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UNECE SURVEY ON USE OF EMPLOYMENT DATA IN NATIONAL ACCOUNTS

Note by the secretariat[1]

Summary

Consistency of employment estimates with the output and value added indicators in national accounts is important for productivity analysis. In 2006, Eurostat and OECD conducted a survey on the use of employment data in national accounts in their member states. The UNECE extended the survey to the other countries in its region. This report summarises the replies of the 16 countries that responded to the UNECE questionnaire. The structured national metadata are presented in an addendum to the report.

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I. INTRODUCTION

1.   Competitiveness of economies has become the main focus of the policies of UNECE countries in recent years. The UNECE reform of 2006 has established a new subprogramme on Economic Integration and Cooperation that aims to contribute to strengthening the competitiveness of member state economies. This has increased the interest in comparative analysis of productivity between countries. Users demand good quality labour market indicators that can easily be combined with gross domestic product (GDP), production and value added measures derived from the system of national accounts.

2.   Ensuring the consistency of labour market and national accounts indicators is of particular importance since the definitions used in the respective international standards are different. Chapter XVII of the 1993 System of National Accounts (SNA) and Chapter XI of the 1995 European System of Accounts (ESA) deal with labour concepts and labour input variables in the frame of national accounts and productivity analysis and review the adjustments that need to be made. However, until now employment has been considered an auxiliary variable, somewhat outside the core indicators of the System. Little has been known of the actual methods applied by countries to reconcile the estimates.

3.   A first step towards harmonizing labour inputs data both with other national accounts aggregates and across countries is gathering information on how national accountants estimate employment. This was the reason why, in 2005 and 2006, the OECD and Eurostat prepared a questionnaire and conducted a survey among their member states. The results were presented for the first time and discussed at the Joint UNECE/OECD/Eurostat Meeting on National Accounts, held in Geneva on 25-28 April 2006. The main concern expressed by countries was how to arrive at a more consistent set of data in view of productivity analyses and how to reconcile the varying information sources. In addition, it was noted that employment data are extensively used for consistency checks and adjustment in the process of compilation of national accounts.

4.   The above-mentioned issues are of significant interest for all countries in the UNECE region. Therefore, the meeting recommended that the UNECE should extend the survey on use of employment data in national accounts to its member states that were not covered by the Eurostat/OECD questionnaire. This group includes 23 countries: Albania, Andorra, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Croatia, Georgia, Israel, Kazakhstan, Kyrgyzstan, Liechtenstein, Moldova, Monaco, Montenegro, Russian Federation, San Marino, Serbia, Tajikistan, The former Yugoslav Republic of Macedonia, Turkmenistan, Ukraine and Uzbekistan.

5.   This report presents a summary of the main findings from the UNECE survey.

II. THE QUESTIONNAIRE

6.   The aim of the survey was to collect metadata in a harmonised way similar to that of EU member countries. Therefore, the UNECE followed the structure of the Eurostat questionnaire to the extent possible. The questionnaire asks for information on the use of employment data in national accounts in general and more concretely on data sources and adjustments to estimate

employment according to the national accounts concept. It focuses on two major employment variables that are embedded in the national accounts standards:

(a)   Persons employed - employment covers all persons (both employees and self-employed) engaged in some productive activity that falls within the production boundary of the system;

(b)   Actual hours worked - the aggregate number of hours actually worked as an employee or self-employed during the accounting period, when their output is within the production boundary. Because of the broad definition of employees which covers persons temporarily not at work but with a formal attachment, and part-time workers, the SNA and ESA recommend that the appropriate measure for productivity calculation is not a head count but total hours worked.

7.   Countries were also requested to provide in a bridge table actual data, quantifying the adjustments that they make to the main data source in order to arrive at the national accounts concept.

8.   It should be noted that the countries covered in the UNECE survey differ in respect to their statistical obligations for data reporting as compared to those countries that replied to the Eurostat questionnaire. For the EU member states, both estimates, i.e. those coming from the labour force survey (LFS) and from the national accounts, are regularly produced and submitted. The variables mentioned in paragraph 6 are part of the 1995 ESA transmission programme. A commission regulation establishes the LFS and requires countries to conduct the survey and report data on a regular basis. It was therefore logical that the Eurostat survey focused on the adjustments made to reconcile the two employment estimates.

9.   The countries that are members of the UNECE are encouraged to implement the national accounts concept, but they are not formally obliged to compile and report these estimates. Moreover, some of them, in particular the Commonwealth of Independent states (CIS) countries, do not have well-established LFS. Therefore, the main purpose of the UNECE survey was to examine the availability of data sources for employment statistics and only after that to collect information on the adjustments made in order to arrive at an estimate consistent with the national accounts.

III.   TYPE OF SOURCES FOR EMPLOYMENT STATISTICS

10.   In general, surveys collecting data about labour market can be classified as surveys on the labour-supply side or on the labour-demand side. In the former, the respondents are the individuals who are also suppliers of labour, while in the latter data are coming from the units that are employers.

11.   *The LFS* is the most comprehensive and well established labour-supply survey. Its methodology has been set out by the International Labour Organization (ILO) and accepted world-wide. However, LFS data are not directly usable for the purpose of national accounts because they are not fully consistent with the production boundary defined in the SNA. For example, LFS generally measures the national labour force (the resident persons employed),

while for national accounts and productivity analysis the domestic labour force (the persons employed in resident production units) would be more relevant. Even for the national labour force, some particular groups are not covered in LFS e.g. staff of national embassies working abroad and/or crews in national fishing boats, aircrafts and floating platforms. But LFS have the advantage of covering the whole economy, and both persons and hours worked of employees, self-employed and unpaid family workers.

12.   *Other household surveys* could also provide labour-supply side data on employment. Such are the surveys collecting information on household income and expenditure: household budget surveys (HBS), living standards surveys, etc.

13.   Surveys collecting data at the labour demand-side are typically *business (or enterprise) surveys*. They provide detailed information on number of employees and hours worked by different branches of activity classification as reported by the economic units (employers). The advantage of labour statistics collected through business surveys is that they are broadly consistent with production indicators such as output and value added. But business surveys have limitations on the coverage. Often, the business surveys tend to exclude small firms and are generally unable to collect data on self-employed and unpaid family members. This is a serious problem in countries where the agriculture or the informal sector play an important role in the economy. Business surveys also measure employment in terms of jobs, and adjustments are necessary in order to obtain employment in terms of persons.

14.   *Administrative sources* are also widely used by countries. These include mainly:

    (a)   Business registers or similar administrative registers;

    (b)   Information from tax authorities - mainly personal income tax declarations used to estimate secondary jobs and self-employment;

    (c)   Social security and health insurance records, etc.

15.   Data from these administrative sources are useful for cross-checking but they could also serve as the only source for some sectors of the economy.

16.   *Other data sources* could also be used for employment estimates, e.g. population censuses, but these were not mentioned as a major data source by the countries that replied to the UNECE survey and were therefore not included in the analysis. They are rather used for benchmarking or cross-checking of the estimates.

IV. SURVEY RESULTS

A. Data sources used for employment statistics

17.   The UNECE sent out the questionnaire in the autumn of 2006. The countries provided their replies in November 2006 and in an additional round in the summer of 2007. The following countries participated in the survey:

    (a)   9 CIS countries: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Turkmenistan and Ukraine;

    (b)   5 Western Balkan countries: Albania, Bosnia and Herzegovina, Croatia, Serbia and The former Yugoslav Republic of Macedonia;

    (c)   2 other UNECE member states: Andorra and Israel.

18.   Replies vary significantly in terms of structure, detail and specification of the information provided. Most of the countries generally followed the format of the questionnaire, answering all or part of the questions depending on their experience. Some countries just submitted a brief description of the existing methodology and/or of their future plans.

19.   The following summary is an attempt to structure the replies received so far and to classify them to the extent possible according to international definitions and guidelines. Countries' metadata are attached separately to this document.

20.   Table 1 presents an overview of the existing data sources on employment in the 16 surveyed countries. The sources are grouped into three major categories: enterprise surveys, household surveys and administrative sources.

Table 1
Data sources used for employment statistics

	Household surveys		Enterprise surveys	Administrative sources		
	Labour Force Survey	Other household surveys		Business or similar registers	Tax records	Social security or health
Albania	+	+	+			
Andorra						+
Armenia	+		+	+		
Azerbaijan	+		+			
Belarus		+	+	+	+	
Bosnia&Herzegovina	+					
Croatia	+			+	+	+
Georgia	+		+			
Israel	+		+			+
Kazakhstan	+		+		+	
Kyrgyzstan	(+) *		+			
Moldova	+		+			
Serbia	+		+	+	+	+
The former Yugoslav Republic of Macedonia	+			+	+	+
Turkmenistan		+	+	+		
Ukraine	+		+	+	+	+

First LFS foreseen for the near future

21.   LFS exists in almost all countries, but is not the main source for employment data. The reason is that, except in Israel, it is a relatively new survey that is often not conducted with sufficient frequency. Therefore, the LFS is mainly used as a secondary source for adjustment of certain types of employment. However, the UNECE survey shows that, with the experience gathered, its role for measuring employment in national accounts is increasing. Currently 10 out of the 16 countries conduct it on a more or less regular basis. In addition, Albania and Bosnia and Herzegovina have recently carried out their first LFS and the results will become available soon. Kyrgyzstan has also foreseen such a survey for the near future. As far as periodicity is concerned, the LFS is either continuous (Moldova), monthly (Ukraine), quarterly (Azerbaijan, Croatia, Georgia, Israel, Kazakhstan), or annual (Serbia). The periodicity was not specified for Armenia and The former Yugoslav Republic of Macedonia.

22.   In three countries, other household surveys also provide data on employment. These are living standard measurement survey (Albania), household income and expenditure survey (Belarus) and a one-off household survey of work time consumption and production of goods and services (Turkmenistan).

23.   Unlike LFS, enterprise surveys have a relatively longer history in the CIS and Western Balkan states, where the output approach was traditionally the first method to estimate the GDP. These are typically censuses of the public sector and large incorporated enterprises, combined with sample surveys for small businesses. Altogether 12 out of the 16 surveyed countries use them as a data source for employment estimates. The periodicity varies - monthly (Azerbaijan, Belarus, Serbia, Ukraine), quarterly (Azerbaijan, Georgia, Israel, Kazakhstan) and annual (Azerbaijan, Albania, Armenia, Israel, Kyrgyzstan, Moldova, Turkmenistan).

24.   The last group are the various administrative data that also provide mainly demand-side estimates. They are mentioned by 10 countries as a primary or secondary data source on employment. Included here are business and other registers (Armenia, Belarus, Croatia, Serbia, The former Yugoslav Republic of Macedonia, Turkmenistan and Ukraine), tax data (Belarus, Croatia, Kazakhstan, Serbia, The former Yugoslav Republic of Macedonia, Ukraine), social security records (Andorra, Croatia, Israel, Serbia, The former Yugoslav Republic of Macedonia and Ukraine), health insurance data (Serbia). While business and social security registers generally provide estimates of employees, tax data is more often used to cover only the small entrepreneurs and self-employed.

B.   Country methods for estimation of persons employed

25.   Although a variety of basic labour data is available, countries still find it challenging to reconcile them and arrive at a national total consistent with the GDP. The main difficulty emanates from the newly established and still developing data sources. In some countries, resource constraints do not allow the carrying of the surveys with the necessary frequency and/or coverage. Sometimes it is also hard to match the data from different registers or to match the definitions applied in administrative sources and in enterprise surveys.

26.   It should be noted that for part of the countries that participated in the survey the priority is to ensure exhaustive coverage of the major national accounts indicators and mainly of the production account. These countries do not explicitly try to produce an estimate for persons

employed or hours worked that could be related to GDP and thus used for productivity analysis. Instead they rely on the comparisons between the available employment statistics in order to identify hidden economic activities and to adjust the other national accounts aggregates, like output and value added.

27.   Altogether ten countries provided estimates of employment that follow to a greater or lesser extent the national accounts concept. Table 2 classifies the methods used depending on the predominant data source and the starting point for the calculations. Countries have been associated with different groups on the basis of the replies provided to the first part of the questionnaire (description of data sources and adjustments made) and on the basis of the data presented in the bridge table.

Table 2.
Methods used for estimating employment in national accounts

Method	Countries
Mainly supply-side based estimate (major source is the LFS or similar survey, adjusted for some industries by demand based estimates)	Israel
Combined labour-supply and labour-demand estimates	Albania, Georgia, Kazakhstan, Moldova, The former Yugoslav Republic of Macedonia, Ukraine
Mainly demand-side based estimate (major source are enterprise surveys with minor adjustments for some industries by a household survey)	Armenia, Belarus, Serbia
No estimate of persons employed according to national accounts concept	Andorra, Azerbaijan, Bosnia&Herzegovina, Croatia, Kyrgyzstan, Turkmenistan

28.   In general, the following findings could be mentioned:

(a)   None of the countries in the survey relies on a purely demand or purely supply based estimates. Although in most cases more weight is given to enterprise surveys and business registers, countries are combining different available sources to verify their estimates;

(b)   Only Israel bases its estimate predominantly on the LFS results, replacing them in two industries (manufacturing and hotel services) with data from the enterprise surveys. In the rest of the countries, the LFS and other household surveys are not the major source used for employment estimates in national accounts.

(c)   Six countries combine sources for labour supply and demand. In most cases, the starting point is the enterprise surveys, business or tax registers. The data for some activities (e.g. agriculture, construction, trade) or employment groups (self-employed, employed in small enterprises) come from LFS or other household surveys.

(d)   Mainly demand-side data sources are used in three countries. The estimates of persons employed in enterprises are based on business surveys. Tax authorities data and similar administrative sources are used to derive the number of small entrepreneurs and self-employed. LFS is only partially used in order to adjust for hidden labour in some activities.

C.   Procedures to adjust the main source of employment

29.   The 1993 SNA and the 1995 ESA provide detailed definitions and guidance on the various adjustments needed to ensure consistency of the employment estimates with GDP. The procedures applied by the countries in order to approximate national accounts coverage are summarised in the following paragraphs.

30.   As a general rule, the basic data sources directly provide estimates in terms of annual averages. When this is not the case, the methods for calculation of annual averages depend on the periodicity of the corresponding source. Simple (i.e. not weighted) arithmetic mean is most commonly applied.

31.   Adjustments to pass from jobs to persons (or vice versa) are often needed when information from various sources is combined. For example, enterprise surveys and business registers tend to provide data in terms of jobs, and, therefore, are not directly comparable to the LFS and other household surveys, which collect data in persons. However, not many countries reported to make such adjustments:

(a)   In Albania, Armenia and Israel the data are directly available in terms of number of persons employed (or in both jobs and persons), so there is no need to transform jobs data to persons employed;

(b)   Belarus excludes the data on secondary jobs in order to reconcile the estimates;

(c)   Kazakhstan and The former Yugoslav Republic of Macedonia use LFS to transform second jobs into full time equivalents.

32.   According to SNA § 17.25 and 17.26 and ESA § 11.17 to 11.19, employment should include people working for resident units as only the latter contribute to GDP. Therefore, sometimes adjustments have to be applied to achieve geographical coverage, i.e. to exclude residents working for non-resident producer units and to include non-residents working for resident producer units. This mainly applies to those countries that use LFS data, but could also be relevant for other cases depending on the coverage of the available data sources.

33.   Israel is the only country that relies predominantly on LFS. Therefore, adjustments are made to include non-residents working on the resident territory. In most other countries, a significant part of the information comes from enterprise surveys that, in principle, should be broadly consistent in coverage with the production boundaries of the national economy. However, for certain activities or types of employees the estimates are based on household surveys. In these cases, it is not clear how the data are adjusted to account for non-residents working for resident producer units.

34.   Adjustments to include military forces are made by Serbia. In other countries, e.g. Ukraine, these figures are explicitly covered by the basic data sources. However, most of the countries do not account for the military forces in the employment estimates.

35.   By far the most common adjustment is the one for underlined exhaustiveness, as the share of the non-observed economy is significant in almost all countries that participated in the survey. The transition process gave rise to an increasing number of small economic units often remaining outside of the scope of the basic statistical surveys.

36.   The exhaustiveness adjustment is made by all 10 countries that compute employment in national accounts. LFS or another household survey provides the basis for these estimates. In most CIS and Western Balkan countries, employment data are even used as an underlying indicator to estimate corresponding output and value added for the non-observed part of the economy.

Methods for estimation of hours worked

37.   The ILO has defined hours worked in its "Resolution concerning statistics of hours of work", adopted by the Tenth International Conference of Labour Statisticians. These definitions are further developed in the 1993 SNA and the 1995 ESA.

38.   Hours worked is the preferred measure of labour inputs in production and is widely used for estimating productivity in certain sectors but also at national level. In order to align them to the output that is within the production boundary, specific adjustments are sometimes necessary to basic data sources.

39.   Only four of the surveyed countries compile estimates for actual hours worked although not all of them fully follow national accounts concept. The data sources used are the same as for persons employed. The sources are: quarterly LFS (Azerbaijan, Israel, Kazakhstan) and monthly enterprise surveys (Azerbaijan, Belarus).

40.   The estimates of hours worked refer only to employees in Belarus and to the total number of persons employed in Azerbaijan, Israel and Kazakhstan. The data include overtime, whether paid or not, and exclude public holidays, strikes, leaves, sickness, etc. In Israel and Kazakhstan the estimates are adjusted for hidden labour.

41.   In Croatia, Georgia and The former Yugoslav Republic of Macedonia, basic data on hours worked are already available from LFS or administrative sources. The first estimates of actual hours worked for total economy are foreseen in the near future.

V.   CONCLUSION

42.   The results show that most countries in the UNECE survey are still in the initial stages of estimating employment and hours worked as requested by the SNA. LFS is not the predominant source, as it is a newly established survey. However, with the experience gained, its importance is increasing. The traditional data sources, such as enterprise surveys and administrative registers, are also subject to development in many countries. Therefore, it would be useful to

conduct a similar survey in 2 years' time in order to analyse progress made with estimates of employment data for national accounts purposes and to report the results to a future meeting.

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