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CEO Gender and Downward Pay Rigidities as Rent-extractions

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Abstract

This study explores gender differences in performance-related pay structures in the context of CEO power and rent-extraction mechanisms. The literature on the CEO power approach suggests that CEO pay increases when firm performance increases but does not decrease to the same extent when firm performance decreases. In other words, CEO pay exhibits downward pay rigidities. We examine whether these downward pay rigidities differ by gender under managerial settings. First, we revisit and confirm the incidence of pay rigidities. Then, motivated by documented gender differences in attitudinal and behavioral traits, we hypothesize that pay rigidities are greater for male CEOs than for female CEOs. We measure downward pay rigidities directly by developing a regime-switching model that distinguishes between rigid and flexible pay-performance sensitivity and find evidence supporting our hypothesis. Our result implies that female CEOs are less likely to seek opportunities to extract rents than are male CEOs.

Key words

CEO gender, CEO pay, downward pay rigidity, pay-without-performance, regime-switching

Introduction

The literature on gender differences in CEO pay indicates that female CEOs are generally underpaid relative to male CEOs (Bonin et al., 2007; Croson & Gneezy, 2009). Some scholars interpret this finding to suggest

that women are selfish, lacking in work ethic, or low performers, whereas others suggest that non-cognitive aspects, such as emotional stability, conscientiousness, aggression, and antagonism, might explain the gaps between men and women (Mueller & Plug, 2006; Watson & McNaughton, 2007). This study provides a different view on this issue by focusing on the literature on *CEO power theory*. Bebchuk and Fried (2004, 2006) argue that *pay-without-performance* is a widespread and persistent pay arrangement because the pay-setting process has often deviated from arm's-length contracting. The power that CEOs derive from their positional advantages can encourage them to influence their own pay contracts and, thus, induce pay-without-performance. We operationalize the pay-without-performance construct by incorporating downward pay rigidities and then investigate whether these rigidities display gender differences.

The literature on traditional agency theory emphasizes the role of pay-for-performance in aligning the interests of management and shareholders (e.g., Core, Holthausen, & Larcker, 1999; Grossman & Hart, 1983; Holmström, 1979; Jensen & Meckling, 1976; Jensen & Murphy, 1990; Murphy, 1998).[1] However, the literature on CEO power theory indicates that some pay arrangement features, rather than efficiently incentivizing CEOs, seem to reflect CEOs' rent-seeking behavior (e.g., Bertrand & Mullainathan, 2001; Blanchard, Lopez-de-Silanes, & Shleifer, 1994; Yermack, 1997). In particular, recent studies show that a CEO's pay is downwardly rigid, meaning that a CEO's annual pay increases when a firm's performance increases but does not decrease to the same extent if the firm's performance declines (Adut, Cready, & Lopez, 2003; Chen et al., 2014; Garvey & Milbourn, 2006; Gaver & Gaver, 1998; Jackson, Lopez, & Reitenga, 2008; Kim, Yang, & Lee, 2017). Downward pay rigidities as a form of pay-without-performance reflect rents[2] that CEOs extract. According to the CEO power approach, CEOs can influence the board's

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[1] According to optimal contracts theory, which is in turn based on agency theory (e.g., Core, Holthausen, & Larcker, 1999; Grossman & Hart, 1983; Holmström, 1979; Jensen & Meckling, 1976; Jensen & Murphy, 1990; Murphy, 1998), optimal pay-for-performance arrangements induce executives to make their best efforts, thereby ensuring shareholder wealth. Such arrangements are expected to be based on a fair trade platform between the board and the executives.

[2] The term "rents" refers to the excess returns individuals or firms obtain due to their positional advantages (see Bebchuk & Fried, 2004).

pay decision by exerting their power. Bebchuk and Fried (2003) propose the *board capture mechanism*, by which CEOs can capture the board and extract rents using their positional advantages.

This study measures downward pay rigidities using a *regime-switching* model and examines CEO gender differences in pay rigidities. We use 23,760 firm-year observations of U.S. companies covering 1993 to 2013. We observe downward pay rigidities under managerial settings. We also find that the pay rigidities of male CEOs are greater than those of their female peers. Our findings support our theoretical prediction that male CEOs influence the board's pay-setting process more aggressively than female CEOs do to maintain their pay levels when the firm's performance declines.

This study contributes to several current debates in the literature. First, the agency problem derived from the dominance of managerial power is becoming a central issue for business and scholarship. The agency literature has investigated the association between CEO pay and firm performance (pay-for-performance sensitivity). However, these studies have neglected to incorporate the pay-without-performance problem in their linear models. Only a few empirical studies have investigated the pay-performance link using asymmetric specifications with complex interactions (e.g., Kim, Yang, & Lee, 2017). As these prior asymmetric specifications have many interaction terms, their results might not be robust, and their interpretations may vary. To correct these biases and to further capture the actual distributions of pay changes accurately over the observation period (see Bauer et al., 2007), we measure downward pay rigidities by employing regime-switching estimation. Our study therefore contributes to the agency literature from the viewpoint of econometric methodology.

Finally, our study complements the literature on gender pay inequality by suggesting that male CEOs adhere to pay-with-performance as a means of rent extraction but that female CEOs are likely to bear a pay reduction under the cardinal principles. We highlight a significant distortion in CEO pay by gender, which may impose substantial costs that ultimately damage shareholders' interests.

Theory and Hypothesis

The literature on agency theory indicates that CEO compensation should

be aligned with firm performance in order to encourage executives to work harder and, thus, enhance shareholder value (Core, Holthausen, & Larcker, 1999; Grossman & Hart, 1983; Holmström, 1979; Jensen & Meckling, 1976; Jensen & Murphy, 1990; Murphy, 1985). Agency theory posits that strong pay-for-performance arrangements encourage executives to work harder and thereby ensure shareholder wealth. Related studies provide direct evidence that greater sensitivity of performance-related pay is linked to higher stock returns. Masson (1971) finds that higher executive rewards in response to firm performance are associated with greater stockholder wealth. Abowd (1990) finds that operating performance is positively associated with CEO pay and that higher pay-for-performance sensitivity is linked to higher stock performance. McConaughy and Mishra (1996) suggest that increased pay-for-performance sensitivity induces risk-adjusted excess returns for firms.

However, studies have recognized that the application of performance-related pay faces several challenges and limitations, such as those involving CEO power and personal relationships, unclear appraisal criteria and scales, limited knowledge of performance, and the lack of a link between appraisal results and pay (Maaniemi, 2013; Salimäki & Jämsén, 2010). Gaps may also appear between the intended performance-appraisal system and the realized system (Maaniemi, 2013).

Furthermore, CEO power theorists argue that some pay arrangement features do not efficiently incentivize CEOs but rather reflect CEOs' rent-seeking behavior (e.g., Bertrand & Mullainathan, 2001; Blanchard, Lopez-de-Silanes, & Shleifer, 1994; Yermack, 1997). CEO power theorists posit that, although most CEOs contractually require greater pay when the firm outperforms, they tend to avoid pay reductions when firm performance deteriorates. Recent research reveals the pervasiveness of downward pay rigidities in managerial settings (e.g., Adut, Cready, & Lopez, 2003; Chen, Liu, & Peng, 2014; Chen et al., 2014; Garvey & Milbourn, 2006; Gaver & Gaver, 1998; Jackson, Lopez, & Reitenga, 2008; Kim, Yang, & Lee, 2017). Downward pay rigidities cannot be accounted for within the optimal contracting approach based on maximizing shareholder value; rather, they must be attributed to managerial influence (Bebchuk & Fried, 2003; Bebchuk, Fried, & Walker, 2002).

Agency theory emphasizes cardinal principles for pay schemes that are

optimal for shareholders. The board, acting at arm's length, should independently select the CEO pay arrangement that maximizes shareholder wealth (Bebchuk, Fried, & Walker, 2002). However, CEO power theorists posit that management tends to dominate the compensation committee by influencing the appointment of directors. Contrary to the common perception that directors are responsible for monitoring CEO activities, they may instead operate under the top manager's power and support the CEO (Bebchuk & Fried, 2003; Bebchuk, Fried, & Walker, 2002). CEOs who are involved in the appointment of directors tend to influence the board's setting and adjusting of executive compensation schemes. As CEOs engage in rent-seeking behavior by using their positional advantages, they happily accept pay increases when firm performance increases but avoid pay reductions when performance declines. Doing so induces weaker pay-for-performance sensitivity when the firm underperforms than when the firm over-performs, thus suggesting downwardly rigid CEO pay. We thus propose the following:

Pre-Hypothesis: Pay-for-performance sensitivity is lower when the firm's performance declines than it is when performance improves.

The overall gender pay gap seems to be wide and is consistent over time as well as across national and cultural boundaries (Gray & Benson, 2003). Studies on gender differences in pay (or wages) report relatively low pay (or wages) for women (e.g., Bell, 2005; Bertrand & Hallock, 2001; Croson & Gneezy, 2009). Gender inequalities are derived from a variety of mutually reinforcing mechanisms, such as discriminatory social norms, indirect discrimination concerning educational background and occupational choice, and other negotiated wage outcomes that reflect power relations (European Commission, 2001; Sandberg, 2017).

It has been assumed that performance-related pay systems promote equal pay (e.g., Ministry of Social Affairs and Health, 2007, 2016). However, performance-related pay faces challenges as a tool for promoting equal pay (Maaniemi, 2013; Sandberg, 2017). Maaniemi (2013) mentions unclear appraisal criteria and scales, limited knowledge of performance, and navigating personal relationships as several of the challenges in the application of performance-related pay, and she finds a gap between the intended perform-

ance-appraisal system and the realized system.

CEO power theory attributes the gap between intended and realized performance-based pay to managerial influence on the board's compensation setting and adjusting. Insofar as men exert more (or less) power on the board's pay evaluation decisions than women do, we expect gender differences in realized CEO performance-related pay schemes.

Regarding the exertion of power, the gender gap can be explained in terms of attitudinal and behavioral variables such as business ethics, stereotypes, risk aversion, and overconfidence. The literature on gender differences posits that men tend to be less ethical (Eynon, Hills, & Stevens, 1997; Francoeur, Labelle, & Sinclair-Desgagne, 2007; McCabe, Ingram, & Dato-on, 2006; Shaub, 1994). In the context of CEO pay contracts, several studies posit that female CEOs are more likely than male CEOs to refrain from using their power for their private interests and to consider shareholder value as being important (Francoeur, Labelle, & Sinclair-Desgagne, 2007; Krishnan & Parsons, 2008). Related studies also find consistent evidence that women in managerial positions tend to display more ethical behavior, thus enhancing shareholder wealth (Francoeur, Labelle, & Sinclair-Desgagne, 2007; Gul, Srinidhi, & Tsui, 2007; Krishnan & Parsons, 2008).

In a similar vein, traditional stereotypes describe women as being communal in the sense of having "soft" and "warm" traits (Kulich et al., 2011, p. 7). These stereotypes may imply that women are more likely than are men to be punished when their behavior differs from the generally accepted expectation and, thus, may feel more pressured to meet these expectations (Eagly & Karau, 2002; Eagly, Karau, & Makhijani, 1995). Supporting this view, the evidence suggests that female CEOs are more likely to be punished for being overly competitive in pay negotiations (Bowles, Babcock, & Lai, 2007).

Some studies on gender differences posit that women are more risk averse than men are (Barsky et al., 1997; Byrnes, Miller, & Schafer, 1999; Croson & Gneezy, 2009; Eckel & Grossman, 2002; Hartog, Ferrer-i-Carbonell, & Jonker, 2002). Croson and Gneezy (2009) find that women are, indeed, more risk averse and socially oriented even though their social preferences are more or less situationally specific. Above all, dismissal is considered one of the most severe risks that a CEO faces (Kim, Yang, &

Lee, 2017). The threat of dismissal may restrain a female CEO from extracting pay-rents and exerting her power on the board, thereby forcing her into a defensive stance (Bebchuk & Fried, 2004; DeFond & Park, 1999; Kim, Yang, & Lee, 2017). Thus, women are less likely than men are to engage in profit-seeking behavior in the workplace in order to gain financial rewards.

Men have been described as confident in a wide variety of domains (Niederle & Vesterlund, 2007; O'Laughlin & Brubaker, 1998; Pajares & Miller, 1994), especially those related to financial matters (Barber & Odean, 2001; Estes & Hosseini, 1988; Wu, Johnson, & Sung, 2008). Unprovoked attacks and wars are more often initiated by men, which may be attributable to overconfidence in their abilities (Johnson et al., 2006). If male CEOs are overconfident about their future performance, they may consciously ignore the guilty feeling related to receiving excessive compensation despite their low performance.

Considering gender differences in light of business ethics, stereotypes, risk aversion, and overconfidence, we expect that male CEOs have more incentives to resist pay cuts and engage in rent-seeking behavior than female CEOs have since male CEOs are more likely to capture the board, believing that they can camouflage rents and render them undetectable without fearing punishment. Accordingly, male CEOs will not bear pay reductions when firm performance worsens, but they are very willing to receive performance-related pay when the firm outperforms. This difference leads to greater downward pay rigidities for male CEOs than for female CEOs. We therefore propose the following hypothesis:

Hypothesis: Downward pay rigidities are greater for male CEOs than for female CEOs.

Research Design and Data

Methodological Background

Hamilton (1989, 1990) builds a regime-switching specification for analyzing discrete qualities of time-series data. Altonji and Devereux (2000) and

Bauer et al. (2007) examine the incidence of downward wage rigidities by measuring them using a regime-switching specification. Several studies on wages have applied the regime-switching model to macroeconomics and finance. One group of studies has employed regime switching to investigate structural shifts in business cycles (e.g., Kim, Morley, & Piger, 2005; Kim & Nelson, 1999; Öcal & Osborn, 2000; Van Dijk & Franses, 1999). Another group of studies has utilized regime switching to model regime shifts in time series of inflation and interest rates (Ang & Bekaert, 2002), high and low volatility regimes in equity returns (Dueker, 1997; Hamilton & Lin, 1996), shifts in the Federal Reserve's policy *rule* (Sims & Zha, 2006), and time variations in the response of economic output to monetary policy actions (Lo & Piger, 2005; Ravn & Sola, 2004).

Unlike a linear regression model, a regime-switching regression allows for the presence of nonlinearity in the regression coefficient, and, thus, the coefficients of the regime-switching regression model may differ across different regimes. When estimating the slope of a regime-switching regression, we can calculate the probability that each regime occurs. A greater (or lower) probability value indicates that the related observation is more likely to belong to a flexible (or rigid) regime. To analyze the non-linear distributions of pay changes, studies use asymmetric models with dummy and interaction variables (e.g., Kim, Yang, & Lee, 2017). However, complex variables with many interactions tend to produce inconsistent results that vary across studies. By contrast, the regime-switching model captures the actual distributions of pay changes over the observation period and thereby helps to reduce biases driven by complex and manipulative interactions.

Estimating Downward Pay Rigidities

The literature on CEO pay-for-performance uses returns on assets or stock returns as proxies for firm performance (e.g., Kim, Yang, & Lee, 2017; Leone, Wu, & Zimmerman, 2006). We also adopt the changes in returns on assets or stock returns to measure changes in firm performance. In the case of downward pay rigidities, CEO pay behaves asymmetrically in response to changes in firm performance; specifically, CEO pay declines less when firm performance weakens than it increases when performance

improves.[3]

Following Song, Yang, and Kwon (2017), we consider two regimes. The first is the flexible regime, referring to the state in which CEO pay significantly reacts to firm performance. The second is the rigid regime, referring to the state in which CEO pay does not significantly respond to firm performance.

Given the two regimes, we express a generic form of the regime-switching model as follows:

$$y_t = X_t^{'}\beta_m + Z_t^{'}\gamma + \sigma_m\varepsilon_t\,, \qquad m = 1,2 \tag{1}$$

Note that the slope parameter β_m differs across the regime, whereas the slope parameter γ is the same regardless of the regime. In the context of the two regimes, we implement two different slopes for X_t in Eq. (1). For each individual observation at time t, we consider the following likelihood function:

$$L_t(\beta,\sigma,\delta) = \sum_{m=1}^{2}\frac{1}{\sigma_m}\Phi\left(\frac{y_t - X_t'\beta_m - Z_t'\gamma}{\sigma_m}\right)P(s_t = m|\kappa_{t-1},\delta), m = 1,2 \tag{2}$$

where β and σ represent (β_1, β_2) and (σ_1, σ_2), respectively. Similarly, δ indicates a vector of (δ_1, δ_2) in Eq. (2). We assume that $\Phi(\bullet)$ follows the standard normal distribution and that k_{t-1} indicates the information available in period.

In the likelihood function of Eq. (2), we present the probability that each individual observation of y_t and X_t belongs to regime 1 and 2 given a conditional probability, $P(s_t = m|k_{t-1}, \delta)$. In Eq. (2), we express individual likelihood functions in logarithmic form and aggregate them over time periods from 1 to T. Using the resulting likelihood function, we esti-

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[3] In a similar vein, a stream of literature on cost accounting suggests that costs change asymmetrically in response to sales changes when addressing the agency problem. Anderson, Banker, and Janakiraman (2003) and subsequent studies show that cost stickiness pervades under different settings (e.g., Balakrishnan, Petersen, & Soderstrom, 2004; Banker, Byzalov, & Chen, 2013; Chen, Lu, & Sougiannis, 2012; Yang, 2015).

mate β, σ, and δ using maximum likelihood estimation. To focus on pay rigidities in the downward (rather than upward) direction, we incorporate a condition for the CEO pay decrease in the conditional probability, $P(s_t = m | k_{t-1}, \delta)$ as follows:

$$P(s_t = m|\kappa_{t-1}, \delta) = \frac{exp\{\delta_{m,0} + \delta_{m,1} I[\Delta s_{t-1} < 0]\}}{\sum_{m=1}^{2} exp\{\delta_{m,0} + \delta_{m,1} I[\Delta s_{t-1} < 0]\}}, \quad (3)$$

where $I(\Delta S < 0)$ is a dummy variable equal to one if firm performance (return on assetsor stock returns) decreases and zero otherwise. Based on Eq. (3), we specify Eq. (1) as follows:

$$\Delta Pay_t = \beta_{m,0} + \gamma \Delta Pay_{t-1} + \beta_{m,2} \Delta s_t + \sigma_m \varepsilon_t, \quad m = 1, 2. \quad (4)$$

We include ΔPay_{t-1} in Eq. (4) to reduce possible autocorrelation in the time series of ΔPay_t to prevent a misleading estimation of Eq. (4). In Eq. (4), we also consider heterogeneous variances over the two regimes' disturbances by incorporating σ_m in $\sigma_m \epsilon_t$. If one of the two regime slope parameters is not significant and the other parameter is significantly positive, then the insignificant parameter indicates a rigid regime, whereas the significant parameter represents a flexible regime. Here, we represent Δs_t using returns on assets (ΔROA) or stock returns (*Return*), which cause pay changes (e.g., Leone, Wu, & Zimmerman, 2006). In addition, we condition the probability of a change in pay on decreases in performance because our focus is on whether the association between pay-for-performance and CEO gender is contingent on the extent of firms' financial success. In short, we employ Eq. (4) to estimate the probability of an observation being in the rigid regime, and we use this probability as our dependent variable in Eq. (5), as specified below.

Specification of CEO Pay Rigidities

We estimate the following model to test our hypothesis that downward pay rigidities are greater for male CEOs than for female CEOs:

$$PayRigidities_{i,t} = \beta_0 + \beta_1 * Gender_{i,t} + \beta_2 * Age_{i,t} + \beta_3 * Duality_{i,t} + \beta_4 * Size_{i,t} + \beta_5 * Leverage_{i,t} + \beta_6 * MTB_{i,t} + \varepsilon_{i,t} \quad (5)$$

where *PayRigidities* represents downward pay rigidities (the probability of an observation being in the rigid regime when performance is bad), estimated by our modified regime-switching model; *Gender* is a dummy variable equal to 1 if the CEO is male and 0 otherwise; *Age* is the age of the CEO in the given year; *Duality* is a dummy variable equal to 1 if the CEO is also the chairman of the board and 0 otherwise; *Size* is the log of total assets; *Leverage* is debt divided by total assets; and *MTB* is the market value of equity divided by the book value of equity.

If the downward pay rigidities are greater for male CEOs than for female CEOs when firm performance worsens, the coefficient on *Gender* will be positive. As key controls, our model includes two measures of CEO characteristics: CEO age (*Age*) and CEO duality (*Duality*). As male CEOs tend to survive longer in the workplace than female CEOs do, we consider CEO age as a control variable. We also control for CEO duality, which occurs when the CEO is also the chairman. CEO duality is known to be a key factor in CEO power because it allows CEOs to exert more influence over the board (Finkelstein & Hambrick, 1988; Van Essen, Otten, & Carberry, 2015).

Moreover, we consider the *firm-specific* controls of firm size, leverage, and the market-to-book ratio. The literature shows that larger firms and firms with greater growth opportunities demand CEOs with higher abilities and offer higher compensation (Carter, Lynch, & Tuna, 2007; Smith & Watts, 1992). Firm leverage is included to control for its influence on CEO pay structures (Smith & Watts, 1992).

CEO Pay and Gender Data

We obtain CEO pay and gender data from the S&P ExecuComp database, financial statement data from the annual COMPUSTAT Industrial File, and stock return data from the Center for Research in Security Prices (CRSP). Firms with SIC codes 6000 to 6999 (financial institutions) are excluded from our study. We also require that firm-year observations have the necessary data to compute the control variables in the regressions. This sample selection procedure generates 23,760 firm-year observations between 1993 and 2013.

Panel A of Table 1 reports our variable definitions. Our variable of inter-

est, ΔPay, is based on total pay, including salary, bonus, other annual pay; the total value of restricted stock granted that year; the Black-Scholes value of stock options granted that year; long-term incentive payouts; and all other compensation for up to five top-level executives (as reported in ExecuComp item TDC1). Cash pay comprises salary plus bonuses, and equity pay includes restricted stock granted and stock options. We restrict the sample to firm-years in which the CEO was in office for two consecutive years to avoid capturing spurious relationships between different CEOs' pay. The descriptive statistics of the regression variables are reported in Panels B and C. Panel B shows that the number of female CEOs in the sample is 480.

Table 1.
Definitions of Variables and Descriptive Statistics

Panel A. Definitions of Variables

Variable	Definition
Variables for Estimation of Pay Rigidities	
ΔPay	Change in natural logarithm of total CEO pay (as reported in ExecuComp item TDC1).
ΔCash Pay	Change in natural logarithm of cash pay (salary plus bonus).
Variables for Tests of Hypothesis	
Gender	Dummy equal to 1 if the CEO is male and 0 otherwise.
Age	Age of the CEO in a given year.
Duality	Dummy equal to 1 if the CEO is also the chairman of the board and 0 otherwise.
Size	Natural logarithm of total assets.
Leverage	Debt divided by total assets.
MTB	Market value of equity divided by book value of equity.

Note 1. Total pay = Salary + Bonus + Other Annual + Restricted Stock Grants + Value of Option Grants + LTIP Payouts + All Other. Equity pay = Restricted Stock Grants + Value of Option Grants.
Note 2. This table defines the variables used in this study. Firm characteristic data are obtained from the Center for Research in Securities Prices and COMPUSTAT databases, and CEO pay data are drawn from EXECUCOMP for the period 1993 – 2013. All continuous variables are winsorized at the 1st and 99th percentiles. A firm's industry is defined based on its two-digit SIC classification. The sample consists of 23,760 firm-year observations, excluding financial firms.

Panel B. Summary Statistics of Regression Variables

	Mean	Median	Standard deviation	25%	75%
Pay Rigidities (log)	-.0784	-.0162	0.7000	-.0521	-.0058
Cash Pay/Total	0.4888	0.4380	0.2954	0.2351	0.7257
Equity Pay/Total	0.3847	0.4200	0.2712	0.1249	0.5981
Gender	0.9798	1	0.1409	1	1
Age (log)	3.9940	3.9890	0.1223	3.9120	4.0775
Duality	0.5013	1.0000	0.5003	0.0	1.0
Size (log)	2.0330	2.0325	0.2356	1.8654	2.2323
Leverage (log)	-0.7214	-0.5725	0.5346	-0.9491	-0.3835
MTB	2.4530	1.8904	6.2178	1.1704	3.0133

Panel C. Summary Statistics of the Rigid Regime

	Probability	Log of probability
Mean	0.9597	-0.0549
Standard deviation	0.0927	0.2754
Median	0.9839	-0.0163
25%	0.9491	-0.0522
75%	0.9941	-0.0059

Results

Estimates of Downward-sticky Pay

We first test the incidence of downward pay rigidities in managerial settings. Figure 1 presents the degrees of downward pay rigidities for 23,760 firm-year observations between 1993 and 2013. In Panels A and B of Figure 1, we use returns on assets) and stock returns (*Return*) to represent in Eq. (4), respectively. Both panels show a significant separation between the flexible and rigid regimes. The line with the lower (higher) slope represents the rigid (flexible) regime. We use a two-state Markov regime-switching model to estimate the probability of an observation being in the rigid regime for poor performance and use this probability as the dependent variable in Eq. (5).

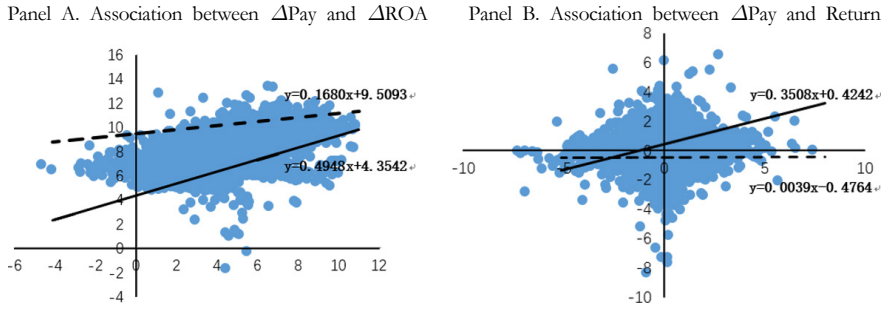

Figure 1. Two regimes in the regime-switching model

Table 2 presents the estimates of the regime-switching regression in Eq. (4). Panel A of Table 2 shows the association between ΔPay and ΔROA, and Panel B shows the association between ΔPay and RET. Both panels show that one β_m is insignificant and the other β_m is significantly positive, indicating that the former (latter) represents a rigid (flexible) regime. Accordingly, the low sensitivity of pay to firm performance, which is manifested in a low slope line, indicates that CEO pay does not drop to the expected level when firm performance declines.

Table 2.
Regime-switching Regression

Panel A. Association between ΔPay and ΔROA

Specification	Dependent Variables	Independent Variables	Coefficient Estimates	t-statistics
Rigid slope	ΔPay_t	ΔROA_t	0.168	0.394
Flexible slope	ΔPay_t	ΔROA_t	0.495***	24.954
Probabilities parameter	P_r	Intercept	2.357**	4.097
		$I(\Delta ROA<0)$	0.809**	2.147

Panel B. Association between ΔPay and RET

Specification	Dependent Variables	Independent Variables	Coefficient Estimates	t-statistics
Rigid slope	ΔPay_t	RET_t	0.004	0.103
Flexible slope	ΔPay_t	RET_t	0.350***	2.665
Probabilities parameter	P_r	Intercept	-22.165***	-0.196
		$I(RET<0)$	45.922**	3.156***

Note. Table 2 presents the estimates of the regime-switching regression in Eq. (4). Panel A in Table 2 shows the association between ΔPay and ΔROA, and Panel B shows the association between ΔPay and RET.
*$p < .1$, **$p < .05$, ***$p < .01$.

Effects of CEO Gender on Downward-rigid Pay

Using the downward pay rigidities previously estimated by the regime-switching regression, Table 3 reports the panel regression results from estimating Eq. (5). In Model A, we use the downward pay rigidities estimated based on the association between *△CEO pay* and *△ROA* as the dependent variable; in Model B, we use those based on the association between *△CEO pay* and *Return*. Both models show that the coefficients on *Gender* are significantly positive, suggesting that male CEOs avoid pay reductions more aggressively than do female CEOs when firm performance declines. In other words, CEO pay is more rigid under poor economic conditions for firms with male CEOs. This evidence is consistent with male CEOs engaging in rent-seeking behavior to maintain their previous pay level when the firm's performance worsens, and it therefore supports our hypothesis. The coefficient on CEO age (*Age*) is significantly positive in

Table 3.
Impact of CEO Gender on Pay Rigidities (N=23,760)

	Pay Rigidities (A) Model: [△Pay and △ROA]		Pay Rigidities (B) Model: [△Pay and RET]	
	Estimate	*t*-stat	Estimate	*t*-stat
Intercept	-2.9167***	-8.15	-19.2157***	-4.08
Gender	0.1570***	2.99	0.2189**	2.42
Age	0.0100*	1.79	0.0806	1.09
Duality	0.1955**	2.56	2.2113**	2.20
Size	0.0046	0.17	0.0135	0.03
Leverage	0.0478	0.16	0.0659	0.28
MTB	0.0061	0.84	0.0441	0.45
Industry Fixed Effect	Yes		Yes	
Year Fixed Effect	Yes		Yes	
Adjusted-R^2	0.0362		0.0125	

Note. Table 3 reports the panel regression results from estimating Eq. (5). In Model A, we use as the dependent variable the downward pay rigidities estimated based on the association between △CEO pay and △ROA; in Model B, we use those based on the association between △CEO pay and Return. t-statistics are calculated based on robust standard errors clustered at the firm level. Variable definitions are provided in Table 1.
*$p < .1$, **$p < .05$, ***$p < .01$.

Model A but not in Model B. The coefficient on CEO duality (*Duality*) is significantly positive, suggesting that it has a positive impact on downward pay rigidities. This result supports the assertion that a single individual serving as both CEO and board chair may have more power and may dominate the board's pay decision (e.g., Bebchuk, Fried, & Walker, 2002). Our conservative model controlling for CEO duality may result in an underestimation of the effects of CEO gender on downward pay rigidities and, thus, may capture the pure gender effects.

Omitted Variable Tests

Our variable of interest is CEO gender. To address concerns related to omitted variable bias, we estimate firm fixed-effects regressions. Firm fixed- and firm*CEO fixed- effects regressions control for unobservable time-invariant firm- and CEO-specific characteristics, which might affect both firm performance and CEO compensation. We find that the results (untabulated) are qualitatively the same.

Results of Pay Rigidities Using Level Estimation

In this subsection, we present the results from the *level* analysis of the pay–performance association. In the preceding tests, we employed the *change* specification to estimate pay-for-performance sensitivity while exploring whether male CEOs avoid pay reductions to a greater extent when current performance declines than do female CEOs. Here, we test whether male CEOs are paid more highly than female CEOs when firm performance declines. In other words, this analysis is more of a cross-sectional comparison than a within-firm comparison. Table 4 shows the results, which mirror those shown in Table 3.

Table 4.
Level Estimation

Panel A. Regime-switching Regression

Specification	Dependent Variables	Independent Variables	Coefficient Estimates	t-statistics
Rigid slope	Pay_t	ROA_t	25.339	0.701
Flexible slope	Pay_t	ROA_t	42793.45***	11.468
Probabilities parameter	P_r	Intercept	-0.324	0.322
		$I(\Delta ROA<0)$	0.945*	1.638

Panel B. Empirical Estimation (N=23,760)

	Full Model		Modification (1)		Modification (2)		Modification (3)	
	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat
Intercept	-3.3414***	-12.19	-3.428***	-12.66	-3.286***	-25.3	-3.285***	-25.2
Gender	0.4062***	6.45	0.4239***	6.79	0.3893***	6.31	0.4040***	6.59
Age	0.0007	0.00	0.0022	0.53				
Duality	0.1097*	1.88			0.1042*	1.83		
Size	0.2920	1.63	0.3000	1.15	0.2870	1.28	0.2940	1.50
Leverage	0.0017	0.12	0.0139	0.10	0.2040	0.17	0.0390	0.28
MTB	0.0143**	1.99	0.0150*	1.68*	0.0119**	2.16	0.0123**	2.23
Industry Fixed Effect	Yes		Yes		Yes			
Year Fixed Effect	Yes		Yes		Yes			
Adjusted-R^2	0.3239		0.3200		0.3158		0.3122	

Note. This table presents the results from the *level* analysis of the pay – performance association. *$p < .1$, **$p < .05$, ***$p < .01$.

Analysis on a Subsample of Firms with at Least One Female CEO

Firms with only male CEOs could differ from those with both female and male CEOs in terms of downward pay rigidities and other dimensions. To mitigate this concern, we analyze a subsample of firms with at least one female executive (N = 1,446) and find that the results of Table 5 are qualitatively the same as those for the whole sample.

Table 5.
Analysis for a Subsample of Firms with at Least One Female Executive (N=1,446)

	Pay Rigidities (A) Model: [ΔPay and ΔROA]		Pay Rigidities (B) Model: [ΔPay and RET]	
	Estimate	t-stat	Estimate	t-stat
Intercept	-1.1431***	-8.44	-10.4491***	-2.96
Gender	0.1569***	3.84	0.6509**	2.73
Age	0.0100*	1.61	0.0076	0.91
Duality	0.0412**	2.01	1.1201	1.56
Size	-0.0103	1.20	0.0914	0.58
Leverage	0.0567	0.18	0.1001	0.10
MTB	0.0011	0.14	0.0102	0.77
Industry Fixed Effect	Yes		Yes	
Year Fixed Effect	Yes		Yes	
Adjusted-R^2	0.0413		0.0195	

Note. This table presents the results of the analysis of a subsample of firms with at least one female CEO. t-statistics are calculated based on robust standard errors clustered at the firm level. Variable definitions are provided in Table 1.
*p < .1, **p < .05, ***p < .01.

Robustness Test Using Cash Pay

We retest the effect of CEO gender on downward pay rigidities by using cash-based pay (salary plus bonuses) as an alternative proxy for total pay in Eq. (5). Several studies on compensation postulate that cash-based pay might capture the managerial power effect more effectively than equity-based pay (i.e., Bebchuk & Fried, 2004; Zheng, 2010). The results based on the cash-based pay model, shown in Table 6, robustly confirm the prior results based on the total pay model.

Table 6.
Pay Rigidities for Cash Pay (N=23,760)

	Pay Rigidities (A) Model: [ΔPay and ΔROA]		Pay Rigidities (B) Model: [ΔPay and RET]	
	Estimate	*t*-stat	Estimate	*t*-stat
Intercept	-4.8252***	-8.15	-13.2263***	-5.17
Gender	0.1881***	3.87	0.2021***	2.61
Age	0.0140	0.82	0.4917	0.29
Duality	0.2311***	3.09	1.0244**	2.01
Size	0.0327*	1.72	0.1230*	1.91
Leverage	0.0002	1.15	-0.0201	-0.57
MTB	0.1832	0.84	0.5043	0.95
Industry Fixed Effect	Yes		Yes	
Year Fixed Effect	Yes		Yes	
Adjusted-R^2	0.0471		0.0255	

Note. This table reports the panel regression results of estimating Eq. (5) using cash (salary plus bonus) pay. In Model A, we use as the dependent variable the downward pay rigidities estimated based on the association between △Cash Pay and △ROA; in Model B, we use those based on the association between △Cash Pay and Return. t-statistics are calculated based on robust standard errors clustered at the firm level. Variable definitions are provided in Table 1.
$^{*}p < .1$, $^{**}p < .05$, $^{***}p < .01$.

Conclusions

After retesting the incidence of downward pay rigidities in managerial settings, this study investigates whether downward pay rigidities are more prevalent in firms with male CEOs than in those with female CEOs. Drawing on prior evidence regarding gender differences, we find that downward pay rigidities are greater for male CEOs than for female CEOs. This result suggests that female CEOs bear pay reductions stemming from declining firm performance, whereas male CEOs influence the board's pay-setting process to maintain their pay level when firm performance worsens. Our results imply that male CEOs are more likely to exhibit rent-seeking behavior in situations where pay-for-performance systems work against their interests.

References

Abowd, J. M. (1990). Does performance-based managerial compensation affect corporate performance? *Industrial and Labor Relations Review*, *43*, 52S–73S.

Adut, D., Cready, W. H., & Lopez, T. J. (2003). Restructuring charges and CEO cash compensation: A reexamination. *The Accounting Review*, *78*(1), 169–192.

Altonji, J., & Devereux, P. (2000). The extent and consequences of downward nominal wage rigidity. In S. W. Polacheck (Ed.) *Research in Labor Economics*, Vol. 19. Amsterdam. New York and Tokyo: Elsevier Science, JAI.

Anderson, M., Banker, R., & Janakiraman, S. (2003). Are selling, general and administrative costs "sticky"? *Journal of Accounting Research, 41*(1), 47–63.

Ang, A., & Bekaert, G. (2002). International asset allocation with regime shifts. *The Review of Financial Studies*, *15*(4), 1137–1187.

Balakrishnan, R., Petersen, M., & Soderstrom, N. (2004). Does capacity utilization affect the "stickiness" of cost? *Journal of Accounting, Auditing & Finance, 19*(3), 283–299.

Banker, R. D., Byzalov, D., & Chen, L. T. (2013). Employment protection legislation, adjustment costs and cross-country differences in cost behavior. *Journal of Accounting and Economics, 55*(1), 111–127.

Barber, B. M., & Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. *Quarterly Journal of Economics*, *116*, 261–292.

Barsky, R. B., Juster, F. T., Kimball, M. S., & Shapiro, M. D. (1997). Preference parameters and behavioral heterogeneity: An experimental approach in the health and retirement study. *Quarterly Journal of Economics*, *112*, 537–579.

Bauer, T., Bonin, H., Goette, L., & Sunde, U. (2007). Real and nominal wage rigidities and the rate of inflation: Evidence from West German micro data. *The Economic Journal*, *117*(524), 508–529.

Bebchuk, L. A., & Fried, J. M. (2003). Executive compensation as an agency problem. *The Journal of Economic Perspectives*, *17*(3), 71–92.

Bebchuk, L. A., & Fried, J. M. (2004). *Pay without performance: The unfulfilled promise of executive compensation*. Cambridge: Harvard University Press.

Bebchuk, L. A., & Fried, J. M. (2006). Pay without performance: Overview of the issues. *Academy of Management Perspectives*, *20*(1), 5–24.

Bebchuk, L. A., Fried, J. M., & Walker, D. I. (2002). Managerial power and rent extraction in the design of executive compensation. *University of Chicago Law Review*, *69*(3), 751–846.

Bell, L. (2005). *Women-led firms and the gender gap in top executive jobs*. Institute for the

Study of Labor Working Paper No. 1689, Germany.

Bertrand, M., & Hallock, K. F. (2001). The gender gap in top corporate jobs. *Industrial and Labor Relations Review*, *55*(1), 3–21.

Bertrand, M., & Mullainathan, S. (2001). Are CEOs rewarded for luck? The ones without principals are. *Quarterly Journal of Economics*, *116*(3), 901–932.

Blanchard, O. J., Lopez-de-Silanes, F., & Shleifer, A. (1994). What do firms do with cash windfalls? *Journal of Financial Economics, 36*, 337–360.

Bonin, H., Dohmen, T., Falk, A., Huffman, D., & Sunde, U. (2007). Cross-sectional earnings risk and occupational sorting: The role of risk attitudes. *Labour Economics*, *14*(6), 926–937.

Bowles, H. R., Babcock, L., & Lai, L. (2007). Social incentives for gender differences in the propensity to initiate negotiations—Sometimes it does hurt to ask. *Organizational Behavior and Human Decision Processes, 103*(1), 84–103.

Byrnes, J. P., Miller, D. C., & Schafer, W. D. (1999). Gender differences in risk-taking: A meta-analysis. *Psychological Bulletin*, *125*(3), 367–383.

Carter, M. E., Lynch, L. J., & Tuna, I. (2007). The role of accounting in the design of CEO equity compensation. *The Accounting Review*, *82*(2), 327–357.

Chen, C. X., Lu, H., & Sougiannis, T. (2012). The agency problem, corporate governance, and the asymmetrical behavior of selling, general, and administrative costs. *Contemporary Accounting Research*, *29*(1), 252–282.

Chen, X., Liu, F., & Peng, Y. (2014). The effect of managerial power in executive compensation contracts: Empirical evidence from China's capital market. *Frontier in Finance, 1*, 9–17.

Chen, X., Peng, Y., Liu, F., & Xu, J. (2014). Research on CEO compensation stickiness of Chinese listed companies. *Frontier in Finance*, *1*, 1–8.

Core, J. E., Holthausen, R. W., & Larcker, D. F. (1999). Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics*, *51*(3), 371–406.

Croson, R., & Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic Literature*, *47*(2), 1–27.

DeFond, M., & Park, C. (1999). The effect of competition on CEO turnover. *Journal of Accounting and Economics*, *27*, 35–56.

Dueker, M. J. (1997). Markov switching in GARCH processes and mean-reverting stock-market volatility. *Journal of Business & Economic Statistics*, *15*(1), 26–34.

Eagly, A. H., & Karau, S. J. (2002). Role congruity theory of prejudice toward female leaders. *Psychological Review, 109*(3), 573–598.

Eagly, A. H., Karau, S. J., & Makhijani, M. G. (1995). Gender and the effectiveness

of leaders: A metaanalysis. *Psychological Bulletin, 117*(1), 125–145.

Eckel, C. C., & Grossman, P. J. (2002). Sex differences and statistical stereotyping in attitudes toward financial risk. *Evolution and Human Behavior*, *23*(4), 281–295.

Estes, R., & Hosseini, J. (1988). The gender gap on Wall Street: An empirical analysis of confidence in investment decision making. *The Journal of Psychology*, *122*(6), 577–590.

European Commission. (2001). *Employment in Europe*. Luxembourg: European Commission.

Eynon, G., Hills, N. T., & Stevens, T. (1997). Factors that influence the moral reasoning abilities of accounts: Implications for universities and the profession. *Journal of Business Ethics*, *16*, 1297–1309.

Finkelstein, S., & Hambrick, D. C. (1988). Chief executive compensation: A synthesis and reconsideration. *Strategic Management Journal*, *9*, 543–558.

Francoeur, C., Labelle, R., & Sinclair-Desgagne, B. (2007). Gender diversity in corporate governance and top management. *Journal of Business Ethics*, *73*, 231–242.

Garvey, G. M., & Milbourrn, T. T. (2006). Asymmetric benchmarking in compensation: Executive are rewarded for good luck but not penalized for bad. *Journal of Financial Economics*, *82*, 197–225.

Gaver, J. G., & Gaver, K. M. (1998). The relation between nonrecurring accounting transactions and CEO cash compensation. *The Accounting Review*, *73*(2), 235–253.

Gray, S. R., & Benson, P. G. (2003). Determinants of executive compensation in small business development centers. *Nonprofit Management and Leadership*, *13*(3), 213–227.

Grossman, S. J., & Hart, O. D. (1983). An analysis of the principal–agent problem, *Econometrica, 51*, 7–45.

Gul, F., Srinidhi, B., & Tsui, J. (2007). Do female directors constrain earnings management? Some evidences from earnings quality and market perceptions of earnings quality. Paper presented at the 2007 annual meeting of the American Accounting Association.

Hamilton, J. D. (1989). A new approach to the economic analysis of nonstationary time series and the business cycle. *Econometrica*, *57*, 357–384.

Hamilton, J. D. (1990). Analysis of time series subject to changes in regime. *Journal of Econometrics*, *45*, 39–70.

Hamilton, J. D., & Lin, G. (1996). Stock market volatility and the business cycle. *Journal of Applied Econometrics*, *11*(5), 573–593.

Hartog, J., Ferrer-i-Carbonell, A., & Jonker, N. (2002). Linking measured risk aversion to individual characteristics. *Kyklos*, *55*(1), 3–26.

Holmström, B. (1979). Moral hazard and observability. *Bell Journal of Economics, 10,* 74–91.

Jackson, S. B., Lopez, T. J., & Reitenga, A. L. (2008). Accounting fundamentals and

CEO bonus compensation. *Journal of Accounting and Public Policy, 27*, 374–393.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*, 305–360.

Jensen, M. C., & Murphy, K. J. (1990). Performance pay and top-management incentives. *Journal of Political Economy, 98*, 225–264.

Johnson, D. D. P., McDermott, R., Barrett, E. S., Cowden, J., Wrangham, R., McIntyre, M. H., & Rosen, S. P. (2006). Overconfidence in wargames: Experimental evidence on expectations, aggression, gender and testosterone. *Proceedings of the Royal Society of London–B*, *273*(1600), 2513–2520.

Kim, C. J., Morley, J., & Piger, J. (2005). Nonlinearity and the permanent effects of recessions. *Journal of Applied Econometrics, 20*(2), 291–309.

Kim, C. J., & Nelson, C. R. (1999). Has the US economy become more stable? A Bayesian approach based on a Markov-switching model of the business cycle. *The Review of Economics and Statistics*, *81*(4), 608–616.

Kim, J., Yang, D., & Lee, M. (2017). CEO tenure, market competition, and sticky pay-without-performance as the extraction of rents. *Asia-Pacific Journal of Financial Studies*, *46*, 248–277.

Krishnan, G. V., & Parsons, L. M. (2008). Getting to the bottom line: An exploration of gender and earnings quality. *Journal of Business Ethics, 78*, 65–76.

Kulich, C., Trojanowski, G., Ryan, M. K., Haslam, S. A., & Renneboog, L. (2011). Who gets the carrot and who gets the stick? Evidence of gender disparities in executive remuneration. *Strategic Management Journal, 32*(3), 301-321.

Leone, A. J., Wu, J. S., & Zimmerman, J. L. (2006). Asymmetric sensitivity of CEO cash compensation to stock returns. *Journal of Accounting and Economics*, *42*, 167–192.

Lo, M. C., & Piger, J. M. (2005). Is the response of output to monetary policy asymmetric? Evidence from a regime-switching coefficients model. *Journal of Money, Credit, and Banking*, *37*(5), 865–886.

Maaniemi, J. (2013). *Reflections of systemic justice? Employees' and supervisors' experiences of injustice in the performance appraisal and merit pay context* (Doctoral dissertation). Aalto University School of Science, Department of Industrial Engineering and Management, Helsinki, Finland.

Masson, R. T. (1971). Executive motivations, earnings and consequent equity performance. *Journal of Political Economy*, *79*, 1278–1292.

McCabe, A. C., Ingram, R., & Dato-on, M. C. (2006). The business of ethics and gender. *Journal of Business Ethics*, *64*, 101–116.

McConaughy, D. L., & Mishra, C. S. (1996). Debt, performance-based incentives and firm performance. *Financial Management*, *25*, 37–51.

Ministry of Social Affairs and Health. (2007). *The Equal Pay Programme*. Helsinki: Yliopistopaino.

Ministry of Social Affairs and Health. (2016). *The Equal Pay Programme, 2016–2019*. Helsinki: Yliopistopaino.

Mueller, G., & Plug, E. (2006). Estimating the effect of personality on male and female earnings. *Industrial and Labor Relations Review*, *60*(1), 3–22.

Murphy, K. J. (1985). Corporate performance and managerial remuneration: An empirical analysis. *Journal of Accounting and Economics*, *7*, 3–36.

Niederle, M., & Vesterlund, L. (2007). Do women shy away from competition? Do men compete too much? *Quarterly Journal of Economics*, *122*(3), 1067–1102.

Öcal, N., & Osborn, D. R. (2000). Business cycle non-linearities in UK consumption and production. *Journal of Applied Econometrics*, 27–43.

O'Laughlin, E. M., & Brubaker, B. S. (1998). Use of landmarks in cognitive mapping: Gender differences in self report versus performance. *Personality and Individual Differences*, *24*(5), 595–601.

Pajares, F., & Miller, M. D. (1994). Role of self-efficacy and self-concept beliefs in mathematical problem solving: A path analysis. *Journal of Educational Psychology*, *86*(2), 193–203.

Ravn, M. O., & Sola, M. (2004). Asymmetric effects of monetary policy in the United States. *Review-Federal Reserve Bank of Saint Louis*, *86,* 41–58.

Salimäki, A., & Jämsén, S. (2010). Perceptions of politics and fairness in merit pay. *Journal of Managerial Psychology*, *25*(3), 229–251.

Sandberg, P. K. (2017). Intertwining gender inequalities and gender-neutral legitimacy in job evaluation and performance-related pay. *Gender, Work and Organization*, *24*(2), 156–170.

Shaub, M. (1994). An analysis of the association of traditional demographic variables with the moral reasoning of auditing students and auditors. *Journal of Accounting Education, 12*, 1–25.

Sims, C. A., & Zha, T. (2006). Were there regime switches in US monetary policy? *The American Economic Review*, *96*(1), 54–81.

Smith, C. W., & Watts, R. L. (1992). The investment opportunity set and corporate financing, dividend, and financing policies. *Journal of Financial Economics, 32*, 262–292.

Song, J., Yang, D., & Kwon, S. (2017). FDI consequences of downward wage-cost rigidities. *Singapore Economic Review, 62*(5), 1223-1244.

Van Dijk, D., & Franses, P. H. (1999). Modeling multiple regimes in the business cycle. *Macroeconomic Dynamics*, *3*(3), 311–340.

Van Essen, M., Otten, J., & Carberry, E. J. (2015). Assessing managerial power theory: A meta-analytic approach to understanding the determinants of CEO compensation. *Journal of Management*, *41*(1), 164–202.

Watson, J., & McNaughton, M. (2007). Gender differences in risk aversion and expected retirement benefits. *Financial Analysts Journal*, *63*, 52–62.

Wu, S. W., Johnson, J. E. V., & Sung, M. C. (2008). Overconfidence in judgements: The evidence, the implications and the limitations. *The Journal of Prediction Markets*, *2*(1), 73–90.

Yang, D. (2015). Mergers, CEO hubris and cost stickiness. *Emerging Markets Finance and Trade*, *51*, S46–63.

Yermack, D. (1997). Good timing: CEO stock option awards and company news announcements. *Journal of Finance, 52*, 449–476.

Zheng, Y. (2010). The effect of CEO tenure on CEO compensation, evidence from inside CEOs vs. outside CEOs. *Managerial Finance, 36*, 832–859.

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