

CEO Traits and Internal Control Deficiency Probability: Evidence from CEO Risk Conservatism and Organizational Identification

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Abstract: Internal control embeds rules and monitoring procedures into business processes to alleviate agency conflicts and correct information biases, forming a key mechanism that safeguards the credibility of financial reporting, compliance enforcement, and risk management capacity. Using issuance review (IPO review) information, this study builds an internal control deficiency prediction model and proposes the model-generated probability of internal control deficiency (IC_PROB) as a continuous measure to capture firm-level latent internal control failure risk. The empirical analysis yields three main findings. First, CEO risk conservatism is significantly negatively associated with IC_PROB, indicating that a more conservative risk orientation reduces risk exposure and strengthens compliance enforcement. Second, CEO organizational identification is significantly positively associated with IC_PROB, suggesting that, under performance pressure and financially oriented incentives, stronger organizational identification may raise tolerance for unethical pro-organizational behavior, thereby increasing the probability of internal control deficiencies. Third, CEO individual attributes play a substantive role: educational attainment and a finance/accounting background are both negatively related to IC_PROB. By jointly examining individual and organizational dimensions, the study identifies mechanisms underlying internal control effectiveness and offers both theoretical and practical implications.

Keywords: Internal Control Effectiveness, Probability of Internal Control Deficiency, CEO Risk Conservatism, CEO Organizational Identification.

1. Introduction

Internal control is a contractual arrangement designed to mitigate information asymmetry and agency problems; its effectiveness bears directly on the reliability of financial reporting, compliance enforcement, and the construction and maintenance of risk management capacity. By means of process standardization, segregation of duties, and the alignment of responsibilities and authority, effective internal control reduces agency costs and information asymmetry, thereby improving information quality and the efficiency of resource allocation. Identifying the determinants of internal control effectiveness and clarifying their mechanisms is therefore of substantial theoretical and practical significance.

Within the framework of Upper Echelons Theory (UET), CEO attributes permeate organizational routines and institutional operations. CEO risk conservatism shapes the trade-off between risk exposure and compliance, altering the execution of control activities and the likelihood that deficiencies are exposed. CEO organizational identification, through norm internalization and the shaping of behavioral boundaries, may constrain opportunism; at the same time, under strong performance pressure and financially oriented incentives, it may increase tolerance for unethical pro-organizational behavior (UPB). Examining internal control effectiveness through the lenses of CEO risk conservatism and organizational identification helps disentangle how individual and organizational forces operate on internal control effectiveness.

Departing from the conventional classification of material/significant/general deficiencies or composite

internal control indices, this study adopts the model-generated probability of internal control deficiency (IC_PROB) as a continuous measure. IC_PROB captures latent deficiency risk on a continuous scale; relative to categorical deficiency labels or composite indices, a probabilistic measure is better suited to detecting subtle yet systematic differences in internal control weaknesses. Empirically, I analyze the relationships among CEO risk conservatism, CEO organizational identification, and IC_PROB. The results indicate, first, a significant negative association between CEO risk conservatism and IC_PROB, consistent with a more conservative risk orientation being linked to lower risk exposure, stronger compliance investment, and tighter process execution. Second, CEO organizational identification is positively associated with IC_PROB, suggesting that performance pressure and incentive structures can elevate tolerance for “process bending” in the name of organizational interests, increasing overreach and procedural slack and thereby raising the probability of internal control deficiencies. Third, CEO individual attributes—such as educational attainment and a finance/accounting background—also play an important role in internal control effectiveness.

This study contributes in two ways. First, leveraging a unique survey matched to listed firms, it examines how CEO risk conservatism and organizational identification relate to the probability of internal control deficiency, enriching the literature on the mechanisms of internal control effectiveness in the Chinese context. Second, by introducing IC_PROB, as opposed to traditional categorical deficiencies or composite indices, the study provides a measure that more effectively captures latent internal control risk and enhances both

estimation efficiency and the economic interpretability of results.

2. Theoretical Analysis and Research Hypotheses

Internal control effectiveness is jointly influenced by governance structure, business complexity, and the information environment. Prior research shows that audit committee governance, managerial characteristics, and organizational complexity are decisive factors; stronger governance and lower complexity are typically associated with fewer material weaknesses and shorter remediation periods. At the same time, CEO attributes can materially affect corporate decisions and resource allocation. Educational attainment and disciplinary background are significantly associated with innovation output, and demographic characteristics also shape firms' financial and risk policies. In sum, while CEO traits have been linked to important outcomes such as innovation, internationalization, and capital policy, their direct impact on internal control effectiveness and the underlying mechanisms remain underexplored, which provides the entry point for the hypothesis development.

From the perspectives of agency and risk management, CEO risk orientation can affect internal control through two channels. The first is risk exposure. More aggressive managers are more likely to undertake mergers and acquisitions, increase leverage, and tolerate higher earnings volatility, which raises the burden of process integration and institutional complexity and, in turn, increases the probability that control failures are exposed. Malmendier and Tate (2008) show that overconfident CEOs are significantly more likely to initiate acquisitions [1], and Cain and McKeon (2016) show that firms led by CEOs with higher risk preference exhibit higher equity volatility. The second channel is performance pressure [2]. Under budget and time constraints, an aggressive orientation may treat compliance as a compressible cost, weakening process constraints and expanding reporting discretion. Schrand and Zechman (2012) find that overconfident executives are more prone to distort earnings [3]. By contrast, risk-conservative managers favor prudent operations, stronger process execution, and compliance redundancy, thereby reducing the likelihood that deficiencies are exposed. Accordingly, I posit:

Hypothesis 1: Holding other factors constant, CEO risk conservatism is significantly negatively associated with the probability of internal control deficiency (IC_PROB).

CEO organizational identification induces managers to internalize corporate objectives as personal objectives. Zhou et al. (2021) further find that CEO organizational identification is negatively associated with tax avoidance [4], with heterogeneity across settings of information transparency and enforcement intensity. These findings suggest that stronger organizational identification is aligned with a greater compliance orientation and may correspond to lower deficiency risk. However, organizational identification is not a one-sided "governance dividend." Umphress et al. (2010) argue that strong organizational identification can, under certain conditions, foster Unethical Pro-Organizational Behavior (UPB) [5]. Based on a survey of 253 finance managers, Mahlendorf et al. (2018) document a positive relation between organizational identification and the willingness to engage in UPB, which becomes stronger when

bonus pay is more tightly linked to financial metrics [6]. This evidence indicates that, under performance pressure and given specific incentive structures, higher organizational identification may translate into boundary-crossing "for the good of the organization," thereby increasing the risk of internal control deficiencies. Motivated by this double-edged effect, I propose competing hypotheses:

Hypothesis 2a: Holding other factors constant, CEO organizational identification is significantly negatively associated with the probability of internal control deficiency (IC_PROB).

Hypothesis 2b: Holding other factors constant, CEO organizational identification is significantly positively associated with the probability of internal control deficiency (IC_PROB).

3. Research Design

3.1. Sample and Data Selection

Data on CEO risk orientation (measuring risk conservatism; CEO_RC) and organizational identification (CEO_OI) come from the CSRC research team on internal control of listed companies. On September 5, 2014, the team distributed questionnaires to A-share listed firms via the Shanghai Stock Exchange and the Shenzhen Stock Exchange. By October 31, 2014, 2,536 questionnaires had been sent and 2,154 were returned, yielding an overall response rate of 84.95%. For details on the survey organization and administration, see Zhao et al. (2015) [7]. Following Zhou et al. (2021) [4], CEO risk orientation and organizational identification are assumed to be relatively stable over a short horizon; accordingly, I extend the sample window by two years on either side of the survey year. Hence, for regressions involving risk conservatism and organizational identification, the sample period is 2012–2016.

The probability of internal control deficiency (IC_PROB) is sourced from Lin (2025) [8], who develops the internal control deficiency prediction model used in this study. IC_PROB is available from 2010 to 2022. Additional firm-level data are obtained from the CSMAR and Choice databases.

Consistent with prior research, I apply the following screening rules: (i) exclude firms in the financial industry; and (ii) drop observations with missing data. To mitigate the influence of outliers, all continuous variables are winsorized at the 1st and 99th percentiles.

3.2. Variable Definitions

The dependent variable is the firm-year probability of internal control deficiency (IC_PROB), generated by the internal control deficiency prediction model developed in Lin (2025) [8]. The model leverages China's issuance review regime by using IPO rejection as a proxy label and is trained on a feature set primarily composed of financial ratios; model selection identifies the best-performing configuration. After incorporating proxy information from IPO rejection, the best model from a full-parameter search improves PR-AUC (Average Precision, AP) and ROC-AUC by 23.0% and 5.4% relative to the baseline, respectively; at a fixed threshold, F1, precision, and recall all improve. These results are directionally consistent across alternative thresholds and across multiple model families, indicating robust discriminatory power and out-of-sample generalization. I

therefore use the model's predicted IC_PROB as an operational measure of internal control effectiveness for listed firms.

The first key explanatory variable is CEO risk conservatism (CEO_RC). In the survey instrument, following the risk-preference elicitation in Graham et al. (2013) [9], respondents completed a three-round branching choice task, choosing in each round between a certain pay option and a two-point risky pay option. In round one, the choice was between "maintain current salary" and a lottery with a 50% chance of receiving twice the current salary and a 50% chance of receiving two-thirds of the current salary. If the respondent chose the certain option, the second round raised the lower bound of the risky option to four-fifths; if the respondent chose the risky option, the third round lowered the risky option's lower bound to one-half. Based on each respondent's terminal position on the decision tree, I construct a four-level risk preference index R (a higher value indicates greater risk preference). To align with the theoretical framing, I define risk conservatism as 5 – R, so that larger values indicate greater conservatism.

The second key explanatory variable is CEO organizational identification (CEO_OI). The survey instrument draws on the organizational identification scale of Mael et al. (1992) [10] and includes six statements, such as "When someone criticizes this company, I feel as if they were criticizing me," "I care about how others view this company," and "I often use 'we' rather than 'they' to describe this company." Responses are recorded on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree). I sum the six items to obtain a raw index

(range 6–30) and then scale it proportionally (dividing by 100) to form CEO_OI; higher values indicate stronger organizational identification.

I also consider several CEO attributes that may affect internal control effectiveness and IC_PROB, including CEO age (CEO_AGE), gender (CEO_GENDER), educational attainment (CEO_DEGREE), finance/accounting background (CEO_FUNBACK), and CEO duality (CEO_DUAL), among others.

3.3. Model Specification

To examine the effect of CEO risk conservatism on the probability of internal control deficiency, I specify regression model (1) and estimate it by OLS regression:

$$IC_PROB_{i,t+1} = \alpha_0 + \alpha_1 CEO_RC_{i,t} + \sum \alpha_k CONTROL\ VARIABLES_{i,t} + \varepsilon \quad (1)$$

Here, IC_PROB is the probability of internal control deficiency, and CEO_RC is CEO risk conservatism. Controls denotes the set of control variables, including CEO attributes and the following firm-level covariates: log total assets (SIZE), leverage (LEV), revenue growth rate (GROW), largest shareholder ownership (TOP1), state ownership indicator (SOE), modified audit opinion (MAO), Big Four auditor indicator (BIG4), and log years since listing (LIST_AGE), together with year and industry fixed effects. Variable definitions are reported in Table 1.

Table 1. Variable Definitions

Variable	Name	Definition
IC_PROB	probability of internal control deficiency	As defined earlier.
CEO_RC	CEO risk conservatism	As defined earlier.
CEO_OI	CEO organizational identification	As defined earlier.
CEO_AGE	log of CEO age	Natural logarithm of the CEO's age.
CEO_GENDER	CEO gender	Indicator variable: male = 0; female = 1.
CEO_DEGREE	CEO educational attainment	Coded as: 1 = bachelor's or below; 2 = master's; 3 = doctorate.
CEO_FUNBACK	CEO finance/accounting background	Indicator variable: 1 if the CEO's career experience includes accounting or finance; 0 otherwise.
CEO_DUAL	CEO duality	Indicator variable: 1 if the CEO also serves as board chair; 0 otherwise.
SIZE	log total assets	Natural logarithm of total assets.
LEV	leverage	Total liabilities divided by total assets.
GROW	revenue growth rate	(Current-year revenue – Prior-year revenue) ÷ Prior-year revenue.
TOP1	largest shareholder ownership	Shares held by the largest shareholder ÷ Total shares outstanding.
SOE	state ownership indicator	Indicator variable: 1 for state-controlled firms; 0 otherwise.
INDEPEN	independent director ratio	Number of independent directors / Board size.
MAO	modified audit opinion	Indicator variable: 1 if the annual financial statements receive a modified audit opinion; 0 otherwise.
BIG4	Big Four auditor	Indicator variable: 1 if the annual financial statements are audited by a Big Four firm; 0 otherwise.
LIST_AGE	log years since listing	Natural logarithm of years since listing.
YEAR	year fixed effects	Year dummies.
INDUSTRY	industry fixed effects	Industry dummies.

To examine the effect of CEO organizational identification on the probability of internal control deficiency, I specify regression model (2), again estimated by OLS regression:

$$IC_PROB_{i,t+1} = \alpha_0 + \alpha_1 CEO_OI_{i,t} + \sum \alpha_k CONTROL\ VARIABLES_{i,t} + \varepsilon \quad (2)$$

where CEO_OI is CEO organizational identification. Controls are defined as in model (1), and CEO_RC is included concurrently.

4. Empirical Results and Analysis

4.1. Descriptive Statistics

Table 2 reports descriptive statistics for the main variables. The probability of internal control deficiency (IC_PROB) has a mean of 0.405 and a median of 0.352. The mean exceeding the median indicates a right-skewed distribution with a long

right tail, consistent with the notion that, in certain years and contexts, internal control failure risk is concentrated among a subset of listed firms. CEO risk conservatism (CEO_RC) has a mean of 2.733, and CEO organizational identification (CEO_OI) has a mean of 0.257. Regarding CEO attributes, the proportion of female CEOs (CEO_GENDER) is 6.9%, the mean of educational attainment (CEO_DEGREE) is 1.217, the share with a finance/accounting background (CEO_FUNBACK) is 19.9%, and CEO duality (CEO_DUAL) is 30.2%.

Control variables are in line with prior research. The mean of log total assets (SIZE) is 22.118, leverage (LEV) averages 0.414, and revenue growth (GROW) averages 0.175. On the board and audit dimensions, Big Four audits (BIG4) account for 5.8% of the sample, and modified audit opinions (MAO) account for 3.3%.

Table 2. Descriptive Statistics

Variable	N	Mean	Std. Dev.	Min	Median	Max
IC_PROB	36934	0.405	0.230	0.011	0.352	0.969
CEO_RC	5920	2.733	1.248	1.000	3.000	4.000
CEO_OI	5920	0.257	0.038	0.060	0.260	0.300
CEO_DEGREE	36934	1.217	0.867	0.000	1.000	3.000
CEO_FUNBACK	36934	0.199	0.399	0.000	0.000	1.000
CEO_AGE	36934	3.901	0.142	3.178	3.912	4.407
CEO_GENDER	36934	0.069	0.253	0.000	0.000	1.000
CEO_DUAL	36934	0.302	0.459	0.000	0.000	1.000
SIZE	36934	22.118	1.293	18.956	21.928	26.452
LEV	36934	0.414	0.210	0.024	0.402	1.037
GROW	36934	0.175	0.421	-0.658	0.111	4.070
TOP1	36934	0.342	0.149	0.081	0.320	0.780
SOE	36934	0.331	0.470	0.000	0.000	1.000
INDEPEN	36934	0.374	0.057	0.000	0.333	1.000
MAO	36934	0.033	0.178	0.000	0.000	1.000
BIG4	36934	0.058	0.233	0.000	0.000	1.000
LIST_AGE	36934	1.969	0.983	0.000	2.197	3.497

4.2. CEO Risk Conservatism and the Probability of Internal Control Deficiency

Table 3 reports the empirical results on CEO risk conservatism and the probability of internal control deficiency (IC_PROB). Column (1) uses the full sample and includes firm-level and governance controls to examine the role of CEO attributes in IC_PROB. Column (2) restricts the sample to firms that can be matched to the survey and introduces CEO risk conservatism (CEO_RC) to test its effect on IC_PROB. Column (3) further includes both CEO_RC and CEO attributes simultaneously to assess their joint effects on IC_PROB.

The coefficient on CEO_RC is -0.004 in both columns (2) and (3), significant at the 5% level. This indicates that, after controlling for firm-level and governance variables, greater CEO risk conservatism is associated with a significantly lower probability of internal control deficiency. Put differently, more conservative risk orientation aligns with stronger compliance investment and tighter process execution, thereby improving internal control effectiveness. The result

remains in both sign and significance after adding CEO attributes, supporting Hypothesis 1.

Regarding CEO attributes, the coefficient on educational attainment (CEO_DEGREE) is -0.001 and insignificant in column (1), but becomes -0.006 and significant at the 5% level in column (3). After controlling for risk orientation, higher educational attainment is associated with a lower likelihood of internal control deficiencies, suggesting that education may reinforce governance awareness and professional capability and, in turn, attention to compliance and internal control. The finance/accounting background indicator (CEO_FUNBACK) is -0.005 and significant at the 10% level in column (1); in column (3) the magnitude increases to -0.022 and is significant at the 1% level. This pattern suggests that CEOs with finance or accounting backgrounds more effectively promote internal control quality, as their expertise helps identify and mitigate potential weaknesses. CEO age (CEO_AGE) is significantly negative in column (1) but turns positive and insignificant in column (3), providing no evidence that age per se is a determinant of internal control effectiveness. CEO gender (CEO_GENDER)

is insignificant in both columns, indicating that female CEOs do not show systematic strengthening or weakening of internal control effectiveness. CEO duality (CEO_DUAL) is also insignificant in both columns, implying that combining the CEO and chair positions does not significantly alter the probability of internal control deficiencies. Although power concentration could, in theory, weaken board oversight and increase failure risk, this effect is not evident in the Chinese setting. Overall, Table 3 indicates heterogeneous effects among CEO attributes: educational attainment and a finance/accounting background exhibit robust mitigating effects, whereas there is no evidence that age, gender, or duality affects internal control effectiveness.

For control variables, firm size (SIZE) is significantly negative, consistent with larger firms having greater capacity to maintain effective internal controls through institutionalization and resource allocation. Leverage (LEV)

is significantly positive, indicating that highly levered firms have a higher probability of deficiencies, consistent with financial pressure undermining compliance. Revenue growth (GROW) is significantly negative, suggesting that higher-growth firms attract more market attention and resource support, which lowers deficiency risk. The largest shareholder ownership (TOP1) is negative, supporting the view that ownership concentration can improve governance and strengthen internal control. The state ownership indicator (SOE) is positive, indicating a greater propensity for deficiencies among state-owned enterprises. The coefficient on modified audit opinion (MAO) is positive, in line with external audits identifying risk. The Big Four indicator (BIG4) is generally negative; while its significance is limited, the direction suggests that higher audit quality helps reduce the probability of internal control deficiencies. Overall, the control-variable results are consistent with prior literature.

Table 3. CEO Risk Conservatism and the Probability of Internal Control Deficiency

	(1) <i>IC_PROB</i>	(2) <i>IC_PROB</i>	(3) <i>IC_PROB</i>
<i>CEO_RC</i>		-0.004** (-2.24)	-0.004** (-2.20)
<i>CEO_DEGREE</i>	-0.001 (-1.27)		-0.006** (-1.98)
<i>CEO_FUNBACK</i>	-0.005* (-1.86)		-0.022*** (-3.49)
<i>CEO_AGE</i>	-0.033*** (-4.55)		0.005 (0.24)
<i>CEO_GENDER</i>	0.006 (1.48)		0.011 (1.17)
<i>CEO_DUAL</i>	-0.004 (-1.62)		-0.003 (-0.49)
<i>SIZE</i>	-0.016*** (-14.17)	-0.020*** (-6.73)	-0.021*** (-6.79)
<i>LEV</i>	0.444*** (71.89)	0.507*** (32.14)	0.507*** (32.14)
<i>GROW</i>	-0.036*** (-12.79)	-0.034*** (-5.11)	-0.034*** (-5.18)
<i>TOP1</i>	-0.079*** (-10.90)	-0.068*** (-3.77)	-0.069*** (-3.84)
<i>SOE</i>	0.039*** (14.55)	0.053*** (8.08)	0.052*** (7.72)
<i>INDEPEN</i>	-0.036** (-1.99)	0.044 (1.07)	0.047 (1.16)
<i>MAO</i>	0.098*** (16.17)	0.066*** (3.94)	0.066*** (3.99)
<i>BIG4</i>	-0.009* (-1.72)	-0.018 (-1.11)	-0.015 (-0.92)
<i>LIST_AGE</i>	0.037*** (29.27)	0.053*** (12.21)	0.053*** (11.98)
<i>CONS</i>	0.701*** (19.31)	0.686*** (10.39)	0.681*** (7.05)
<i>YEAR</i>	Yes	Yes	Yes
<i>INDUSTRY</i>	Yes	Yes	Yes
N	36934	5920	5920
Adj. R ²	0.325	0.430	0.431

Notes: t-statistics in parentheses; ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively.

4.3. CEO Organizational Identification and the Probability of Internal Control Deficiency

Table 4 examines the relation between CEO organizational identification (CEO_OI) and the probability of internal control deficiency (IC_PROB). The three specifications sequentially include baseline controls, add CEO risk conservatism (CEO_RC), and then add CEO attributes. The coefficients on CEO_OI are 0.114, 0.117, and 0.115 across columns (1)–(3), respectively; all are positive and significant at the 10% level. Thus, after controlling for firm-level governance and fixed effects, stronger organizational identification is associated with a higher probability of

internal control deficiencies. When CEO_RC and CEO attributes are simultaneously included, the sign and statistical significance of the CEO_OI coefficient remain largely unchanged.

These results are consistent with Hypothesis 2b, which emphasizes the “over-identification–rule malleability” mechanism, and provide no support for Hypothesis 2a. In an environment characterized by performance pressure, financially oriented evaluation structures, and relational governance, stronger identification may coincide with greater process elasticity and tolerance for overreach, thereby increasing the likelihood that deficiencies are exposed.

Table 4. CEO Organizational Identification and the Probability of Internal Control Deficiency

	(1) <i>IC_PROB</i>	(2) <i>IC_PROB</i>	(3) <i>IC_PROB</i>
<i>CEO_OI</i>	0.114* (1.81)	0.117* (1.85)	0.115* (1.82)
<i>CEO_RC</i>		-0.004** (-2.27)	-0.004** (-2.23)
<i>CEO_DEGREE</i>			-0.006** (-1.97)
<i>CEO_FUNBACK</i>			-0.022*** (-3.51)
<i>CEO_AGE</i>			0.005 (0.25)
<i>CEO_GENDER</i>			0.010 (1.05)
<i>CEO_DUAL</i>			-0.003 (-0.54)
<i>SIZE</i>	-0.020*** (-6.69)	-0.021*** (-6.77)	-0.021*** (-6.85)
<i>LEV</i>	0.506*** (32.10)	0.507*** (32.20)	0.507*** (32.20)
<i>GROW</i>	-0.034*** (-5.14)	-0.034*** (-5.13)	-0.034*** (-5.19)
<i>TOP1</i>	-0.064*** (-3.56)	-0.067*** (-3.71)	-0.068*** (-3.78)
<i>SOE</i>	0.052*** (8.00)	0.053*** (8.10)	0.052*** (7.72)
<i>INDEPEN</i>	0.044 (1.08)	0.042 (1.03)	0.046 (1.13)
<i>MAO</i>	0.067*** (3.98)	0.066*** (3.95)	0.066*** (4.00)
<i>BIG4</i>	-0.017 (-1.09)	-0.016 (-1.03)	-0.013 (-0.83)
<i>LIST_AGE</i>	0.054*** (12.36)	0.054*** (12.26)	0.053*** (12.03)
<i>CONS</i>	0.642*** (9.41)	0.658*** (9.65)	0.653*** (6.68)
<i>YEAR</i>	Yes	Yes	Yes
<i>INDUSTRY</i>	Yes	Yes	Yes
N	5920	5920	5920
Adj. R ²	0.429	0.430	0.431

Notes: t-statistics in parentheses; ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively.

5. Conclusion

Drawing on issuance review (IPO review) information, I build an internal control deficiency prediction model and use the model-generated probability of internal control deficiency (IC_PROB) as a continuous measure of firm-level latent internal control failure risk. The empirical analysis yields three main results. First, CEO risk conservatism (CEO_RC) is significantly negatively associated with IC_PROB, consistent with a more conservative risk orientation reducing deficiency exposure through stronger compliance enforcement and tighter process execution. Second, CEO organizational identification (CEO_OI) is significantly positively associated with IC_PROB; after jointly controlling for CEO_RC and CEO attributes, the sign and significance remain largely unchanged. This pattern supports a mechanism in which identification, under performance pressure and metric-oriented incentives, increases tolerance for process elasticity and overreach, thereby elevating the likelihood that deficiencies are exposed. Third, CEO attributes matter for internal control effectiveness: educational attainment and a finance/accounting background are negatively associated with IC_PROB, whereas age, gender, and CEO duality are generally insignificant.

The findings offer two policy implications. First, CEO risk preference and organizational identification operate along a “rule enforcement versus performance pressure” trade-off that manifests in process control and institutional compliance. For management teams with high identification and strong performance constraints, performance contracts should place greater weight on nonfinancial and compliance metrics, and oversight should emphasize process rigidity and accountability to deter “process bending in the name of the organization.” Second, when combined with managerial attributes, a continuous deficiency-probability measure can support risk stratification and sampling optimization in audit procedures and provide a priori prioritization for regulatory review.

This study has limitations. CEO risk preference and organizational identification are drawn from a one-time survey and treated as relatively stable in the short run; this design may entail measurement error and timing mismatch. Future research can conduct rolling surveys or use alternative proxies to cross-validate these constructs.

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