

Chapter 1

The Use of Analytical Procedures

Update 1-1 *Audit: Clarified Auditing Standards*

The auditing guidance in this guide edition has been conformed to Statement on Auditing Standards (SAS) Nos. 122–125, which were issued in 2011 as part of the Auditing Standards Board’s Clarity Project. These clarified SASs are effective for periods ending on or after December 15, 2012. Early application is not permitted. Although extensive, the revisions to generally accepted auditing standards resulting from these clarified SASs do not change many of the requirements found in the auditing standards that they supersede.

To assist auditors and financial reporting professionals in making the transition, this guide includes appendix C, “Mapping and Summarization of Changes—Clarified Auditing Standards,” which provides a cross reference of the sections in the superseded auditing standards to the applicable sections in the clarified auditing standards and identifies the changes, either substantive or primarily clarifying in nature, that may affect an auditor’s practice or methodology relative to the applicable sections of SAS Nos. 122–125. It also summarizes the changes resulting from the requirements of SAS Nos. 122–125.

The preface of this guide and the Financial Reporting Center on www.aicpa.org provide more information on the Clarity Project. Visit www.aicpa.org/sasclarity.

1.01 This chapter discusses the concepts and definitions found in AU-C section 520, *Analytical Procedures* (AICPA, *Professional Standards*). Also discussed are the four phases of the analytical procedure process: expectation formation, identification, investigation, and evaluation.

1.02 Analytical procedures are a natural extension of the auditor’s understanding of the client’s business and add to his or her understanding because the key factors that influence the client’s business may be expected to affect the client’s financial information. Analytical procedures are used in all three stages of the audit. In the planning stage, the purpose of analytical procedures is to assist in planning the nature, timing, and extent of auditing procedures that will be used to obtain audit evidence for specific account balances or classes of transactions.¹ In the substantive testing stage of the audit, the purpose of analytical procedures is to obtain evidence, sometimes in combination with other substantive procedures, to identify misstatements in account balances, and thus to reduce the risk that misstatements will remain undetected. The auditor’s reliance on substantive tests to achieve an audit objective related to a particular assertion may be derived from tests of details, from analytical procedures, or from a combination of both. The decision about which procedure or procedures to use to achieve a particular audit objective is based on the auditor’s judgment about the expected effectiveness and efficiency of the available procedures. In the overall review stage, the objective of

¹ In accordance with paragraph .06 of AU-C section 315, *Understanding the Entity and Its Environment and Assessing the Risks of Material Misstatement* (AICPA, *Professional Standards*), analytical procedures should be performed as risk assessment procedures to provide a basis for the identification and assessment of risks of material misstatement at the financial statement and relevant assertion levels. Refer to AU-C section 315 for further guidance.

analytical procedures is to assist the auditor in assessing the conclusions reached and in evaluating the overall financial statement presentation.

Concepts and Definitions

Analytical Procedures

1.03 Analytical procedures are defined by paragraph .04 of AU-C section 520 as “evaluations of financial information through analysis of plausible relationships among both financial and nonfinancial data. Analytical procedures also encompass such investigation, as is necessary, of identified fluctuations or relationships that are inconsistent with other relevant information or that differ from expected values by a significant amount.” The definition implies several key concepts:

- The “evaluations of financial information” suggests that analytical procedures will be used to understand or test financial statement relationships or balances.
- The “investigation...of identified fluctuations or relationships that are inconsistent with other relevant information or that differ from expected values by a significant amount” implies an understanding of what can reasonably be expected and involves a comparison of the recorded book values with an auditor’s expectations and an understanding of those differences.
- “Relationships among both financial and nonfinancial data” suggests that both types of data can be useful in understanding the relationships of the financial information and, therefore, in forming an expectation.

1.04 AU-C section 520 addresses the auditor’s use of analytical procedures as substantive procedures (substantive analytical procedures). It also addresses the auditor’s responsibility to perform analytical procedures near the end of the audit that assist the auditor when forming an overall conclusion on the financial statements. Analytical procedures also are used as risk assessment procedures (which may be referred to as analytical procedures used to plan the audit), as described in AU-C section 315, *Understanding the Entity and Its Environment and Assessing the Risks of Material Misstatement*, (AICPA, *Professional Standards*). AU-C section 330, *Performing Audit Procedures in Response to Assessed Risks and Evaluating the Audit Evidence Obtained* (AICPA, *Professional Standards*), also addresses the use of analytical procedures as substantive procedures. In all cases, the effectiveness of analytical procedures lies in developing expectations that can reasonably be expected to identify unexpected relationships. Paragraph .08 of AU-C section 520 provides requirements for documentation of the performance of substantive analytical procedures. If an analytical procedure is used as the principal substantive test of a significant financial statement assertion, the auditor should document all of the following:

- a. The expectation referred to in paragraph .05c of AU-C section 520 and the factors considered in its development when that expectation or those factors are not otherwise readily determinable from the audit documentation
- b. Results of the comparison referred to in paragraph .05d of AU-C section 520 of the recorded amounts, or ratios developed from recorded amounts, with the expectations

- c. Any additional auditing procedures performed in accordance with paragraph .07 of AU-C section 520 relating to the investigation of fluctuations or relationships that are inconsistent with other relevant information or that differ from expected values by a significant amount and the results of such additional procedures

1.05 Also, in accordance with paragraphs .06*b* and .A7–.A9 of AU-C section 315, the auditor should apply analytical procedures on the planning stage of the audit. Those procedures may provide useful information in planning the audit to assist in understanding the entity and its environment and to identify areas that may represent specific risks relevant to the audit. For example, analytical procedures may be helpful in identifying the existence of unusual transactions or events, and amounts, ratios, and trends that might indicate matters that have financial statement and audit implications. In performing analytical procedures as risk assessment procedures, the auditor should develop expectations about plausible relationships that are reasonably expected to exist. When comparison of those expectations with recorded amounts or ratios developed from recorded amounts yields unusual or unexpected relationships, the auditor should consider those results in identifying risks of material misstatement. However, when such analytical procedures use data aggregated at a high level (which is often the situation) the results of those analytical procedures provide only a broad initial indication about whether a material misstatement may exist. Accordingly, the auditor should consider the results of such analytical procedures along with other information gathered in identifying the risks of material misstatement.

1.06 Analytical procedures performed when forming an overall conclusion about whether the financial statements are consistent with the auditor's understanding of the entity are designed to assist the auditor in assessing (a) the adequacy of the evidence gathered in response to unusual or unexpected balances identified during the course of the audit and (b) all significant fluctuations and other unusual items have been adequately identified and explained.

1.07 During the substantive testing stage, analytical procedures may be used to obtain assurance that material misstatements are not likely to exist in financial statement account balances. If analytical procedures are used for substantive testing, the auditor should focus his or her analytical procedures on relevant assertions related to each material class of transactions, account balance, and disclosure and should give detailed attention to the underlying factors that affect those areas through the development of an expectation independent of the recorded balance. Therefore, substantive analytical procedures generally are performed with more rigor and precision than those used for planning or overall review.

1.08 Paragraph .05 of AU-C section 520 contains requirements when designing and performing analytical procedures, either alone or in combination with tests of details, as substantive procedures in accordance with AU-C section 330. The auditor should

- a. determine the suitability of particular substantive analytical procedures for given assertions, taking into account the assessed risks of material misstatement and tests of details, if any, for these assertions;
- b. evaluate the reliability of data from which the auditor's expectation of recorded amounts or ratios is developed, taking into account the

- source, comparability, and nature and relevance of information available and controls over preparation;
- c. develop an expectation of recorded amounts or ratios and evaluate whether the expectation is sufficiently precise (taking into account whether substantive analytical procedures are to be performed alone or in combination with tests of details) to identify a misstatement that, individually or when aggregated with other misstatements, may cause the financial statements to be materially misstated; and
 - d. determine the amount of any difference of recorded amounts from expected values that is acceptable without further investigation as required by paragraph .07 of AU-C 520 and compare the recorded amounts, or ratios developed from recorded amounts, with the expectations.

When evaluating the reliability of the data, as required in paragraph .05b of AU-C section 520, the auditor could test the controls, if any, over the entity's preparation of information to be used by the auditor in applying analytical procedures. When such controls are effective, the auditor has greater confidence in the reliability of the information and, therefore, in the results of analytical procedures. When designing substantive analytical procedures, the auditor should evaluate whether the controls that are in place are operating effectively, including the risk of management override of controls. As part of this process, the auditor might need to evaluate whether such an override might have allowed adjustments outside of the normal period-end financial reporting process to have been made to the financial statements. Such adjustments might have resulted in artificial changes to the financial statement relationships being analyzed, causing the auditor to draw erroneous conclusions. For this reason, substantive analytical procedures alone are not well suited to detecting some types of fraud. Alternatively, the auditor may consider whether the information was subjected to audit testing in the current or prior period. In determining the audit procedures to apply to the information upon which the expectation for substantive analytical procedures is based, the auditor should consider the guidance in paragraphs .07–.10 of AU-C section 500, *Audit Evidence (AICPA, Professional Standards)*, as it relates to the relevance and reliability of the information.

1.09 In planning substantive analytical procedures, the auditor should consider the amount of difference from the expectation that can be accepted without further investigation. This consideration is influenced primarily by performance materiality and should be consistent with the desired level of assurance. Determination of this amount involves considering the possibility that a combination of misstatements in the specific account balance, class of transactions, or disclosure could aggregate to an unacceptable amount. In designing substantive analytical procedures, the auditor should increase the desired level of assurance as the risk of material misstatement increases.

Expectations

1.10 Expectations are the auditor's predictions of recorded accounts or ratios. In performing analytical procedures, the auditor should develop the expectation in such a way that a significant difference between it and the recorded amount is indicative of a misstatement, unless he or she can obtain and corroborate explanations for the difference (for example, an unusual event occurred). Expectations are developed by identifying plausible relationships (for example, store square footage and retail sales) that are reasonably expected

to exist based on the auditor's understanding of the client and of the industry in which the client operates. The auditor may select from a variety of data sources to form expectations. For example, the auditor may use prior-period information (adjusted for expected changes), management's budgets or forecasts, industry data, or nonfinancial data. The source of information determines, in part, the precision with which the auditor predicts an account balance and, therefore, is important to consider in developing an expectation to achieve the desired level of assurance from the analytical procedure.

Precision

1.11 Precision is a measure of the closeness of the auditor's expectation to the correct amount. The desired precision of the expectation varies according to the stage of the audit or the purpose of the analytical procedure. For example, precision is more important for analytical procedures used as substantive tests than for those used in planning. The effectiveness of analytical procedures depends on their precision and purpose. Factors that affect the precision of analytical procedures include

- the type of expectation developed.
- the reliability and other characteristics of the data used in forming the expectation (both internally and externally prepared data).
- the nature of the account or the assertion.

1.12 For example, an auditor plans to test interest income. Because the nature of the account is relatively objective (interest income can easily be predicted), analytical procedures could be designed to serve as an effective substantive test. If the auditor needs a high level of assurance from a procedure, he or she should develop a relatively precise expectation by selecting the appropriate type of expectation (for example, a reasonableness test instead of a simple trend analysis), the level of detail of the data (for example, quarterly versus annual data), and the reliability of the source of the data (for example, data that have been subject to auditing procedures versus data that have not been subject to auditing procedures). In the case of substantive tests, the precision of the expectation is the primary determinant of the level of assurance obtained from the analytical procedure. It affects the ability of the auditor to identify correctly whether a given unexpected difference in an account balance is the result of a misstatement. Because precision is directly related to the level of assurance obtained, it is an important consideration in determining whether the planned level of assurance desired from the analytical procedure is achieved. In addition, the higher the desired levels of assurance, the more precise the expectation would need to be.

Level of Assurance

1.13 Level of assurance is the complement of the level of detection risk and is the degree to which substantive auditing procedures (including analytical procedures) provide evidence in testing an assertion. The level of assurance is dependent on the restriction of detection risk because inherent and control risk exist independently of an audit of financial statements. Detection risk relates to the auditor's procedures and can be changed at his or her discretion. The desired or planned level of assurance is that level needed to achieve an acceptable level of detection risk. It is determined by the acceptable level of audit risk, the risk of material misstatement (in other words, the combined

assessment of inherent and control risk), and the planning materiality threshold. The achieved level of assurance is the degree to which the auditing procedure actually reduces audit risk and is a function of the effectiveness of the substantive procedures.

Analytical Procedure Process: Four Phases

1.14 The use of analytical procedures can be considered a process that consists of four phases. The first phase is the expectation-formation process. In this phase, the auditor forms an expectation of an account balance or financial relationship. In doing so, the auditor determines the precision of the expectation and thus, in part, the effectiveness of the analytical procedure.

1.15 The remaining three phases consist of the identification, investigation, and evaluation of the difference between the auditor's expected value and the recorded book value in light of the auditor's materiality assessment. In the second phase, identification, the auditor identifies whether an unusual fluctuation exists between the expected and recorded amounts. In the third, investigation, the auditor investigates the cause of unexpected differences by considering possible causes and searching for information to identify the most probable causes. Finally, in the evaluation phase, the auditor evaluates the likelihood of material misstatement and determines the nature and extent of any additional auditing procedures that may be required.

Expectation Formation (Phase I)

1.16 Forming an expectation is the most important phase of the analytical procedure process. The more precise the expectation (that is, the closer the auditor's expectation is to the correct balance or relationship), the more effective the procedure will be at identifying potential misstatements. Also, paragraph .05c of AU-C section 520 states that the expectation should be precise enough to provide the desired level of assurance that differences that may be potential misstatements, individually or when aggregated with other misstatements, would be identified for the auditor to investigate.

1.17 The effectiveness of an analytical procedure is a function of three factors related to the precision with which the expectation is developed: (a) the nature of the account or assertion, (b) the reliability and other characteristics of the data, and (c) the inherent precision of the expectation method used. Following is a discussion about each of these factors.

Nature of the Account or Assertion

1.18 Analytical procedures are based on relationships between data (see appendix A, "Measures of Precision for a Regression Analysis," of this guide), for example, how this year compares with last and how amounts on a balance sheet relate to income and expense items. The more predictable the relationships are, the more precise the expectation will be. The following are factors an auditor may consider in predicting the amount of an account:

- The subjective or objective nature of the items in an account balance (for example, whether the account comprises estimates or the accumulation of transactions)
- Product mix

- Company profile (for example, the number of stores or the various locations)
- Management's discretion (for example, estimates)
- Stability of the environment
- Income statement or balance sheet account

1.19 Numerous factors affect the amount of an account balance. Increasing the number of such factors considered in forming an expectation of the account balance increases the precision of the expectation. Such factors include

- significant events.
- accounting changes.
- business and industry factors.
- market and economic factors.
- management incentives.
- initial versus repeat engagement.

1.20 Moreover, expectations developed for income statement accounts tend to be more precise than expectations for balance sheet accounts because income statement relationships generally are more predictable. In addition, expectations formed under stable economic conditions (for example, stable interest rates) or stable environmental factors (for example, no regulatory changes) tend to be more precise relative to an unstable economy or environment.

Reliability and Other Characteristics of the Data

1.21 In forming an expectation, an auditor should consider two broad factors related to the characteristics of the data included in the account: the level of detail on which the auditor is able to base his or her expectation and the reliability of the data.

1.22 In general, the more disaggregated the data, the more precise the expectation. For example, the use of monthly instead of annual data tends to improve the precision of the expectation. Preparing an expectation by store or division is also more precise than an expectation based on consolidated data.

1.23 The more reliable the source of the data, the more precise the expectation. The following are factors related to the reliability of data that the auditor may consider in forming the expectation:

- *Strength of the company's internal control.* The stronger the internal control over financial reporting (which includes controls over the accounting system), the more reliable the data generated from the company's accounting system.
- *Outside versus internal data and degree of independence.* Data from more objective or independent sources are more reliable (for example, third-party generated versus management generated).
- *Nonfinancial versus financial data or data that has been subject to auditing procedures versus data that has not been subject to auditing procedures.* The use of reliable nonfinancial data (for example, store square footage or occupancy rates) and the use of data that has been subjected to auditing procedures improve the precision of the expectation.

1.24 The auditor should assess the reliability of data used to develop his or her expectations, taking into account, if necessary, the results of other related procedures. When substantive analytical procedures are used to test for both overstatement and understatement, the auditor needs to ensure that the data used to build the expectation is reliable in both directions.

Inherent Precision of the Expectation Method Used

1.25 Expectations can be developed with methods as simple as using the prior-year sales balance (adjusted for expected changes) as the expectation for current year sales or as complex as multiple regression analysis that incorporates both financial (for example, cost of goods sold) and nonfinancial data (for example, store square footage) to predict retail sales. The auditor typically selects the most appropriate type of expectation method to use for an account by considering the level of assurance desired for the procedure. Determining which type of expectation method is appropriate is a matter of professional judgment; however, the inherent precision of the expectation method used is a consideration in developing the expectation. The four types of expectation methods and their appropriateness are discussed in the following paragraphs.

1.26 *Trend analysis.* This is the analysis of changes in an account balance over time. Simple trends typically compare last year's account balance to the current unaudited balance. More sophisticated trends encompass multiple time periods.

1.27 Trend analysis is most appropriate when the account or relationship is fairly predictable (for example, sales in a stable environment). It is less effective when the entity under audit has experienced significant operating or accounting changes. The number of years used in the trend analysis is a function of the stability of operations. The more stable the operations over time, the more predictable the relations and the more appropriate the use of multiple time periods.

1.28 Trend analysis at an aggregate level (for example, trend analysis of an entity's operating units on a consolidated basis) is relatively imprecise because a material misstatement is often small relative to the natural variation in an aggregate account balance. This suggests the need to perform trend analysis on a disaggregated level (for example, by segment, product, or location, and monthly or quarterly rather than on an annual basis).

1.29 In using trend analysis, it is important for the auditor to understand the volatility of the environment related to the accounts being tested. For example, research has shown that, except in situations in which the environment has remained stable relative to the prior year, using only the prior-year balance as the expectation reduces the effectiveness of analytical procedures to identify potential high-risk areas. In fact, using only the prior-year balance without considering whether it is the most appropriate expectation can lead to a bias toward accepting the current data that have not been subject to auditing procedures as fairly stated, even when they are misstated.

1.30 *Ratio analysis.* This is the comparison of relationships between financial statement accounts (between two periods or over time), the comparison of an account with nonfinancial data (for example, revenue per order or sales per square foot), or the comparison of relationships between firms in an industry (for example, gross profit comparisons). Ratio analysis entails a comparison of interrelations between accounts, nonfinancial information, or both. Another example of ratio analysis (which is sometimes referred to as

common size analysis) is the comparison of the ratio of shipping costs or other selling expenses to sales from the prior year with the current year ratio, or the comparison of shipping costs to sales with the ratio for a comparable firm in the same industry. See appendix B, “Financial Ratios,” of this guide for a listing of helpful ratios.

1.31 Ratio analysis is most appropriate when the relationship between accounts is fairly predictable and stable (for example, the relationship between sales and accounts receivable). Ratio analysis can be more effective than trend analysis because comparisons between the balance sheet and income statement can often reveal unusual fluctuations that an analysis of the individual accounts would not. Comparison of ratios with industry averages (or with comparable firms in the same industry) is most useful when operating factors are comparable.

1.32 Ratio analysis at an aggregate level (that is, consolidated operating units or across product lines) is relatively imprecise because a material misstatement is often small relative to the natural variations in the ratios. This suggests the need to perform ratio analysis on a disaggregated level (for example, by segment, product, or location).

1.33 *Reasonableness testing.* This is the analysis of account balances or changes in account balances within an accounting period that involves the development of an expectation based on financial data, nonfinancial data, or both. For example, an expectation for hotel revenues may be developed using the average occupancy rate, the average room rate for all rooms, or room rate by category or class of room. Also, using the number of employees hired and terminated, the timing of pay changes, and the effect of vacation and sick days, the model could predict the change in payroll expense from the previous year to the current balance within a fairly narrow dollar range.

1.34 In contrast to both trend and ratio analyses (which implicitly assume stable relationships), reasonableness tests use information to develop an explicit prediction of the account balance or relationship of interest. Reasonableness tests rely on the auditor’s knowledge of the relationships, including knowledge of the factors that affect the account balances. The auditor uses that knowledge to develop assumptions for each of the key factors (for example, industry and economic factors) to estimate the account balance. A reasonableness test for sales could be explicitly formed by considering the number of units sold, the unit price by product line, different pricing structures, and an understanding of industry trends during the period. This is in contrast to an implicit trend expectation for sales based on last year’s sales. The latter expectation is appropriate only if there were no other factors affecting sales during the current year, which is not the usual situation.

1.35 *Regression analysis.* This is the use of statistical models to quantify the auditor’s expectation in dollar terms, with measurable risk and precision levels.² For example, an expectation for sales may be developed based on management’s sales forecast, commission expense, and changes in advertising expenditures.

1.36 Regression analysis is similar to reasonableness testing in that there is an explicit prediction using the auditor’s knowledge of the factors that affect

² In many cases, the client has developed analytical procedures, internal models, or both for monitoring and evaluating its business and performance. The auditor may find these internal analytics useful for developing his or her own analytical procedures in the planning phase of an audit and substantive testing purposes.

the account balances to develop a model of the account balance. The model is most effective when the data are disaggregated and are from an accounting system with effective internal controls.

Relationship Between the Methods Used to Develop an Expectation and the Precision of the Expectation

1.37 Of the four types of expectation methods, trend analysis generally provides the least precision because this expectation method does not take into consideration changes in specific factors that affect the account (for example, product mix). The imprecision is magnified in the context of a changing environment in which the assumptions underlying the prior year numbers are no longer valid. For example, the auditor is predicting sales and new products have been introduced, or economic conditions affecting sales have changed significantly. Using prior year's sales (or an average of the time series) as the implicit expectation for current sales does not provide a precise expectation because it omits relevant information about additional products and changes in the economic environment.³

1.38 Regression analysis, in contrast, provides potentially the highest level of precision because an explicit expectation is formed in which the relevant data can be incorporated in a model to predict current year sales. Regression analysis potentially can take into account all of the relevant operating data (sales volume by product), changes in operations (changes in advertising levels, changes in product lines or product mix), and changes in economic conditions. In addition, regression analysis allows the auditor to measure the precision of the expectation.

1.39 The precision of ratio analysis and reasonableness testing typically falls somewhere in between that of trend analysis and regression analysis. However, reasonableness tests generally provide better precision because they involve the formation of explicit expectations similar to regression analysis. That is, reasonableness tests can employ multiple sources of data, both financial and nonfinancial, across time. Ratio analysis is similar to trend analysis in that it employs an implicit expectation. That is, when using a reasonableness test, the auditor may begin with the idea of predicting the balance, whereas for ratio analysis, the expectation formation process is implicit—as the ratio is compared with budget, industry, or other relevant benchmarks.

1.40 Some aspects of the foregoing analysis can be summarized and grouped according to a number of factors, as follows:

- *Explicit or implicit expectation.* When using reasonableness tests or regression, the auditor is explicitly forming an expectation. This approach helps to increase the precision of the expectation. In contrast, in using trend and ratio analysis the auditor may tend to rely more upon comparison and evaluation, for example, to budget, prior year, or industry figures that may or may not be relevant due to changes in the entity's operations or in the economic environment affecting the entity or its specific industry.
- *Number of predictors.* Trend analysis is limited to a single predictor, that is, the prior period's or periods' data for that account. Because

³ This discussion is not intended to suggest that trend analysis is imprecise or that it cannot be improved to be more precise. For example, changing interest rates, inflation, or price changes can be incorporated or factored into trend analysis to increase the analytical procedure's precision.

ratio analysis employs two or more related financial or nonfinancial sources of information, thus using known relationships among the accounts, the result is a more precise expectation. Reasonableness tests and regression analysis further improve the precision of the expectation by allowing potentially as many variables (financial and nonfinancial) as are relevant for forming the expectation.

- *Operating data.* Trend analysis, by relying on a single predictor, does not allow the use of potentially relevant operating data, as do the other three types of procedures.
- *External data.* Reasonableness tests and regression analysis are able to use external data (for example, general economic and industry data) directly in forming the expectation. Although external data can potentially be used in ratio analysis, its use in this manner is quite rare.
- *Statistical power.* Of the four expectation methods described herein, only regression analysis provides the benefits of statistical precision. The statistical model provides not only a best expectation given the data at hand, but also provides quantitative measures of the fit of the model.

Table 1-1 illustrates how the four expectation methods differ in terms of the five criteria in the previous list for determining the most appropriate method.

Table 1-1

The Relationship Between Types of Analytical Procedures and Selected Precision Factors

<i>Type of Analytical Procedure</i>	<i>Explicit or Implicit Expectation</i>	<i>Number of Predictors</i>	<i>Can Include Operating Data</i>	<i>Can Include External Data</i>	<i>Measure of Statistical Precision</i>
Trend Analysis	Implicit	One	No	No	No
Ratio Analysis	Implicit	Two	Yes	Limited	No
Reasonableness Test	Explicit	Two or more	Yes	Yes	No
Regression Analysis	Explicit	Two or more	Yes	Yes	Yes

Identification and Investigation (Phases II and III)

1.41 The next two phases of the analytical procedure process consist of identification and investigation. Identification begins by comparing the auditor's expected value with the recorded amount. Given that the auditor developed an expectation with a particular amount of difference that could be accepted without further explanation, he or she then compares the unexpected differences with the threshold. In substantive testing, an auditor testing for the possible misstatement of the book value of an account determines whether the audit difference was less than the auditor's threshold. If the difference is less

than the acceptable threshold, taking into consideration the desired level of assurance from the procedure, the auditor accepts the book value without further investigation. If the difference is greater, the next step is to investigate the difference.

1.42 In investigation, the auditor should evaluate possible explanations for the difference. The greater the precision of the expectation (that is, the closer the expectation is to the correct amount), the greater the likelihood that the difference between the expected and recorded amounts is due to misstatement rather than nonmisstatement causes. The difference between an auditor's expectation and the recorded book value of an account (value of an account not subject to auditing procedures) can be due to any or all of the following three causes: (a) the difference is due to misstatements, (b) the difference is due to inherent factors that affect the account being audited (for example, the predictability of the account or account subjectivity), and (c) the difference is due to factors related to the reliability of data used to develop the expectation (for example, data that have been subject to auditing procedures versus data that have not been subject to auditing procedures). The greater the precision of the expectation, the more likely the difference between the auditor's expectation and the recorded value will be due to misstatements (cause a). Conversely, the less precise the expectation, the more likely the difference is due to factors related to the precision of the expectation (causes b and c).

1.43 If the auditor believes that the difference is more likely due to factors related to the precision of the expectation, the auditor should consider whether a more precise expectation can be cost-effectively developed. If so, the analytical procedure should be reperformed based on the new expectation, and the new difference should be calculated. On the other hand, the auditor may rule out causes b and c (see paragraph 1.42) as explanations for the unexpected difference and may then evaluate the unexpected difference as a potential misstatement. The auditor should then perform further analysis and inquiry to evaluate the most likely causes and identify a plausible explanation.

1.44 Plausible explanations usually relate to unusual transactions or events or accounting or business changes. In evaluating whether an explanation is plausible, the auditor might consider such factors as

- the understanding of matters noted while performing audit work in other areas, particularly while performing audit work on the data used to develop the expectation.
- management and board reports containing explanations of significant variances between budgeted and actual results.
- review of board minutes.
- information on unusual events occurring in prior years (this may indicate the types of unusual events that could have affected the current year data).

1.45 When analytical procedures serve as substantive tests, the auditor should ordinarily corroborate explanations for significant differences by obtaining sufficient appropriate audit evidence. The procedures used to corroborate the explanation depend on the nature of the explanation, the nature of the account balance, and the results of other substantive procedures. To corroborate an explanation, one or more of the following techniques may be used:

- *Inquiries of persons outside the client's organization.* For example, the auditor may confirm discounts received with major suppliers or agree

to changes in commodity prices with a commodities exchange or the financial press.

- *Inquiries of independent persons inside the client's organization.* For example, an explanation received from the financial controller for an increase in advertising expenditures might be corroborated with the marketing director. It is normally inappropriate to corroborate explanations only by discussion with other accounting department personnel.
- *Evidence obtained from other auditing procedures.* Sometimes the results of other auditing procedures (particularly those performed on the data used to develop an expectation) are sufficient to corroborate an explanation.
- *Examination of supporting evidence.* The auditor may examine supporting documentary evidence of transactions to corroborate explanations. For example, if an increase in cost of sales in one month was attributed to an unusually large sales contract, the auditor might examine supporting documentation, such as the sales contract and delivery dockets.

1.46 When the population is disaggregated, a pattern in the differences may indicate that there is a common explanation for those differences. However, the auditor cannot assume that this is the case. He or she should perform sufficient work to corroborate each significant difference.

Evaluation (Phase IV)

1.47 The final phase of the analytical procedure process consists of evaluating the difference between the auditor's expected value and the recorded amount. It is usually not practicable to identify factors that explain the exact amount of a difference identified for investigation. However, the auditor should attempt to quantify that portion of the difference for which plausible explanations can be obtained and, where appropriate, corroborated and determine that the amount that cannot be explained is sufficiently small to enable him or her to conclude on the absence of material misstatement.

1.48 If a reasonable explanation cannot be obtained, in accordance with paragraph .11 of AICPA section 450, *Evaluation of Misstatements Identified During the Audit* (AICPA, *Professional Standards*), the auditor should determine whether uncorrected misstatements are material, individually or in the aggregate. In making this determination, the auditor should consider (a) the size and nature of the misstatements, both in relation to particular classes of transactions, account balances, or disclosures and the financial statements as a whole, and the particular circumstances of their occurrence and (b) the effect of uncorrected misstatements related to prior periods on the relevant classes of transactions, account balances, or disclosures and the financial statements as a whole.

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