Statistiska centralbyrån
Statistics Sweden

Notes
Nov12-13 2015

Advisory Scientific Board
Suad Elezović, U/ARK
Tiina Orusild, PCA/MIH

Meeting with the Advisory Scientific Board of Statistics Sweden November 12-13, 2015

Board members

Helen Stoye, Statistics Sweden, co-chair
Lilli Japec, Statistics Sweden, co-chair
Tiina Orusild, Statistics Sweden, secretary
Suad Elezović, Statistics Sweden, secretary
Professor Jan Björnstad, Statistics Norway
Professor Sune Karlsson, Örebro University
Professor Xavier de Luna, Umeå University
Professor Daniel Thorburn, Stockholm University
Professor Geert Loosveldt, Catholic University of Leuven
Professor Natalie Shlomo, University of Manchester
Professor Lars Lyberg, Stockholm University
Professor Thomas Laitila, Statistics Sweden and Örebro University

Other attendees

Annika Fröberg, Statistics Sweden
Eva Bolin, Statistics Sweden
Annica Isaksson, Statistics Sweden
Yingfu Xie, Statistics Sweden
Andreas Lennmalm, Statistics Sweden
Daniel Lennartsson, Statistics Sweden
Mats Haglund, Statistics Sweden
Magnus Saltveit, Statistics Sweden
Marcus Fridén, Statistics Sweden
Anders Norberg, Statistics Sweden
Kristina Strandberg, Statistics Sweden
Martin Kullendorf, Statistics Sweden
Fredrik Jonsson, Statistics Sweden
Thomas Bjurenvall, Statstics Sweden
Susanne Svartengren, Statistics Sweden
Joakim Malmdin, Statistics Sweden
Eva Elvers, Statistics Sweden

Day 1

Current issues at Statistics Sweden

Speaker: Helen Stoye, Deputy Director General

Helen informed the board about the challenges and relevant issues at Statistics Sweden:

- Strategy 2020 and changes in the portfolio management system to improve SCB's development capacity.
- Development projects 2016
- Diminishing response rates but LFS improvements in the right direction.

Overall goals for operations 2020

- Statistics Sweden meets the needs for users of statistics of high quality.
- Statistics Sweden makes it easy to provide the right information.
- Statistics Sweden is a preferred partner for commissioned work and respected contributor in national and international cooperation efforts.

Changes in the portfolio management system

- Well balanced portfolio for the Strategy 2020 implementation.
- Central development budget.
- Implementation is deliverable in the projects.
- Business case with cost-benefit analysis.
- A new role responsible for realization of effects.
- Improve our project maturity.
- Both short-term and long-term development plans.
- Change management.

Development projects 2016

- New design and new alternative data sources for the production of Household Budget Survey (HBS).
- Review of the design and production systems for Living Conditions Survey (LSC/SILC).
- Methodology for web panel surveys.

Helen also informed the Board about the new homepage of Statistics Sweden, called Sweden in figures (Sverige i siffror) which is presently available only in Swedish but there are plans for an English version in the near future.

Reply to recommendations

Speaker: Lilli Japec

Lilli commented that the Board's recommendations have been well received by Statistics Sweden. Lilli summarized SCB's responses to the recommendations. The Board has addressed certain note of criticism concerning the quality of the presentations about the first two topics "Indicators and strategies for data collection from individuals" and "Contact Attempts and non-response". The response from Statistics Sweden is that some of the recommendations have

already been tackled by on-going project work that has been carried out since 2014. At present, Statistics Sweden is working on improvement of old routines and development of new routines and tools that will improve quality of the survey results.

Concerning the topics "The behaviour of balance indicators under various response models" and "Design, data collection, and estimation" presented on April 17, 2015, the response was that Statistics Sweden is planning to work on the recommended issues within the non-response project.

Concerning the criticism, Lilli informed the Board that Statistics Sweden has already started an evaluation of internal process of dealing with the papers and the presentations. The goal of this is to ensure certain level of quality of the presentations by making information about requirements more clear and comprehensive to all parts involved.
Lilli also informed the Board about her participation at ROS-conference. She mentioned that the other agencies (producers of official statistics) found it interesting to hear about the Board's activities. She also added that Statistics Sweden has not been very good in informing those agencies about the Board so far and this process should be evaluated and improved as well.

Topic 1: Uncertainty in the Swedish GDP

Speaker: Annica Isaksson, Andreas Lennmalm, Yingfu Xie

Summary of presentation
Annica informed about the background for the project: ASPIRE recommendations and two projects- pilot study 2014 and a main study in 2015. The project group consists of methodologists, subject-matter experts and national account experts. At the same time an external (out of the project) reference group has also been involved.
Andreas Lennmalm explained the main problem in the system of National Accounts which is necessity of balancing GDP from the Supply and Use side. The balancing process today, which is mostly based on a subject-matter expertise judgment, is not satisfactory and a suggestion for a more automatic solution is the major purpose of this presentation.
Yingfu explained the proposed SCM method which is basically a GLS-approach of balancing the tables in the system of National Accounts. Some preliminary results (which have not been included in the underlying paper because they were obtained after the paper had been submitted) were presented.
Finally a few questions were addressed to the Board for a general consideration.

Discussant: Sune Karlsson

Sune mentioned that the paper was interesting and well-written. He pointed out that the procedure in the paper was actually not a GLS but WLS (weighted least squares) since the matrix $\boldsymbol{W}$ (variance-covariance matrix) in the presented model seems to be diagonal. He also proposed OLS (ordinary least squares) instead of the GLS (or WLS) in order to avoid the somewhat arbitrary matrix $\boldsymbol{W}$ but in general it is difficult to say which method is more efficient.
Some other remarks:

- MSE in W is theoretically wrong since MSE mixes bias and variance.
- It is not clear why we should allow larger adjustment when the bias is large as the adjustment could make the bias larger.

Answers on the posted questions to the Board

- We are not interested in risk but in the variance.
- Judgment about variances:
  - Focusing on relative variances is what matters.
  - The Delphi method could be used to reconcile the opinions of the experts.
- MSE is probably not a relevant quantity because it mixes bias and variance and these should be treated separately.
- Normality and independence of value in current prices and its deflating price index (needed for computing uncertainties of values in constant prices) are not reasonable.
- Simulation could be a good approach to evaluate the method.
- It is probably impossible to get correct matrix ***W***.
- Matrix inversion of **X**/**W** is probably not a big problem since it is not dimension of the mentioned matrices that matters but the number of rows of matrix **A** in the model (number of linear restrictions).
- There is no good answer to question about evaluating the SCM method.

Discussion

The Board discussed the paper and the presentations.

Daniel's comments:

- You cannot skip the correlations! Frame error: Big units versus small units.
- Agree with Sune's remark about WLS versus GLS. However, some measure of covariance should be included and hence OLS is not really a good alternative.
- Problem with the conditions: check the conditions by calculating the difference between model estimation and standard deviation.
- Worry about large errors: Distribution of the type of error can have long tail.
- From mathematical point of view it is easy to write down the total error formula but be careful because such a model would not involve important information about e.g. black market. It is not sure that the uncertainty in the preliminary figures will be the same as the uncertainty in the final figures.

Natalie's comments:

- Why not perform a proportional adjustment instead of the proposed balancing method?
- General remark about the tendency to add up everything in the balance tables- it would be more applicable to make everything balanced at a more aggregate level instead.
- Simulations are recommended.
- What would Eurostat say if Statistics Sweden suddenly changed the method?

Jan's comments

- What are you going to do with measures of uncertainty? Are you going to publish it? It's O.K. to use the information internally but these measures should not be published.

- Although some parts of the methods are subjective it is generally encouraging to have such a mixture of people with different background in the project.

Xavier's comments

- What perspective does the GDP have in this respect? To compare GDP between different countries or to estimate growth rates (changes) from period to period?
- Big issue: If comparison is important then you have to take consideration of the fact that different countries use different models and do different things.

Thomas' comments

- Have you been considering using coefficient of variation?
- This is not a method but an estimate!
- How does the additional information work?

Yingfu's answer on some of the questions

- High uncertainty in initial estimates.
- Big part of uncertainty goes to the component with large uncertainty.

Kristina Strandberg's comments

- The problem is that a part of the error is systematic and a part is not!

Sune's response

- If systematic then focus on bias! We know for sure that we do not know the correct variance-covariance matrix.

Geert's comments

- What is responsible for non-sampling errors? What kind of measurement error is that all about?
- I guess you have to know that something is overestimated!
- GDP is also a big political issue but you do not know anything about uncertainty. Assume that you are sure- how would you proceed?

Lars' comments

- It is essential to have standardized process. It's not enough just to do things- it's equally important to have good information from other agencies and from the literature.
- Ask people about the sources of the errors (Jörgen Dalén has done something in this area).

Yingfu's answers

- We have already consulted subject-matter specialists and methodologists about sampling error but the problem is non-sampling error.

Daniel's additional comment

- Try to make some simple assumptions and do analysis with small steps by increasing complexity- do not put everything in a big complex model at once.
- Be careful since there will be revisions.
- It's actually not the level but the rate of change what is interesting!

Daniel Lennartsson's comment

- There is a need for an automatic way of performing balancing. It should be better than the subjective approach. The first step has already been done.

Annica thanked the Board and the audience for an insightful discussion and valuable advices. The work is going on and the project team will try to make use of the recommendations.

Helen closed the session.

Day 2

External members present their own research

Speaker: Geert Loosveldt

Summary of presentation
Geert described his research in the project "Aspects of Data Quality- Assessment in the European Social Survey". The work includes analysis of response rates and field work activities and evaluation of the interviewer effects. The ESS (European Social Survey) is a biannual, cross-national survey carried out in several European countries: first round in 2002 – round 7 in 2014.

Analysis of response rates and fieldwork activities involved study about trends in response rates and study about the fieldwork power. Summary of the results gave information about significant differences between countries. The negative linear trend was not significant. Trend of nine indicators of fieldwork efforts indicated increase of efforts. There are also results that indicate negative association between fieldwork length and fieldwork power.

Analysis of interviewer effects was performed by measuring intra-interviewer correlation by using multilevel model.
Some results and conclusions:

- Interviewer effects are responsible for correlated responses and must be taken into account in cross national survey.
- In some countries the interviewer effects on both single variables and bivariate associations are considerable.
- More information about interviewers, training and fieldwork practices is advisable.

Discussion
Short discussion followed after the presentation. The other members of the Board found the presentation very interesting and informative.

Topic 1: Survey Feedback

Speaker: Fredrik Jonsson

Summary of presentation
Fredrik summarized the contents of the paper and described the problem including the questions to the Board.
The Swedish business register is updated continuously by several different sources. Coordinated samples are drawn from frames which are built from the business register. Coordination is done over time and between different surveys,

using permanent random numbers. This technique has many benefits but suffers from a drawback concerning updating of register data.

Survey feedback means that information on sampled units is fed back from a sample survey to a register which is used to build a frame for future surveys. It may seem evident to update a register with survey feedback in order to make it as suitable as possible. However, methodological problems may occur due to the dependency of samples.

It seems hard to adjust the estimators for the presence of survey feedback. Another approach is to implement source and time stamps in the business register. Survey feedback can then be used e.g. for contact information and distribution by domains of study, but removed when frames are created for sampling purposes. Thereby, the estimation will not be disturbed by survey feedback.
Questions to the Board:

- Comments and suggestions concerning the practical handling of survey feedback.
- Comments and suggestions about extended survey frames.
    - Using extended survey frames in sampling.

Discussant: Natalie Shlomo

Natalie summarized the contents of the paper including a general overview of what other countries do in similar situation.
Natalie went through problem formulation and tried to answer the questions formulated in the paper. She pointed out that she needed more information about the procedure at Statistics Sweden in order to give a more specific recommendation.
Some recommendations & answers to the questions

- Concerning the question about the general attitude toward survey feedback she commented that all information is necessary- whether it comes from an update survey, survey feedback, administrative data, coverage surveys or anything else but in reality such information is not always possible.
- Concerning the exclusion of survey feedback she pointed importance of the criteria for this matter.¨
- Small businesses in short-term surveys should not use survey feedback. Annual surveys can use updated information and it is possible to back-estimate short-term surveys for consistency with annual surveys.
- Concerning the extended survey frames, there is a need for updating of all information on the register with systematic and consistent source codes and time stamps.
- Other ways for updating business register should be considered for small non-sampled units, such as an update survey or profiling. Also, modelling the size variable for the out-of-sample units should be considered.
- Concerning the view on stratification and domains of estimation
    - If register was updated independently of survey feedback the recommendation is to correct estimates via post-stratification or calibration, otherwise domain information is required.
    - Domain estimation can take place reflecting changes in stratification and activity status – these will be unbiased but increase variability. Outliers can be handled by winsorisation.

Discussion

- Fredrik clarified some issues concerning how the simulation study was performed.
- Geert would like to know more about "births". He also mentioned that there will be problems with non-response as well.
- Natalie asked whether there was supplementary strata.
- Daniel commented that the permanent random number method might cause problems. He also pointed that not only the "births" are important but also changes in activity and size etc.
- Thomas asked a question whether Statistics Sweden updates the business register or the frame. These are two different issues.
- Lars: The project group should have done more to find out how big the problem is. It's hard to advice on this specific topic with the information in the paper. More in-depth analysis about importance of the problem would be necessary. He also recommended that methodological papers and reports should be written in English in order to alleviate exchange of ideas and experiences with other countries (this is the case with Stockholm University – working language is English).
- Eva Elvers clarified a few points about the background for the project. One question to be clarified is about the need of a new business register. An important part of the purpose of this project was about investigating whether this issue should be further pursued in the future at Statistics Sweden.
- Daniel agreed with Lars about the difficulty to give any concrete advice with information from this paper. However, Statistics Sweden should always try to update the registers aiming to have a register with the best possible information available. This information should perhaps not be used in all phases. There's a lot of work done in this area so Statistics Sweden should go through the literature and other relevant sources in more detail.
- Thomas asked about possibility to update annually. Tiina answered that the suggestion would not solve the problem as we only update the sample and not the frame.
- Lars added that some sort of risk-assessment model should be established by Statistics Sweden.
- Lilli commented on ASPIRE recommendation.
- Jan's comment: One reason to have statistics is to estimate changes over time. Measurement error might be more important in this sense.

After the general discussion, Helen closed the meeting by thanking everyone for participating.