

Organizational Psychological Capital and Managers’ Strategically Textual Reporting Activities in Annual Reports

Tsung-Kang Chen*

Email: vocterchen@nycu.edu.tw

Department of Management Science, National Yang Ming Chiao Tung University
Center for Research in Econometric Theory and Applications, National Taiwan
University

Yijie Tseng

E-mail: 081647@mail.fju.edu.tw

Department of Accounting, Fu Jen Catholic University

Yun Hao

Email: peterhao.mg12@nycu.edu.tw

Department of Management Science, National Yang Ming Chiao Tung University

* Corresponding author. Address: No. 1001, Dasyue Rd., East Dist., Hsinchu City 300, Taiwan (R.O.C.).
Tel: +886-3-5712121 ext 57124. The authors gratefully acknowledge the financial support from the
National Science and Technology Council, Taiwan (NSTC 112-2410-H-A49 -053 -MY3), and the Center
for Research in Econometric Theory and Applications (Grants 114L900203; 114L900201) from The
Featured Areas Research Center Program within the framework of the Higher Education Sprout Project
by the Ministry of Education (MOE) in Taiwan.

Organizational Psychological Capital and Managers’ Strategically Textual Reporting Activities in Annual Reports

Abstract

We empirically investigate whether a firm’s organizational psychological capital (OPC) affects its managers’ strategically textual reporting (MSTR) activities in annual reports (measured by readability). We first find that organizational efficacy, hope, and resilience are all significantly and negatively related to annual report readability based on the mechanisms of the risk-taking and risk tolerance attitudes while organizational optimism has the opposite effect based on the mechanisms of the positive psychology (PosPsy) and positive organizational behavior (POB) effects. Our findings also reveal that: (1) consistent with the mechanisms of risk-taking and risk tolerance attitudes, the negative association between OPC and annual report readability is strengthened in firms characterized by higher levels of CEO overconfidence, subordinate executives’ relative power, managerial ability, and CEO ownership, but is weakened in firms with greater financial constraints and a higher ratio of outside directors; and (2) in line with the PosPsy and POB mechanisms, the positive association between OPC and annual report readability is more pronounced in firms with stronger credit quality and higher profitability. Finally, our findings are robust when considering endogeneity issues.

Keywords: Organizational psychological capital, Managerial strategically textual reporting, Annual report readability, Organizational climate, CEO overconfidence, Financial constraint

1. Introduction

This study explores whether organizational psychological capital (hereafter denoted as OPC) affects managers' strategically textual reporting activities (hereafter denoted as MSTR) in annual reports, focusing on annual report readability as a managerial tool to influence the cost of acquiring and processing the annual report information for outside investors (Li, 2008). The annual report readability reflects the speed at which annual report information is conveyed to outside investors, namely the text-based communicative value (hereafter denoted as TCV) of annual reports (Seebeck and Kaya, 2023; Chen et al., 2023). The main motivation for managers to manipulate annual report readability is to influence the favorability of regulated disclosures by adjusting annual report readability to communicate information more (less) rapidly. That is, conducting MSTR activities is a communication strategy that aims to change the conveying speed of annual report information or to improve corporate images for outside investors. Therefore, exploring the determinants of annual report readability is essential for helping outside investors better understand the drivers behind MSTR behaviors.

Previous studies have shown that current earnings (Li, 2008), earnings persistence (Li, 2008), earnings management (Lo et al., 2017), management risk incentive (Chakrabarty et al., 2018), pension plan characteristics (Chen et al., 2025b), and CEO personality traits (Chen et al., 2024a) are the determinants of annual report readability. However, these determinants represent management outcomes, managerial behaviors, and managers' intrinsic characteristics (e.g. personality traits) rather than organizational capital, especially for organizational psychological capital. Furthermore, while previous research on OPC has mainly focused on the direct impact on a firm's performance (e.g. Anglin et al., 2018; Wang et al., 2019; Grözinger et al., 2022) and

stakeholders, such as employees (e.g. Turner et al., 2002; Larson and Luthans, 2006) and bondholders (e.g. Chen et al., 2024b), there has been limited focus on how OPC affects MSTR behaviors. Despite the critical role of OPC in shaping external investors' perception and required information risk premium, it remains largely unexplored in annual report readability literature. To address this gap, this study examines whether OPC—specifically efficacy, hope, optimism, and resilience—is associated with their incentives to engage in MSTR activities.

OPC provides the four psychological resources of organizational hope, efficacy, resilience, and optimism (McKenny et al., 2013) for a firm and leads the firm have sustainable and inimitable competitive advantages (Luthans and Youssef, 2004; Toor and Ofori, 2010; Xu, 2021). First, organizational efficacy (hereafter denoted as O_EFF), derived from self-efficacy theory (Bandura, 1997, 2012), is shown through a shared trust of a firm in its own abilities and cognitive resources that are indispensable to perform certain tasks, and the belief that these can be mobilized (Grözinger et al. 2022; Luthans and Youssef, 2004). That is, O_EFF is a positive assessment of a firm's abilities, reflected in a shared confidence in the firm's abilities. Bandura (2012) and McKenny et al. (2013) demonstrate that firms with high O_EFF depend strongly on their abilities and thus can pursue more ambitious goals than those with low O_EFF. Second, for the organizational hope (hereafter denoted as O_HOPE), it derives from hope theory (Snyder et al., 1991; Snyder, 2002)¹ and represents the positive state of motivation within an organization. Luthans et al. (2007b) document that O_HOPE can be expressed in a common goal-oriented dynamic driven by a shared belief that the goals can be reached in different ways. That is, firms with high O_HOPE level can not only

¹ Following Snyder et al. (1991, p. 570), hope is defined as “a cognitive set that is based on a reciprocally derived sense of successful (a) agency (goal-directed determination) and (b) pathways (planning of ways to meet goals).”

develop and share their long- and short-term goals but also share the common perception that these goals can be reached in a multiple of ways (Grözinger et al. 2022; McKenny et al., 2013). Third, organizational optimism (hereafter denoted as O_OPT), based on the opinions of Luthans and Youssef (2004), represents the shared positive reasoning at organization level that assigns positive developments to lasting and persistent triggers and negative events to local, transient, and situation-specific occurrences. Therefore, firms with higher O_OPT are more likely to use positive reasoning when facing difficulties and believe the positive outcomes (McKenny et al., 2013; Scheier et al., 2001). Moreover, it has to be noted that the concepts and implications of optimism are different from those of overconfidence in two aspects (Capps et al., 2015): (1) overconfidence can be defined as the tendency that individuals have to be too sure about their beliefs (Griffin and Varey, 1996) despite those beliefs may not be optimistic;² (2) overconfidence is not bound by past (including factual knowledge) or future thinking, whereas optimism is tied to the future. Hence, a firm's stakeholders may have different perceptions and cognitions about managers' overconfidence and O_OPT. Fourth, organizational resilience (hereafter denoted as O_RES), rooted in clinical psychology (e.g. Masten, 2001; Masten and Reed, 2002), represents the psychological capability that empowers the organization to overcome frustrations and crises, to recover, and thus have a performance improvement over the initial level (Luthans, 2002b). Therefore, firms with high O_RES have higher abilities to “bounce back” from the unfavorable developments since such firms have higher tolerance level and constructively handle such situations with the goal of solving them (Luthans et al., 2006; McKenny et al., 2013). For example, Grozinger et al. (2022) find

² An overconfident individual overrates his or her ability, knowledge, and the accuracy of the possessed information, which thus lead the individual to expect and seek to reach more favorable outcomes beyond the suggestion based on realistic assessments (Bhandari and Deaves, 2006; Hsieh et al., 2014; Chen et al., 2025a).

that SMEs (small and medium-sized enterprises) with higher OPC level have higher performance during the crises periods. In addition, some studies clearly point out the themes or components of resilience, such as adversity, positive adaptation, and uncertainty (e.g. Awotoye and Singh, 2017; Ayala and Manzano, 2014).

Based the above discussions, we can summarize that since firms with higher OPC essentially have higher “positive psychology (PosPsy) effect” (Seligman and Csikszentmihalyi, 2000; Gable and Haidt, 2005) and “positive organizational behavior (POB) effect” (called as “positive strength effect”), the firms may have superior management performance in operations and employees or better appearance for outside investors, which enhances the firms’ incentives to accelerate the conveying speed of these information. In addition, firms with higher O_EFF also have greater risk-taking attitude (Bandura, 2012; McKenny et al., 2013) and firms with higher O_HOPE, O_OPT, and O_RES have greater risk tolerance level (Luthans et al., 2006; Scheier et al., 2001; Grözinger et al. 2022; McKenny et al., 2013), which may increase the firms’ incentives to delay the conveying speed of these information. Hence, OPC is hypothesized to be have an uncertain impact on MSTR activities (and annual report readability). However, OPC is rarely discussed in the annual report readability literature. Therefore, the purpose of this study is to fill part of the important gap by exploring the effects of OPC on annual report readability.

We empirically examine the effect of OPC on annual report readability by employing 32,988 S&P 1500 component firm observations from 2000 to 2021. Empirical results of this study show that organizational efficacy, hope, and resilience are all significantly and negatively related to annual report readability while organizational optimism has the opposite effect when controlling for other well-known determinant variables of annual report readability. These results indicate that (1) firms

with higher O_EFF lead managers to have greater risk-taking attitude and may be overly confident in their ability to solve problems, leading them to delay the disclosure of risk information during periods of poor financial performance, in the hope of bridging the current gap through improved future outcomes; (2) firms with higher O_HOPE may lead managers to hold strong expectations for the future, resulting in a tendency toward overly optimistic forecasts or self-rationalization (namely have greater risk tolerance levels) that delays the disclosure of negative information; (3) firms with higher O_RES tend to seek room for survival in the face of adversity, which may lead their managers to temporarily conceal or delay the disclosure of unfavorable information in order to preserve the company's image and maintain stability, consistent with "self-regulation theory" (Bandura, 1991); (4) firms with higher levels of organizational optimism (O_OPT) foster a belief among managers that challenges can be overcome. Consequently, these managers are more inclined to confront current difficulties and to disclose unfavorable information proactively and transparently, aiming to secure external resources or maintain stakeholder trust. This, in turn, enhances the transparency and forward-looking quality of corporate disclosures.

In addition, we also find that (1) CEO overconfidence strengthens the negative relationship between O_EFF and annual report readability; (2) subordinate executives' relative power strengthens the association between O_HOPE and annual report readability while outside director ratio weakens this association; (3) credit quality and profitability enhances the association between O_OPT and annual report readability while CEO ownership, managerial ability, and financial constraint weaken this association; and (4) financial constraint weakens the association between O_RES and annual report readability. That is, the results indicate that (1) CEO overconfidence, subordinate executives' relative power, CEO ownership, and managerial ability all

strengthen the mechanisms of risk-taking incentives and risk tolerance, whereas the outside director ratio and financial constraint weaken those of risk-taking incentives and risk tolerance; and (2) credit quality and profitability enhances the mechanisms of PosPsy and POB effects.

To address the endogeneity issue, we conduct robustness tests using an instrumental regression model design to mitigate issues such as omitted variables and reverse causality. The results of the IV regression model design are consistent with our main findings. Hence, our findings that O_EFF, O_HOPE, and O_RES has a negative association with annual report readability while O_OPT has a positive association is robust when considering endogeneity issue.

The main contributions of this study are: (1) focusing on the perspectives of organizational psychological capital rather than those of managers' intrinsic characteristics, management outcomes and behaviors; (2) first introducing the importance and implications of organizational psychological capital for MSTR activities and annual report readability, especially from two mechanisms of (a) positive strength effect (covering PosPsy effect and POB effect) and (b) greater risk-taking and risk tolerance attitudes; and (3) discussing several moderating roles for the association between OPC and annual report readability, such as CEO overconfidence, subordinate executives' relative power, outside director ratio, financial constraints, CEO ownership, managerial ability, and firm profitability. These contributions enhance both the annual report readability literature and the OPC literature, offering valuable insights for the OPC development by highlighting the impact of OPC on corporate communication transparency.

The remainder of this paper is organized as follows. Section 2 presents the measures of OPC and annual report readability. Section 3 describes the literature

reviews and hypotheses developments. Section 4 summarizes the other major variables used in the empirical examinations. Section 5 presents and analyzes the results. Finally, section 6 provides concluding remarks.

2. Main Measures

This section introduces the OPC variables and annual report readability measures used to examine our main hypotheses and how to calculate these variables.

2.1. Organizational Psychological Capital

To measure OPC, this study mainly follows McKenny et al. (2013) and Xu (2021) to employ the text-based OPC variable, covering four psychological resources of organizational hope, efficacy, resilience, and optimism. The computer-aided text analysis word lists for OPC four dimensions developed by McKenny et al. (2013) can be referred to the Table 2 on page 163 of McKenny et al. (2013). Some example keywords in the word lists for each OPC dimension of McKenny et al. (2013) are shown as follows. First, the example keywords of organizational hope (O_HOPE) include “Accomplishments”, “Achievements”, “Aspire”, “Belief”, “Believe”, “Desire”, “Engagement”, “Hope”, “Opportunity”, and “Wishes”. Second, the example keywords of organizational efficacy (O_EFF) cover “Capableness”, “Commitment”, “Confidence”, “Effectiveness”, “Knowledgability”, “Masterfulness”, “Reassurance”, “Self-confidence”, “Strength”, “Sureness”, and “Undoubtedly”. Third, the example keywords of organizational resilience (O_RES) include “Assiduousness”, “Bounce”, “Determination”, “Endurance”, “Hammer away”, “Holding up”, “Immovability”, “Indefatigableness”, “Keep going”, “Never-tiring”, “Perseverance”, “Persistence”, “Remain”, and “Resilience”. Fourth, the example keywords of organizational optimism (O_OPT) contain “Bullish”, “Encourage”, “Expectations”, “Hearten”, “Ideal”,

“Optimism”, “Outlook”, “Positive”, “Propitious”, “Reassure”, “Roseate”, “Sanguine”, and “Sunny”. For the complete and detailed word lists of OPC (O_HOPE, O_EFF, O_RES, O_OPT), please refer to the Table 2 on page 163 of McKenny et al. (2013).

Based on the above word lists for OPC four dimensions (McKenny et al., 2013), this study estimates the levels of O_HOPE, O_EFF, O_RES, and O_OPT of a firm by the ratio of the number of each OPC dimension’s words listed in McKenny et al. (2013) counted in the firm’s annual 10-K filing (especially for “letters to shareholders”) to the number of total words in this filing, called as the variables of OPC_HOPE, OPC_EFFI, OPC_RES, and OPC_OPT, respectively. The aggregate OPC variable, called as OPC_TOTAL variable, is estimated by the sum of the OPC_HOPE, OPC_EFFI, OPC_RES, and OPC_OPT variables.

2.2. Annual Report Readability

Regarding the annual report readability, we follow Bonsall et al. (2017) and use the Bog index (BOG) of annual reports as the main measure. According to Bonsall et al. (2017), the Bog index (BOG) is defined as the sum of *Sentence Bog* and *Word Bog* minus *Pep*. *Sentence Bog* is defined as the standardized average sentence length, which identifies readability issues stemming from sentence length. *Word Bog* is defined as the sum of plain English style problems and word difficulty multiplied by 250 and divided by the number of words. *Pep* suggests the writing attributes that facilitate understanding of texts by readers, defined as the sum of the usage of items such as names and interesting words. Higher BOG variable values represent lower annual report readability. The relationship between text readability and the Bog index is as follows: excellent ($20 \geq \text{BOG} \geq 0$), good ($40 \geq \text{BOG} \geq 21$), average ($70 \geq \text{BOG} \geq 41$), poor ($100 \geq \text{BOG} \geq 71$), bad ($130 \geq \text{BOG} \geq 101$) and dreadful ($1000 \geq \text{BOG} \geq 131$).

3. Hypotheses Developments

This section presents the hypotheses developments on the association between OPC and annual report readability. The details are described below.

The main theoretical foundations of hypotheses development are that: (1) firms with higher OPC essentially exhibit a stronger “positive strength effect”—that is, the PosPsy effect (Seligman and Csikszentmihalyi, 2000; Gable and Haidt, 2005) and the POB effect (Luthans, 2002a)—which may contribute to superior managerial performance in operations and employee relations, or present a more favorable image to external investors. This, in turn, enhances firms’ incentives to accelerate the conveying speed of such information; (2) firms with higher levels of O_EFF tend to exhibit a greater risk-taking attitude (Bandura, 2012; McKenny et al., 2013), while those with higher levels of O_HOPE, O_OPT, and O_RES demonstrate greater risk tolerance (Luthans et al., 2006; Scheier et al., 2001; Grözinger et al., 2022; McKenny et al., 2013). These characteristics may increase firms’ incentives to delay the conveying speed of such information.

Therefore, we conclude that OPC may enhance a firm's incentive to accelerate the conveying speed of information when driven by the PosPsy and POB effects, whereas it may lead to a delay in information conveying speed when influenced by risk-taking and risk tolerance attitudes, shown as Hypothesis 1a and Hypothesis 1b, respectively.

Hypothesis 1a. *A firm’s OPC (O_EFF, O_HOPE, O_OPT, O_RES) is positively related to annual report readability based on the mechanisms of the PosPsy and POB effects.*

Hypothesis 1b. *A firm’s OPC (O_EFF, O_HOPE, O_OPT, O_RES) is negatively related to annual report readability based on the mechanisms of the risk-taking and risk tolerance attitudes.*

Moreover, this study also considers other moderating roles for the association between OPC and annual report readability from the perspectives of CEO overconfidence, subordinate executives' relative power, outside director ratio, financial constraints, CEO ownership, managerial ability, credit quality and firm profitability.

First, the mechanisms of risk-taking incentives and risk tolerance appear to be strengthened in firms with higher levels of CEO overconfidence, subordinate executives' relative power, managerial ability, and CEO ownership, but are weakened in the presence of greater outside director ratio and financial constraints. Thus, the negative association between OPC and annual report readability is amplified in firms with higher levels of CEO overconfidence, subordinate executives' relative power, managerial ability, and CEO ownership, but is attenuated in firms facing greater financial constraints, as proposed in Hypothesis 2.

Hypothesis 2. *Based on the mechanisms of the risk-taking and risk tolerance attitudes, the negative association between a firm's OPC (O_EFF, O_HOPE, O_OPT, O_RES) and annual report readability is amplified in firms with higher levels of CEO overconfidence, subordinate executives' relative power, managerial ability, and CEO ownership, but is attenuated in firms facing greater outside director ratio and financial constraints.*

Second, since firms with higher credit quality and greater profitability are more likely to proactively disclose positive information to shape a favorable external image, the mechanisms of the PosPsy and POB effects appear to be strengthened in these firms. Hence, the positive association between OPC and annual report readability is amplified in firms with higher levels of credit quality and firm profitability based on the mechanisms of the PosPsy and POB effects, as proposed in Hypothesis 3.

Hypothesis 3. *Based on the mechanisms of the PosPsy and POB effects, the positive association between a firm's OPC (O_EFF, O_HOPE, O_OPT, O_RES) and annual report readability is amplified in firms with higher levels of credit quality and firm*

profitability.

4. Data and Methodology

Because the purpose of this study is to investigate the determinants of annual report readability from the OPC perspective, this section introduces the sample selection procedures and data sources.

4.1. Sample selection and data source

For the data sources of the annual report readability proxies used in this study (namely BOG), the BOG variable is obtained from the personal webpage of Professor Brian P. Miller (<https://sites.google.com/iu.edu/professorbrianpmiller/bog-data>). In addition, since we investigate the association between OPC and annual report readability using S&P 1500 component firms, those sample observations without OPC data are excluded. After the above screening criteria, a total 32,988 firm-year sample observations during the sample period were retained, covering the period from 2000 to 2021. Table 1 shows the sample distribution of 32,988 annual firm observations for those with a Bog index, and the subsamples are sorted by the Bog index for each year. The yearly trend of the average Bog index from year 2000 to 2021 is increasing.

[Insert Table 1 here]

We estimate OPC variables (OPC_EFFI, OPC_HOPE, OPC_OPTIM, OPC_RESIL) using textual information in annual report (10-K filing), and the OPC-related lists of words developed by McKenny et al. (2013). In addition, the data collection and estimation procedures of OPC variables are similar with those in McKenny et al. (2013), Xu (2021), and Grözinger et al. (2022). The textual information in annual reports is gathered from the SEC online Edgar system and the SEC formats

of annual reports include 10-K and 10-K405. The proxies of the OPC used in this study are detailed in Section 2. The sample is limited to S&P 1500 component firms and the sample period in this study is from the year 2000 to 2021.

4.2. Control variables

For the control variables of annual report readability, we follow Li (2008) and Lo et al. (2017) to introduce several firm characteristics variables, such as negative Earnings dummy variable (Loss), firm size (SIZE), financial leverage (LEV), firm profitability (ROA), special item per asset value (SPI), Delaware state dummy variable (DLW_D), firm age (Fage), firm profitability volatility (ROAV), market to book value ratio (MB), and equity volatility (EVOL). Among these control variables, ROA is defined as net income deflated by total assets; Loss equals one if the value of operating earnings is negative and zero otherwise; SIZE stands for firm size, measured by the natural logarithm of asset market value; MB is defined as the ratio of asset market value to asset book value; Fage is the number of years since the firm appeared on CRSP; SPI is defined as the ratio of special items to total assets; ROAV is defined as the standard deviation of ROA estimated by the previous five years; EVOL is defined as the standard deviation of monthly stock returns in the previous one year; DLW_D equals one if a firm is headquartered in Delaware state and zero otherwise.

4.3. Moderating variables

We also propose several moderating variables for the association between OPC and annual report readability, covering CEO overconfidence dummy variable (OC), outside director ratio (ODIR), internal governance quality (IG, Cheng et al., 2016), managerial ability variable (MA_S, Demerjian et al., 2012), CEO holdings (CEO_OWN), Size and Age index (SA), Altman's Z-score (Z_score), and firm profitability (ROA). First, the proxy of CEO overconfidence is a dummy variable (OC;

Lin et al., 2020; Campbell et al., 2011) that equals one when a CEO defers the exercise of 100% in-the-money options at least twice during the CEO's tenure period and zero otherwise. Second, the proxies of subordinate executives' relative power and corporate governance used in this study include the internal governance variable (IG; Cheng et al., 2016) and outside director ratio (ODIR). Following Cheng et al. (2016), the IG variable is defined as the sum of standardized values of Exec_Horizon and Exec_PayRatio. Exec_Horizon stands for the number of years until the age of retirement and Exec_PayRatio presents the key subordinate executives' ability to monitor the CEO. For the proxy of corporate governance, the ODIR variable is defined as the percentage of outside directors on the board. Third, managerial ability is measured by managerial score (MA_S; Demerjian et al., 2012); CEO holdings (CEO_OWN) is measured by the ratio of the CEO's shareholding to total outstanding shares; financial constraint is measured by Size and Age index (SA, Hadlock and Pierce, 2010); credit quality and firm profitability are measured by Z-score (Z_score) and ROA, respectively.

Table 2 presents the summary statistics of annual report readability variables, OPC variables, control variables, and moderating variables used in the empirical analyses. Average BOG is 87.29. These results show that annual report readability is poor on average (based on the *BOG* criteria). In addition, the average of organizational efficacy (OPC_EFFI), organizational hope (OPC_HOPE), organizational optimism (OPC_OPTIM), and organizational resilience (OPC_RESIL) variables are 0.5913%, 0.4757%, 0.2440%, and 0.1841%, respectively. These results indicate that firms in S&P 1500 components on average have relatively lower organizational resilience.

[Insert Table 2 here]

5. Empirical Analysis

5.1. Examinations of the relation between OPC and annual report readability

This section proposes the methodologies used to examine the main hypothesis. For the hypothesis 1, we employ panel data regressions with fixed effect model settings (firm & year) to investigate the association between OPC and annual report readability when controlling for other well-known variables identified in the literature. Finally, we consider the firm-level clustered standard errors (Petersen, 2009) in evaluating the effectiveness of the regression coefficients estimates. Equation (1) show the model specifications for examining the hypotheses 1a and 1b.

$$BOG_{it} = \alpha + \beta_1 OPC_EFFI_{it} + \beta_2 OPC_HOPE_{it} + \beta_3 OPC_OPTIM_{it} + \beta_4 OPC_RESIL_{it} + \sum_{j=1} \beta_{j+4} CV_{j,it} + \varepsilon_{it} \quad (1)$$

In Eq. (1), BOG variable is the adverse proxy of annual report readability. Control variables (CV) include the LOSS, SIZE, LEV, MB, Fage, SPI, ROA, ROAV, EVOL, and DLW_D variables. Detailed descriptions of these variables are given in section 4.2.

Table 3 presents the empirical results of Eq. (1) for the entire sample period. The results of the columns (1) to (5) both show that the OPC_EFFI, OPC_HOPE, and OPC_RESIL variables are significantly and positively related to the Bog variable while OPC_OPTIM has the opposite effect when controlling for well-known determinant variables, indicating that OPC_EFFI, OPC_HOPE, and OPC_RESIL (OPC_OPTIM) are negatively (positively) associated with annual report readability. The coefficients of the OPC_EFFI, OPC_HOPE, OPC_OPTIM and OPC_RESI variables in column (5) are 3.9461, 3.4204, -3.6608, and 8.5305, indicating that the Bog index decreases 0.5098 (3.9461×0.1292), 0.5185 (3.4204×0.1516), -0.2354 (-3.6608×0.0643), and 0.4760

(8.5305×0.0558) per standard deviation increase in the firm's OPC_EFFI, OPC_HOPE, OPC_OPTIM and OPC_RESI variables in the fixed effect model setting, respectively. The results also indicate that firms with higher levels of organizational efficacy, hope, and resilience may have incentives to reduce the readability of their annual reports in order to lower outside investors' perceived risk, which arises from the firms' increased risk-taking and risk tolerance attitudes. In addition, the result also indicates that firms with higher level of organizational optimism may have incentives to improve the readability of their annual reports due to the PosPsy and POB effects. The Hypothesis 1a, which posits a positive relationship between OPC and annual report readability, is supported by the OPC_OPTISM dimension, whereas Hypothesis 1b is supported by the OPC_EFFI, OPC_HOPE, and OPC_RESI dimensions.

[Insert Table 3 here]

5.2. The effect of organizational climate on annual report readability

This section investigates whether organizational climate (ethical climate, innovative climate) affects a firm's annual report readability. This study employs aggregate organizational ethical climate (EC_TOTAL) and aggregate organizational innovative climate (IC_TOTAL) as main variables. The model specification is stated in Eq. (2):

$$BOG_{it} = \alpha + \beta_1 OC_{it} + \beta_2 OPC_{it} + \sum_{j=2}^N \beta_j CV_{j,it} + \varepsilon_{it} \quad (2)$$

Where

$OPC = OPC_EFFI, OPC_HOPE, OPC_OPTIM, OPC_RESIL$

$OC = EC_TOTAL, IC_TOTAL$

$CV = LOSS, SIZE, LEV, MB, Fage, SPI, ROA, ROAV, EVOL, \text{ and } DLW_D$

The results of columns (1) to (4) in Table 4 show that OC variables (EC_TOTAL ,

IC_TOTAL) are both significant and positive. These results suggest that ethical climate significantly firms with higher levels of ethical climate and innovative climate may have incentives to reduce the readability of their annual reports. These results thus support the contention that (1) although a strong ethical climate can effectively suppress unethical behavior, the lack of enforcement mechanisms or the emergence of ethical silence within the organization may nonetheless permit such behavior to persist (Treviño et al., 1998); and (2) innovative climate may increase earnings pressure and incentives for earnings management.

[Insert Table 4 here]

5.3. The association between OPC and annual report readability: The moderating roles of CEO overconfidence, subordinate executives' relative power, outside director ratio, financial constraints, CEO ownership, managerial ability

This section investigates whether CEO overconfidence, subordinate executives' relative power, outside director ratio, financial constraints, CEO ownership, managerial ability play the potential moderating roles for the association of a firm's OPC and annual report readability based on the mechanisms of risk-taking and risk tolerance attitudes. The model specification is shown as Eq. (3).

$$BOG_{it} = \alpha + \beta_1 OPC_{it} + \beta_2 MOD_{it} + \beta_3 OPC_{it} \times MOD_{it} + \sum_{j=4}^N \beta_j CV_{j,it} + \varepsilon_{it} \quad (3)$$

OPC= *OPC_EFFI*, *OPC_HOPE*, *OPC_OPTIM*, *OPC_RESIL*

MOD=*OC*, *IG*, *MA_S*, *CEO_OWN*, *SA*, *ODIR*

CV= *LOSS*, *SIZE*, *LEV*, *MB*, *Fage*, *SPI*, *ROA*, *ROAV*, *EVOL*, and *DLW_D*

The results of columns (1) to (3) in Table 5 show that the coefficient of the

interaction term of OPC_EFFI and OC is significant and positive; the results of columns (1) to (2) in Table 6 show that the coefficient of the interaction term of OPC_HOPE and IG is significant and positive while that between OPC_HOPE and ODIR is significant and negative; the results of columns (1) to (3) in Table 7 show that the coefficient of the interaction term of OPC_OPTIM and MA_S (CEO_OWN) is significant and positive; the results of columns (1) to (2) in Table 8 show that the coefficient of the interaction term of OPC_RESIL and SA is significant and negative. Thus, based on the mechanisms of the risk-taking and risk tolerance attitudes, the positive (negative) association between OPC and BOG (annual report readability) is amplified in firms with higher levels of CEO overconfidence, subordinate executives' relative power, managerial ability, and CEO ownership, but is attenuated in firms facing greater financial constraints and outside director ratio. Accordingly, Hypothesis 2 is empirically supported.

[Insert Table 5 here]

[Insert Table 6 here]

[Insert Table 7 here]

[Insert Table 8 here]

5.4. The association between OPC and annual report readability: The moderating roles of credit quality and firm profitability.

This section investigates whether credit quality and firm profitability play the potential moderating roles for the association of a firm's OPC and annual report readability based on the mechanisms of the PosPsy and POB effects. The model specification is shown as Eq. (4).

$$BOG_{it} = \alpha + \beta_1 OPC_{it} + \beta_2 MOD2_{it} + \beta_3 OPC_{it} \times MOD2_{it} + \sum_{j=4}^N \beta_j CV_{j,it} + \varepsilon_{it} \quad (4)$$

$OPC = OPC_EFFI, OPC_HOPE, OPC_OPTIM, OPC_RESIL$

$MOD2 = Z_score, ROA$

$CV = LOSS, SIZE, LEV, MB, Fage, SPI, ROA, ROAV, EVOL, \text{ and } DLW_D$

The results of columns (4) to (5) in Table 7 show that the coefficient of the interaction term of OPC_OPTIM and Z_score (ROA) is significant and negative. Thus, based on the mechanisms of the PosPsy and POB effects, the negative (positive) association between OPC and BOG (annual report readability) is amplified in firms with higher levels of credit quality and firm profitability. Accordingly, Hypothesis 3 is empirically supported.

5.5. Endogeneity Discussions

We employ the two-stage least squares (2SLS) method in the instrumental variable regression analysis. We use the average of prior one-year OPC variables of industrial peers in the same state (Geo_OPC ; Geo_OPC_EFFI , Geo_OPC_HOPE , Geo_OPC_OPTIM , Geo_OPC_RESIL) as the instrumental variables because it may be more exogenous and is associated with OPC variables.

In the first stage, we regress OPC variables (OPC_EFFI , OPC_HOPE , OPC_OPTIM , OPC_RESIL) on the instrumental variables. Then, we estimate the predicted values of OPC variables in the first stage, denoted as P_OPC variables. Accordingly, in the second stage, we regress annual report readability variable (BOG) against the predicted values of the first stage and other control variables.

Table 9 presents the results of the two-stage regressions, where the coefficients of

the predicted OPC variables have the predicted signs and are significant in the regressions with annual report readability variable (BOG) as the dependent variable for the whole sample period. Overall, the results of our two-stage regression estimation provide further support for the results of Table 3 that OPC_EFFI, OPC_HOPE, and OPC_RESIL (OPC_OPTIM) variables are negatively (positively) related to annual report readability. Based on the above results, we conclude that our previous results are robust after controlling for potential endogeneity problems.

[Insert Table 9 here]

6. Concluding Remarks

This study is the first to investigate the effects of a firm's OPC on annual report readability (measured by BOG index). OPC is a unique resource based on positive psychology perspective (McKenny et al., 2013; Seligman and Csikszentmihalyi, 2000; Gable and Haidt, 2005) for firms (namely positive psychological resources at the organizational level), covering organizational hope, efficacy, resilience, and optimism. Hence, firms with higher OPC may have superior management performance in operations (e.g. Grözinger et al. 2022; Beheshtifar, 2013) and higher trust in financial markets (e.g. Tomasic and Akinbami, 2011) since the firms essentially have higher positive strength effect. In addition, firms with higher O_EFF have greater risk-taking attitude (Bandura, 2012; McKenny et al., 2013) and firms with higher O_HOPE, O_OPT, and O_RES have greater risk tolerance level (Luthans et al., 2006; Scheier et al., 2001; Grözinger et al. 2022; McKenny et al., 2013). Therefore, when driven by the mechanisms of the PosPsy and POB effects, OPC may increase a firm's incentive to adopt a more readable communication strategy. Conversely, when influenced by the mechanisms of the risk-taking and risk tolerance attitudes, OPC may strengthen the

firm's incentive to adopt a less readable communication strategy. We summarize the findings of this study as follows: (1) organizational efficacy, hope and resilience are all significantly and negatively related to annual report readability while organizational optimism has the opposite effect; (2) ethical climate and innovative climate are also both significantly and negatively related to annual report readability; (3) based on the mechanisms of the risk-taking and risk tolerance attitudes, the negative association between OPC and annual report readability is amplified in firms with higher levels of CEO overconfidence, subordinate executives' relative power, managerial ability, and CEO ownership, but is attenuated in firms facing greater financial constraints and outside director ratio; (4) based on the mechanisms of the PosPsy and POB effects, the positive association between OPC and annual report readability is amplified in firms with higher levels of credit quality and firm profitability. Finally, our findings are robust when considering endogeneity issues.

In sum, we conclude that a firm's OPC plays an important role in influencing a firm's MSTR activities, especially annual report readability. This work thus not only provides new insights for the annual report readability literature but also practical guidance for regulators and external investors in conducting decisions based on a new understanding of the economic consequences of the firm's OPC. For regulators, these findings offer insights into the appropriate level of oversight and scrutiny required to ensure that firms provide high-quality, text-based communicative value in their annual reports. For external investors, understanding the connection between OPC and MSTR behaviors can improve their ability to evaluate firms' reporting practices more effectively. Thus, acknowledging the influence of OPC serves as a valuable reference point for both regulators and investors in promoting greater transparency and informational quality in corporate disclosures.

References

- Anglin, A. H., J.C. Short, W. Drover, R.M. Stevenson, A.F. McKenny, T.H. Allison, 2018. The power of positivity? The influence of positive psychological capital language on crowdfunding performance. *Journal of Business Venturing* 33(4), 470-492.
- Awotoye, Y., R.P. Singh, 2017. Entrepreneurial resilience, high impact challenges, and firm performance. *Journal of Management Policy and Practice* 18(2), 28-37.
- Ayala, J. C., G. Manzano, 2014. The resilience of the entrepreneur. Influence on the success of the business. A longitudinal analysis. *Journal of Economic Psychology* 42, 126-135.
- Bandura, A., 1991. Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes*, 50(2), 248–287
- Bandura, A., 1997. *Self-Efficacy: The exercise of control*. New York, NY: W. H. Freeman.
- Bandura, A., 2012. On the functional properties of perceived self-efficacy revisited. *Journal of Management*, 38(1), 9–44.
- Beheshtifar, M., 2013. Organizational optimism: A considerable issue to success. *Journal of Social Issues & Humanities* 1(6), 23-32.
- Bhandari, G., R. Deaves, 2006. The demographics of overconfidence. *The Journal of Behavioral Finance* 7 (1), 5–11.
- Bonsall IV, S.B., B.P. Miller, 2017. The impact of narrative disclosure readability on bond ratings and the cost of debt capital. *Review of Accounting Studies* 22, 608-643
- Campbell, T. C., Gallmeyer, M., Johnson, S. A., Rutherford, J., & Stanley, B. W. (2011). CEO optimism and forced turnover. *Journal of Financial Economics*, 101(3), 695–712.
- Capps, G., L. Koonce, K.R. Petroni, 2015. Natural optimism in financial reporting: A state of mind. *Accounting Horizons* 30(1), 79-91.
- Chakrabarty, B., A. Seetharaman, Z. Swanson, X. Wang, 2018. Management risk incentives and the readability of corporate disclosures. *Financial Management* 47, 583-616.
- Chen, T.K., Y. Tseng, Y. Hao, Y.C. Lin, 2025a. CEO narcissism, management team characteristics, and corporate credit risk. *Journal of Business Finance & Accounting*, forthcoming.
- Chen, T.K., Y. Tseng, Y.S. Hung, Y. Hao, 2025b. Decoding annual report narrative disclosure readability: Pension plan characteristics perspective. Working Paper, National Yang Ming Chiao Tung University.

- Chen, T.K., Liao, H.H., Chen, G.D., Kang, W.H., & Lin, Y.C., 2023. Bankruptcy prediction using machine learning models with the text-based communicative value of annual reports. *Expert Systems with Applications* 233, 120714.
- Chen, T.K., Y. Tseng, Y, Hao, 2024a. CEO neuroticism and managers' strategically textual reporting in annual reports. Working Paper, National Yang Ming Chiao Tung University.
- Chen, T.K., Y. Tseng, Y, Hao, 2024b. Organizational psychological capital and corporate credit risk. Working Paper, National Yang Ming Chiao Tung University.
- Cheng, M., Lee, J., Shevlin, T. (2016). Internal governance and real earnings management. *Accounting Review* 91, 1051-1085.
- Demerjian, P., Lev, B., McVay, S., 2012. Quantifying managerial ability: A new measure and validity tests. *Management Science*, 58(7), 1229-1248.
- Gable, S. L., J. Haidt, 2005. What (and Why) is positive psychology? *Review of General Psychology* 9(2), 103–110.
- Griffin, D.W., C.A. Varey, 1996. Towards a consensus on overconfidence. *Organizational Behavior and Human Decision Processes*, 65(3), 227–231
- Grözinger, AC., S. Wolff, P.J. Ruf, P. Moog, 2022. The power of shared positivity: organizational psychological capital and firm performance during exogenous crises. *Small Business Economics* 58, 689–716.
- Hadlock, C. J., & Pierce, J. R. (2010). New evidence on measuring financial constraints: Moving beyond the KZ index. *Review of Financial Studies*, 23(5), 1909–1940.
- Hsieh, T.S., J.C. Bedard, K.M. Zehms, 2014. CEO overconfidence and earnings management. *Journal of Business Finance and Accounting* 41 (9-10),1243-1268.
- Larson, M., F. Luthans, 2006. Potential added value of psychological capital in predicting work attitudes. *Journal of Leadership & Organizational Studies* 13(2), 75-92.
- Li, F., 2008, Annual report readability, current earnings, and earnings persistence. *Journal of Accounting and Economics* 45, 221–247.
- Lin, C.Y., Y. Chen, P.H. Ho, J.F. Yen, 2020. CEO overconfidence and bank loan contracting. *Journal of Corporate Finance* 64, 101637.
- Lo, K., F. Ramos, F. Rogo, 2017. Earnings management and annual report readability. *Journal of Accounting and Economics* 63, 1–25.
- Luthans, F., C.M. Youssef, 2004. Human, social, and now positive psychological capital management: Investing in people for competitive advantage. *Organizational Dynamics* 33(2), 143–160.
- Luthans, F., J.B. Avey, B.J. Avolio, S.M. Norman, G.M. Combs, 2006. Psychological capital development: Toward a micro-intervention. *Journal of Organizational*

- Behavior* 27(3), 387–393.
- Luthans, F., C.M. Youssef, B.J. Avolio. 2007a. Psychological capital: developing the human competitive edge. Oxford Scholarship Online.
- Luthans, F., B. J. Avolio, J. B. Avey, S.M. Norman, 2007b. Positive psychological capital: Measurement and relationship with performance and satisfaction. *Personnel Psychology* 60(3), 541-572.
- Masten, A. S., 2001. Ordinary magic: Resilience processes in development. *American Psychologist* 56(3), 227-238.
- Masten, A. S., M.-G. J. Reed, 2002. Resilience in development. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of Positive Psychology* (pp. 74–88). Oxford University Press.
- McKenny, A. F., J. C. Short, G. T. Payne, 2013. Using computer-aided text analysis to elevate constructs: An illustration using psychological capital. *Organizational Research Methods* 16(1), 152–184.
- Petersen, M., 2009. Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies* 22, 435-480.
- Scheier, M.F., C.S. Carver, M.W. Bridges, 2001. Optimism, pessimism, and psychological well-being. In E. C. Chang (Ed.), *Optimism & Pessimism: Implications for Theory, Research, and Practice* (pp. 189–216). American Psychological Association.
- Seebeck, A. & Kaya, D., 2023. The power of words: An empirical analysis of the communicative value of extended auditor reports. *European Accounting Review* 32 (5), 1185-1215.
- Seligman, M.E.P., M. Csikszentmihalyi, 2000. Positive psychology: An introduction. *American Psychologist* 55(1), 5–14.
- Snyder, C. R., 2002. Hope theory: Rainbows in the mind. *Psychological Inquiry* 13(4), 249-275.
- Snyder, C. R., C. Harris, J.R. Anderson, S.A. Holleran, L.M. Irving, S.T. Sigmon, S. T., P. Harney, 1991. The will and the ways: development and validation of an individual differences measure of hope. *Journal of Personality and Social Psychology* 60(4), 570.
- Toor, S.U.R., G. Ofori, 2010. Positive psychological capital as a source of sustainable competitive advantage for organizations. *Journal of Construction Engineering and Management* 136(3), 341-352.
- Treviño, L. K., Butterfield, K. D., & McCabe, D. L. (1998). The ethical context in organizations: Influences on employee attitudes and behaviors. *Business Ethics Quarterly*, 8(3), 447–476.
- Turner, N., J. Barling, A. Zacharatos, 2002. Positive psychology at work. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of Positive Psychology* (pp. 715–728).

Oxford University Press.

Wang, Y., C. H. Tsai, D. D. Lin, O. Enkhbuyant, J. Cai, 2019. Effects of human, relational, and psychological capitals on new venture performance. *Frontiers in Psychology* 10, 1071.

Xu, Y., 2021. Organizational psychological capital and financial reporting quality. Working paper. University of Wisconsin-Whitewater.

Table 1. Sample Distribution

The sample period is yearly between 2000 and 2021. There are totally 32,988 yearly S&P 1500 firm observations with available data of organizational psychological capital (OPC) and annual reporting readability (measured by Bog index, denoted as BOG). The higher value of Bog index indicates more poor readability. Table 1 reports the numbers of pooled observations for firms in the given years and Bog index. The relationship between text readability and the Bog index is as follows: excellent ($20 \geq \text{BOG} \geq 0$), good ($40 \geq \text{BOG} \geq 21$), average ($70 \geq \text{BOG} \geq 41$), poor ($100 \geq \text{BOG} \geq 71$), bad ($130 \geq \text{BOG} \geq 101$) and dreadful ($1000 \geq \text{BOG} \geq 131$). The yearly subsamples are sorted by Bog index of annual report estimated by Bonsall et al. (2017).

Year/Group	Average (41-70)	Poor (71-100)	Bad (101-130)	Dreadful (>130)	Total
2000	18	139	2	0	159
2001	22	446	3	0	471
2002	22	1,156	7	0	1,185
2003	30	1,443	10	0	1,483
2004	18	1,635	9	0	1,662
2005	14	1,736	15	0	1,765
2006	11	1,758	10	0	1,779
2007	13	1,766	30	0	1,809
2008	7	1,758	21	0	1,786
2009	6	1,761	16	0	1,783
2010	5	1,742	16	0	1,763
2011	4	1,586	16	0	1,606
2012	2	1,612	21	0	1,635
2013	2	1,627	34	0	1,663
2014	2	1,653	31	0	1,686
2015	3	1,637	36	0	1,676
2016	2	1,612	34	0	1,648
2017	1	1,545	49	0	1,595
2018	6	1,325	162	3	1,496
2019	3	1,190	226	7	1,426
2020	5	1,210	266	0	1,481
2021	7	1,156	268	0	1,431
Total	203	31,493	1,282	10	32,988

Table 2. Summary Statistics of Major Variables

This table presents the mean, median standard deviation (S.D.), minimum, and maximum of major variables used in empirical analyses. Panel A, B, C, and D present the summary statistics of annual report readability, organizational psychological capital (OPC) variables, organizational climate variables, and control variables, respectively. In panel A, BOG represent the measure of a firm's annual report readability (measured by Bog index). Bonsall et al. (2017) define the Bog index (BOG) as the sum of *Sentence Bog* and *Word Bog* minus *Pep*. *Sentence Bog* is defined as the standardized average sentence length, which identifies readability issues stemming from sentence length; *Word Bog* is defined as the sum of plain English style problems and word difficulty multiplied by 250 and divided by the number of words; *Pep* suggests the writing attributes that facilitate understanding of texts by readers, defined as the sum of the usage of items such as names and interesting words. A higher values of BOG variable represent a lower readability of annual report. Panel B shows summary statistics of organizational psychological capital (OPC) variables, including organizational efficacy (OPC_EFFI), organizational hope (OPC_HOPE), organizational optimism (OPC_OPTIM), and organizational resilience (OPC_RESIL). Panel C shows summary statistics of organizational climate variables, including ethical climate (EC) variables and innovative climate (IC) variables. The measures of organizational ethical climate include conscientiousness, empathy, integrity, warmth, courage, and zeal, denoted as EC_CONSC, EC_EMPTAH, EC_INTEG, EC_WARM, and EC_COUR. The aggregate organizational ethical climate variable, called as EC_TOTAL variable, is estimated by the sum of the above six category variables. The measures of organizational innovative climate include innovative-general, structures, processes, and practices, denoted as IC_INNOV, IC_STRU, IC_PROCE, and IC_PRACT. The aggregate organizational innovative climate variable, called as IC_TOTAL variable, is estimated by the sum of the above four category variables. Panel D shows control variables of annual report readability (Li, 2008; Lo et al, 2017), including negative Earnings dummy variable (Loss), firm size (SIZE), financial leverage (LEV), firm profitability (ROA), special item per asset value (SPI), Delaware state dummy variable (DLW_D), firm age (Fage), firm profitability volatility (ROAV), market to book value ratio (MB), and equity volatility (EVOL). Panel E shows moderating variables, covering CEO overconfidence dummy variable (OC), outside director ratio (ODIR), internal governance quality (IG, Cheng et al., 2016), managerial ability variable (MA_S, Demerjian et al., 2012), CEO holdings (CEO_OWN), Size and Age index (SA), Altman's Z-score (Z_score), and firm profitability (ROA).

Variable	Obs	Mean	Std. dev.	Min	Max
Panel A. Dependent Variable					
BOG	32,988	87.2883	7.4607	27.0000	163.0000
Panel B. Organizational Psychological Capital variables					
OPC_EFFI	32,988	0.5913	0.1292	0.1073	2.5415
OPC_HOPE	32,988	0.4757	0.1516	0.0595	4.2058
OPC_OPTIM	32,988	0.2440	0.0643	0.0000	0.9433
OPC_RESIL	32,988	0.1841	0.0558	0.0000	1.4763
Panel C. Organizational Climate Variables					
EC_TOTAL	32,988	0.7020	0.1397	0.1337	3.1423
IC_TOTAL	32,988	1.6302	0.2481	0.4651	4.4634
Panel D. Control Variables					
LOSS	32,988	0.0553	0.2286	0.0000	1.0000
SIZE	32,988	7.9573	1.7398	-1.9241	15.2406
LEV	32,988	0.2642	0.2568	0.0000	1.0000
ROA	32,988	0.0309	0.3099	-13.6705	46.4545
SPI	32,988	-0.0135	0.1040	-3.9135	11.0863
DLW_D	32,988	0.0025	0.0504	0.0000	1.0000

Fage	32,988	24.0981	19.2076	-22.6329	96.0658
ROAV	32,988	0.0633	0.2126	0.0003	20.8295
MB	32,988	2.9411	75.7329	-6714.9630	8244.2310
EVOL	32,988	0.1093	0.0868	0.0000	4.7035
Panel E. Moderating Variables					
OC	30,644	0.3373	0.4728	0.0000	1.0000
ODIR	30,968	0.8438	0.0832	0.0000	1.0000
IG	27,814	0.0154	1.3776	-4.5038	10.9128
MA_S	24,439	0.0039	0.1426	-0.2707	0.6617
CEO_H	22,345	2.4337	6.2735	0.0000	336.0000
SA	32,988	-2.9040	0.8953	-5.4777	0.1265
Z_Score	32,909	3.4668	45.3568	-8148.7670	117.0582
ROA	32,988	0.0309	0.3099	-13.6705	46.4545

Table 3. Organizational Psychological Capital and Annual Report Readability

This table shows the results regarding the association between organizational psychological capital (OPC) and annual report readability (measured by Bog index, BOG). For the estimations of organizational psychological capital (OPC), this study follows McKenny et al. (2013) to facilitate the Computer-Aided Text Analysis to analyze the narrative disclosures in a firm's annual report and then calculates the firm's OPC levels in each dimension, covering organizational efficacy (OPC_EFFI), organizational hope (OPC_HOPE), organizational optimism (OPC_OPTIM), and organizational resilience (OPC_RESIL). Control variables include Loss, SIZE, LEV, ROA, SPI, DLW_D, Fage, ROAV, MB, and EVOL. We consider the model specification of fixed effect (firm and year) model for the association between organizational psychological capital (OPC) and annual report readability. This table presents the regression coefficients. The t-statistics calculated by firm-level clustered standard errors (Petersen, 2009) for each coefficient appears immediately underneath. The signs of "*", "**", "***" represent the significance of 10%, 5%, and 1%, respectively.

	(1) BOG	(2) BOG	(3) BOG	(4) BOG	(5) BOG
OPC_EFFI	5.6186*** (7.77)				3.9461*** (5.52)
OPC_HOPE		4.5514*** (6.00)			3.4204*** (4.29)
OPC_OPTIM			-0.6561 (-0.60)		-3.6608*** (-3.33)
OPC_RESIL				8.5311*** (8.04)	8.5305*** (8.02)
LOSS	0.4590*** (3.05)	0.4670*** (3.14)	0.4703*** (3.12)	0.4605*** (3.06)	0.4342*** (2.94)
SIZE	0.2685*** (3.50)	0.2876*** (3.76)	0.2838*** (3.69)	0.3096*** (4.06)	0.2783*** (3.67)
LEV	1.5740*** (6.31)	1.6474*** (6.61)	1.6984*** (6.74)	1.7124*** (6.85)	1.4846*** (6.03)
ROA	-0.4303*** (-3.05)	-0.4474*** (-3.23)	-0.4411*** (-3.00)	-0.3797*** (-2.70)	-0.3582*** (-2.71)
SPI	-0.1773 (-0.67)	-0.0786 (-0.30)	-0.0789 (-0.30)	-0.0732 (-0.31)	-0.1552 (-0.65)
DLW_D	0.0000 (0.00)	0.0000 (0.00)	0.0000 (0.00)	0.0000 (0.00)	0.0000 (0.00)
Fage	0.0989 (0.90)	0.0920 (0.83)	0.1623 (1.46)	0.1329 (1.20)	0.0432 (0.39)
ROAV	0.4932*** (2.65)	0.5454*** (2.83)	0.5164*** (2.68)	0.4709*** (2.60)	0.4482** (2.56)
MB	0.0000 (0.27)	0.0000 (0.09)	0.0000 (0.18)	0.0000 (0.26)	0.0001 (0.32)
EVOL	1.7628*** (3.44)	1.8250*** (3.60)	1.9522*** (3.75)	1.8107*** (3.61)	1.5789*** (3.28)
Constant	85.4345*** (23.04)	86.6467*** (23.45)	86.8649*** (23.38)	85.7015*** (23.15)	85.6878*** (23.39)
Firm FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Observations	32988	32988	32988	32988	32988
Adjusted R ²	0.7832	0.7825	0.7808	0.7823	0.7854

Table 4. Organizational Climate and Annual Report Readability

This table shows the results regarding the association between organizational climate (OC) and annual report readability (measured by Bog index, BOG). This study describes organizational climate as ethical climate (EC) and innovative climate (IC). Following Payne et al. (2011), the measures of organizational ethical climate include conscientiousness (EC_CONSC), empathy (EC_EMPTH), integrity (EC_INTEG), warmth (EC_WARM), courage (EC_COUR), and zeal (EC_ZEAL). The aggregate organizational ethical climate variable (EC_TOTAL) is estimated by the sum of the above six category variables. Following Heyden et al. (2018), the measures of organizational innovative climate include innovative-general (IC_INNOV), structures (IC_STRU), processes (IC_PROCE), and practices (IC_PRACT). The aggregate organizational innovative climate variable (IC_TOTAL) is estimated by the sum of the above four category variables. Control variables include Loss, SIZE, LEV, ROA, SPI, DLW_D, Fage, ROAV, MB, and EVOL. We consider the model specification of fixed effect (firm and year) model for the association between organizational psychological capital (OPC) and annual report readability. This table presents the regression coefficients. The t-statistics calculated by firm-level clustered standard errors (Petersen, 2009) for each coefficient appears immediately underneath. The signs of “*, **, ***” represent the significance of 10%, 5%, and 1%, respectively.

	(1) BOG	(2) BOG	(3) BOG	(4) BOG
EC_Total	4.9575*** (10.41)		4.7517*** (10.05)	2.7260*** (5.24)
IC_Total		1.3883*** (4.54)	1.0339*** (3.43)	1.0832*** (3.64)
OPC_EFFI				2.5934*** (3.61)
OPC_HOPE				3.2677*** (4.21)
OPC_OPTIM				-4.6393*** (-4.30)
OPC_RESIL				6.4408*** (5.74)
LOSS	0.4771*** (3.18)	0.4994*** (3.29)	0.4969*** (3.30)	0.4607*** (3.12)
SIZE	0.2871*** (3.75)	0.3018*** (3.91)	0.2981*** (3.87)	0.2837*** (3.72)
LEV	1.6407*** (6.60)	1.7954*** (7.11)	1.7051*** (6.83)	1.5234*** (6.20)
ROA	-0.3985*** (-2.96)	-0.4572*** (-3.09)	-0.4104*** (-3.01)	-0.3588*** (-2.77)
SPI	-0.0877 (-0.39)	-0.0921 (-0.35)	-0.0984 (-0.43)	-0.1523 (-0.68)
DLW_D	0.0000 (0.00)	0.0000 (0.00)	0.0000 (0.00)	0.0000 (0.00)
Fage	0.1689 (1.53)	0.2017* (1.82)	0.1988* (1.80)	0.1050 (0.95)
ROAV	0.4569** (2.53)	0.5549*** (2.80)	0.4852*** (2.61)	0.4520** (2.55)
MB	0.0000 (0.19)	0.0000 (0.25)	0.0000 (0.25)	0.0001 (0.36)
EVOL	1.8305*** (3.59)	1.9933*** (3.83)	1.8658*** (3.66)	1.6274*** (3.38)
Constant	82.8012*** (22.11)	82.8699*** (21.79)	80.1101*** (21.00)	81.3510*** (21.59)
Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	32988	32988	32988	32988
Adjusted R ²	0.7837	0.7814	0.7840	0.7864

Table 5. The Relationship between Organizational Efficacy and Annual Report Readability: The Moderating Role of CEO Overconfidence

This table shows the results of the moderating effect of CEO overconfidence (OC) for the relation between organizational efficacy (OPC_EFFI) and annual report readability (BOG). For the estimations of organizational psychological capital (OPC), this study follows McKenny et al. (2013) to facilitate the Computer-Aided Text Analysis to analyze the narrative disclosures in a firm's annual report and then calculates the firm's OPC levels in each dimension, covering organizational efficacy (OPC_EFFI), organizational hope (OPC_HOPE), organizational optimism (OPC_OPTIM), and organizational resilience (OPC_RESIL). The proxy of CEO overconfidence is a dummy variable (OC100; Lin et al., 2020; Campbell et al., 2011) that equals one when a CEO defers the exercise of 100% in-the-money options at least twice during the CEO's tenure period and zero otherwise. Control variables include Loss, SIZE, LEV, ROA, SPI, DLW_D, Fage, ROAV, MB, and EVOL. We consider the model specification of fixed effect (firm and year) model for the association between organizational efficacy (OPC_EFFI) and annual report readability. This table presents the regression coefficients. The t-statistics calculated by firm-level clustered standard errors (Petersen, 2009) for each coefficient appears immediately underneath. The signs of "*", "**", "***" represent the significance of 10%, 5%, and 1%, respectively.

	Whole Sample	Low OC High MA	High OC Low MA
	(1) BOG	(2) BOG	(3) BOG
OPC_EFFI	3.1247*** (3.91)	1.0979 (0.85)	5.4530*** (2.89)
OPC_HOPE	3.5305*** (4.23)	1.3373 (0.92)	3.6126** (2.05)
OPC_OPTIM	-4.2408*** (-3.68)	-0.3864 (-0.16)	-8.7491*** (-3.04)
OPC_RESIL	8.6996*** (7.79)	5.8496*** (2.66)	11.4133*** (3.48)
OC	-1.3301** (-2.39)		
OPC_EFFI*OC	2.0394** (2.19)		
LOSS	0.3019* (1.91)	-0.1067 (-0.27)	-0.1229 (-0.20)
SIZE	0.3155*** (3.90)	0.3787** (1.99)	0.6788** (2.50)
LEV	1.4299*** (5.65)	0.9098* (1.92)	3.3645*** (2.86)
ROA	-0.4019** (-2.32)	-1.1215 (-0.81)	-1.9463 (-1.37)
SPI	-0.1020 (-0.38)	0.6787 (0.58)	0.3786 (0.25)
DLW_D	0.0000 (0.00)	0.0000 (0.00)	0.0000 (0.00)
Fage	0.0150 (0.14)	-0.2651 (-1.11)	-0.1474 (-0.36)
ROAV	0.6152** (2.12)	2.0713 (1.16)	-2.2537 (-1.56)
MB	0.0001 (0.60)	0.0015* (1.95)	-0.0019 (-0.97)
EVOL	1.2489*** (2.71)	3.2687*** (2.80)	1.7605 (0.95)
Constant	86.9295*** (23.23)	98.7335*** (11.93)	87.8689*** (7.08)
Firm FE	YES	YES	YES
Year FE	YES	YES	YES
Observations	30644	7069	4103
Adjusted R ²	0.7872	0.8182	0.8056

Table 6. The Relationship between Organizational Hope and Annual Report Readability: The Moderating Roles of Subordinate Executives' Relative Power and Corporate Governance

This table shows the results of the moderating effects of subordinate executives' relative power and corporate governance for the relation between organizational hope (OPC_HOPE) and annual report readability (BOG). For the estimations of organizational psychological capital (OPC), this study follows McKenny et al. (2013) to facilitate the Computer-Aided Text Analysis to analyze the narrative disclosures in a firm's annual report and then calculates the firm's OPC levels in each dimension, covering organizational efficacy (OPC_EFFI), organizational hope (OPC_HOPE), organizational optimism (OPC_OPTIM), and organizational resilience (OPC_RESIL). The proxies of subordinate executives' relative power and corporate governance used in this study include the internal governance variable (IG; Cheng et al., 2016) and outside director ratio (ODIR). Following Cheng et al. (2016), the IG variable is defined as the sum of standardized values of Exec_Horizon and Exec_PayRatio. Exec_Horizon stands for the number of years until the age of retirement and Exec_PayRatio presents the key subordinate executives' ability to monitor the CEO. For the proxy of corporate governance, the ODIR variable is defined as the percentage of outside directors on the board. Control variables include Loss, SIZE, LEV, ROA, SPI, DLW_D, Fage, ROAV, MB, and EVOL. We consider the model specification of fixed effect (firm and year) model for the association between organizational hope (OPC_HOPE) and annual report readability. This table presents the regression coefficients. The t-statistics calculated by firm-level clustered standard errors (Petersen, 2009) for each coefficient appears immediately underneath. The signs of **, *, *** represent the significance of 10%, 5%, and 1%, respectively.

	(1) BOG	(2) BOG
OPC_EFFI	3.5358*** (4.98)	4.0543*** (5.18)
OPC_HOPE	12.7905*** (3.33)	3.8174*** (4.40)
OPC_OPTIM	-3.5845*** (-3.28)	-3.9578*** (-3.23)
OPC_RESIL	8.1129*** (7.39)	9.2205*** (7.76)
ODIR	8.2339*** (3.65)	
OPC_HOPE*ODIR	-11.0050** (-2.43)	
IG		0.0694 (0.43)
OPC_EFFI*IG		-0.3575 (-1.28)
OPC_HOPE*IG		0.4767*** (2.66)
LOSS	0.1148 (0.69)	0.3487* (1.93)
SIZE	0.3269*** (4.19)	0.2650*** (3.24)
LEV	1.3562*** (5.50)	1.3230*** (5.19)
ROA	-1.3519*** (-2.94)	-0.1603 (-0.35)
SPI	0.6854 (1.29)	-0.3586 (-0.69)
DLW_D	0.0000 (0.00)	0.0000 (0.00)
Fage	0.0541 (0.48)	-0.0051 (-0.05)
ROAV	1.0214*** (2.80)	0.6243** (2.22)
MB	0.0000 (0.19)	0.0001 (0.69)
EVOL	1.2638*** (2.65)	1.0392** (2.32)
Constant	78.2455*** (18.51)	87.2177*** (23.71)
Firm FE	YES	YES
Year FE	YES	YES
Observations	30968	27814
Adjusted R ²	0.7896	0.7885

Table 7. The Relationship between Organizational Optimism and Annual Report Readability: The Moderating Roles of Firm Characteristics

This table shows the results of the moderating effects of firm characteristics (managerial ability, CEO holdings, financial constraint, credit quality, and firm performance) for the relation between organizational optimism (OPC_OPTIM) and annual report readability (BOG). For the estimations of organizational psychological capital (OPC), this study follows McKenny et al. (2013) to facilitate the Computer-Aided Text Analysis to analyze the narrative disclosures in a firm's annual report and then calculates the firm's OPC levels in each dimension, covering organizational efficacy (OPC_EFFI), organizational hope (OPC_HOPE), organizational optimism (OPC_OPTIM), and organizational resilience (OPC_RESIL). Managerial ability is measured by managerial score (MA_S; Demerjian et al., 2012); CEO holdings (CEO_OWN) is measured by the ratio of the CEO's shareholding to total outstanding shares; financial constraint is measured by Size and Age index (SA, Hadlock and Pierce, 2010); credit quality and firm performance are measured by Z-score (Z_score) and ROA, respectively. Control variables include Loss, SIZE, LEV, ROA, SPI, DLW_D, Fage, ROAV, MB, and EVOL. We consider the model specification of fixed effect (firm and year) model for the association between organizational optimism (OPC_OPTIM) and annual report readability. This table presents the regression coefficients. The t-statistics calculated by firm-level clustered standard errors (Petersen, 2009) for each coefficient appears immediately underneath. The signs of “*”, “**”, “***” represent the significance of 10%, 5%, and 1%, respectively.

	(1) BOG	(2) BOG	(3) BOG	(4) BOG	(5) BOG
OPC_EFFI	4.5387*** (5.85)	4.6423*** (5.37)	3.8252*** (5.35)	3.9221*** (5.49)	4.6747*** (5.04)
OPC_HOPE	4.5631*** (5.55)	3.3656*** (3.76)	3.2189*** (4.05)	3.4383*** (4.31)	6.0066*** (4.40)
OPC_OPTIM	-5.6445*** (-4.58)	-5.4909*** (-3.75)	5.4334 (1.59)	-2.5150** (-2.15)	-5.3815*** (-3.39)
OPC_RESIL	7.9497*** (6.32)	10.4580*** (7.91)	8.2103*** (7.87)	8.3412*** (7.86)	9.3413*** (6.61)
MA_S	-2.4584* (-1.90)				
OPC_OPTIM*MA_S	10.7552** (2.26)				
CEO_OWN		-0.1279*** (-3.65)			
OPC_OPTIM*CEO_OWN		0.5013*** (3.67)			
SA			-6.2947*** (-9.18)		
OPC_OPTIM*SA			2.8816*** (2.60)		
Z_score				0.0444*** (3.23)	
OPC_OPTIM*Z_score				-0.2467*** (-3.12)	
OPC_OPTIM*ROA					-19.1077*** (-2.81)
LOSS	0.1103 (0.63)	0.1746 (0.88)	0.5195*** (3.57)	0.3967*** (2.70)	1.6699*** (5.88)
SIZE	0.3115*** (3.44)	0.3403*** (3.54)	-0.4174*** (-4.27)	0.3189*** (4.11)	0.3694*** (5.94)
LEV	2.3063*** (5.94)	1.4524*** (5.08)	0.2493 (0.92)	1.4751*** (6.00)	1.7207*** (5.03)
ROA	-1.2520** (-2.51)	-0.7754 (-1.38)	-0.4632*** (-4.38)	-0.3835*** (-3.42)	3.4426** (2.24)
SPI	0.7433 (1.31)	-0.1705 (-0.28)	-0.0214 (-0.12)	-0.1240 (-0.56)	-0.2223 (-0.60)
DLW_D	0.0000 (0.00)	0.0000 (0.00)	0.0000 (0.00)	0.0000 (0.00)	1.7795 (0.94)
Fage	0.1725 (1.31)	-0.0038 (-0.03)	-0.1023 (-0.92)	0.0462 (0.42)	-0.0246*** (-4.13)
ROAV	0.4600** (2.47)	0.6387** (2.10)	0.8486*** (3.95)	0.5222*** (2.94)	1.6712*** (4.13)
MB	0.0000 (0.11)	0.0002 (1.12)	0.0001 (0.52)	0.0001 (0.34)	0.0002 (1.01)
EVOL	1.0934** (2.21)	0.3544 (0.90)	1.8160*** (3.64)	1.6129*** (3.32)	2.8250*** (3.72)
Constant	80.2591*** (17.98)	86.5450*** (23.43)	76.0609*** (19.70)	85.0563*** (23.05)	85.2232*** (95.95)
Firm FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Observations	24439	22345	32988	32909	32988
Adjusted R ²	0.7786	0.7945	0.7877	0.7854	0.4467

Table 8. The Relationship between Organizational Resilience and Annual Report Readability: The Moderating Roles of Financial Constraint and Firm Profitability

This table shows the results of the moderating effects of financial constraint and firm profitability for the relation between organizational resilience (OPC_RESIL) and annual report readability (BOG). For the estimations of organizational psychological capital (OPC), this study follows McKenny et al. (2013) to facilitate the Computer-Aided Text Analysis to analyze the narrative disclosures in a firm's annual report and then calculates the firm's OPC levels in each dimension, covering organizational efficacy (OPC_EFFI), organizational hope (OPC_HOPE), organizational optimism (OPC_OPTIM), and organizational resilience (OPC_RESIL). Financial constraint and firm profitability are measured by Size and Age index (SA, Hadlock and Pierce, 2010) and ROA, respectively. Control variables include Loss, SIZE, LEV, ROA, SPI, DLW_D, Fage, ROAV, MB, and EVOL. We consider the model specification of fixed effect (firm and year) model for the association between organizational resilience (OPC_RESIL) and annual report readability. This table presents the regression coefficients. The t-statistics calculated by firm-level clustered standard errors (Petersen, 2009) for each coefficient appears immediately underneath. The signs of ***, **, **** represent the significance of 10%, 5%, and 1%, respectively.

	(1) BOG	(2) BOG
OPC_EFFI	3.8755*** (5.45)	4.6765*** (5.04)
OPC_HOPE	3.1901*** (4.03)	6.0057*** (4.40)
OPC_OPTIM	6.1640* (1.79)	-5.4196*** (-3.40)
OPC_RESIL	1.5589 (0.47)	8.9953*** (6.39)
SA	-6.0407*** (-8.56)	
OPC_OPTIM*SA	3.2271*** (2.88)	
OPC_RESIL*SA	-2.2527** (-2.01)	
OPC_OPTIM*ROA		-18.3618** (-2.54)
OPC_RESIL*ROA		11.0150* (1.80)
LOSS	0.5241*** (3.61)	1.6673*** (5.90)
SIZE	-0.4213*** (-4.32)	0.3704*** (5.95)
LEV	0.2442 (0.90)	1.7211*** (5.03)
ROA	-0.4583*** (-4.32)	1.2696 (0.57)
SPI	-0.0420 (-0.23)	-0.7415 (-1.58)
DLW_D	0.0000 (0.00)	1.7474 (0.93)
Fage	-0.1092 (-0.98)	-0.0246*** (-4.14)
ROAV	0.8618*** (3.97)	1.6422*** (4.09)
MB	0.0001 (0.46)	0.0001 (0.94)
EVOL	1.8126*** (3.64)	2.8324*** (3.73)
Constant	77.0711*** (19.72)	85.2813*** (96.00)
Firm FE	YES	YES
Year FE	YES	YES
Observations	32988	32988
Adjusted R ²	0.7878	0.4469

Table 9. Endogeneity Discussions on the Relation between Organizational Psychological Capital and Annual Report Readability: Two-Stage Regressions

This table shows the results of two-stage regressions with annual report readability (measured by Bog index, BOG) as the dependent variable against organizational psychological capital (OPC) using data observations during the period from 2000 to 2021. For the estimations of organizational psychological capital (OPC), this study follows McKenny et al. (2013) to facilitate the Computer-Aided Text Analysis to analyze the narrative disclosures in a firm's annual report and then calculates the firm's OPC levels in each dimension, covering organizational efficacy (OPC_EFFI), organizational hope (OPC_HOPE), organizational optimism (OPC_OPTIM), and organizational resilience (OPC_RESIL). Control variables include Loss, SIZE, LEV, ROA, SPI, DLW_D, Fage, ROAV, MB, and EVOL. The firm- and year-fixed effects and cluster issues are considered in these results. The instrumental variable is the average of prior one-year OPC variables (OPC_CONFI, OPC_HOPE, OPC_OPTIM, OPC_RESIL) of industrial peers in the same state (Geo_OPC; Geo_OPC_EFFI, Geo_OPC_HOPE, Geo_OPC_OPTIM, Geo_OPC_RESIL). Pred_OPC (Pred_OPC_EFFI, Pred_OPC_HOPE, Pred_OPC_OPTIM, Pred_OPC_RESIL) is the predicted value of the first-stage regression. The fixed effects and heteroscedasticity issues are considered in these results. The t-statistics are calculated by the firm-level clustered standard errors (Petersen, 2009) for each coefficient and appears immediately underneath. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1) OPC_EFFI	(2) BOG	(3) OPC_HOPE	(4) BOG	(5) OPC_OPTIM	(6) BOG	(7) OPC_RESIL	(8) BOG	(9) BOG
Geo_OPC_EFFI	0.8593*** (34.88)								
P_OPC_EFFI		5.2730*** (4.93)							4.1658*** (3.82)
Geo_OPC_HOPE			0.8065*** (17.24)						
P_OPC_HOPE				3.3201*** (2.93)					2.1849* (1.83)
Geo_OPC_OPTIM					0.9194*** (69.75)				
P_OPC_OPTIM						-1.2620 (-0.75)			-3.9362** (-2.31)
Geo_OPC_RESIL							0.9251*** (63.53)		
P_OPC_RESIL								10.5696*** (6.49)	10.5055*** (6.41)
LOSS		0.4714*** (3.12)		0.4696*** (3.12)		0.4704*** (3.12)		0.4433*** (2.94)	0.4337*** (2.90)
SIZE		0.2787*** (3.64)		0.2847*** (3.72)		0.2839*** (3.69)		0.3043*** (3.99)	0.2859*** (3.76)

LEV		1.6701*** (6.66)		1.6920*** (6.74)		1.6988*** (6.75)		1.7177*** (6.84)	1.6260*** (6.52)
ROA		-0.4335*** (-3.00)		-0.4427*** (-3.03)		-0.4420*** (-3.02)		-0.4180*** (-2.94)	-0.4039*** (-2.88)
SPI		-0.1285 (-0.49)		-0.0755 (-0.28)		-0.0805 (-0.30)		-0.0827 (-0.34)	-0.1331 (-0.54)
DLW_D		0.0000 (0.00)		0.0000 (0.00)		0.0000 (0.00)		0.0000 (0.00)	0.0000 (0.00)
Fage		0.1102 (0.99)		0.1146 (1.03)		0.1637 (1.47)		0.1358 (1.23)	0.0729 (0.65)
ROAV		0.4966*** (2.59)		0.5208*** (2.71)		0.5164*** (2.68)		0.4942*** (2.67)	0.4634** (2.51)
MB		0.0000 (0.25)		0.0000 (0.13)		0.0000 (0.18)		0.0001 (0.30)	0.0001 (0.38)
EVOL		1.8687*** (3.60)		1.9038*** (3.69)		1.9559*** (3.76)		1.8732*** (3.73)	1.7853*** (3.60)
Constant	0.0888*** (5.54)	85.1462*** (22.79)	0.1017*** (4.11)	86.5407*** (23.28)	0.0202*** (5.69)	86.9697*** (23.38)	0.0169*** (5.34)	85.2177*** (23.05)	84.7326*** (22.90)
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	32988	32988	32988	32988	32988	32988	32988	32988	32988
Adjusted R^2	0.8477	0.7816	0.8655	0.7811	0.8140	0.7808	0.7789	0.7817	0.7827