경영학석사학위논문

What makes the Firm silent?

– Relation between Gender pay gap

and Financial reporting quality

남녀임금차이의 재무적 고찰

2021 년 1 월

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이 논문을 경영학 석사 학위논문으로 제출함
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Abstract

What makes the firm silent?

-Relation between Gender pay gap and Financial reporting quality

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Using the Korea data, this paper investigates the relation of high gender pay gap within firm with two aspects of financial reporting quality: compliance with accounting standards and real earning management. Firms with high gender pay difference are more likely to be implicated in enforcement action by FSS(Financial Supervisory Service) from violating accounting standards, and they are more likely to do real earning management. Consistent with oppressive culture lowering the financial reporting quality through lack of information sharing within firm, this paper suggests that high gender pay gap represents oppressive culture within the firm leading to financial misconduct. The innovation of this paper is documenting that the gender pay disparity within the firm can be one of the indicators of financial reporting quality.

Keywords: *gender pay gap; oppressive culture; information sharing; financial reporting quality*

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1. Introduction

Gender earnings is contentious issue and has been actively studied in various fields. Many Countries make an effort to reduce the gender pay gap between male and female but it is still a problem to be solved. Gender earnings gap in Korea is the highest in the OECD since 2000. In the latest report by the OECD, released on 2018, the gender gap in Korean median earnings was the highest as 34.1%. The gap in most OECD countries was between 10% and 20% and the average was 13.0%. In Korea, the number of the rate of low-paid women has been on the decline but it is still on the top among the OECD countries.

Many global leaders and studies make their voice heard about the negative effect of gender pay disparity. Prior literature contend that the gender discrimination can lead to inefficiencies within the firm lowering the output of the firm(Cavalcanti and Tavares, 2016; Cuberes and Teignier, 2016). Dugardin et al.(2019) also raise a question about the effect of the gender pay gap. And it suggests that there is positive(negative) relation between gender pay gap and firm productivity in female(male)-dominated firm when unions are present. There are mixed results about the relation between gender pay gap and firm performance but global leaders and companies, governments still pledge to reduce the gender pay disparity.

There are many reasons causing the gender pay disparity. One reason could be that lots of Korean women have a hiatus in their careers after their pregnancy and getting back to their career is structurally difficult. Workplace culture can pressure women to withdraw from labor force, and it can be hard for mothers to return to well-paid regular employment. Besides the structural difficulty, many studies find that characteristics of male and female itself can lead to the gender pay difference. It documented the different characteristics of male and female and how these factors are rewarded. Individual level factors like career, experience or skill can lead to the pay gap between male and female. Pay gap is a reasonable result of these

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individual determinants. Some studies find the difference of risk preferences or attitudes accepting the competition and negotiation between male and female(Bertrand, 2010). Firm level factors like foreign direct investment are also analyzed by the prior literature. Regarding the foreign direct investment, there are mixed results of relation between foreign direct investment and gender pay disparity. Braunstein and Brenner(2007) contend a positive relation while Oostendorp, R.H(2009) suggests a negative relation. From finding the individual level factors or firm level factors, the idea that firms itself play an important role in creating the gender pay disparity has become popular. Some suggested that the firms do the role in maintaining the gender pay gap by their practices such as defining and rewarding the jobs(Baron, 1984; Acker, 1990, 1992). As these views, Organizational culture is a noticeable determinant to explain the gender pay inequality. Furthermore, it can be helpful to predict the financial performance of the firm. Because organizational culture can have an effect on employees' behavior ultimately on the organization's financial performance(Holmes & Marsden, 1996). Organizational culture is a shared expectation of approved behavior within the firm(Schwartz and Davis, 1981; Van Maanen and Barley, 1984) and it is promising to look into organizational culture and its relation with financial reporting quality. But it is difficult to empirically observe and measure the organizational culture so it is the second best way to distinguish or predict the organizational culture with other measurable way.

   This paper suggests that high gender pay gap firms represent the 'Oppressive culture' which have a relation with low financial reporting quality. Firms with high gender pay gap is the firm with inequality. There are many standards to divide the employees within the firm and one of the standards to divide the employee is 'Gender and pay'. If the gender pay gap gets bigger, the hierarchical organization structure which consist of higher paid male and lower paid female gets stronger. The important decision making will be more focused on the

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centralized group; the higher paid male. Employees who are in the middle of the decision making or in the centralized group are likely to exert their strength on the process of the firm, oppressing the other(Morrison and Milliken, 2000). And this centralized decision making within a corporation is one of the factor that can induce a 'Organizational silence'(Morrison and Milliken, 2000). Prior studies find that employees who believe they have been muted might stop passing any information and withhold their voice(Ashforth, 1985; Greenberger and Strasser, 1991). As a result, the firms are more likely to be engaged in financial misconduct leading to low financial reporting quality. Because COSO report suggests that "information and communication" is one of the components of integrated control framework ensuring the continued reliability of accounting system.

I test that firms with high gender pay gap is more likely to be associated with financial misconduct, suggesting the effect of the workplace or culture within the firm by this relation. First this paper basically finds the determinants of the gender pay difference within the firm. To find the high gender pay gap firms, I use the 'gender pay gap model' including firm fixed effect and variables that can influence on the gender pay gap following the prior literature. I categorized the firm which has positive and statistically significant relation with gender pay gap(Gender_pay_gap) into HGPF(indicator variable, 1 for firm years with a coefficient on firm's fixed effect that is statistically significant(p-value<0.05) when estimating Gender pay gap model). After categorizing the high gender pay gap firms(HGPF), this paper tests whether HGPF is associated with low financial reporting quality. It analyzes two aspects of financial misconduct: compliance with accounting standards and real earning management.

The empirical analysis of this paper is based on the data of the Korea listed firms from 2003 to 2019. Studying disparity within firms is demanding task(Tomaskovic-Devey,

and Skaggs 2010) and using the unique data in Korea is different from the traditional approach focusing on the overall wage pay gap. Because it is mandatory for the Korea listed firms to disclose the average pay of male and female, Korea data is a desirable property to examine the gender pay gap within the firm. Regarding the compliance with accounting standards, I looked into the Financial Supervisory Service(FSS) press release. In Korea, Financial Supervisory Service(FSS) reviews a firm's filing after the audit, and do the enforcement actions if the firm violated the accounting standards. I used the variable Fraud(indicator variable equal to one if a firm is implicated in enforcement actions by the FSS(Financial Supervisory Service), and zero otherwise) to see whether the firm violated the accounting standards. And to see the relation with real earning management I used the variable REM following Cohen et al, (2008).

This paper finds the positive relation between HGPF and Fraud/REM supporting that the firms with high gender pay gap are more likely to be associated with financial misconduct. That is High gender pay gap firms(HGPF) are more likely to violate the accounting standards and be associated with real earning management.

I did validation test to make sure that the HGPF captures the main interest of my paper; the organizational culture leading to financial misconduct. Because organizational culture has an influence on the employee job satisfaction leading to financial performance (Brief, 1998), I tested the relation between HGPF(High Gender Pay gap Firms) and the employee satisfaction. I used subindex of KEJI to measure the employee satisfaction. In Korea, Citizens' Coalition for Economic Justice Institute (CCEJI) publishes the Korea Economic Justice Institute (KEJI) Index, a index to measure the Corporate Social Responsibility. One of the subindices in the KEJI index is the human capital investment evaluating the employee satisfaction. I used a variable KEJI(the score firm received in

'employee satisfaction' divided by the perfect score of the 'employee satisfaction' section), and find the negative and significant relation with the HGPF. High gender pay gap firms mostly received low score at the employee satisfaction suggesting that employees within HGPF(high gender pay gap firm) are less likely to be satisfied. This relation supports that the culture within the HGPF might have negative influence on the employee satisfaction, ultimately causing the negative financial performance; the financial misconduct.

The innovation of this paper is looking within-firm gender pay gap and finding the relation with financial misconduct. This approach and findings do provide new insights into the gender pay gap in Korea. It contributes to the management accounting literature by showing that gender pay disparity can translate into firm's financial reporting quality representing the oppressive organizational culture.

There are some limitations. First of all it is hard to consider the individual characteristics(e.g. educational background, skill, career). The pay also depends on the experience or the certification license the employees have but it is hard to control those variables because of data limitation. There is little empirical result of measuring the culture within the firm and it is hard to generalize the finding of this paper to other labor markets.

The paper proceeds as follows. Section 2 discusses about the prior literature regarding the gender pay gap and develops two hypotheses to test. Section 3 describes the sample and the research design. Section 4 presents descriptive statistics and results and Section 5 deals with the validation test. Finally, the section 6 summarizes the main findings and concludes with contributions and limitations of this paper.

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2. Literature review and Hypotheses Development

2.1 Prior research on Gender issues

"Gender" has been highly contentious issue and there are diverse papers focusing on this topic. Bertrand(2010) underlines the difference between men and women on risk preferences or attitudes accepting the competition and negotiation, and it shows the effect of the difference on sorting of men and women. Gender socialization theory suggests that men are more achievement-oriented while women are more relationship-oriented(Carlson 1972), and other documents that females are more likely to comply with rules than males(Barnett et al.1994; Bernardi and Arnold. 1997). And many research papers started to make an attention to the role of women especially in board. Some focuses on the proportion of the female director on board; the gender diversity. The women on boards play an monitoring role and this gender diversity on board reduces earning management(kim et al. 2017; García Lara et al. 2017; Fan et al. 2019).

Some provides the evidence of the difference in pay between male executive and female executive(Vieito and Khan, 2012; Bertrand and Hallock,2001). Regarding the gender earnings issue, it has been of great interest to investigate the determinants of the pay gap. Foreign direct investments(FDI) is one of the determinants suggested and the results are not uniform; while some papers find a positive association between FDI and the gender pay gap(Braunstein and Brenner, 2007), others find a negative association(Oostendorp, R.H. 2009). Information is another determinant to have an impact on different pay by gender. The firms with less information about the employee's productivity are likely to be more unequal firm(Rothschild and Stiglitz, 1982; Lundberg and Startz, 1983). Firms pay more to workers who give high information about their productivity than the employees who convey less information, leading to the higher pay gap. Market competition is also considerable variable

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which can have an impact on pay inequality. Becker's theory suggests that increased market competition will lower the gender pay gap (Dudley Cooke et al., 2019; Hellerstein et al., 2002). While M Guadalupe(2007) documented that the market competition makes productive worker to be more valuable and this makes more return to higher skilled employees, causing the wage inequality. Besides these factors, firm characteristics or institutional settings can influence on wage inequality within firms(Becker, 1957). Firms itself do the role in maintaining the gender pay gap by their practices such as defining and rewarding the jobs(Baron, 1984; Acker, 1990, 1992). As a result, organizational culture within the firm can be an important factor to explain the gender pay difference.

2.2 Gender pay gap and Firm performance

There are some studies suggesting the effect of the gender pay gap on firm performance. Gender pay disparity has a negative effect on output of the firm, creating inefficiencies(Cavalcanti and Tavares, 2016; Cuberes and Teignier, 2016). Perryman et al.,(2016) suggest that there still exits gender pay gap in the top management team(TMT) and gender diversity moderates the gap. It contends that gender diversity of top executives reduces firms' risk-taking behaviors and this leads to better firm performance proxied by Tobin's Q. Dugardin et al.(2019) demonstrated that the gender pay gap reduces the profitability of the firm under the condition of no union. But when unions are present, there is positive(negative) relation between the gender pay gap and firm productivity in female-dominated(male-dominated)firm. It interprets that union is a signal of the fair pay policy. And it explains that females are more likely to accept the incentive wages for males when their work-life balances are warranted by the union.

Some prior studies deal with the effect of gender on earnings quality including internal control. Barua et al.(2010) analyzed the relation between the gender of chief financial

officer and accrual earnings(Barua et al., 2010). It documented that absolute value of discretionary accruals is lower when the firm has female CFO. Others find the effect of the gender diversity of boards on higher quality earnings(Srinidhi et al., 2011; Kyaw et al., 2015). Chen et al.(2016) investigates the relation between gender and internal control weakness and suggests that firms with more female representation on board are less likely to have internal control weakness.

2.3 Gender pay gap and Organizational culture

Studying disparity within firms has been an demanding task(Tomaskovic-Devey, and Skaggs 2010). Organization itself plays an important role in gender pay disparity because they are responsible for defining and rewarding jobs(Baron, 1984; Acker, 1990, 1992). Many studies explain the discrimination with the idea of matching the employer and employees(Becker, 1971), and the prior literature(Hamermesh, 1999) suggests that it is a promising way to link the gender pay gap to the features of worker and firms. From this point, it is meaningful to look into the culture or firm level characteristics that can also be determinants to the gender pay inequality. It can be also an indicator for financial performance because organizational culture have an impact on the employee's behavior deciding the firm's financial results(Holmes & Marsden, 1996). But Organizational Culture is the organization's shared expectations for consensually approved behavior(Schwartz and Davis, 1981; Van Maanen and Barley, 1984), so much work on organizational culture has been conceptual and theoretical rather than empirical(Gudykunst et al., 1985; Pacanowsky and O'Donnell-Trujillo, 1983).

2.4 Hypotheses development

There are many prior literatures finding the effect of the gender pay inequality on firm's productivity. Prior study suggests the effect of organizational culture on an employees' behavior, and ultimately on the organization's financial performance(Holmes & Marsden, 1996). By this reason, organizational culture is one of the determinants of financial reporting quality.

Gender inequality is more likely to be high in firms with high gender pay difference. If the gender pay gap gets bigger, the hierarchical organization structure which consist of higher paid male and lower paid female gets stronger. Centralized decision making is one of the characteristics of hierarchical organization and this centralized decision making can induce a perceived lack of control leading to organizational silence(Morrison and Milliken, 2000). In those firms, decision making will be more likely to be centralized to the higher paid group. Following the prior literature, employees who are in the middle of the decision making are likely to exert their strength on the process of the firm, oppressing the other(Morrison and Milliken, 2000). Centralized decision making within a corporation is one of the factor that can induce a 'Organizational silence' (Morrison and Milliken, 2000) and employees who believe they have been muted might stop passing any information and withhold their voice(Ashforth, 1985; Greenberger and Strasser, 1991). COSO report suggests that "information and communication" is one of the components of integrated control framework ensuring the continued reliability of accounting system. I test that firms with high gender pay gap is more likely to be associated with financial misconduct, suggesting the effect of the workplace or culture within the firm by this relation. From this logic and prior literature, it can be predicted that HGPF(High Gender Pay gap Firm) will capture the oppressive culture

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with lack of information sharing, and the firm with this characteristics are more likely to have low financial reporting quality.

This paper investigates the relation of high gender pay gap within firm with two aspects of financial reporting quality: compliance with accounting standards and real earning management. In Korea, Financial Supervisory Service(FSS) reviews a firm's filing after the audit, and do the enforcement actions if the firm violated the accounting standards. It is predicted that high gender pay gap firms are more likely to be implicated in enforcement actions by the FSS, violating the accounting standards. And the firms with high gender pay gap are more likely to be associated with the real earning management.

The hypotheses of this paper are as below.

Firms with high gender pay gap are more likely to be associated with financial misconduct.

H1a : Firms with high gender pay gap are more likely to violated the accounting standards.

H1b : Firms with high gender pay gap are more likely to be associated with real earning management.

3. Method

3.1 Sample selection

The sample of observations used in this paper are publicly traded Korean companies from 2003 to 2019. In Korea, firms disclose various employee information such as average pay and continuous years of service by gender. This data is desirable properties to examine the firm-level data and the meaning of gender pay gap within the firm.

To confirm that the firms are implicated in enforcement actions by the Financial Supervisory Service(FSS), I used the FSS press release. I obtained other data from Dataguide and TS2000. And I limited the sample to non-financial firms and also restricted the

observations with December-fiscal year end. Initial firm years that are covered by TS2000 and Dataguide was 41,399. I exclude data for missing data of the number of employees and the variables that used in the gender pay gap model. I also excluded the firm years which there is more than one part time workers, because the wage trends are different between part-time working females and full-time working females(Fitzenberger and Wunderlich., 2002). Firms in Korea don't disclose the pay for the part-time workers distinctly so I deleted those observations to remove the effect of the part-time workers. I ameliorate the influence of outliers by winsorizing all continuous variables at the top and bottom 1% of variable distributions.

The final sample of 14,113 firm years used in both Gender pay gap model and Fraud model. Table 1 panel B(panel C) is the yearly(industry) distribution of those firm years. And 1,723 firm years are deleted because of the lack variables used in REM model. The final firm years used in REM model is 12,390. Table 1 panel A presents the sample selection process.

3.2 Research design: Gender pay gap model, Fraud model, REM model

3.2.1 Gender pay gap model

To find the high gender pay gap firms, I used the gender pay gap model controlling the determinants that can influence on the gender pay gap following the prior literature and firm fixed effect. The model used to categorize the high gender pay gap firm is as below.

$$
\begin{aligned}
Gender\_pay\_gap_{it} = {} & \mu_0 + \mu_1 HHI_{it} + \mu_2 Labor\_intensity_{it} + \mu_3 FEME_{it} + \mu_4 Gender\_tenue\_gap_{it} \\
& + \mu_5 Size_{it} + \mu_6 Debtratio_{it} + \mu_7 Mtb_{it} + \mu_8 Profitability_{it} \\
& + \mu_9 Average\_pay_{it} \\
& \qquad\qquad + \mu_9 Average\_pay_{it} + \mu_{10} Indep\_ratio_{it} \\
& + \mu_{11} Board\_size_{it} + \mu_{12} FDI_{it} + FIRMFE + YearFE + \varepsilon_{it}
\end{aligned}
$$

There are extensive studies examining the various drivers of the gender pay gap.

Some studies document the effects of foreign direct investments on wage disparity and the results are not uniform; while some papers find a positive association between FDI and the gender pay gap(Braunstein and Brenner, 2007), others find negative association (Oostendorp, R.H. 2009). Kodama, Javorcik, & Abe.(2018) also documented that the foreign-owned firms are more likely to have more family-friendly workplace and the equal pay policy. I included the variable FDI(Foreign Direct Investment) to control those effect. According to the personal taste hypothesis, which was suggested by Becker(1957) and further developed by Arrow(1973), discrimination is a cost to the employer especially in competitive market. By this paper, if the market competition gets stronger firms are likely to reduce the level of discrimination. Hellerstein et al.(2002) demonstrated that the market power is the prerequisite to the employer's discrimination. To reflect the influence of market competition, I include the variable HHI(Herfindal-Hershman Index). In addition, some studies showed that the firms with less information about the employee's productivity are likely to be more unequal firm(Rothschild and Stiglitz, 1982, Lundberg and Startz, 1983). While others suggest that firms pay more to workers who gives high information about their productivity, more than the employees who convey less information, leading to the higher pay gap. Labor intensity is used as a proxy of whether the individual productivity is easily measured(Xin meng, 2004). It can be predicted that high labor intensity firms are more likely to have higher gender pay gap, so I included the variable Labor_intensity(ratio of labor costs on the sum of cost of goods sold and SG&A) to control the effect. There are two types of compensation setters in the board, insider and the independent directors. Independent directors do the monitoring role so higher board independence would reduce the gender pay disparity. So I included the Indep_ratio(the ratio of the independent directors on board) to consider the effect. I also controlled FEME(the ratio of female employee on total employee) because firms

who hire more female employees are to be expected to have less bias toward the female leading to low gender pay gap followed by Becker's personal taste hypothesis. In addition I controlled Gender_tenure_gap(the difference between male's continuous years of service and female's continuous years of service divided by male's continuous years of service) and Board_size(the number of entire board members) as corporate governance. And I also included Size(firm size), Debtratio(leverage), and Mtb(market equity to book equity ratio), Profitability(net income divided by the lagged total assets), Average_pay(the average pay of the employees) in the gender pay gap model. All continuous variables in this model are winsorized at 1st and 99th percentile.

3.2.2 Fraud model

First I used the Fraud variable to test the first hypothesis that the High gender pay gap firms(HGPF) are more likely to violate the accounting standards. Fraud is indicator variable equals to 1 if firm is implicated in FSS enforcement actions by violating the accounting standards. Financial Supervisory Service(FSS) reviews a firm's filing after the audit and do the enforcement actions if the firm violated the accounting standards. This proxy is used in some studies for aggressive type of earning management and it is one of the proxies for the financial misconduct. The model used to test H1a is as below.

$$
\begin{aligned}
Fraud_{it} = \ & \mu_0 + \mu_1 HGPF_{it} + \mu_2 Size_{it} + \mu_3 Firm\_age_{it} + \mu_4 Big\_4_{it} + \mu_5 Loss_{it} \\
& + \mu_6 Leverage_{it} \\
& \quad + \mu_7 Adj\_cfo_{it} + \mu_8 Adj\_roa_{it} + \mu_9 Adj\_rnoa_{it} + \mu_{10} Intan_{it} \\
& + \mu_{11} Indep\_ratio_{it} \\
& \quad + \mu_{12} Profitability_{it} + IndustryFE + YearFE + \varepsilon_{it}
\end{aligned}
$$

In this model the main variable of interest is HGPF(High Gender Pay gap Firm). HGPF is an indicator variable equal to 1 for firm years with a coefficient on firm's fixed effect that is positive and statistically significant (p-value <0.05) when estimating gender pay gap model equation. I also controlled for the firm-level characteristics in the Fraud model following the prior literatures documenting the financial misconduct(Armstrong, Larker, Ormazabal, and Taylor, 2013). These controls include firm size(Size), leverage(Leverage), intangible assets(Intan), the incidence of loss(Loss), net income divided by the lagged total assets(Profitability) and the accounting performance(Adj_cfo, Adj_roa, Adj_rnoa). I also include the indicator variable for the firm audited by Big4(Big_4), and the proportion of independent director on the board(Indep_ratio) to control the external monitoring that can influence on the firm's financial misconduct. Because financial misconduct could be different depending on the developmental stages of the firms' business, this paper include Firm_age(the natural logarithm of number of years since the date of firm incorporation) to control the effect. All continuous variables in Fraud model are winsorized at 1st and 99th percentile. Finally, I include two-digit KSIC industry fixed effect and year fixed effect to address the variation in financial misconduct across industries and use cluster-robust standard errors at the firm level(Petersen 2009).

3.2.3 REM(AEM) model

These are two typical types of earning management: accrual earnings management(AEM); and real earnings management (REM). Firms manipulate their earnings by accrual-based management or real activities. AEM is done by managers through accounting estimates and methods and it doesn't have an impact on cashflow, while REM is done through operational activities which has direct effects on cash flow(Roychowdhury,

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2006). I argue that large gender pay disparity within the firm is associated with high levels of real earning management. Following the prior literature, accrual based earning management requires accounting and finance expertise so it is likely to be limited to chief financial officers(CFOs) or CEOs(Jiang et al., 2010). Preparing the financial statements including deciding accounting methods and measurement systems is implemented by a company's management team and top management teams are mainly involved in AEM. While REM is done through operational activities(Roychowdhury, 2006), these decisions at the 'operational' level are more likely to compose or reflect the culture within the firm. REM is mostly done through core business activities related to all employees in the firm. By this reason it is proper measure to investigate the gender pay gap reflecting organizational culture or process within the firm and its relation with financial misconduct.

I used REM variable to test the second hypothesis that firms with high gender pay gap are more likely to be associated with real earning management. I also tested the association between AEM and high gender pay gap firms. Both tests are meaningful to document that high gender pay gap is one of the indicators of organizational culture which can have an influence on the financial performance. The model used in this paper is as below.

$$
\begin{aligned}
REM(AEM)_{it} = {} & \mu_0 + \mu_1 HGPF_{it} + \mu_2 Size_{it} + \mu_3 Firm\_age_{it} + \mu_4 Leverage_{it} + \mu_5 Indep\_ratio_{it} \\
& + \mu_6 Mtb_{it} + \mu_7 Average\_pay_{it} + \mu_8 Profitability_{it} + \mu_9 FDI_{it} + \mu_{10} Big\_4_{it} \\
& + \mu_{11} AEM(REM)_{it} + IndustryFE + YearFE + \varepsilon_{it}
\end{aligned}
$$

I follow the Cohen et al.(2008) to measure the REM(real earnings management). First I estimated the abnormal levels of cash flow from operations(AB_CFO), discretionary expenses(AB_DISX) and production costs (AB_PROD). I multiplied AB_CFO and AB_DISX to (-1) and then combined three individual variables, (-1)*AB_CFO, (-

1)*AB_DISX, and AB_PRO , to capture total effect of real earnings management(Cohen et al., 2008). Table 4 shows result for the measurement of real activities manipulation. I used the variable AEM followed by performance-matched discretionary accruals as in Kothari et al.(2005) to measure the accrual earning management. I controlled the firm-level variables that could be also related to REM(AEM). Size is firm size; Debtratio captures financial risk and Profitability controls the firm performance. Mtb controls the investment opportunities because it can affect the discretionary expenses. And I added firm_age(log of firm age) because younger firms grow faster and need more financing with which they are more likely to rely on the REM(Skinner and Sloan 2002; Armstrong et al. 2013). Big4 is indicator variable 1 for the firm audited by Big4, Indep_ratio is the proportion of independent director on the board and FDI is foreign ownership. These variables capture external monitoring mechanisms. It is possible that employees' pay can be a factor that makes the employee to engage in REM(AEM), so I included the Average_pay to control for the possibility(Ahearne et al. 2016, Cho et al. 2019). Prior studies suggest the tradeoff between real earning management and accrual-based earning management(Cohen and Zarowin, 2010; Zang, 2012). I included AEM(REM) in the REM(AEM) model to control the effect. In this REM(AEM)model, main variable of interest is also the HGPF(High Gender Pay gap Firm).

All continuous variables in REM(AEM) model are winsorized at 1st and 99th percentile. Finally, I include two-digit KSIC industry fixed effect and year fixed effect to address the variation in financial misconduct across industries and use cluster-robust standard errors at the firm level(Petersen 2009).

4. Results

4.1 Descriptive statistics and correlation matrix

Table 2 panel A presents the descriptive statistics for the regression analyses of Gender pay gap model. The mean of the Gender_pay_gap(difference between male's average pay and female's average pay divided by male's average pay) is 0.309 and the standard deviation is 0.208. And the mean of the Gender_tenure_gap (difference between male's continuous years of service and female's continuous years of service divided by male's continuous years of service) is 0.171 and the standard deviation is 0.609. On average, both the pay and the work-period of the male are longer than the female. And the mean of FEME(the ratio of female employees on total employees) is 0.221 showing that about 22% is female in the firm. And the mean of the board size is 6.224 and the outside directors account for 48.2% of the board on average.

Table 3 reports the descriptive information about variables used in Fraud and REM model. The mean of the fraud is 0.027, meaning that the 2.7% of the observations is implicated in Financial Supervisory Service(FSS) enforcement actions by violating the accounting standards. And REM variable and the variable used to measure the REM(rm_disx, rm_cfo, rm_prod) have the mean value close to zero by construction(table 4). 19.1%(18.8%) of firm years has positive and significant relation with the gender pay gap in Fraud model(REM model).

Table 5 reports the Pearson correlations for the variables in our main analysis. HGPF(High Gender Pay gap Firm) is positively correlated with the Fraud, hinting the positive relation between the gender pay gap and the enforcement actions by FSS. And the correlation between HGPF and REM is also positive, addressing the concern that high gender pay gap firms are positively related to real earning management.

4.2 Regression results

4.2.1 Gender pay gap model

Table 2 panel B presents the regression result of the Gender pay gap model. The coefficient of FEME(the ratio of female employees on total employees), Gender_tenure_gap are all positive and significant as predicted. As in column 1, adjusted r square is 0.3496 if the firm fixed effect and the year fixed effect is included. The adjusted r square is 0.1981 if only the industry fixed effect and the year fixed effect are included(column2). The coefficient of both Labor_intensity(the ratio of labor costs on the total costs) and FEME(the ratio of female employees on total employees) are positive and statistically significant as predicted.

4.2.2 Relation between HGPF and Fraud

Table 6 presents the regression result of the association between HGPF and the Fraud. In the sample, only 2.7% of firm years are implicated in FSS(Table 3). It might be a challenge to derive meaningful conclusions in suggesting the relation between the HGPF and financial misconduct. By this reason, I use a Firth logit regression(Firth 1993) with probit model to address the problem caused by the small-sample bias. Firth logit regression is done through a penalized likelihood estimation and this solves the first-order bias by small samples(Rasch and Waibel, 2018).

Both results using probit model(column1) and firth logit model(column2) show a strong positive association between HGPF and Fraud, indicating that high gender pay gap firms exhibit higher likelihood of Fraud. This supports the H1a that high gender pay gap firms are more likely to violate the accounting standards. The coefficient of Big4 is negative and significant, suggesting that firms are less likely to violate the accounting standards when they are audited by Big4. The relation between Fraud and loss, Intan are all consistent with the prior literature explaining the incidence of financial misconduct(Armstrong, Larker, Ormazabal, and Taylor, 2013).

4.2.3 Relation between HGPF and REM(AEM)

Table 7 column 1 presents the regression result of the association between HGPF and REM (real earnings management). And column2 presents the result of the relation between HGPF and AEM(accrual-based earning management). We see a positive and significant relation between HGPF and REM, indicating high gender pay gap firm are more likely to be associated with real earnings management consistent with H1b. But as in column2, HGPF and AEM are not significantly related. This result(table7) supports that high gender pay gap firm represents the organizational culture where there are lack of information sharing within the firm leading to the financial misconduct. The coefficient of Big_4 is negative, suggesting that firms audited by Big4 are less likely to do earning management. And the relation between REM and FDI, Profitability (column 1) are all consistent with the prior literature explaining the incidence of real earnings management(Cho et al., 2019).

5. Validation test

To test whether the HGPF(High Gender Pay gap Firm) captures the organizational culture leading to financial misconduct, I did the validation test to see the relation between employee satisfaction and the HGPF. Because organizational culture affects the employee job satisfaction ultimately leading to job performance(Brief, 1998).

I obtain the scores of employee satisfaction from the Korea Economic Justice Institute(KEJI) Index published by the Citizens' Coalition for Economic Justice Institute(CCEJI). Many prior studies use this KEJI Index to measure the corporate social responsibility of Korean firms. All KSE listed firms except financial institutions, mutual funds, and REITs are subject to an evaluation and only the firms which meet certain

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conditions are evaluated by CCEJI[1]. CCEJI publishes the final scores generally in December

of the following year. Among the subindices in the KEJI index[2], this paper only used the

subindex that capture firm's employee satisfaction. These subindices are composed of

individual components and CCEJI aggregates these components to evaluate the employee

satisfaction. This paper just used the score of the employee satisfaction the firms received

because some individual components are hard to evaluate and distinguish. The model used in

this paper to test the relation between HGPF and employee satisfaction is as below.

$KEJI_{it} = \mu_0 + \mu_1 HGPF_{it} + \mu_2 Sga\_welfare_{it} + \mu_3 Averagepay\_m_{it} + \mu_4 Averagepay\_f_{it}$

$+ \mu_5 Tenure\_m_{it} + \mu_6 Tenure\_f_{it} + \mu_7 Size_{it} + \mu_8 FDI_{it} +$

$\mu_9 Debtratio_{it} + \mu_{10} Profitability_{it}$

$+\mu_{11} Leverage_{it} + \mu_{12} Indep\_ratio_{it} + \mu_{13} HHI_{it} + IndustryFE + YearFE + \varepsilon_{it}$

      I used KEJI variable(ratio of score that firms received at employee satisfaction of

KEJI Index to the perfect score) as dependent variable. First I included the Sga_welfare

(Welfare expenses over total Selling, General and Administrative expenses at year t) and

Averagepay_m(the natural logarithm of average pay of male), Averagepay_f(the natural

logarithm of average pay of female), Tenure_m(the natural logarithm of average male's

continuous years of service at the fiscal year t), Tenure_f(the natural logarithm of average

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[1] The CCEJI excludes the firms : 1) with net losses for three consecutive years 2) with negative net assets 3) with low-interest coverage ratio 4) firms which have merged 5) changing the fiscal year 6) newly listed during the year.

[2] The subindices in the KEJI index changed from the year of 2011.

  To the year of 2009, KEJI Index are composed of 7 subindices : business soundness, fairness, contribution to community service, environment protection, consumer protection, employee satisfaction and contribution to economic development.

  From the year of 2011, KEJI Index are composed of 5 subindices : business soundness, fairness, contribution to community service, environment protection, consumer protection, employee satisfaction.

female's continuous years of service at the fiscal year t) to control the factors that are included in the components of the employee satisfaction. I also included the FDI(the ratio of shares owned by foreign investors on total shares) because foreign-owned firms may be more likely to support both equal pay legislation and family-friendly workplace solutions than domestically-owned companies(Kodama, Javorcik, & Abe., 2018). It can be predicted that the family-friendly workplace is more likely to be lead to the high employee satisfaction. I include Size, Debtratio, Leverage and Indep_ratio as control variables. I also controlled the competition(HHI) because fierce competition limits taste-based employer discrimination (Hirsch et al., 2014). The lower discrimination is helpful to make favorable workplace where employees can be satisfied.

Table 8 panel B is about the sample selection to test the KEJI model. CCEJI rank and disclose 200 firms by its quantitative score each year. CCEJI didn't hold the awards ceremony in 2010 and the KEJI score in 2019 was not available. By this reason, the initial firm years are 2,619. From this sample I excluded the firm-years with casual workers and the firm-years which lack variables used in the model. The final sample used to test the relation between high gender pay gap firm and employee satisfaction is 1,132. The pearson correlation between this KEJI index and the HGPF is -0.02, negative and insignificant (untabulated).

Table 8 panel C presents the regression results for the KEJI model. The coefficient of HGPF is negative and significant indicating that employees in HGPF are more likely to be unsatisfied. Organizational culture affects the employee job satisfaction (Brief, 1998) and this increases the possibility of financial misconduct. As a result, the negative relation supports that the organizational culture within the high gender pay gap firms has negative effect on employee satisfaction leading to poor financial performance.

6. Conclusion

Gender earnings disparity is one of the most contentious issues. Given the growing importance of this topic, it is meaningful to understand its financial meaning. This study investigates the relationship between a gender pay gap, or oppressive culture, and financial reporting quality: violation of accounting standards and real earning management. With these measures, this paper finds that high gender pay gap is positively associated with financial misconduct. Using the Korea listed firms from 2003 to 2019, I find that high gender pay firms are more implicated in FSS by violating the accounting standards. And the firms with high gender pay gap are more likely to be associated with real earning management. This paper suggests that high gender pay gap firm represents the firm with oppressive culture and these firms are more likely to do financial misconduct because of the lack of information sharing within the firm. The firms with high gender pay difference are more likely to be centralized and this centralized decision-making forms the 'oppressive culture' within the firm. Centralized decision making within a firm is one factor that can lead to organizational silence(Morrison and Milliken, 2000). Following the prior study, employees who are in side of the subordinate withhold their voice leading to organizational silence(Brinsfield, Edwards, and Greenberg, 2009). And the groups that were in the middle of the decision making or belong to the part of the centralized group are likely to exert their strength on the process of the firm, oppressing the other group(Morrison and Milliken, 2000). As a result employees who believe they have been muted might stop passing any information and withhold their voice(Ashforth, 1985; Greenberger and Strasser, 1991). This makes the firms to be more associated with the financial misconduct because "information and communication" is one of

the components of integrated control framework ensuring the continued reliability of accounting system.

The finding of this paper adds to an important stream of research in explaining the gender pay inequality within firm. It explains the meaning of the pay gap from financial perspective and suggests the impact of high gender pay gap on financial reporting quality. In so doing, it contributes to management accounting studies that how the pay difference between male and female can be one of the leading indicators for financial reporting quality. This paper also adds to the prior literature of gender pay disparity by delineating potential channels which gender pay gap influence the financial misconduct.

This study has some limitations. There is no prior literature that provides empirical results of measuring the culture of the firm. To mitigate this problem, it tested the relation between the high gender pay gap firm and the employee satisfaction suggesting the negative effect of the high gender pay gap leading to financial misconduct. I expect to see further researches that can provide or suggest the mechanism to validate the meaning of high gender pay gap. And the main finding of this paper is difficult to generalize because the result of this paper is restricted to Korean listed firms. There is also a limitation of not considering individual characteristics in the determinants of the gender pay gap. By this reason, it is expected to see the future research with more comprehensive data supporting the main finding of this study.

More research needs to be done to identify the mechanism underlying the relation between the gender pay gap within the firm and financial reporting quality. It needs a proxy to validate the measure of oppressive culture. Future studies could investigate a measure to quantify the oppressive culture. Furthermore, it could examine the relation between the gender pay gap and the financial misconduct using the proxy of the lack of information in

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intermediate level. It will be also meaningful to test whether the finding of this paper remains in other labor markets.

Appendix

Variable Definitions

Variable	Description
Dependent variables	
Gender_pay_gap	Difference between male's average pay and female's average pay divided by male's average pay ;
Fraud	An indicator variable equal to one if a firm is implicated in enforcement actions by the FSS, and zero otherwise;
REM	Proxy for real earning management calculated following cohen et al., (2008) model: the sum of three individual variables, AB_CFO (abnormal cash flow from operating activities), AB_PROD (abnormal production costs) and AB_DISX (abnormal discretionary expenditures).AB_CFO and AB_DISX are multiplied by (-1) to make higher values represent more extensive real earnings management;
AEM	Performance-matched discretionary accruals as in Kothari, Leone, and Wasley (2005)
KEJI	the score firm received in 'employee satisfaction' section included in KEJI Index / perfect score of the 'employee satisfaction' section included in KEJI Index
Variable of Interest	
HGPF	An indicator variable equal to one for firm years with a coefficient on firm's code that is statistically significant (p-value <0.05) when estimating gender model equation, and zero otherwise;
Control variables	
HHI	Sum of the squared market share of all firms in the two-digit Korean SIC industry;
FDI	The ratio of shares owned by foreign investors on total shares;
Labor_intensity	The ratio of labor costs on the total costs(sum of cost of goods sold and SG&A);
FEME	The ratio of female employees on total employees;

Gender_tenure_gap	Difference between male's continuous years of service and female's continuous years of service divided by male's continuous years of service;
Size	The natural logarithm of total assets at the end of fiscal year *t*;
Debtratio	Total liability to Total equity ratio at the end of fiscal year *t*;
Mtb	Market equity to book equity ratio at the end of fiscal year *t*;
Profitability	Net income divided by lagged total assets;
Average_pay	The natural logarithm of average fee for fiscal year t;
Indep_ratio	The number of outside directors divided by the number of the entire board members (Board_Size)
Board_size	The sum of inside and outside directors
Firm_age	The natural logarithm of number of years since the date of firm incorporation;
Leverage	Total liabilities divided by total assets at the end of fiscal year *t*;
Big_4	An indicator variable equal to one if the auditor of a firm is big 4, and zero otherwise;
Loss	An indicator variable equal to one if net income is negative at the end of fiscal year t, and zero otherwise;
Adj_cfo	Industry-adjusted *CFO*, which equals the difference between firm-specific *CFO* and the median *CFO* for the same year and industry (two-digit KSIC).
Rnoa	Operating income divided by average net operating assets;
Adj_rnoa	*RNOA* minus industry median of *RNOA* for fiscal year *t*;
Roa	Net income divided by total assets for fiscal year *t*;
Adj_roa	*ROA* minus industry median of *ROA* for fiscal year *t*;
Intan	The sum of R&D expenses and advertising expenses over total assets for fiscal year *t*;
Sga_Welfare	Welfare expenses over total Selling, General and Administrative expenses year t;
Averagepay_m	The natural logarithm of average pay of male employees at the fiscal year *t*;
Averagepay_f	The natural logarithm of average pay of female employees at the fiscal year *t*;
Tenure_m	The natural logarithm of average male's continuous years of service at the fiscal year t;
Tenure_f	The natural logarithm of average female's continuous years of service at the fiscal year t;

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TABLE 1

Panel A. Sample selection

Gender pay gap model/ Fraud model sample selection

Firm-years that are covered by TS2000 and Dataguide from 2003 to 2019;	41,399
Less firm-years that lack the number of employees;	(7,521)
Less firm-years with casual workers;	(10,252)
Less financial firms;	(600)
Less firm-years that lack variables used in the Gender pay gap model;	(8,913)
Final firm-years used in Gender pay gap model/ Fraud model	14,113

REM/AEM model sample selection

	14,113
Final firm-years used in Gender pay gap model	
Less firm-years that lack variables used in the REM/AEM model;	(1,723)
Final firm-years used in REM/AEM model	12,390

Panel B. Yearly distribution of observations

year	N	%
2003	1124	7.96
2004	1161	8.23
2005	1204	8.53
2006	1273	9.02
2007	1350	9.57
2008	1399	9.91
2009	775	5.49
2010	694	4.92
2011	589	4.17

2012	588	4.17
2013	598	4.24
2014	602	4.27
2015	529	3.75
2016	568	4.02
2017	527	3.73
2018	548	3.88
2019	584	4.14
	14,113	

Panel C. Industry distribution of observations

Industry code	N	%
3	31	0.22
5	17	0.12
6	11	0.08
7	11	0.08
10	338	2.39
11	64	0.45
12	6	0.04
13	133	0.94
14	221	1.57
15	39	0.28
16	29	0.21
17	271	1.92
18	51	0.36
19	41	0.29
20	832	5.90
21	669	4.74
22	411	2.91
23	245	1.74
24	681	4.83
25	288	2.04
26	2403	17.03
27	354	2.51
28	477	3.38
29	1021	7.23
30	724	5.13
31	103	0.73
32	74	0.52
33	59	0.42
35	62	0.44
38	41	0.29
39	10	0.07
41	369	2.61

42	105	0.74
45	14	0.10
46	1039	7.36
47	244	1.73
49	81	0.57
50	25	0.18
51	16	0.11
52	49	0.35
55	23	0.16
56	10	0.07
58	652	4.62
59	262	1.86
60	61	0.43
61	100	0.71
62	244	1.73
63	179	1.27
70	60	0.43
71	510	3.61
72	75	0.53
73	45	0.32
74	19	0.13
75	69	0.49
76	5	0.04
85	64	0.45
90	30	0.21
91	41	0.29
96	5	0.04
	14,113	

TABLE 2
Descriptive Statistics

Panel A. Descriptive statistics for Gender pay gap model

Measure	N	Mean	Median	Q1	Q3	Std. Dev.
Gender_pay_gap	14113	0.309	0.322	0.221	0.419	0.208
HHI	14113	0.270	0.210	0.103	0.361	0.230
Labor_intensity	14113	0.069	0.046	0.025	0.086	0.088
FDI	14113	0.060	0.011	0.001	0.058	0.113
FEME	14113	0.221	0.176	0.096	0.306	0.161
Gender_tenure_gap	14113	0.171	0.220	0.000	0.426	0.609
Size	14113	18.421	18.242	17.575	19.065	1.253
Debtratio	14113	1.008	0.649	0.300	1.230	1.251
Mtb	14113	1.537	1.014	0.613	1.777	1.657
Profitability	14113	-0.024	0.025	-0.041	0.069	0.200
Average_pay	14113	17.368	17.371	17.148	17.596	0.344
Indep_ratio	14113	0.482	0.333	0.200	0.800	0.316

Board_size	14113	6.224	6.000	5.000	7.000	2.060

Table 2 reports the descriptive statistics of our sample. The sample is 14,113 firm-year observations during the sample period (2003–2019). See Appendix for the variable definitions.

Panel B. First stage model(Gender pay gap model) regression

$$Gender\_pay\_gap_{it} = \mu_0 + \mu_1 HHI_{it} + \mu_2 Labor\_intensity_{it} + \mu_3 FEME_{it} + \mu_4 Gender\_tenue\_gap_{it}$$
$$+ \mu_5 Size_{it} + \mu_6 Debtratio_{it} + \mu_7 Mtb_{it} + \mu_8 Profitability_{it}$$
$$+ \mu_9 Average\_pay_{it}$$
$$+ \mu_9 Average\_pay_{it} + \mu_{10} Indep\_ratio_{it}$$
$$+ \mu_{11} Board\_size_{it} + \mu_{12} FDI_{it} + FIRMFE + YearFE + \varepsilon_{it}$$

Gender pay gap model

	Pred.	DV: Gender _pay_ gap (1)	DV: Gender _pay_ gap (2)
Intercept		-1.823***	-1.720***
		(-10.86)	(-15.64)
HHI	-	-0.008	-0.002
		(-0.67)	(-0.26)
Labor_intensity		0.079***	0.102***
		(3.20)	(5.06)
FEME	+	0.310***	0.166***
		(13.50)	(12.91)
Gender_tenure_gap	+	0.112***	0.121***
		(40.68)	(45.30)
Size		0.001	-0.001
		(0.00)	(-0.80)
Debtratio		0.001	0.000
		(0.70)	(0.23)
Mtb		0.000	-0.003**
		(0.49)	(-2.58)
Profitability		0.014	0.003
		(1.23)	(0.31)
Average_pay		0.124***	0.124***
		(15.34)	(19.42)
Indep_ratio		-0.001	0.008
		(-0.21)	(1.61)
Board_size		-0.002	-0.000
		(-1.31)	(-0.00)
FDI	-	-0.018	-0.042**
		(-0.66)	(-2.58)
Firm fixed effects		YES	NO
Year fixed effects		YES	YES
Industry fixed effects		NO	YES
Observations		14,113	14,113
Adj R^2		0.3496	0.1981

TABLE 3
Descriptive Statistics
Descriptive statistics for second stage model(Fraud/REM model)

Measure	N	Mean	Median	Q1	Q3	Std. Dev.
Fraud model						
Fraud	14113	0.027	0.000	0.000	0.000	0.161
HGPF	14113	0.191	0.000	0.000	0.000	0.393
Size	14113	18.421	18.242	17.575	19.065	1.253
Firm_age	14113	3.454	3.466	3.091	3.829	0.451
Big_4	14113	0.440	0.000	0.000	1.000	0.496
Loss	14113	0.331	0.000	0.000	1.000	0.470
Leverage	14113	0.407	0.400	0.237	0.558	0.214
Adj_cfo	14113	-0.010	0.000	-0.048	0.044	0.108
Adj_roa	14113	-0.047	0.000	-0.043	0.035	0.211
Adj_rnoa	14113	-0.019	0.000	-0.046	0.041	0.139
Intan	14113	0.006	0.001	0.000	0.004	0.014
Indep_ratio	14113	0.482	0.333	0.200	0.800	0.315
Profitability	14113	-0.024	0.025	-0.041	0.069	0.200
REM/AEM model						
REM_disx	12390	0.010	0.020	-0.028	0.061	0.131
REM_cfo	12390	0.005	-0.001	-0.055	0.055	0.110
REM_prod	12390	0.012	0.013	-0.051	0.075	0.142
REM	12390	0.027	0.030	-0.100	0.160	0.285
HGPF	12390	0.187	0.000	0.000	0.000	0.390
Size	12390	18.421	18.249	17.579	19.044	1.260
Firm_age	12390	3.447	3.466	3.091	3.829	0.470
Leverage	12390	0.410	0.399	0.239	0.554	0.279
Indep_ratio	12390	0.486	0.333	0.200	0.800	0.318
Mtb	12390	1.506	1.010	0.614	1.747	1.587
Average_pay	12390	17.372	17.376	17.157	17.600	0.342
Profitability	12390	-0.016	0.025	-0.035	0.069	0.179
FDI	12390	0.059	0.010	0.001	0.057	0.111
Big_4	12390	0.441	0.000	0.000	1.000	0.497
AEM	12390	0.003	0.001	-0.080	0.082	0.193

TABLE 4

Measurement of Real Activities Manipulation

Estimation of the Normal Levels of Operating cash flow, Production Costs and Discretionary Expenditures[a]

	$CFO_t/Asset_{t-1}$	$PROD_t/Asset_{t-1}$	$DISX_t/Asset_{t-1}$
Intercept	0.0048	-0.0368	0.0509
	(1.83)	(-7.12)	(9.27)
$1/Asset_{t-1}$	-0.8890	-0.9793	2.2300
	(-10.37)	(-5.62)	(12.64)
$Sales_t/Asset_{t-1}$	0.0623	0.8191	0.1229
	(19.02)	(99.97)	(14.88)
$\Delta Sales_t/Asset_{t-1}$	0.0361	-0.0387	
	(5.45)	(-2.66)	
$\Delta Sales_{t-1}/Asset_{t-1}$		-0.0366	
		(-2.19)	
# of industry-years	512	512	512
Adjusted R^2	0.18	0.86	0.28

This table reports the estimated parameters in the following regressions:

$$\frac{CFO_{it}}{Assets_{i,t}} = K_1 \frac{1}{Assets_{i,t-1}} + K_2 \frac{Sales_{it}}{Assets_{i,t-1}} + K_3 \frac{\triangle Sales_{i,t}}{Assets_{i,t-1}} + \varepsilon_{it} \tag{1}$$

$$\frac{PROD_{it}}{Assets_{i,t-1}} = K_1 \frac{1}{Assets_{i,t-1}} + K_2 \frac{Sales_{it}}{Assets_{i,t-1}} + K_3 \frac{\triangle Sales_{it}}{Assets_{i,t-1}} + K_4 \frac{\triangle Sales_{i,t-1}}{Assets_{i,t-1}} + \varepsilon_{it} \tag{2}$$

$$\frac{DISX_{it}}{Assets_{i,t-1}} = K_1 \frac{1}{Assets_{i,t-1}} + K_2 \frac{Sales_{it}}{Assets_{i,t-1}} + \varepsilon_{it} \tag{3}$$

$PROD_{it} = COGS_{it} + \triangle INV_{it}$
$DISX_{it}$: including advertising, R&D, and SG&A expenses

rm_cfo_t and rm_disx_t are estimated residuals from Equations (1) and (3), multiplied by -1 respectively; rm_prod_t is the estimated residuals from Equation (2); and REM_t is the sum of rm_cfo_t, rm_disx_t and rm_prod_t .

[a] The regressions are estimated for every industry every year. Two-digit SIC codes are used to define industries. Industry-years with fewer than 15 firms are eliminated from the sample. There are 512 separate industry-years over 2003–2019. The table reports the mean coefficient across all industry-

years and t-statistics calculated using the standard error of the mean across industry-years. The table also reports the mean R^2s (across industry-years) for each of these regressions.

TABLE 5

Pearson Correlation Matrix

Panel A. Fraud model

	Fraud	Size	HGPF	Big_4	Loss	Lever age	Adj_ cfo_	Adj_ roa	Adj_ rnoa	Intan	Indep _ratio	Profita bility
HGPF	**0.03**	**0.04**	**0.04**	**-0.03**	**-0.01**	**-0.02**	**-0.02**	0.00	-0.01	**-0.11**	**0.03**	0.01
Fraud		**-0.06**	**-0.01**	**-0.07**	**0.13**	**0.10**	**-0.11**	**-0.14**	**-0.09**	**-0.02**	**-0.03**	**-0.17**
Size			**0.31**	**0.32**	**-0.30**	**0.09**	**0.22**	**0.31**	**0.31**	**0.03**	**-0.15**	**0.34**
Firm_age				**0.07**	**-0.15**	**0.09**	**0.03**	**0.08**	**0.06**	**-0.01**	**-0.08**	**0.11**
Big_4					**-0.11**	**0.01**	**0.11**	**0.10**	**0.11**	**0.07**	0.07	**0.13**
Loss						**0.24**	**-0.39**	**-0.54**	**-0.53**	**-0.02**	0.01	**-0.66**
Leverage							**-0.20**	**-0.33**	**-0.24**	**-0.03**	**0.01**	**-0.30**
Adj_cfo								**0.54**	**0.58**	0.01	0.01	**0.54**
Adj_roa									**0.74**	**-0.02**	**-0.02**	**0.86**
Adj_rnoa										0.00	**-0.02**	**0.69**
Intan											0.00	0.00
Indep_ratio												-0.01

Panel B. REM/AEM model

	REM	Size	Firm_age	Leverage	Indep_ratio	Mtb	Average_pay	profitability	FDI	Big_4	AEM
HGPF	0.04	0.06	0.05	-0.02	0.02	-0.09	0.08	0.02	-0.01	-0.03	0.02
REM		-0.10	0.02	0.10	-0.03	-0.01	-0.08	-0.23	-0.13	-0.07	0.22
Size			0.31	0.04	-0.16	-0.15	0.41	0.32	0.43	0.32	-0.06
Firm_age				0.07	-0.07	-0.24	-0.04	0.11	0.10	0.08	-0.02
Leverage					0.02	0.08	-0.07	-0.30	-0.07	0.01	-0.06
Indep_ratio						0.02	-0.14	0.00	-0.05	0.00	-0.02
Mtb							0.00	-0.22	0.03	-0.02	0.00
Average_pay								0.13	0.17	0.17	-0.03
Profitability									0.17	0.12	0.01
FDI										0.22	-0.04
Big_4											-0.05

Table 5 presents Pearson correlations among key variables. The sample is 14,113(12,390) firm-year observations for the Fraud model(REM/AEM model) during the sample period (2003–2019). Coefficients in bold are significant at 10% or better levels. See Appendix for the other variable definitions.

TABLE 6
Relation between HGPF and Fraud

$$Fraud_{it} = \mu_0 + \mu_1 HGPF_{it} + \mu_2 Size_{it} + \mu_3 Firm\_age_{it} + \mu_4 Big4_{it} + \mu_5 Loss_{it}$$
$$+ \mu_6 Leverage_{it} + \mu_7 AdJ\_cfo_{it} + \mu_8 Adj\_roa_{it} + \mu_9 Adj\_rnoa_{it}$$
$$+ \mu_{10} Intan_{it} + \mu_{11} Indep\_ratio_{it} + \mu_{12} Profitability_{it} + IndustryFE + YearFE +$$
$$\varepsilon_{it}$$

Fraud model

	Pred.	(1) Probit	(2) Firth Logit
		DV : Fraud	
Intercept		-3.681***	-7.589***
		(-4.04)	(-3.44)
HGPF	+	0.219**	0.488**
		(1.99)	(2.00)
Size		-0.020	-0.046
		(-0.48)	(-0.48)
Firm_age		0.050	0.120
		(0.38)	(0.43)
Big4	-	-0.403***	-0.864***
		(-4.77)	(-4.40)
Loss		0.392***	0.938***
		(5.53)	(5.78)
Leverage		0.814***	1.702***
		(4.89)	(4.89)
Adj_cfo		-0.857***	-1.690***
		(-3.05)	(-2.86)
Adj_roa		0.161	0.323
		(0.74)	(0.74)
Adj_rnoa		0.475	1.010
		(1.44)	(1.51)
Intan		-2.563	-5.433
		(-0.93)	(-0.84)
Indep_ratio		-0.294***	-0.610**
		(-2.64)	(-2.42)
Profitability		-0.676***	-1.267***
		(-2.79)	(-2.62)
Year fixed effects		YES	YES
Industry fixed effects		YES	YES
Observations		14,113	14,113
McFadden's R^2		0.056	0.052

Table 6 reports the estimation results of FRAUD model using probit regression and Firth logistic regression, where all *z*-statistics(in parentheses) are based on standard errors clustered by firm.

TABLE 7
Relation between HGPF and REM/AEM

$$REM(AEM)_{it} = \mu_0 + \mu_1 HGPF_{it} + \mu_2 Size_{it} + \mu_3 Firm\_age_{it} + \mu_4 Leverage_{it} +$$
$$+ \mu_5 Indep\_ratio_{it} + \mu_6 Mtb_{it} + \mu_7 Average\_pau_{it} +$$
$$\mu_8 Profitability_{it} \qquad\qquad + \mu_9 FDI_{it} + \mu_{10} Big\_4_{it} +$$
$$\mu_{11} AEM(REM)_{it} + IndustryFE + YearFE + \varepsilon_{it}$$

REM/AEM model

	Pred.	(1) REM	(2) AEM
		DV	
Intercept		0.781***	0.267*
		(2.64)	(1.80)
HGPF		0.033***	0.006
		(3.44)	(1.33)
Size		0.000	-0.005**
		(0.03)	(-2.17)
Firm_age		0.041***	-0.003
		(3.43)	(-0.75)
Leverage		0.073***	-0.071***
		(2.85)	(-5.20)
Indep_ratio		-0.024*	-0.015**
		(-1.88)	(-2.48)
Mtb		-0.014***	0.004**
		(-4.14)	(2.32)
Average_pay		-0.056***	-0.007
		(-3.09)	(-0.74)
Profitability		-0.338***	0.079***
		(-11.60)	(2.61)
FDI		-0.192***	-0.003
		(-3.55)	(-0.15)
Big_4		-0.011	-0.012***
		(-1.29)	(-3.24)
AEM		0.322***	
		(12.41)	
REM			0.164***
			(14.89)
Year fixed effects		YES	YES
Industry fixed effects		YES	YES
Observations		12,390	12,390
Adj R²		0.145	0.061

TABLE 8

Panel A. Descriptive statistics for KEJI Model

Measure	N	Mean	Median	Q1	Q3	Std. Dev.
KEJI	1132	0.577	0.584	0.496	0.674	0.125
HGPF	1132	0.205	0.000	0.000	0.000	0.404
Sga_benefit	1132	0.045	0.041	0.026	0.059	0.026
Averagepay_m	1132	17.624	17.644	17.434	17.833	0.274
Averagepay_f	1132	17.171	17.178	16.977	17.372	0.306
Tenure_m	1132	2.188	2.208	1.932	2.510	0.418
Tenure _f	1132	1.675	1.649	1.386	1.973	0.462
Size	1132	19.704	19.479	18.777	20.427	1.330
FDI	1132	0.147	0.080	0.015	0.230	0.168
Debtratio	1132	0.779	0.587	0.301	1.065	0.687
Profitability	1132	0.065	0.056	0.030	0.091	0.055
Leverage	1132	0.378	0.370	0.231	0.516	0.175
Indep_ratio	1132	0.428	0.333	0.222	0.571	0.248
HHI	1132	0.273	0.199	0.122	0.329	0.234

Table 8 Panel A. reports the descriptive statistics of the sample for KEJI model. The sample is 1132 observations. See Appendix for the variable definitions.

Panel B. Sample selection

KEJI model sample selection

Firm-years that are published by CCEJI;	2,619
Less firm-years with casual workers;	(1,009)
Less firm-years that lack variables used in the KEJI model;	(478)
Final firm-years used in KEJI model	1,132

Panel C. KEJI model result

$$KEJI_{it} = \mu_0 + \mu_1 HGPF_{it} + \mu_2 Sga\_welfare_{it} + \mu_3 Averagepay\_m_{it} + \mu_4 Averagepay\_f_{it}$$
$$+ \mu_5 Tenure\_m_{it} + \mu_6 Tenure\_f_{it} + \mu_7 Size_{it} + \mu_8 FDI_{it} + \mu_9 Debtratio_{it}$$
$$+ \mu_{10} Profitability_{it} + \mu_{11} Leverage_{it} + \mu_{12} Indep\_ratio_{it}$$
$$+ \mu_{13} HHI_{it}$$
$$+ IndustryFE + YearFE + \varepsilon_{it}$$

	Pred.	DV: KEJI
Intercept		0.439
		(1.54)
HGPF	-	-0.015*
		(-1.73)
Sga_welfare		0.595***
		(5.08)
Averagepay_m		0.048**
		(2.35)
Averagepay_f		-0.016
		(-0.84)
Tenure_m		-0.001
		(-2.92)
Tenure_f		0.012
		(1.37)
Size		-0.001***
		(-3.24)
FDI		0.012
		(0.56)
Debtratio		-0.024**
		(-2.53)
Profitability		-0.222***
		(-3.93)
Leverage		0.167***
		(4.58)
Indep_ratio		-0.006
		(-0.55)
HHI		0.021
		(1.26)
Year fixed effects		YES
Industry fixed effects		YES
Observations		1,132
Adj R^2		0.492

국문초록

남녀임금차이의 재무적 고찰

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최수영

한국의 기업은 남녀직원에 대한 평균근속연수, 1 인평균급여액을 성별로 구분하여 공시할 의무를 지닌다. 본 연구는 한국 기업 내 남녀평균임금격차와 재무보고품질의 관계를 규명함으로써 남녀임금차이를 재무적 관점에서 고찰해보고자 하는 데 목적을 두고 있다. 재무보고품질을 나타내는 지표들 중에서 금융감독원으로부터 감리지적을 받았는지 여부 및 실질적 이익조정이 남녀평균임금차이와 갖는 상관관계를 분석하였다. 2003 년부터 2019 년까지 한국상장기업들의 패널자료를 실증분석한 결과, 기업 내 남녀평균임금격차가 커질수록 재무보고품질이 유의적으로 낮은 것(금융감독원으로부터 감리지적을 받은 기업, 실질적 이익조정을 한 기업)으로 파악되었다. 남녀평균임금격차가 큰 기업일수록 특정 그룹에 의한 의사결정이 집중적으로 이루어짐에 따라 억압적 조직문화가 형성되고, 이는 활발한 정보공유를 저해함으로써 궁극적으로 낮은 재무보고품질로 이어질 수 있음을 나타낸다. 본 연구는 기업의 남녀평균임금 차이가 재무보고품질을 예측해 볼 수 있는 하나의 지표가 될 수 있다는 사실을 제시한다.

주요어: 남녀임금차이; 억압적 조직문화; 정보공유; 재무보고품질

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