

AUDIT SAMPLING AND OTHER SELECTIVE TESTING PROCEDURES

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The audit evidence can be obtained by applying specific techniques to all the items within an account balance or to a class of transactions (100% examination) or to a representative sample based on which conclusions that could be drawn concerning the whole set of information (sampling audit). The article analyses the manner in which the auditor applies the sampling techniques and other selective testing procedures in order to obtain audit evidence with the help of which he/she could substantiate the opinion expressed in the auditor's report related to the true and fair view reflected in the financial statements.

Key words: audit, samples, audit evidence, selective testing procedures

JEL Classification: M41, M42.

In the process of collecting the audit evidence, the auditor should act in an effective and professional manner. These requirements can be achieved with the provision of reasonable assurance and with low costs afferent to the collection and analysis of the evidence supporting the substantiation of the opinion.

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International Standard on Auditing ISA 530 “Audit Sampling and Other Means of Testing” sets rules and recommends audit sampling procedures and other means of selecting the testing items, for the collection of the audit evidence. This audit evidence is obtained from an appropriate mix of tests of controls and substantive procedures.

- The **audit sampling for the tests of controls** is generally appropriate when the application of the control generates audit evidence of performance (for example, initials of the warehouse keeper on the delivery note accompanying the finished products to the warehouse or the samples concerning the authorization of data input to a computer-based data processing system).
- **The substantive procedures** are associated with values and can be **analytical procedures and tests of details transactions and accounting balances and** their purpose is to detect material misstatements in financial statements. When such procedures are performed, audit sampling and other means of selecting items may be used to verify one or more **assertions** about **a certain amount in the financial statements** (for example: the existence of **inventories**) or to make **an independent estimate of certain amounts** (for example: the evaluation of hard-to-sell **inventories**).

Besides audit sampling, the audit standard (ISA 530 “Audit Sampling and Other Means of Testing”, paragraphs 22 ÷ 27) also mentions the following means of selecting items for audit testing:

- **Selecting all items** (100% examination), more frequent in the case of the substantive procedures, it may be appropriate when the population constitutes a small number of large value items, when both the inherent and control risks are high, and other means do not provide sufficient appropriate audit evidence, or when the repetitive nature of a calculation or other process performed using a computer-based information system makes a 100% examination cost effective, for example, through the use of computer-assisted audit techniques (CAATs).

- **The selection of specific items** is based on professional judgement and is subject to non-sampling risk. Specific selected items may include **high value or key items** (those that raise suspicions, or are unusual, particularly risk-prone or that have errors in their history). The auditor may also decide to examine items the **values of which exceed a certain amount** so that he/she may verify a large proportion of the total amount of an account balance or that of a class of transactions. **Other items of information** can be selected so that the auditor may obtain information about the client's business, nature of the transactions, accounting or internal control system, as well as to check whether a certain procedure was performed.

In what the sampling is concerned, it can be **statistical** (if the sample selection is made at random, and probability theory is used for the evaluation of the results of sampling, including the measurement of the sampling risk) or **non-statistical** (if it does not have the characteristics of the statistical one). **Probability (random) sampling** is a method by which the sample is designed so that each unit of the total population has a known probability of being included into the sample, and the sample is designed through a random process. **The non-statistical (rational) sampling** is a method of designing the sample through which the auditor uses his/her professional judgement rather than the probability methods in order to select the items that should be included in the sample.

***Comment:** In practice, as well as in the specialized literature, there are supporters of both sampling methods. Consequently, although the **selection through statistic means** is deemed to be more expensive (due to the fact that it is necessary to use the quantification of the risk associated to each area and the usage of this information for the statistical establishment of the size of the audit samples), its supporters argue that, as it is based on mathematical principles, it increases the certitude that the size of the used samples was correctly decided and that more objective conclusions will be drawn. However, **the selection based on judgement** is more often used in practice, and the auditor decides the size of the sample and the sampling method based on experience, judgements and general knowledge concerning the client's activity. The fact that the audit process implies many interconnected judgements also leads to the selection of samples in the same manner, which is why the supporters of this method argue that the selection through the statistical method may result in samples with inadequate size. Other arguments can be: the fact that the selection based on judgement is simpler, therefore allowing for more flexibility and being less expensive.*

*The auditor is therefore free to choose the sampling method that is going to be used **for obtaining** appropriate and sufficient **audit evidence**, in the respective circumstances. The principles on which the selection is based should be recorded.*

The minimal audit norms recommend that, if the auditor decides the size of the samples using his/her own judgements, he/she should also take into account the extent to which he/she will use analytical examination and control. The auditor should also present the reasons of choosing the size of the samples very clearly.

What should the auditor take into account in sampling?

- **The decided audit objective for example testing the inventory evaluation;**
- The adequate and complete **population** from which the sample is selected, **for example the inventory account balance;**

According to the standards, the audit efficiency can be improved if the auditor **stratifies** a population by dividing it into discrete sub-populations which have an identifying characteristic. The objective of stratification is to reduce the variability of items within each stratum and therefore allow sample size to be reduced without a proportional increase in sampling risk. Sub-populations should be carefully defined in such manner that any sampling unit can only belong to one stratum. The results of the audit procedures applied to a sample of items within a stratum can

only be projected to the items that make up that stratum. In order to draw a conclusion on the entire population, the auditor will need to consider the risk and significance threshold in relation to any other strata making up the entire population.

Sample size

Irrespective of the chosen method, the auditor takes into account the level of sampling risk and the maximum error. The lower the level of accepted risk, the larger the size of the necessary sample in order to provide for the required credibility. Similarly, the lower the maximum admitted error, the larger the number of more detailed tests will be necessary. The annexes of the above-mentioned standard exemplify the factors that influence the size of the testing samples in controls and in the case of the substantive procedures.

Selecting the sample. The sampling units can be physical items (such as invoices) or monetary units. As mentioned before, the items of the sample can be selected at random (in statistical sampling) or based on professional judgement (in non-statistical sampling). Due to the fact that the purpose of sampling is to draw conclusions about the entire population, the auditor tries to select a representative sample by choosing the sampling units with characteristics typical of the respective population, and the sample should be selected in such a way as to avoid bias.

The main **methods used for the selection of samples** are reflected in the table below.

Table no. 1. Sample selection methods

<p>a) The use of a computerized random number generator or of random number tables</p>
<p>b) The systematic selection, in which the number of sampling units in the population is divided by the sample size to give a sampling interval, for example, 40, and having determined a starting point within the first 40, each 40th sampling unit thereafter is selected. Although the starting point may be determined haphazardly, the sample is more likely to be truly random if it is determined by use of a computerized random number generator or random number tables. When using systematic selection, the auditor would need to determine that sampling units within the population are not structured in such a way that the sampling interval corresponds with a particular pattern in the population.</p>
<p>c) Haphazard selection, in which the auditor selects the sample without following a structured technique. Although no structured technique is used, the auditor would nonetheless avoid any conscious bias or predictability (for example, avoiding difficult to locate items, or always choosing/avoiding the first or last entries on a page) and thus attempt to ensure that all items in the population have a chance of selection. Haphazard selection is not appropriate when using statistical sampling.</p>
<p>d) Block selection involves selecting a block (or several blocks) of contiguous items from within the population. It is believed that block selection cannot ordinarily be used in audit sampling because most populations are structured such that items in a sequence can be expected to have similar characteristics to each other, but different characteristics from items elsewhere in the population. When the auditor intends to draw correct inferences about the entire population based on the sample, this selection technique is not viewed as adequate.</p>

- **Performing the audit procedure** – the auditor should apply the adequate audit procedures for each objective of the test on each selected item. If a selected item is not appropriate for the application of the audit procedure, the audit procedure is normally performed on a replacement item. If the auditor is not able to apply the designed audit procedures to a selected item, viable alternative procedures will be applied, and if these alternative procedures cannot be applied either, the respective item will be considered to be an error.
- **Nature and causes of errors** – the sample results, the nature and cause of any identified error, as well as their possible effect on the objective of the test or on other areas of the audit should be taken into account by the auditor.

The auditor can observe that many errors have a common feature, for example, type of transaction, product line or period of time, (in this situation the auditor may decide to identify all items in the population that possess the common feature, and extend audit procedures in that stratum). Such errors may be intentional, and may indicate the possibility of fraud.

In some cases, the auditor may be able to establish whether an error arises from an isolated event that has recurred only on specifically identifiable occasions and is therefore not representative of similar errors in the population (**anomalous error**). In order to have the certainty that it is not representative for the respective population, the auditor performs additional controls (for example, an error caused by the incorrect calculation formula for the **exit value of raw material stocks** in a certain affiliate; (to establish that this is an anomalous error, the auditor should check whether the correct formula has been used at other affiliates).

- **Projecting errors** - for the substantive procedures, the auditor should project monetary errors found in the sample on the population and should evaluate the effect of the projected error on a particular objective, i.e. the testing, and on other areas of the audit.

The auditor projects the total error for the population to obtain a global view of the scale of errors and to compare it with the tolerable error. In the case of the substantive procedures, the tolerable error is represented by a tolerable misstatement and will be an amount less than, or equal to the preliminary estimate of the significance threshold, used for individually audited account balances.

In the case of anomalous errors that have not been corrected, the effect should be taken into account in addition to the projection of non-anomalous errors.

If the stratification of the population was used, the projected errors, in addition to those that have not been corrected for each stratum are combined, when the possible effect of the errors on total account or on the class of transactions as a whole is taken into account.

- **Evaluating the sampling results** - the auditor should evaluate the sampling results to assess whether the assessment of the relevant characteristic of the population is confirmed or needs to be revised.

In the case of **the tests of controls**, an unexpectedly high sample error rate may lead to an increase in the assessed level of control risk, unless evidence is obtained in support of the initial evaluation.

In the case of **the substantive procedures**, an unexpectedly high error in a sample may determine the auditor to believe that an account balance or a class of transactions contains material misstatements, in the absence of further audit evidence that no such material misstatement exist.

We must take into account that the sampling results are affected by the sampling risk⁴¹⁰. Taking into account the results of other audit procedures helps the auditor appreciate this risk, although the risk can be reduced, if further audit evidence is obtained.

If the evaluation of sample results indicates that the preliminary assessment of the relevant characteristic of the population needs to be revised, the auditor may: Request management to investigate identified errors and the potential for further errors, and to make any necessary adjustments; and/or modify the planned audit procedures; and / or analyse the effect on the auditor's report.

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410 Sampling Risk (ISA 530, paragraph 7) appears as a result of the fact that there is a chance that the auditor may draw a conclusion, based on a sample, which differs from the conclusion the auditor would have drawn if an identical audit procedure had been applied to the whole population.

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