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Task Force on Improvement of Response Rates and Minimisation of Respondent Load

Part 1 – Relationship between response rates and data collection methods

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OECD / European Commission Working Group on Business Tendency and Consumer Opinion Surveys:

Taskforce on "Improvement of Response Rates and Minimisation of Respondent Load"

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DRAFT

Abstract

This paper summarises the main findings and lessons learnt from taskforce work to investigate the relationship between response rates and data collection methods. These findings are based on information collected from members of the taskforce, other participants of the OECD / European Commission Working Group on Business Tendency and Consumer Opinion Surveys, and other research and analysis performed on the topic. The paper addresses the following two aspects of the terms of reference for the taskforce, although concentrates mostly on the first point:

Terms of reference
1.   To investigate which methods of data collection (e.g. mail, phone, fax, internet, email etc.) and follow-up routines are most effective for improving response rates and reducing burden, also considering the impact of the different methods on the costs of conducting the survey. Work on this issue should include taking into account the (possible) different effects between sectors (e.g. industry vs services vs construction) and types of respondents (e.g. large businesses vs small/medium).

2.   Effective and cost efficient methods for communicating with survey respondents to gain their co-operation. This includes how to best communicate legislative requirements, if these exist for the survey (i.e. if the survey is compulsory by law in the country) as well as the most effective approaches in situations where the survey is not compulsory.

A summary of materials / papers received and those specifically prepared for the work of the task force is presented in the Appendix as a separate document. Some general remarks and suggestions based on a detailed analysis of the reference material are presented in this paper.

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1   INTRODUCTION

Research performed by Willimack (2002) (reported by Petroni, 2004) proposed formulation of a conceptual framework for Business survey participation: businesses weight response burden against business goals when considering the decision to participate in a survey. Both burden and goals may be impacted by:

a) factors relating to the external environment, the business and the respondent, which are not under control of the survey organisation

b) survey design features, which are under the survey organisation control.

Focusing on this second aspect, as response rate (RR) one of the most important factors to ensure a high quality of the BTS results (Etter, 2002), the efforts in minimising non responses represent one of the most relevant (even not unique) aspects on which to concentrate efforts.

In fact, the non response rate (NR) is one of the components of non-sampling errors that may affect the survey and the most efficient strategy for reducing measurement errors is to eliminate possible causes of such errors during the whole survey design stage (OECD 2003).

This paper is even more focused on a particular aspect - the relationship between NR and Data Collection Mode (DCM). It is worth remembering that the problem of improving the RR (and consequently reducing NR) is bound to the whole survey design, that is all the various steps of which a survey process is composed have a specific influence on the quantity (and quality) of the responses and it is not always possible to isolate unique relations. Therefore, in the following sections, the relationship between RR and DCM are often explained in the more general context of the whole survey design, whose main steps are here briefly recalled.

Kind of survey

Business Tendency Surveys (BTS) when compared to Structural surveys have timeliness as the key requirement which allows only limited follow up action. BTS are characterised by less sensitive (non personal) topics which is also generally the case for Households/Consumer Opinion Surveys (COS).

Subject of investigation

Quantitative questions (mainly in quarterly BTS surveys) often have a higher NR in comparison to qualitative information collected in the monthly survey.

Questionnaire

The kind of questions requested (quantitative vs qualitative) influences the RR. Also the wording of the questionnaire affects the RR. In the case of a harmonised questionnaire not all questions fit in the same way for all kinds of industries (Etter, 2002). The visual impact of a paper questionnaire (which allows to immediately obtain a general view of the survey) have a different influence (generally better) on responses from that of an Internet/telephone one, where this general view is not available.

Reporting, Sampling and Response Unit

Only focusing on the relationship with DCM, selecting as the reporting unit the local unit or the kind of activity unit, while incrementing the sectoral representivity, may negatively affect the RR as it implies a major burden for firms in collecting information. A positive influence on RR is related to the ability of contacting the right person (response unit) and of maintaining this contact over the time (for BTS panel surveys).

Target Universe

The availability of reliable Universe information has a positive influence on sample design and consequently on RR.

Frame

The availability of a complete, updated frame allows a reliable selection of units (firms) and lowers the risk of out-of-date addresses or contact names, particularly among small companies which increases the NR.

Sample design (Panel, simple random, etc.)

Just to hint to the extreme opposite designs, while simple random samples implies always new respondents and consequently "low" RR, consolidated panels, with always the same respondents, have a "high" RR. Sample updates and mainly panel rotation have a negative influence on RR, at least in the initial waves of BTS (Slovakia, Census Bureau) as new sampling units have to be convinced to join the survey. However the issue of sample representativeness of the population can not be forgotten.

Sample size

The choice of an appropriate sample size is mainly bound to a desired precision of estimates. For our purposes it is important to recall that larger samples imply higher costs for the Institute carrying out the survey, so that the two aspects have to be carefully balanced.

Data Collection techniques

The mode of how data are collected is probably the most important phase in the process, aimed at increasing "a priori" the response rates and consequently the quality of the surveys results.

Adjustments Methods

The techniques used, including weighting, have a crucial "ex-post" importance in improving the quality of the survey and are discussed in part 2 of the task force (TF).

A preliminary point to focus on is the definition of RR, as it appears not to be unique. Secondly a review of DCM is presented, with a discussion of their positive and negative aspects. Finally this note mainly focuses on experiences and suggestion of participants to the TF as well as on recent literature found out to be successful in increasing RR, with details as far as possible, on size/sectoral aspects.

2   RESPONSE RATES

The first problem that arises when dealing with RR (or with its complement non response rate - NR) is to give a clear definition. As reported by Lozar Manfreda (2003) in the literature authors often speak about response rate; however they do not define how these are calculated.

OECD DEFINITIONS

According to OECD (2003) three definitions of NR are given. The most general one is:

$$NR1 = \left(\frac{n'}{n} \right) * 100$$

where n'=number of enterprises which did not submit useable information
           n= number of enterprises in the survey

this measure is useful for checking the efficiency of data collection procedures in surveys with uniform sampling fraction and equal weights.

In case of unequal sampling fraction but uniform weights a proper measure is the following:

$$NR2 = \frac{\sum_{i=1}^{n^{'}} \frac{1}{f_i}}{\sum_{1=1}^{n} \frac{1}{f_i}} * 100$$

where $f_i = \frac{n^i}{n}$ is the sampling fraction of the ith unit

In the most general case, of unequal sampling fraction and reporting units with different weights, the formula becomes (OECD 2003):

$$NR3 = \frac{\sum_{i=1}^{n^{'}} \frac{1}{f_i} * w_i}{\sum_{1=1}^{n} \frac{1}{f_i} * w_i} * 100$$

where w_i is the size weight of the ith unit

OTHER LITERATURE ON RR DEFINITIONS

In their Standard Definitions referring to household surveys, AAPOR (2004) strongly stresses the necessity of using clear and unique definitions of RR. The researcher must precisely define which rates are being used. For example, a statement that "the response rate is X" is unacceptable. The report focuses on four kinds of possible response rates, precisely:

1. RR = Response Rate

AAPOR (2004) presents the following definition of RR according to several sources: **the response rate is the number of complete interviews with reporting units divided by the number of eligible reporting units in the sample**. The report provides six variations to this definition of response rate, ranging from the definition that yields the lowest rate to the definition that yields the highest rate depending on how partial interviews are considered and how cases of unknown eligibility are handled. All these cases could be seen as a more detailed presentation of the OECD formula NR1. The corresponding formulas for unequal selection probability and weights are also presented i.e. analogous to OECD (formulas NR2 and NR3).

For the purposes of this paper also the following definitions play a relevant role, as they allow to focus the quality of preliminary steps of the survey design. Notably:

2. COOP= Co operation rate

Defined as the proportion of all cases interviewed of all eligible units ever contacted. Four variations of this definition are presented.

3. REF = Refusal Rate

Defined as the proportion of all cases in which a housing unit or respondent refuses to do an interview, or breaks-off an interview of all potentially eligible cases. Three variations of this definition are presented.

4. CON = Contact Rate

Defined as the proportion of all cases in which some responsible member of the housing unit was reached by the survey. Three variations of this definition are presented.

Further, other statistics are necessary to correctly calculate the NR, precisely: Non-contact; Other (reasons). The NR is correctly calculated by summing up Refusal, Non-contact and Other rates.

Lozar Manfreda (2003) assumes that most often authors when dealing with RR actually refer to NR1 and call it OVERALL COMPLETION RATE (% of responses among all sent invitations or exposed to invitation - eligible) including partial and complete respondent. The FULL COMPLETION RATE differs from the previous where it considers only the % of complete respondents. Referring only to item non response as a DROP-OUT RATE is also considered,.

For Web surveys the CLICK-OUT RATE (% of accessing the Web questionnaire among all invited) is a noted term. Overall Completion Rates reported in literature (for Web surveys) vary from less than 1% to just a few percent for very general self-selected Web surveys to higher percentage, even as high as 78% in the case of telephone pre-recruited panels.

While in the Commission metadata the majority of Institutes disseminate information on a generic RR, only INSEE disseminates unweighted (i.e. NR1) and weighted RR (even not considering the sampling fraction fi).

RECOMMENDATIONS

For statisticians dealing with surveys, methodological suggestions that arise from the above sections seem to be :

- **clearly specify which kind of response rate is applied**

Further, two kinds of NR/RR seem to be most advisable, according to specific work purposes:

- **NR1 (or Overall Completion Rate) is useful in the first steps of the survey design** to check the robustness of the data collection process. Also COOP, CON and CLIK OUT (for Web) could help in improving the survey design.
- **NR3**, although more complex to calculate, **offers a measure of the quality of the survey estimates** as the majority of BTS samples have weights and often unequal sampling fraction. (This kind of NR is going to be thoroughly discussed in part 2 of the taskforce).

3   DATA COLLECTION MODES

In this section are briefly described the most important and diffused DCMs, with some specific comments on their advantages and drawbacks.

FACE-TO-FACE (PERSONAL VISIT)

Historically one of the first data collection modes (since 1912), mainly used for Consumer (household) surveys. It is also often defined as "personal" mode. It assures high quality results, but also implies very high costs. It is still used for sensitive topics and also for BTS in particular cases (e.g. big companies). Also useful in the recruitment phase in longitudinal or panel surveys.

CAPI/CASI

Computer Assisted Personal Interviewing (CAPI) is the "computerised" evolution of the face-to-face mode, carried out by the interviewer with the support of a personal computer and proper software. In case of sensitive topic, mainly on Consumer surveys, the interviewer hands out the computer to respondent for a short period: Computer Assisted Self-Interviewing (CASI).

MAIL (POSTAL)

This technique, the first historically applied (the first documented Mail survey dates 1788, as reported by de Leeuw), implies the self-administration of the questionnaire by the respondent. The person (or firm) selected completes the questionnaire without the assistance of an interviewer and sends it back generally in a pre-paid envelope. It allows to quickly obtain a general view of the survey (visual approach).

Up to now the majority of Institutes still use this technique for BTS: SA, KOF, INSEE, IFO, CBI, etc. Postal technique is generally widely used for the relatively low costs. It also allows the use of low skilled personnel (Kershoff, 2004). It is worth noticing however, that postal survey costs are directly correlated with a carefully chosen frame. Should addresses not be controlled and correct, or enterprises not be contacted in advance to get their cooperation, this is likely to lead to widespread refusals (increasing costs) and to a very low RR impacting on quality.

Mail questionnaire seems to remain the preferred way of answering also in mixed mode survey (postal plus electronic reporting options) (Census Bureau).

FAX

This mode is widely (and for some aspects unexpectedly) utilised for BTS surveys. The firms themselves contacted by mail or also by phone often prefer to respond with this method. It seems to be going to maintain a relevant role also for the future. Like for MAIL, it allows to quickly obtain a general view of the survey (visual approach). Also this mode is profitable in terms of costs. Part of questionnaires sent by mail are returned by fax (SA, Italy), and also on specific requests after a telephone contact in the CBI experience.

TELEPHONE

In the literature and by many users this tool is often confused with the more sophisticated CATI systems. Telephone alone is mainly useful as a supporting measure: for preliminary contacts, reminders, assistance, follow ups. This mode, like the more sophisticated CATI version explained below, implies the "aural" contact (instead of the more immediate "visual" one as for MAIL/FAX) with the risk of loss of context for the interviewee. Primacy/recency effects (to give the first/last reply option proposed by the interviewer) may arise, mainly for household/consumer surveys. With all the aural DCM the role of the interviewer becomes crucial, so it requires accurate training. The process of making contact and obtaining cooperation by phone was shown to be rather long and complex. In postal mode this may be the same, but it is hidden from the researcher which may be one of the reasons of low RR (Linn et al., 2004).

CATI (Computer Aided Telephone Interview)

These are telephone interviews supported by software that allows to quickly memorize the information. This method is widely used in Consumer Surveys, but less for BTS (Italy, Census Bureau) and often as a follow-up of mail mode (BLS, Census Bureau). It allows to quickly collect information as the interviewer, while asking the questions, immediately enters the information requested and the CATI software stores the data in a proper way. It also allows computerised controls for inconsistencies (Stangl, 2004). Italy uses this technique for Consumer, Industry and Services surveys, with the support of FAX (for firms). It is a quite expensive form of DCM.

Focus: The CATI DCM for Industry and Services at ISAE

In 1988 ISAE started using CATI DCM in the Manufacturing survey instead of the mail mode to address the fall of RR mainly in the southern part of the country, featured by small sized firms. The satisfactory results led to the enlargement of this application progressively up to, in February 2002, cover the whole sample.

Due to the positive results for Manufacturing, since its inception in 1992 the Services sector survey has also used CATI.

With respects to the postal technique, the telephone survey allows to collect information faster, as the answers are readily available after the interview. Further, as each firm establishes a personal direct contact with the same interviewer, month after month, the quality is also improved in comparison with the postal approach, making sure, that always the same agent is responding. Practically, every time, at the end of the interview, firms are requested to fix a date, as they prefer, for the next one, in the first half of the following month. At the beginning of the month they also receive by fax a copy of the questionnaire, with the aim both to focus on the accorded appointment and to give a general overview of the investigated topics. By the end of each month, they also receive the press bulletin containing the general results of the monthly survey. Further, as interviews are carried out by experienced personnel, the risk of item NR is minimised (less than 3-4%).

Another important point is the possibility to easily replace firms (that have ceased or are not any longer willing to participate) in exactly the same strata where they are needed. This allows to avoid most of the distortions arising from relevant differences between the theoretical sample and effective replies.

Furthermore, CATI mode allows to overcome the problem of late coming questionnaires, so that, from this point of view, there isn't any need to revise the results .

ISAE Manufacturing and Services CATI Interviews structure			
Outcome		*Number of phone calls*	
		MANUFACTURING (sample size 4100 units)	*SERVICES (sample size 2100 units)*
1- Accepted interview (explanatory material received)		4032	1846
2 - Accepted interview (explanatory material non received)		31	93
3 - Accepted first interview		46	36
4 - Refusal		69	64
5 - Unreachable		129	730
6 -Out of target		4	2
Failure	*7 -No response*	51	75
	8 -Phone busy		37
	9 - Automatic replayer		9
	10 - Wrong phone number		72
	11 - Already contacted		1
	12 - No more active		7
13 – Exceeding quotas			105
Total phone calls		4359	3076
Monthly average January – June 2005			

More properly the ISAE CATI DCM is essentially a Mixed Mode (see further) as the firms also receive the paper questionnaire by fax and a not negligible percentage of them (about 20%) prefer to return it also by fax. For these firms phone calls of control and thanks are provided. A few firms also answer by e-mail.

Preliminary face –to –face and by phone contacts, mainly for large new entrant firms, are still maintained, as well as phone assistance.

The following table presents the structure of the monthly average outcome of the telephonic interviews for Manufacturing and Services in the first semester of 2005. Rows 1 and 2 show the phone calls to firms which have been responding to the survey for a long time, which ISAE refers to as "loyal" firms. In row 3 the new monthly entries necessary to maintain the desired sample size are shown, which could be seen as a monthly panel rotation quota. The effort to maintain the desired sample size leads to in the Manufacturing survey an extra 6% phone calls with respect to the planned number of interviews' desired size, mainly due to the efforts of contacting new firms. This percentage is however much higher for Services, approximating nearly 50% (sum of rows 5-13) signalling the higher difficulties in this sector of selecting and convincing new firms to join the survey. In fact, the majority of these additional phone calls are in row 5 and 10, indicating that the appropriate personal contact hasn't yet been established.

E-MAIL

This mode has the same visual approach as MAIL and FAX, but it has superiority in terms of speed in comparison to MAIL. It is often used upon specific request of enterprises (e.g. by Italy for Business and Services Survey). This DCM has shown a decreasing trend for RR during the nineties, but "all in all no other method of collecting data ..offers so much potential for so little costs" (Sheenan, 2001). Problems of confidentiality, however, may arise. With e-mail it is not possible to assure that the information given by firms will not be intercepted on the Web (At INSEE, for example, the sending of individual data from or to a firm via e-mail is forbidden).

TOUCH-TONE DATA ENTRY/VOICE RECOGNITION ENTRY (TDE/VRE)

Once the responding unit is contacted by phone, the interviewer activates the automatic registered voice which poses the questions. The interviewee replies by touching one number within a proposed range corresponding to the possible reply option. This is mainly used by the Census Bureau and United Kingdom ONA for some quantitative business surveys. Although convenient in terms of costs, it is featured by relatively high NR.

WEB (Computerised self-administered questionnaires CSAQs, On-line, Internet)

This mode has increasing relevance for BTS, but less for COS because the Internet is not yet sufficiently widespread in households. Web mode is quick and, after the initial phase of Software investment, convenient in terms of costs. It allows, like CATI, computerised controls for inconsistencies. On-line mode enhances the commitment to the survey because it offers additional opportunities for communication with participants and improves the organiser's corporate image (Stangl, 2004).

The major drawback of this method is still represented for COS by the coverage errors as only a part of population have access to the net, while for BTS, having now the majority of firms access to the net, the problem is less relevant.

The layout of the questionnaire plays a relevant role in the on-line surveys as there is a risk of loss of context. The general advice is to use a simple and fast questionnaire design as similar as possible to the paper form.

The on-line mode is featured by a higher unit non response and a lower item non response in comparison to the Mail mode (Arnould, 2005). As (low) item non response is generally regarded as a quality indicator, this finding could firstly suggest a quality improvement in the Web surveys.

A very interesting finding emerges from literature and material presented (Etter, Stangl and Kershoff): only a part of firms (about 30%) freely choose this mode. This percentage is however higher (nearly 50%) for the French annual industry survey. Even presumably increasing in the future, a great part of firms seems still preferring to maintain the more traditional Mail mode.

Etter reported that the Internet survey has a slightly lower unit NR than the mail survey (60.6% in manufacturing , 7.3 points below the mail mode) .

The electronic reporting thus remains an alternative reporting mode offered along with traditional paper forms (BLS, Census Bureau, IFO, INSEE). Since electronic reporting has not yet become the predominant or sole collection mode, resources are not saved or traded-off in data collection; rather additional resources and survey coordination are required to maintain multiple reporting modes.

The "computerised" version of the on line mode, the Computer-Assisted Web Interview (CAWI) is increasingly used in association with CATI in Market research, like CAPI/CATI for consumers does.

MIXED MODE

Mixed mode seems to be the best affordable DCM of the future, which allows to optimize data collection procedures and reduce total survey errors within the available time and cost (de Leeuw, 2005). Table 2 in Attachment 1 summarises the response rates obtained and DCM's used by Institutes, were it clearly emerges the wide use of Mixed DCM's.

There are several types of mixed DCM's, that could be grouped considering the timing of interacting with respondents (from co operation to full completion phase) and/or considering concurrent multiple modes (of data collection and of means of communication) in each single phase. In many real cases, it deals more properly with a Multi Mode System (de Leeuw, 2005).

While sequential mixed mode contacts with a unique mode of data collection do not have consequences in data integrity, using multiple mode in the data collection phase (either concurrent or sequential) affects the data quality (occurrence of mode effects and selection effects).

The DCM adopted also depends on the population investigated (COS vs BTS). For example, in COS mail precontact and telephone interview/self administered mode have shown to be effective, while for BTS the telephone precontact followed by a Mail/Web survey seems to be advisable.

Introducing a Mixed DCM is strongly advisable from the point of view of the firms participating to the survey as it reduces burden and panel attrition, also generally with positive consequences on RR, mainly in the case of voluntary participation.

Drawbacks of a Mixed DCM however are major burden and cost (with respect to some single DCM like mail) for the Institute carrying out the survey and the possible presence of measurements errors deriving from mode effects. A major concern is the impact that a change in mode between surveys may have. For example changing the layout of the questionnaire (between Mail and Web modes) affects the responses (Stangl, 2004). Further, as Etter (2004) reports for Internet in comparison with Mail, some modes may have (slightly) less satisfactory RR. Also, if surveys were conducted with the goal of measuring changes over time, switching modes could have major consequences (Dillman, 2001), as it would be difficult to know whether changes are effective or have to be imputed to mode or self-selection effects.

In adopting a Mixed DCM an Institute should therefore carefully plan and balance the mixed effects of all the following components: costs (initial and stabilised), (average) expected increase of RR , non sampling errors (frame errors, measurements errors and non response errors) and improvement in timeliness of data collection.

4   SECTORAL and SIZE EFFECTS

Relating to economic sectors Etter (2002) reports that, for both mail and internet, there are differences between sectors due to a firm-specific effect: the standardised questionnaire does not suit perfectly all kind of productive activities (e.g. stocks, orders). A similar occurrence is found also in Italy, were the services sectors have relatively higher item non responses in comparison to Industry (both interviewed with CATI/FAX mode) due to the same "firm specific effect". But this occurrence, like for Retail (featured by the presence of very small firms), seems to be more correlated with the size of the firm.

Generally an inverse correlation emerges between RR and firms' size, but with some exceptions.

Within the firms size there is a clear tendency for medium and large size firms to respond more regularly (Etter, 2002), also confirmed in the Italian experience while small establishments may stop responding because they have limited staff and time to report, i.e. the burden is greater (Petroni 2003). Quite the reverse is found in South Africa where the size does not affect the response rate in all sectors surveys (Kershoff, 2005), and the same is found in Latvia.

5   IMPROVING RESPONSE RATES THROUGH THE DATA COLLECTION MODE

Firstly it is worth mentioning that influencing the response rate in data collection depends on a number of factors other than the mode of collection, most notably:

- Number of questions
- Sensitivity of questions
- Simple or difficult questions
- Personal willingness to participate in BTS
- Reputation of the Institution conducting the survey
- Actual business situation of the firm

For these factors appropriate actions should be taken at other survey design steps.

The major factors influencing the RR depending on the DCM are indicatively summarised in Table 1 of Attachment 1. This table is probably far from being exhaustive, thus it should only be regarded as a first attempt. Most of the factors can have a positive or negative effect. Is has been tried also to present the factors in a chronological succession, that is at which step of the data collection process these factors have more relevance, although this may not always be unique. A set of suggestions which has emerged from the available materials is presented in more detail below focusing on the most relevant ones.

CO-OPERATION STAGE

In this initial phase, pre-survey notification activities are strongly advisable. In addition the following actions have demonstrated to be useful in getting co-operation:

- Tailoring contacts to characteristics of the establishment (especially for large ones).
- Contacting the "right" person
- Overcoming a lack of awareness of the survey.
- Make potential respondents more aware of the Institution and its survey programs.
- Personal contact in building the initial relationship with the respondent.
- Knowledge of survey characteristics, explain differences from other surveys in order to avoid burden bound to duplication perceptions.
- Easy accessibility to the data requested and explicitly indicating that estimates are acceptable for requested data items.

Respondent capacity plus respondent authority to release data is necessary. This authority tends to reside in the mid-level managers who have also the authority to delegate the data retrieval and response tasks to subordinate staff. This implies that sending a survey form to the mid-level manager may lead to a non response reduction.

Incentives for obtaining respondent cooperation have also shown positive effects. Monetary incentives have been successfully used in the US for Consumer surveys.

Use of interviewers (in the initiation process, even if the ongoing DCM is going to be of a different kind) increases RR (BLS surveys).

Training of interviewer. For BTS detailed knowledge of the project is essential in order to answer the gatekeepers' (secretaries, receptionists) questions and to overcome the first obstacles. They should be thoroughly versed in the design and objectives of the survey - perhaps more thoroughly than would typically be necessary for a household survey, as business survey respondents represent a particularly informed study population.

No evidence has been found to suggest that employers who are more difficult to contact are more or less reluctant than others to co-operate once contacted. This is encouraging evidence that can be used to motivate interviewers who may be sceptical of the merits of continuing to make contact attempts with sample members after many attempts have already been made.

Research of a sponsor could help in giving a more authoritative image of the survey.

Training of "data collectors" (for large firms). For businesses the BLS teaches the data collectors how to use the concept of "reciprocal value" to obtain respondent cooperation. Training of data collectors in avoiding refusals prepares them to react positively to potential objection of respondents, in convincing firms that their data will have some benefit for their establishment or industry.

Compulsion

Compulsion seems to have contradictory effects. While it seems that compulsion increases the overall completion rate, it also increases the drop-outs (item non response) and may also increases the burden (or perceived burden) for the respondent. Mandatory reporting has significantly increased RR in some Census Bureau Surveys (Worden and Hamilton, 1989), and Berté (2005) analyses the positive effects on RR (mainly for large firms) and regularity in French Manufacturing and Services survey. Ferrari (2004), dealing with the French Investment survey, reports that compulsion did not modify the regularity and quality of answers at an aggregated level and allowed also a significantly increase of the response rate for large firms, mainly in the strata where they were more lacking. The CENSUS Bureau in its economic Census surveys uses a wide set of strategies ranging from stronger appeals in successive follow-up mails to the exercise of its mandatory authority via the threat of prosecution. However this type of action does not seem relevant for BTS.

Voluntary collection

The most effective approaches for organizations without governmental mandatory authority may be those reported by Paxon et al. 1995, namely to send the business survey to named individuals and to use telephone follow-up methods to encourage response or obtain the needed data. As in the UK where the participation is voluntary (CBS), Linn (2003) states that the balance between response burden and business goals is the determinant of the response decision. So all actions aimed at lowering response burden and increasing the perceived relevance of the survey to business goals have to be performed. In South Africa participation is voluntary, and it is doubtful that the participation rate would increase if the survey were compulsory (Kershoff 2005) .

OVERALL RESPONSE STAGE

The efforts of Institutions carrying out BTS to successfully obtain participation over time should comprise all the strategies to preserve the interest in the survey and to ease, as far as possible, the burden of the respondents. Particularly by:

- Maintaining *contact*s with participants, renewing the *interest* in the survey topics, making them aware of the relevance of participating;
- Using *simple and plain questionnaires*, giving particular attention to question wording;

- *Offering* the respondent *free choice of the method of communication* they prefers has a positive influence, therefore foreseeing a Mixed DCM.
- *Training of data collector* (mainly for large firms) to teach respondents how to complete the survey during the initial contact and on how to avoid overwhelming respondents with the survey task
- Foreseeing *follow ups* which the firms can find useful for their activity .

Lozar Manfreda et al. (2003) reported that for Web surveys pre-notice (Individual pre-recruitment) increases the click-trough and overall completion rates.

Reducing burden

The balance between response burden and business goals determines the response decision of the firm (Linn et al., 2003). The perception of burden may be as important as the actual level of burden itself. This perception can be affected by the "time in sample" (participation over time in panel surveys), the length of interview (or number of separate reporting items) and apparent duplication with other government surveys. Time in sample may be the most important source of perceived burden (panel attrition). Studies on ways of reducing burden, mainly focusing at the sectoral level require more study (Petroni et al.2004).

Offering choices to firms for different method of answering (Mixed mode) may reduce burden (however, it implies higher burden for Institute collecting process. Kershoff, 2005). Recalling (pre-printing, etc.) previously reported data can ease response burden (Census). Specifically for quantitative questions, aims in reducing burden are for example represented by reminding the answer given in previous survey (Stangl, 2004), however should the t-1 answer be unreliable or out-dated, this recall can wrongly influence the t answer, introducing bias.

Remindings

It is often necessary to make more contact attempts to get the requested information: Linn et al. (2003) reported an average of 7.8, mainly by phone for BTS. Census Bureau suggests the following actions:

- stronger appeals in successive follow up mailings;
- enclosure of promotional materials;
- toll-free telephone help-lines to provide assistance to respondents completing forms;
- collecting minimal data requirements in lieu of total non response (also firms vs establishment) searching for an alternative informant to report the desired company or establishment data;
- explicit indication that estimates are acceptable for requested data items;
- working with selected sample units to establish reporting parts facilitating response;
- accepting data in alternative forms (that is data that are not recorded on the questionnaire) .

According to Etter (2002) one of the main topics for internet is to find ways to remind firms to respond to the questionnaires: the respondents forget the Internet more easily than the Mail survey. Therefore some measures have to be developed for a more adequate recall system, e.g. a combination of e-mail and telephone recalls. Evidence exists that e-mail reminders in Internet survey contribute to a large part of the final sample size. INSEE, for example, sends a first e-mail message to inform the firms of the opening of a new campaign, if necessary a recall e-mail, with for both messages a direct access to the protected Web site (https).

FULL COMPLETION STAGE/DROPP-OUT

Training of interviewer is essential to properly solicit responses to avoid drop out (item non responses). Interviewer should also encourage and allow the respondent to retrieve information that may be held by other persons within the organisation. RR improved from increased re-contact efforts and the use of incentives (IGEN98 reported in Petroni et al. 2004). Avoiding open-ended and "difficult to answer" questions in order to decrease drop outs (item non response).

6   CONCLUSIONS

In regards to acting on data collection mode to improve response rates three main suggestions appear to emerge from the literature and available material for BTS and COS:

1. **The starting point of view should be the firm (to a lesser extent the consumer): adopting a company-centric point of view. Efforts should be made to allow surveys' participants to choose the mode they prefer.**
2. **All the modes have plusses and drawbacks. The future appears to be even more bound to a mixed data collection mode. Mixed mode data collection should be carried out both contemporaneously and in a multi stage way (as far as possible bound to BTS and COS timeliness). That is efforts should be made in improving preliminary contacts and reminders / follow up actions.**
3. **Although Internet (online) seems to be the mode of the future, a large part of firms still prefer the most traditional mail questionnaire and a significant part of respondents prefer fax (habit persistence).**

Additional general suggestions could be:

Efforts should be undertaken to document and standardize the data collection process (as recommended to BLS by the Mathematical Statistical Research Center in the mid 1980's, reported also by Petroni et al., 2004). This would allow evaluations of mode effect on quality. The philosophy of the Census Bureau's economic area is that issues related to response/non response can and should be addressed through: reducing response burden, providing better customer care and adopting a company-centric point of view. To encourage responses BLS surveys have increasingly offered establishments multiple mode of reporting and are moving toward offering the electronic option as well.

For very large companies, the assignment of an Account Manager responsible to identify a company contact to be primarily responsible for coordinating or completing the forms showed satisfactory results both in terms of RR and timeliness. Most intensive levels of outreach or non response follow-up activities on selected cases, usually very large business (having the greatest potential impact on statistical survey estimates) is advisable.

Table 1 Factors influencing the RR depending on the DCM

	DATA COLLECTION MODE							
RATES	**FACE-TO-FACE/CAPI**	**MAIL**	**FAX**	**TELEPHONE**	**CATI**	**DTE/VRE**	**E-MAIL**	**WEB**
					Prenotice (+)			
					Incentives (+)			
	Training of interviewer (+)	Compressed mail schedule			Training of interviewer (+)			Coverage (-)
					Survey salience (topic interest) (+)			
					Research sponsor (+)			
COOPERATION (Participation)	Contact the right person (mid-level manager) (+)							
		Reduction of social desirability bias (Anonymity) (+)						
					Compulsion (+/-)			
		Clear layout of the questionnaire (+)						Simple and clear layout (+)
		Pre-paid return envelope (+)						Easy and quick access to the internet survey (+)
		System of recall (+)						System of recalls for the internet survey (+)
	Availability of non verbal cues (+)	Specific (dis)/advantages of the mode itself (e.g. hard copy as a reminder, delivery delay) (+/-)					Secure Internet message exchange (concern about confidentiality) (-)	Use of protected web site (https and not http) (+) (concern about confidentiality), if not (-)
		Personalisation of mailing materials (+)					Specific (dis)/advantages of the Internet mode itself (e.g. e-mails get lost in the huge number of incoming e-mails, quick transmission, problems with the computer systems, computer frustrations of respondents). (+/-)	
					Inconsistencies controls (could help but could also demotivate and lower the attention of the respondents) (+/-)			Need of controls procedures (preference for internal controls to external control which could demotivate and lower the attention of the respondents) (+/-)

Table 1 Factors influencing the RR depending on the DCM

RATES	DATA COLLECTION MODE							
	FACE-TO-FACE/CAPI	**MAIL**	**FAX**	**TELEPHONE**	**CATI**	**DTE/VRE**	**E-MAIL**	**WEB**
FAILURE (NON-CONTACT)				Wrong address/phone number (-)				Take into account the different types of browsers, if not (-) Sending of e-mail to remind the web data collection (+).
OVERALL COMPLETION							Technical experience of the Institute (+)	
				Question wording (+/-)				
				Free choice for the respondent between response modes (+/-)				
				Lenght of questionnaire/interview (-)				
				Reducing burden (-)				
				Remindings				
				Follow-ups				
				Day time (lunch break and afternoon) (+)				
		Length of questionnaire (-)		Loss of context in an aural contact (-)				
FULL COMPLETION/DROP-OUT		Loss of interest (-)						
		Getting annoyed (-)						Loss of context in an only partial visual contact (-)
				Difficult (open ended) questions (-)				

Note: (+) and (-) indicate respectively positive/negative influence; (+/-) indicates mixed effects

Table 2 : RESPONSE RATES and DATA COLLECTION MODE

	SURVEY RESPONSE RATES						COUNTRY	SURVEY DATA COLLECTION MODE					
	INDUSTRY	INVESTMENT	CONSTRUCTION	RETAIL	SERVICES	CONSUMER		INDUSTRY	INVESTMENT	CONSTRUCTION	RETAIL	SERVICES	CONSUMER
BELGIUM	96	95	96	94	90	22		MAIL (mainly); E-MAIL	MAIL (mainly); E-MAIL	MAIL (mainly); E-MAIL	MAIL (mainly); E-MAIL	MAIL (mainly); E-MAIL	CATI
CZECH	85	85	75	60	75	33		MAIL (mainly); E-MAIL; remindings Phone	MAIL/E-MAIL;interviews with manager as treatment for NR	MAIL/E-MAIL;interviews with manager as treatment for NR	MAIL/E-MAIL	MAIL/E-MAIL; remindings by PHONE	FACE-TO-FACE
DENMARK	90	90	80	85	75	63		MAIL	MAIL	MAIL	TELEPHONE(CATI?)	MAIL	TELEPHONE(CATI?)
GERMANY	88	66	62	63	75	100 (quotas.)		FAX/E-MAIL/INTERNET;remindings by FAX/TELEPHONE	MAIL/ON-LINE;reminders FAX/E-MAIL/TELEPHONE	MAIL/ON-LINE;reminders FAX/E-MAIL/TELEPHONE	MAIL, remindings by FAX, TELEPHONE	FAX/E-MAIL/INTERNET;remindings by FAX/TELEPHONE	FACE-TO-FACE, IN HOME (?), COMPUTER ASSISTED (CAPI?)
ESTONIA	70-80	60	80	75	80	100		INTERNET+ 20% by fax/mail	INTERNET+ 20% by MAIL; remindings E-MAIL,TELEPHONE	INTERNET+ 5% by MAIL; remindings E-MAIL,TELEPHONE	INTERNET+ 15% by MAIL; remindings E-MAIL,TELEPHONE	INTERNET+ 1% by mail	TELEPHONE (CATI?); 3 remindings
GREECE	38	26	33	40	48	5		MAIL	MAIL	MAIL	MAIL	MAIL	TELEPHONE (CATI?)
SPAIN	50-60	60	40	44	44	33		MAIL	MAIL	MAIL	TELEPHONE (CATI?)	TELEPHONE (CATI?)	FACE-TO-FACE
FRANCE	57-67 (unw.); 69-78 (w.)	57 (turnover)	57-63 (unw.); 72-79 (w.)	72 (unw.); 62 (w.)	64-65 (unw.); 53-62 (w.)	70		MAIL/INTERNET; remindings MAIL	MAIL; remindings MAIL	MAIL; remindings MAIL	MAIL; remindings MAIL	MAIL; remindings MAIL	MAIL pre-notice;CATI; MAIL follow up

Table 2 : RESPONSE RATES and DATA COLLECTION MODE

	SURVEY RESPONSE RATES						COUNTRY	SURVEY DATA COLLECTION MODE					
	INDUSTRY	INVESTMENT	CONSTRUCTION	RETAIL	SERVICES	CONSUMER		INDUSTRY	INVESTMENT	CONSTRUCTION	RETAIL	SERVICES	CONSUMER
	45	30	45-65	43-45	35-38	56-58	**IRELAND**	MAIL/FAX	MAIL; intensive TELEPHONE follow up	MAIL; TELEPHONE follow up	MAIL; TELEPHONE follow up	MAIL; reminidings PHONE	TELEPHONE (CATI?)
	97	25	40	77	97	100 (quota s.)	**ITALY**	CATI/FAX	CATI/MAIL	MAIL;TELEPHONE remindings	MAIL; TELEPHONE remindings; E-MAIL follow up	CATI/FAX	CATI
	85	80	85	75	85	65	**CYPRUS**	TELEPHONE	TELEPHONE	TELEPHONE	TELEPHONE	TELEPHONE	TELEPHONE (CATI?)
	77-88	81-83	81-86	72-79	74-81	85-89	**LATVIA**	MAIL; remindings FAX, PHONE	reminding by FAX/TELEPHONE	MAIL	MAIL	MAIL; remindings FAX, PHONE	FACE-TO-FACE; 3 remindings
	55	60	70	50	65	95-100	**LITHUANIA**	MAIL	MAIL	MAIL	MAIL	MAIL	FACE-TO-FACE/TELEPHONE
	98	98	98	NA		65-70	**LUXEMBOURG**	MAIL/FAX/INTERNET	MAIL/E-MAIL/FAX	MAIL/E-MAIL/FAX/WEB			TELEPHONE
	23-27	22-25	10-20	13-17	17-24	100 (quota s.)	**HUNGARY**	MAIL	MAIL	MAIL	MAIL	MAIL	FACE-TO-FACE
	30-32	NA	NA	NA	NA	30	**MALTA**	TELEPHONE; remindings mail, e-mail	NA	NA	NA	NA	TELEPHONE
	>=80	80	65	80	80	65	**NETHERLANDS**	MAIL/INTERNET/E-MAIL(40%)	MAIL	MAIL	CATI	CATI	TELEPHONE
	51-67	42	48	11	47	71	**AUSTRIA**	MAIL/ONLINE		MAIL/ONLINE	MAIL/E-MAIL	MAIL/ONLINE	CATI
	65	58	50	37	37	75	**POLAND**	MAIL	MAIL	MAIL, TELEPHONE follow up	MAIL	MAIL	CAPI since jan2004; prev. MAIL

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Table 2 : RESPONSE RATES and DATA COLLECTION MODE

COUNTRY	SURVEY RESPONSE RATES						SURVEY DATA COLLECTION MODE					
	INDUSTRY	INVESTMENT	CONSTRUCTION	RETAIL	SERVICES	CONSUMER	INDUSTRY	INVESTMENT	CONSTRUCTION	RETAIL	SERVICES	CONSUMER
PORTUGAL	77	67.9	70	68	60	85	MAIL	MAIL	MAIL	MAIL	MAIL	CAPI / TELEPHONE (CATI?)
SLOVENIA	91	90	92	82	92	60-70	MAIL	MAIL	MAIL, CATI follow up	MAIL	MAIL	CATI
SLOVAKIA	76.5	76.5	85.7	76.5	57.4	86-95	MAIL/E-MAIL/FAX; remindings by PHONE	MAIL/E-MAIL/FAX; remindings by PHONE	MAIL/E-MAIL/FAX; remindings by PHONE	MAIL/E-MAIL/FAX; remindings by PHONE	MAIL/E-MAIL/FAX; remindings by PHONE	FACE-TO-FACE
FINLAND	80-90	70	80	45-50	70	72-76	MAIL/FAX/INTERNET 50-60%	MAIL/FAX/INTERNET 40-50%	MAIL/FAX/INTERNET 50-60%	MAIL/FAX	MAIL/FAX/INTERNET(60-70%)	CATI
SWEDEN	80	85	75-80	55-60	55	100 (quotas.)	MAIL/WEB	MAIL	MAIL/WEB	MAIL/WEB	MAIL/WEB	TELEPHONE
UNITED KINGDOM	50	19	50-55	28	20-22	5 (random dialling)	MAIL	MAIL	NA	MAIL	MAIL	CATI
BULGARIA	97.9	90	99.2	99.1	97.6	62	FACE-TO FACE (first contact)/MAIL	MAIL	FACE-TO FACE (first contact)/MAIL	FACE-TO FACE (first contact)/MAIL	FACE-TO FACE (first contact)/MAIL	FACE-TO-FACE
ROMANIA	85	85	80	75	79	60-70	DATA COLLECTION BY INTERVIEWER on paper questionnaire (FACE-TO-FACE?)	DATA COLLECTION BY INTERVIEWER on paper questionnaire (FACE-TO-FACE?)	DATA COLLECTION BY INTERVIEWER on paper questionnaire (FACE-TO-FACE?)	DATA COLLECTION BY INTERVIEWER on paper questionnaire (FACE-TO-FACE?)	DATA COLLECTION BY INTERVIEWER on paper questionnaire (FACE-TO-FACE?)	FACE-TO-FACE (?)
SOUTH AFRICA	28		20	20-23			MAIL		NA	MAIL		
USA												CATI/WEB/E-MAIL
CANADA												

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