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**Employment measures in the OECD national accounts:
Comparison between national accounts and labour force
statistics**

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EMPLOYMENT MEASURES IN THE OECD NATIONAL ACCOUNTS: COMPARISON BETWEEN NATIONAL ACCOUNTS AND LABOUR FORCE STATISTICS

Introduction

1. Employment data are included in national accounts publications (NA) principally to enable productivity calculations to be made. Consequently, employment estimates are needed on a basis compatible with output and value added series. Employment data collected for the labour force statistics (LFS) publications are not used for the same purpose. LFS data are used to provide a description of the labour market: number of unemployed persons, number of women in the labour force, average age of the labour force, etc. This situation may introduce statistical differences between the two types of publication. If we compare NA and LFS employment data, differences vary from 0% (series are identical) to 20%. Many analysts who are using both data sources are often puzzled by these differences and contact the OECD Statistics Directorate to ask for explanations: How can we explain these differences? Why don't we have the same level of differences for all countries? Do we consider that the data are comparable? The purpose of this paper is to provide a comprehensive explanation of the differences that occur.

1. Main differences between National Accounts (NA) and Labour Force Statistics (LFS)

1.1 Similar definitions of employment

2. According to the System of National Accounts (SNA), employment data must reflect the number of jobs¹ which contribute to GDP within national economic (rather than geographic) boundaries. All limits and inclusions which apply to the definition of GDP should also apply to the definition of employment.
3. The International Labour Organisation (ILO) guidelines for labour force data state that employment should be based on the definitions used in the SNA. Employment definitions in the two publications are similar since they use the same concept of productive activity. Hence, the only difference between NA and LFS data ought to be due to cases where alternative measures of employment are used.

1.2 Productivity and labour market analysis

4. Each type of publication serves a different purpose: productivity analysis for National Accounts employment, labour market analysis for Labour Force data. Practically, adjustments will be introduced to meet the objectives defined in each publication.

¹ A job is defined as an explicit or implicit contract between a person and an institutional unit to perform work in return for compensation (or mixed income) for a defined period or until further notice.

5. Productivity estimation in National Accounts requires an appropriate measure of the labour input which has contributed to output. The number of employed persons which is often used in the LFS is not a satisfactory measure because multiple jobholders and part-time jobs are not taken into account. Consequently, alternative units of measurement will be used in the National Accounts.

1.3 Employment measures in the National Accounts

6. Three alternative units of measurement are given in the 93 SNA. These units are generally considered to be superior to numbers employed :

1.3.1 Number of jobs

7. According to the 93 SNA, National Accounts data must be based on the number of jobs (as distinct from numbers employed). On a jobs basis, a person who holds two jobs is counted twice. Such a measure can be useful in indicating how industry-specific needs for labour shape the production process. The number of jobs is more relevant in analysing productivity by industry and thus it better serves the National Accounts purposes.
8. On a person employed basis, a person who holds two or more jobs is counted only once, based on their main activity. This measurement unit is useful in analysing the situation of a group of persons on the labour market (for example to provide some insight into the distribution of income among workers). This measurement unit is compatible with LFS purposes.

1.3.2 Number of hours actually worked

9. This measurement unit is the best one for productivity analysis. It is the only measure which gives a true estimate of the labour input. It is particularly relevant in the SNA because the latter states that these data should describe the number of hours “actually” worked as distinct from the number of hours paid for. In other words, these data should be adjusted to exclude, for example, holidays or sick leave. The required estimate corresponds to the time spent at the work place engaged in a productive task.

1.3.3 Number of “full-time equivalent” jobs

10. This is an intermediate unit between the above two. The SNA defines full-time equivalent jobs as total hours worked divided by average annual hours worked in full-time jobs. This unit is useful in calculating productivity estimates. Nonetheless some statistical problems may occur sometimes. For example in the case of France, what will happen when the legal length of the average work week is reduced to 35 hours? Is the average number of hours worked by each person going to decrease and if so, will full-time equivalent jobs reflect this decrease?

1.4 Geographic and economic boundaries

11. Another factor which explains the differences between NA and LFS can be found in the concept of economic territory as defined in the SNA. Despite the ILO guidelines, the data series used in Labour Force Statistics are often based more on geographic boundaries rather than on economic boundaries. The reason is that the detailed data in Labour Force Statistics is usually based on the results of labour force surveys which are themselves based on a national sample of households resident within the geographic territory. In addition, it may be argued that labour market analysis

is in fact commonly concerned with the geographic population, despite the fact that some individuals may not contribute to GDP or that some who do contribute may be omitted.

12. In the case of National Accounts, given the desire to generate productivity estimates, there is a greater incentive to follow ILO and SNA guidelines more closely. Also for National Accounts it is easier to conform to ILO standards because the employment data required is less detailed compared to that published in Labour Force Statistics.
13. The important aspects of the SNA definition of economic boundary with regard to employment are as follows² :
 - A country’s military bases and diplomatic premises on foreign soil are part of its economic territory.
 - The residence of an institutional unit is determined according to its “centre of economic interest” which, for an enterprise is an establishment which produces goods or services over a long period of time (the SNA suggests that a period of one year should be chosen as defining a “long period of time”). For households, “principle residence” indicates their “centre of economic interest”.
14. Suppose that we have employment data that are representative of the resident population (as is the case for most labour force surveys), i.e. are based on geographic boundaries. If we want to adjust these employment figures to conform strictly to the economic boundary as defined by the SNA then the following must be taken into account :
 - 1) Military and diplomatic staff working overseas must be added to the employment figures.
 - 2) Those residing within the country, but who commute on a regular basis to work in another country should be subtracted from the employment figures. In addition, those not residing within the country but who commute to the country in question must be added to the employment figures.
 - 3) Employment in domestically-owned enterprises which are operating for less than one year outside the country should be added to the employment figures. Employment for foreign enterprises operating for less than one year within the country should be subtracted from the employment figures.

1.5 Different sources

15. The above remarks suggest that data given in the two publications are obtained from different sources. LFS data is usually based on the unadjusted results of labour force surveys. National Accounts employment data can use these surveys as a primary source of information but they can also incorporate additional data drawn from other sources such as business surveys.
16. The choice of specific measurement units in each data set is responsible for some statistical differences. The concept of economic territory can also explain part of the differences that occur. Nonetheless, these may obviously not be the only reasons why figures in NA and LFS may differ. For example: the basic source may differ; there may be different methods used to derive the published figure; or different revisions may be made to the series. The second part of this

² See paragraph 17.23 of the 1993 System of National Accounts.

paper presents a country by country analysis of the differences between LFS and NA data. The purpose of this part is to confirm the above remarks, to define those which cause the biggest differences and finally to conclude to what extent data are comparable.

2. Comparison of data

2.1 Observed differences

17. The comparison presented in this paper is based on information obtained in 1996. During the last two years, only one or two countries have introduced significant changes in the definition of their employment data. In consequence, observations and comments below remain valid for the majority of countries.
18. In order to gain an impression of the differences between data in National Accounts and Labour Force Statistics, Table A compares, for selected years, the Total Employment series used in the OECD National Accounts Volume 2 with the Civilian Employment series used in the OECD Labour Force Statistics publication. Table B compares the series of the number of Employees used in National Accounts with the series of Total (civilian) Employees appearing in LFS. Note that the Czech Republic, Hungary, Ireland, Korea, Mexico, New Zealand, Poland, Switzerland and Turkey are not included in this comparison either because employment data are not presently published in either OECD National Accounts or Labour Force Statistics.

Table A : **Percentage difference between total employment in OECD National Accounts and civilian employment in OECD Labour Force Statistics**

	1970	1980	1990
<i>Australia</i>	0	1	-1
<i>Austria</i>			-2
<i>Belgium</i>	1	1	1
<i>Canada</i>		-3	0
<i>Denmark</i>	-1	-1	-3
<i>Finland</i>	4	-3	-4
<i>France</i>	3	3	2
<i>Germany</i>	1	2	2
<i>Greece</i>		0	
<i>Iceland</i>	0	0	-1
<i>Italy</i>	4	9	10
<i>Japan</i>	7	6	3
<i>Luxembourg</i>	1	0	0
<i>Netherlands</i>		-1	-17
<i>Norway</i>	10	4	3
<i>Portugal</i>			
<i>Spain</i>			4
<i>Sweden</i>		0	2
<i>United Kingdom</i>	2	2	2
<i>United States</i>	-1	-3	-2

Source: OECD, 1996

Table B : **Percentage difference between the number of employees in OECD National Accounts and employees in OECD Labour Force Statistics**

	1970	1980	1990
<i>Australia</i>		1	-1
<i>Austria</i>	10	10	-1
<i>Belgium</i>	1	1	1
<i>Canada</i>		-4	-1
<i>Denmark</i>	0		-2
<i>Finland</i>	8	-2	-2
<i>France</i>	4	4	2
<i>Germany</i>	2	2	2
<i>Greece</i>		0	
<i>Iceland</i>	-1	0	0
<i>Italy</i>	8	6	6
<i>Japan</i>	9	8	7
<i>Luxembourg</i>	1	0	0
<i>Netherlands</i>		-2	-17
<i>Norway</i>	13	6	4
<i>Portugal</i>			
<i>Spain</i>			5
<i>Sweden</i>		0	5
<i>United Kingdom</i>	2	1	1
<i>United States</i>	1	-3	-2

Source: OECD, 1996

19. Firstly, in the comparison of total employment series (Table A), the data for Australia, Canada, Greece, Iceland and Luxembourg indicate that for a number of the years, exactly the same figures are used for each series. In the comparison of employee series (Table B), the data show that this is the case only for Greece, Iceland and Luxembourg. In all other cases, there is a difference between the figures appearing in each series. Given the above discussion it is in fact surprising that there are cases where the same data are used for both publications.
20. Secondly, in relative terms the figures underlying the data in the above tables generally do not exceed a difference of more than plus or minus five percentage points. In the comparison of total employment series, the main exceptions to this are Germany, Italy, Japan and the Netherlands. In the comparison of employee series, the exceptions are Austria, Finland, Germany, Italy, Japan, the Netherlands, Norway, Portugal and Spain. They are cases where the difference exceeds five percent for at least some years in the series. Larger differences of more than 10 percentage points are seen in the employment series (Table A) for Germany, Italy and the Netherlands. Similarly, large differences in the employee series (Table B) exist for Austria, Germany, the Netherlands and Portugal. These larger differences are more than likely accounted for by reasons other than those of measurement and coverage outlined above.
21. Finally, it is not uncommon to see shifts in the relationship between the figures. For example the early years of the employee series for Austria show the National Accounts figures exceeding the Labour Force Statistics figures by around 10 percent. In more recent years the Labour Force Statistics employee figures exceed those in National Accounts. These shifts are likely to be explained in part by breaks within data series due to adoption of new sources and methods.

2.2 Explaining differences

22. Differences have been resolved through contact with Member Countries Statistical Offices. The annex of this paper includes the result of this survey. Table C below summarises characteristics of employment in the OECD National Accounts. It focuses on the adjustments which have led to the differences with LFS data.

Table C : **Summary table of characteristics of employment in the OECD National Accounts**

	Units	Sources	Estimation methods	Armed Forces
<i>Australia</i>	Job count (?)	Labour Force Survey	Yearly averages of 4 monthly observations	incl.
<i>Austria</i>	Job count	Social insurance statistics (employee data), Ministry of Defence (armed forces), Austrian Institute for Economic Research (self employed and employers).	12 month average	incl.
<i>Belgium</i>	Head count	Labour Force Survey	Midyear estimate - adjustments for frontier workers	incl.
<i>Canada</i>	Head count	Labour Force Survey	12 month average	excl.
<i>Denmark</i>	Head count	Various Sources, notably registered Labour Force Statistics data	12 month average -some adjustments on "marginal" jobs	incl.
<i>Finland</i>	Head count	Household survey of the population, establishment statistics, registered employment statistics, registers of businesses and enterprises	12 month average - adjustments for some unpaid voluntary workers - some series are expressed as full time equivalents	incl.
<i>France</i>	Head count	Employment Survey	12 month average - adjustments for frontier workers	incl.
<i>Germany</i>	Head count	Labour Force Survey	12 month average for employees liable to social security contributions - Single annual figure provided by the micro census for self-employed, unpaid family workers and civil servants not liable to social security contributions - adjustment for border workers	incl.
<i>Greece</i>	Head count	Labour Force Survey		excl.
<i>Iceland</i>	Number of man-years	Tax records	"man years"	incl.
<i>Italy</i>	Labour units	Quarterly Labour Force Survey	Full-time labour units, taking account of workers on part-time and shorter hours and workers in the black economy (full time equivalent)	incl.

Table C : Summary table of characteristics of employment in the OECD National Accounts (cont.)

	Units	Sources	Estimation Methods	Armed Forces
<i>Japan</i>	Job count	Labour Force Survey and Employment Status (for secondary jobs)	12 month average - adjustments for secondary jobs - paid family workers are included in employees since the 1980 benchmark year revision.	incl.
<i>Luxembourg</i>	Head count		12 month average	incl.
<i>Netherlands</i>	Full time equivalent jobs	Annual Survey on Employment and Earnings and other sources	Annual average - Several adjustments are made (conscripts, employees not observed in company records, jobs in education, etc.) - Full-time equivalent	incl.
<i>Norway</i>	Head count	Including foreign employees on Norwegian ships	12 month average	incl.
<i>Portugal</i>	Head count	Annual Enterprise Survey	12 month average	incl.
<i>Spain</i>	Job count	Labour Force Survey	12 month average - Adjustments for border workers. May detect part of the black economy	incl.
<i>Sweden</i>	Head count		12 month average	incl.
<i>United Kingdom</i>	Job count	LFS and employer-based survey.	Mid year estimate	excl.
<i>United States</i>	Full time equivalent jobs	BLS Employment and Wages Program (ES 202). ES 202 program is an employer survey which excludes proprietors, the self employed, unpaid family workers and certain farm and domestic workers	12 month average - Full time equivalent -	incl.

Source: OECD, 1996

23. The information contained in the above table confirms the explanations established during a first inspection of definitions. Differences between NA and LFS data can be explained by the following :
- *National Accounts data are often defined on a jobs basis*, whilst the LFS data are almost always defined on a numbers employed basis. The National Accounts data may include estimates of those with second jobs, thus in effect generating an estimate of the number of jobs rather than the number of individuals with jobs. Depending on the country, the resulting differences can be important. Nonetheless, it should be noted that according to the collected information most countries express their employment data in terms of numbers employed.
 - *National Accounts data are defined within economic boundaries*, whilst LFS data are defined within geographic boundaries. For some countries, NA data will be adjusted so that border

workers, diplomatic staff and the armed forces are taken into account³. National Accounts will use complementary sources to elaborate these adjustments. It should be noted that adjustments on border workers are rare and anyway induce relatively small differences. In the case of Belgium, differences between LFS and NA data are explained by an adjustment for border workers and the resulting statistical differences is close to 1% only.

- *National Accounts data include additional adjustments* to obtain a true measure of labour input. Some individuals who contribute to GDP but who are not necessarily part of the labour force are added (unpaid voluntary workers or workers on the black market for example). Persons receiving incomes but who do not contribute to national output are excluded. This is the case for apprentices or students receiving scholarships who are part of the labour force but who are subtracted from National Accounts employment figures.
- *National Accounts and LFS data are not based on the same estimation methods*. Sources used and calculation formula (average data based on a variable number of observations for example) are sometimes different and cause differences which might be important. The way new definitions are implemented is not necessarily identical and revised data are not always included at the same time. These remarks are not theoretical differences; it is just a problem of data collection but the resulting differences may be important
- *National Accounts data are not using the same measurement units*. National Accounts data in this comparative analysis are based on the former SNA. Data which conform to the new 93 SNA will be published in 1999 only. In the latest issue of the OECD National Accounts, employment series include a mix of number of jobs, number of persons employed, number of full-time equivalent jobs, and number of full-time equivalent persons. The explanatory notes allow identification of each type of series but for obvious reasons, full-time equivalent jobs will be very different than a series expressed in terms of number of jobs, especially in countries like the Netherlands where the number of part-time jobs is important.

2.3 Comparability of data

24. Some of the above explanations induce relatively small differences which do not greatly affect data comparability between NA and LFS. This is the case of border workers.
25. An interesting observation from this comparison is that, strictly speaking, the employment data in publications such as LFS do not conform to ILO guidelines on the subject of border workers. The practical reason for not making the appropriate adjustments is that specialised labour force publications include various detailed breakdowns of employment. Similar breakdowns are not typically available for the required adjustment data. For example, little is known about the characteristics of incoming boundary workers. In addition, in most cases the relative size of adjustments is so small as to make little difference to the figures and the inferences that may be

3 In this comparison, LFS series represent, or are supposed to represent, civilian employment only. In principle the armed forces contribute to aggregate output and should be included in the figures in National Accounts. In fact a comparison of the series showed that the civilian employment in LFS is typically closer in statistical terms to that appearing in National Accounts and this motivated the use of these figures rather than the total employment figures (civilian plus armed forces) in the comparison of figures in Tables A and B. It is in fact not uncommon for some of the armed forces to be included in civilian employment figures. Members of the armed forces who live in private households are included in some household labour force surveys and are not always removed from civilian employment estimates.

drawn from them. Apart from practical considerations it may also be argued that a lot of market analysis is in fact often more focused on the geographic population and therefore it is appropriate to use geographic rather than economic boundaries in this regard. It can also be noted that in NA, border workers data are often given for the total economy and they are not available broken down by activity.

26. Another notable feature is that there do not appear to be any cases of there being adjustments for employment in enterprises that are temporarily operating outside the geographic boundary or for employment in foreign enterprises operating temporarily within the national boundary. Presumably the reason for this is a lack of suitable data and a perception that the numbers involved are relatively small.
27. These differences are relatively small but the other explanations may cause significant differences (number of jobs as distinct from numbers employed, civil employment as distinct from total employment, etc.). This situation leads to the conclusion that the two data sets are not comparable. It is not a problem in itself as long as the type of data set is clearly identified and the purpose it serves is known.
28. On the other hand, and this is certainly one of the main interesting feature of this comparative analysis, the varying levels of differences suggest that data within a single publication are not comparable. In National Accounts, adjustments introduced or not introduced may affect data comparability. Nonetheless, this conclusion must be modified by the following observations.
29. The SNA defines concepts and objectives. National Accounts employment data must reflect the labour input which has contributed to GDP. Some adjustments are marginal and can be ignored. Conversely, some additional adjustments are needed to meet the SNA objectives. Data comparability is not necessarily obtained by similar estimation procedures.
30. As for the use of “full-time equivalents” among other measurement units in the National Accounts, the implementation of the new System of National Accounts should clarify the situation. The next issue of the annual OECD National Accounts publication will show detailed tables based on the new SNA definitions. The new questionnaire will contain three different measurement units: number of jobs, number of hours actually worked and number of full-time equivalent jobs⁴. Data based on number of jobs and those based on full-time equivalent jobs will not appear in the same table any more. Member countries should also be able to extrapolate backwards their data thus removing breaks generated by changes in definitions.

3. Evolution of the employment measures

3.1 Evolution of the labour market

31. In the coming years, data on hours worked, and on human and social capital will be the centre of interest for many new developments. Discussions on globalisation, on the decrease of social contributions and on the measurement of household activities point out some employment characteristics which were not measured on a regular and detailed basis, especially in the national accounts, but which has an impact on productivity levels.

4 Table 03.03 of ESA95 questionnaire

32. Employment has to be treated differently. The increased number of part-time workers in most OECD Member countries changes the characteristics of the labour market. Globalisation i.e. development of trade and of foreign direct investment, new developments in information and communication technologies is leading to new approaches to employment.
33. In recent years, the OECD has tried to contribute to a better understanding of this phenomenon. Recent OECD studies have shown that globalisation has a number of positive effects, for example the decrease of poverty in many developing countries. But these studies have also shown that globalisation was leading to a decrease in the demand for non-qualified workers in the OECD countries. Competition from low wage countries is not the main explanation of this phenomenon. In reality, changes in wages and income distribution in OECD countries is explained by factors other than increased trade with developing countries. Among other explanatory factors is that more and more emphasis is being given to education and training. This is the area where adjustment policies should allow the redeployment of unemployed persons into expanding industries and enterprises⁵.
34. Many recent studies have been undertaken on the concepts of human and social capital. For example, some recent studies have tried to evaluate the return on the investment in human capital (i.e. initial education)⁶. Other studies have focused on training.
35. People in employment have to adapt their competencies and to become flexible to face the developments of new techniques and the opening of markets. The concept of “employability”, i.e. of a continuous adaptation, has been the centre of interest in many recent discussions.
36. These concepts of training and education are becoming indispensable to understand the labour market recent changes. Training and education have a direct effect on productivity⁷. The structure of the labour market is changing and Labour Force Statistics will need to reflect this evolution.
37. The 93 SNA is trying to follow these recent developments. An important improvement has been introduced with regard to the measurement of hours worked.

3.2 Hours worked

38. The development of part-time jobs drastically changes productivity studies. The number of jobs (or the number of employed persons) does not provide a satisfactory measure of the labour input which has contributed to GDP. The new SNA states that in addition to the data on number of jobs, Member countries should also give information on hours worked and full-time equivalent jobs.

5 “L’investissement direct, clef de la mondialisation. Quelle approche multilatérale ?”, Presentation of Ms Joanna Shelton, OECD deputy secretary-general, Séminaire transatlantique de l’IFRI, July 1998, Paris

6 The World Bank has used cost-benefit analysis to calculate a “social” rate of return to university education of well over 10% a year between 1960 and 1995 in the OECD countries (Alain Mingat and Jee-Peng Tan (1996), *The full Social Returns to Education: Estimates Based on Countries’ Economic Growth Performance*, World Bank, Washington, D.C.).

7 An OECD analysis estimated that secondary education had contributed an annual 0.6% to productivity growth in the OECD countries between 1960 to 1985 (Steven Englander and Andrew Gurney (1994), *Medium term Determinants of OECD Productivity*”. OECD Economic Studies, no.22, OECD publications, Paris).

39. Hours worked data must not reflect hours paid for. They must be adjusted to reflect the time spent at the work place engaged in a productive work.
40. According to the SNA, statistics of hours worked should include ⁸ :
- “Hours actually worked during normal periods of work ;
 - Overtime ;
 - Time spent at the place of work on work such as the preparation of the workplace, repairs and maintenance, preparation and cleaning of tools, and the preparation of receipts, time sheets and reports ;
 - Time spent at the place of work waiting or standing-by for such reasons as lack of supply of work, breakdown of machinery, or accidents, or time spent at the place of work during which no work is done but for which payment is made under a guaranteed employment contract ;
 - Statistics of hours actually worked should exclude :
 - Hours paid for but not worked, such as paid annual leave, paid public holidays, paid sick leave ;
 - Meal breaks ;
 - Time spent on travel from home to work and vice versa.”
41. According to the SNA, the requested total hours worked is the aggregate number of hours actually worked in employee and self-employment jobs. International comparisons that are presented without identifying the concepts used, such as hours per job or hours per person, can be misleading. For example hours per job are much lower than hours per person in the total economy, as shown in table D below.

**Table D : Comparison of Average Annual Hours at Work per Job and per Person
in the United States**

Total economy ⁹	1960	1965	1970	1975	1980	1985	1990
Per job	1 990	1 977	1 889	1 832	1 792	1 793	1 782
Per person	2 031	2 034	1 914	1 890	1 883	1 918	1 942

Source: Bureau of Labour Statistics, Office of Productivity and Technology, August 1994

42. The OECD Directorate for Education, Employment, Labour and Social Affairs publishes on a regular basis data on hours actually worked in its publication *Employment Outlook*. These figures are close to those which should appear in the forthcoming National Accounts publications. Table E below includes some of the Employment Outlook information. The

⁸ See paragraph 17.11 of the 1993 System of National Accounts.

⁹ For all persons including proprietors and unpaid family workers.

concept used is the total number of hours worked over the year divided by the average numbers of people in employment. Part-time workers are covered as well as full-time.

Table E : **Average annual hours actually worked per person in employment**

	1965	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	80-94 (%)
Australia				1 878,0	1 858,0	1 869,0	1 858,0	1 850,0	1 874,0	1 879,0	1 876,0	0.1
Canada	1 985,0	1 891,5	1 839,4	1 784,8	1 744,8	1 737,6	1 717,2	1 714,1	1 718,3	1 734,6	1 737,1	-2.8
Finland	2 075,0	1 981,8	1 899,4	1 847,5	1 808,9	1 763,9	1 735,7	1 741,6	1 753,8	1 771,4		-4.1
France		1 962,5	1 864,9	1 809,8	1 684,8	1 668,1	1 665,1	1 653,9	1 638,5	1 635,2	1 630,8	-9.6
Germany	2 059,6	1 949,1	1 800,7	1 748,5	1 702,4	1 616,0	1 598,0	1 609,6	1 582,2	1 574,6	1 558,7	-9.9
Italy	1 955,2	1 968,8	1 840,5	1 789,8	1 736,0							
Japan			2 112,0	2 121,0	2 093,0	2 031,0	1 998,0	1 965,0	1 905,0	1 898,0		-10.5
Netherlands	2 054,0	1 916,0	1 704,0	1 611,0	1 563,0							
Norway	1 909,2	1 784,1	1 670,6	1 515,0	1 473,3	1 432,0	1 427,3	1 436,9	1 435,3	1 434,0	1 423,5	-5.3
Sweden	1 747,0	1 641,0	1 516,0	1 439,0	1 459,0	1 480,4	1 467,8	1 484,5	1 500,6	1 532,2	1 544,4	6.5
United Kingdom		1 945,3	1 885,9	1 775,0	1 767,0	1 772,6	1 773,1	1 719,6	1 715,4	1 728,2	1 734,5	-2.6
United States	2 003,1	1 913,9	1 889,7	1 883,4	1 918,4	1 942,6	1 936,0	1 918,9	1 945,9	1 945,3	1 952,3	3.3

Source: *OECD Employment Outlook, ISDB*

43. These data include most adjustments recommended by the 93 SNA with some additional corrections; for example to include strikes. At the time being, only 7 countries have sent data on hours worked to the OECD: Canada, United States, Australia, Finland, Luxembourg, Norway and Sweden. These data are given for the number of employees only and it is not always clear if these data refer to hours paid or to hours “actually” worked and if they are defined on a job basis or a person basis. The implementation of the new SNA should clarify this situation. It should be noted that the SNA definitions are quite ambitious and thus most countries may not be able to provide satisfactory data in a near future.

Conclusions

44. Employment data taken from National Accounts and Labour Force Statistics are different. It is not a problem as long as data are consistent within each publication and differences between the two types of publication are clearly identified.
45. Even if the new measurements units defined by the new 93 SNA are ambitious and thus difficult to implement, they should improve national accounts data consistency. These units should lead to an improved measure of labour input and the productivity analysis based on these data will benefit from this refinement.
46. The next improvement in employment definition will consist in introducing a qualitative aspect.

Questions

1. Data availability

- This paper concludes that by definition LFS and NA data are different. Do Member countries agree with this conclusion. For some countries, the OECD does not received any information on employment. Is this lack of data due to the fact that employment data adjusted to the SNA definitions do not exist? For other countries, NA and LFS data are strictly identical. Is it acceptable?
- Would it be possible for Member countries to send comprehensive and detailed methodological information to the OECD? We do not indicate in OECD publications if a series is defined on a job basis or a person basis. Should we mention this type of information? Globally, if employment data have not been adjusted to meet the SNA requirements, should we say it in the explanatory notes, or do we consider that it is part of the tolerated differences that cannot be avoid in any international comparisons?

2. Implementation of the new SNA

- Will the implementation of the new SNA imply an important change to the employment figures?
- Will Member countries be able to give the three type of measurement units defined in the SNA : number of jobs, number of hours “actually” worked per job and number of full-time equivalent jobs ?
- Will data on hours worked correspond to the aggregate number of hours actually worked in employee and self-employment? Will Member countries be able to give these data per jobs ? or will they give it per person?
- Are Member countries going to extrapolate backwards their new employment series?

3. Productivity Measurement

- What is the best measurement unit to express employment in productivity calculations ?
- The implementation of new definitions should obviously change the productivity levels. Is it a problem or do we consider that new definitions are sufficient to explain the differences that occur. Did Member countries try to adjust their data in order to keep the same productivity levels between the results obtained from the new and the former SNA?

Main References

OECD - Statistics Directorate (1996), *Labour Force Statistics*, Paris

OECD - Statistics Directorate (1996), *National Accounts, Volume I: Main aggregates*, Paris

OECD - Statistics Directorate (1996), *National Accounts, Volume II: detailed tables*, Paris

OECD - Statistics Directorate (1996), *Services: Statistics on Value Added and Employment*, Paris

OECD - *International Sectoral Database* (1997), Paris

OECD - Directorate for Education, Employment, Labour and Social Affairs (1996), *Employment Outlook*, Paris

UNITED NATIONS, EUROSTAT, IMF, OECD, WORLD BANK (1993), *System of National Accounts*, Bruxelles/Luxembourg, New York, Paris, Washington, D.C.

ANNEX

Country-by-country description of the differences between National Accounts data (NA) and Labour Force Statistics series (LFS).

The information below was collected by the OECD in 1996. Except for one or two countries, methods used to estimate employment data have not changed during the last two years. In most cases, information were given by Member countries' statistical offices. The OECD sent a copy of the data taken from its two publications NA and LFS and asked each Member country to explain the observed differences.

Australia

Tables A and B show that prior to 1976 the total employment figures are identical (ignoring what are probably rounding errors). From 1976, there are differences in the figures which result in NA employment being from 1 percent less than LFS to 3 percent greater than LFS employment. The situation is roughly similar for the total number of employees (the NA series began in 1979).

It has been suggested that the main reason for the divergence in the figures is due to the adoption of different estimates from the Labour Force Survey. For the first part of the series the data for both NA and LFS are estimates for the month of August from the Labour Force Survey. However, from 1983 the NA figures are estimates for the financial year (July to June) based on quarterly estimates from the Labour Force Survey. In 1987 the LFS series for employees switched from being August results to being calendar averages based on quarterly Labour Force Survey data. Finally, in 1988 the employment series of LFS are calendar averages of monthly Labour Force Survey data.

The above explanation obviously provides partial explanation for the differences between the OECD figures as we observe a divergence between the figures from 1976, prior to the change in methods in 1983.

Austria

Series for employment date back to 1983 and those for employees date back to 1970. Table B shows that prior to 1984, the NA figures for total employees exceed the LFS figures by up to 14 percent. In 1985, the figures are almost identical and from 1986 onwards NA employment figures are typically 1 % less than those in LFS but more so in recent years.

The series in LFS and NA in fact come from different sources. Results on the quarterly Microcensus sample survey are used for the LFS figures, with no change in the basic data. The NA employment figures are the sum of figures for employees, and the self employed (including employers) from various sources.

The employee data in NA are based on the numbers in employment (social insurance statistics) plus the number in the armed forces (calculated by the Federal Ministry of Defence). The breakdown of sectors is based on the profiles of yearly surveys. Where such data are not available (e.g. trade, hotels, restaurants, financing and insurance), data from the last social insurance survey are used.

The employment data are calculated using the employee data described above with additional data for the self employed and employers. These data are calculated by the WIFO (Austrian Institute for Economic Research), based on Census data. The breakdown by sectors is done in the same way as for employees, but based on membership of the Economic Chamber for Austria for the cases where yearly survey data is not available.

The Social Statistics Department of the Austrian CSO was currently reviewing the methods used to construct the NA series in 1996.

Belgium

Tables A and B show the same absolute difference in the figures for both total employment and for the number of employees. The reason for this difference is that firstly the NA figures include both career military personnel and conscripts. Secondly, an adjustment has been made for frontier workers. The LFS figures include those who commute outside of Belgium for work but do not include those who commute to Belgium for work. In the NA figures, the opposite is the case and thus the National Accounts conform more to ILO guidelines.

Both the NA and LFS data are based on a labour force survey with additional information from other sources. Full details of the definitions and data sources may be found in "La population active en Belgique, No 3 Note Méthodologique", Ministère de l'emploi et du travail.

Canada

The comparison made in Tables A and B show that the Total Employment figures in NA match the Civilian Employment figures used in LFS, with the exception of 1980 where NA employment is less than LFS employment. The total number of employees is consistently about 1 % less than that in LFS, except for 1980 where there is a larger difference.

The differences in the figures are apparently generated by the use of different revisions of the same basic series and there are no differences in the sources and definitions between the NA and LFS data.

Denmark

The data in Tables A and B show that since 1985 the NA figures are less than the LFS figures by between 1 and 4 percent. Prior to 1985 the NA figures are greater than the LFS by similar orders of magnitude.

The main reasons for the differences in the figures are as follows. Firstly, the LFS data are based upon a labour force survey. The NA makes use of other sources, especially Registered Labour Force Statistics data.

Secondly, in the NA data "marginal employment" is excluded from the data. This consists of wage and salary earners who in the reference period of the primary data source fall below a certain activity level (10 hours per week) and those below the age of 16. The reason for this adjustment is that it is a proxy for weighting the employed by their labour force participation throughout the year.

Finland

Tables A and B show that prior to the mid-1970s the figures in the NA series are greater than in the LFS series. For total employment, the NA figures exceed those in the LFS by between 1 and 5 percent. The difference in the employee figures is slightly larger. From the mid-1970s onwards the NA figures are less than the LFS. In the case of total employment, the NA figures are between 2 and 5 percent less than those in the LFS.

The Labour Force Statistics series is based on a household survey of the population, whilst the *National Accounts* series uses additional sources: establishment statistics, register employment statistics, registers of businesses and enterprises. The establishment surveys cover only those establishments with more than 5 employees. Employment in small enterprises are estimated. The approach taken to generate the NA figures varies across sectors.

There are a number of definitional differences between the series:

- the NA employment figures include members of the armed forces, hence contributing to the difference between these figures and the *civilian* employment figures in LFS.
- the LFS data cover only those who are registered as 'living in the country', whilst the NA series includes all employment in domestic production.
- the LFS data do not count those temporarily laid-off, but the NA may include them.
- in some sectors estimation of full-time equivalents has been made in the NA series, the LFS series is simply a count of the numbers employed.
- the LFS includes persons receiving grants, scholarships etc., these are excluded from the NA.
- the NA includes unpaid voluntary work in the production of goods and services, whilst the LFS excludes all unpaid voluntary work.

France

Tables A and B show similar differences between both the employment and employee series. For example in 1993 the total employment in the NA series is 275 000 greater than that in the LFS series. The difference between the figures for employees in 1993 is 296 000. This points to similar adjustments for both series.

The differences are in fact generated by the following. Firstly, the NA series includes data for the armed forces whereas the series chosen for comparison from LFS is for civilian employment only. Secondly, the treatment of frontier workers differs between the series. The LFS series includes those who live in France but who commute across national boundaries for work and excludes those commute to France to work. The reverse is true for the NA data.

Germany

The comparison between the figures in Tables A and B show that prior to 1991, the same absolute difference between the data exists for both total employment and the total number of employees. Data from 1991 onwards differ markedly between NA and LFS, the former series continuing to represent the former Federal Republic whilst the LFS data represent the whole of Germany.

Apart from the obvious difference in geographic coverage in the series from 1991, there are two basic reasons for differences in the data. Firstly, the NA figures include members of the armed forces. Secondly, the LFS figures include border crossings out of Germany (or the former Federal Republic) but exclude workers commuting into Germany. The reverse is true for the NA figures.

The Federal Statistical Office is in the process of implementing a modified method of calculating annual average figures to achieve consistency in terms of the methodology and content with the annual Eurostat survey. At present, the only data for the LFS from 1991 onwards are based on this new methodology. All of the NA series and the LFS series prior to 1991 are based on the previous methodology. Note however that revised series for the period 1984 to 1990 are being made available by the Federal Statistical Office and will be incorporated into the OECD series in due course.

Greece

The comparison of data in Tables A and B show that the same employment and employee figures are used in NA as appear in the *civilian* employment series in LFS, with the exception of the period 1982 to 1984.

In fact the difference occurring between 1982 and 1984 is due to the use of revised figures for the LFS.

Iceland

The comparison of data made in Tables A and B shows that the series for Total Employment are identical prior to 1991 and thereafter the NA figures are 9 to 11 percent less than the LFS figures. In the case of employees a divergence between the figures appears in 1987, the total number of employees in NA sometimes being greater and other times being less than LFS employment.

Prior to 1991, the source for both NA and US series is tax records. The NA series continues to be based on this source after 1991 but the LFS data is based on the bi-annual labour force survey.

Italy

Tables A and B show both employment and employee figures to be greater in NA than the civilian employment figures in LFS. In the case of total employment the relative difference between the figures has risen over time with the NA employment figure being 12 percent greater than the LFS in 1993. The relative differences between the figures for employees show little trend but range between 5 and 10 percent.

The data for both NA and LFS are based on the quarterly Labour Force Survey, however a number of factors account for the differences between the figures. Firstly, the NA series are based on full-time labour units, whilst the LFS data refer to the number of persons employed. The full-time labour units take account of workers on part-time and shorter hours and workers in the "black economy". The figures also include members of the armed forces.

Secondly, the reference populations are different. The NA figures are based on the population surveyed in the census of 1981, updated by administrative registers of local municipalities. The US reference population is based on the census of 1991, also updated by administrative registers of local municipalities. The updated population figures based on the census of 1981 are much greater than those based on the 1991 census.

Finally, the classifications of economic activity are different. In order to prevent a break in the series the NA is based on NACE/CLIO but on NACE, whilst the classification used in the labour force survey from 1992 is NACE Rev. 1.

Japan

For Japan the Tables A and B indicate that both employment and employee figures in NA are greater than those in LFS. The figures for employment are currently about 3 percent greater and about 6 percent greater in the case of employees. In both cases there has been a downward trend in the relative difference between the figures over time.

The data for the *National Accounts and Labour Force Statistics* are both based on the same source, the Labour Force Survey. The difference between the series is mainly caused by the fact that those with secondary jobs are included in the *National Accounts* series and therefore the series represent the number of jobs rather than employment. Data for secondary jobs is taken from the Employment Status Survey which is conducted every five years.

The downward trend can be explained by the fact that the number of paid family workers has been included in employees since the 1980 benchmark year revision. They had been included in self-employment before this revision.

Luxembourg

In the case of Luxembourg small differences between NA and LFS figures exist, which is probably accounted for by the inclusion of the armed forces in the NA figures. From the correspondence with Statec, it appears that both sets of figures represent employment as defined by geographic boundaries. In the case of Luxembourg, this means that the figures include two relatively important groups, those commuting to Luxembourg for work and those working for international agencies within Luxembourg are included in both the NA and the LFS figures.

Netherlands

The comparisons made in Tables A and B show that in the period 1977 to 1979, the NA figures exceed the LFS figures but by relatively small amounts. From 1980, the NA figures are less than the LFS. For example, in the period 1980 to 1986 the NA figures for total employment are between 1 and 7 percent less than the LFS and since 1987 the figures are between 15 and 20 percent less.

The data in *National Accounts* represents full-time equivalent jobs, whilst that in *Labour Force Statistics* represents employment data. The series for *Labour Force Statistics* is taken from the Labour Force Survey and represents employed persons aged between 15 and 64. No adjustment is made for frontier workers, i.e. the data include those who commute to other countries and exclude those who commute to the Netherlands to work. In addition, the series include some flexi-workers who in fact did not work during the reference period (conversion to annual average). In the Labour Accounts maintained by Statistics Netherlands, employment figures for those aged over 65 are included and various other adjustments are made including those for frontier workers, flexi-workers, conscripts, etc.

The data for *National Accounts* are based on full-time equivalents in the Labour Accounts with some adjustments including a correction for subsidised labour.

Norway

Tables A and B show that the NA figures for both employment and employees exceed the LFS figures. In the case of total employment there is a relatively large difference in the period 1962 to 1970, with NA

employment being about 10 percent greater than the LFS figure. Thereafter the figure lies between 1 and 4 percent.

There are two general reasons for the differences between the series. Firstly, the NA figures include the armed forces. Secondly, foreign employees on Norwegian ships in ocean transport are also included in the NA figures. The rationale for their inclusion is that such workers fall into the same category as incoming frontier workers in the sense that they also contribute to GDP.

A number of breaks in the series account for the changing relationship between the two series. Firstly, the LFS series prior to 1972 is based on administrative data (Health Insurance Offices) which is not compatible with the labour force survey data from 1972 onwards. In addition there is a labour force survey break in the labour force survey series between 1979 and 1980 due to the adoption of new estimation procedures. Finally, from 1980, estimates of the armed forces include conscripts as well as permanent members which led to an increase in employment figures in NA.

Portugal

Tables A and B show that the NA figures for total employment are slightly greater than those in LFS by between 2 and 3 percent. However the difference between the employee data is much greater with the NA figures being between 17 and 20 percent greater than the LFS figures.

One explanation for the difference between the LFS and NA total employment figures is that the former only covers *mainland* Portugal whereas the NA figures include additional data such that the whole country is covered.

The employee data in NA is not based on the same sources as that in LFS. The NA figures are based on the Enterprises Annual Survey, the reason being that these data more accurately reflect those who are actually in receipt of salaries compared to the standard labour force statistics.

Spain

The data in Tables A and B show that both for employment and employees the NA figures exceed those chosen for comparison from the LFS. For total employment the NA figures are between 3 and 6 percent greater than those in the US and for the total number of employees the difference is between 4 and 7 percent.

The data provided for LFS are based on the results of a labour force survey (the Encuesta de Poblacion Activa or EPA), augmented by data from the last Population Census. The EPA provides data for the population living in private households and the Population Census supplies information for those living in collective households.

The data provided for NA are based on a wider variety of sources including administrative records, business surveys and so on. The employment figures are derived separately for each branch of activity and are based on the use of indicators applied to estimates in a given basis year.

There are also differences in coverage between the LFS and NA series. In particular:

- a) the NA series includes adjustment for frontier workers such that those commuting out of Spain are excluded and those commuting into Spain are included.

- b) the NA series includes secondary jobs. Therefore strictly speaking the series represent 'jobs' rather than 'employment'.
- c) the NA series probably detect part of the "black" economy in some branches of activity, as a consequence of connecting employment with production and incomes generated in the production process.

Sweden

The series compared in Tables A and B show that the NA figures are typically greater than those in the LFS. Differences are relatively small for total employment with NA employment being up to 2 percent greater than LFS. For total employees there are cases where the NA figures are up to 5 percent greater than the LFS.

United Kingdom

In the case of the United Kingdom. Tables A and B show the NA figures to be consistently between 1 and 2 percent greater than the civilian employment figures in the LFS. The Office for National Statistics uses household-based LFS surveys and employer-based surveys. The LFS provides estimates of number of people who worked for longer than one hour in the survey week and number of people with a second job. The employer surveys measure numbers of jobs for businesses whose records are held on the Inter-Departmental Business Register. There are both coverage and conceptual differences between the estimates. Work to quantify these differences suggests that there are large numbers of people identified by the LFS working in jobs which are not included in the employer survey estimates.

United States

For the United States, Tables A and B show the NA figures to typically be between 2 and 4 percent lower than those in LFS. By way of exception there are some of the earlier years in the series where the NA figure exceed those in LFS.

The series in *National Accounts and Labour Force Statistics* differ not only because in the first case the series represents "full-time equivalent" employment, not the numbers employed as is the case in *Labour Force Statistics*.

The series in *National Accounts* are based primarily on data from an employer survey, the *BLS Employment and Wages program or ES-202 program*. The series in *Labour Force Statistics* are based on a household survey, the *Current Population Survey*. There are a number of issues which emerge from this:

- The CPS includes some individuals who are "with a job but not at work" who earn no wages. The ES-202 program only counts encumbered jobs during the reporting period.
- The EOS-202 program counts jobs rather than numbers employed as is the case for the CPS. Hence the *National Accounts* series should, strictly speaking be labelled as full-time equivalent *jobs*.
- The employer based nature of the EOS-202 program means that jobs at work are being counted, whilst the CPS evaluates individuals at their place of residence. This implies that the CPS may include some frontier workers who live in the United States but commute to work, say, in Canada but

excludes those commuting to the United States for work. The ES-202 program will obviously count individuals in the reverse situation and therefore in this regard follows more closely the I.L.O. guideline that employment should represent those contributing to GDP as defined in the SNA.

- The ES-202 program excludes proprietors, the self employed, unpaid family workers and certain farm and domestic workers. All these are included in the CPS with the condition that unpaid family workers are only included in employment if they have worked more than 15 hours in the survey period. In addition, the CPS data exclude those aged under 16 years whilst the ES-202 program covers workers of all ages.