

Using the Audit Risk Model to Opine on Internal Control

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ABSTRACT: In recent years, auditors have reported on the effectiveness of internal control, usually as part of an integrated audit. The audit risk model currently provided in auditing standards was designed for financial statement audits, not internal control audits, a key part of integrated audits. Since the audit of processes (internal control) is conceptually different from the audit of outputs (financial statements), the auditor needs a modified audit risk model to provide a conceptual framework for internal control audits. This conceptual framework provides the auditor a method to determine the appropriate nature, timing and extent of substantive testing. In this paper I provide an overview of a proposed model to achieve this purpose. My proposed internal control model is focused on the risk of material weakness, rather than the risk of material misstatement. I also show how the auditor could use two different models in an integrated audit.

Key Words: Audit risk model, integrated audit, internal control, risk of material misstatement, risk of material weakness

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INTRODUCTION

The audit risk model has provided a conceptual framework for auditing practice for more than 40 years. Despite practical difficulties in implementation and criticisms of its theoretical foundation,² the model has been fairly effective in helping auditors analyze risks and use that analysis to determine the nature, timing, and extent of audit procedures (especially substantive procedures) in audits of financial statements. The audit risk model provides a conceptual framework for the risk assessment standards (Statements on Auditing standards (SAS) 104-111).

In recent years, auditors have tried to apply the model to audits of internal control, usually performed as parts of integrated audits. An integrated audit is an engagement where the auditor provides an opinion on the financial statements and an opinion on the effectiveness of internal control. It is integrated in the sense that the auditor tries to use some of the same procedures to meet both objectives.

¹ This paper expresses my views, which are not necessarily the views of my employer.

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² Several papers indicate problems with the multiplicative form of the model, including that in certain situations the model may understate the audit risk. See for example, Kinney (1983); Jiambalvo, J. and W. S. Waller (1984); Cushing, B and J.K. Loebbecke (1983).

While the audit risk model was designed for audits of financial statements, it was not specifically designed for audits of internal control. Audits of internal control are audits of processes rather than audits of outputs (financial statements).

Because of this conceptual difference, the audit risk model, as originally formulated, does not work as a coherent conceptual foundation for audits of internal control. As I discuss later, the model needs to be modified for the auditor to use it in audits of internal control. The auditor needs to apply two different models in an integrated audit (the original model for the opinion on the financial statements and a somewhat different model for the opinion on internal controls). The need for a different audit risk model for internal control audits is not currently recognized in the auditing standards.

In recent years, auditors have been asked to opine not only on financial statements, but also on the effectiveness of internal control over financial reporting (internal control), usually as part of an integrated audit. The two key laws requiring opinions on internal control are the Federal Deposit Insurance Corporation Improvement Act of 1991 and the Sarbanes-Oxley Act of 2002. The Government Accountability Office (GAO) prefers that its financial audits include opinions on internal control (See GAO/PCIE, *Financial Audit Manual*, 2008). To help auditors whose clients request opinions on internal control, the American Institute of Certified Public Accountants (AICPA) developed Statement of Standards on Attestation Engagements (SSAE) No. 10. SSAE 10 (the current Attestation Standard (AT) 501) has been used for entities subject to the Federal

Deposit Insurance Corporation Improvement Act of 1991, as well as for opinions on internal control issued by GAO and others. To provide guidance for auditors performing integrated audits under the Sarbanes-Oxley Act of 2002, the Public Company Accounting Oversight Board (PCAOB) developed Auditing Standard Number 5 (AS-5), *An Audit of Internal Controls over Financial Reporting*. The AICPA Auditing Standards Board recently approved issuance of SSAE 15, *An Examination of an Entity's Internal Control Over Financial Reporting That Is Integrated With an Audit of Its Financial Statements*. SSAE 15 revises AT 501 to substantially conform with AS-5. SSAE 15 is effective for periods ending on or after December 15, 2008.

The PCAOB recently issued a proposed revision of its risk assessment standards (PCAOB 2008). Although that revision provides definitions of and direction on the components of audit risk, it does not directly contain the audit risk model. Thus, most of my discussion refers to the AICPA standards.

This paper is organized as follows: In the next section, I explain the current audit risk model and how it is applied to financial statement audits. After that, I explain why the model requires modification for an audit of internal controls. Then I present an overview of a proposed audit risk model for internal control audits. I also discuss how to use the two models in an integrated audit, thoughts for academics, and thoughts for standard setters.

THE AUDIT RISK MODEL FOR FINANCIAL STATEMENT AUDITS

Even though audit risk may be viewed as applying to the financial statements taken as a whole, AU 314 (SAS 109), *Understanding the Entity and its Environment and Assessing the Risks of Material Misstatement*, requires the auditor to evaluate audit risk at the relevant assertion level. Thus, the auditor applies the audit risk model at the relevant assertion level.

Figure 1 presents a graphical depiction of the audit risk model applied at the relevant assertion level for financial statement audits.

Insert Figure 1 here.

Audit risk for financial statement audits is a function of the risk of material misstatement and of detection risk. In symbols,

$$AR = f(RMM, DR), \text{ where} \tag{1}$$

- AR (financial statement audits) = audit risk (either desired or achieved),
“the risk that the auditor may unknowingly fail to appropriately modify his

or her opinion on financial statements that are materially misstated” (AU 312.02);³

- RMM = risk of material misstatement, “the auditor’s combined assessment of inherent risk and control risk” (AU 312.22); said another way, RMM is the auditor’s assessment (prior to the performance of substantive testing) of the risk that the financial statements or an assertion are materially misstated; the auditor may make this assessment after evaluating the design and implementation of internal controls or after performing tests of the operating effectiveness of controls; and
- DR= detection risk, “the risk that the auditor will not detect a misstatement that exists in a relevant assertion that could be material, either individually or when aggregated with other misstatements.” (AU 312.24) Said another way, detection risk is the risk that all the substantive tests of details and substantive analytical procedures concerning an assertion would fail to

³ The model does not consider the risk that the auditor will incorrectly determine that the financial statements are materially misstated when they are not. In those situations, management and those charged with governance will challenge the auditor’s conclusion, and the auditor will do more work to determine the correct conclusion. If the auditor eventually modifies the report, the risk is still that the auditor failed to detect other matters that should have been added to the auditor’s report, not that the modification is incorrect. This is thus an efficiency issue.

detect aggregate material misstatements⁴ that have occurred and were not detected (and corrected)⁵ by the entity's internal controls.

I use the function symbol because it is not clear what the form of the model should be.⁶ In AU 312.26 (SAS 107), *Audit Risk and Materiality in Conducting an Audit*, the form of the model is given as:

$$\text{AR (financial statement audits)} = \text{RMM times DR, where}^7 \quad (2)$$

AR, RMM, and DR are as defined above.

The auditor's goal is to reach a conclusion that, after all the evidence is gathered and evaluated, audit risk is low (or to not issue an unqualified opinion if the auditor concludes that, after all the evidence is gathered and evaluated, audit risk is not low). That is, the auditor's goal is to obtain a high level of assurance as to whether the financial statements are or are not materially misstated. The auditor should not give an unqualified opinion on the financial statements if the auditor believes that audit risk has not been reduced to a sufficiently low level.

RMM is further defined in AU 312 as follows:

$$\text{RMM} = \text{IR times CR, where} \quad (3)$$

⁴ Aggregate material misstatements means that the individual misstatements need not be material, but that the total effect of misstatements for the year could be material.

⁵ "and corrected" is not in the current AU 312, but is included in the International Statements on Auditing (ISAs) and in other standards.

⁶ See note 2.

⁷ AU 312.26 changed some of the notation from that used in earlier standards. I use the notation in AU 312, because it is the current standard.

- IR = inherent risk, the auditor's assessment of "the susceptibility of a relevant assertion to a misstatement that could be material, either individually or when aggregated with other misstatements, assuming there were no related controls"(AU 312.21)
- CR = control risk, the auditor's assessment of "the risk that a misstatement that could occur in a relevant assertion and that could be material, either individually or when aggregated with other misstatements, will not be prevented or detected (and corrected) on a timely basis by the entity's internal control."(AU 312.21)

AU 312 and AU 314 discuss assessing the risk of material misstatement. The second standard of fieldwork indicates that the auditor's objective is to assess the risk of material misstatement in order to design the nature, timing and extent of further audit procedures. AU 312 and AU 314 discuss assessing the risk of material misstatement as a combined assessment of inherent and control risk; however, AU 312.22 permits the auditor to make separate assessments of inherent risk and control risk. The auditor may determine the risk of material misstatement in planning, but after evaluating the design and implementation of controls; if the auditor performs tests of controls, the auditor would re-evaluate the risk of material misstatement based on the results of the tests of controls.

Even though the standards discuss combined evaluations of inherent and control risks, some auditors prefer separate assessments of inherent risk and control risk.

These auditors often use the following form of the audit risk model:

$$AR=f (IR, CR, DR), \text{ where} \tag{4}$$

These terms have the same definition indicated above.

In multiplicative form, this model is

$$AR \text{ (financial statement audits)} = IR \text{ times } CR \text{ times } DR \tag{5}$$

Whether the auditor uses separate or combined assessments of inherent and control risk, the auditor needs to use the components of DR. AU 312 divides DR into its components, as follows:

$$DR= TD \text{ times } AP, \text{ where} \tag{6}$$

- DR= detection risk, as defined above;
- TD= test of detail risk, the risk that the primary substantive test being designed will not detect aggregate material misstatements; auditors may use 1 minus TD as the level of assurance provided by the test⁸; and

⁸ Auditors using statistical sampling usually determine the risk of incorrect acceptance as TD; or they define the confidence level for primary substantive tests as 1 minus TD;

- AP= analytical procedures (and other substantive testing) risk, the risk that analytical procedures and other substantive testing directed towards the same assertion will not detect aggregate material misstatement.

Auditors may make judgments about the various components of audit risk and then use them in a multiplicative form of the model to consider audit risk. Other auditors may make these judgments in verbal form (high, moderate, or low),⁹ then use tables or judgment to determine whether the result is an appropriate low audit risk for the specific audit. If not, they often modify TD with the result being that the auditor performs more substantive testing.

Other auditors specify the desired audit risk (say, 5%) and then use the audit risk model to determine TD.¹⁰ They may assess the risks in verbal or numeric form. For some auditors, 1 minus TD becomes the level of assurance the auditor uses to determine the extent of substantive tests. Thus, the primary purpose of the audit risk model is to help the auditor plan the extent of control and substantive testing to achieve the desired audit risk; an important purpose of the model in a financial statement audit is to help the auditor determine an appropriate assurance level for substantive tests.

⁹ The GAO/PCIE *Financial Audit Manual* suggests that the auditor may evaluate inherent risk, control risk, and risk of material misstatement as low, moderate, or high.

¹⁰ This is illustrated in the Appendix to AU 350 and amplified in the audit guide, *Audit Sampling*.

AN AUDIT RISK MODEL IN AN INTERNAL CONTROL AUDIT

Need for Model

An audit of internal control is different from an audit of financial statements. An audit of internal control involves the evaluation of processes. An audit of financial statements involves an evaluation of outputs. To audit internal control (if the audit were not an integrated audit), the auditor would not be required to perform substantive tests of account balances or classes of transactions.¹¹ Even in an integrated audit, substantive tests are designed primarily to test financial statement assertions, not internal control effectiveness (although substantive tests might ultimately lead the auditor to detect internal control deficiencies). Tests of controls are the primary tests the auditor performs in an internal control audit.¹² Since the audit risk model is designed to help the auditor determine the extent of control and substantive testing including determining the desired level of assurance for substantive tests, the audit risk model in AU 312.26 is not directly applicable to an audit of internal control (whether integrated or not). Just as the profession needs an audit risk model to provide a conceptual framework to help auditors determine the extent of testing in financial statement audits, the profession needs an appropriate model to provide a framework to help auditors determine the extent of testing in audits of internal control. In the next sections, I

¹¹ SSAE 15 and AS-5 apply only to integrated audits; AT 101 now applies to examinations of internal control that are not part of integrated audits.

¹² Some tests could be dual purpose –having a control and substantive aspect. The auditor evaluates each aspect separately.

propose an audit risk model for an audit of internal control performed as part of an integrated audit.

Audit Objective for Internal Control Audits

Before discussing the proposed model, it is important to indicate the auditor's objective in an internal control audit. The objective of an internal control audit is not to detect material misstatements. AS-5 and SSAE 15 indicate, "The auditor's objective in an examination of internal control is to form an opinion on the effectiveness of the entity's internal control. Because an entity's internal control cannot be considered effective if one or more material weaknesses exist, to form a basis for expressing an opinion, the auditor should plan and perform the examination to obtain sufficient appropriate evidence to obtain reasonable assurance about whether material weaknesses exist as of the date specified in management's assertion. A material weakness in internal control may exist even when financial statements are not materially misstated." (SSAE 15, par 9. AS-5 paragraph 3 contains similar wording). Thus, the auditor's real objective in an internal control audit is to obtain reasonable assurance that there are no undetected material weaknesses in design, implementation or operating effectiveness.

Audit Risk in an Internal Control Audit

In an audit of internal control, an initial definition of audit¹³ risk might be “the risk of issuing an improper opinion on the effectiveness of internal control.” As stated above, the auditor’s objective is to obtain a high level of assurance about whether the entity’s internal control system has a material weakness. The auditor should not give an unqualified opinion on internal control if the auditor believes that the risk of an undetected material weakness has not been reduced to a sufficiently low level. Thus, audit risk for an internal control audit is the risk that the entity has a material weakness that the auditor has not detected. The risk of an undetected material weakness is the auditor’s risk if the auditor issues an unqualified opinion on internal control. Even if the auditor reports material weaknesses and issues an adverse opinion, the auditor’s real risk is not the detected material weaknesses but the risk that there remain undetected material weaknesses.

If that is the definition of audit risk, what’s the purpose of a conceptual framework for an audit of internal control? The purpose is to help the auditor determine how much testing is needed to reduce the risk of an undetected material weakness to a sufficiently low level.

There are two ways material weaknesses can occur:

- A material weakness in design or implementation of internal controls, and

¹³ Since the AICPA standard for this work is an attestation standard, some auditors refer to this risk as attestation risk. To simplify the terminology, I use audit risk throughout.

- For adequately designed and implemented controls, a material weakness in operating effectiveness of controls.

The auditor attempts to find material weaknesses in design or implementation by doing an adequate analysis of the design of controls, and by adequately testing whether the controls have been implemented. Typical procedures to do this include inquiry (often based on questionnaires or other practice aids), analyzing flowcharts, reading documentation, observation, walkthroughs, and some document examination. These risk assessment procedures are sometimes tests of controls. The auditor attempts to find material weaknesses in the operating effectiveness of controls by performing an adequate test of the operating effectiveness of controls.¹⁴ An adequate test of controls is one with a low detection risk. An appropriate audit risk model for internal control audits would help the auditor determine an appropriate extent of testing of operating effectiveness.

Developing a Model

Since audit risk is the failure to detect a material weakness, the model for an internal control audit needs to focus on the risk of undetected material weakness, rather than the risk of material misstatement. However, the model cannot use

¹⁴ Some of the tests of implementation may also provide evidence about operating effectiveness.

risk of undetected material weakness as one of its terms. If it did, the model would become a simple statement:

$$\text{AR (internal control audit)} = \text{Risk of undetected material weakness} \quad (7)$$

For a model to provide a useful conceptual framework, the model needs to break the risk into its components. By focusing on the components, the auditor can better analyze the risks.

Equation (7) does not provide a conceptual framework for the auditor to determine the extent of testing because it doesn't analyze the components of audit risk. The model I propose recognizes that an entity can have a risk of material weakness only where (1) internal controls are not adequately designed for the inherent risk; (2) internal controls are not adequately implemented; or (3) where adequately designed and implemented internal controls are not operating effectively. I do not present a multiplicative form of the model, because I believe the probabilities are conditional.

Figure 2 presents a graphical description of a risk model for internal control audits. It is a simplification of the model in figure 3, discussed in the appendix.

Insert figure 2 here.

The model is:

AR (internal control audit) = f (CDIR/given IR; COER/if CDIR effective) where
(8)

- AR (internal control audits) = audit risk (either desired or achieved), the risk of the auditor reaching a conclusion that the entity's internal control system has no material weaknesses when there really are material weaknesses that the auditor has not detected;¹⁵
- IR = inherent risk, the auditor's assessment of "the susceptibility of a relevant assertion to a misstatement that could be material, either individually or when aggregated with other misstatements, assuming there were no related controls"(AU 312.21); see discussion below;
- CDIR = the auditor's assessment of the risk that the internal control system is not designed or implemented adequately to prevent or detect and correct aggregate material misstatements in light of the inherent risk; and

¹⁵ This model does not consider the risk that the auditor may identify what the auditor believes are material weaknesses that are in reality not material weaknesses. Similar to the treatment of the risk of incorrect rejection in financial statement audits, management and those charged with governance will challenge the auditor's conclusion and the auditor will do more work to eventually reach the correct conclusion. If the auditor ultimately issues an adverse opinion identifying material weaknesses, the auditor's risk is still additional undetected material weaknesses (not the risk of issuing an incorrect opinion). Thus, this is primarily an efficiency issue.

- COER = the auditor's assessment of the risk that an adequately designed internal control system is not being followed sufficiently to prevent or detect and correct aggregate material misstatements; see discussion below.

The auditor may assess CDIR and COER in planning and reassess them at the end of the audit to consider the achieved levels of those risks.

Role of Inherent Risk

Inherent risk is the risk of material misstatement if there were no controls. If this risk is low, it means that no matter how bad the controls, there is a low risk of material weakness. This occurs because an integral part of determining whether a deficiency constitutes a material weakness is to assess both the magnitude and likelihood of a material misstatement that could not be prevented or detected and corrected as a result of the deficiency. With low inherent risk, there is a low likelihood of a material misstatement.

However, inherent risk is usually not low, except perhaps for the existence assertion for accounts that are not material. In analyzing inherent risk, auditors often assume the competence of employees or adequate supervision or an adequate control environment. Since these are controls, the auditor needs to include them in the control risk analysis, not as the reasons for low inherent risk.

In the analysis of design and implementation, the auditor needs to determine whether the design and implementation of the controls is adequate given the level

of inherent risk. That is, the auditor determines adequacy in light of what could go wrong if there were no controls. If inherent risk is high, the entity needs stronger controls to prevent or detect and correct misstatements. As inherent risk decreases, the need for controls becomes less. Thus, inherent risk is not a separate term in the model; rather, I define the CDIR term as: CDIR/given IR.

Role of COER

The auditor uses COER to determine the extent of control testing. Thus, its function is similar to the function of detection risk. By analogy to the audit risk model for financial statement audits, I replace COER with DR for control tests. The auditor would use 1 minus DR to determine the assurance level needed for control tests.¹⁶

The model assumes that the auditor tests controls only when they are adequately designed and implemented. If the auditor determines that the controls are not adequately designed or implemented, the auditor already has determined that there is a control deficiency and evaluates whether the deficiency is a material weakness. Therefore, the DR term is conditional. Thus, the model becomes:

AR (internal control audits) =

$$f(\text{CDIR/given IR; DR (test of controls)/if CDIR effective}) \quad (9)$$

¹⁶ The auditor using statistical sampling would use DR for the risk of assessing control risk too low or 1 minus DR as the confidence level for control tests.

Expanding the Model

The above model is a starting point in developing a useful conceptual approach for internal control audits. The auditor may expand the model to separately include the control environment as part of CDIR and DR.

SSAE 15 and AS-5 state: “Because of its importance to effective internal control, the auditor should (must in AS-5) evaluate the control environment at the entity. When evaluating the control environment, the auditor should apply paragraphs .67–. 75 of AU section 314, *Understanding the Entity and Its Environment and Assessing the Risks of Material Misstatement*. As part of evaluating the control environment, the auditor should assess

- Whether management's philosophy and operating style promote effective internal control;
- Whether sound integrity and ethical values, particularly of top management, are developed and understood; and
- Whether those charged with governance understand and exercise oversight responsibility over financial reporting and internal control.” (SSAE 15, par 40. AS-5 paragraph 25).

This requires a separate evaluation of the design and implementation and operating effectiveness of the control environment. In the Appendix, I expand the model to include the control environment.

If the auditor finds material weaknesses in the control environment, the auditor is likely to find other material weaknesses. The auditor might wish to stop and issue an opinion indicating that because there are material weaknesses in the control environment, the auditor concludes that the controls are not effective. However, since there might be other undetected material weaknesses, SSAE 15 and AS-5 do not permit the auditor to issue an adverse opinion if there is a scope limitation. Thus, I do not develop a model that allows the auditor to discontinue testing of internal control after analyzing only the design, implementation and operating effectiveness of the control environment.

USING TWO MODELS IN AN INTEGRATED AUDIT

For an integrated audit, the auditor would use the two models separately. As explained below, the auditor would use the results of the internal control audit risk model as an input to the financial statement audit risk model. First, the auditor would use the internal control risk model as a framework to determine the extent of control tests. Then the auditor would use the financial statement audit risk model as a framework to determine the extent of substantive testing.

The auditor may perform the internal control audit and after all testing reach a conclusion that audit risk for the internal control audit is low. This means that after all internal control testing is completed there is a low risk of an undetected material weakness. If so, there also is a low risk of material misstatement. This is

because the effective controls will prevent or detect and correct material misstatements. If the auditor is planning an integrated audit and expects to be able to provide an opinion that controls are effective (there are no material weaknesses), the auditor would usually plan substantive testing assuming low risk of material misstatement. If the auditor performing an integrated audit believes the risk of material misstatement is other than low, the auditor would expect to find material weaknesses. Thus, although there is a need for two models, the models are related.

There are some financial statement audits where the auditor is required to test the operating effectiveness of internal controls whenever the auditor concludes the design and implementation is effective (the preliminary assessment is that control risk is low).¹⁷ In those situations, the auditor cannot avoid tests of controls. If after sufficient testing the auditor concludes that control risk is low, it usually means the auditor is satisfied that there is a low risk of undetected material weakness. In that situation, the auditor has done enough to issue the opinion that internal control is effective.

IMPLICATIONS OF THE MODEL

¹⁷ For example, in some government audits, such as those subject to the Office of Management and Budget (OMB)'s audit guidance for Chief Financial Officers (CFO) Act Agencies, the auditor is required to test internal controls whenever the auditor assesses control design as adequate.

Although more work needs to be done on my model, there are implications that standard setters and auditors may consider even before the model is perfected.

The auditor using my audit risk model for internal control audits would need to assess (1) control risk based on design and implementation given the inherent risk; (2) control environment design and implementation risk; and (3) if controls are adequately designed and implemented, control environment operating effectiveness risk. An assessment of risk of material misstatement does not directly help the auditor determine the risk of material weakness or the confidence level for control testing. However, the audit risk for the internal control audit does help the auditor assess the risk of material misstatement.

The auditor would use the model to determine the extent of tests of controls. However, there might need to be constraints on CDIR. For example, if the auditor assessed the design and implementation as excellent and assessed CDIR as low (say 10%), a multiplicative model would imply almost no need for control tests. Since it is not appropriate to have such a low level of control tests, there is a need for research on how to constrain the model, including how to limit multiplicative forms of the model.

There also are implications for the audit risk model for financial statement audits. For example, the audit risk model would be clearer if the required assessment of design and implementation were explicit parts of the model. Also, considering

the conditional probabilities for testing internal control would improve the audit risk model for financial statement audits.

THOUGHTS FOR ACADEMIA

Since the profession has issued opinions on internal control as part of integrated audits for only a short time, there is a great need for research on the fundamental concepts underlying those audits. I believe this is the first paper that raises issues about the use of the audit risk model for internal control audits and for integrated audits. Future research could determine a more appropriate model based on how auditors perform these audits. For example,

- Is a model useful in providing a conceptual framework for internal control audits?
- What are the current practices for the auditor's evaluation of inherent risk?
Are those practices adequate to effectively use in an audit risk model?
- Do auditors effectively assess design and implementation of internal controls in light of inherent risk without considering operating effectiveness?
- What are the current practices for the auditor's evaluation of design, implementation, and operating effectiveness of the control environment?
Are those practices adequate to effectively use in an audit risk model?
- Do the models understate audit risk?
- Are the inputs independent?

- How should conditional probabilities be considered in the model?
- Would a Bayesian audit risk model be more useful?¹⁸
- How would a revised model be used in an integrated audit?
- Are changes needed to the audit risk model for financial statement audits to be consistent with current standards or to recognize the conditional probabilities?

In addition to the research issues, there also is a need for teaching materials on internal control audits and on integrated audits. This material could include case studies and should focus on the underlying concepts, not just the rules in AS-5 and SSAE 15.

THOUGHTS FOR STANDARD SETTERS

As noted above, the standards for internal control audits do not contain an audit risk model for audits of internal control. I believe the standards could be significantly enhanced in the following ways:

- Indicate that the original audit risk model is intended for use only in financial statement audits, not internal control audits;
- Write standards that consistently use risk terminology and are clear as to which risk they are discussing (e.g., risk of material misstatement vs. risk of material weakness);

¹⁸ A discussion of a Bayesian audit risk model is in Leslie (1985).

- Indicate that in internal control audits, the auditor needs to make separate assessments of control design and implementation risk given inherent risk, control environment design and implementation risk, control environment operating effectiveness risks if the control environment is adequately designed and implemented, and if controls are adequately designed and implemented, detection risk for tests of controls;
- Sponsor research on an appropriate risk model for audits of internal control;
- Eventually publish an appropriate model for internal control audits; and
- Provide guidance on the use of the two different models in integrated audits.

APPENDIX

EXPANDING THE MODEL FOR CONTROL ENVIRONMENT

As discussed in the section “Expanding the model”, AS-5 and SSAE 15 require a separate assessment of the control environment. Figure 3 presents a graphical description of an expanded model where control environment design and operating effectiveness are separate factors in the model.

Insert figure 3 here.

The model becomes:

AR (internal control audits) = f (CEDIR, CDIR/both given IR; CEOER/if CEDIR effective; DR (test of controls)/ if CDIR effective), where (10)

- IR = inherent risk, the auditor’s assessment of “the susceptibility of a relevant assertion to a misstatement that could be material, either individually or when aggregated with other misstatements, assuming there were no related controls”;
- CEDIR = control environment design and implementation risk, the auditor’s assessment of the risk that the control environment is not designed or implemented adequately to prevent or detect and correct aggregate material misstatements;

- CEOER = control environment operating effectiveness control risk, the auditor's assessment of the risk that an adequately designed control environment is not being followed sufficiently to prevent or detect and correct aggregate material misstatements;
- CDIR = the auditor's assessment of the risk that the internal control system (except the control environment) is not designed adequately to prevent or detect and correct aggregate material misstatements; and
- DR (test of controls) = the auditor's assessment of the risk that an adequately designed internal control system (except the control environment) is not being followed sufficiently to prevent or detect and correct aggregate material misstatements.

Figure 1

The Audit Risk Model for Financial Statement Audits, applied at the relevant assertion level

Objective: Low risk that, after all testing, relevant assertions in financial statements are materially misstated.

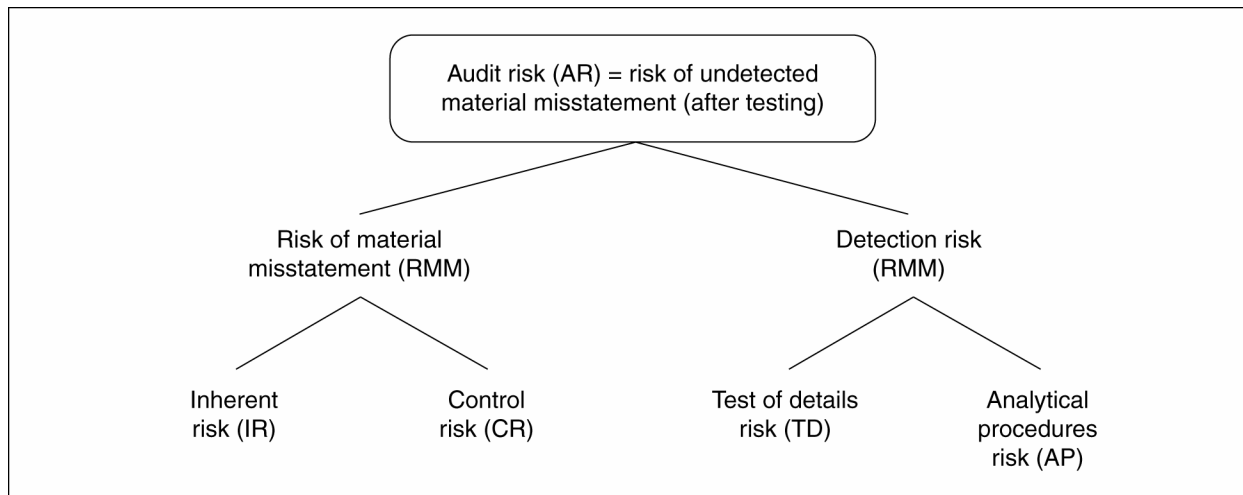


Figure 2

Audit Risk Model, applied at the relevant assertion level, for Internal Control Audits

Objective: Low risk that, after all testing, there is an undetected material weakness.

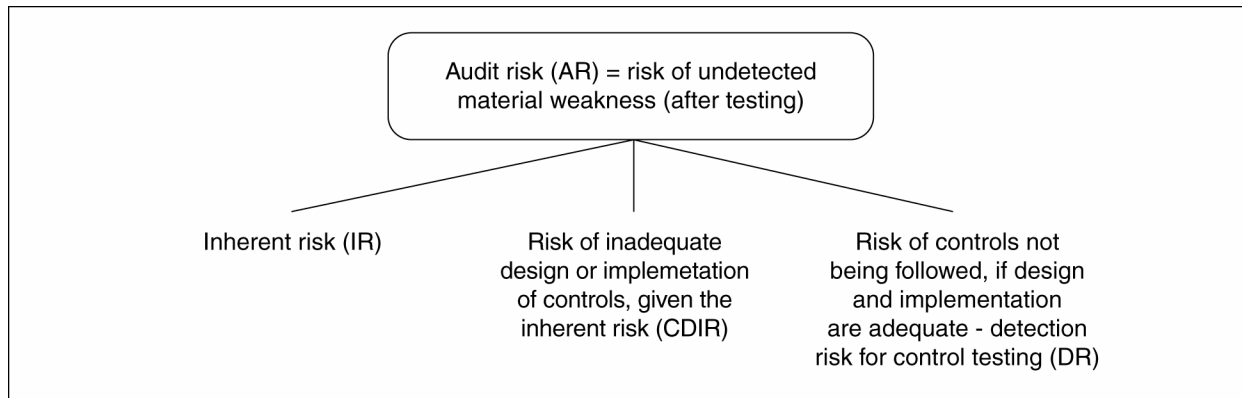
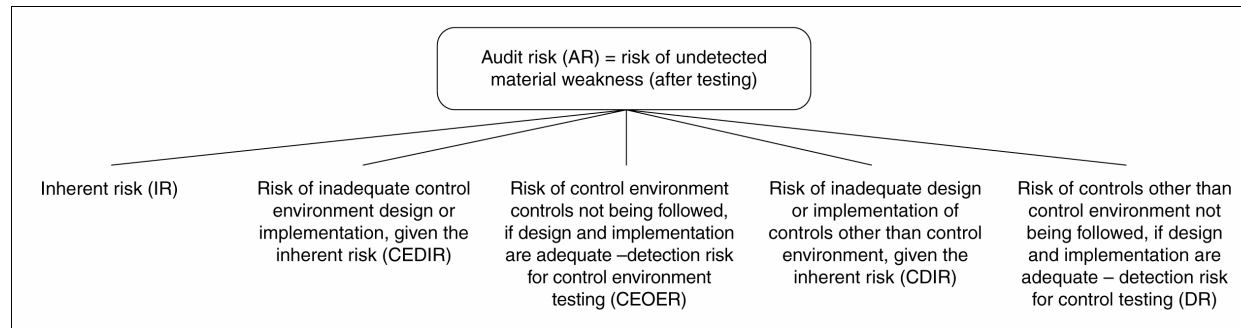


Figure 3

**Audit Risk Model, applied at the relevant assertion level, for Internal Control Audits --
Expanded for effect of control environment**

Objective: Low risk that, after all testing, there is an undetected material weakness.



REFERENCES

- American Institute of Certified Public Accountants. 2006. *Assessing and Responding to Audit Risk in a Financial Statement Audit* (audit guide).
- _____. 2008. *Audit Sampling* (audit guide).
- _____. 2008. *Codification of Statements on Auditing Standards (Including Statements on Standards for Attestation Engagements) Numbers 1 to 114*.
- _____. 2008. *Statement of Standards for Attestation Engagements Number 15, An Examination of an Entity's Internal Control Over Financial Reporting That Is Integrated With an Audit of Its Financial Statements (SSAE 15)*.
- Cushing, B and J.K. Loebbecke. 1983. Analytical Approaches to Audit Risk: A Survey and Analysis, *Auditing: A Journal of Practice & Theory* 3, 23-48.
- Government Accountability Office and President's Council for Integrity and Efficiency (GAO/PCIE). 2008. *Financial Audit Manual*.
- Jiambalvo, J. and W. S. Waller. 1984. Decomposition and Assessments of Audit Risk, *Auditing: A Journal of Practice & Theory* 4, 80-88.
- Kinney, William R. 1983. A Note on Compounding Probabilities in Auditing, *Auditing: A Journal of Practice & Theory* 2, 13-22.
- Leslie, Donald A. 1985. *Materiality—The Concept and its Application to Auditing (A Research Study)*, The Canadian Institute of Chartered Accountants, Appendix A.
- Public Company Accounting Oversight Board (PCAOB). 2007. Auditing Standard Number 5, *An Audit of Internal Control over Financial Reporting*.
- _____. 2008. *Proposed Auditing Standards Related to the Auditor's Assessment of and Response to Risk* (PCAOB Release No.2008-006).