SAMPLING IN AUDIT AND PROFFESIONAL REASONING

ESANTIONAREA ÎN AUDIT ŞI RAŢIONAMENTUL PROFESIONAL

CLAUDIA BURTESCU[1], GHE. GRIGORE[2]

[1]University of Pitesti, Romania; claudia.burtescu@yahoo.com
[2] "Constantin Brâncoveanu" University Pitesti, Romania

Abstract: *The auditor's objective, when using sampling in audit, is to supply a reasonable base for the auditor, to submit conclusions regarding the population from which the sample is selected. The auditor uses the professional reasoning regarding the use of stratification and selection techniques according to value, sample size and sample selection methods.*

Key words**:** *stratification and selection methods, tolerable error, sampling risk, professional reasoning*

INTRODUCTION

ISA 530 "Sampling in audit" establishes standards and offers recommendations on using the sampling in audit and other selection methods for testing elements in order to plan the audit procedures for collecting audit samples.

For audit procedures, sampling is the procedure applied by the auditor after performing the risk assessment o, the tests on controls, the auditor's professional reasoning, which include the experience accumulated.

In designing an audit sample, the auditor should consider the purpose of the audit procedure and the characteristics of the population from which the sample is to be taken. The auditor should establish a sufficient size of the sample to reduce the sampling risk to an acceptably low level. The auditor should select the elements of the sample so that each sampling unit within the population could be selected.

When taking into consideration the characteristics of the population from which the sample was taken, the auditor can establish if the stratification or selection according to value is appropriate.

STAGES IN SAMPLING IN AUDIT

Stratification or selection according to value

When considering the characteristics of the population from which the sample is to be taken, the auditor can establish that the stratification or selection according to value is appropriate. As for using the stratification and selection techniques according to value, the auditor uses the professional reasoning.

The audit efficiency can be improved if the auditor arranges a population in layers by dividing it into distinct sub-populations having a characteristic of identification. The objective of stratification is to reduce the variability of the elements within each category and therefore allows the size of the sample to be reduced without increasing the sampling risk.

When they perform detail tests, the population is often stratified according to the monetary value, allowing that a larger audit effort be directed to elements with a higher value, because these elements can contain the highest potential of deviation with regards to over-evaluation. Similarly, a population can be stratified in compliance with a particular characteristic indicating a higher deviation risk, for example, in the case of testing the provision in the assessment of receivables accounts, the balances can be stratified according to their age.

The results of audit procedures applied to a sample of elements within a category can only be projected to the elements composing that category. To conclude regarding the entire population, the auditor will have to consider the significant deviation risk versus any other categories composing the entire population. For example, 20% of the elements of a population can compose 90% from the value of the balance of an account. The auditor can decide to examine a sample from these elements. The auditor assesses the results of this sample and concludes according to the 90% of the value, separately from the rest of 10% (for which they will use another sample or other methods of collecting audit samples).

If a transaction class or a balance of an account was divided into categories, the deviation is projected separately for each category. The deviations projected for each category are combined then, when they take into consideration the possible effect of the deviations over the total class of transactions or over the balance of the account.

Selection according to value

When performing detail tests, the identification of the sampling unit can be efficient, as being represented by the individual monetary units composing the population. After selecting the particular monetary units within the population – for example, the balance of the receivables accounts, the auditor can examine the particular elements - for example, the individual balances containing those monetary units. A benefit of this approach is that the auditor's effort is directed towards the elements with higher value, as they present a higher probability to be selected. This approach can be used in parallel with the systematic method of sample selection and it the most efficient when the elements are selected by using random selection.

Sample size

The size of the sample can be established by applying a statistical-based formula or by using professional reasoning. The auditor should identify the influences that different factors usually have on establishing the sample size.

The following are factors that the auditor can consider when establishing the sample size in case of tests of controls. These factors, that should be considered together, suppose that the auditor should not modify the nature or location in time of the tests of controls or otherwise modify the approach of the merits procedures as response to the risks assessed.

Table no. 1. Examples of factors influencing the sample size in case of tests of controls**.**

Factor	Effect on sample size
When the auditor assesses the risk, the relevant controls are very much considered	The more the auditor intends to obtain more insurance by means of the functional efficiency of controls, the bigger the sample size will have to be.
The tolerable rate of deviation	The lower the tolerable rate of deviation is, the bigger the sample size has to be.

The estimated deviation rate of the population to be tested	The higher the deviation rate is, the bigger the sample size has to be, so that the auditor should make a reasonable estimation of the real rate of deviation. The relevant factors include understanding the activity by the auditor, changes of personnel or of the internal control, the results of the audit procedures previously applied and the results of other audit procedures. The high estimated rates of control deviation usually guarantee very little, if any, reductions of the assessed risk of significant deviation.
Level of insurance wanted by the auditor that the tolerable rate of deviation is not exceeded by the real rate of deviation within the population	The higher the level of insurance wanted by the auditor is, that the results of the sample are actually indicators of the real incidence of deviation within the population, the bigger the sample size has to be.
The number of sampling units within the population	In case of big populations, the real size of the populations has a low effect, if any, on the sample size. However, in case of small populations, audit sampling cannot be as effective as an alternative method of obtaining sufficient appropriate audit samples.

The following are factors that the auditor can take into consideration when establishing the sample size in case of detail tests. These factors, that should be considered together, suppose that the auditor should not modify the approach of the tests of controls or the nature or location in time of the merits procedures as response to the risks assessed.

Table no. 2 Examples of factors influencing the sample size in case of detail tests.

Factor	**Effect on sample size**
Assessment by the auditor of the risk of significant deviation	The higher the assessment by the auditor of the risk of significant deviation is, the bigger the sample size has to be. This assessment is affected by the inherent risk and by the control risk. Thus, if the auditor does not perform tests of controls, this assessment cannot be reduced for the efficient operation of internal controls concerning a

	statement. Thus, to reduce the audit risk to an acceptably low level, the auditor needs a low detection risk and will grant higher credibility to merits procedures. The more the audit samples from detail tests are obtained (i.e. the lower the detection risk is), the bigger the sample size has to be.
Use of other merits procedures directed on the same statement	The more credibility the auditor grants to other merits procedures (detail tests or merits analytical procedures), in order to acceptably reduce the detection risk corresponding to a specific population, the more reduced insurance, by sampling, the auditor will require, and therefore, the smaller the sample size will have to be.
Level of insurance wanted by the auditor that the tolerable rate of deviation is not exceeded by the real rate of within the population	The more the level of insurance which the auditor requires, that the results of the samples are actually indicators of the real value of deviation within the population, the bigger the sample size has to be.
Tolerable deviation	The lower the tolerable deviation is, the bigger the sample size has to be.
Value of deviation that the auditor estimates to identify within the population	The higher the value of deviation that the auditor estimates to identify within the population, the bigger the sample size has to be, in order to make a reasonable estimation of the real value of deviation within the population. The relevant factors for this estimation include the amplitude whom the values of the element are subjectively established, the results of the procedures of risk assessment, the results of tests of controls, the results of audit procedures previously applied and the results of other merits procedures.
Stratification of the population when it is appropriate	When there is a great variety of the monetary size of the elements within the population, the stratification of the population can be useful. When a population can be stratified adequately, the sum of the sizes of samples coming from categories will generally be smaller than the size of sample that would have been necessary to obtain a given level of sampling risk, if a sample had been extracted from the entire population.
Number of sampling	In case of big populations, the real size of the population

units within the population	has a low effect, if any, on the sample size. Thus, in case of small populations, audit sampling is not usually as effective as an alternative method of obtaining sufficient appropriate audit samples. Nevertheless, when using the sampling of monetary units, an increase of the monetary value of the population implies an increase of the sample size, except when this is compensated by a proportional increase of the threshold of significance of financial situations as a whole and, if applicable, of the level or levels of significance for the particular classes of transactions, balances of accounts or presentations.)

METHODS OF SAMPLE SELECTION

ISA 530 „Audit sampling" requires that the elements of the sample be selected so that we expect that the sample represent the population. Thus, all the elements should be available equally in order to be selected.

Table no. 3. Methods of simple selection

The method of simple selection	Characteristics
Random selection	It is applied by means of some generators of random numbers, for example, tables of random numbers.
Systematic selection	The number of sampling units within the population is divided at the size of the sample in order to obtain a sampling interval, for example 50, and after establishing a starting point, contained in the first 50, they select subsequently every 50^{th} sampling unit. Although the starting point can be established at random, the sample has a higher probability to really be random if it is established by using a computer generator of random numbers or some tables of random numbers. When systematic selection is used, the auditor should establish that the sampling units within the population are not structured so that the sampling unit correspond to a particular type within the population.

Sampling of monetary unit	It is a type of selection according to value in which the sample size, the selection and the assessment have as a result a conclusion expressed in monetary values.
Random selection	The auditor selects the sample without complying with a structured technique. Although no structured technique is used, the auditor would avoid, still, any conscious influences or any predictability (for example, avoiding the elements which are difficult to be located, or choosing or avoiding every time the first and the last entries on a page) and would try to make sure that all the elements within a population have the possibility to be selected. Random selection is not appropriate when the statistic sampling is used.
Block selection	It implies the selection of some blocks of close elements within the population. Normally, the block selection cannot be used in the sampling audit because most of the populations are structured in such a way that it is likely that the elements of a string have similar characteristics one to another, but different characteristics compared to the elements from another part of the population. Although in some cases examining the blocks of elements can be an adequate audit procedure, this will rarely be an appropriate sample selection technique.

CONCLUSIONS

The sampling risk can lead to two types of error-generating conclusions:

In case of a test of controls, the conclusion according to which the controls are more effective than they really are, or in case of detail tests, the conclusion that there is no significant deviation when it actually is. The auditor is concerned first of all by this type of error-generating conclusion, as it affects the efficiency of the audit and there is a higher probability to lead to an inappropriate audit opinion.

In case of a test of controls, the conclusion according to which the controls are less effective than they really are, or in case of a detail test, the conclusion that there is a significant deviation when it actually is not. This

type of error-generating conclusion affects the audit efficiency as it usually leads to additional work to establish if the initial conclusions are inaccurate.

If the auditor concludes that the audit sampling did not provide a reasonable base for the conclusions corresponding to the population that was tested, the auditor can:

- Request the management staff to investigate the already identified and the potential future deviations and to make the necessary adjustments; or
- Personalize the nature, the location in time and the amplitude of those additional audit procedures to achieve the foreseen insurance most efficiently. Thus, for tests of controls, the auditor can expand the sample size, test an alternative control or modify the respective merits procedures.

The auditor's professional reasoning is essential in establishing the appropriate values of the elements used to calculate the sample size. The sample can be established according to: the expected level of trust; the tolerable rate of deviation; the estimated rate of deviation of the population.

Establishing the sample size is the most difficult stage within the sampling process, because of the difficulty of application of the professional reasoning by the auditor.

REFERENCES

1. DOBROTEANU CAMELIA LILIANA, DOBROTEANU L. (2005), External audit-professional reasoning between national and international, Editura Infomega, Bucureşti,

2. * ISA 530** Audit sampling

3. * ISA 200** General objectives of the independent auditor and the performance of an audit in compliance with the Auditing International Standards.

4. * ISA 330** The auditor's response to assessed risks

5. * ISA 315** Identification and assessment of the risks of significant deviation by understanding the entity and its environment