

Risk of Misstatement and Internal Controlsⁱ

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INTRODUCTION

This case introduces audit risk (also known as misstatement risk), i.e., the risk that the auditor may unknowingly fail to appropriately modify the opinion on financial statements that are materially misstated (PCAOB AS 1101). Specifically, US auditing standards highlight the prominence of material errors, including fraud, in AS 1001.02, *Responsibilities and Functions of the Independent Auditor*, stating:

“The auditor has a responsibility to plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether caused by error or fraud”

The misstatement of financial information is defined in Appendix A of AS 2810 *“Evaluating Audit Results”* as:

“A misstatement, if material individually or in combination with other misstatements, causes the financial statements not to be presented fairly in conformity with the applicable financial reporting framework. A misstatement may relate to a difference between the amount, classification, presentation, or disclosure of a reported financial statement item and the amount, classification, presentation, or disclosure that should be reported in conformity with the applicable financial reporting framework. Misstatements can arise from error (i.e., unintentional misstatement) or fraud.”

Note that fraud has long been of additional interest to auditors and regulators. The current auditing standard AS 2401 (previously AU Section 316) *“Consideration of Fraud in a Financial Statement Audit”* distinguishes fraud from errors based on the intention of the actions undertaken by management. Specifically, “*fraud* is an intentional act that results in a material misstatement in financial statements that are the subject of an audit.” (AS 2401.05). Please note, however, that fraud is not “everywhere.” In many companies with strong controls over operations and financial reporting, fraud is very difficult for an individual to commit.

In this case, we will focus our discussion around misstatement and the relation to internal control weaknesses.

QUANTIFYING MISSTATEMENT RISK

Data analytics can provide us with additional insight into the risk of a material misstatement by thinking data-first. Research of accounting quality provides evidence of a link between observable firm-characteristics and the likelihood of a future material misstatement. There are several different approaches that can be used to gain insight into the probability of material misstatements in a firm's accounting. One example is the F-score, a misstatement risk metric developed by UW-Foster Accounting Professor Weili Ge and her coauthors. The **F-score** is a logistic-regression based tool for identifying the likelihood that a company's accounting estimates are materially misstated based on publicly observable firm characteristics (see Dechow et al. 2011).

THE F-SCORE takes structured data that is sourced from publicly available filings and other sources and estimates the association between historical material misstatements and many predictor variables. Keep in mind that earnings distortions are generally carried out by increasing accrual profits, widening the gap between earnings and cash-flows. The F-score builds on this understanding of the flexibility in the accounting system by incorporating measures of **accrual quality**. The F-Score also builds in prior financial and nonfinancial performance measures to identify the likelihood of a misstatement.

WHAT SPECIFIC MEASURES ARE USED TO ESTIMATE THE F-SCORE? The most comprehensive F-Score model includes firm financial information, nonfinancial and off-balance sheet information, and market-based information. The firm financial variables begin with measures of accruals, or the non-cash portion of earnings, because these are often considered to capture earnings that is more easily manipulated by management. Accruals are estimated by taking the change in a balance sheet account such as receivables and dividing by average assets. The model includes:

(1) **change in receivables** (i.e., change in receivables, all divided by total average assets): an increase in receivables means an increase in revenues. Thus, misstating receivables is one way to manipulate financial statements to show improved revenues, sales growth, and gross profit. The authors predict a positive relation between change in receivables and restatements.

(2) **change in inventory** (i.e., change in inventory, all divided by total average assets): cost of goods available for sale are allocated between ending inventory and cost of goods sold. If more is allocated to ending inventory, that would likely mean an increase in the inventory balance, lower cost of goods sold, and higher improved gross profit. Thus, misstating inventory is another way to manipulate financial

statements to show improved gross profit. The authors predict a positive relation between change in inventory and restatements.

(3) **RSST accruals** (i.e., the net change in all nearly all operating assets and liabilities, all divided by total average assets): more generally, revenues and expenses can be manipulated up or down by increasing or decreasing any of the accrual operating assets and liabilities such as receivables, inventory, prepaid expenses, accrued expenses, etc. RSST accruals increases with increases in operating assets and decreases in operating liabilities. Thus, the authors predict a positive relation between RSST accruals and restatements.

(4) **the percent soft assets** (i.e., the percent of assets that are not cash or PP&E): the value of soft assets is more often determined by estimation, which means there is greater ability for managers to exercise discretion by changing assumptions to influence earnings. Thus, the authors expect that firms with more of these assets are more likely to have restatements.

(5) **change in cash sales** (i.e., change in (sales less change in receivables)): this variable is more complicated. The authors expected the percent of cash sales (i.e., sales less the change in accounts receivable) to be less subject to manipulation, so that an increase in cash sales would reduce the chance of restatements. However, the analysis finds the opposite: an increase in the percent of cash sales predicts restatements. After reading the enforcement actions, an explanation is that firms often manipulate earnings with unusual end-of-period transactions that increase cash sales.

(6) **change in return on assets** (i.e., change in net income / assets): managers of firms with diminishing firm performance have incentives to misstate. Thus, the authors expect a negative relation between change in return on assets and restatements.

(7) **abnormal change in employees** (i.e., percentage change in employees less percentage change in assets): reduced employee headcount relative to a firm's assets could reflect (1) managers reducing headcount and wages expense to hide poor performance, or (2) higher asset values due to manipulation that are then not matched by increases in employees . Thus, the authors expect a negative relation between abnormal change in employees and restatements.

(8) **existence of operating leases**: the use of operating leases can reflect front-loading of earnings (accounting for operating leases allows firms to record lower expenses early in the life of a lease as compared to capitalized leases). Also, operating leases can be used to reduce the perceived debt of the

company, so it could reflect a company's desire and willingness to manage financial reporting. Thus, the authors expect a positive relation between the existence of operating leases and restatements.

(9) **issuance of debt or equity in the period:** firms that are expecting to issue debt or equity in the near future have incentives to inflate firm performance to maintain or increase stock prices. Thus, the authors predict more restatements when firms are issuing debt or equity.

(10) **lagged market-adjusted stock return:** strong stock market performance in prior years can mean the market has high expectations for continued growth, which can create incentives for managers to manipulate financial statements to avoid investor disappointment and, in turn, a decline in stock prices which could affect how people perceive the managers' performance and also reduce the value of the manager's stock-based compensation or personal holdings of the firm's stock. The authors predict a positive relation between lagged market-adjusted stock returns and restatements.

(11) **market-adjusted stock return:** as with lagged returns, managers of firms with high stock market expectations can be subject to incentives to engage in aggressive tactics. The authors predict a positive relation between market-adjusted stock returns and restatements.

(12) **the book-to-market ratio:** an alternative measure of high market expectations is the book value of equity divided by the market value of equity (often called the book-to-market ratio). When this ratio is low, it means the market value of the firm is high relative to the book value, suggesting there might be high expectations for future growth and thus pressure on managers to meet those expectations. The authors predict a negative relation between book-to-market and restatements because of this pressure on management.

CAN WE USE IT TO PREDICT MISSTATEMENT RISK? The F-Score can be used to predict the misstatement risk associated with a single company following a two-step process: (1) historical parameters are estimated using data on features expected to be associated with material misstatements and historical misstatements. This is estimated using a logistic regression as the outcome is binary (either the firm misstates or it doesn't); (2) each estimated parameter is multiplied with the related observable characteristic for the firm you are interested in (say an IPO firm). Both steps can be done quickly and efficiently within excel or any other statistical software.

The F-score produces a simple diagnostic. When the F-score is above 1, the likelihood of a material misstatement is high. Attention could be placed on companies that the F-score suggests have higher

levels of misstatement risk. In addition, the risk of misstatement is increasing with the magnitude of the F-score, which allows us to use the F-score to rank firms based on their misstatement risk.

CAN WE MODIFY THE F-SCORE? There are several ways in which the F-Score could be modified. The two most common are to: (1) consider whether the economic drivers of material misstatements vary either due to the passage of time (perhaps following important regulation aimed at preventing misstatements) or differ for different groups of firms (such as IPOs); (2) include additional economic drivers of misstatement risk by including additional firm characteristics in the first stage (i.e., the logistic regression with historical data).

IS THE F-SCORE THE ONLY WAY TO MEASURE MISSTATEMENT RISK? More recently, researchers have been using machine learning methods such as ensemble learning and gradient boosted regression tree to predict restatements, which allow them to incorporate variables in a more flexible way (Bao et al. 2020; Bertomeu et al. 2021). Rather than the researcher determining the ratios and interactions, the machine learning algorithms systematically examine many different options to select the model that best predicts restatements.

INTERNAL CONTROLS

Internal controls can be considered in terms of controls over financial reporting, operations, compliance and nonfinancial reporting objectives. We will focus on internal controls over financial reporting (ICFR). Firms have been required to maintain “cost-effective” ICFR since the 1970s, but “cost-effective” is ambiguous and many firms decided it was too costly.

WHAT’S THE PROBLEM? Ineffective internal controls result in less reliable financial reporting, decreasing the usefulness of accounting information, especially accrual estimates, to investors.ⁱⁱ In addition, as UW-Foster Professor Sarah McVay and her co-authors highlight, internal control quality impacts the usefulness of internal management reports.



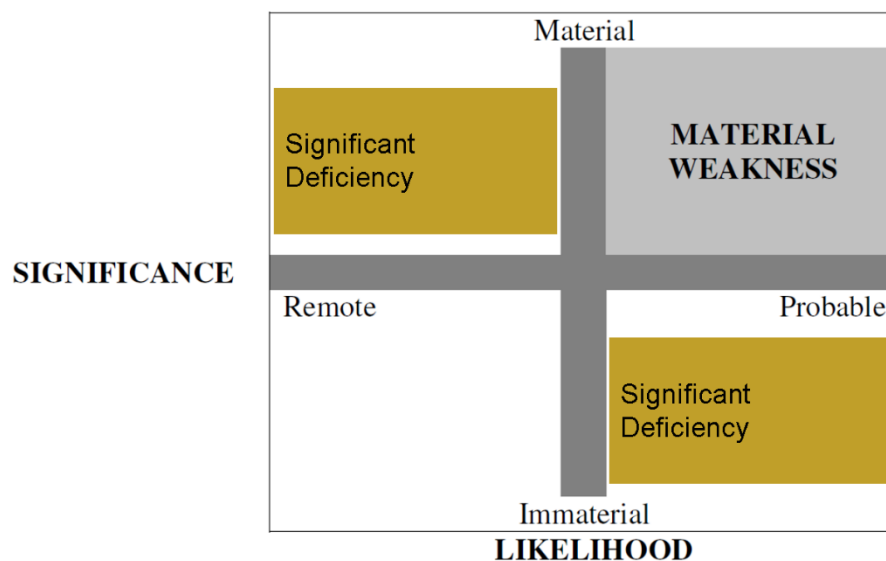
Academic evidence suggests that firms with more complex operations, **recent changes in organization structure**, greater accounting risk exposure, and **less investment in internal control systems** are more likely to disclose internal control weaknesses.

Specifically, the evidence suggests that internal control weaknesses lower the accuracy of earnings forecasts, especially when the internal control weaknesses relate to revenues or cost of sales (see Feng et al. 2009). Forecasts often draw heavily from internal budgets and projections, so these internal control

weaknesses have also been shown to decrease operational efficiency. For example, weak internal controls in inventory management result in slower inventory turnover and more frequent inventory impairments (see Feng et al. 2015).

WHAT DID SOX DO? There are three important sections of SOX that relate to ICFR. Section 302 requires the public disclosure of material weaknesses, and Section 404 requires the documentation and testing of ICFR (404a) and the auditor opinion on ICFR (404b).ⁱⁱⁱ Like other accounting and auditing tasks, the identification of a material weakness in internal controls requires judgement. For internal controls, a weakness could be considered material when it could result in a material misstatement. If a weakness exists but is either immaterial or the likelihood of misstatement is remote, then there is a **significant deficiency** in the internal controls. Significant deficiencies do not need to be publicly disclosed but must be disclosed to the audit committee.

Figure 1
Material Weaknesses v. Significant Deficiencies



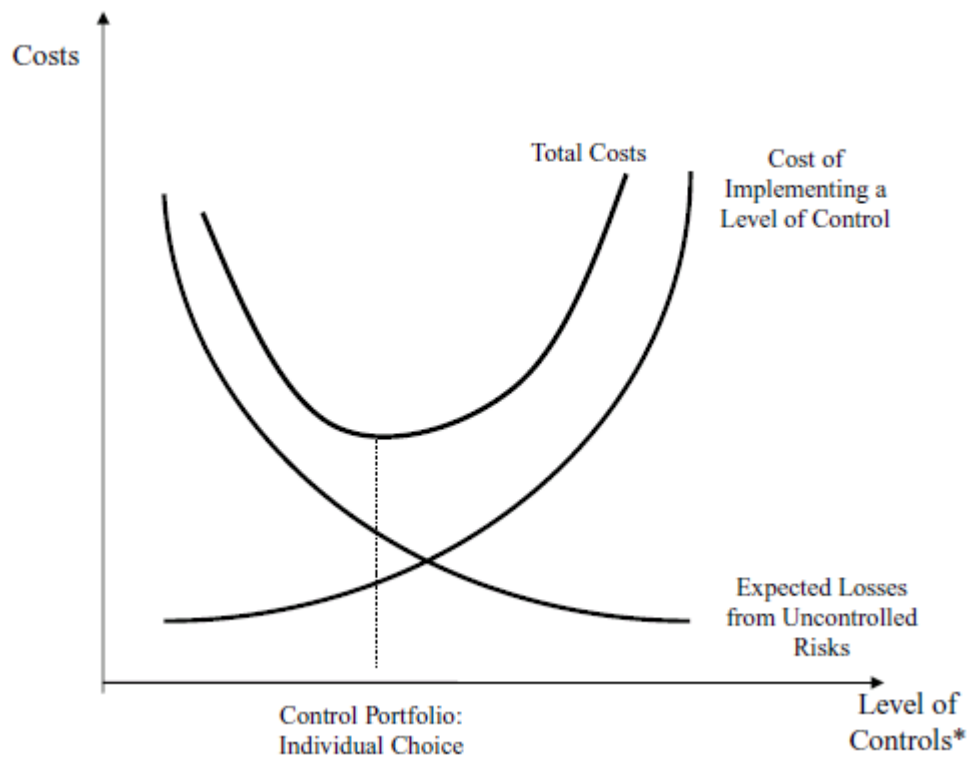
Notes: This figure is adapted from the joint work of UW-Foster Professors Weili Ge and Sarah McVay (see Ge and McVay 2005).

The distinction between material weaknesses and significant deficiencies are summarized in Figure 2.

WHY DON'T MANAGERS INVEST MORE IN CONTROLS AND MAKE THEM MORE EFFECTIVE? Despite the apparent importance of having effective internal controls, managers tend not to invest additional resources in internal controls. A survey of 2,901 managers of various public companies provides some

insight.^{iv} Specifically, managers were asked to assess the costs and benefits of compliance with SOX Section 404. The answers revealed that although most recognize compliance benefits, they do not perceive the benefits to outweigh the costs. This perception by managers is even more acute when the companies are small, as smaller companies have fewer resources. In general, the cost-benefit trade-off will not be linear, Figure 3 summarizes the theoretical cost-benefit trade-off.

Figure 2
Costs-Benefit Trade-off for Internal Controls



Notes: This figure is adapted from Knechel and Willekens (2006).

DO WE HAVE A PROBLEM? Following concerns about the costs of implementing SOX 404 compliance, especially for small firms, Congress passed the Jumpstart Our Business Startups, or JOBS Act, which exempts Emerging Growth Companies (EGCs) from Section 404b of the Sarbanes-Oxley Act. EGCs are defined as firms with under \$1bn in Sales or a market capitalization under \$700mn.



The NYT article "At Large and Small Companies, Internal Controls Matter" discusses the importance of the JOBS Act. Young growing companies are those who are at a high risk of having internal control problems. By not having to disclose problems, does the JOBS Act take the focus off effective controls?

EGCs are also exempt from regulation such as the disclosure of the auditors' discussion of Critical Audit Matters (or CAMs). When the client is exempt, however, the auditor will still undertake control testing as part of the integrated audit, and so it is possible that many control problems could be remediated before being required to be disclosed.

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ENDNOTE

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ⁱⁱ The authors of this study find that when an internal control deficiency is first announced, market value on average declines by -0.76%, regardless of whether it is a material weakness or a significant deficiency.

ⁱⁱⁱ Section 302 became effective in 2002 following SOX and applies to all public companies. Section 404a became effective in 2004 but was delayed for non-accelerated filers (those with a public float, like market capitalization, of less than \$75mn) until 2007. Section 404b also became effective in 2004 for accelerated filers but was permanently exempted as part of the Dodd-Frank Act for non-accelerated filers.

^{iv} Further detail and discussion of the survey can be found in (Alexander et al. 2013).