



JOINT EUROPEAN COMMISSION – OECD WORKSHOP ON INTERNATIONAL  
DEVELOPMENT OF BUSINESS AND CONSUMER TENDENCY SURVEYS

BRUSSELS

14 – 15 NOVEMBER 2005

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

**Part 2 – Assessing and minimising the impact of non-response on  
survey estimates**

**Richard McKenzie  
Short-term Economic Statistics Division  
OECD Statistics Directorate**

- November 2005 -

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

**Taskforce on “Improvement of Response Rates and Minimisation of Respondent Load”**

**Part 2 - Assessing and minimising the impact of non-response on survey estimates**

**Abstract**

This report summarises the specific work performed by a multi country task force of the OECD / European Commission Working Group on Business Tendency and Consumer Opinion Surveys on the topic of assessing and minimising the impact of non-response on survey estimates. A thorough review has been undertaken on country practices and available literature on the key issues related to this topic, namely: defining non-response and observing non-response rates across countries; reviewing weighting methodologies used and their relationship to the treatment of non-response and; assessing the likely impact of non-response bias on survey estimates.

All institutes reviewed in this study apply to at least some extent the missing at random (MAR) methodology for treating non-respondents in business tendency surveys, which assumes that the average (weighted) distribution of answers from responding business is representative of non-respondents. Whilst there appears to have been limited analysis of the validity of this assumption, investigations which have been performed show that it may not hold in some cases and that more thorough research on this issue is warranted. The task force also found that some institutes may not be correctly taking into account sampling probabilities in their weighting methodologies and the paper outlines the proper practices that should be followed.

Richard McKenzie  
Short-Term Economic Statistics Division  
OECD Statistics Directorate  
November 2005

## 1 Introduction

1 The terms of reference specific to the task force work on “Assessing and minimising the impact of non-response on survey estimates” were:

- a. How to assess the impact (bias) that non-response<sup>1</sup> can have on survey estimates. Work on this issue should take into account both the impact of the overall level of non-response (e.g. 10% vs 50%) and non-response by type of business or consumer (e.g. large businesses vs small) and type of variable / question. The possible bias caused by excluding small businesses from the scope of the survey to reduce response burden (cutoff sampling) will also be studied.
- b. Develop methods to minimise the impact (bias) of non-response (e.g. imputation methods, estimation methodologies).

2 As such, this report deals entirely with technical or ‘quantitative’ issues associated with non-response as opposed to qualitative issues (e.g. improving survey processes to minimise non-response) which were addressed separately by this task force under the issue “Relationship between response rates and data collection methods”<sup>2</sup>

3 The task force<sup>3</sup> addressed the terms of reference in the following three ways:

- Internet research to identify relevant documents on the topic;
- Provision of documents by task force members based on work they had performed on this topic or were aware had been performed;
- Distribution of a small questionnaire to a sample of institutes to collect relevant information to explore the issues in the terms of reference. A copy of this questionnaire is provided in Attachment 1.

4 The material collected from these activities forms the basis for the analysis presented in this paper, through which all aspects of the terms of reference are addressed to some extent with the exception of the impact of cutoff sampling (i.e. exclusion of small businesses). The paper is presented in 4 substantive parts. Firstly the concept of non-response is defined and response rates for a selection of countries are reviewed. Then the paper reviews weighting methodologies used and its relationship to the treatment of non-response. Following this an assessment of the likely impact of non-response bias on survey estimates is provided based on a review of the literature and finally a set of conclusions and recommendations are made.

## 2 Defining non-response

5 Prior to addressing the issue of the impact of non-response on survey estimates it is important to define what is meant by non-response and the non-response rate (NR). Here we specifically refer to the definitions provided by the OECD (2003), but these are also supported by AAPOR (2004) and NCES (2002).

---

<sup>1</sup> Related to this is the need to define response rates for tendency surveys given that different types of collection methodologies are often used (e.g. quota sampling).

<sup>2</sup> The report on this aspect of the task force work is available at <http://www.oecd.org/dataoecd/55/40/35558806.pdf>

<sup>3</sup> The contributing members for this part of the task-force were: Richard Curtin (University of Michigan, USA); Lin Tao (Statistics Bureau, China); Pieter Laubscher & George Kershoff (Bureau Economic Research, South Africa); Klaus Abberger (IFO, Germany); Roger Khudsen (Economic Research Institute, Sweden); Gerhard Schwarz (WIFO, Austria); Jonathon Wood (Confederation of British Industry); Staffan Linden (European Commission); Bianca Martelli (ISAE).

## OECD definitions

6 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 selected in the survey

7 This measure is useful for checking the efficiency of data collection procedures and is an appropriate aggregate measure in surveys with uniform sampling fraction and equal weights.

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

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

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

where  $w_i$  is the size weight of the  $i^{th}$  unit

## Assessing response rates for a selection of countries

9 The response rate (RR) for a survey is simply the inverse of the NR as defined above and thus should be calculated in the same manner (or simply  $100\% - NR$ ). Information on current response rates was requested in the questionnaire (see Attachment 1) sent to a selection of countries as outlined in paragraph 3. The majority of responses to the questionnaire on the issue of RR implied they were calculated roughly in accordance with the OECD recommendations. However it was apparent that information on sampling probabilities is rarely used and this issue is discussed further in paragraph 18.

10 Understanding the potential impact of non-response bias on the quality of survey estimates for business and consumer opinion surveys is of particular importance given that these surveys often experience low response rates. This is in part influenced by the authority under which the data is collected, as it is often voluntary and in many countries performed by private institutes. This can give rise to a wide variation in RR across countries as shown in Table 1, depending on the particular circumstances under which the data is collected within the country.

11 Whilst the issue of non-response bias may appear more pertinent for surveys with low response rates, the representativeness of the responding sample<sup>4</sup> is the key issue. Consequently surveys with relatively high response rates (e.g. 70 – 80 %) may be just as susceptible to non-response bias as those with

---

<sup>4</sup> Assuming no explicit imputation for non respondents

relatively low response rates (e.g. 30 – 40 %). Therefore, understanding the nature of potential non-response bias should be considered to be of importance to all institutes<sup>5</sup>, not withstanding the large differences in RR which exist between countries as shown in Table 1.

**Table 1: Current response rates for a sample of countries**

Country & Institute	Survey & Response rate (effective sample size if reported)
United Kingdom : Confederation of British Industry	Industry 45% (2000), Retail 22% (1000), Investment 19% (2000), Services 20% (1000)
South Africa: Bureau for Economic Research	40-45% across retail / wholesale, manufacturing, motor trade and contractors (building related). Stable for 3 years and largely the same respondents each quarter which minimizes movement error. Total sample of around 3000
Canada: Statistics Bureau	Business conditions for manufacturing (55%), BC for Traveler Accommodation Services (70% - in pilot phase though)
Finland: Statistics Bureau	Consumer Survey 74% (2,200)
Austria: WIFO	Manufacturing 30%, Construction 30%, Services 34%. These are panel response rates, response rates of recruits are lower.
France: INSEE	Industry 81% (4000), Investment 77% (4000), Retail 82% (5,000), Services 76% (4500), Construction 84% (5,000)
Netherlands: Statistics Office	Industry 90%
Slovenia: Statistics Office	Consumer Survey 68% (1500), Industry 91% (600), Construction 92% (300), Services 92% (520), Retail 82% (800)
Japan: Central Bank	Whole economy: TANKAN survey 95%.
Germany: IFO	Manufacturing 90%, Construction 70%, Overall including other sectors 80%
Slovak Republic: Statistics Office	Industry 75% (500), Construction 85% (420), Retail 60% (420), Services 63% (500)
Statistics Norway	BTS Survey for Manufacturing, Mining and Quarrying 85% (700)
China	Whole economy 95%

### 3 Weighting methodology and its relationship to non-response bias

12 The methodology used for weighting business responses in sample surveys is regarded as a crucial element impacting on the quality of results for population estimates of macro-economic variables and countless studies<sup>6</sup> on weighting methodologies and their relationship to sampling error and bias have been undertaken. However this issue does not appear to have generated much attention in the field of Business Tendency Surveys (BTS). This may reflect the fact that BTS deal with qualitative data. Nonetheless, as a key purpose of estimates from BTS is to provide insights on the likely developments in key macro economic variables (e.g. production, employment, GDP) this issue deserves more attention<sup>7</sup>.

#### Recommended weighting methodologies and treatment of non-response

13 The OECD Handbook on Business Tendency Surveys (OECD, 2003) has a detailed chapter on recommended weighting methodologies for BTS surveys which can be found at<sup>8</sup>

<sup>5</sup> The NCES Statistical Standard (2002) produced by the U.S Department of Education states in its guidelines that analysis of the survey characteristics for non-respondents and respondents are required to assess the potential non-response bias in the RR is less than 85%.

<sup>6</sup> For example, see the proceedings of International Conference of Establishment Surveys 2 (ICES2), 2000. [http://www.eia.doe.gov/ices2/invited\\_session\\_abstracts.htm#11](http://www.eia.doe.gov/ices2/invited_session_abstracts.htm#11)

<sup>7</sup> Similar statements can be made for the relationship between estimates from Consumer Opinion Surveys and macro economic variables such as household final consumption expenditure.

<sup>8</sup> This document is contained on the OECD portal: Business Tendency and Consumer Surveys: International Development Work and Coordination at <http://www.oecd.org/std/bt-coi/coordination>

<http://www.oecd.org/dataoecd/11/51/33659920.pdf> . It recommends that three main issues be taken into consideration when forming survey weights (refer to the above link for the relevant formulae):

1. Sampling probability. It is essential that the inverse of the sampling probability of the business be a component of the business weight.
2. Business size. A measure of business size relevant to the subject of interest should always be used to weight responses to qualitative questions. The most readily available relevant measures of size are turnover and employment. These would normally be collected in the survey and be multiplied by the inverse of the sampling probability to form the overall business weight.
3. The above variables should be used to generate branch level estimates (e.g. detailed industry). Branch level estimates should then be weighted together to form aggregate estimates (e.g. total manufacturing) based on population statistics of value added or the most closely related variable available.

14 In dealing with non-response the OECD handbook states the following:

*If non-response can be expected to be systematic, in the sense that units which have had or are expecting an especially good or bad development are also an unduly large part of non-response, then special measures need to be taken in order to avoid bias. One possible approach is to construct a separate "non-response stratum", and take a repeat sub-sample from this stratum for which further strong efforts are made to collect data. This information can then be used to make separate estimates for this "non-response stratum".*

15 This approach is supported by NCES (2002) together with an emphasis on the importance of analysing non-response caused by respondents that are difficult to reach in the case of Consumer Surveys, an issue also researched by Curtin et al. (2000). However the European Commission (1997) harmonised guidelines indicate that a missing at random (MAR) approach should be assumed for non-respondents implying they would have the same response distribution as responding units.

16 Non-response analysis of the kind implied by the OECD handbook is expensive and clearly not practical in the context of regular survey procedures. Nonetheless, it is an important issue which can be the subject of specific research or be addressed through implementation of an appropriate explicit imputation methodology. The key issue to explore is whether the missing at random assumption for non-respondents is reasonable or not. This issue is therefore a major focus of the remainder of this paper.

#### Review of weighting methodologies and treatment of non-response

17 The weighting methodology and treatment of non-response was examined for 11 institutes across a range of countries conducting business tendency and / or consumer opinion surveys. For BTS surveys a wide variety of weighting methodologies were used, with the most common aspect being the use of a variable representing business size collected from the survey to weight together responses within some relatively homogenous branch / cell / stratum. These branch / cell / stratum estimates were then weighted together on the basis of available population statistics (e.g. value added of industry components) to form required aggregates. However two organisations did not weight their responses at any level but did provide a qualitative justification on why this approach was used.

18 Consequently the majority of organisations appear to use a weighting methodology roughly in line with the OECD recommendations. However it was not clear whether organisations took into consideration sampling probabilities in the weighting process. If aggregation to the branch or cell level

combines businesses chosen with different probabilities (e.g. large and small businesses) then the inverse sampling fraction should be a part of the business weight – otherwise the estimates will be biased. This is possibly an issue which may have been overlooked by some organisations. It is recognised that sampling methodology varies considerable across countries conducting BTS and issues such as the reliability (or non-existence) of survey frames, frequency of sample updates and method of business selection (e.g. recruitment to a panel, maintenance of a quota) can imply that information on sampling probabilities are unreliable or unobtainable. Nonetheless, it is important that a component of the weight assigned to businesses when estimating at the branch / cell level is approximately in proportion to the distribution of these types of businesses in the population for the branch / cell in question otherwise the survey estimates will suffer significantly from sampling bias<sup>9</sup>. If no such information on sampling probability or distribution of businesses exists, a minimum requirement if business weights (e.g. employment / turnover) are to be used is that estimation cells are split by business size group (e.g. small, medium and large businesses). This would require approximate population level estimates from external sources for these estimation cells to use as weights in order to form aggregates as outlined in point 3 of paragraph 13.

19 In regards to the treatment of non-response for BTS, all organisations surveyed used the missing at random approach – assuming the average (weighted) distribution of responses from responding business is representative of non-respondents. An exception applies for INSEE, which explicitly imputes responses for non-responding businesses under certain circumstances using a method referred to as the “constant sample”. This methodology is discussed further in paragraphs 25 - 29.

20 Only a small number of countries’ weighting methodology for consumer opinion surveys (COS) were reviewed in this analysis, but concern over sampling and non-response bias for consumer surveys appears to be less of an issue in comparison to BTS. For most countries, detailed demographic data available from population censuses can be used to post stratify the sample and thus adjust respondents’ weights to be representative of the population. This helps significantly to reduce the risk of non-response bias.

#### **4 Assessing the impact of non-response on survey estimates**

21 There appears to have been very few analyses to investigate the existence and impact of non-response bias for BTS whereas this issue has been studied to a greater extent for consumer surveys, at least in the United States. This section attempts to review the literature for both types of surveys and draw conclusions or suggest areas for future work.

##### Business Tendency Surveys

22 As outlined in paragraph 19, virtually all institutes undertaking BTS treat non-response using the missing at random approach – assuming the average (weighted) distribution of responses from responding business is representative of non-respondents. Given the high levels of non-response for many institutes’ surveys, it seems important to investigate the validity of this assumption.

---

<sup>9</sup> In the case where small and large businesses are chosen in a survey with different probabilities (i.e. large businesses are selected with certainty and the small business are chosen at random) and weighted together in an estimation cell using only business size as a weighting variable, the resulting estimate at the cell level is not representative of the business population for this cell. In fact, the contribution of small businesses will be significantly underestimated. Either an additional weighting factor should be applied for the small business or they should be excluded from the sample altogether. In the later case, the survey takes the form of a ‘cutoff’ sample in which an implicit assumption is made that the distribution of responses across large businesses in the cell would be representative of small businesses.

### *Research undertaken in South Africa*

23 The South African Bureau of Economic Research has undertaken some analysis in this field which is currently ongoing. An initial study (Pellisier, 2005) investigated the impact of response patterns on the Retail Survey results by estimating the retail business confidence indicator<sup>10</sup> (BCI) for three groups of respondents: active; less active; occasional<sup>11</sup>. This initial assessment was performed for the survey periods of December quarter 2003 to March quarter 2005.

24 Whilst the definition of the response groups of active, less active and occasional is somewhat arbitrary<sup>12</sup>, the difference in average BCI for these three groups was statistically significant over the period and not constant over time. Similar results were also found for Manufacturing business confidence. These results indicate, at least for this study, that non-response bias exists and its magnitude changes over time. Consequently this would affect the quality of the Retail and Manufacturing business confidence measures for both point in time estimates and changes over time derived from the time series. Therefore this initial study has cast serious doubt over the appropriateness of using the MAR assumption for non-respondents and suggests that more research by other institutes is urgently required.

### *INSEE experience with explicit imputation – the “constant sample” method*

25 INSEE applies a unique method known as the “constant sample” to explicitly impute responses to questions which applies to both partial (i.e. item) and complete (i.e. unit) non-response in their business tendency surveys. However this method is only applied to a subset of non-respondents as the imputed values are derived from previous responses to the survey. Scherrer (2005) describes the application of this methodology in detail together with the logic underlying the imputation process.

26 The motivation behind INSEE’s use of the constant sample methodology is to maximise the accuracy of estimates of change derived from their surveys, due to the fact that enterprises do not systematically answer each monthly survey, or may submit responses after the cutoff date for publication. Therefore, only taking into account answers from businesses responding to a particular monthly cycle of a survey can lead to a false diagnosis of changes in the business climate if this is due only to a change in structure of the respondents. This concern should not be unique to France, thus the concept of focusing on the impact on non-response on estimates of change for survey outputs should be of interest to all institutes responsible for BTS.

27 Analysis presented by Scherrer (2005) shows that the impact of applying the constant sample methodology on estimates of the balance of opinion for key items from the Retail Trade survey is negligible in most months but can have an impact of between 2 and 8 percentage points in some months. The occurrence of these occasional large impacts is explained by the fact that the Retail Trade sector is relatively concentrated and therefore the absence of one or another large enterprise can modify the balance of opinion.

28 Further analysis on the tendency of past production for the car industry branch of the industry survey and the tendency of past sales for the do-it-yourself branch of the retail sector showed that the time series derived using the constant sample methodology gave a smoother evolution than the time series

---

<sup>10</sup> The BCI is calculated as the % of businesses claiming to be satisfied with prevailing business conditions

<sup>11</sup> Active respondents were defined as those who had responded to 80% or more surveys over a 4 year period, less active had replied to between 60 – 80% and occasional to less than 60%.

<sup>12</sup> The arbitrary nature of the response groups’ definition suggests some sensitivity analysis should be done to see if changing the definition affects the statistical significance of the tests performed.

derived from treating non-response using the MAR assumption. This result was apparent for both preliminary and final estimates thus demonstrating that the constant sample methodology can be effective in reducing the amount of noise in the survey estimates and resultant time series. The analysis performed by Scherrer provides some (limited) evidence that the MAR assumption may not hold and that the constant sample methodology is relatively effective in imputing the likely response of non-respondents (or in this case late respondents), at least for the sectors analysed.

29 INSEE has not yet performed enough analysis to place serious doubt on whether the MAR assumption is reasonable or not. Nonetheless their methodology represents one of the only attempts to seriously tackle the issue of non-response bias for BTS and further research on its effectiveness and ability to identify evidence of non-response bias is encouraged. This would be more effective if this type of research could be expanded to other countries through their application of the constant sample methodology for experimental purposes.

#### *Norwegian research on non-response bias for business tendency surveys*

30 Wang (2004) reported on a study to examine the potential impact of non-response in the Norwegian Business Tendency Survey. Statistics Norway currently uses the missing at random assumption and the main purpose of the study was to “take a closer look at this assumption to see if it holds”.

31 The main focus of the study was to use alternative methods across stratum groups (i.e. employment size & industry) to distribute the design weights of non-responding units and to compare this for both number raised and ratio estimation. The results from these alternative estimation models showed very little difference to those based on the MAR assumption. However this is not surprising as the aggregations across stratum groups that were used in the study only served to provide a potentially more robust weighting adjustment methodology.

32 The study also experimented with nearest neighbour imputation based on employment size. Here some evidence was found of a difference in response pattern between size of unit, although the overall impact on estimates was minimal.

33 Whilst this analysis represents an interesting study and one of the first of its kind, a number of simplifying assumptions were made and data from only one cycle of the survey was analysed. Consequently significantly more research of this kind is required before being able to make any conclusions on this topic, a point which the author notes in his summary of the paper.

#### Consumer opinion surveys

34 Curtin et al. (2000) undertook a comprehensive review on the effect of response rate changes on the Index of Consumer Sentiment compiled by the University of Michigan, which generally achieves response rates of between 60 – 70%. This study looked at the impact of non-response bias on both cross sectional and time series (i.e. changes between surveys) estimates. The study found that there was a systematic difference in the level of the Index of Consumer Sentiment (ICS) between easier and harder to interview respondents, of which the latter are of course more commonly non-respondents. However, detecting this difference required sample sizes larger than those typically used in consumer surveys, and furthermore the exclusion of more difficult to contact respondents from the sample causes a negligible difference to the overall ICS. A more important result from the study was that the significant difference found between easy and hard to interview respondents was constant over time. Consequently the non-response bias has no impact on temporal analyses which are generally the main focus of the survey

estimates. Thus the study concluded that the ICS's ability to predict future changes in economic conditions is unlikely to be affected by non-response bias.

35 Similarly to Curtin et al. (2000), Keeter et. al. (2000) found few significant impacts on estimates for key survey variables between two identical telephone surveys conducted 5 days apart with significantly different response rates (36% compared to 60.6%). The South African Bureau of Economic Research also reported on a study they undertook on quantitative inflation expectations which showed no difference in response patterns for respondents regularly participating over the past 5 years in comparison to new recruits.

36 Given these results, and the detailed demographic information generally available to enable effective post stratification to be performed when compiling estimates from consumer opinion surveys, the impact of non-response bias is most likely well contained. Consequently the task force does not recommend any further work be done in this area, other than reinforcing the importance of applying a robust estimation methodology using available information from population censuses. Such methodologies were demonstrated to the task force by Statistics Finland and Statistics Slovenia and they therefore serve as reference contacts for good practice.

## 5 Conclusions and Recommendations

37 This report has summarised the specific work performed by a multi country task force of the OECD / European Commission Working Group on Business Tendency and Consumer Opinion Surveys on the topic of assessing and minimising the impact of non-response on survey estimates. A thorough review has been undertaken on country practices and available literature on the key issues related to this topic, namely: defining non-response and observing non-response rates across countries; reviewing weighting methodologies used and their relationship to the treatment of non-response and; assessing the likely impact of non-response bias on survey estimates. The following text summarises the key conclusions and recommendations that can be drawn from this analysis, including the need for future work.

### *Conclusion 1 – weighting methodology*

38 It is suspected that some institutes do not properly take into account sampling probabilities in the weighting process (refer to paragraph 18 for more detail). If aggregation to the branch or cell level combines businesses chosen with different probabilities (e.g. large and small businesses) then the inverse of the sampling fraction should be a factor in the weighting process – otherwise estimates will be biased. If sampling fractions are not available or unreliable, then a minimum requirement is that a component of the weight assigned to businesses when estimating at the branch / cell level is approximately in proportion to the distribution of these types of businesses in the population for the branch / cell in question. Alternatively if no such information on sampling probability or distribution of businesses exists, estimation cells should at least be split by business size group (e.g. small, medium and large businesses). Otherwise the survey estimates will suffer significantly from sampling bias<sup>13</sup> and there is little point in including small businesses in the survey.

---

<sup>13</sup> In the case where small and large businesses are chosen in a survey with different probabilities (i.e. large businesses are selected with certainty and the small business are chosen at random) and weighted together in an estimation cell using only business size as a weighting variable, the resulting estimate at the cell level is not representative of the business population for this cell. In fact, the contribution of small businesses will be significantly underestimated. Either an additional weighting factor should be applied for the small business or they should be excluded from the sample altogether. In the later case, the survey takes the form of a 'cutoff' sample in which an implicit assumption is made that the distribution of responses across large businesses in the cell would be representative of small businesses.

- **Recommendation 1:** Institutes review their current weighting methodology to ensure that business weights used in estimation are representative of the population.

### *Conclusion 2 – use of the missing at random assumption for non-respondents*

39 All institutes reviewed in this study use to at least some extent the missing at random (MAR) assumption for treating non-respondents in business tendency surveys, which assumes that the average (weighted) distribution of answers from responding businesses is representative of non-respondents. If this assumption does not hold, then only taking into account answers from businesses responding to a particular monthly cycle of a survey can lead to a false diagnosis of changes in the business climate if this is due only to a change in structure of the respondents. This report summarises work performed thus far by INSEE, Statistics Norway and the South African Bureau of Economic Research on whether the MAR assumption is valid.

40 Clearly, not enough research has been performed at this stage to determine whether the MAR assumption is reasonable or not, and under what circumstances. However there is some evidence from the studies which have been performed that businesses with different propensities to respond to the survey may answer differently (e.g. early vs late vs non respondents for a particular survey cycle). Furthermore, INSEE has developed an imputation methodology which uses historical data to impute for non-response at both the unit and item level, and has performed some limited analysis which demonstrates the effectiveness of this methodology.

- **Recommendation 2:** Institutes are encouraged to analyse results from their surveys to determine whether there is any evidence of different response behaviour for businesses which are more or less likely to respond to a particular survey cycle. The approach taken for this type of study by the South African Bureau of Economic Research as described in paragraphs 23 & 24 is recommended as a starting point.
- **Recommendation 3:** Institutes are encouraged to evaluate whether the “constant sample” imputation methodology<sup>14</sup> developed by INSEE could improve the quality of estimates for their surveys. The simplest evaluation procedure is to estimate aggregates from a sub sample of respondents using both the MAR and constant sample methodologies and see which is closer to the estimates for the full sample. However institutes are encouraged to develop more comprehensive evaluation criteria.

### *Conclusion 3 – non-response bias for consumer opinion surveys*

41 An evaluation of the literature and country practices indicates that the impact of non-response bias is most likely minimal for consumer opinion surveys. However, this assumes that a robust estimation methodology is employed which makes maximum use of information available from population censuses through the application of post stratification. Such methodologies were demonstrated to the task force by Statistics Finland and Statistics Slovenia and they therefore serve as reference contacts for good practice.

---

<sup>14</sup> The constant sample methodology has been criticised by some users (e.g. ECB) because it causes revisions to estimates. However the methodology can be altered such that revisions do not occur.

## **Attachment1: Questionnaire**

The questions below were sent to the following sample of countries: China, Belgium, Germany, Austria, United Kingdom, Canada, Finland, India, Japan, Slovenia, Switzerland, Netherlands, Australia, South Africa and France. All countries responded with the exception of Belgium, India, Switzerland & Australia.

- 1) What are the current response rates for your survey(s)?
- 2) How are the weights of responding businesses calculated?
- 3) What assumptions are made about non-responding businesses in the calculation of weights for responding businesses?
- 4) Has your organisation ever done any work to address the issues below that are being studied by the OECD task force on improvements of response rates and minimisation of respondent load (If so, could you please send any details you have on the relevant work done) :
  - (a) Assessed the impact (bias) that non-response can have on survey estimates. Work on this issue could have included taking into account both the impact of the overall level of non-response (e.g. 10% vs 50%) and non-response by type of business or consumer. Any studies to assess the possible bias caused by excluding small businesses from the scope of the survey to reduce response burden (cutoff sampling) is also relevant.
  - (b) Developed methods to minimise the impact (bias) of non-response (e.g. imputation methods, estimation methodologies)

## References

- American Association for Public Opinion Research AAPOR, (2004), *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys*, 3rd edition. Lenexa, Kansas
- Curtin, Richard, Stanley Presser, and Eleanor Singer. 2000. *The effects of response rate changes on the index of consumer sentiment*. Public Opinion Quarterly Volume 64:413–428. q 2000 by the American Association for Public Opinion Research
- Keeter, Scott, Carolyn Miller, Andrew Kohut, Robert Groves, and Stanley Presser. 2000. *Consequences of Reducing Nonresponse in a Large National Telephone Survey*. Public Opinion Quarterly Volume 64:125–48 the American Association for Public Opinion Research.
- National Centre for Education Statistics, 2002. *NCES Statistical Standards* (<http://nces.ed.gov/statprog/2002/stdtoc.asp>). U.S. Department of Education
- OECD, (2003), *Business Tendency Surveys: A Handbook*, Paris  
<http://www.oecd.org/dataoecd/29/61/31837055.pdf>
- | Pellisier, Murray (2005). *Business Surveys in South Africa: an analysis of non-response patterns*. OECD / European Commission Working Group on Business Tendency and Consumer Opinion Surveys, Brussels November 2005. PPT presentation given by Pieter Laubscher: <http://www.oecd.org/dataoecd/28/40/35674158.ppt>
- Scherrer, Philippe. 2005. *Adjusting for non-response: Constant-sample method in the French business surveys*. OECD / European Commission Working Group on Business Tendency and Consumer Opinion Surveys, Brussels November 2005:  
<http://www.oecd.org/dataoecd/61/63/35524807.pdf>
- Statistics Finland. 2005. Metadata for Consumer Opinion Survey:  
[http://europa.eu.int/comm/economy\\_finance/indicators/business\\_consumer\\_surveys/metadata/fi\\_metadata\\_cons.pdf](http://europa.eu.int/comm/economy_finance/indicators/business_consumer_surveys/metadata/fi_metadata_cons.pdf)
- Statistics Slovenia. 2005. Metadata for Consumer Opinion Survey:  
[http://europa.eu.int/comm/economy\\_finance/indicators/business\\_consumer\\_surveys/metadata/si\\_metadata\\_cons.pdf](http://europa.eu.int/comm/economy_finance/indicators/business_consumer_surveys/metadata/si_metadata_cons.pdf)
- Wang, Jan Henrick 2004. Non-response in the Norwegian Business Tendency Survey. Statistics Norway.  
<http://www.oecd.org/dataoecd/11/50/33659968.pdf>