**Measuring response burden at the Swiss Federal Statistical Office**

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**Abstract**

*The Swiss Federal Statistical Office (SFSO) is willing and needs to put in place a procedure for systematically measuring the burden that stems from its different surveys (household and business surveys). A first evaluation of that burden, in terms of time and cost imposed on businesses was carried out in 2013 by external specialists at the University of St.Gallen, Switzerland. A working group within SFSO has recently examined the existing literature and the dispositions taken by other national statistical institutes. Its current task is to expand and improve on the 2013 works and thus define the way in which burden will be accounted for.*

*This paper presents an overview of the difficulties encountered when measuring actual response burden, the principal challenges that need to be met and the different options available. It lists measures that have already been adopted so as to reduce the global survey burden, such as, for instance, mandatory use of administrative data, online questionnaires, profiling of large and multi-establishment companies. Also is to mention SFSO's tool for coordinated selection of samples, which allows to spread the response burden for most of our surveys. Among other benefits, it allows to track unit selections over time and thus facilitates survey burden evaluation.*

**Keywords:** Response burden, Sample Coordination

**1. Context**

Measuring survey burden is one of the principal objectives of the Swiss Federal Statistical Office (SFSO) assigned within the federal statistical multiannual programme (see Schütz 2016, p.15). Specifically, the actual burden on enterprises was evaluated in 2013 by external specialists from the University of St. Gallen (see Müller and Bergmann, 2013). According to this study, the cost that stems from business statistics produced at SFSO and at the KOF Swiss economic institute is approximately 9.3 million Swiss francs, of which 7.3 million concern surveys for which participation is mandatory. Recently, two parliamentary motions which aim to exclude from the statistical returns businesses of less than 50 employees were accepted by the first chamber before being rejected by the second chamber[[1]](#footnote-1). The initiators were questioning the workload imposed by the statistical system. If these motions were accepted, there would have been severe consequences on the production of business statistics, excluding 98% of the businesses, employing 44% of the active employed population. Some economic activity sectors would have been entirely removed from the surveys with impact, for instance, on measuring the gross domestic product or the consumer price index. The possibility of comparing the load generated by the statistical production system with the load due to regulations, evaluated to 50 billion Swiss francs per year, was essential (see Savary, 2016).

At the same time, and without knowing the real numbers on the subject, we cannot help but be concerned by the exasperation of the Swiss population towards the solicitation it meets in responding to different phone surveys although most of this solicitation is probably not connected in any way with official statistics. SFSO needs to measure its own contribution and communicate it in a transparent manner. This could allow for increasing the propensity to respond of selected persons and households. Thus, an investment in measuring response burden would allow to improve and maintain the quality of the produced statistics both in the domain of population and household surveys and in the domain of business surveys. SFSO has engaged in projects which aim to reduce and spread the burden generated by its surveys. For instance, we use systematically register data, when this data is suitable for the production of the specific statistics (see also Schütz 2016). In certain cases, SFSO is participating in the process of harmonizing register data in order to make them statistically relevant. This was the case, for instance, of the cantonal and municipality population registers. In the domain of household statistics, the most important reform that allowed for reducing survey burden is certainly the renovation of the census: the traditional census which took place each 10 years and aimed at exhaustiveness was replaced by the use of registers, along with a large annual survey (see, e.g., Graf and Qualité 2014). Each year, between 3 and 4 percent of the population take part in this survey. Moreover, the selections of persons and households are spread as good as possible by using a survey coordination method. In business statistics, from 2009 on, the system for drawing and coordinating samples is used in order to spread effectively the samples, select and update samples in panels and rotated panels. However, a large effort is put in order to reduce burden on businesses through profiling of large enterprises, which are included in most of SFSO's surveys. The profiling guarantees a personalized contact and a unique procedure in order to deliver the necessary information for producing the statistics. SFSO pursues also in a larger use of register data, such as the social security register.

**2. Major challenges**

SFSO has the chance to be able to select its samples within two rich sampling frames - one for the households (persons) and the other one for the businesses. For the persons and households, we use files (on a quarterly basis) which are obtained by integrating cantonal and municipality registers, as well as some federal registers on migrants, foreign workers and asylum seekers. For businesses, the sampling frame represents a snapshot of the business register (BR) which is made each semester. The BR is itself continuously updated. All information derived from the coordination of surveys such as inclusion probabilities, joint selection probabilities for two different surveys, effective selections is centralized in what we call ''a system of coordination''. There is also a considerable amount of auxiliary information that is available to us. This auxiliary information allows for evaluating the selection frequencies at different levels. For instance, for business surveys, we have kind of activity, unit sizes, etc.

However, not all surveys are selected in these sampling frames. We can cite, amongst others, the surveys on the border traffic of persons and the flow of goods. In fact, these surveys are actually realised on the borders. They concern private persons and enterprises. Their samples are not necessarily matched with the sampling frame. Moreover, even the sampled populations could not necessarily match the population from our frames – foreign tourists or carriers are surveyed.

On the other hand, a certain number of samples is drawn in our sampling frame for the needs of our external partners. These survey are not directly linked to the statistics that SFSO was mandated to produce. For instance, the sampling frame for the household and persons surveys could be used for all projects supported by the Swiss National Science Foundation.

Thus, our first objective is to define the field of the surveys which are included in the measurement of response burden: only these produced by SFSO, surveys ordered by the federal administration, extension of samples for the needs of the Swiss cantons, surveys for research institutes or universities? The definition of burden needs to be examined too. Response burden has multiple aspects and different components. However, in our paper we restrict ourselves only to certain aspects of response burden. For instance, in business statistics, we often talk about actual and perceived response burden, the first one more easily measurable than the second one (see, e.g., Dale and Haraldsen, 2007 or Snijkers et al., 2013). In Müller and Bergmann (2013), the survey burden of a business is expressed in terms of duration and financial cost. For the household and population surveys, it is reasonable to express burden in terms of survey duration.

Measuring response burden is not straightforward and depends on the data collection mode. Household and population surveys at SFSO are essentially done by a paper questionnaire or by phone with always having the possibility to complete the survey on the Internet. For telephone surveys, we could think of collecting the duration of the call from the poll institutes that have received the mandate to realise the survey. In general, this information is used by the poll institutes in order to establish their invoices/offers. In most cases, the call durations are tested prior to the main survey on a smaller test survey in order to estimate the costs. For surveys based on paper questionnaires or an online form, what could be done is to calculate estimations on test questionnaires, perhaps even prediction on models fitted on the collected data. Finally, for surveys which are not in SFSO’s scope, we should organize for a feedback which is for the moment not foreseen: SFSO should provide samples, but cannot, at this point in time, demand anything in return.

Most of the business surveys at SFSO are done by a paper questionnaire or through electronic data transmission. The results of Müller and Bergmann (2013) are obtained by predicting survey burden using an experts' opinion. If we would like to replace these predictions by a statistical return, we need to find a solution that is acceptable for all businesses. Some businesses are capable of giving an estimation of the duration but not of the cost and inversely. For some, neither one nor the other have a direct significance: how to account for a one-off investment for a software that allows for answering an indefinite number of times to SFSO's surveys? This represents an issue in measuring the statistical burden as we also need to differentiate between one-off and regular (annual) costs. Thus, it really seems difficult to imagine a situation where statistics are entirely based on the statistical returns.

Knowing the number of sent and returned questionnaires, as well as response burden, allows for better quantifying the total survey burden. But there are some hidden disparities in this total burden: not all the units are asked to participate in the survey with the same frequency or burden. In order to successfully obtain a relevant description of survey burden, we need to look at a specific population and study the burden in terms of the characteristics of the population, such as the size or the economic activity domain of an enterprise, place of residence, age or nationality of a person, household size and composition.

The definition of the population of study is also a matter of choice. Indeed, households and enterprises may change over time. We need to account for the fact that persons could leave or enter the population, or that new business could be created, or there could be some mergers or splits. In SFSO's coordination systems, we have established a certain number of rules in order to treat the natural evolution of the population. These rules were chosen in order to satisfy our primary objective which is to spread the survey burden in the best possible way. For households that change their structure, the adopted rule is to transfer the history and identification indicators from and towards the largest group of persons participating in these changes. New households which do not inherit a history are treated as new independent units. For businesses, whenever it is possible, all the history of a unit (recorded selections, sampling probabilities, etc.) is transferred to the new statistical unit. Annually, for a few hundred businesses, we need to carry out a complete analysis of the enterprise's structure, its establishments and their size in order to choose what transitions to apply. For the time being we do not have a final definition of the types of transitions when following a business over time. These transfers of identity indicators and past selections are determining for the response burden measurement at SFSO. We can argue on the choice we make for following the changes in the structure of the businesses. However, the sampling method we use for drawing the samples guarantees that the cross-sectional design for each survey is duly upheld (see Qualité 2009). In particular, a group of units that was over-represented in a given survey does not risk to be absent from the sample of a subsequent survey and a unit which inherits a ''wrong past'' will not have an inclusion probability for a future survey that is not respected .

**3. Initial solution**

Starting in 2016, the workgroup on burden measurement has designed and improved a draft monitoring system. Its first results were based solely on selection information extracted from the SFSO’s coordination systems. Regarding business surveys, these accounted for about two thirds of the selections considered in Müller and Bergmann (2013). Almost all household and population surveys were covered. Other information, such as activation indicators (meaning that a unit was contacted or that there was an attempt to establish contact), response indicators and estimated or observed individual response burdens were not, and are still not all available at the unit level. However, this information, when available, is directly collected from survey managers and is consolidated into monitoring tables. When individual data are not available, global counts and estimates are requested so that all surveys are considered. SFSO is now working on extending the proportion of individual data collected (necessary to compute cumulated burdens) and on improving the quality of individual burden measurement.

Some preliminary results based on selection indicators within the business sample coordination system are presented in Tables 1 and 2. In Table 1 we have the number of unique and repeated selections for the samples of business surveys drawn in SFSO's coordination system between 2009 and 2016.

Some of the samples belong to panels. These surveys are drawn using Poisson sampling and coordinated negatively (except for panels where we aim at positive coordination). The principle for drawing and coordinating samples in the Swiss coordination systems is described in Qualité (2009). The samples in Table 1 are separated in two time periods: 2009-2012 (10 samples) and 2013-2016 (16 samples). All the enterprises taken in account for these calculations are present in the sampling frame from 12.12.2016, in total 873 801 enterprises.

For the total (2009-2016), we have reported in Table 1 the number of repeated selections until 11 and 12 or more. It should be noted that there were 22 enterprises which were selected 19 times and 4 enterprises which were selected 20 times - the observed maximal number of selections for the whole period. These are probably the largest enterprises as it could be seen also from Table 2 where we have reported the unique and repeated selections by unit size classes. The unit size classes are defined according to the total number of employees of a business denoted by EMPTOT. These statistics can also be calculated by canton, kind of activity, etc.

**Table 1. Selections of businesses which appear in the sampling frame of December 2016**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Years** | **1 sel.** | **2 sel.** | **3 sel.** | **4 sel.** | **5 sel.** | **6 sel.** |
| 2009-2012 | 40’279 |  7’316 | 5’671 | 4’207 | 3’022 | 1’585 |
| 2013-2016 | 79’001 | 14’236 | 8’132 | 4’829 | 3’163 | 3’029 |
| *2009-2016* | *92’417* | *15’418* | *9’721* | *6’748* | *4’796* | *2’620* |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Years** | **7 sel.** | **8 sel.** | **9 sel.** | **10 sel.** | **11 sel.** | **12+ sel.** |
| 2009-2012 | 995 |  146 | 3 | 0 | 0 | 0 |
| 2013-2016 | 2’714 | 2’036 | 1’259 | 589 | 183 | 14 |
| *2009-2016* | *2’014* | *1’899* | *1’249* | *1’310* | *1’745* | *4’977* |

**Table 2. Selections of businesses by unit size classes**

|  |  |
| --- | --- |
|  | **Unit size classes (1-6) according to total number of employees (EMPTOT)** |
| **Number of selections** | **1** | **2** | **3** | **4** | **5** | **6** |
| ≤ 2 |  [3;9] | [10;19] | [20;49] | [50;99] | ≥ 100 |
| 1 | 16’987 | 55’422  | 16'068  | 3'745  | 124  | 71  |
| 2 | 1’744 | 6'098  | 3'984  | 3'293  | 215  | 84  |
| 3 | 967  | 3'376  | 2'062  | 2'765  | 417  | 134  |
| 4 | 637  | 1'966  | 1'209  | 2'083  | 525  | 328  |
| 5 | 323  | 1'649  | 959  | 1'296  | 333  | 236  |
| 6 | 124  | 591  | 496  | 871  | 378  | 160  |
| 7 | 59  | 345  | 320  | 765  | 357  | 168  |
| 8 | 33  | 233  | 217  | 798  | 306  | 312  |
| 9 | 23  | 103  | 113  | 511  | 295  | 204  |
| 10 | 7  | 89  | 121  | 450  | 461  | 182  |
| 11 | 8  | 50  | 76  | 304  | 739  | 568  |
| 12 | 8  | 14  | 39  | 182  | 458  | 460  |
| 13 | 7  | 3  | 13  | 114  | 641  | 469  |
| 14 | 1  | 2  | 5  | 67  | 374  | 426  |
| 15 | 0 | 2  | 2  | 61  | 147  | 557  |
| 16 | 0 | 1  | 1  | 25  | 53  | 339  |
| 17 | 0 | 0  | 0  | 7  | 15  | 290  |
| 18 | 0 | 0  | 0  | 1  | 1  | 166  |
| 19 | 0 | 0  | 0  | 0  | 0  | 22  |
| 20 | 0 | 0  | 0  | 0  | 0  | 4  |

**4. Conclusion**

In this paper, we have presented the context in which SFSO needs to manage and account for the response burden generated by its surveys. We have described the major challenges which we meet as well as an initial solution which allows to measure survey burden based on the information which is readily obtainable from the Swiss system for coordination of surveys. For business surveys, the results based on the selection indicators have shown that although the fact that we coordinate negatively our samples, we cannot avoid the large number of repeated selections, especially for large enterprises. One of our next objectives is to replace the selection indicator used for these calculations by activation indicator or response indicator or some other response burden measure.

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1. see: <https://www.parlament.ch/en/ratsbetrieb/amtliches-bulletin/amtliches-bulletin-die-verhandlungen?SubjectId=36634>. [↑](#footnote-ref-1)