ẢNH HƯỞNG CỦA MẠNG XÃ HỘI ĐỐI VỚI THÙ LAO TÀI CHÍNH CỦA GIÁM ĐỐC ĐIỀU HÀNH

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Tóm tắt

Nghiên cứu này điều tra xem liệu khi các giám đốc điều hành CEO sử dụng mạng xã hội twitter (CEO twitter) có ảnh hưởng đến thù lao tài chính mà họ được nhận hay không. Đầu tiên, chúng tôi thấy rằng CEO twitter có tương quan cùng chiều đáng kể đến tổng mức bồi thường (TDC1), xác nhận rằng CEO twitter có ảnh hưởng thực sự đến việc bồi thường. Chúng tôi cũng kiểm tra xem việc đăng nhiều tweet hơn có thể hạn chế phản ứng của thị trường đối với các thông báo thu nhập hay không. Ngoài ra, hiệu ứng này còn nổi bật hơn ở các mẫu có độ bất xứng thông tin cao hơn. Bên cạnh đó, hiệu ứng của CEO Twitter trở nên mạnh mẽ hơn khi các công ty có mức độ cạnh tranh thị trường về sản phẩm cao. Nhìn chung, phát hiện của chúng tôi ủng hộ quan điểm cho rằng CEO có tài khoản twitter nhận được tổng số tiền bồi thường tài chính nhiều hơn.

Từ khóa: CEO Twitter; bồi thường; lợi nhuận bất thường; bất cân xứng thông tin.

THE EFFECT OF SOCIAL NETWORK ON CEO'S COMPENSATION Abstracts

This research investigates whether CEOs using twitter (CEO twitters) influence their compensation. First, we find that CEO_twitters have a significantly positive relation to total compensation (TDC1), confirming that CEO twitters really have effects on compensation. We also examine whether posting more tweets can curtail the market responses to the earning announcements. In addition, the effect is more salient in the sample of higher information asymmetry. Besides, the effect of CEO Twitters becomes stronger when firms have a high product market competition. Overall, our findings support that CEO with twitter account receive more total CEO compensation.

Keywords: CEO Twitter; compensation; abnormal return; information asymmetry.

JEL classification: G21; G32; G34.

1. Introduction

Information intermediaries, besides traditional ones (Miller, 2006; Miller and Skinner, 2015, Bushee and Miller, 2012), recently explode in new sources of information like Twitter, is of crucial importance for a firm. It can improve the firm's information environment (Chen et al., 2017; Chen et al., 2018; Bartov et al., 2018; Elliott et al., 2018) so that investors can take some advantages, acquire timely and value-relevant information. Corporate executives are becoming increasingly active on twitter owing to directaccess information technologies (DAITs), which allow users to directly access investors. In the research of Blankespoor et al., 2014, they focus on sample of information technology firms with active Twitter accounts and find that dissemination via Twitter is associated with lower bid-ask spreads, greater depths, and a higher liquidity ratio after controlling for the information content of the news and other firm as well as market characteristics. It supports that firms use Twitter to spread out news, and this dissemination

helps reduce information asymmetry. Firms can use twitter to reduce investors' information acquisition costs and allow more potential investors to process the information.

Further, the results from the study of Chen et al., 2018 suggest that tweets coming out of top executives' personal Twitter accounts are significantly more impactful than those coming out of firm-managed accounts (Chen et al., 2018). Using Twitter gives CEO any benefit in compensation is an intriguing question which has not been addressed. In this paper, we fill this gap in the literature by examining whether using twitter is associated with higher compensation. Specifically, we explore the following four research questions: (1) Do CEOs with twitter account get higher total compensation? (2) Whether posting more tweet can curtail the market responses to the earning announcements (3) The effect is more salient in the sample of higher information asymmetry and high market competition product? (4) Do twitter effects still hold after adjusting for other CEO compensation schemes.

To study our four research questions, we construct our sample of top executives' personal Twitter accounts. We download a list of all CEOs in the Execucomp database between 2006 and 2015. Execucomp covers the S&P 1500 as well as companies that were once part of the S&P 1500 index and that are still trading. We start with the complete list of all CEOs in Execucomp and locate users with active Twitter accounts that have the same first and last names as the CEO in question. We then cross-check the executives' middle names, gender, and company information with user characteristics; we also read tweets to determine whether any account that we find does indeed belong to the executive in question. Through this labor-intensive process, we determine that 336 S&P 1500 CEOs have active personal Twitter accounts and work for firms that have the data necessary to conduct our tests. We make the full list of the 336 CEOs in our sample available through our appendix. We obtain all accounting variables and stock prices from the Compustat database and the Center for Research in Security Prices (CRSP). Corporate-governance and CEO-compensation-related variables come from RiskMetrics and ExecuComp.

2. Literature review and hypothesis development

Before the mass adoption of social media applications, to disseminate financial information for the demand of investors, it can't help referring to the role of some internet tools such as: Google search (Da et al., 2011; Drake et al., 2012), Internet bulletin boards (Hirschey et al., 2000), Tumarkin and Whitelaw, 2001), message boards, such as Yahoo! or Raging Bull (Antweiler and Frank, 2004, Das and Chen, 2007). However, these platforms are limited in term of online interaction in financial market and personal finance (Gallaugher and Ransbotham, 2010). To adjust this drawback in recent years, social media appears and explodes in popularity with different forms (eg., Facebook, StockTwits, Twitters) and can have important economic consequence for the using firm and financial market (e.g., Bollen et al., 2011; Laroche et al., 2012; Chen et al., 2014; Lee et al., 2015; Jung et al., 2018). Nowadays the power of social media in organizations is significant for not only short-term performance

but also long-term productivity benefits inherently connected to firm equity value (Luo et al., 2013). Curtis et al., 2016, who focus on the overall social media activity over 30-day rolling windows, find that high levels of activity are associated with greater sensitivity of earnings announcement returns to earnings surprises, while low levels of social media activity are associated significant post-earnings-announcement with drift. Firms increasingly make use of these channels so that the information environment is improved or information asymmetry is reduced, then increase the liquidity of the market for a firm's securities, lower bid-ask spreads and increased trading activity (Xu and Zhang, 2013, Blankespoor et al., 2014).

Twitter was created in 2006 and undoubtedly is one of the most popular social media disclosure platforms in USA with short format (140character limitation) and ease of information search. Jung et al., 2018 collected data from all firms included in the S&P 1500 index and show that Twitter has become the preferred social media platform for companies. Using twitter gives account users opportunity to communicate, share opinions and facilitate open sharing of information in a timely fashion. The text content of Twitter may be day-to-day activities, current interests, and personal mood (Naaman et al., 2010). Bollen et al., 2011 find that by text processing techniques, the collective mood states posted on Twitter can help predict changes in the value of the Dow Jones Industrial Average over time. Consistently, using Twitter data, Mao et al., 2012 show that the daily number of tweets that mention S&P 500 stocks is significantly associated with S&P 500 daily closing price, S&P 500 daily price change and S&P 500 daily absolute price change.

Beside the benefits of company's own social media pages, a CEO who is an influencer in his or her space can be a big advantage for company. Users can cultivate their own followings, effectively reduce cost of digital distribution. Making use of Twitter, CEO can write their own stories which influence media narratives rather than press. For example, to become a superstar, the media play a causal role in fostering a celebrity culture and enable the observed changes in CEO behavior, as a consequence, CEO compensation increase following CEO awards (Malmendier and Tate, 2009). So why don't CEOs make use of this free channel to increase CEO status and power within the organization. What left unexplored by these literatures is the question of whether in a company CEO use Twitter account is correlated with CEO compensation, the very question we examine in our paper. CEO pay is a topic that has received significant attention both in the popular press and academic journals. It is significant to have new approaches in the study of CEO rewards despite a wealth of research, largely grounded in agency or managerialist perspectives (Bugeja et al., 2012;

H1: firms with CEO using twitter are more likely to pay higher compensation

In our paper, we refer to earnings announcements information because information fully reflects the abnormal returns on market efficiency that captures the economic hypothesis (Fama, 1998) and large abnormal returns around earnings announcement dates (Kaniel et al., 2012). Furthermore, the previous studies confirms that earnings announcement influence price changes and abnormal returns For example, La Porta et al. 1997 mention that 20% stock returns around the earnings announcement dates. In addition, Lee et al., 2015 document that the impact of Twitter can weaken the negative price reaction to recall announcements by direct broadcasting firm's intended message to investors without distorting the content. The authors find if properly managed, firms can engage users and customers through social media to mitigate the adverse effect of bad reputation associated with product recalls, a result that potentially extends to other types of corporate events. Also Bartov et al., 2018 argue that twitter can be useful in predicting abnormal return around earnings announcements. They classified two notable roles of Twitter in providing new sources of information as well as disseminating existing information. Especially the opinion from Twitter posts is more prominent in predicting announcement return for high information assymetry environment. Thus, we examining whether CEO twitter effect as information react on earnings announcement

Banker et al., 2013). We argue that inasmuch as external directorate networks CEO are strategically valuable to firms, they should be reflected in CEO compensation levels, particularly when the benefits of those ties are of greatest value. Further, the results from study of Chen et al., 2018 suggest that tweets coming out of top executives' personal Twitter accounts are significantly more impactful than those coming out of firm-managed accounts (Chen et al., 2018). In the preliminary study of Karadunam (2013), he emphasizes that making use of social media and find that CEOs not only can create value for themselves but company also. Based on these considerations, it is hypothesized that:

dates that reflect the market efficiency and expect our next hypothesis as follow:

H2: the CEO twitter effect are more likely to curtail the market responses to the earning announcements.

3. Empirical Results

3.1. Main result: Twitter and CEO compensation

We use the following regression setting to test our main hypothesis following Vidhi et al., 2009.

 $tdc1_{i,t} = \alpha_0 + \alpha_1 CEO_t witter_{i,t} +$

 $\beta' F_{i,t-1} + \theta' Z_{i,t} + \gamma_i + \mu_t + \varepsilon_{i,t} \quad (1)$

Table 1 presents the effects of using twitter and CEO compensation. Our focus is the coefficient of *CEO_twitter* on *TDC1*. For the robustness of our results, we conduct four specifications in the regression setting. The first one do not control for industry and year fixed effects; the second adds controls for year fixed effect, the third for governance characteristics, CEO characteristics, industry and year fix effects and the fourth for all governance characteristics, industry and year fix effects.

Consistent with our expectation, positive and significant coefficients are observed in all specifications, even though we have controlled for all potential factors, indicating that CEO with twitter account will get higher compensation. Thus, the results support our H1 that *firms with CEO using twitter are more likely to pay higher compensation*. Specifically, the coefficients of *Vega* are positive and significant at the one-percent level from a 0.1430 to 0.3070, indicating that using twitter is associated with higher compensation in a firm.

	Table 1: Twitter and CEO compensation				
	(1)	(2)	(3)	(4)	
	TDC1	TDC1	TDC1	TDC1	
CEO_twitter	0.3070***	0.1779***	0.1376***	0.1430***	
	(7.93)	(4.59)	(3.55)	(3.70)	
CEO5pct	-0.3044***	-0.2626***	-0.3237***	-0.3049***	
	(-8.40)	(-7.31)	(-9.15)	(-8.72)	
CEO_firstyear	-0.0510	-0.0931**	-0.0800*	-0.1506***	
	(-1.11)	(-2.05)	(-1.83)	(-3.27)	
CEO_tenure	-0.0245*	-0.0556***	-0.0388***	-0.0461***	
	(-1.76)	(-4.05)	(-2.95)	(-3.53)	
CEO_chair	-0.1485***	0.2395***	0.2508***	0.2207***	
	(-4.91)	(6.01)	(6.62)	(5.82)	
Bdsize	0.1074***	0.1047***	0.1272***	0.1172***	
	(21.67)	(21.69)	(22.08)	(20.32)	
Indcompcom	0.4529***	0.3649***	0.3422***	0.3615***	
•	(10.02)	(8.25)	(8.02)	(8.43)	
BMV				-0.2547***	
				(-8.34)	
DE				0.0504***	
				(7.45)	
ROA				0.1372	
				(0.97)	
RET				0.1767***	
				(8.44)	
Std5RET				-2.6328***	
				(-10.38)	
Std5ROA				-0.1291	
				(-0.75)	
Constant	6.8066***	6.6060***	6.9793***	7.6005***	
	(97.65)	(74.39)	(28.37)	(43.27)	
Control for					
Industry FE	No	No	Yes	Yes	
Year FE	No	Yes	Yes	Yes	
Obs.	10690	10690	10690	10093	
$Adj R^2$	0.1081	0.1540	0.2442	0.2892	

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3.2. Twitter effect and cumulative abnormal return (CAR)

To examine the effects of using twitter in cumulative abnormal return (CAR), we use the sensitivity of earnings announcement. We run a regression model as follows:

$$CAR[-1; 1]_{it} = \beta_1 SUE_mean_{it} \\ + \beta_2 CEO_twitter_{it} \\ + \beta_3 SUE_mean_Twit_{it} \\ + \gamma' Z_{it-1} + u_j + v_t + \varepsilon_{it}$$

where $CAR[-1;1]_{it}$ is the cumulative abnormal return (from the Fama-French three factor model) in the window [-1;1]; SUE_mean_{it} is the difference between actual and the mean of earning per share (EPS) forecasts of the analysts, divided by the deviation of standard EPS forecast; SUE_mean_Twit_{it} is the interaction between SUE_mean and CEO_twitter; Z_{it-1} is the vector of control variables; u_i and v_t are industry and year fixed effect, respectively. Control variables include Asset (natural logarithm of total assets), Q (Tobin's Q), Leverage (ratio of long-term

Source: Authors run model from Stata software debt plus debt in current liabilities to total assets), BHAR (the corresponding buy-and-hold abnormal return), Tangibility (ratio of net property, plant, and equipment to total assets), Profitability (ratio of earnings before interest, taxes, depreciation, and amortization to total assets), Z-score (a modified Altman's Z-score), and CF volatility (ratio of standard deviation of quarterly cash flows from operations over the four fiscal years prior to loan initiation year to total debt).

Our key independent variable is the interaction between SUE_mean and CEO_twitter, which shows how the market reacts to the CEO using twitter of the reporting firm. According to our predictions, this interaction term's coefficient should be negative and significant.

Table 2 presents the regression results. Our key coefficient is the interaction between SUE and CEO_twitter is positive but not significant in the low frequency sample (Model 2). On average, the market reacts similarly to the news, regardless of whether CEO using twitter or not. However, we find that investors react differently to group with CEOs tweet frequently. Specifically, the results support the hypothesis 2 that the interaction between SUE and $T_{\rm eff} = 2 T_{\rm eff}$

CEO_twitter is negative and statistically significant in the subsample of high frequency.

	no twitter	low frequency	hi frequency
	(1)	(2) CAR[-1;1]	(3) CAR[-1;1]
	CAR[-1;1]		
CEO_twitter		0.0146	0.0152
		(1.33)	(1.15)
SUE_mean_Twit		0.0000	-0.0072***
		(0.02)	(-4.82)
SUE_mean	0.0024***	0.0043***	0.0081***
	(5.73)	(3.46)	(5.61)
Assets	-0.0023***	-0.0003	0.0015
	(-3.05)	(-0.11)	(0.42)
Q	-0.0027**	-0.0009	0.0004
	(-1.99)	(-0.24)	(0.11)
Leverage	0.0121*	-0.0619*	0.0008
-	(1.65)	(-1.73)	(0.02)
BHAR	-0.0036	-0.0053	-0.0046
	(-1.06)	(-0.60)	(-0.54)
Tangibility	-0.0207**	-0.0340	0.0399
	(-2.40)	(-0.89)	(0.81)
Profitability	-0.0024	0.0223	0.0030
,	(-0.10)	(0.28)	(0.02)
Z_score	-0.0002	-0.0026	0.0019
	(-0.17)	(-0.51)	(0.20)
CFvolatility	-0.0000	0.0000	-0.0001***
·	(-0.47)	(1.31)	(-2.69)
Constant	0.0369***	-0.0275	-0.0716
	(2.74)	(-0.96)	(-1.14)
Control for			
Year FE	Yes	Yes	Yes
ndustry FE	Yes	Yes	Yes
Dbs	6065	460	385
$Adj. R^2$	0.0370	0.0135	0.1522

Table 2: Earning Announcement Responses: Mean SUE

As a robustness check, we replace the *SUE_mean* by *SUE_median* in Table 3. Specifically, *SUE_median* is the difference between actual and the median of analyst forecasts on EPS. We repeat our analysis in the

Source: Authors run model from Stata software Table 3 by SUE_median. Similar to Table 2, we find that the interaction between SUE_median and CEO_twitter is negative and significant only in the subsample of high frequency of tweet, also support hypothesis 2 (Model 3).

	no twitter (1)	low frequency	hi frequency (3) CAR[-1;1]
		(2) CAR[-1;1]	
	CAR[-1;1]		
CEO_twitter		0.0149	0.0154
		(1.35)	(1.17)
SUE_median_Twit		0.0001	-0.0073***
		(0.06)	(-4.79)
SUE_median	0.0024***	0.0044***	0.0082***
	(5.72)	(3.55)	(5.58)
Assets	-0.0023***	-0.0004	0.0014
	(-3.06)	(-0.15)	(0.39)
Q	-0.0027**	-0.0009	0.0004
	(-2.00)	(-0.25)	(0.10)
Leverage	0.0123*	-0.0614*	0.0020
	(1.66)	(-1.72)	(0.05)
BHAR	-0.0036	-0.0055	-0.0048
	(-1.05)	(-0.62)	(-0.56)
Tangibility	-0.0207**	-0.0340	0.0406
	(-2.40)	(-0.89)	(0.82)
Profitability	-0.0023	0.0242	-0.0028
	(-0.10)	(0.31)	(-0.02)
Z score	-0.0002	-0.0027	0.0021
	(-0.16)	(-0.53)	(0.22)
CFvolatility	-0.0000	0.0000	-0.0001***
	(-0.47)	(1.31)	(-2.71)
Constant	0.0369***	-0.0263	-0.0711
	(2.74)	(-0.91)	(-1.13)
Control for			
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Obs	6065	460	385
$Adj. R^2$	0.0368	0.0158	0.1540

 Table 3: Earning Announcement Responses: Median SUE

5. Conclusion

Our study is the first to document and describe the effect of chief executive officer using Twitter on their compensation. We examine the potential consequences of such behavior for the underlying firm. Twitter was created in 2006 and undoubtedly is one of the most popular social media disclosure platforms in USA with short format (140-character limitation). With the complete list of all CEOs in Execucomp, we locate users with active Twitter accounts that have the same first and last names as the CEO in question. We then cross-check the executives' middle names, gender, and company information with user characteristics; we also read tweets to determine whether any account that we find does indeed belong to the executive in question. Through this labor-intensive process, we determine that 336 S&P 1500 CEOs have active personal Twitter accounts and work for firms that have the data necessary to conduct our tests. Using a sample of a total 10,093 observations in the U.S. we find evidence that CEO_twitter is significantly positive related to total compensation, confirming Source: Authors run model from Stata software CEO_twitter has a real effect on compensation. In addition, the effect is more salient in the sample of higher information asymmetry. Third, the effect of CEO Twitter becomes stronger when firms have a high product market competition. Besides, we also examine whether posting more tweet can curtail the market responses to the earning announcements Overall, our findings support that CEO with twitter account receive more total CEO compensation. Together, our results point to the growing significance of social media in financial markets and show that social media activity can have important consequences for CEOs that engage in it.

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