

ETC relevant parts of EGESIF sampling guidance

February 2018



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Purpose

This document is an extraction of ETC relevant sections from the EGESIF Guidance on sampling methods for audit authorities - Programming periods 2007-2013 and 2014-2020 ([EGESIF_16-0014-01 - 20/01/2017](#)).

It is a copy/paste of the following sections from the EGESIF guidance:

- 1 Introduction
- 2 Regulatory references
- 6.5 Sampling methods for European Territorial Cooperation (ETC) programmes

This document does not substitute the actual guidance. It should be understood as a simplified (shortened) document for ETC programmes. With regard to audit risk models, audit procedures, statistical concepts, sampling techniques, sampling methods, projection of errors etc. please refer to the complete guidance note.

1. Introduction

The present guide to sampling for auditing purposes has been prepared with the objective of providing audit authorities in the Member States with an updated overview of the most commonly used and suitable sampling methods, thus providing support for the implementation of the regulatory framework for the 2007-2013 programming period and, where applicable, the 2014-2020 programming period.

International auditing standards and updated sampling theory provide guidance on the use of audit sampling and other means of selecting items for testing when designing audit procedures.

The present guidance replaces the previous guidance on the same subject (ref. COCOF 08/0021/03-EN of 04/04/2013). The present document is without prejudice of other complementary Commission guidelines, namely the:

- Programming period 2007-2013:
 - “Guidance note on annual control reports and opinions” of 18/02/2009, ref. COCOF 09/0004/01-EN and EFFC/0037/2009-EN of 23/02/2009;
 - “Guidance on treatment of errors disclosed in the annual control reports” ref. EGESIF_15-0007-01 of 09/10/2015;
 - “Guidance on a common methodology for the assessment of management and control systems [MCS] in the Member States” ref. COCOF 08/0019/01- EN and EFFC/27/2008 of 12/09/2008.
- Programming period 2014-2020:
 - Guidance for Member States on the Annual Control Report and Audit Opinion (Programming period 2014-2020), ref. EGESIF_15-0002-02 final of 9/10/2015;
 - Guidance for the Commission and Member States on a common methodology for the assessment of management and control systems in the Member States (EGESIF_14-0010-final of 18/12/2014).

Thus, complementary reading of these additional documents is advised in order to have a complete view of the guidelines related to the production of annual control reports.

2. Regulatory references

Regulation	Articles
Programming period 2007-2013	
Reg. (EC) No 1083/2006	Article 62 - Functions of the audit authority
Reg. (EC) No 1828/2006	Article 17 - Sampling Annex IV - Technical Parameters for Random Statistical Sampling Pursuant to Article 17
Reg. (EC) No 1198/2006	Article 61 - Functions of the audit authority
Reg. (EC) No 498/2007	Articles 43 - Sampling Annex IV - Technical parameters
Programming period 2014-2020	
Reg. (EU) No 1303/2013 Common Provisions Regulation (<i>hereafter CPR</i>)	Article 127 (5)- Functions of the audit authority Article 148(1) - Proportional control of operational programmes
Reg. (EU) No 480/2014 Commission Delegated Regulation (<i>hereafter CDR</i>)	Article 28 - Methodology for the selection of the sample of operations

6.5 Sampling methods for European Territorial Cooperation (ETC) programmes

6.5.1 Introduction

ETC programmes have a number of particularities: it is normally not possible to group them because each system and sub-system is different; the number of operations is frequently low. For each operation, there is generally a lead partner (lead beneficiary under Article 13 of Regulation (EU) No 1299/2013) and a number of other project partners (other beneficiaries under Article 13 of Regulation (EU) No 1299/2013). Operations selected under cross-border and transnational cooperation shall involve partners from at least two participating countries, whereas operations under interregional cooperation shall involve partners from at least three countries (Article 12 of Regulation (EU) No 1299/2013).

6.5.2 Sampling unit

The sampling unit shall be determined by the audit authority based on professional judgement. It may be an operation, a project within an operation or a payment claim by a beneficiary (Article 28(6) of delegated Regulation No 480/2014). If the AA decides to use a payment claim as a sampling unit, it could opt either for an aggregated payment claim including individual payment claims of lead and other project partners or alternatively it could opt for a payment claim of a project partner (without distinguishing between lead and other project partners). The AA could also decide to use grouped payment claims of a project partner declared within an operation in a given sampling period. In such a case the grouped payment claims by project partner constitute the sampling unit (this sampling unit is later referred in the text as a project partner).

The selection of the sampling unit determines the projection approach. The projection of errors to the level of population is based on the errors in the selected sampling units. Thus, if the AA does not verify all the expenditure in the selected sampling unit (subsampling is applied), it needs to extrapolate the errors of the sub-sample to the level of the sampling unit before extrapolation to the level of the population.

In particular, if the AA decides to choose operations as the sampling units, with a subsample of project partners, the AA has to project the errors detected in the expenditure of selected partners to the level of the operation before extrapolation to the level of the population.

On the contrary, a simpler projection approach would be ensured by the use of project partners¹ (or of payment claims of project partners) as sampling units. Use of these sampling units allows for projection of the errors detected in the expenditure declared by the selected project partners (or in the selected payment claims of projects partners) directly to the level of the population of all expenditure declared to the EC, without going through the two-stage projection described above. (As the operation does not constitute the sampling unit in such a situation, there is no need to extrapolate detected errors to the level of the operation).

¹ without the need to distinguish between lead and other project partners

Although there might be other options available, the EC services recommend in particular the use of one of the following sampling units in ETC programmes when designing the sampling methodology:

- a) payment claim of an (individual) project partner,
- b) project partner (i.e. all the payment claims declared by a project partner within an operation in a given sampling period) or
- c) the operation.

All the above sampling units could be used both in statistical sampling and nonstatistical sampling methods. However, the use of operations as sampling units under a statistical sampling method could require heavy workload in the context of ETC programmes as compared to the other two sampling units listed above. Therefore, the use of operation as the sampling unit is recommended in non-statistical sampling methods.

Section 6.5.3 below presents in the context of two- and three-stages sampling more detailed information on the possible sampling units and sub-sampling units in the ETC programmes together with additional notes on the relevant methodological constraints and implications.

6.5.3 Sampling methodology

In the case of both statistical and non-statistical sampling procedures within ETC programmes, the general sampling methodologies, as described in the relevant sections of this guidance, are applicable. This section provides additional clarifications in view of particularities of the ETC programmes.

The threshold of 50-150 operations may not be reached in ETC programmes characterised by small population sizes, particularly in the beginning of the implementation period. However, even if this threshold is reached, given the specific set-up of the ETC programmes, it may not be cost-effective to use statistical sampling.

Therefore the AA, on the basis of its professional judgement, could use non-statistical sampling for ETC, under the conditions of Article 127(1) CPR, while respecting the minimum coverage of 5% of operations and 10% of expenditure. The reasoning and options taken by the AA should be reflected in its audit strategy, which requires an annual update, as established by Article 127(4) CPR.

When statistical sampling methods are used, this allows the calculation of the precision, which gives control over the audit risk. Where an operation constitutes the sampling unit, the application of the statistical sampling methodologies may lead to high costs for auditing ETC programmes, given their specific set-up. Therefore, the AAs are recommended to use other sampling units (a partner or a payment claim of an individual project partner) which could decrease the costs of the audit procedures with statistical sampling. This approach is facilitated once the monitoring system (foreseen in Article 24 of Regulation (EU) No 480/2014) allows for the breakdown of data on expenditure between project partners.

Moreover, it should be noted that in the 2014-2020 programming period the provisions of Article 127 of Regulation (EU) No 1303/2013 require a coverage of a minimum of 5% of operations and 10% of the expenditure declared if a non-statistical sampling method is applied. Since in the case of statistical sampling this requirement is not applicable, the AA

should consider that the use of a statistical sampling method could lead in some cases to equivalent or even reduced audit work (as compared to nonstatistical sampling), in particular if payment claims of project partners are used as sampling units and simple random sampling is used. If confronted with similar audit costs and efforts, the AA is recommended to opt for statistical sampling.

Finally, due to the specific control system used by ETC programmes (e.g. decentralized vs centralised systems) the AA may consider stratification (for example, using the results from system audits), enabling the AA to draw conclusions per stratum where necessary. The stratification by MS may be considered either a priori or a posteriori (e.g. when the error rate is above 2%), in order to allow the AA to assess where the error comes from. In this respect, the sampling methodology can take into account the "bottom-up strategy" explained in section 7.8 of this guidance.

6.5.3.1 Two-stage and three-stage sampling (sub-sampling)

When using either statistical or non-statistical sampling methods, the AA needs to establish errors at the level of the selected sampling units before projecting the errors detected in the sample to the population. As a general rule, all expenditure declared to the Commission in the sample should be subject to audit. However, where the selected sampling units include a large number of underlying payment claims or invoices, the audit authority may audit them through sub-sampling. In such cases, to establish the error at the level of the selected sampling units, the AA needs to project errors detected in the sub-sample to the level of the sampling unit. In the next stage, the errors of the selected sampling units (established on the basis of a sub-sample) are projected to the population of operations or payment claims in order to calculate the projected error of the population.

Sub-sampling units

Both in statistical and non-statistical sampling, the AA could use different sub-sampling units within two/three-stage sampling design such as invoices, projects within an operations, aggregated payment claims including individual payment claims of lead and other project partners, payment claims of individual project partners, project partners.

Due to the set-up of operations in the context of ETC programmes, the AA frequently applies a sampling design with either two-stage or three-stage sampling, where a project partner or a payment claim of project partner could constitute a sampling unit at one of the sampling stages.

If the sampling unit is an operation, the AA could decide to have a sampling design with selection of a sub-sample of payment claims of individual project partners (two-stage sampling). Another option of two-stage sampling design, the most frequently used in ETC context, is to group all payment claims of individual project partners per project partner and to select a sub-sample of project partners within the selected operation. In such cases, errors detected at the level of payment claims/project partners need to be projected first to the level of the operation before the final projection of errors to the level of the population of operations.

Invoices as sub-sampling unit

If some sampling units of the selected sub-sample (payment claims/partners) have a large number of invoices/other expenditure items, the AA could decide to audit them on a sample basis leading to a three-stage sampling design. In such a case, the error detected in the sub-sample of invoices should be first projected to the level of a payment claim/a partner. Subsequently, the errors established at the level of payment claims/partners should be projected to the level of the operation as in two-stage sampling design.

The AA could also use invoices as the sampling unit in two-stage sampling, which is in particular applied when either a payment claim of individual project partner or a partner constitute the main sampling unit. In the case of operation as the main sampling unit in two-stage sampling design, the sub-sample of invoices would be selected directly from the population of all invoices of the operation, without the intermediary stage of a subsample at the level of partner/payment claim.

Selection of sub-sampling units under statistical and non-statistical methods

All sampling units in sub-samples should be selected at random², also in the case of non-statistical sampling methods. Nevertheless, in case stratification is applied at the level of sub-samples, obviously the AA could decide to audit all sampling units of a particular stratum.

Example: if the AA decides to use an operation as the sampling unit of the main sample and project partners as the sub-sampling units, the AA could either:

- *make a random selection of project partners (without distinguishing between lead and other project partners) or*
- *apply stratification at the level of an operation:*
- *one stratum for the expenditure of the lead partner and*
- *a second stratum for the expenditure of other project partners.*

Since in the latter case, the lead partner is not selected at random but his expenditure constitutes an exhaustive stratum, the projection model should take this into account. To calculate the error at the level of the operation, the errors of the other project partners selected at random in the operation should be projected to the stratum of other project partners, whereas the error of the lead partner should be added to the projected error to establish the total projected error rate of the operation. Section 6.5.3.3 below includes an example based on such a sampling design.

² Using equal probability selection (where each sampling unit has equal chance of being selected regardless of the amount of expenditure declared in the sampling unit) or probability proportional to size (expenditure) (where a random selection is made of the first element for the sample and then subsequent elements are selected using an interval until the desired sample size is reached) with the use of the monetary unit as an auxiliary variable for sampling as done for the MUS case.

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Source EGESIF-16-0014-01 (20/01/2017)

It is also reminded that in case statistical sampling is applied for the main sample, the AA needs to ensure application of the statistical sampling method for the selection of sampling units of the sub-samples at all stages. In particular, in case operations are chosen as the sampling units with a sub-sample of projects partners in the second stage and a sub-sample of invoices in the third stage, the AA needs to ensure observation of at least 30 units in the second stage and also in the third stage. Consequently, if the subsample unit selected within an operation is the project partner, this means that 30 project partners should be selected (few cases would be applicable, if any). Otherwise, the method can still be applied but it will lead to the selection of all the partners pertaining to the operation, leading in practice to application of two-stage sampling (operation in first stage and invoice in second stage) instead of three-stage sampling. Similarly, for each selected partner a verification of a sub-sample of at least 30 invoices should be ensured in case the exhaustive audits are too costly.

For the programming period 2014-2020 and in line with Article 28 CDR, where subsampling is used with either invoices or payment claims as the sub-sampling units, the AA should cover not less than 30 invoices/other expenditure items or payment claims also under non-statistical sampling. Where other sub-sampling units are used under nonstatistical sampling (such as for example a project within an operation, a project partner), the AA may decide, based on professional judgment, the sufficient coverage of a sub-sample. In this case, it is recommended that if less than 30 sub-sampling units are selected, they should cover at least 10% of the expenditure of the sampling unit (for example of an operation).

6.5.3.2 Main potential configurations of sampling units in two-stage and three-stage sampling

The tables below summarise the main potential configurations of sampling units in twostage or three-stage sampling within the ETC context. Based on statistical considerations, these configurations could be applied both in statistical and nonstatistical sampling methods. However, as clarified in the table, some of the listed configurations could be not feasible due to high-cost of audit and in some cases methodological constraints would hinder using them in statistical sampling methods due to insufficient number of sub-sampling units in practice. **In particular, whereas options 1 and 2 presented in the table below are considered as the most costeffective in the case of statistical sampling methods and options 2 and 3 in nonstatistical sampling methods, the remaining options could require much more audit resources and consequently are often not feasible in practice.**

6.5.3.2.1 Two-stage designs

Option	Sampling unit of the main sample	Sub-sampling unit (if relevant)	Recommendation to apply in nonstatistical and statistical sampling methods	Other remarks/constraints
1.	Payment claim of a project partner	Invoice/other expenditure item	<i>Statistical sampling: yes</i>	Among the presented statistical sampling designs, it is the configuration requiring the least audit resources allowing at the same time calculation of precision and upper error limit, which gives control over the audit risk.
			<i>Non-statistical sampling:</i> It is a significantly less cost-effective approach as compared to the use of project partner as the main sampling unit due to the requirement of covering a minimum of 10% expenditure declared to the EC and 5% of operations in regard to an accounting year. (The AA would need to cover more sampling units to comply with the requirement of covering the minimum expenditure level).	In non-statistical sampling methods options 2 and 3 are more cost-effective.
2.	Project partner	Invoice/other	<i>Statistical sampling: yes</i>	It is a recommended approach in

Option	Sampling unit of the main sample	Sub-sampling unit (if relevant)	Recommendation to apply in nonstatistical and statistical sampling methods	Other remarks/constraints
		expenditure item		statistical sampling method. It could be more costly than option 1.

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			<p><i>Non-statistical sampling:</i> yes (Art.127 of the CPR requires a coverage of a minimum of 5% of operations and 10% of the expenditure declared.)</p>	<p>It is a recommended approach in nonstatistical sampling method.</p> <p>It should be noted that as compared to another cost-effective approach in nonstatistical sampling (i.e. option 3 below), option 2 does not require projection from project partners to the level of the operation since the projection to the population is carried out directly from project partners. In the case of project partners whose invoices/expenditure items are not verified exhaustively, the error of a partner would be calculated on the basis of projection of errors detected in the sub-sample of invoices/other expenditure items.</p>
3.	Operation	Project partner ³	<p><i>Statistical sampling:</i> a) In the case of up to 30 project partners in an operation, this design is not applied. (For statistical methods verification of all or at least 30 partners at the level of sub-sample would be required. Whenever the number of partners is equal or smaller than 30, the method would lead to the selection of all existing partners, leading to one-stage sampling design.)</p>	<p>In statistical sampling methods, options 1 and 2 are more cost-effective.</p>

³ This sub-sampling unit groups per partner all the payment claims declared by a project partner within an operation in a given sampling period.

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Source EGESIF-16-0014-01 (20/01/2017)

			<p>b) In the case of more than 30 project partners: high audit cost of covering at least 30 partners.</p>	
			<p><i>Non-statistical sampling:</i> yes (Art.127 of the CPR requires a coverage of a minimum of 5% of operations and 10% of the expenditure declared.)</p>	<p>Two options could be applied for the selection of project partners: a) random selection of partners without distinction between lead and other project partners, b) for each selected operation verification of expenditure declared by the lead partner and expenditure declared by randomly selected other project partners.</p> <p>The approach requires the projection of errors of the selected project partners to the level of the operation (see option 2 for another cost-effective approach in non-statistical sampling which does not require projection from the level of partners to the level of operation).</p>
Option	Sampling unit of the main sample	Sub-sampling unit (if relevant)	Recommendation to apply in nonstatistical and statistical sampling methods	Other remarks/constraints

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Source EGESIF-16-0014-01 (20/01/2017)

				In non-statistical sampling, it is recommended that the sub-sample of project partners covers at least 10% of the expenditure of the operation.
4.	Operation /Aggregated payment claim	Invoice/other expenditure item	<i>Statistical sampling:</i> As it could require verification of expenditure incurred by different partners within a selected operation (aggregated payment claim), this configuration is not cost-effective. It requires more audit resources than under options 1 and 2.	In statistical sampling methods, options 1 and 2 are more cost-effective.
			<i>Non-statistical sampling:</i> usually not feasible due to high cost of audit	In non-statistical sampling methods, options 2 and 3 are more cost-effective.
5.	Operation	Aggregated payment claim	<i>Statistical sampling:</i> a) In the case of up to 30 aggregated payment claims, this design requires verification of all aggregated payment claims, leading to one-stage design. b) In the case of more than 30 payment claims: high audit cost of covering at least 30 aggregated payment claims.	In statistical sampling methods, options 1 and 2 are more cost-effective.
			<i>Non-statistical sampling:</i> usually not feasible due to high cost of audit	In non-statistical sampling methods, options 2 and 3 are more cost-effective.

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Source EGESIF-16-0014-01 (20/01/2017)

6.	Operation or aggregated payment claim	Payment claim of a project partner	<p><i>Statistical sampling:</i></p> <p>a) In the case of up to 30 payment claims of individual project partners, this design requires verification of all payment claims of individual projects partners, leading to one-stage sampling design.</p> <p>b) In the case of more than 30 payment claims: high audit cost of covering at least 30 payment claims of individual project partners.</p>	In statistical sampling methods, options 1 and 2 are more cost-effective.
			<p><i>Non-statistical sampling:</i></p> <p>usually not feasible due to high cost of audit</p>	In non-statistical sampling methods, options 2 and 3 are more cost-effective.

In practice, within the ETC context the most commonly used two-stage sampling designs are:

- the use of an operation as the sampling unit and a project partner as the subsampling unit in the case of non-statistical sampling (cf. option 3 above),
- the use of a payment claim of individual project partner as the sampling unit and an invoice/other expenditure items as the sub-sampling unit in the case of statistical sampling (cf. option 1 above).

The configuration of a project partner as the sampling unit and an invoice/other expenditure item as the sub-sampling unit (cf. option 2 above) is also a recommended approach, which could be cost-effective both under statistical and non-statistical sampling methods. In such a case, the error of each partner could be calculated on the basis of projection of errors detected in the sub-sample of invoices. The errors of partners would be extrapolated directly to the level of population (without the need to calculate the error of the relevant operations as the operation does not constitute the sampling unit in such a configuration).

Specific attention should be paid to the case where the AA decides to choose an operation as the sampling unit under a statistical sampling method. Different subsample units could be applied in such a case, such as an aggregated payment claim (cf. option 5 above), a project partner (cf. option 3 above) or a payment claim of individual project partner (cf. option 6 above). However, under a statistical sampling method it is required to ensure at least 30 observations at each sampling stage, this may require the verification of all sub-sample units (as normally there are less than 30 sub-sampling units available).

The exception concerns the selection of operation as the sampling unit and an invoice/other expenditure item as the sub-sampling unit (cf. option 4 above). In this case, the statistical sub-sample of invoices would be selected from the population of all invoices declared for

the operation within the sampling period (i.e. covering all project partners who declared expenditure in the sampling period). The audit workload would largely decrease as compared to the application of other sub-sample units mentioned above. However, this configuration would generally require much more audit resources as compared to the use of project partners or payment claims of project partners as the sampling units with a sub-sample of invoices (cf. options 1 and 2 above).

6.5.3.2.2 Three-stage designs

Sampling unit of the main sample	Sub-sampling unit	Sampling unit of sub-sample at the lowest stage	Remarks
Operation	Project partner ⁴	Invoice/other expenditure item	See option 3 of the table above.
Operation	Aggregated payment claim	Invoice/other expenditure item	See option 5 of the table above.
Operation	Payment claim of individual project partner	Invoice/other expenditure item	See option 6 of the table above.
Aggregated payment claim	Payment claim of individual project partner	Invoice/other expenditure item	See option 6 of the table above.

Within ETC context, the three-stage design is mainly applied in non-statistical sampling methods where operations are selected as sampling units and project partners as subsampling unit, for which a random selection of invoices is verified.

6.5.3.3 A possible approach in two-stage sampling (operation as the sampling unit and sub-sample of project partners whereby the lead partner and a sample of project partners are selected)

6.5.3.3.1 Sampling design

Let's take a case where the AA has decided that, for the operations selected, the audit of the lead partner will always be carried out covering both its own expenditure and the process for aggregating the project partners' payment claims. Where the number of other project partners is such that it is not possible to audit all of them, a random sample shall be selected. Thus the AA has opted for stratification at the level of the sampling unit of the main sample with separated stratum of expenditure declared by the lead partner and stratum of expenditure declared by other project partners. The size of the combined sample of lead partner and project partners must be sufficient to enable the AA to draw valid conclusions.

⁴ This sub-sampling unit groups per partner all the payment claims declared by a project partner within an operation in a given sampling period.

In such cases, the projection of the errors to the population (or to the corresponding operation) should take into consideration that the lead partner has been audited, while the project partners were audited through sampling.

The following methodology applied by the AA in the present example assumes:

- the use of non-statistical sampling design;
- two-stages design, where the first level is the selection of the operations, the second level the selection of a sample of partners within each operation⁵;
- selection of all units (operations, partners) with equal probabilities (other sampling methods are acceptable);
- in each operation the lead partner is always selected;
- a sample of project partners is selected among the list of partners.

Firstly, one should acknowledge that in the first stage of selection (operations) the design should follow one of the previously proposed methods. Inside each operation, the strategy formally corresponds to a stratified design with two strata:

- the first stratum corresponds to the lead partner and is constituted by just one population unit that is always to be selected in the sample. In practice this stratum has to be treated as an exhaustive stratum similar to the high-values strata;
- the second stratum corresponds to the set of project partners and is observed through sampling.

For one specific operation, i , in the sample, the projected error for the exhaustive stratum (corresponding to the lead partner) is:

$$EEe = ELP$$

where E_{LP} is the amount of error found in the lead partner's expenditure. In other words the projected error of the exhaustive stratum is simply the amount of error found in the lead partner.

Please be aware that it is not mandatory to fully audit the lead partner; subsampling of the lead partner's expenditure is an option if it includes a large number of payment claims (or other subunits). If this is the case, the subsample of payment claims (or other subunits) has to be used in order to project the amount of error of the lead partner.

If a subsample is used and assuming again a selection based on equal probabilities and ratio estimation⁶, the projected error of the lead partner will be:

⁵ It is also possible to subsample the payments claims or other units of the selected partners if they are too large to be observed exhaustively.

⁶ Be aware that this formula has to be adapted to the specific selection and extrapolation process that have been selected in each. We won't burden the reader with the consideration that should be taken into consideration for these choices fully debated in previous sections.

$$EE_{LP} = BV_{LP} \frac{\sum_{j=1}^{n_{LP}} E_j}{\sum_{j=1}^{n_{LP}} BV_j}$$

where BV_{LP} is the expenditure of the lead partner and n_{LP} the sample size of the subunits audited for this partner.

For the stratum containing the other project partners, the error has to be projected taking into consideration that only a sample of these partners has been observed.

Again, if partners were selected with equal probabilities and assuming ratio estimation, the projected error is

$$EE_{PP} = BV_{PP} \frac{\sum_{i=1}^{n_{s,PP}} E_i}{\sum_{i=1}^{n_{s,PP}} BV_i}$$

where BV_{PP} is the expenditure of the set of project partners and $n_{s,PP}$ the sample size in the project partners stratum.

This projected error is equal to the error rate in the sample of project partners multiplied by the population expenditure of the stratum.

Please be aware that in cases where the project partners selected to the sample are not fully audited, but only audited through a subsample of payments claims (or other units) then the errors E_i have to be projected, as explained for the lead partner.

The total projected error for the operation i is just the sum of these two components:

$$EE_i = EELP + EEP$$

This projection procedure should be followed for each operation in the sample in order to obtain the projected errors for each operation ($EE_i, i = 1, \dots, n$). Once the projected errors of all operations in the sample have been calculated, the projection to the population is straightforward, using the appropriate methodologies presented in the previous sections.

The projected error (and the upper error limit when using a statistical design) are finally compared to the maximum tolerable error (materiality level rate multiplied by the population expenditure) in order to conclude about the existence of material error in the population.

6.5.3.3.2 Example

Let us assume a population of expenditure declared to the Commission in a given reference period for operations in European Territorial Cooperation (ETC) programmes. As the management and control systems are not common to all the Member-States involved it is not possible to group them. Moreover, as the number of operations is significantly low (only 47) and for each operation there are more than one project partner (the lead partner and at

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Source EGESIF-16-0014-01 (20/01/2017)

least one other project partner), and there are a few operations with extremely large book values, the AA decided to use a non-statistical sampling approach with stratification of the high-value operations. The AA decided to identify these operations by setting the cut off level as 3% of total book value.

The following table summarizes the available population information.

Declared expenditure (DE) in the reference period	113,300,285 €
Size of population (operations)	47
Materiality level (maximum 2%)	2%
Tolerable misstatement (TE)	2,266,006 €
Cut off value (3% of total book value)	3,399,009 €

This high-value project will be excluded from sampling and will be treated separately. The total value of this project is 4,411,965 €. The amount of error found in this operation amounts to

$$EE_e = 80,328.$$

The following table summarizes these results:

Number of units above cut-off value	1
Population book value above cut-off	4,411,965 €
Amount of error found in operations with book larger than cut-off	80,328 €
Remaining population size (no. of operations)	46
Remaining population value	108,888,320 €

The AA considers that the management and control system “*essentially does not work*”, so it decides to select a sample size of 20% of the population of operations. That is, $20\% \times 47 = 9.4$ rounded by excess to 10. Due to the small variability in the expenditure for this population, the auditor decides to sample the remaining population using equal probabilities. Although based on equal probabilities, it is expected that this sample will result in the coverage of at least 20% of the population expenditure stratum (cf. 6.4.3).

A sample of 9 operations (10 minus the high-value operation) is randomly drawn. 100% of the expenditure regarding the leading partner was audited. Two errors were found.

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Source EGESIF-16-0014-01 (20/01/2017)

Operation ID	Lead Partner expenditure		
	Book value	Audited expenditure	Amount of error
864	890,563 €	890,563 €	0 €
12895	1,278,327 €	1,278,327 €	0 €
6724	658,748 €	658,748 €	5,274 €
763	234,739 €	234,739 €	20,327 €
65	987,329 €	987,329 €	0 €
3	1,045,698 €	1,045,698 €	0 €
65	895,398 €	895,398 €	0 €
567	444,584 €	444,584 €	0 €
24	678,927 €	678,927 €	0 €
Total	7,114,313 €		

Regarding the expenditure submitted by the remaining project partners, the AA decides, for each operation, to randomly select one project partner to be exhaustively audited.

Operation ID	Project Partners expenditure				
	No. partners audited	Book value (for all project partners in low-value stratum)	Audited expenditure	Amount of error	Projected error
864	1	234,567 €	37,147 €	0 €	0 €
Operation ID	Project Partners expenditure				
	No. partners audited	Book value (for all project partners in low-value stratum)	Audited expenditure	Amount of error	Projected error
12895	1	834,459 €	164,152 €	0 €	0 €
6724	1	766,567 €	152,024 €	23 €	116 €
763	1	666,578 €	83,384 €	0 €	0 €
65	1	245,538 €	56,318 €	127 €	554 €
3	1	344,765 €	101,258 €	0 €	0 €
65	1	678,927 €	97,656 €	0 €	0 €
567	1	1,023,346 €	213,216 €	1,264 €	6,067 €
24	1	789,491 €	137,311 €	0 €	0 €
Total		5,584,238 €			

ETC relevant parts of EGESIF sampling guidance

Source EGESIF-16-0014-01 (20/01/2017)

The AA projects the error for each operation using ratio estimation. For example, the projected error of operation ID 65 is given by the sample error rate ($127/56,318 \times 100\% = 0.23\%$) multiplied by the book value of the project partners of the operation ($0.23\% \times 245,538 \text{ €} = 554 \text{ €}$).

For each operation in the sample the projected error is equal to the error projected for the project partners plus the error observed in the lead partner.

Operation ID	Total book value	Projected error (lead partner)	Projected error (other project partners)	Total projected error by operation
864	1,125,130 €	0 €	0 €	0 €
12895	2,112,786 €	0 €	0 €	0 €
6724	1,425,315 €	5,274 €	116 €	5,390 €
763	901,317 €	20,327 €	0 €	20,327 €
65	1,232,867 €	0 €	554 €	554 €
3	1,390,463 €	0 €	0 €	0 €
65	1,574,325 €	0 €	0 €	0 €
567	1,467,930 €	0 €	6,067 €	6,067 €
24	1,468,418 €	0 €	0 €	0 €
Total	12,698,551 €			32,338 €

The projected error for the whole low-value stratum is given by the sum of the projected errors by operation (32,338€) divided by the total book value of the sampled operations, $7,114,313 \text{ €} + 5,584,238 \text{ €} = 12,698,551 \text{ €}$, which leads to a sample error rate at low-value stratum level of 0.25%. Once again, using ratio estimation procedure, this sample error rate applied to the book value of the low-value stratum, 108,888,320 € gives the projected error at low-value stratum level, 277,294 €.

Summing the projected error for both high-value and low-value strata, the AA gets the total projected error.

$$EE = EE_e + EE_s = 80,328 + 277,294 = 357,622\text{€}$$

Finally, the projected error will be compared with the materiality threshold (2,266,006€) as usual leading to conclude that the projected error is below the materiality threshold.