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# The Impact of Firm Performance Following an External Shock on Executive Gender Composition

## 외부 충격 후의 기업 성과가 경영진의 성별 구성에 미치는 영향

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# The Impact of Firm Performance Following an External Shock on Executive Gender Composition

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# Abstract

Recent literature demonstrates mixed results on the relationship between firms' economic performance and the gender of executives. This study tests the effect of external shock on the gender composition of executives in the top management teams, in particular the appointment of females, using two global-scale economic crises (i.e., the Great Recession and COVID-19).

**Keywords:** signaling, external shock, gender composition, glass cliff, performance feedback, upper echelon

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# 1. INTRODUCTION

Recent literature demonstrates mixed results on the relationship between firms' economic performance and the gender composition of executives. A body of work investigates the role of the gender of executives as a predictor and find that it may impact firm performance. This is important, especially given upper echelon theory, which suggests that the gender of top executives may play a critical role in determining the key outcomes of the organization (Hambrick and Mason, 1984). Top executives interpret situations based on their personal experiences, values, and personalities, which can lead them to make different organizational decisions even when they face similar situations (Hambrick, 2007). While there is general support for the upper echelon theory, there may understandably be important contextual and executive-specific factors that moderate whether one gender outperforms another. Indeed, several works have shown the complexities in predicting firm performance with the gender of executives through meta analyses (e.g., Post and Byron, 2015; Pletzer et al., 2015; Jeong and Harrison, 2017).

However, less is known about the reverse relationship. That is, how would firm performance impact the gender of executives? The glass cliff hypothesis suggests that firms in crisis may be more likely appoint women to

executive positions (Ryan & Haslam, 2005; Ryan & Haslam, 2007), but the evidence for it has been mixed. While some work shows empirical support (e.g., Dwivedi, Joshi, &Misangyi 2018), many others show contradictory results (e.g., Bechtoldt, Bannier, &Rock 2019). A recent meta-analysis also was not able to show robust effects of the glass cliff hypothesis (Morgenroth et al., 2020). Several reasons may underlie such mixed results. Notably, in recent work by Reinwald, Zaia, and Kunze (2022), they note that one reason why it is difficult to establish a clean causal relationship between firm performance and the gender of executives is that other variables inherent to the culture and situation of the firm may impact executive appointment, rather than its performance.

This study aims to contribute to contextualize the impact of firm performance on gender composition of top executives, by examining a circumstance where firms would be motivated to send signals of change to their investors and the general public: during an external global-scale economic shock. I propose that firms hire female top executives in attempt to signal their willingness to change. If this signaling account is correct, firms should be motivated to send signals of change by hiring female executives in situations where investors and the general public are paying close attention to their performance, such as when an economic crisis occurs at the macro-level. For instance, in the immediate aftermath of the Great Recession or COVID-

19, it will be particularly useful for firms to signal change, to differentiate themselves from other firms. Though other firm-specific economic crises (e.g., a scandal concerning a top executive) may similarly draw attention to the firm's signal to change, a global-scale economic shock provides a context where there is less heterogeneity in the factors that may impact a firm's decision to hire female executives. I utilize external shock to delineate when firm performance is particularly visible and therefore major changes to send signals to investors and the general public may be particularly useful for firms, versus when it may less be salient, to demonstrate when and why firm performance may predict the gender composition of executives.

# 2. LITERLITURE REVIEW AND HYPOTHSES

## 2.1. Gender Composition in Top Management Teams and Performance

Top executives of a firm unsurprisingly have critical impact on firm performance. The upper echelon theory even posits that ‘an organization is a reflection of its top managers’ (Hambrick and Mason, 1984). Top executives interpret situations based on their personal experiences, values, and personalities, which can lead them to make different organizational decisions even when they face similar situations (Hambrick, 2007). As such, various characteristics of the top executives can predict firm performance, including education level and expertise (Bantel and Jackson 1989), big five personality factors in executives (Bell 2007), size of boards (Desai 2016) among other factors (for a review, see Oppong 2014). For instance, even if a company experiences a crisis, more empathic executives may be able to detect it and take actions to prevent further damage, while executives that are less empathic may not (König et al., 2020).

One characteristic of top executives that is consistent with the upper echelon theory, that has received more attention in recent work is their gender composition (Herman and Smith, 2015). While there is general support for the upper echelon theory, such that the gender composition of top executives

impact firm performance, it is difficult to predict whether one gender would outperform the other (Carter et al., 2007). For instance, even if female executives may tend to take less risks, their tendencies may be beneficial in certain situations for specific firms, while their tendencies may backfire for a context where taking risks can garner high returns. This complexity is evidenced by the body of work demonstrating mixed results on whether one gender may outperform the other gender.

One stream of literature supports that female executives may outperform their male counterparts (Carter et al. 2003; Erhardt, 2003; Lückerath-Rovers, 2013; Perryman et al., 2016). An analysis surveying more than 21 thousand firms in 91 countries revealed that the presence of women in leadership positions of firms can significantly improve corporate performance (Noland et al., 2016). This analysis also revealed that the most impactful position that the appointment of females increased corporate performance was the executive role, with board membership coming in second. Surprisingly, females in the CEO position did not significantly impact corporate performance. Similarly, using data from more than three thousand public firms in 47 countries, Terjesen et al. (2016) revealed that firms with more female executives had higher corporate performance.

On the other hand, another stream of literature indicates caution. Analyzing data from S&P 1,500 firms, Dezsö and Ross (2012) argue that the

presence of female in top management team improves corporate performance only to the extent that a firm's strategy focuses on innovation. As another example, banks with female executives tended to underperform when competition was high, while experiencing significantly higher financial performance when competition is low (Amore and Garofalo, 2016). Further, some evidence suggests that gender diversity in boards may even predict negative financial performance using a sample of American firms (Adams and Ferreira, 2009), while a similar investigation revealed no significant association between female representation in boards and financial performance using a sample of Dutch and Danish firms (Marinova et al., 2016; Rose, 2007).

Several studies have employed meta-analysis to reconcile the conflicting results (Klein, 2017). In one review, Post and Byron (2015) show that the overall relationship between gender diversity in board and financial performance was close to zero, though this relationship was positive (vs. negative) in countries with high (vs. low) gender equality. Similarly, Pletzer et. Al. (2015) find non-significant results across 20 papers. Another meta-analysis using 146 papers demonstrate that the relationship between gender diversity in the upper echelons and long-term financial performance is statistically significant but small (Jeong and Harrison, 2017). Finally, one limitation of these meta-analytic studies is that the data examined primarily

consist that of economically developed countries. A review of 54 Colombian businesses revealed a positive relationship between gender diversity in top management team and financial performance (Moreno-Gomez et al., 2018).

The complex relationship between gender composition of executives and firm performance has important implications for this current research in two ways. First, it highlights the importance of identifying moderating contextual factors that can moderate the relationship between firm performance and executive gender composition. This study contributes to this line of work by examining how a global economic shock can moderate the relationship between firm performance and executive gender composition. Second, it illustrates that appointment decisions for a certain gender are unlikely to be driven by an expectation that their gender will increase firm performance. Empirical findings of mixed to no significant relationship between executive gender and firm performance indicates that practitioners may also feel uncertain about the role of gender on firm performance, from their past experience. That is, it would be difficult for firms to predict how hiring a female or male executive would impact firm performance, based on their gender. This leads to the following section where I argue that firms appoint female executives in order to send signals. A signaling account would predict that regardless of whether female executives have behavioral advantage for firm performance, the appointment of a female executive

signals information that the firm believes their stakeholders will value.

## 2.2. Glass Cliff, Signaling, and Performance Feedback Theory

Firms appointing female executives as a signaling effort is not a novel concept (e.g, "glass cliff hypothesis"; Ryan & Haslam, 2005; Ryan & Haslam, 2007). Signaling theory broadly indicates that in a situation where one party serves as a sender of the signal and the other party serves as a receiver of the signal, the sender will behave in order to send information to the receiver, which the receiver will interpret (Connelly et al., 2011). When firms are in the shoes of the sender, signaling may be useful in conveying a variety of information to various receivers, such as investors, other stakeholders, and the general public.

One tool that firms have often used to send signals is the appointment of female top management executives. Firms can be particularly inclined to appoint female managers when they believe that the role is a passive one, but not when the role is an active one that can publicly represent the firm or directly impact corporate performance (Ryan et al., 2011). From a signaling perspective, this may be a reasonable approach for firms to convey information to receivers with a different gender, all the while ensuring that the new hire will not directly impact the firm in a meaningful way.

In particular, when a firm is experiencing a decline in performance relative to its targeted aspirations, performance feedback theory posits that firms may search for alternative strategies (Greve 1998, 2003). Thus, when a firm underperforms, it starts looking for alternative approaches to attain better performance. From a signaling perspective, this search for an alternative strategy may drive the firm's hiring decisions, specifically female (vs. male) executives, as it can serve as a visible signal of a firm's willingness to change. Indeed, firms may be more likely to appoint female executives as a signal of change when their top management team previously did not include any female executives (Reinwald et al. 2022).

In this study, I examine whether such signaling efforts of appointing female executives in firms may be predicted by poor firm performance. Contrasting with the extant body of that examines how gender composition impacts firm performance, relatively less is known about how firm performance may impact the appointment of female executives. In addition, across work that have examined firm performance as the predictor and gender composition of executives as the outcome, the results have been mixed, resulting in a "glass cliff debate" (Reinwald et al. 2022). Indeed, Ryan et al. (2016)'s review of the first decade of research on this phenomenon and describe the glass cliff as a complex and multiply-determined phenomenon that has influenced public discourse about women and leadership (Ryan et al.,

2016).

Several works support the glass cliff hypothesis and demonstrate that poor firm performance predicts the appointment of female executives (Mulcahy & Linehan, 2014). Similarly, Kulich et al. (2015) find that when a company's crisis was attributed to past leadership, females (vs. males) were more preferred as a new leader. Consistent with this finding, a study on a 15-year CEO turnover dataset from Fortune 500 companies revealed that professional minority groups including white women, women of color, and men of color were more likely than white men to be hired for CEO positions at underperforming firms (Cook and Glass, 2014). At the same time, several work reveal results that contradict the phenomenon. The performance trends of German and British firms that appoint female executives are no more negative than those that appoint male managers, leading Bechtold et al. (2019) to conclude that the glass cliff seems to be more of a myth than a real phenomenon for female top managers in Germany and the UK. Additional evidence, such as findings that females are often appointed to CEO positions in American firms when firms are relatively better financially, has also called into question whether there is a glass cliff for female CEOs of American firms (Adams et al., 2009). Moreover, a recent meta-analysis also was not able to show robust effects of the glass cliff hypothesis (Morgenroth et al., 2020).

Notably, in recent work by Reinwald, Zaia, and Kunze (2022) that

demonstrate a moderator for the glass cliff hypothesis, they note that it is difficult to establish a causal relationship between firm performance and the gender of executives because other confounding variables inherent to the culture and situation of the firm may predict executive appointment. In their work, to account for how one firm may experience a hit in their performance in a different year than another firm, they select which year each firm will be analyzed by identify when they were each experiencing financial crisis.

This study builds on this line of work to further contextualize the impact of firm performance on gender composition of top executives. Specifically, I utilize external global-scale economic shocks, the Great Recession and COVID-19, for two main reasons. First, though other firm-specific economic crises, such as a scandal concerning a top executive, serve as a way to capture the firm's financial performance, it is difficult to account for the heterogeneity across different firm's cause of crisis, their specific financial situation, and whether an executive was perceived to be responsible for the crisis. By using a global-scale economic shock, I aim to test how firms respond to a crisis caused by the same reason. Second, the immediate aftermath of a macro-level economic shock provides a suitable context to test the proposed signaling mechanism, as the firm's actions will be highly scrutinized by investors, other stakeholders, and the general public. This contrasts with an alternative of using firm-specific performance crisis to test

the effects, where there may be variability in the extent to which a firm's crisis is visible to various stakeholders. Moreover, it follows that during "benign" times (not during an economic shock), firms' hiring decisions will be less salient to various stakeholders, such that hiring female executives will hold less signaling value. Thus, firm performance will not predict gender composition of executives in such benign times.

Thus, building on performance feedback theory, glass cliff theory, and signaling theory, I propose that:

> *Hypothesis 1. Decrease in firm performance during an external shock is positively related to an increase in the proportion of female executives in the top management team. That is, shock-driven underperformance will increase appointment of female executives.*

In addition to gender as a signaling tool that firms may use in the face of crisis during an external shock, there may be other demographic dimensions that are also related to signals of change: executive's age and level of education. That is, it may be that when firms hire more female executives to signal organizational change, they may particularly be interested in hiring younger (vs. older) and/or higher educated females to emphasize its commitment to change. This leads to two hypotheses:

*Hypothesis 2. Decrease in firm performance during an external shock is positively related to a decrease in average age of female executives in the top management team. That is, shock-driven underperformance will increase appointment of younger (vs. older) female executives.*

*Hypothesis 3. Decrease in firm performance during an external shock is positively related to an increase in the average level of education of female executives in the top management team. That is, shock-driven underperformance will increase appointment of highly (vs. less) educated female executives.*

Because hypothesis 1 is driven by signaling motives, rather than the desire to truly change and innovate the firm, I further propose that the top management team's managerial discretion may attenuate the effects. If a firm's motivation is to send signals, they may be less willing to risk making hiring decisions that can meaningfully impact the company. Prior work has shown that certain industry sectors may place greater managerial discretion on their top management teams, compared to other industries (Hambrick and Abrahamson, 1995). In industries where the top management team has greater managerial discretion, hiring female executives may imply tangible changes

beyond sending signaling. This leads to the following hypothesis:

*Hypothesis 4. The industry-level of managerial discretion will weaken the relationship between the decrease in firm performance and an increase in the proportion of female executives in the top management team.*

# 3. METHODS

## 3.1. Sample

### Research setting

Most fortune 500 companies unfortunately included a marginal number of female top executives, which narrowed the sample selection. The setting for this study is industries that have been shown to have the biggest growth for female representation in the workplace over the past decade, which was adequate to capture a reasonable number of female top executives, since the dependent variable compares changes in the gender composition of top executives. According to a report by McKinsey & Company and Lean In (2021), health care, consumer packaged goods, retail, professional and information services, public and social sector are the top 5 industries that consider female candidates for senior leadership hire. Cross-referencing the availability of such data in WRDS, in this study, I focus on health care, consumer packaged goods, retail, professional and information services industries for empirical investigation.

### Sample

The sample covers 8 Standard Industrial Classification (SIC) codes

in total. Specifically, I examined the SIC codes with the largest amounts of companies within health care, consumer packaged goods and retail. These codes included: family clothing stores (5651), women's clothing stores (5621), offices and clinics of doctors of medicine (8011), home health care services (8082), perfumes, cosmetics and other toilet preparations (2844), department stores (5311), investment advice (6282), insurance agents, brokers, and services (6411), and computer processing and data preparation and processing services (7374). Out of these industries, six industries (i.e., 5651, 5621, 8011, 8082, 2844, 5311) were used to test hypotheses 1 and 2. Following prior work's findings (Hambrick and Abrahamson, 1995) that the service sector offers more managerial discretion for executives, I employ three professional service industries (i.e., 6282, 6411, 7374) to test whether the proposed effects hold when executives have greater managerial discretion (hypothesis 4).

Importantly, the sample included data from 2006, 2008, 2009, 2010, 2018, 2020, and 2021. These selections were made due to the objective of this study. In particular, to examine the influence of a firm's rapid performance shift on female hiring decisions for executives in the top management teams, I employ two global-scale economic external shocks: the great recession (that begun in 2007) and COVID-19 (that begun in 2019). Thus, the sample includes firm performance and executives in top management teams hiring

decisions in the years before and after these two shocks. All data was retrieved from WRDS and were limited to North American firms.

## 3.2. Measures

**Performance measure**

To capture the decrease in a firm's performance during an external shock, I define shock-driven underperformance as the firm's relative ROA in the immediate year following the external shock compared to its baseline ROA. Specifically, the main external shock that this study uses is the great recession that started in December 2007. I compare the firm's ROA in 2008, with the firm's ROA in 2006 as a baseline (the closest year to 2007, but yet the firm performance was not impacted by the shock). Then, to account for the drastic differences between firm performances due to this external shock, I calculated the relative shock-driven underperformance that the firm went through by comparing their performance to their peers. This follows previous work that have shown the importance of incorporating both historical and social relativity in testing the role of firm performances (Joseph and Gaba, 2015). Thus, shock-driven underperformance was constructed as follows:

$$\text{Shock-driven Underperformance} = \frac{ROA_{t+1} - ROA_{t-1}}{|Mean(ROA_{t+1} - ROA_{t-1})|}$$

In addition, to test an additional prediction that underperformance during a "benign" period, compared to shock-driven underperformance, will not predict the appointment of female executives, underperformance during this benign period (i.e., the firm's relative ROA in the year one year after the external shock compared to its baseline ROA) was constructed as follows:

$$\text{Benign Underperformance} = \frac{ROA_{t+2} - ROA_{t-1}}{|Mean(ROA_{t+2} - ROA_{t-1})|}$$

**Dependent variable**

In this study, the outcome of interest is the change in the percentage of female executives in the top management team. Executives in the top management team are comprised of the CEO and top executives (vice president, senior vice president, C-suite). In the current dataset, the number of female CEOs were marginal (around 0-10% in each industry), reflecting the bias that females face in the workplace. However, the dataset reflected a reasonable percentage of female executives for analysis (around 20-30% in each industry). Thus, I focus on the gender composition of executives in the top management team to include greater variance in the dataset. My hypothesis is that the shock-driven underperformance that a firm goes through will influence their hiring decisions. Specifically, if a firm experiences shock-driven underperformance (for example, in 2008, after a shock in 2007) they

will adjust their hiring decisions for executives. These hiring decisions will take effect the following year (for example, in 2009). Thus, the change in percentage of female executives in the top management team was constructed as follows:

Change in percentage of female executives =

$$\%\ of\ female\ executives_{\,t+2} \ - \ \%\ of\ female\ executives_{\,t+1}$$

In addition, the change in average age and level of education of executives in the top management team was constructed as follows. The level of education was transformed into nominal values, college graduates were measured as 1, master's degree holders as 1.5, and doctoral degree holders as 2. I examine the extent to which the change in average age and/or level of education of female executives were impacted:

Change in average age of female executives =

$$Average\ \ age\ of\ female\ executives_{\,t+2} \\ - Average\ \ age\ of\ female\ executives_{\,t+1}$$

Change in average level of education of female executives =

$$Average\ \ level\ \ of\ \ education\ of\ female\ executives_{\,t+2} \\ - Average\ \ level\ \ of\ \ education\ of\ female\ executives_{\,t+1}$$

## 3.3. Results

### The effect of ROA on proportion of female executives

A linear regression analysis (Table 5) with shock-driven underperformance as the predictor revealed that it significantly impacted the change in the percentage of female executives ($\beta = -2.107$, $p < .001$). That is, in the event of an external shock, firms with greater decrease in ROA were more likely to hire female executives, supporting Hypothesis 1.

### Additional analyses

To understand whether the observed main effects were driven by a signaling account, I collected data in the subsequent "benign" year, when the impact of the external shock would have subsided. Specifically, I tested the firm's benign underperformance by comparing their performance one year after the external shock (i.e., in 2009, after the shock in 2007), compared to their baseline performance prior to the shock (i.e., in 2006). Also, I collected their hiring of executives that took effect in 2010. A similar linear regression analysis (Table 5) of firms' performance during a benign period (i.e., one year after the external shock) revealed that their benign underperformance did not significantly impact the gender composition in executives ($\beta = -.087$, $p = .816$).

Second, one could wonder if the effects observed after the global economic crisis in 2008 is unique, or if other external shocks may similarly impact a firm's hiring decisions. To provide preliminary evidence for the robustness of the proposed effects, I also collected additional data to examine the effect of another global-scale external shock, COVID-19 in 2019. Using the same industries, the results show that the impact of an external shock on a firm's hiring decisions replicate. Replicating the main findings, firms that experienced shock-driven underperformance (i.e., in 2020) as a result of the external shock (i.e., in 2019) were more likely to hire female executives ($\beta$ = -6.731, $p$ = .008; see Table 5).

**The effect of underperformance on age and/or level of education of female executives**

To test Hypothesis 2, I focus on female executives, to test if shock-driven underperformance also predicted younger (vs. older) female hires. A linear regression analysis (Table 5) with the shock-driven underperformance as the predictor on the change in average age did not reveal a significant effect ($\beta$ = .079, $p$ = .500). That is, the new female hires were not necessarily younger in age, rejecting Hypothesis 2.

To test Hypothesis 3, I also focus on female executives, to test if shock-driven underperformance predicted higher educated female hires. A

linear regression analysis (Table 5) with the shock-driven underperformance as the predictor on the change in level of education did not reveal a significant effect (β = -.014, $p$ = .402), rejecting Hypothesis 3.

**The effect in industries with high managerial discretion**

Hypothesis 4 suggests that if firms that suffer from a downturn in their ROA hire female executives in an attempt to signal change, rather than through a motivation to seek actual change, the effects should be attenuated for industries where the top management team has greater managerial discretion. A similar linear regression analysis that was used to test Hypothesis 1 was employed to test the effects of shock-driven underperformance on the change in the percentage of female executives, using data from the professional services industries. The result (Table 5) was non-significant (β = .315, $p$ = .477), supporting Hypothesis 4 that the effects will be attenuated for industries where executives have greater managerial discretion.

Table 1. Descriptive statistics and correlation matrix 1

| Variable | Mean | S.D. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| 1. Shock-driven underperformance (*t*=2007) | -1.000 | 2.488 | 1 | | | |
| 2. Change in percentage of female executives (*t*=2007) | -0.180 | 9.530 | -0.550*** | 1 | | |
| 3. Change in ages of female executives (*t*=2007) | 1.143 | 1.159 | 0.107 | -0.338* | 1 | |
| 4. Change in level of education of female executives (*t*=2007) | 0.001 | 0.826 | -0.038 | -0.013 | -0.322* | 1 |

*** p<0.001, ** p<0.01, * p<0.05, + p<0.1
Note. *t* indicates time

Table 2. Descriptive statistics and correlation matrix 2

| Variable | Mean | S.D. | 1 | 2 |
|---|---|---|---|---|
| 1. Benign underperformance (*t*=2007) | -1.000 | 5.193 | 1 | |
| 2. Change in percentage of female executives (*t*=2008) | 0.684 | 1.765 | -0.037 | 1 |

*** p<0.001, ** p<0.01, * p<0.05, + p<0.1
Note. *t* indicates time

Table 3. Descriptive statistics and correlation matrix 3

| Variable | Mean | S.D. | 1 | 2 |
|---|---|---|---|---|
| 1. Shock-driven underperformance (*t*=2019) | -1.000 | 0.993 | 1 | |
| 2. Change in percentage of female executives (*t*=2019) | 0.997 | 12.613 | -0.530** | 1 |

*** p<0.001, ** p<0.01, * p<0.05, + p<0.1
Note. *t* indicates time

Table 4. Descriptive statistics and correlation matrix 4

| Variable | Mean | S.D. | 1 | 2 |
|---|---|---|---|---|
| 1. Shock-driven underperformance of high managerial discretion firms (*t*=2007) | -1.000 | 2.479 | 1 | |
| 2. Change in percentage of female executives of high managerial discretion firms (*t*=2007) | -0.266 | 7.344 | 0.106 | 1 |

*** p<0.001, ** p<0.01, * p<0.05, + p<0.1
Note. *t* indicates time

Table 5. Regression results

| Independent variable | Dependent variable | β | Constant | Observations | R-squared |
|---|---|---|---|---|---|
| Shock-driven underperformance (*t*=2007) | Change in percentage of female executives (*t*=2007) | -2.107*** (0.506) | 1.924 (1.342) | 42 | 0.302 |
| Shock-driven underperformance (*t*=2007) | Change in ages of female executives (*t*=2007) | 0.079 (0.116) | 1.064** (0.309) | 42 | 0.011 |
| Shock-driven underperformance (*t*=2007) | Change in level of education of female executives (*t*=2007) | -0.014 (0.016) | 0.087+ (0.045) | 42 | 0.017 |
| Benign underperformance (*t*=2007) | Change in percentage of female executives (*t*=2008) | -0.087 (0.371) | 0.771 (1.938) | 42 | 0.001 |
| Shock-driven underperformance (*t*=2019) | Change in percentage of female executives (*t*=2019) | -6.731** (2.295) | 7.526* (3.234) | 24 | 0.281 |
| Shock-driven underperformance of high managerial discretion firms (*t*=2007) | Change in percentage of female executives of high discretion firms (*t*=2007) | 0.315 (0.439) | -0.581 (1.174) | 47 | 0.011 |

Standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05, + p<0.1

Note. *t* indicates time

# 4. DISCUSSION

The central goal of this study was to test how firms cope with underperformance, in the face of global-scale economic shock (e.g., the Great Recession, COVID-19). In particular, I examined whether they attempt to send signals of change by appointing female executives in top management teams. This study contributes to the literature in two main ways. First, this study demonstrates that immediately following an economic shock, firms experiencing shock-driven underperformance were more likely to hire female executives. However, when the context was not a global-scale shock such as during a benign period, firm underperformance did not predict an increase in the proportion of female executives in the top management teams. This highlights that not all performance downturns can predict female hires – it is particularly when a firm's actions are scrutinized that firms turn to use the gender composition of executives to send signals. This finding also builds on and contributes to prior work that have shown the relationship between firm performance and hiring decisions (e.g., Reinwald et al., 2022). Second, this study examined whether managerial discretion affects hiring decisions for firms suffering from shock-driven underperformance. By demonstrating this moderating role of managerial discretion, the findings provide further support for the signaling mechanism.

The results provided support for Hypothesis 1, revealing following an economic shock (both the Great Recession and COVID-19), firms experiencing shock-driven underperformance were more likely to hire female executives in the top management team. While economic shocks do not occur often, these results provide understanding for particularly when female executives may have greater upward mobility in the workplace and the caveats that may accompany this hiring decision (e.g., "glass cliff"; Morgenroth et al. 2020; Ryan and Haslam 2007).

Further, Hypothesis 4 was supported. For industries with greater managerial discretion and therefore has greater risk handing off executive roles to women just for the sake of signaling, the relationship between shock-driven underperformance and the change in the proportion of female executives in the top management team was not observed. The results of Hypotheses 1 and 4 together support that signaling motives drive hiring decisions for firms experiencing a decrease in their performance (Reinwald et al. 2022), rather than their desire to truly change and innovate. Of course, the current study is limited in its study of industry-level of managerial discretion. Future research can contribute to the literature by examining a broader set of industries with managerial discretion to understand how firms with greater managerial discretion may attempt to send signals in economic downturns. It may be that although it is difficult to employ female executives,

they would turn to other types of demographic variables, such as age, to send signals of change.

Hypothesis 2 and 3, unfortunately, were not supported by the results. I expected that firms may like to hire younger (vs. older) and/or highly (vs. less) educated female if hiring female executives in the top management teams was indeed for signaling. It may be that different demographic variables are perceived to hold different degrees of signaling value, where gender may have stronger signaling power compared to other variables. Future research may explore how age and/or level of education of executives may serve as a signal, and when firms may be more likely to employ younger (vs. older) and/or higher educated executives.

While the current research focuses on signaling and the appointment of female executives, another dimension of the impact of a firm's shock-driven underperformance is how executives might decide to move to another firm. Across Fortune 500 companies, top management turnover is inversely related to financial performance of the firm and, at the individual analysis level, managers in worse performing firms were found to be more likely to leave (Wagner et al., 1984). Future work may examine whether there is a relationship between the gender of executives that decide to leave and the gender of newly appointed executives. Relatedly, it may be fruitful to examine the broader relationship that the newly appointed female executives

may have with the firm. For example, a firm may choose to promote female executives within the organization to increase gender diversity in executives, or they may choose to hire from outside of the organization. It would be insightful to investigate how their relationship with the firm further explains the firm's efforts to send signals versus other motivations.

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## 국 문 초 록

# 외부 충격 후의 기업 성과가 경영진의 성별 구성에 미치는 영향

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최근 문헌은 기업의 경제적 성과와 경영진의 성별 사이의 관계에 대해 일치되지 않은 결과를 보여줍니다. 본 연구는 두 차례의 세계적 규모의 경제 위기(대침체와 코로나19)를 이용하여 외부 충격이 최고 경영진의 성별 구성, 특히 여성의 임명에 미치는 영향을 테스트합니다.

**주요어:** 신호, 외부 충격, 성별 구성, 유리 절벽, 성과 피드백, 상위 계층

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