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**Statistical Commission**

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**Demographic and social statistics: labour statistics supplement  
to the Tourism Satellite Account****Report of the Bureau of Statistics of the International  
Labour Organization****Note by the Secretary-General**

1. The Secretary-General has the honour to transmit to the Statistical Commission a report prepared by the Bureau of Statistics of the International Labour Organization (ILO), entitled "Developing a labour accounting system for tourism: issues and approaches", which is contained in the annex. The report is transmitted to the Commission in accordance with a request of the Statistical Commission at its thirty-first session.<sup>1</sup>

**Points for discussion**

2. The Commission may wish to:

(a) Comment on the main concepts and principles of the labour accounting system (LAS) and labour accounting system for tourism (LAS-T) linked to the Tourism Satellite Account, as described in the ILO report;

(b) Provide advice on how the conceptual and methodological framework of a labour accounting system presented in the ILO report could be further developed.

*Notes*

<sup>1</sup> *Official Records of the Economic and Social Council, 2000, Supplement No. 4 (E/2000/24), para. 1.*

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\* E/CN.3/2001/1.



## Annex

### Developing a labour accounting system for tourism: issues and approaches

#### Report of the Bureau of Statistics of the International Labour Organization\*

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\* Based on a paper prepared by Eivind Hoffmann for the twenty-sixth meeting of the Statistical Working Party of the OECD Tourism Committee, 6 and 7 November 2000. Comments and suggestions for improvements and correction are welcome. Address: CH-1211 Geneva 22, Switzerland; Fax: +41 22 799 6957; email: [stat@ilo.org](mailto:stat@ilo.org).

## I. Introduction and background

1. Supplementing the work undertaken by the World Tourism Organization (WTO) and the Organisation for Economic Cooperation and Development (OECD) to develop tourism satellite accounts (TSA) to the System of National Accounts (SNA),<sup>a</sup> OECD also prepared an employment module to the TSA (TSA-EM), which is contained in part II of OECD (2000). The objective of TSA-EM is to present a conceptual and methodological framework that links basic employment data with TSA. The objective of the present report is to build on that work as well as on the work to develop a labour accounting system (LAS) undertaken in the International Labour Organization (ILO) and some national statistical agencies.<sup>b</sup> The intention is that on LAS for tourism (LAS-T) will represent a labour statistics-based extension of TSA, designed to facilitate the production of TSA-consistent statistics from several different sources to answer questions about how many and what kind of workers are participating in tourism-related activities; how the compensation of employees is being distributed among those tourism-related activities workers who are considered to be employees; and what will be the impact on total employment in an economy of a change in tourism-related demand. The perspective of LAS-T is focused on the definitions and classifications as well as the relationships between units which need to be respected in order to create a coherent body of tourism-related labour statistics. Thus, LAS-T represents a framework which will support the production of labour statistics of the type presented in OECD's TSA-EM, i.e., representing a producer's response to that user's perspective. The present report provides an overview of the main concepts and principles of LAS and an LAS-T linked to TSA.

2. The term "labour accounts" or "labour accounting system" emerged from discussions which started in the early 1980s between representatives of some national statistical offices and statistical secretariats of some international organizations. These discussions concerned the objectives, principles and mechanisms for combining in an effective manner the fragmented statistics available on labour markets, i.e., statistics on employment, unemployment, wages and income from employment, and were concerned with the coherence between the statistics for these respective areas, and between them and other areas of statistics, i.e., economic statistics, in particular as organized by the

System of National Accounts (SNA) and social and demographic statistics. The concern applied to statistics, both for a particular reference period and for the changes which take place between reference periods, both in respect of the net changes for groups and in respect of the (gross) changes for individuals. The participants felt that users as well as producers of labour market statistics would benefit from the creation of a framework which could assist in the production of comprehensive and coherent statistics with improved precision for these areas, and in better use of fragmented, incomplete and partly overlapping primary statistics, which often are less precise than required by users. By using the term LAS for this framework, it was intended to signal (a) the intention to make use of any relevant definitional relationships between central concepts and units; and (b) the conviction that a useful LAS framework would serve as a coordinating tool for all labour statistics, in the same way as SNA serves as a coordinating tool for economic and financial statistics. It was also felt that with a developed LAS, it would be easier to describe statistically the interaction between production, income generation and the labour market.

3. Having participated actively in the LAS discussions from the start, the Bureau of Statistics of the International Labour Organization submitted a study (ILO, 1992) for discussion at the Fifteenth International Conference of Labour Statisticians (see ILO, 1993, paras. 98-108). During the discussion, it was agreed that the most difficult problems would be related to the use of available data to generate the actual estimates, and that only experience with the preparation and use of such estimates would lead to further progress in developing a coherent and agreed LAS. The focus and outcomes of such national work in Denmark, the Netherlands and Switzerland have been summarized in Buhmann et al. (2000). Other studies *économiques* (INSEE) (see INSEE, 1997) indicated that similar work has also been carried out in other countries or is being planned, partly under the heading of "reconciliation of labour market statistics from different sources" and partly as "labour accounting". The efforts reported to date have not included separate LAS-based estimates for tourism-related activities, or the use of the LAS framework to support estimates of the impact on employment of changes in tourism-related demand, such as those presented for Norway in Evensen (1999). Thus, there is no practical experience

available in applying the principles of LAS-T described below. One reason may be that work on TSA and LAS has been carried out in isolation, although TSA-EM makes reference to Dutch LAS work.

## II. User areas

4. The discussion of any form of LAS has to distinguish between two sets of issues: (a) those concerning the logical and definitional structures; and (b) those concerning the observation and estimation of the corresponding data (parameters). This distinction is necessary because the issue of inconsistency and imprecision in the primary statistics has tended to get confused with that of ensuring logical consistency within LAS and between LAS estimates and those of, for example, national accounts. The problem of how best to use the primary statistics to estimate the data cells defined by the structure of an LAS is basically no different from that faced by national accountants and other secondary users of statistical data, and in seeking its solution one may, in the same way as the national accountants, benefit from the requirement that estimates be consistent within the logical framework of the LAS structure, in particular from the accounting relationships in the system. Thus, one basic use of LAS is to provide a logical framework for obtaining consistent estimates of key labour market variables and their distribution over the population — estimates which are also consistent with corresponding estimates prepared within the SNA framework. Such consistent estimates may in turn facilitate the description and analysis of the state and dynamics of the labour market and its interaction with the rest of the economy. In addition to accounting relationships, the logical framework will require consistent use of units of observation and measurement, time references, definitions and classifications.

5. More specifically, the description and analysis of the state and dynamics of the labour market and its interaction with the rest of the economy refers to the following main areas for statistical description and analysis:

(a) Provide an overall picture of the employment status of the population and its distribution over the various variables of interest for economic, labour market and educational policies and planning, as well as estimates of net changes which can be derived from successive situation descriptions (see,

for example, Gouriev, 1984, and Neubourg, 1983). For tourism-related activities, this corresponds to the presentation of such activities in the context of the total labour market and the total economy;

(b) Studies of the total amount of human resources, their change and allocation between different activities, including productivity studies which require consistency between labour input data, on the one hand and production or national accounts data on the other (see, for example, Harildstad, 1989). An LAS-T will provide a basis for such studies focused on tourism-related activities;

(c) Studies of the relationship between the cost of labour and the demand for it, on the one hand, and the remuneration of labour and the supply of it, on the other (see, for example, Altena et al., 1991). This includes the study of the distribution of the compensation of employees among the different groups of workers, as described by characteristics of their jobs, themselves and/or their households. An LAS-T will provide a basis for focusing such studies on those participating in tourism-related activities;

(d) Studies of gross changes (flows) in the number of jobs and persons, and in their activity situation (see Neubourg, 1983). For an LAS-T, this will mean focusing in particular on the gross changes related to tourism-related activities.

6. There are very real differences in the requirements of these different user areas in terms of units of observation, units of measurement, reference period and periodicity — core elements which need to be considered when developing LAS estimates. User areas, such as those defined in paragraphs 5 (a) and (d) above, focus mainly on persons, both as units of observation and units of measurement, but will often differ with respect to desired periodicity and reference period. User areas, such as those defined in paragraphs 5 (b) and (c) above, are mainly interested in the flow of productive services and how they are generated, allocated and rewarded, and may focus on hours as a unit of observation and some quality indicator (e.g., value or money) as a unit of measurement.

## III. Periodicity and reference periods

7. The reference periods required for user areas, such as those defined in paragraphs 5 (b) and (c) above, will depend on the accounting periods used. A

calendar year or a quarter are the most frequently used periods. Productivity studies require data on the amount of productive services rendered by labour during the chosen reference periods. The user areas defined in paragraph 5 (a) and (c) above will be interested in certain types of stock, such as:

(a) The average number of persons and posts that have had certain status characteristics during the reference period;

(b) The number of persons with certain characteristics present at the end of the reference period;

or they will focus on various changes, such as:

(c) The net changes in the number of persons in each status category;

(d) The total number of changes occurring in the reference period;

(e) The total number of persons who experience at least one change within a reference period;

(f) The number of persons who have changed status from one period (or one reference date) to the next.

The numbers for types (c)-(f) above are equal only for very short reference periods, periods which are too short for a post or a person to experience more than one change.<sup>c</sup>

#### IV. Units and other structural elements

8. The present section describes the basic units which serve as the building blocks of the logical LAS structure and how they are related (note that the use of a specific reference period is implicit in what follows).

9. Posts and persons are the main objects (or units of observation) of an LAS because these are the units which are counted in (part of) LAS as well as observed in much in the underlying statistics. When persons and posts are linked, there exists a "job" (and vice versa: it takes a job to link a post and a person):

(a) A person requires no further comment at this stage;

(b) A post should be defined as a set of tasks which are (designed to be) carried out by one person;

(c) A job should be defined as an implicit or explicit contractual relationship between a specific person and a specific post. Each job represents the link between an employed person and a filled post (this includes the self-employed person who fills a post, with himself/herself as employer).

10. The primary units — posts, persons and jobs — are carriers of characteristics (variable values) which are of interest to the users of LAS-based statistics. Some of these characteristics are derived from defined links with other units of observation, i.e., employers and households:

(a) A household is an important part of the context for a person's participation in the labour market. Characteristics of households are therefore important in much analysis and description of labour supply;

(b) An employer may be a corporation, a government unit, a non-profit institution or a person in his/her capacity as owner of an unincorporated enterprise.<sup>d</sup> In addition to being important in the definition of posts, employers are primary carriers of characteristics which are important when describing posts and, through them, also jobs and/or persons.

11. In an LAS, we want to distinguish on the one hand those characteristics of posts and persons which describe their relation to the labour market (i.e., those describing "activity situations"), and on the other the characteristics (distribution variables). The latter are used to describe the structure of the primary units found in the different activity situations. The following activity situations seem most important:

*For posts:*

- (a) Filled posts
- (b) Vacant posts

*For persons:*

- (a) Employed persons
- (b) Unemployed persons
- (c) Persons outside the labour force

While initially the number of activity-descriptive classes can be limited to these three classes for persons and two for posts, the number of classes can be expanded if required, e.g., with training and education for persons.

12. The international recommendations concerning the definition of activity situations for persons are presented in the resolution concerning statistics of the economically active population, employment, unemployment and underemployment, adopted by the Thirteenth International Conference of Labour Statisticians in 1982.<sup>e</sup> Corresponding recommendations do not exist for posts or jobs, but some elements of future definitions would seem to follow from the logic of their inclusion in LAS:

(a) Since a filled post should correspond to (at least) one employed person, there will be (at least) one post whenever we have an employed person. Because employed persons may be temporarily absent from work, we may also have a filled post temporarily inactive (however, since some workers can be engaged on a temporary basis as substitutes for some of the workers who are absent, there cannot be a one-to-one relationship between the number of employed persons temporarily absent and the number of filled posts temporarily inactive);

(b) Until recently, there has not been much international discussion of the concept and measurement of vacancies. However, it has been suggested (see Hoffmann, 1999), that it is fairly straightforward to develop a definition of a vacant post which parallels the definition of an unemployed person:

“A vacant post can be said to exist if an employer before or during the reference period has taken concrete steps to find a suitable person to carry out a specific set of tasks and would have taken on (entered into a job contract with) such a person if she/he had been available during the reference period.”

Similar definitions have been used as the basis for existing as well as planned surveys, for example, in Canada; Hong Kong, China; the Netherlands; Sweden; the United States; and (starting in 2001) the European Union. In the discussions of the forthcoming Statistical Office of the European Communities (Eurostat) programme of establishment-based surveys on the demand for labour, it has been suggested that it may be easier for employers to reply if the search for workers to fill not yet available posts would be included; thus ignoring that this definition requires that it should be possible for the new staff to start during the reference period, if available (see, for example, Eurostat, 2000).

The available experience does indicate, furthermore, that it is virtually impossible to design surveys which can cover all vacancies to which unemployed persons may apply (see Hoffmann, 1999; and Verhage et al., 1997).

13. The chart contained in the appendix describes how the units discussed above are related. It has been drawn to emphasize the parallel between persons and posts, representing, respectively, the supply side and the demand side of the labour market. However, this should not lead one to forget a fundamental difference between these two types of units: persons can exist independently of the labour market — thus the need for the category “persons outside the labour force” — but it is not meaningful to speak of “posts outside the labour market”. Consequently, “the total number of posts” cannot be defined independently of its components “filled posts” and “vacant posts”.<sup>f</sup>

14. In addition to making it possible to define vacant posts, the term “designed to be” in the definition of post given in paragraph 9 (b) above will allow the definition of posts to cover the situation of the shared post (or shared job, which is the more common expression). “Shared post” is the situation where a post has been designed by the employer to be filled by one person, but for various reasons two or more persons have been engaged to carry out its tasks during the reference period. In other words, one post can be linked to more than one person. This parallels the situation of one employed person being linked to more than one post. Difficulties which arise from this can probably best be dealt with through appropriate characteristics of “posts”, e.g., as “part-time/full-time”, “principal/substitute”, “shared/not shared”.

15. One function of the job concept in LAS is to represent the link between one particular filled post and one particular employed person. The job is the unit observed in most establishment-based employment statistics, and it is also the link which makes it possible to associate person-specific characteristics (e.g., age, sex, education, work-history) with posts, and post-specific characteristics (e.g., the occupation and status-in-employment of the post as well as the industry of the employer) with employed persons.

16. There is a clear parallel between jobs as units in an LAS and “transactions” as units in the national accounts. In fact, jobs should be seen as reflecting a specific subset of the transactions described by the

national accounts.<sup>8</sup> This provides the main conceptual link between the two systems, while the use of common classifications of sectors and industries will be the main practical instruments for tying them together.

17. The chart in the appendix includes the categories "hours actually worked" and "hours paid for" as two special sets of units linked to jobs. Both types of unit are of central interest to users of an LAS, both in themselves and because they provide the basis for productivity calculations (hours actually worked), for definitional links with the SNA (hours paid for) and for defining accounting relationships within LAS.

## V. Measurement of quantities

18. The main *quantities* asked for in an LAS will be:

(a) Number of units, i.e., number of posts, jobs and persons;

(b) Amount of productive services rendered by employed persons in filled posts;

(c) Value of productive services rendered by employed persons in filled posts.

When describing the number of persons, it should be possible for LAS to link directly with the demographic accounts, including educational accounts, which are part of the Framework for Social and Demographic Statistics described in United Nations (1979), i.e., common conventions, definitions and classifications. Similarly, information on hours actually worked should be linked to a time-use component of the Framework. When describing the value of productive services, it should be possible for LAS to link directly to SNA, particularly as one of the satellite tables to the national accounts is designed to display the amount of productive services provided by labour.

19. While standard conventions specify how to measure the number of persons and the value of labour services, no agreement has been reached concerning the measurement of the amount of services provided by labour. Four different measurement methods can be said to exist (or to have been proposed):

(a) Number of persons at work (a subset of persons employed);

(b) Number of work-years (man-years);

(c) Number of actual hours of work;

(d) Value of wage bill at constant wages.

Measurement method (a) is generally thought by most users to be too crude to be satisfactory, as it does not take into account differences in persons' intensity of work during the reference period. Method (b) is currently the most commonly used in the national accounts satellite tables, and is often thought of as equivalent to number of jobs on a full-time basis. It uses a reference to the normal work-year when converting from persons employed to work-years, and the estimation is usually based on a classification of persons employed as either full-time or part-time workers. Several countries now seem to find that normal work-year and part-time work are concepts which are too imprecise and variable, both over time and between industries, and they therefore prefer to use (c) as the measure (see Mata Greenwood, 2000, for a presentation of issues related to data collection and estimates). Method (d) has been proposed as the best method to make adjustments both for intensity of work during the reference period and for differences in the amount of productive services rendered by different types of labour due to differences in qualifications and other factors, but no examples of its use in official statistics has been found.

20. It seems likely that, of the measurement methods described in paragraph 19 above, measurement methods (a) and (b) will continue to be the most widely used in the near future because they require less (or simpler) information than methods (c) and (d), which may be preferable in principle. To collect good data which can serve as a basis for measurement methods (c) and (d) is not easy and is especially difficult for persons working for profit or family gain and not for pay.

21. A time-accounting approach to the measurement of time actually worked has been outlined (see, for example, Hoffmann, 1981, and Mata Greenwood, 2000), which seems to give better estimates of hours worked by self-employed groups than the standard approach used in labour force surveys. If hours of work are obtained for quality-relevant categories of employed persons (as defined by, for example, occupation or educational attainment), then we can apply some weighting scheme to arrive at a quality-adjusted measure of amount of services rendered. The

difficulty, of course, is to determine the basis for such weights.

22. Most of the weighting systems which have been proposed are related either to the cost of increasing the quality and productivity of workers (e.g., years of schooling and special vocational training, costs of education and training) or to the results of their productive activity (e.g., relative wages). The problem with cost-related weights is that there is no way of knowing the degree to which the cost of training received is related to the resulting capacity to render productive services (available evidence seems to indicate that cross-section correlations are positive but weak, and that they probably are not stable over time). However, one problem with the proposed result-related weights, such as relative wages, is that they only reflect results under rather strict assumptions about the markets in which they are determined. These assumptions are not satisfied in real labour or goods markets, and we have no way of knowing how important this is for the ability of, say, relative wages to reflect relative productivities. This problem is compounded when we remember that the remuneration of many employed persons is determined not directly in a labour market but indirectly in goods and services markets as a combined remuneration of both labour and capital (human as well as physical and financial). Consequently, "wage bill at constant wages" is a problematic basis for measuring the amount of productive services rendered, even if we do not take into account the difficulties of estimating a wage equivalent component of the incomes of self-employed persons or others with mixed incomes.

## VI. Classifications

23. The distribution variables referred to in paragraph 11 above have two important functions in LAS. The most obvious one is to describe important characteristics of the units accounted for by LAS-based estimates, i.e., the stock of persons and posts in the different activity situations, the changes in these stocks or the amount or value of services provided in/by the units during a reference period. Gross transition of persons or posts between classes in the distribution variables should not be seen as part of LAS, but may be included in other parts of a socio-demographic accounting system. The second function is related to the estimation of cells in LAS-based tables. The data

sources being used as a basis for LAS estimates will frequently be incomplete, in particular with respect to units covered, and the coverage of different sources will be truncated differently. Identification of the gaps in coverage of the different sources and their degree of overlap in terms of the distribution variables will provide a basis for making necessary estimates and/or improving the database.

24. It is useful — at least from a data-collection point of view — to recognize the primary unit for each distribution variable. Other units may also be described by these variables, but only if they have a recognized relationship to the primary unit, i.e., they are sub-units or they are linked in a defined way to the primary units, such as in the way persons are classified by industry by being linked to a post at an employer (i.e., an establishment) through a job. The table indicates the main distribution variables of interest to users of LAS-based statistics and how they are allocated among primary units. The table also indicates whether some type of international recommendation exists concerning the definition and classification (value set) of the variables. In the work to develop actual LAS estimates, it is the use of the industry classification — both the actual categories used and how the industry information has been recorded which is of primary importance, in addition to the coverage of units of the different data sources. For LAS-T, the key factor will be the availability of relevant statistics according to the specifications for characteristic tourism industries.

### Distribution variables in the labour accounting system by primary units

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#### *No. Distribution variable*

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1. Employers
  - Type of ownership<sup>a</sup>
  - Industry<sup>a</sup>
  - Size<sup>a</sup>
  - Location
2. Posts
  - Status in employment<sup>a</sup>
  - Occupation<sup>a</sup>
  - Contractual working hours
  - Shift system
  - Pay system
  - Collective agreement



No.	Distribution variable
3.	Jobs Income from employment <sup>a</sup> Amount of labour costs <sup>a</sup> Amount of compensation of employees <sup>a</sup> Amount of net operating surplus for self-employed persons (of unincorporated enterprises) <sup>a</sup> Normal or usual hours worked <sup>a</sup> Hours paid for
4.	Persons Sex Age <sup>a</sup> Nationality Ethnic group Union membership Education obtained <sup>a</sup> Actual hours worked <sup>a</sup> Past occupation <sup>a</sup> (and other life history variables) Work desires Activities (other than those defining status)
5.	Households Domicile (location) Type of household <sup>a</sup>

<sup>a</sup> Indicates that there exists some type of international recommendation concerning the definition and classification of this variable; they are not necessarily coordinated with each other or with SNA recommendations.

25. According to OECD, almost exactly the same set of descriptive variables are outlined for possible inclusion in a TSA-EM (see OECD, 2000, text table 2). Among other possible objects are also included job/vacancies, occupation, collective agreements and labour conditions, employment agencies (job mediation), strikes, unpaid labour and transitions. The first three and the last of these are included in LAS and LAS-T as an activity situation for one of the main units (i.e., posts), as descriptive variables and as separate type of accounts, respectively. The meaning of unpaid labour is ambiguous: if it means self-employment, then it is one element in the descriptive variable status in employment and these workers are covered by the scope of LAS (LAS-T) which is defined to be all economic activities, i.e., all activities which fall within the production boundary of SNA (and TSA). The term unpaid labour may also refer to activities services performed for the own household, and may then relate

to the driving of one's own car on holiday trips. The former of these possibilities seems to be the most likely one.

## VII. Accounting relationships in the labour accounting system

26. Accounting relationships in the context of LAS will relate to stocks of persons (for the supply side) and posts (for the demand side), to changes in these units, and to flows of hours and income/costs. The elaboration of these relationships are important, both because describing the accounting structure of LAS will make explicit the logical and definitional interdependence of various elements in the LAS and because they can facilitate the identification of inconsistencies in the available data used to make LAS estimates and the necessity of adjustments and/or supplementary data. Wherever relevant, the design of these accounting relationships must be coordinated with corresponding parts of SNA<sup>h</sup> and the Framework for Social and Demographic Statistics, for the same reasons, although in practice the coordination between an LAS and the SNA and the Framework for Social and Demographic Statistics systems depends more on the coordination of scope, units, reference periods and classifications. This is also valid for LAS-T, with the key additional factor being the specifications for the characteristic tourism activities, as noted above.

27. Accounting for the stocks of persons should take the total population as the point of departure, making sure that in this context total population is delineated in a way which is consistent with the SNA guidelines for the delineation of the (national) production boundary, as well as the Framework for Social and Demographic Statistics guidelines.<sup>1</sup> Depending on the main uses of the data, there will be a need to account for the average number of persons in each of the groups, defined by cross-classification of the activity variables and the distribution variables, as well as for the closing stocks at the end of each reference period. The former stock concept is the one most closely related to the flow accounts for hours and income (see paras. 30 and 31 below). The latter stock concept is the one most directly relevant for the change accounts (see para. 29 below). The basic relationship to be satisfied by these accounts is:

total population = employed persons +  
unemployed persons + persons outside the labour  
force

28. In paragraph 13 above, it was underlined that the total number of posts cannot be defined or observed independently of its components — filled and vacant posts — and in paragraph 12 (b), the observation was made that in practice it is virtually impossible to observe all vacancies. Most accounts of the stock of posts will therefore be limited to filled posts and an observable subset of vacant posts, with groups defined by distribution variables. Consistency issues with SNA concern the distinction between those activities which fall within the production boundary of the system and those which fall outside that boundary while inside the general production boundary. The same considerations as for persons will determine the choice of average or closing stock concept for posts. The basic relationship to be satisfied by these supply side accounts are:

total number of posts = filled posts + vacant posts

29. In early discussions about an LAS, much attention was paid to gross changes from one closing date to the next (see para. 7 (e) above). Making sure that all possible forms of such changes have been identified and estimated, given the periodicity and reference periods, is one type of accounting relationship that is necessary within a complete LAS, as well illustrated in Denton et al. (1976). Such change accounts must account for and therefore define births and deaths of posts and persons, respectively, as well as the transfers from one activity situation to another. There is no problem in principle in defining activity transfers or births and deaths of persons (where the latter would cover migrants as well as real deaths and entries and exits to/from any lower and upper age limits), and such data will often be available and of interest. More problematic are the status transfers, i.e., births and deaths of posts, as they can only be defined on the basis of recruitment activities (i.e., vacant posts) or observed jobs (i.e., filled posts). Most employers are likely to find it difficult to give information about activity changes of posts, i.e., about whether a newly hired person has entered into a formerly vacant post or into a new post, and whether the departure of a person from the establishment has created a vacant post or has led to the loss (death) of a post, even though in public discussions there are frequently references to and considerable interest in the loss and creation of jobs, i.e., posts in the terminology of the present report. The

distinction between the death and vacating of a post must be tied to a decision to replace the departed worker.

30. A complete time accounting system has been outlined in Denton (1986). This can serve as a basis for defining a third type of LAS accounting relationship, which will make use of the convention that time used for work by employed persons must be absorbed by filled posts. Tying the demand and supply sides together are the jobs, which can link information from employers and workers about hours paid for, hours actually worked and paid hours absent from work. To ensure equivalent coverage of the data sources used to estimate the two sides will, however, pose a major practical problem. Accounting for hours actually worked should be developed in a way which is consistent with the conventions developed for time-use studies, which account for the total use of time over a short reference period, as well as with the development of yearly estimates of hours actually worked linked to SNA.<sup>j</sup> The basic relationship to be satisfied by these accounts is:

total number of hours actually worked by  
employed persons  
= total hours paid for  
- total hours of paid absence and resting time  
+ total hours of unpaid work  
= total hours used by filled posts

31. The monetary accounts of LAS should link the income to employed persons and the cost of employing them. This is both conceptually and from a measurement perspective much easier to do for income and cost of paid employment (e.g., work of employees) than for self-employment. For the former, the basic relationship to be satisfied by these accounts is:

total income from "paid employment"  
+/- various components = total cost of paid labour

The starting point for further specifications should be the International Conference of Labour Statisticians resolutions, as well as SNA and TSA conventions regarding the corresponding income and cost concepts (see, for example, ILO, 2000).

## VIII. Possible data sources for LAS: weaknesses and strengths

32. Estimates based on the LAS framework will be based on information provided by individuals or by establishments, directly to the statistical agency through household and establishment surveys or indirectly through the use for statistics of information recorded by various administrative agencies.

33. The advantages of household surveys are: (a) they provide complete coverage of the resident, non-institutional population of the country; (b) employment and unemployment estimates will be consistent; (c) the estimation procedures used normally will try to compensate for biases due to selective non-response rates within the target population; and (d) they are flexible and can be made to measure desired concepts. Disadvantages are (i) the need to adjust for the institutional and non-resident population of workers in the national economy, e.g., those who commute to neighbouring countries for work, to ensure consistency with the geographic scope of the national accounts; (ii) the low level of precision in many of the estimates of interest, due to the use of sampling,<sup>k</sup> and (iii) the reliance on the knowledge and memories of the respondents, which may result in inaccurate information. From the perspective of LAS-T, the low level of precision in many of the relevant estimates is a major shortcoming of these surveys, even though some of the estimates of totals of employment and unemployment may have a satisfactory degree of precision provided that the industry information has been recorded with sufficient detail to allow aggregation across characteristic tourism industries. In some countries, the exclusion of institutional households from the sampling frame may represent a problem if this means that collective accommodations for seasonal workers are excluded from the frame.

34. The advantages of establishment surveys are (a) that they provide fairly precise estimates for the covered population and variables, and (b) that employment estimates will be consistent with those for production and factor income made within the framework of the national accounts. Disadvantages are the need to adjust for (i) inadequate coverage of small establishments, in particular those in the informal sector and in certain activities,<sup>l</sup> and (ii) the observation of (characteristics of) jobs rather than (of) persons. In addition, establishment surveys will normally provide

only a limited range of characteristics of workers because the information that establishments can provide at low costs depend on the records they keep for their own needs and the need to interpret them to provide the information requested by the survey questionnaire.

35. The advantages of using administrative records, in addition to those related to cost of data collection (usually low) and adjustments needed (often high) of the statistical agency are (a) that the estimates made from them will not suffer from sampling imprecision, and (b) that some variables (important to the administrative process) may be measured very reliably. Disadvantages are that (i) the measurement of certain other variables may have very low reliability, (ii) the information may concern cases and jobs rather than persons, depending on whether the information originated with persons or establishments, unless individual registrations for the same person can be linked, i.e., by the use of unique personal identification numbers of the Scandinavian type. Important concerns are also the lack of stability in coverage and definitions due to changes in administrative rules and capacities as well as in public behaviour relative to the administrative institutions and regulations. For LAS-T, it is also relevant that the under-reporting of certain categories of short-term or seasonal workers may be more pronounced for tourism-related activities than for many other activities, even where clandestine foreign workers do not represent a significant problem.

## IX. Use of different sources in countries studied

36. The relative importance of the different types of sources are different in the four countries which have prepared the general LAS estimates studied for the present report,<sup>m</sup> as is the strategy for using them (see Buhmann et al., 2000, for further details). It is particularly in the Netherlands and Norway that the focus seems to be on providing estimates of employment which are consistent with the estimated national accounts production and incomes estimates. The main starting point for the Dutch estimates is an establishment survey in which information on both employment and earnings are collected, whereas the Norwegians have to cope with a more splintered collection of not particularly well-coordinated establishment surveys, although most of them seem to

cover the same variables. In both countries, the results from the main household survey, the labour force survey, is used to fill in the most of the elements which are missing from complete coverage according to national accounts conventions. The labour force survey is based on relatively large samples and continuous in both the Netherlands and Norway, thus providing a good basis for estimates of year estimates of totals and averages for the population and the variables covered.

37. The Swiss team has prepared parallel investigations of the consequence of starting from each of their three main sources for the chosen reference date of 1 January 1991 — the December 1990 population census, the September 1991 establishment census and the second quarter 1991 labour force survey. Adjustments were made to the three sources to bring their results into line with those required by the LAS framework. The resulting estimates of total employment from these adjustments were very similar for the latter two sources, a difference of about 1 per cent, while the estimate arrived at from the population census was 7 to 8 per cent lower than the other two.

38. The Danish work starts from the register-based labour force statistics, supplemented with data from sources not already used in the construction of those statistics to make the adjustments necessary to change the population from persons to jobs and the reference period from November of the reference year to the average for the year. Included among other sources is also the annual labour force survey, the only source which is not based on administrative registrations.

39. In all four countries, adjustments are made to compensate for shortcomings in the primary data sources or differences between the sources and between the sources and the general framework used for LAS. The Dutch talk about three types of such shortcomings or differences,<sup>n</sup> related, respectively, to:

(a) Differences in definitions, classifications and amount of detail:<sup>o</sup> the adjustment for which is "harmonization";

(b) Differences in population coverage: the adjustment for which is "achievement of full coverage";

(c) Measurement errors; which one seeks to "minimize".<sup>p</sup>

The elimination of remaining minor differences is said to constitute "balancing".

40. In the part of LAS which concerns employment, it is very important to distinguish between the different types of units which can be counted. Jobs are being counted in an establishment survey and an establishment census, persons are counted in a labour force survey and a population census, while the coordination with national account data for, for example, productivity analysis will often require the use of full-time equivalent work-years or total number of work-hours. The difference between the first two is the result of some persons holding more than one job during the reference period. The conversion from the number of jobs or persons on the one hand and the number of work-years or work-hours on the other is designed to adjust as much as possible for differences between sectors and over time in the amount of work, i.e., in the incidence of overtime and part-time work as well as differences in normal working hours.<sup>q</sup> It is not clear whether such adjustments can be regarded as harmonization in the typology above, but the adjustment to achieve consistency in reference periods would seem to be.

## X. Scope of national LAS estimates

41. There are several dimensions to the question of scope or coverage of an LAS: (a) geographic, (b) type of workers, (c) topical, and (d) whether the focus is on situations and corresponding net changes, or on gross flows into and out of the stock of persons in these situations.

42. Relevant geographic scope will be determined by whether the objective is to coordinate with SNA and economic statistics or to coordinate with social and demographic statistics. Coordination with statistics on production, the most relevant perspective for LAS-T, requires that the national LAS cover all jobs located in a country according to the national accounts, and only these jobs (see the discussion in chap. XIV, sect. B and C, and chap. XVII, sect. B of IMF et al., 1993). As noted above for LAS-T, the most important factor is the separate identification of the characteristic tourism industries. Coordination with social and demographic statistics requires that the national LAS cover all persons either legally residing in the country (*de jure*) or present there (*de facto*). The fact that people may work in a country different from where they normally (or actually) reside means that adjustments must be made to make sure that the geographic coverage of

statistics on jobs, normally from establishment-based reports, and on persons, normally from household surveys, have the same geographic scope. Such adjustments are made most explicitly by the Dutch and the Swiss, reflecting the respective relative importance of trans-border commuting by workers. The Norwegians adjust for foreigners working on Norwegian registered ships but not for trans-border commuting, for example, to Sweden. The Danes do not say whether they make such adjustments, although commuting must be of some importance across the borders with Germany and Sweden. The importance such adjustments for characteristic tourism activities will probably be significant for some countries.

43. Topically, the scope of LAS and LAS-T can be divided into several modules: (a) employment, including total hours actually worked; (b) income from employment; (c) labour costs; (d) unemployment; and (e) vacancies. But TSA-EM also includes such issues as working-time arrangements (e.g., full-time/part-time, but not scheduling), hours paid, strikes and (implicitly) occupational accidents. Work-related training is one module which to date is missing from both LAS(-T) and TSA-EM.<sup>4</sup> Within a module, the work to develop coherent LAS estimates will tend to focus on the categories which are considered to be most important, either numerically or from a policy perspective; or for which the available data sources are seen as most adequate. Consequently, LAS work in all four countries has started with the first of these modules, with separate procedures for workers in paid and workers in self-employment, because different data sources and adjustments have to be used. In the Danish, Dutch and Norwegian work, estimates for modules (b) and (c) have also been developed which are consistent with those for module (a) at the macro level, but only as concerns workers in paid employment. No efforts have been described concerning the corresponding rewards and costs for persons in self-employment.<sup>5</sup>

44. Modules (d) and (e) were included in the framework presented in ILO (1992), as are issues related to dimension (iv) defined in paragraph 41 above. However, among the national studies reviewed for the present report, only the Swiss present concrete efforts to include estimates related to module (d) into the LAS work (see Buhmann et al., 2000, tables CH 2), and none have so far included module (e). With respect to module (d), unemployment, this is surprising given that in all countries this is a major policy concern for

which uncoordinated statistics from different sources exist, with different strengths and weaknesses. It is less surprising for module (e), vacancies, since among the LAS-countries only the Dutch and the Swiss seem to have regular establishment surveys on this.<sup>6</sup> The other countries only have administrative records as a basis for statistics on vacancies, and they are recognized to cover a relatively small proportion of all vacancies.

45. To extend the LAS framework to include module (f), persons in training, is a possibility mentioned in ILO (1992). This element is also mentioned in the Danish work but is limited to adult education. To do so would tie LAS work closer to the fairly loose Framework for Social and Demographic Statistics. However, no work to do has been described in the sources reviewed.

46. For each of the modules mentioned in paragraphs 43 to 45 above, estimates can be made for the situation of a (sequence of) particular year(s), i.e., stock estimates and estimates of net changes. In Buhmann et al. (2000), the extension of the work to include estimates of flows, i.e., gross changes for one or two modules, has been made only for Switzerland. It may be expected, however, that such estimates may also be made on a regular basis for other countries.

## XI. Concluding remarks

47. The efforts to develop LAS estimates reviewed for the present report demonstrate that work on LAS in some national statistical offices has now advanced from conceptual discussions to partial estimations, and that this work has yet to influence the way estimates on the labour market impact of characteristic tourism activities and tourism demand are being prepared. The focus of the current estimations is on (a) making optimal use of statistics from different sources, giving priority to paid employment and using labour force survey results as an overall reference for coverage; and (b) ensuring coordination with corresponding national accounts estimates for production and income. One may speculate that the preference for the latter rather than for preparing, for example, overall integrated estimates for gross flows between labour market situations, or to the labour supply and demand imbalances, may be motivated partly by the prestige and importance of the national accounts in the national statistical programmes, and partly by the availability of suitable data. The result is, therefore, that it is the

inclusion of a more complete description of the labour market which seems to be the most urgent extension of LAS estimates. This may seem slightly ironic given that the early attention of LAS discussions were more on the latter concerns than on the former. However, from the perspectives which have guided the development of TSA, this should be welcomed since it should mean that a foundation has been made for better statistical descriptions of the impact of tourism demand on the labour market and its structure, as well as on its impact on and rewards for workers.

48. That work on what is now called labour accounts has a fairly long history is not surprising given that the LAS focus is on the most important resources of any society: the mobilization of the workforce and its allocation among different uses, how it is costed and rewarded. Furthermore, these elements also go a long way in determining our welfare before, during and after our participation in the labour markets. What is surprising is that efforts to make systematic use of the splintered statistics for these markets have not been given higher priority much earlier than is in fact the case,<sup>4</sup> and among the efforts referred to in this note only the Dutch seem to have the critical mass and perseverance needed to make work on LAS estimates as central to the production and use of labour market statistics as national accounts estimates are for economic statistics and empirical analysis. That the labour market and labour issues thus belong to both the economic and social spheres in our society and are analysed both by economists and by other social scientists does seem to have prevented rather than supported the development of integrated and consistent data systems. The descriptive needs and analytical perspectives have been too diverse to promote the creation of a strong core of integrated data. Only time will show whether the current relatively stronger political and analytical concern with micro rather than macroeconomic and social issues will lead to wider support and more for resources LAS-related work.

49. The presentation in the present report has focused mainly on general LAS issues because they apply equally to an LAS-T. The special conceptual issues for an LAS-T have essentially been resolved by the TSA. More light on practical problems in compiling a LAS-T to accompany TSA will emerge from practical experiments. The development of a national LAS-T will depend on the availability of suitable national statistics and of the presence of user demand. The work

to develop national, more or less complete LAS estimates, e.g., in Denmark, the Netherlands and Switzerland, has shown that it is possible to produce these on a regular basis within acceptable time limits. Thus, it does not seem unreasonable to expect that if there is a demand for LAS-T-based estimates to accompany TSA estimates, these can be produced as well. The present report has tried to provide a reasonably precise and formalized methodological framework which can serve as basis for the estimates demanded by the tables specified in OECD's TSA-EM, as well as for similar requests for tourism-related labour statistics.

#### Notes

- <sup>a</sup> See OECD (2000) for a presentation of TSA-EM; and International Monetary Fund et al. (1993) for a presentation of the SNA.
- <sup>b</sup> See, for example, Buhmann et al. (2000), Hoffmann (2000) and Leunis and Altena (1996) for presentations of this work.
- <sup>c</sup> We must expect that labour accounts estimates of changes will mostly be of type (c) and (f) for reasons relating to the availability of data. However, data from administrative records may tend to be of type (d), while some users may prove to have a preference for type (e) data (it may be worth noting that whereas changes of types (d) and (e) recorded for each of, for example, four quarters, add up to the total which would be recorded if the reference period was one year, the adding up of quarterly changes to obtain changes over one year is not possible with type (c) and type (f) data.
- <sup>d</sup> Because some employed persons are self-employed, we must use the counter-intuitive convention that a person may have a job and a post with herself/himself as employer; logically, this should not present any problems, nor should it be problematic from a data-collection point of view.
- <sup>e</sup> See Hussmanns et al. (1990) for further discussion of these recommendations.
- <sup>f</sup> It can be argued that in bureaucratic organizations there may exist "posts" which have been "blocked", i.e., which must remain unfilled because of lack of funds or for other reasons; it is difficult to see, however, the conceptual or practical advantages of including such blocked posts in the framework.
- <sup>g</sup> On the role of transactions in national accounts (see, for example, Aukrust, 1949/50 and 1966).
- <sup>h</sup> Since jobs represent the link between filled posts and employed persons, there is no need to have separate

accounts for jobs, even though they play an important conceptual role in LAS; also, in this respect, they can be seen as the parallel of transactions in SNA, which in principle represent the main units of observation even if their number is never counted (see, for example, Aukrust, 1949/50 and 1966).

- <sup>i</sup> The most difficult issue, of importance only for some countries, will be the treatment of persons living in one country and working in another.
- <sup>j</sup> See, for example, United Nations (1997), as well as Hoffmann and Mata Greenwood (1999) and Mata Greenwood (2000).
- <sup>k</sup> The Swiss work is the only serious discussion of population census results in the context of the LAS system; the LAS framework is used for an analysis of weaknesses in the employment estimates from the 1990 census.
- <sup>l</sup> Such under-coverage is relatively more important for LAS estimates than for national accounts estimates because it normally relates to establishments with lower than average productivity; this implies that when linking to NA estimates represents a major reason for the use of establishment surveys data in LAS work, care should be taken not to make such coverage adjustments in LAS estimates which go beyond those made in the corresponding national accounts estimates.
- <sup>m</sup> Unfortunately, it has not been possible to date to find any examples of national programmes with LAS-T estimates.
- <sup>n</sup> These types of adjustments are also relevant when creating consistent time series, even when the source for the different years is said to be the same.
- <sup>o</sup> The reference to amount of detail is unexplained, but one may assume that it refers to the use of information from a secondary source to estimate the distribution over categories for a variable not covered by the primary source, or not covered with a value set which is sufficiently detailed.
- <sup>p</sup> The Dutch include sampling errors among measurement errors. This is an unfortunate and misleading terminology, as sampling does not lead to errors in the resulting statistics but to imprecision. Such imprecision can be reduced by the use of supplementary information, and it seems that this is what the Dutch do, and why they talk about minimization of measurement errors (see, for example, Leunis and Altena, 1996). One would expect adjustments necessitated by untreated sampling imprecision to be part of the balancing.
- <sup>q</sup> Using hours as the unit of account will make it easier to prepare coordinated estimates which include education and training activities, as well as make possible relevant distinctions between productive, economic and market

activities in the sense discussed in United Nations (1997) and Hoffmann and Mata Greenwood (1998).

- <sup>r</sup> The discussion in Altena et al. (1999) is not linked to LAS or SNA; to establish those links should be seen as a priority in the overall coordination of economic, labour and educational statistics.
- <sup>s</sup> SNA only defines a combined reward to labour and capital for the self-employed. In October 1998, the Sixteenth International Conference of Labour Statisticians adopted a resolution concerning the measurement of employment-related income (see ILO, 2000).
- <sup>t</sup> Note, however, that Eurostat has initiated an establishment survey programme for such statistics to start in 2001 (see, for example, Eurostat, 2000).
- <sup>u</sup> The so-called "balance sheets of labour resources" routinely prepared in the former centrally controlled economies of central and eastern Europe, and in the former USSR represent an exception to this (see, for example, Gouriev, 1984); the conceptual scope of LAS is, however, much broader than it was for these balances, although to date the same cannot be said of most of the national estimates prepared under the LAS heading.

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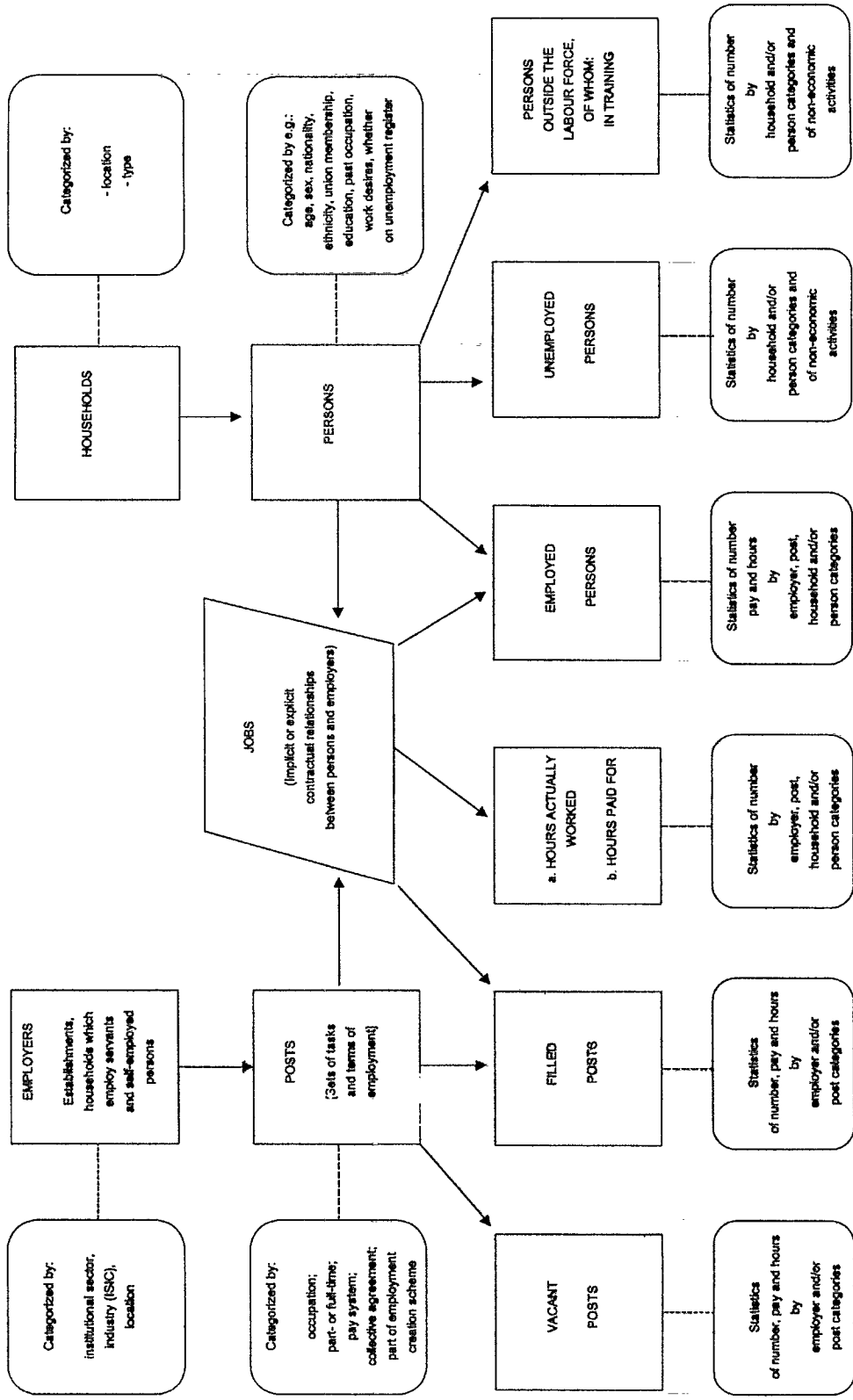
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# Appendix

## Conceptual framework for a labour accounting system



Note: "Numbers" means stock at a point in time, average over a time period or total over a period (for flows, e.g., hours actually worked or paid for). The statistics on total compensation by institutional sector and by industry provides links to the system of national accounts.