Managers' Pay Duration and Voluntary Disclosures

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Motivation
- the use of stock-based compensation

- Benefits: interest alignment between managers and shareholders
- Costs:
  - More costly (risk premium)
  - Inducing managerial short-termism (e.g., Jensen 2005)

- Remedies
  - To reduce the use of stock-based compensation (particularly option-based compensation): Cheng and Farber (2008)
  - To link stock-based compensation to long-term performance, e.g., by increasing the vesting period

- **Do they help?**

Motivation
- stock-based compensation and voluntary disclosures

- Disclosure-related agency problems (Nagar et al. 2003)
  - While disclosures benefit shareholders, they are costly to managers.
  - When their incentives are not aligned with shareholders', managers are reluctant to reveal private information

- One remedy: stock-based compensation
  - Nagar et al. (2003): Stock-based compensation mitigates disclosure-related agency problems.

- Is stock-based compensation the panacea?
  - Kothari et al. (2009): managers tend to withhold bad news and such tendency increases with stock-based compensation.

- **Does increasing pay duration help?**

Research Questions

- **Does pay duration affect voluntary disclosure practices, particularly, those of bad news?**
  - Are managers with long pay duration more likely to issue bad news earnings forecasts than those with short pay duration?

- **If so, is the effect stronger for the circumstances under which pay duration is likely to be more effective**
  - the marginal benefits of additional disclosures are higher
  - the managers' ex ante incentives to disclose bad news are weaker

Preview of main findings

- **Managers with long pay duration are more likely to issue bad news earnings forecasts than those with short pay duration**

- **The impact of pay duration is more pronounced for**
  - **firms with weaker corporate monitoring**
  - **firms with poorer information environments**
  - **firms facing lower litigation risk**
  - **firms operating in more homogeneous industries**

- **Pay duration is positively correlated with the accuracy of bad news earnings forecasts**

Hypotheses – H1

- **Do managers with long pay duration disclose more bad news?**
  - Longer pay duration reduces (disclosure-related) agency problems (Gopalan et al. 2014)
  - Managers with long pay duration are not as sensitive to short-term stock price movements.
  - Bad news disclosures can improve investment efficiency and ultimately firm value in the long-run (Kumar et al. 2012).

- **H1: (*Ceteris paribus*), managers with long pay duration are more likely to issue bad news forecasts than those with short pay duration.**

Hypotheses – H2 and H3

- **Variations with (i) corporate governance and (ii) information environment**
  - Marginal effects of additional disclosures induced by pay duration may not be large for firms that have better governance and good information environment
    - Board independence and institutional ownership are positively associated with management earnings forecast (e.g. Ajinkya et al. 2005)
    - When the information environment of a firm is already rich, further enhancing disclosure arguably has a smaller marginal effect (e.g.,Verrecchia 1990)

Hypotheses – H2 and H3

- **The effect of pay duration on bad news disclosures, as hypothesized in H1, is stronger for**
  - **H2: firms with weaker governance**
  - **H3: firms with poorer information environments**

Hypotheses – H4 and H5

- **Variations with (iii) litigation risk (iv) industry homogeneity**
  - The incremental effects of pay duration would be stronger for firms that face lower ligation risk and that are operating in more homogenous industries
    - Firms with higher litigation risk are already motivated to disclose bad news timely (Skinner 1994, 1997)
    - Managers in more homogenous industries are less likely to disclose bad news because such managers have greater job security concerns; it is easier for firms in more homogenous industries to find CEO candidates and replace CEOs (Parrino 1997) & disclosing bad news can exacerbate career concern

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Hypotheses – H4 and H5

- **The effect of pay duration on bad news disclosures, as hypothesized in H1, is stronger for**
  - **H4: firms facing lower litigation risk**
  - **H5: firms operating in more homogenous industries**

Data

- Executive compensation data for Russell 3,000 firms from Equilar
  - Equilar provides the grant date fair value and the vesting schedule of each compensation component from 2006 onwards
- Management earnings forecasts from First Call's CIG files
- Compustat, CRSP, IBES, and Corporate Library
- Final sample: 7,536 firm-years in the period 2006-2010

Variable measurement - Pay Duration

- Pay duration: the weighted average of the vesting periods of the four components of CEO compensation awarded in a given year: salary, bonus, restricted stock, and stock option (Gopalan et al. 2014)

$$P\_DURATION = \frac{\sum_{i=1}^{n_1} Restricted\ Stock_i \times t_i + \sum_{j=1}^{n_2} Option_j \times t_j}{Salary + Bonus + \sum_{i=1}^{n_1} Restricted\ Stock_i + \sum_{j=1}^{n_2} Option_j},$$

- Limitations:
  - It assumes that managers exercise all of the grants once they vest.
  - It only reflects the incentives arising from the current year's compensation as it does not incorporate the effect of existing stock and option holdings or deferred compensation
  - $\rightarrow$ the alternative measurement by including stocks and options awarded in previous years

Endogeneity of Pay Duration

- To mitigate the concern of an omitted correlated variable bias
  - To the extent to some unobservable firm characteristics affect both pay duration and bad news disclosure
- We conduct a two-stage instrumental variable analysis
  - Two instruments
    - **State average pay duration and industry average pay duration**

    (Kedia and Rajgopal (2009) and Hochberg and Lindsey (2010))
  - We check that these instruments are powerful based on the diagnostic test suggested in Larcker and Rusticus (2010)
- Predicted value of pay duration based on two measures: (1) annual-based and (2) cumulative

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Research design

- Regression specification:

$$D\_MF_{i,t+1} = \alpha_0 + \alpha_1 P\_DURATION_{i,t} + \alpha_2 EQ\_COMP_{i,t} + \alpha_3 SHARE\_OWN_{i,t}$$
$$+ \alpha_4 OPTION\_GRANT_{i,t+1} + \alpha_5 INST_{i,t} + \alpha_6 AC_{i,t} + \alpha_7 DISP_{i,t} + \alpha_8 RVOL_{i,t+1}$$
$$+ \alpha_9 BIND_{i,t} + \alpha_{10} LIT_{i,t} + \alpha_{11} SIZE_{i,t} + \alpha_{12} MTB_{i,t} + \alpha_{13} EQ\_ISS_{i,t+1} + \alpha_{14} RET_{i,t+1}$$
$$+ \alpha_{15} CHG\_ROA_{i,t+1} + Industry\ Dummies + Year\ Dummies$$
$$+ \varepsilon_{i,t+1} \hspace{4cm} (2)$$

- *D_MF*: an indicator for issuance of bad news forecasts

- Good news vs. bad news
  - comparison with prevailing analysts forecasts
  - treatment of bundled forecasts (Rogers and Van Buskirk 2013)

- Standard error adjusted for firm- and year-clustering

Test of H1 (Table 4)

	(1) Annual *P_DURATION*			(2) Cumulative *P_DURATION*		
	Coefficient	p-value	Marginal Effect	Coefficient	p-value	Marginal Effect
P_DURATION (H1: +)	**0.2743***	**0.001**	**0.097**	**0.2215****	**0.031**	**0.063**
EQ_COMP	-0.4759***	0.007	-0.063	-0.2612	0.252	-0.035
Control Variables	Included			Included		
Industry Dummies	Included			Included		
Year Dummies	Included			Included		
N	7,536			7,536		
Pseudo R^2	0.1783			0.1783		

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Robustness Tests for H1

- **Alternative measure of pay duration (Table 5)**
  - Duration of equity-based pay only

- **Change Analysis (Table 6)**
  - To mitigate the omitted correlated variables concern by controlling for time-invariant firm characteristics
  - The change in pay duration is positively associated with the change in the likelihood of issuing bad news earnings forecasts

Test of H2 – Corporate Monitoring (1)

- *LOW_BIND* is an indicator variable for less-than-60% board independence

Table 7 Panel A

	(1) Annual *P_DURATION*		(2) Cumulative *P_DURATION*	
	Coef.	p-val.	Coef.	p-val.
P_DURATION	0.2157***	0.006	0.1514	0.180
P_DURATION ⨯ LOW_BIND (H2: +)	**0.2234***	**0.001**	**0.2745***	**0.001**
Control Variables	Included		Included	
Industry Dummies	Included		Included	
Year Dummies	Included		Included	
N	7,536		7,536	
Pseudo R^2	0.1799		0.1799	

→ **Stronger effect for firms with low board independence**

Test of H2 – Corporate Monitoring (2)

- *LOW_INST* is an indicator variable for less-than-the-median institutional ownership

Table 7 Panel B

	(1) Annual *P_DURATION*		(2) Cumulative *P_DURATION*	
	Coef.	p-val.	Coef.	p-val.
P_DURATION	0.2760***	0.000	0.1973	0.140
P_DURATION × LOW_INST (H2: +)	**0.1828***	**0.000**	**0.2060***	**0.001**
Control Variables	Included		Included	
Industry Dummies	Included		Included	
Year Dummies	Included		Included	
N	7,536		7,536	
Pseudo R^2	0.1769		0.1766	

→ Stronger effect for firms with low institutional ownership

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Test of H3 – Information Environment (1)

- *LOW_AC* is an indicator variable for less-than-the-median analyst coverage

Table 8 Panel A

	(1) Annual *P_DURATION*		(2) Cumulative *P_DURATION*	
	Coef.	p-val.	Coef.	p-val.
P_DURATION	0.2206**	0.021	0.1705	0.164
P_DURATION × LOW_AC (H3: +)	**0.0917****	**0.038**	**0.0955***	**0.064**
Control Variables	Included		Included	
Industry Dummies	Included		Included	
Year Dummies	Included		Included	
N	7,536		7,536	
Pseudo R^2	0.1805		0.1805	

→ Stronger effect for firms with low analyst coverage

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Test of H3 – Information Environment (2)

- *LOW_TO* is an indicator variable for less-than-the-median share turnover

Table 8 Panel B

	(1) Annual *P_DURATION*		(2) Cumulative *P_DURATION*	
	Coef.	p-val.	Coef.	p-val.
P_DURATION	-0.0788	0.444	-0.1076	0.301
P_DURATION × LOW_TO (H3: +)	**0.1388*****	**0.001**	**0.1636*****	**0.001**
Control Variables	Included		Included	
Industry Dummies	Included		Included	
Year Dummies	Included		Included	
N	7,536		7,536	
Pseudo R^2	0.1810		0.1810	

→ **Stronger effect for firms with lower share turnover**

Test of H4 – Litigation Risk

- *LOW_LIT* is an indicator variable for less litigious industries

Table 9

	(1) Annual *P_DURATION*		(2) Cumulative *P_DURATION*	
	Coef.	p-val.	Coef.	p-val.
P_DURATION	-0.6133***	0.000	-0.7042***	0.000
P_DURATION × LOW_LIT (H4: +)	**0.2340***	**0.000**	**0.2969***	**0.000**
Control Variables	Included		Included	
Year Dummies	Included		Included	
N	7,536		7,536	
Pseudo R^2	0.0997		0.0972	

→ Stronger effect for firms facing lower litigation risk (i.e., those with lower *ex ante* incentives to disclose bad news)

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Test of H5 – Industry Homogeneity

- *IND_HOMOGENEITY* is an indicator variable for more-than-median industry homogeneity   Table 10

	(1) Annual P_DURATION		(2) Cumulative P_DURATION	
	Coef.	p-val.	Coef.	p-val.
P_DURATION	-0.5102***	0.000	-0.6088***	0.000
P_DURATION ✕ IND_HOMOGENEITY *(H5: +)*	**0.1831***	**0.006**	**0.2443***	**0.001**
Control Variables	Included		Included	
Year Dummies	Included		Included	
N	7,536		7,536	
Pseudo R^2	0.0997		0.1015	

→ Stronger effect for firms operating in more homogeneous industries

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Additional tests

- Pay duration and all forecasts including both good news and bad news (Table 11)
  - Positive effect of pay duration for total forecasts
  - Positive effect of the level of stock-based compensation on total forecasts, consistent with Nagar et al. (2003)

- Pay duration and forecast accuracy (Table 12)
  - Pay duration improves both the quantity and quality of management forecasts.

Additional tests (continued)

- Alternative explanations for bad news disclosures
  - ✓ *Opportunistic disclosures by managers with long pay duration?*
    - – The same inference for bad news forecasts from the test using the cumulative measure of pay duration
    - – No effect of the cumulative measure of pay duration for good news forecasts

  - ✓ *Non-linear relationship between equity-based compensation and disclosure?*
    - – The same result after including the squared term of *EQ_COMP*

Summary of results

- After controlling for the size of stock-based compensation, managers with long pay duration are more likely to issue bad news earnings forecasts than those with short pay duration.

- The impact of pay duration is more pronounced for firms with weaker governance, for firms with more opaque information environment, for firms facing lower litigation risk, and for firms operating in more homogenous industries.

- Forecasts issued by managers with longer pay duration are more accurate

Contribution

- **To the voluntary disclosure literature**
  - Increasing the vesting periods of stock-based compensation can induce managers to be more forthcoming with bad news.
  - Compared to Nagar et al. (2003)
    - Both the size and duration of stock-based compensation matter
    - Focus on bad news earnings forecasts because managers generally provide good news in a timely fashion but are reluctant to disclose bad news (Kothari et al. 2009)

- **To the executive compensation literature**
  - To complement previous studies examining the time horizon of stock-based compensation (e.g., Gopalan et al. 2014; Cadman et al. 2013)
    - By examining how pay duration affects voluntary disclosures
    - Our finding should be of interest to shareholders and boards of directors given the importance of disclosures for corporate governance (e.g., Beyer et al. 2010)

Thank You!