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**STATISTICAL COMMISSION and ECONOMIC COMMISSION FOR EUROPE****CONFERENCE OF EUROPEAN STATISTICIANS**Forty-ninth plenary session  
(Geneva, 11-13 June 2001)**HOUSEHOLD SURVEYS IN LUXEMBOURG**Supporting paper submitted by Luxembourg<sup>1</sup>

1. The main difficulty faced by small countries is that, despite relatively high levels of surveys, the absolute size of samples remains low when compared to other countries. This sample size is the reason for sampling errors that can become substantial and implies that small countries have considerable difficulty in respecting certain rules on accuracy as set out by international bodies such as EUROSTAT. Sometimes, EUROSTAT is aware of this state of affairs and EU regulations can exempt, expressly, small countries from complying with certain regulations. This is indeed the case for the EU regulation relating to the continuous labour force survey that allows countries of less than one million inhabitants not to be bound by the criteria on accuracy regarding the measurement of quarterly changes.

2. However, as we have mentioned above, a low sample size can go hand in hand with high survey rates. The institutions responsible for carrying out surveys are faced with a serious responsibility, given the lack of resources generally available to them. In Luxembourg, there is a particular difficulty in recruiting good researchers in sufficient numbers.

**I. Sample surveys in Luxembourg**

3. The Grand Duchy of Luxembourg is a very small country comprising a little over 440,000 inhabitants, some 37% of whom are foreigners, in a total surface area of 2,586 km<sup>2</sup>. The number of households can be estimated at 170,000. Luxembourg's population is characterized by strong demographic growth, mainly brought about by substantial migratory flows.

4. There are three regular household surveys:

- the household budget survey (HBS), every five years;
- the labour force survey (LFS), once every year;
- the socio-economic panel supporting the European Community Household Panel (ECHP).

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<sup>1</sup> Paper prepared by Mr Jean LANGERS of STATEC

5. The first two surveys are carried out by INS, STATEC, and the third by a public research institute, CEPS/INSTEAD. Participation is voluntary for the three surveys.

**i) Sampling frame**

6. The extraordinary weight of net immigration is not without influence on the drawing of samples and, more particularly, on the sampling frame that is the central population register for the HBS and the LFS. The fact that a certain number of people leave the country without declaring their departure to the local authorities means that the sampling frame is never up to date and the sample drawn always contains a considerable proportion of households no longer resident in Luxembourg. STATEC tries to get round this problem by assuming that it was not households that were selected but addresses (or dwellings). In the case of a household that has left the country being drawn in the sampling base, the current occupant would be questioned. This possibility means that, given the lack of professional integrity of some of the interviewers, control of the sample by STATEC is partly lost.

**ii) Sampling plan**

7. LFS: The initial sample comprises 8,500 households, which corresponds to a survey rate of 5%. The sampling unit is the household. It involves a simple random drawing, without any stratification, to a single degree.

8. HBS: 3,000 households take part in the final sample. Around 10,000 addresses, of which some 4,000 were unusable (people living in collective households or no longer living at the address given) had been supplied to the interviewers of the private service company. The sample-drawing procedures were at every stage similar to those used for the LFS.

**iii) Data collection**

9. Adopting new collection methods (CAPI, CATI) does not come easily in a very small country. In the first place, there is the problem of economy of scale, where putting the CAPI and especially the CATI systems in place gives rise to relatively high fixed costs, taking into account the number of households or persons to be surveyed.

10. Moreover, these methods have recourse to qualified personnel that STATEC, under present conditions, would have a lot of trouble in recruiting. Currently, the LFS team of interviewers comprises some 150 people. The interviews are of the face-to-face type, with paper and pencil.

**iv) Non-response**

11. The low number of residents gives rise to an increased possibility of them featuring several times in one of the surveys conducted by public, semi-public or private institutions. The saturation phenomenon this can lead to certainly has a negative effect on the desire to participate in the surveys, and may as a result be the cause of the fairly high rates of non-response recorded for the various household surveys. For the HBS and the ECHP, this rate is not far below 50%.

12. The non-response trend is, no doubt, reinforced by people's fear that the limited size of the country together with a dense population do not provide adequate protection for individual privacy. The interviewers might know a certain number of interviewees, which the latter often perceive in a negative way.

13. Finally, one should add that a portion of the non-responses can be explained by the lack of training (and sometimes tact) of the interviewers who are in no way true professionals.

v) **Sampling errors**<sup>2</sup>

14. The following table gives estimations on sampling errors for core variables in the LFS 2000.

Estimates (Taylor asymptotic variance)  
Population = 430,998    Sample = 15,257 (respondents)

		Number	Standard error	CV in %	Confidence interval	
Active	Employment	181,294	1,086	0.60	179,123	183,465
	Unemployment	4,552	348	7.65	3,856	5,249
Inactive	< 15 years	83,297	0	0.00	83,297	83,297
	15-65 years	102,563	1,049	1.02	100,464	104,661
	> 65 years	59,292	164	0.28	58,963	59,621

15. After reweighting, the margin for error for total employment reaches  $\pm 1.2\%$ . It is  $\pm 15\%$  for the number of unemployed.

## II. Can figures affected by a high sampling errors be useful?

16. Interesting details can be drawn from figures marred by a substantial sampling error. As an illustration, let us examine some results of the LFS.

17. Let us consider the unemployment rates for different categories calculated in accordance with the ILO definitions over the period 1997-2000.

	1997	1998	1999	2000
Total unemployment rate	3.1	3.0	2.4	2.4
<b>Sex</b>				
Males	2.3	2.0	1.6	1.9
Females	4.1	4.4	3.5	3.3
<b>Nationality</b>				
Nationals	2.2	2.1	1.6	1.7
Non-nationals	4.1	4.1	3.5	3.5
<b>Sex and nationality</b>				
National males	1.7	1.7	1.2	1.2
Non-national males	3.2	2.7	2.6	3.1
National females	3.1	3.0	2.2	2.6
Non-national females	4.1	6.2	4.7	4.1

<sup>2</sup>The sampling errors have been estimated by Jean-Yves Bienvenue from CEPS/INSTEAD

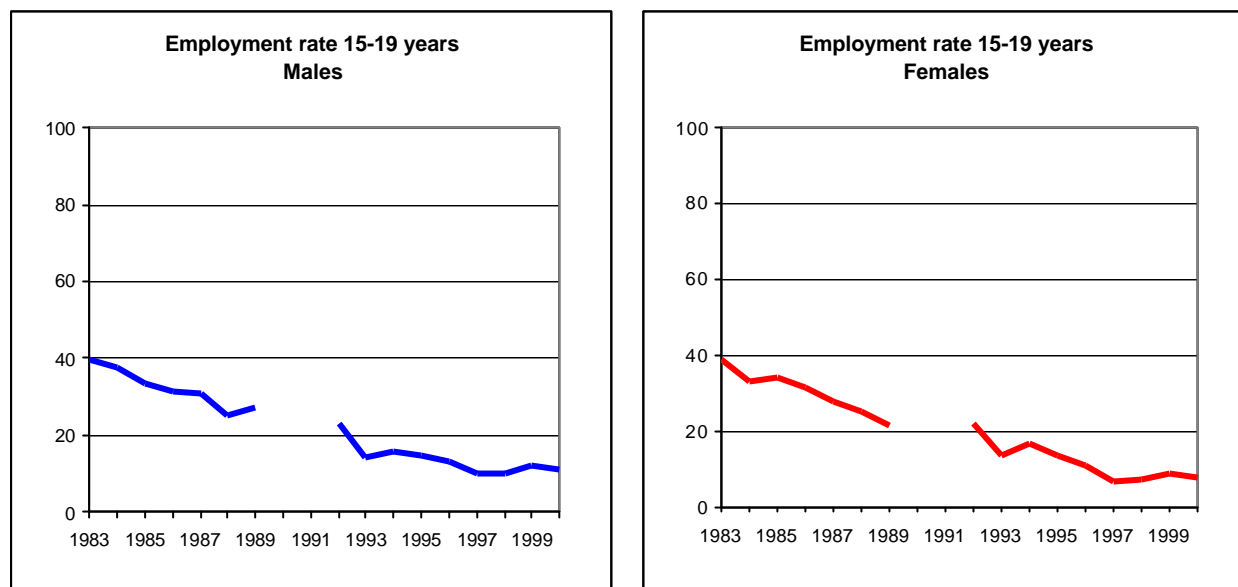
18. It is obvious that one should not attach too much importance to the yearly changes in the table above. The results of the four successive surveys do however raise some permanent features. The male unemployment rate is nearly double that for females, the same proportion of 1 to 2 appearing if one compares nationals to foreigners.

19. One can also cumulate the data from several successive surveys in a single file. LFS data drawn from four surveys (1997 to 2000) have been put together. An example is supplied by the following graph giving outflows by age in relation to people still employed at the same age. Male employees have been divided according to two sectors of activity: industry and public administration (including education). In industry, peaks arise at 57 (early retirement), 60 and 64 years (retirement age reached). None of these peaks can be seen in public administration where departures are spread out in a fairly regular pattern after 60 years of age.



20. Instead of considering a restricted number of successive surveys, one can see whether long-term trends can be put forward as evidence by a set of series taken over a longer period.

21. Take the employment rate of those aged 15 to 19. The two graphs below clearly show that over the past 20 years, one may see a steep fall for this rate from 40% to 10% for both sexes.



22. If the trend of the two curves is obvious, one can also note that they are subject to irregular variations that barely allow for judgements on the annual variations.

### III. New developments in household surveys

23. Increased demands on both the national and international plan have led STATEC to overhaul its surveys.

24. With regard to the labour market, following up the National action plan (NAP) or drawing up performance or policy indicators set out by the EU Commission, require major changes in the LFS. From 2003, the survey must become continuous and different ministries or administrations wish to introduce additional questions. With the transition to the continuous survey, a new sampling plan will have to be drawn up. At the start of this article, it was pointed out that Luxembourg is not forced to respect certain rules relating to the measurement of quarterly variations. The question therefore arises, STATEC gives up, from the outset, drawing up quarterly figures that cannot be relied on and if STATEC puts the emphasis solely on good estimations of the annual averages and variations, or whether the goal should try to obtain the best quarterly estimates possible. The choice made will broadly determine the rotation plan to be adopted.

25. As it will be, in any case, impossible to increase the size of the samples drastically, the problem of a major sampling error will not disappear. The emphasis will rather be put on an improvement in fieldwork in order to decrease the rate of non-response. Having a continuous survey put in place will open up new perspectives. STATEC hopes to be in a position to take on a permanent team of interviewers whom one can train (and monitor) more easily for the first face-to-face interviews, the following interviews being made over the telephone. For these interviews, STATEC will no doubt use an external call centre. The possibility to launch an awareness campaign for households to encourage more of them to take part in our surveys will also be examined.

26. To reduce, at least in part, the effects of non-response, improvements would also be made to the level of reweighting. STATEC depends largely on the overhaul of existing administrative registers and on the creation of new registers, the main aim being to obtain a more dependable sampling frame containing more information on households and people from the sample. In so doing, the characteristics of non-response could be better defined.

27. Major modifications are also planned for the HBS. The five-year periodicity will be made an annual one. This new permanent survey would be based, in principle, on independent annual samples of 1,000 households. Once cruising speed is reached, every year, figures arising from the accumulation of data for

three successive years will become available. As with the LFS, the permanent character of the survey will provide us with the opportunity to set up a new service within STATEC. Up until now, the HBS had, in effect, been carried out, in whole or in part, by external service providers.

#### **IV. Final remark**

28. Small countries will no doubt have a lot of difficulty in compensating for the lack of accuracy in the results obtained from sample surveys. Significant gains in terms of accuracy would need an increase in the sample size that would greatly exceed their capacities.

29. In order to optimize the return on the means deployed, the greatest care should be taken in the sampling plan. Likewise, substantial efforts should be made to reduce non-response and observation errors. STATEC can only hope that the authorities controlling budgetary resources will at last become aware of the existence of these imperatives

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