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THE RELATIONSHIP BETWEEN CFO QUALIFICATIONS AND INTERNAL CONTROL WEAKNESS

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Abstract

This study explores the relationship between CFO qualifications and a firm's internal control weakness (ICWs). We use three measures for CFO competence: financial/accounting background, seniority, and education. Using a sample of Taiwanese listed firms from 2012 to 2015, the results of this study show a negative relationship between CFO financial/accounting background and seniority with internal control weakness, indicating firms with higher quality CFOs experience a lower number of ICWs. CFO education level, however, is not related with a firm's internal control weakness. The results imply that capable CFOs can effectively implement a good internal system. The result of this study provides practical and policy implications.

JEL classification: M4, M12

Keywords: CFO qualification, Financial Accounting background, CFO competence, Seniority, Internal control weakness

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Introduction

In 2001, Enron declared bankruptcy in just one month, causing tens of thousands of employees to lose their jobs, and countless investors lost their money. After that, other listed companies such as Global Crossing and WorldCom continued the trend. It was found that internal controls were inadequate, and the oversight mechanisms were not fulfilling their supervisory function in the capital market (Locatelli, 2002).

To restore public confidence, the US government quickly passed the 2002 Sarbanes-Oxley Act (hereafter, SOX) which is considered the most significant bill in the past seven decades. The SOX requires companies to establish an internal control system and self-assess the effectiveness of the internal control system every year. The Act intends to protect investors by improving the accuracy and reliability of corporate disclosures pursuant to the securities laws. The legislative responses to these accounting scandals are to emphasize CEO and CFO responsibilities for the reliability of financial reporting. Both must jointly endorse the financial reporting and related disclosure issued by the company, as well as be responsible for the establishing and maintaining of an adequate internal control structure and procedures for financial reporting (Pricewaterhouse-Coopers, 2004).

In Taiwan, numerous accounting scandals such as the Boda case in 2004, the Litai case in 2005, and the Zhaofeng case in 2016 were all caused by the lack of internal control. To respond to these scandals, the Taiwan government has also formulated relevant laws and regulations on the governance of a firm's internal control. CFOs play a leading role in the oversight of internal control compliance (Ge& McVay, 2005). The law regulates CFO eligibility, which highlights the important role of CFOs in the reliability of financial reporting.

Internal control is an internal process designed by the management and approved by the board of directors to ensure that the company has a reliable financial reporting system and achieves efficient and effective operations as it complies with Section 404 of the Sarbanes-Oxley Act. The past literature has studied the determinants of internal control weakness, including the company's financial status (such as company financial losses and debt ratio) and other company characteristics in company size, revenue growth rate and complexity (Ashbaugh-Skaife et al., 2007; Doyle et al., 2007; Ge & McVay, 2005). However, past studies focused on the role of CEOs on financial reporting quality. It is necessary to focus on the role of the CFO and how they establish an efficient system of internal control.

This study uses 4,169 Taiwanese listed companies from 2012 to 2015 as the sample to explore the relationship between CFO qualification and internal control weakness. Empirical results find that the higher the corporate CFO's qualification, expressed in CFO's financial/accounting background and seniority in the firm, the lower the possibility of internal control weakness, indicating that competent CFOs can help improve the internal control system and reduce the possibility of internal control deficiency.

Literature review

Internal control is a process, designed by the management and approved by the board of directors, to reasonably ensure the achievement of three major objectives:

1. Reliable financial reporting 2. Efficient and effective operation. 3. Compliance with relevant laws and regulations (eCOSO, 2004). Ge and McVay (2005) indicate that the establishment of an adequate and appropriate internal control system can prevent major deficiencies hidden by the company and increase investor confidence. Huang (2009) explores the impact of internal control on business performance and financial reporting reliability. Their results show that companies with internal control weakness also have poorer operational performance and financial reporting reliability. A sound internal control system will improve the company's operating performance and reduce the occurrence of false financial reporting. Ge and McVay (2005) and Doyle et al. (2007) study the relationship between company characteristics and internal control weakness. Their results show that smaller scale, poor financial status, high operational complexity, and fast-growing companies have more internal control weaknesses.

Companies have been making tremendous efforts towards the establishment and implementation of internal control systems in the post-SOX period (Hoitash et al., 2009). Under SOX of 2002, CEOs and CFOs are required to establish, maintain, and evaluate internal control effectiveness, and to report on this evaluation in both quarterly and annual financial statements. CFOs play a leading role in the oversight of internal control compliance (COSO, 2004), and research shows that CFOs are being held more accountable for their actions in the post-SOX period (Collins et al., 2009). Hoitash et. al., (2009) find the chance of internal control deficiencies is low when a firm's directors (or audit committee members) have financial expertise/experience. Krishnan (2005) and Zhang et. al., (2007) find that audit committee members' professional knowledge and fi-

nancial expertise have a positive impact on the internal control of a firm. Li et al., (2010) also pointed out that a CFO with a CPA license or accounting related experience, implying the CFO's competence, will reduce the possibility of the company receiving a negative SOX404.

Lai et al., (2017) found that internal control material weaknesses in a firm's control environment, information technology, accounting documentation, accounting policies and procedures, or control design have a significantly negative impact on firm performance. Lu & Cao (2018) find that if internal control quality is better, internal control weaknesses are reduced and weakness remediation is more likely to be applied in firms in which board members and board chairpersons have stronger qualifications.

Caglio et. al., (2018) state that CFO financial expertise is positively associated with financial reporting quality, while a CFO's long-term incentive benefit and a CFO's incentive compensation proximity with the CEO are negatively associated with financial reporting quality. Oradi & Asiaei (2020) find a significant negative association between CEOs with financial expertise and Internal Control Weaknesses.

Based on the proceeding discussions, this study establishes the following hypothesis for testing:

Hypothesis: The level of CFO qualification is negatively related to a firm's internal control weakness.

Data and methodology

Sample

The data source of this research is from the Taiwan Economic Journal (TEJ). The research sample is Taiwan Stock Exchange listed and OTC companies from 2012 to 2015. The initial sample number is 6,133, excluding 267 firms from finance and insurance industries. After deleting 1,697 companies with insufficient financial data, 4,169 samples were present for analysis.

Model

The purpose of this research is to explore the relationship between CFO qualification and internal control weakness. According to the 2013 COSO Framework, a major deficiency exists if an internal control deficiency severely reduces the likelihood of an entity achieving any one of the three major objectives in reliable financial reporting: efficient and effective operation, compliance with relevant laws and reliable financial reporting. In other words, if management used its professional judgment to determine that a control objective isn't being met because a relevant principle or associated component isn't present and functioning, or the five components of internal control aren't operating together, the entity has a major deficiency. Though the 2013 Framework uses and defines the terms deficiency and major deficiency, it is suggested that management should use relevant criteria as established by regulators, standards-setting bodies, and other relevant third parties for defining the severity of evaluating and reporting internal control deficiencies when reporting under those regulations or standards.

Based on discussions in the literature review section, the possibility of the occurrence of internal control weakness is lower when a firm hires a more competent CFO. We develop the below model testing the proposed hypothesis after adding firm related control variables.

$$\begin{aligned} ICW_{it} &= \beta_0 + \beta_1 CFOFAC_{it} + \beta_2 CFOEXP_{it} + \beta_3 CFOEDU_{it} \\ &+ \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \beta_6 INV_{it} + \beta_7 GW_{it} + \beta_8 RESTATE_{it} \\ &+ \beta_9 CFOTURN_{it} + \beta_{10} ROA_{it} + \beta_{11} LOSS_{it} + \beta_{12} BIG4_{it} \\ &+ \beta_{13} AC_{it} + \sum \beta_{14} YEAR_{it} + \sum \beta_{15} IND_{it} + \varepsilon_{it} \end{aligned} \quad (1)$$

Dependent variables: internal control weakness (ICW)

Internal control is a mechanism to assure business procedures meeting an organization's objectives in operational effectiveness and efficiency, reliable financial reporting, and compliance with laws, regulations and policies (COSO, 2013). When a firm fails to achieve any one of the three goals, for example, relevant laws and regulations, it is regarded as an internal control weakness. We obtained the internal control weakness report from the Taiwan Corporate Credit Risk Index (TCRI) in the Taiwan Economic Journal covering public information disseminated through newspapers, magazines, and financial reports. We used the number of negative events as a proxy for internal control weakness. To mitigate the impact of extreme values, this study follows procedures suggested by Cahan and Zhang (2006) by replacing internal control weakness variable less than 1% or greater than 99% with values of 1% and 99%, respectively.

Independent variables

We use the following three variables to measure CFO competence:

1) CFO financial/accounting background (CFOFAC)
   If a CFO has a financial or accounting background, such as holding a CPA license, or working in financial/ accounting related departments, it is considered having professional competence as an CFO (Gray,2000). This study uses dummy variables 1 if the CFOhas a financial or accounting background, otherwise 0.

2) CFO's seniority (CFOEXP)
The longer a CFO serves in the company, the accumulated work experience will help to enhance the familiarity and competence of the company's overall financial aspects. The variable is expressed in the natural logarithm of the CFO's years of service.
3) CFO Education Level (CFOEDU)
Lindquist and Rausch (2015) reported that one of the key elements of CFO success is education. In addition to professional knowledge, CFOs with a college education are considered to have richer experience in teamwork, presentation, and communication skills, which will help the CFO participate in the discussion of important decisions at the meeting to fulfill their responsibilities. This variable is expressed as a dummy variable. The education level of the CFO is 1 if it is higher than the university level, otherwise it is 0.

Control variables

The model also controls the following firm related variables:

1) Company size (SIZE)
The size of a company may affect the occurrence of internal control weakness. Past studies have found that the smaller the size of a company, the higher the possibility of a lack of internal control (Ge & McVay, 2005). Lack of internal control may also occur in larger companies with higher complexity of business operations. This study takes the natural logarithm of the company's total assets at the end of the period as a control variable.
2) Debt ratio (LEV)
The debt ratio can be used as a proxy variable for debt risk and default risk (Dhaliwal, Lee & Fargher, 1991). The higher the company's debt ratio, the higher the risk as well as the possibility of internal control failure. This study uses liabilities/total assets to measure debt ratio.
3) Inventory ratio (INV)
Ashbaugh-Skaif et al., (2007) indicate that when a company's assets have a high inventory level, there is a higher probability of lack of internal control. This study measures inventory ratio by inventory over total assets.
4) Revenue growth rate (GW)
Chang et al., (2009) find that a company's poor financial status may result in a higher possibility of internal control weakness. In other words, the possibility of internal control weakness is low when a company is experiencing high revenue growth. This study measures revenue growth rate by the difference between net operating income of the current year and the prior year divided by the base year.
5) Restate
Companies restating financial statements are more prone to internal control weakness (Lin et al, 2011). We measure financial restatement as 1 and 0 otherwise.
6) CFO Change (CFOTURN)
When CFO turnover is high, companies are more prone to internal control weakness (Gilson & Vetsuypens, 1993). This study expresses CFO change at 1, 0 otherwise.
7) Return on Assets (ROA)
Past literature used ROA to measure corporate operating performance (Core, Guay & Rusticus, 2006). Lin (2011) finds negative association between corporate operating performance and internal control weakness. ROA is measured by net profit before interest and tax over average total assets.
8) Net loss (LOSS)
A company with a net loss is more likely to incur internal control weakness (Ge & McVay, 2005). This study uses dummy variables of 1 for loss companies, and 0 otherwise.
9) Big Four Accounting Firms (BIG4)
Companies audited by the Big Four accounting firms are more likely to reveal a lack of internal control.
There is a positive relationship between the two (Ashbaugh-Skaif et al., 2007). However, there are also empirical studies that point out that companies audited by the Big Four accounting firms found their control environment relatively better, and the possibility of lack of internal control low. This study adopts virtual variables. The company checks for the four major firms in year t as 1, otherwise it is 0.
10) Audit Committee (AC)
The higher the quality of the audit committee, the better the effectiveness of the company's internal control (Krishnan, 2005). In other words, if the company has an audit committee, the probability of missing internal control is lower, expressed as a dummy variable in this study. If the company has set up an audit committee in year t it is expressed as 1, otherwise it is 0.
11) Year Dummy Variables (YEAR)
Since the research period of this article is four years, to control the influence of the effects of each year, this study incorporates dummy variables to control influence.
12) Industry Dummy Variables (IND)
To control the effects of various industries, this study incorporates dummy variables.

Empirical results

Descriptive statistics

Table 1 lists the descriptive statistics of variables in the research model, including the mean, median, standard deviation, maximum and minimum. The average number of internal control failures (ICW) is 0.295, which means that about 30% of Taiwan listed companies report internal control weakness, with a standard deviation of 0.828. The main test variables, include CFO accounting background (CFOFAC), CFO seniority (CFOEXP) and the CFO Education Level (CFOEDU), the means are 0.698, 0.786 and 0.985, respectively, indicating that approximately 70% of CFOs in listed companies have a background in finance and accounting and nearly 100% of CFOs have a university degree.

Correlation analysis

Table 2 is the correlation analysis of all variables in the testing model. The results indicate that the lack of internal control (ICW) was significantly negatively correlated with the main explanatory variables CFOFAC and CFOEXP but was significantly positively correlated with CFO education level (CFOEDU). In terms of control variables, the lack of internal control (ICW) has a significant positive correlation with company size (SIZE), debt ratio (LEV), CFO change (CFOTURN), net loss (LOSS) and audit committee (AC) as well as inventory. The ratio (INV), revenue growth rate (GW), return on assets (ROA) and large accounting firms (BIG4) show a significant negative correlation; while the financial report restatement (RESTATE) and the lack of internal control (ICW) are not significantly correlated.

Regression results

The purpose of this study is to explore the impact of CFO qualification, from the perspective of finance/accounting background, length of experiences and educational level, on a firm's internal control weakness. Table 3 reports regression results.

In column 3 of Table 3, CFOFAC and CFOEXP are significant but negatively affect ICW (-0.053, p = 0.037; -0.053, p = 0.047), but CFOEDU is insignificant (0.111, 0.254). The results indicate that CFOs with financial or accounting background and longer tenure can reduce the occurrence of internal control weakness. However, a CFO's education level does not have any impact on a firm's internal control weakness. This is reasonable because more than 99% of our sample CFO have a four-year college degree or higher.

As to control variables, firm size (SIZE), debt ratio (LEV), and CFO turnover (CFOTURN) are significantly and positively related to internal control weakness (SIZE: 0.139, p = .000; LEV: 0.150, p = .042; CFOTURN: 0.087, p = .010; LOSS: 0.087, p = .001). Larger, high leverage, high CFO turnover and loss firms report higher internal control weakness. Return on assets (ROA), and firms audited by big four accounting firms (BIG4) are significantly but negatively related to internal control weakness (ROA = -0.002, p = .088; BIG4 = -0.174, p = .000), consistent with prior studies (Doyle et al., 2007; Ashbaugh-Skaife et al., 2007; Ettredge et al., 2007). Profitable firms and firms audited by big-four CPA firms are less likely to report internal control weakness. Unexpectedly, inventory level (INV) is negatively related to internal control weakness (-0.262, p = 0.011), contrary to our expectations. Growing revenue, financial restatement and audit committee are not significantly related to internal control weakness.

Conclusions, limitations and future studies

In responding to numerous accounting scandals, countries around the world have established laws and regulations on the governance of a firm's internal control. In particular, the law regulates CFO eligibility, which highlights the leading role of CFOs in the establishment and oversight of internal control compliance and the reliability of financial reporting. This study focuses on whether the qualification of CFOs impacts firms' internal control weaknesses.

The empirical results verify our expectations that the higher the corporate CFO's competence, expressed in financial/accounting background and longer tenure with the firm, the lower the possibility of internal control failures. A CFO's competence has a positive influence on the actual implementation of the company's internal control system, improving the internal control system and reducing the possibility of internal control deficiencies. However, a CFO's educational level does not affect a firm's internal control efficiency. This is due to the fact that almost 99% of our sample CFOs have a four-year college degree or higher.

Even though the two measures; financial/accounting background and seniority are imperative to the success of reducing risk in relation to internal control weakness, there are other factors which affect a firm's internal control. Among the control variables, the present study also finds larger, higher leverage, high CFO turnover and loss firms report higher internal control weakness. Profitable firms and firms audited by big four accounting firms usually experience lower level of internal control weakness, providing firms with a safeguard against risk of internal control failure.

second, firms should develop CFO retention strategies since a CFOs' experience accumulates over time. Such seniority with a firm contributes firm specific and industry specific knowledge to the implementation of sound internal control system.

The SOX mandates management evaluation and independent audits of the effectiveness of firms' internal control system (Ashbaugh-Skaife et al., 2009). However, very little is known as to whether CFO qualification will affect the implementation and results of such internal control systems. The results of this study provide management implications for corporate governance.

Potential limitations of this study include sample selection, considering the CFOs need a long time to implement major decisions as to corrections of internal control deficiencies. Second, our sample is from 2012-2015, not updated to the present. One should be cautious on the interpretation of the study results. A future study can include more updated data if available.

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Appendix

Table 1: Descriptive statistics of the research sample

Variables	Mean	Median	Standard Deviation	Coefficient of Variation	Minimum Value	Maximum Value
ICW	0.295	0.000	0.828	281.000	0.000	5.000
CFOFAC	0.698	1.000	0.459	66.000	0.000	1.000
CFOEXP	0.786	0.916	0.469	60.000	-1.097	1.640
CFOEDU	0.985	1.000	0.122	12.000	0.000	1.000
SIZE	15.320	15.078	1.473	10.000	9.795	21.625
LEV	0.407	0.405	0.178	44.000	0.006	0.977
INV	0.159	0.127	0.146	92.000	0.000	0.965
GW	2.163	0.510	28.789	1.331	-100.000	282.960
RESTATE	0.056	0.000	0.229	409.000	0.000	1.000
CFOTURN	0.293	0.000	0.455	49.000	0.000	1.000
LOSS	0.222	0.000	0.416	187.000	0.000	1.000
ROA	0.037	0.042	0.114	308.000	-4.389	0.892
BIG4	0.878	1.000	0.328	37.000	0.000	1.000
AC	0.129	0.000	0.335	260.000	0.000	1.000

N= 4,169

ICW: the numbers of ICW events. CFOFAC: 1 if CFO with finance/accounting background and 0 otherwise. CFOEXP: natural logarithm of the CFO's years of service in year. CFOEDU: 1 if CFO with college degree, and 0 otherwise. SIZE: Natural logarithm of total asset of at year-end. LEV: liability/total asset. INV: inventory/total asset. GW: revenue growth rate over the previous year. RESTATE: 1 if restate financial statement, and 0 otherwise. CFOTURN: 1 if change CFO, and 0 otherwise. LOSS: 1 if report loss, and 0 otherwise. ROA: EBIT/average asset. BIG4:1 if audited by big four accounting firms, and 0 otherwise. AC: 1 with audit committee, and 0 otherwise.

Source: Own Calculation.

Table 2: Correlation analysis

N=4,169	ICW	CFOFAC	CFOEXP	CFOEDU	SIZE	LEV	INV	GW	RESTATE
ICW	1.								
CFOFAC	-0.055***	1.							
CFOEXP	-0.063***	0.059***	1.						
CFOEDU	0.078***	0.010	-0.063***	1.					
SIZE	0.227***	-0.079***	0.013	0.132***	1.				
LEV	0.109***	-0.047***	-0.061***	0.029**	0.342***	1.			
INV	-0.037***	-0.001	0.088***	-0.072***	0.036**	0.227***	1.		
GW	-0.027*	0.035**	-0.005	0.000	0.022	0.040***	0.054***	1.	
RESTATE	0.007*	-0.014	-0.025*	0.023	0.093***	0.039***	-0.028*	0.033**	1.
CFOTURN	0.053***	-0.001	-0.372***	0.029**	-0.058***	0.017	-0.046***	0.011	0.023
LOSS	0.034**	0.008	-0.091***	-0.009	-0.175***	0.089***	-0.068***	-0.231***	-0.037***
ROA	-0.039***	-0.001	0.082***	0.001	0.150***	-0.152***	0.051***	0.259***	0.030**
BIG4	-0.043***	0.016	0.025*	0.131***	0.110***	-0.047***	-0.109***	0.059***	0.014
AC	0.042***	0.019	-0.047***	0.099***	0.123***	-0.035**	-0.091***	0.013	0.032**

Note：***. is 1% significant level (two-tailed); **. is 5% significant level (two-tailed); *. is 10% significant level (two-tailed). The definition of variables is shown in Table1

Source: Own calculation.

Table 3: Results on regression analysis

ICW				
Variables	**Expected Sign**	**Coefficient**	**t-Value**	**P-Value**
INTERCEPT		-1.780	-10.831	0.000***
CFOFAC	-	-0.053	-2.083	0.037**
CFOEXP	-	-0.053	-1.989	0.047**
CFOEDU	-	0.111	1.137	0.256
SIZE	+/-	0.139	15.633	0.000***
LEV	+	0.150	2.036	0.042**
INV	+	-0.262	-2.553	0.011**
GW	-	0.000	-0.902	0.367
RESTATE	+	-0.074	-1.408	0.159
CFOTURN	+	0.087	3.205	0.001***
LOSS	+	0.087	2.583	0.010**
ROA	-	-0.002	-1.705	0.088*
BIG4	+/-	-0.174	-4.854	0.000***
AC	-	0.039	1.120	0.263
Year Dummy	Included			
IndustryDummy	Included			
Adj. R^2	19.4%			
N	4,169			

Year Dummy Included
IndustryDummy Included
Adj. 19.4%
N 4,169

Note： ***. is 1% significant level (two-tailed); **. is 5% significant level (two-tailed); *. is 10% significant level (two-tailed). The definition of variables is shown in Table1

Source: Own calculation.