms over the period 1990-1999. The dependent variable of primary interest is lagged return on assets. The results show no relationship between the addition of women onto the board and the return on assets. This finding is confirmed by a companion event study focusing on the addition of women onto corporate

boards.

Adams and Ferreira (2009) conduct an analysis of the impact of women on boards using a sample of firms in the S&P's 1500 index companies for the years 1996-2003. Among other things, they find evidence that boards with women directors are more likely to remove CEO's after poor stock performance and compensate directors with higher levels of equity-based compensation. However, Adams and Ferreira (2009) also report a negative relationship between the percentage of female directors on the board and Tobin's Q (in an instrumental variable two-stage regression with firm fixed effects). Investigating this negative linkage further, they find that the firms in their sample with weaker (stronger) shareholder rights benefit (suffer) from the stronger monitoring of women on the board. In other words, the desirability and impact of women on boards is contingent on the particular circumstances of individual firms.

Carter et al (2010) employ a three-stage least squares regression to analyze panel data from a sample of 641 different firms included in the S&P 500 index for the years 1998-2002. The number of women on the board and the number of women on important board committees are independent variables of primary interest, while Tobin's Q and the return on assets are alternative dependent variables. Their results show no significant relationship between gender and firm financial performance.

Finally, Gul et al (2011) analyze a sample of 5021 firm-years from 2001-2006, where the dependent variable is stock price informativeness (measured by logistic relative idiosyncratic volatility), and the independent variable is gender

diversity. Diversity is measured in a variety of ways: the number of female directors and female independent non-executive directors, or the percentage of female directors out of all directors and the percentage of female non-executive directors out of all non-executive directors. Gul et al (2011) document that board gender diversity improves stock price informativeness through the mechanism of increased public disclosure in large firms and by incorporating private information in small firms.

Australia provides an appropriate and insightful setting to undertake research on board gender issues since, in contrast to European countries, there is no specific legislation that requires a certain percentage of females on the board. Hence, we have a sample of female directors who are more likely to represent high merit-based appointments. We now apply elements of the above research findings to derive predictable hypotheses.

2.3 Hypotheses development

Gender influence on the profitability of females

Shin (2011) examines whether the presence of a female CEO is associated with an increase in the compensation of female executives. However, no statistical relation is found — consistent with the evidence of many other empirical studies (Ragins and Scandura, 1997; Sosik and Godshalk, 2000; Kamler and Rasheed, 2006). One plausible reason for no linkage could be that female CEOs are subject to a “queen bee syndrome”, which prescribes that highly successful women are rewarded by men for denying other women success. Further, if relationships between female

executives are more competitive than supportive, female managers might perceive their female bosses more as competitors rather than as positive role models (Staines, Jayaratne, and Tavis, 1974; Mavin 2008).

Thus, the “queen bee syndrome” indicates that if there is more than one female sitting on the board, a competitive mindset will result in them being non-cooperative. This could culminate in a strong unwillingness to share any private information, which would cause them to lose trading opportunities. Therefore, one prediction is that female directors would have a lower engagement in insider trading compared to male directors. More specifically, males are more cooperative on the board, they experience less emotional conflict and are willing to share information, while competition between females make them unwilling to share any private information resulting in a loss of trading opportunities.

Conversely, according to the “board busyness” argument, Core et al. (1999) report that male directors tend to hold multiple appointments and this is positively correlated with excess CEO compensation. Their resulting higher salaries lower the incentive to rent extract through insider trading. Further, since females tend not to be as “busy” as male directors, they are more likely than males to focus on monitoring the management activities of a specific firm. As such, female directors have a higher probability of possessing private or price-sensitive information and the ability to convert this into an abnormal return that exceeds that of their male counterparts. Moreover, a lower relative salary and lower insider trading restrictions (Roulstone, 2003) might provide a greater incentive to undertake insider rent extraction. Given

these mixed arguments, the profitability hypothesis could go either way. Accordingly, we accommodate this theoretical tension and the associated conflicting predictions in a pair of competing hypotheses:

H1a: The profitability of insider trading by female directors is higher than male directors.

H1b: The profitability of insider trading by female directors is lower than male directors.

Female influence on the profitability of male insider trading

Empirical evidence suggests that after the addition of a female onto the board, the effectiveness of corporate governance is improved (Hillman et al, 2007). Bradshaw et al (1992) find that a gender diverse board reduces CEO dominance due to their “power sharing style”, which improves corporate governance. Adams and Ferreira (2009) suggest that female directors appear to be tougher monitors than male directors and company information is more transparent when the company has a gender-diverse board. In addition, Gul et al (2011) show that board gender diversity improves stock price informativeness through the mechanism of increased public disclosure in large firms and by incorporating private information in small firms. Hence, male directors have less incentive to trade since there is less economic rent available for them to extract when female directors sitting on the board.

Furthermore, female directors will bring strategic input to the board (Bilimoria, 2000) and increase diversity of opinion in the boardroom (Catalyst, 1995). Homogenous groups tend to have homogenous ways of solving company

problems i.e. “group think” errors would be less likely to occur with a heterogeneous board (Burton and Ryall, 1995). For example, Jianakoplos and Bernasek, (1998) find that appointing a female on the board could reduce the likelihood of excessive risk-taking in strategic decisions since female directors tend to be more risk averse than male directors. In summary, the more females sitting on the board, the “better” is boardroom behavior and the more transparent is company information. Hence, under strong corporate governance, male directors have less incentive to trade because of the increase in transparent information that leaves male directors lower economic rents to exploit and also because of possible restrictions imposed by a more “ethical board”. Thus, the second hypothesis relates to the influence of a gender-diverse board on the profitability of insider trading by male directors:

H2: With a gender-diverse board, the profitability of insider trading by male directors is diminished; and this effect is stronger the higher the percentage of female directors on the board.

3. Empirical framework

3.1 Data

This study covers director transactions for Australian stocks listed on the Australian Stock Exchange from 2004 to 2009. These data are hand collected directors’ trading data from Aspect Huntley’s. More specifically, the data includes the transaction date, report/announcement date, type of financial instruments traded, name of directors,

and nature of ownership (“direct” or “indirect”),³ their initial and final shareholding, whether the insider trade was a purchase or a sale, share price before and after trading and reasons for change in interest. The gender of directors is hand collected based on retrieval of gender information from company websites.

To be included in our sample, a given firm has to satisfy three major screening criteria. First, incomplete, missing or obviously incorrect data are excluded. Second, similar to previous studies on insider trading (Friederich et al, 2002; Hillier and Marshall 2002; Korczak and Lasfer 2007), given the low information content contained in insiders’ sales and the credibility of the related signals, we only analyse open market purchase transactions for ordinary shares. We also exclude trades associated with the exercise of options, security lending, changes in capital structure e.g. share repurchase plans, and takeover bids. Third, if two or more transactions for the same director occur in the same stock on a given day, we aggregate these multiple trades.

The sample for the H1 event study consists of 7,232 director purchase transactions split into 7,010 male transactions and 222 female transactions. Table 1 presents the filtering process used to achieve this final sample. To perform the analysis relevant for H2, the sample is restricted to 1,895 director transactions where there is at least one female sitting on the board. To test whether females on the board

³ Direct ownership means that the shares are actually registered under the insider's name. Indirect ownership refers to insiders who delegate their trading to a third person, for example, trust, family member, enterprise or other intermediary.

would exert a different impact on the profitability of female and male directors, respectively, the sample is split according to gender, that is, 1,589 male transactions and 306 female transactions, respectively.⁴

3.2 Research design

We apply the event-study method outlined by MacKinley (1997) to test H1. The relevant event is each insider purchase transaction made by individual directors. The transaction date is event day [0]. We choose a 5-day event window starting day 0, as well as 1-day and 10-day event alternatives. Following Fidrmuc et al (2006), the 100-trading day period prior to the event window is used as the estimation window, and we apply the standard market model to estimate abnormal returns.⁵ We use the all ordinaries index (AOI) as the market proxy, with daily share prices for each stock involved in the insider transactions obtained from the SIRCA database. Total returns are inclusive of dividends and adjust for capitalisation changes. With regard to H2, we estimate the following regression model:

$$CAR = \alpha + \beta_1 Num_fem + \gamma_1 Prior + \gamma_2 Mag_own + \gamma_3 Rel_own + \gamma_4 Logsize + \gamma_5 M_B + \gamma_6 GFC + \gamma_7 ROE + \gamma_8 INSIDE + \gamma_9 Leverage + error \quad (1)$$

where *CAR* is cumulative abnormal returns for male director trades. *Num_fem* is the

⁴ The total of 306 female transactions exceeds the total number of female transactions (222) from H1-event study analysis. This is explained by the fact that 222 is the number of female transactions after removing duplicates based on firm code, event date and gender, and there is no distinction between different directors as long as they are of the same gender. For example, if Mary (female) and Ann (female) engage in insider transactions for XYZ Co on the same day, from the event study's perspective, we treat them as one transaction since the share price is the same for the same company on the same day, which will have no impact on cumulative abnormal return calculation. Without duplication, the number of unique female transactions is 502. In contrast, 306 female transactions used in hypothesis 2 are unique transactions (for which data are available on all model variables), where using the above example, transactions by Mary and Ann would be treated as two separate transactions.

⁵ In an unreported robustness check we use a market-adjusted return as an alternative benchmark to generate CARs. The results are consistent with the findings reported for the market model.

key test variable and from H2 its predicted sign is negative, namely, the higher the number of female directors on the board, the lower the profitability of male director trades. The control variables that potentially affect the abnormal returns are suggested by Bajo and Petracchi (2006) and Fidrmuc et al. (2006). *Prior* is the ratio of insider ownership to the total number of shares on issue at the time of the insider transaction. *Mag_own* is the magnitude of changes in director's ownership for each transaction; *Rel_own* is the magnitude of changes in director's ownership, scaled by director's ownership prior to a transaction; *Logsize* is the natural logarithm of annual market capitalization (sourced from Fin analysis); *M_B* is market to book (sourced from Fin analysis). *GFC* is a dummy variable to represent the global financial crisis (equal to 1 if the transaction falls in the time interval December 2007 and June 2009, and zero otherwise). *ROE* is return on equity (sourced from Fin analysis). *INSIDE* is a dummy variable equal to 1 if the director is an inside director, otherwise 0 (sourced from Connect4). Finally, *Leverage* is the ratio of long-term debt to total assets (sourced from Fin analysis).

4. Empirical results

4.1 Baseline analysis: Testing the aggregate profitability of director purchases

Panel A of Table 2 displays cumulative abnormal returns for distinct periods subsequent to the event date for all aggregated purchase transactions. The results strongly support prior research, uncovering a strong positive market reaction to the announcement of directors' purchases. More specifically, looking at the immediate

same day stock price reaction associated with purchases, a significant event day 0 abnormal return of 0.53% is found (at the 1% level). Moreover, the price reaction over the extended 5-day event window [0;4] is 1.29%, also statistically significant at the 1% level.

It could be argued that even the 5-day the event window is too short for outside investors to assess the “credibility of signal” conveyed by the transaction (Lakonishok and Lee, 2001 and McConnell et al., 2005). To deal with this concern, we expand the length of the event window to 10 days [0; 9], and find that yet an even bigger cumulative market reaction is generated. In this case, the CAR is 2.07%, nearly double the 5-day CAR which is consistent with Lakonishok and Lee (2001), McConnell et al. (2005), and Fidrmuc et al. (2006). These authors argue that insider purchases of this magnitude convey valuable information to the market, but it should also be noted that the reaction is not instantaneous and this allows the possibility of strategic lagged trading by insiders (Barclay and Warner, 1993). We also examine the CAR for the 20-day event window prior to the transaction (untabulated), which is -3.22% (significant at the 1% level), indicating that corporate insiders that purchase have a contrarian timing ability.

4.2 Hypothesis H1: Profitability of male and female director purchases

To test hypothesis 1, whether the profitability of male versus female director purchases differ, we partition the trades according to gender. The CARs are reported in Panel B of Table 2.

The immediate market reaction (AR[0]) to the male director purchases is similar to female directors (0.52% versus 0.72%), and the difference is statistically insignificant. Over the 5-day window [0; 4], there the CAR reaction to female purchases compared to male purchases is 1.46% versus 1.28%. While the CAR for males is significant at 1% level, the CAR for females is insignificant at any conventional level with the difference in profitability not statistically significant. When we extend the event window to the 10-day case [0;9], the market reaction to male and female purchases is again very similar, and statistically indistinguishable.

In summary, there is no difference between the rent extraction obtained by females compared to male directors, thus not supporting any of the received theories of board dominance or behaviour.

4.3 Hypothesis H2: Influence of board gender diversity on the profitability of male director purchases

To test the influence of board gender diversity on the profitability of male directors, we estimate the model expressed in equation (1) and report the results in Table 3. The variable *Num_fem*, the number of females sitting on the board, is the test variable. According to H2, on average, the expectation is that the profitability of male directors through insider trading becomes lower as the number of female directors sitting on the board, increases. The estimated coefficient on *Num_fem* is -0.0102 and significant at 5% level, which supports H2 i.e. with more females sitting on the board, the lower is the profitability of male directors. With the exception of

the *GFC* dummy, the control variables are all statistically insignificant. The *GFC* dummy indicates that insiders are capable of trading at a more profitable rate than the market, in this case they are purchasing in a down market.

Overall, the results for testing H2, support the prediction that the profitability of male directors decreases when there are more females sitting on the board. But the question remains does board gender diversity also influence the profitability of female directors? We explore this possibility in the context of the regression model of Equation (1) and the results are reported in Table 4.

As evidenced in the table, the estimated coefficient on *Num_fem* is insignificant, suggesting that having females on the board has no impact on the profitability of female directors themselves. This contrasts the results for males. We find a negative relation between females on the board and abnormal performance for male directors. Collectively, these findings suggest that the relationship between females on the board is neutral i.e. neither cooperative nor competitive.

5. Summary and conclusion

Our study examines the role of gender on the profitability of insider trading. The initial question is whether the market reacts positively to director purchases. Strong evidence reported over our 1-day, 5-day and 10-day event windows, together with past research documented outside the Australian setting, support this prediction. When the profits from insider trading are broken down into male versus female purchases, we find that the market reacts positively to both male and female trading

but the market reaction is not statistically different between these two groups. Finally, we test whether having female directors on the board is associated with insider profitability of male or female directors. Our findings support the hypothesis that with more females sitting on the board, the cumulative abnormal return of male (female) directors is diminished (unaffected).

Overall, the profitability of female directors from insider trading is not significantly different from males, which indicates that the market doesn't exhibit a notably different reaction to insider trading according to gender, nor does it indicate that females 'rent extract' any less than males.

Collectively, our evidence suggests that the gender-related "positives", and "negatives", documented in other board studies do not flow over into insider trading in Australia. For example, the Queen bee syndrome that argues that insider trading profitability of female directors is lower than their male counterparts because of the intra-competitive relation among female directors, is not supported by the data. Further, the board busyness argument that suggests female directors (generally being less busy) have a greater chance of possessing private or price-sensitive information in their firm and therefore female abnormal returns should be higher than those of male directors, is also not supported.

However, the lack of support for the gender-related effects does not mean that decomposition of insider trading along gender lines is trivial or unimportant. Indeed, we find strong evidence that female directors sitting on the board is associated with a reduction in the profitability of male directors. This finding might indicate the

importance of including females on the board in this respect, but also suggests a possible leverage effect for other female inside traders who are not similarly constrained.

Our findings could also have important implications from the perspective of female compensation. Female directors have lower salaries than male directors, and this salary differential might give female directors a greater incentive to engage in insider trading compared to their male counterparts. However, female directors also care about their public image, which tends to constrain their incentives to extract rents through insider trading, but this might also be a function of obtaining long-term tenure. This suggests the need for further research into female insider trading and salary compensation along the lines of Roulstone (2003).

Like any research, our analysis is incomplete, and this leads naturally to fruitful directions for future research. A few of these avenues are now briefly discussed. First, we do not model the likelihood of female insiders trading (relative to their male counterparts) and such analysis could prove a highly insightful supplement to our analysis. Second, the impact of female insiders on trading profits might well vary across different market and institutional settings. This would be worthy of investigation, particularly given that the sample size of female trading in our Australian setting is relatively small. Third, Cohen et al. (2012) suggest a decomposition of insider trading transactions into “routine” versus “opportunistic” insider trading. Following on from our study, these two metrics could then be interacted with gender to examine the relative likelihood and profitability of female

versus male directors conditional on these different types of trades.

Fourth, it would be interesting to integrate the gender issue with the media focus of Rogers et al. (2013), to more fully explore insider trading profitability. Finally, our study only considers open-market transactions on the stock exchange involving ordinary shares. Derivative markets provide a leveraged opportunity for trading on asymmetric information and, therefore, such a focus would provide an interesting extension to test the role of gender. We commend all of these ideas to future research efforts.

References

- Adams, R., and Ferreira, D. (2009), "Women in the boardroom and their impact on governance and performance", *Journal of Financial Economics*, Vol. 94, pp. 291-309.
- Bajo, E. and Petracchi, B. (2006), "Do what insiders do: Abnormal performances after the release of insiders' relevant transaction", *Studies in Economy and Finance*, Vol. 23, pp. 94-118.
- Barclay, M. J. and Warner, J. (1993), "Stealth trading and volatility which trades move prices?", *Journal of Financial Economics*, Vol. 34, pp. 281-305.
- Bradshaw, P., Murray, V.V. and Wolpin, J. (1992), "Women on boards of nonprofit organizations", Paper Presented at ARNOVA Conference.
- Burton, C. and Ryall, C. (1995), "Enterprising nation: Reviewing Australia's managers to meet the challenges of the Asia-Pacific century", *Managing for Diversity*.
- Catalyst, (1995), "The CEO View: Women on corporate boards", (Catalyst, New York).
- Carter, D. A., D'Souza, F., Simkins, B. J. and Simpson, W. J. (2010), "The gender and ethnic diversity of US boards and board committees and firm financial performance", *Corporate Governance: An International Review*, forthcoming.
- Chau, M. and Vayanos, D. (2008), "Strong-form efficiency with monopolistic insiders", *Review of Financial Studies*, Vol. 21, pp. 2275-2306.
- Chung, K. H. and Charoenwong, C. (1998), "Insider trading and the bid-ask spread", *Financial Review*, Vol. 33, pp. 1-20.
- Cohen, L., Malloy, C. and Pomorski, L. (2012), "Decoding inside information", *Journal of Finance*, Vol. 67, pp. 1009-1043.
- Core, J., Robert, H. and David L. (1999), "Corporate governance, chief executive officer compensation, and firm performance", *Journal of Financial Economics*, Vol. 51, pp. 371-406.
- Farrell, K. A. and Hersch, P. L. (2005), "Additions to corporate boards: The effect of gender", *Journal of Corporate Finance*, Vol. 11, pp. 85-106.
- Fidrmuc, J. P., Goergen, M. and Renneboog, L. (2006), "Insider trading, news releases, and ownership concentration", *Journal of Finance*, Vol. 61, pp. 2931-2973.
- Finnerty, J. E. (1976), "Insiders' activity and inside information: A multivariate analysis", *Journal of Financial and Quantitative Analysis*, Vol. 11, pp. 205-216.
- Fishman, M. J. and Hagerty, K. M. (1992), "Insider trading and the efficiency of stock prices", *Journal of Economics*, Vol. 2, pp. 3106-122.
- Friederich, S., Gregory, A., Matatko, J. and Tonks, I. (2002), "Short-run returns around the trades of corporate insiders on the London Stock Exchange", *European Financial Management*, Vol. 8, pp. 7-30.
- Gul, F. A., Srinidhi, B. and Ng, A. C. (2011), "Does board gender diversity improve the informativeness of stock prices?", *Journal of Accounting and Economics*, Vol. 51, pp. 314-338.
- Hillier, D. and Marshall, A. (2002), "Are trading bans effective? Exchange regulation

- and corporate insider transactions around earnings announcements”, *Journal of Corporate Finance*, Vol. 8, pp. 393-410.
- Jenter, D. (2005), “Market timing and managerial portfolio decisions”, *Journal of Finance*, Vol. 60, pp. 1903-1949.
- Jianakoplos, N. A. and Bernasek, A. (1998), “Are women more risk averse?”, *Economic Inquiry*, Vol. 36, pp. 620–630.
- John, K. and Mishra, B. (1990), “Information content of insider trading around corporate announcements: The case of capital expenditures”, *Journal of Finance*, Vol. 45, pp. 835-854.
- Kamler, E. and Rasheed, S. (2006), “Mentoring academic women: Struggles for advancement and strategies for change”, *Research and Practice in Social Sciences*, Vol. 2, pp. 1-15.
- Klenke, K. (2003), “Gender influences in decision-making processes in top management teams”, *Management Decisions*, Vol. 41, pp. 1024-1034.
- Korczak, A. and Lasfer, M. (2007), “Foreign shareholder activism and insider trading before material news announcements”, *Cass Business School Working Paper*.
- Lau, D. C. and Murnighan, J. K. (1998), “Demographic diversity and faultlines: The compositional dynamics of organizational groups”, *Academy of Management Review*, Vol. 23, pp. 325-340.
- Lakonishok, J. and Lee, I. (2001), “Are insiders’ trades informative?”, *Review of Financial Studies*, Vol. 14, pp. 79-112.
- MacKinlay, A. (1997), “Event studies in economics and finance”, *Journal of Economic Literature*, Vol. 35, pp. 13-39.
- Mavin, S. (2008), “Queen bees, wannabees, and afraid to bees: No more “best enemies” for women in management?”, *British Journal of Management*, Vol. 19, pp. 75-84.
- McInerney-Lacombe, N., Bilimoria, D. and Salipante, P. F. (2008), “Championing the discussion of tough issues: how women corporate directors contribute to board deliberations”, *Women on Corporate Boards of Directors: International Research and Practice*.
- Nguyen, H. and Faff, R. (2006-7), “Impact of board size and board diversity on firm value: Australian evidence”, *Corporate Ownership and Control*, Vol. 4, pp. 24-32.
- Ragins, B. R. and Scandura, T. A. (1997), “The way we were: Gender and the termination of mentoring relationships”, *Journal of Applied Psychology*, Vol. 6, pp. 945-953.
- Rogers, J., Skinner, D. and Zechman, S. (2013), “The role of the media in disseminating insider trading news”, (March 1, 2013). Chicago Booth Research Paper No. 13-34; Fama-Miller Working Paper. Available at SSRN: <http://ssrn.com/abstract=2235054> or <http://dx.doi.org/10.2139/ssrn.2235054> (accessed March 28, 2013).
- Roulstone, D.T. (2003), “The relation between insider-trading restrictions and executive compensation”, *Journal of Accounting Research* Vol. 41, pp. 525-551.
- Rozanov, K. (2009), “Corporate governance and insider trading”, working paper, London Business School.

- Seyhun, H. N. (1986), “Insiders profits, costs of trading, and market efficiency”, *Journal of Financial Economics*, Vol. 16, pp. 189-212.
- Shin, T. (2011), “The gender gap in executive compensation: The role of female directors and chief executive officers”, *The Annals of the American Academy of Political and Social Science*, Vol. 639, pp. 258-278.
- Sosik, J. J. and Godshalk, V. M. (2000), “The role of gender in mentoring: Implications for diversified and homogenous mentoring relationships”, *Journal of Vocational Behavior*, Vol. 57, pp. 102-122.
- Staines. G. L., Toby. E, J. and Carol, T. (1974), “The queen bee syndrome”, *Psychology today*, Vol. 7, pp. 55-60.
- Trinidad, C. and Normore, A. H. (2005), “Leadership and gender: A dangerous liaison?”, *Leadership & Organization Development Journal*, Vol. 26, pp. 574 – 590.
- Wang, J. (2011), “Transient institutional investors and insider trading signals”, *International Journal of Accounting and Information Management*, Vol. 19, pp. 118-145.
- Zhang, G. (2001), “Regulated managerial insider trading as a mechanism to facilitate shareholder control”, *Journal of Business Finance and Accounting*, Vol. 28, pp. 35-62.

Table I.

Data filtering

Type of purchase transaction	No. of transactions
Initial Director transactions	10043
<i>Sample exclusions</i>	
Last trading date missing/NA/less than zero	-212
Trading date missing/NA/less than zero	-823
Number of shares less than zero	-176
Exercise of options, changes in capital structure and takeover bids	-346
Aggregate multiple trades by same insider in same day	-1254
Final sample	7232
Male Director transactions	7010
Female Director transactions	222

Table II.

Cumulative abnormal returns for male and female directors

This table reports mean cumulative abnormal returns over distinct periods subsequent to the transaction event date in Panel A for 7232 director purchase transactions and in Panel B for a partitioning of 7010 male transactions and 222 female transactions, respectively. The difference in profitability of female and male directors is tested via an F-test. AR [0] refers to the mean cumulative abnormal return earned over the 1-day trading day event window, CAR [0; 4] refers to the mean cumulative abnormal return earned over a 5-day event window, and CAR [0; 9] refers to the mean cumulative abnormal return earned over a 10-day event window. Pooled and Satterthwaite t-tests are the two methods used to test the difference between male and female directors in terms of the profitability through trading on their company's stock. ***, **, * indicate statistical significance at the 1%, 5%, 10% levels, respectively (two tail test).

	AR [0]		CAR[0;4]		CAR[0;9]	
	Mean	p-value	Mean	p-value	Mean	p-value
<i>Panel A: Overall CARs</i>						
N =	0.0053***	<0.0001	0.0129***	<0.0001	0.0207***	<0.0001
<i>Panel B: Male versus Female CARs</i>						
male(N=7010)	0.0052***	<0.0001	0.0128***	<0.0001	0.0206***	<0.0001
female(N=222)	0.0072***	0.0556	0.0145	0.1190	0.0208***	0.0045
test for diff	t-stat	p-value	t-stat	p-value	t-stat	p-value
pooled	0.27	0.7845	0.14	0.887	0.01	0.992
Satterthwaite	0.51	0.6119	0.18	0.855	0.02	0.9784

Table III.

Influence of board gender diversity on the profitability of male director purchases

This table reports the influence of board gender diversity on the profitability of male directors. We focus on director transactions where there is at least one female sitting on the board, which restricts our sample size to 1,895 director transactions. The dependent variable is CAR [0; 5], which is the cumulative abnormal return of male directors over 5 days post trading date. *Num_fem* is the number of female directors sitting on the board for each firm. *Prior* is the ratio of insider ownership to total number of shares on issue when the transaction occurs. *Mag_own* is the magnitude of changes in director's ownership for each transaction. *Rel_own* is the magnitude of changes in director's ownership, scaled by director's ownership prior to transaction. *Logsize* is the logarithm of annual market capitalization. *M_B* is the ratio of market capitalization to book value of equity. *GFC* is a dummy variable = 1 if the transaction falls between December 2007 and June 2009, otherwise 0. *ROE* is return on equity. *INSIDE* is a dummy variable =1 if the director is an inside director of the firm, otherwise 0. *Leverage* is the ratio of long-term debt to total assets. ***, **, * indicate statistical significance at the 1%, 5%, 10% levels, respectively (two tail test).

Variable	Coefficient	t-Statistic	P-value
<i>C</i>	0.0392	1.07	0.2851
<i>NUM_FEM</i>	-0.0102***	-2.32	0.0205
<i>_PRIOR</i>	-0.0515	-1.37	0.1695
<i>MAG_OWN</i>	0.0000	0.52	0.6054
<i>REL_OWN</i>	0.0001	0.43	0.6700
<i>LOGSIZE</i>	-0.0019	-0.46	0.6431
<i>M_B</i>	0.0000	0.09	0.9303
<i>GFC</i>	0.0208***	2.94	0.0033
<i>ROE</i>	-0.0002	-0.03	0.9788
<i>INSIDE</i>	0.0034	0.51	0.6116
<i>LEVERAGE</i>	-0.0220	-0.93	0.3514
Adjusted R-squared	0.0062		

Table IV.

Influence of board gender diversity on the profitability of female director purchases

This table reports the influence of board gender diversity on the profitability of female directors. We focus on female transactions. The dependent variable is *CAR* [0; 4], which is the cumulative abnormal return of female directors over a 5-day event window. *Num_fem* is the number of female directors sitting on the board for each firm. *Prior* is the ratio of insider ownership to total number of shares on issue when the transaction occurs. *Mag_own* is the magnitude of changes in director's ownership for each transaction. *Rel_own* is the magnitude of changes in director's ownership, scaled by director's ownership prior to transaction. *Logsize* is the logarithm of annual market capitalization. *M_B* is the ratio of market capitalization to book value of equity. *GFC* is a dummy variable = 1 if the transaction falls between December 2007 and June 2009, otherwise 0. *ROE* is return on equity. *INSIDE* is a dummy variable =1 if the director is an inside director of the firm, otherwise 0. *Leverage* is the ratio of long-term debt to total assets. ***, **, * indicate statistical significance at the 1%, 5%, 10% levels, respectively (two tail test).

Variable	Coefficient	t-Statistic	P-value
<i>C</i>	0.1248	1.25	0.2117
<i>NUM_FEM</i>	-0.0114	-1.33	0.1851
<i>_PRIOR</i>	0.2021	1.58	0.1156
<i>MAG_OWN</i>	0.0000	-0.77	0.4438
<i>REL_OWN</i>	-0.0353	-1.77	0.0777
<i>LOGSIZE</i>	-0.0083	-0.78	0.4363
<i>M_B</i>	0.0001	0.12	0.9072
<i>GFC</i>	0.0157	0.77	0.4410
<i>ROE</i>	0.0018	0.04	0.9681
<i>INSIDE</i>	-0.0158	-0.81	0.4158
<i>LEVERAGE</i>	-0.0720	-1.37	0.1719
Adjusted R-squared	0.0108		