



EU level sampling of audits of operations for ETC post 2020

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Outline

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Introduction

- This document presents a simulation illustrating the methodologies proposed for discussion in relation with the possible EU sampling of audits of operations for ETC post 2020
- Illustrates the framework of a common sample using a statistical sampling method for the audit of operations to be carried out by the audit authorities for all the Interreg programmes together

Introduction

- Two simulations are presented:
 - A: Common sample with stratification by OP
 - B: Common sample with stratification by OP and MS
- Both simulations are presented for anticipated errors of 1.5% and 3.0%
- Simulations are based on real data for the accounting year 2017/2018 referring to a total of 38 programmes (25 cross-border and 13 transnational & interregional)

Introduction

- Sampling design is stratified SRS
- Sampling unit is the partner
- A 90% confidence level was considered
- Standard-deviations of errors were simulated:
 - Considering the existence of 80% of population units with 0 error
 - 20% of population units with errors of amount necessary produce 1.5% and 3.0% error rate, respectively
 - to be 2096€ for the case of 1.5% anticipated error and 4190€ for the case of 3.0% anticipated error

Introduction

- Minimum sample sizes by stratum are set to be
 - For cross-border programmes
 - 3 for OPs with less than 500 partners
 - 5 for OPs with 500 partners or more
 - If optional stratification by MS is used, minimum sample size by MS is 3
 - For transnational & interregional programmes
 - 3 for OPs with less than 50 partners
 - 5 for OPs with 50 partners or more
 - 5 for countries outside EU

Results

Stratification by OP; 1.5% error rate

Optimal

n	130	160	190	220	250	280	310
Precision (€)	2.660.633	2.087.250	1.833.479	1.671.192	1.545.534	1.449.552	1.367.032
Precision (% of expenditure)	0,55%	0,43%	0,38%	0,34%	0,32%	0,30%	0,28%
Precision gain (%)		21,6%	12,2%	8,9%	7,5%	6,2%	5,7%
Precision gain (%) by each unit in sample size		0,72%	0,40%	0,30%	0,24%	0,21%	0,19%

Results

Stratification by OP; 3.0% error rate

Optimal

n	130	160	190	219	250	280	310
Precision (€)	5.317.151	4.172.275	3.665.307	3.341.166	3.090.135	2.897.839	2.732.784
Precision (% of expenditure)	1,09%	0,86%	0,75%	0,69%	0,63%	0,60%	0,56%
Precision gain (%)		21,5%	12,2%	8,8%	7,5%	6,2%	5,7%
Precision gain (%) by each unit in sample size		0,72%	0,40%	0,30%	0,24%	0,21%	0,19%

Results

Stratification by OP

Distribution by OP – see Excel file

Results

Stratification by OP and MS; 1.5% error rate

Optimal

n	222	252	282	312	342	372	403
Precision (€)	2.274.854	1.784.925	1.591.004	1.465.261	1.368.862	1.291.718	1.226.667
Precision (% of expenditure)	0,47%	0,37%	0,33%	0,30%	0,28%	0,27%	0,25%
Precision gain (%)		21,5%	10,9%	7,9%	6,6%	5,6%	5,0%
Precision gain (%) by each unit in sample size		0,72%	0,36%	0,26%	0,22%	0,19%	0,17%

Results

Stratification by OP and MS; 3.0% error rate

Optimal

n	222	252	282	312	342	372	403
Precision (€)	4.547.538	3.568.145	3.180.490	2.929.123	2.736.418	2.582.202	2.452.164
Precision (% of expenditure)	0,94%	0,74%	0,66%	0,61%	0,57%	0,53%	0,51%
Precision gain (%)		21,5%	10,9%	7,9%	6,6%	5,6%	5,0%
Precision gain (%) by each unit in sample size		0,72%	0,36%	0,26%	0,22%	0,19%	0,17%

Results

Stratification by OP and MS

Distribution by OP and MS – see Excel file

Final Notes

- ▶ It is possible to have a common sample for all the Interreg programmes together
- ▶ Both stratification by OP or by OP and MS are possible to implement
- ▶ Exact sample sizes depend on population characteristics and particularly the level of error in the population
- ▶ With a stratification by OP adequate sample sizes situate between 130 and 160 units both for 1.5% and 3.0% error rates

Final Notes

- ▶ With a stratification by OP and MS adequate sample sizes situate around 220 units both for 1.5% and 3.0% error rate
- ▶ In any case, most of the OPs may be observed through the minimum sample size of 3 or 5 units



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