

Statistical aspects of minimum wage determination

by Robert J. Pember¹ and Marie-Thérèse Dupré²

Summary:

This article expands on a presentation made by Robert Pember to the National Workshop on Minimum Wages for Agricultural Workers in Kathmandu Nepal, 5 January 1996 and also on an article entitled "Wage-fixing policies: Consequences on wage data gathering" by Mr F. Eyraud (Bulletin of Labour Statistics 1992-2). It outlines the types and sources of statistical data which are likely to be required when setting and reviewing minimum wages in a country. The statistical requirements of wage setting may assist and guide other countries in developing their statistical systems for the same purpose.

Section 1: Introduction

A system of minimum wages, whatever its form, cannot work unless it is based on regular, reliable and timely statistics on a variety of data items, including income, wages, prices and the characteristics of wage-earners (sex, occupation, skill levels, etc). This article explores the statistical issues underlying the determination of minimum wages, and makes recommendations for a statistical programme of support. Section 2 describes the objectives for determining minimum wages, Section 3 outlines the criteria for minimum wage determination and Section 4 refers to the methods and systems for setting or adjusting minimum wages. All three sections suggest the statistics which may be required in support of wage determination. Section 5 describes and evaluates the different data sources which may be used to generate these statistics.

Section 2: Objective of minimum wage setting

The **objective** of minimum wage fixing, as set out in ILO *Minimum Wage Fixing Convention, 1970 (No. 131)* and its accompanying Recommendation No. 135, is to give wage-earners the necessary social protection in terms of minimum permissible levels of wages. This objective was already implicitly or explicitly contained in previous ILO Convention No. 26 and Recommendation No. 30 (applicable to trades) and Convention No. 99 and Recommendation No. 89 (applicable to agriculture), which stipulated that the minimum wage should not be fixed at a lower rate than one which would ensure the subsistence of the worker and his/her family.

Minimum wages along with other measures of economic and social policy aim at reducing poverty and meeting basic needs. The concept of minimum wage is related to work, as distinct from that of "minimum income" which is intended to guarantee minimum living conditions regardless of whether a person has an employment from which he/she gets a wage. Minimum wage fixing alone cannot suffice

¹Senior Specialist in Labour Statistics, ILO East Asia Multidisciplinary Team (EASMAT), Bangkok.

²Bureau of Statistics, ILO, Geneva.

(2)

for the overcoming of poverty³ and the satisfaction of the minimum needs of all workers, but minimum wages constitute a level which may not be undercut, and whose application is guaranteed by law.

Minimum wages exclude certain bonuses or benefits and are payable, in cash or in kind, directly or indirectly by the employer to the worker for work performed by the latter. In addition, they often do not apply to certain types of workers (e.g. those working less than a certain number of hours) or to certain activities. The types and sources of statistics required for their fixation and/or adjustment should therefore also throw light on these different aspects of wage formation.

Section 3: Criteria for minimum wage determination

Six **criteria**, or groups of factors, to be taken into account in determining the level of minimum wages, are set forth in Recommendation No. 135. They are:

- Criterion 1: the needs of workers and their families;
- Criterion 2: the general level of wages in the country;
- Criterion 3: the cost of living and changes therein;
- Criterion 4: social security benefits;
- Criterion 5: the relative living standards of other social groups; and
- Criterion 6: economic factors, including the requirements of economic development, levels of productivity and the level of employment. This criterion also includes the capacity to pay as indicated in Starr (1993).

What sort of statistics are needed to quantify these criteria? How might these data be provided by an adequate system of labour statistics?

The following answers to these questions involve some judgement and discretion. For many countries, the recommended data may not be available, while in other countries, data may be available in excess of those suggested. In addition, countries may use only some of the above-mentioned criteria when determining minimum wage levels. The statistics and methodologies suggested below are aimed mainly at developing countries with rudimentary systems of labour statistics and may assist these countries in identifying statistical priorities for this purpose.

Statistics needed for *Criterion 1: Basic needs of workers and their families.*

Poverty levels and the basic needs of households (especially of wage-earner households) may be measured using:

- c data on average expenditure by low income households on various household goods and services⁴
- c related data such as household size and composition, with particular emphasis on low-income households
- c current wages paid to unskilled workers
- c income distributions of wage-earner households

³ Minimum wage-earners may not be concentrated in the poorest families. ILO (1996), for instance, states that in Brazil, less than 15 percent of minimum wage-earners are in the lowest 20 percent of households in terms of per capita income and more than 35 percent are in households with above average per capita income. The minimum wage provides a "safety net" protection against unduly low wages, but has considerable limitations in addressing the problem of income inequality and poverty.

⁴ This set of "average household goods and services" is also described as the regimen or "basket of goods and services" and is used in compiling the weights in price indices.

c average income levels of wage-earner household.

The wage-earner households most likely to benefit from minimum wage determinations are the households with income mainly from *unskilled* wage-earners, and this is the group which should receive the most attention in the statistical analysis for minimum wage determination.

The statistics listed above are most conveniently compiled from *household income and expenditure surveys*. These and other data sources are described and evaluated in more detail in Section 5.

Many of these statistics may also be compiled from administrative records (income tax records, reports to social security schemes and reports prepared by wage inspectors). Administrative systems as a source of labour statistics are also discussed in Section 5 of this article and in ILO/EASMAT (1997).

Household surveys and population censuses will also provide information on the average *household size* (average number of people) in households of different characteristics and this is useful supplementary information when assessing basic needs, nutrition levels, adequacy of income, etc.

Statistics needed for *Criterion 2: General level of wages in the country*

While the notion of “comparable wages and incomes” may not be given the same prominence as other minimum wage fixing criteria in legislative texts, in practice it is often an important, and indeed sometimes the dominant, consideration in decision-making. A detailed examination of the available indicators of wages and other income levels of the workers likely to be immediately affected, as well as of other groups of workers considered comparable, is the normal point of departure of minimum wage fixing authorities. Once the existing pattern of wages and incomes is established, judgements can be made regarding the appropriate level of the minimum wage, by taking into account other criteria such as ability to pay and the needs of workers.

After a minimum wage has been fixed, it needs to be adjusted periodically. This is often done by reference to average wages, with a view to maintaining a particular ratio between the minimum wage and general wage levels. It is also necessary to know the number of workers earning at or near the minimum wage level, in order to assess the impact of a minimum wage increase on the wage bill.

The general level of wages in a country is best measured by statistics on average wages classified by sex, branch of economic activity (industrial group), occupational group and location.

These statistics are best collected in establishment surveys and censuses because establishments can draw upon business records when reporting. As will be mentioned later, such information may also be available from household surveys, but with lower levels of accuracy (due to lack of adequate record keeping).

Statistics on the current *wages paid to unskilled workers* will be useful in assessing the adequacy of wages, and the need for and adequacy of minimum wages. Statistics on the wages of unskilled workers are likely to be available from three different sources:

- c Establishment surveys of wages
- c Household income and expenditure surveys
- c Reports by labour inspectors

Statistics needed for *Criterion 3: Cost of living and changes therein*

Measures of changes in the “cost of living”, or more precisely changes in the aggregated value of a particular basket of household goods and services, are more common than measures of the “cost of living” itself (however defined).

(4)

Some countries produce regular reports of the average prices of a selected range of household goods and services, and these prices may be useful inputs to the determination of minimum wages.

The average expenditure by a specific household type (such as a household comprising two adults and two children with wages as the predominant source of income and headed by an unskilled worker) can also be considered in determining minimum wage levels. A household income and expenditure survey of sufficient sample size (see later) will provide these data.

Changes in price levels (as opposed to the absolute level of prices) are normally measured by a consumer price index. Many countries compile a consumer price index specifically in respect of those price levels affecting the welfare and basic needs of low-income wage-earning households. Such a specific index is likely to be more appropriate to the needs of those engaged in adjusting minimum wage levels. More general consumer price indices are less appropriate since they will be based on the basket of goods and services for a wider group of households and will therefore not measure changes in the “cost of living” of low-income households.

Changes in the “basket of goods and services” itself will also be a time to review the level of the minimum wage. A new household income and expenditure survey provides new information on the composition of the average goods and services purchased by low-income households. This may not only lead to a change in the weighting system for a consumer price index for low-income households and hence a change in the measurement of price changes, but also lead to a re-assessment of the extent to which basic needs are being satisfied (see earlier remarks).

Statistics needed for *Criterion 4: Social security benefits*

Access to social security benefits and other measures to alleviate poverty is an important criterion in minimum wage determination. For this purpose, statistics will be required of:

- c the average benefits paid to beneficiaries;
- c the distribution of benefits paid (the number of beneficiaries classified by level of benefit).

These statistics should also be cross-classified by the characteristics of the beneficiaries (sex, age, disability status, economic activity status, and so on) to distinguish the disabled, old age and other beneficiaries from those who will receive the minimum wage “safety net”.

Data based on the records of the social security (or related) system will be the most appropriate source for this information. However, a household income and expenditure survey may also provide some information on such sources of income (subject to reliability of reporting) and will have the additional advantage of providing useful supplementary information about the households receiving such assistance.

Statistics needed for *Criterion 5: Relative living standards of other social groups*

This criterion can be measured by statistics on:

- c average income and income distributions of different social groups;
- c average expenditure, in total and on different groups of household goods and services, of different social groups;
- c other measures of living standards (average number of rooms in dwelling, proportion of households renting accommodation, average number of household members per room, type of material of walls/roof, proportion of household members with post-primary education, and so on).

The definition of the various social groups will vary from country to country, and may include households with single parents, handicapped, elderly or other vulnerable groups.

Measures of living standards are best provided by household income and expenditure surveys, but may also be derived from other types of household surveys and complementary administrative sources (e.g. social security records).

Statistics needed for Criterion 6: Economic factors, including the requirements of economic development, employers' capacity to pay, levels of productivity and the level of employment

Measures of economic development are diverse and it is beyond the scope of this article to identify or debate the inclusion of different measures. Most analysts would agree that the following economic measures should be included and should be available from national accounts estimates⁵ produced in each country:

- c Changes in gross domestic product (GDP) per capita at constant prices
- c Changes in the proportion of GDP contributed by agriculture, manufacturing and services sectors;
- c Changes in the value of industrial production at constant prices;
- c Changes in the value of foreign trade at constant prices.

Social measures of economic development might include the following statistics available from population censuses and surveys:

- c Changes in the proportion of children attending school;
- c Changes in the literacy rate;
- c Changes in the number of schools/hospitals per capita;
- c Changes in the accessibility of selected community facilities (piped water, markets, schools, hospitals, postal services, fire services, police services).

In the area of economic activity, the following might be considered:

- c Changes in the unemployment rate;
- c Changes in the percentage of persons employed in agriculture, manufacturing and services sectors.

Statistics are also needed on labour productivity, and in particular on changes in real terms of value added per employee and output per employee. These data are needed for different industries and regions⁶, because summary productivity data covering all industries and regions may be irrelevant, or worse, misleading for minimum wage fixing purposes. Low wage industries tend in general to have low

⁵ These national accounts estimates will require the conduct of regular establishment surveys of production and the regular compilation of foreign trade statistics.

⁶ Some countries may also wish to determine minimum wages separately for adults and youths, in which case statistics will also be required by whether adult or not.

(6)

productivity. Consequently, basing minimum wages on national level productivity figures would place a heavy burden on those industries where wages are mainly close to minimum levels.

Statistics on labour productivity may be produced from establishment censuses or sample surveys of industrial production.

National accounts statistics may also assist by providing estimates of value added per employee, but these estimates are more global and less specific to particular industries or regions.

In general, few developing countries have statistics on labour productivity. Many countries do not have a programme of establishment surveys covering industrial production, although most plan to do so. The Asian Productivity Organisation (based in Japan) produces productivity statistics for most countries in Asia and the Pacific (APO, 1995) based on national accounts estimates and estimates of employment. The underlying sources for these estimates are not clear from the APO publication, and would be useful, particularly for those countries which do not have reliable data in these areas.

As stated by Turvey (1990), "there are no formal recommendations on this subject (labour productivity), nor will any be developed in the next few years." Dr Turvey's publication provides a number of useful guidelines to statisticians and has been widely distributed to most countries.

Economic factors also affect the *employers' capacity to pay* a specified minimum wage. A quantitative assessment of this capacity may be difficult but would include measuring the level of wage payments relative to:

- c other payments, in particular other labour costs (including employer's social security expenditure and other non-wage costs related to the employment of labour) and
- c payments to other factors of production (profits, return on investment, etc).

Since the employers' capacity to pay may vary greatly between establishments of different sizes, such measures should, as far as possible, cover small establishments or enterprises as well as large ones, and particular attention should be paid to the level of unskilled workers' pay. Such data may be derived from labour cost surveys and establishment surveys of employment and wages.

As with productivity data, statistics on wage payments relative to payments to other factors of production for different industries and regions are generally not available on a regular basis in many developing countries.

Section 4: Statistics needed for minimum wage adjustment

The **methods** or systems used to fix and adjust minimum wages imply that decisions must be taken, among others, on the coverage of minimum wages in terms of branches of economic activity, workers, regions, etc, and on the basis for adjusting minimum wages. Statistics and details about these statistics are required to support these aspects.

When a minimum wage level has been set, there is still a need to monitor and review the above topics and to decide when and how to adjust the minimum wage. One additional factor which needs to be considered in adjusting an established minimum wage is the change in price levels since the wage was last set.

Another issue to consider is the need for differing minimum wages in respect of different industrial groups, locations, and/or occupations. In order to assess this, one would need to consider statistics in respect of each of these different groups.

Such statistics may not be available (for example, productivity of a particular occupational group, price changes in respect of a particular geographic area). However, establishment surveys will provide

many estimates classified by branch of economic activity (industry) which will meet users' needs in this area. Users should ensure that their requirements are anticipated in the tabulation systems for new statistical surveys.

Section 5: Different data sources - Description and evaluation

This section describes and evaluates the varying data sources mentioned above, namely:

- c household surveys (such as income and expenditure surveys and labour force surveys), population censuses;
- c establishment surveys (such as industrial censuses and surveys, agricultural censuses and surveys, labour cost surveys, occupational wage surveys);
- c administrative records (such as tax or social security records).

Household surveys

Household income and expenditure surveys (HIES) are a rich source of socio-economic information for the assessment of conditions and levels of living of households and the determination of social needs. The focus of these surveys is generally to obtain data on the level of household income and its main components, as well as on the relationship between household income and household expenditure. HIES therefore provide the required data⁷ to assess the needs and consumption patterns of workers and their families, the provision and distribution of social security benefits and the living standards of various socio-economic groups. They provide statistics on the distribution of households by income source (wage employment, self-employment income, property income, transfers including social security benefits, etc.) and income groups, therefore satisfying the requirements of criteria 1 and 5 of the Recommendation. HIES are also the main source of data used to derive the weights, or relative expenditure or consumption shares, of the goods and services acquired by workers and their households, and used in the construction of the Consumer price index (criterion (3)).

Data on household income are generally collected either for the purpose of income distribution or for income and expenditure or household budget analysis. However, it is generally not one of the main purposes of a HIES to collect detailed data on employment and on the relationship between employment and income. Even when detailed data are collected on economic activity, occupation and income from paid employment (wages) from each household member, the unit of analysis of a HIES is generally the household, not the individual. Data are rarely collected on the structure of wages, nor are they collected on work duration in terms of hours of work at the individual level, but rather on the quantum of employment in number of days or weeks, etc. Similarly, no detailed information is collected on the output of piece-rated wage earners, but only on the aggregate amount received from piecework. For these reasons, it is difficult to make a meaningful analysis of the relationship between wages and employment.

The information obtained from HIES on levels of wage income or earnings is often not of an acceptable level of accuracy, being subject to bias and non-sampling errors because of respondent reluctance to reveal such private information to an interviewer. The sample size often does not permit the classification of data by industry, economic activity, etc. at a useful level of detail. HIES are an expensive method of collecting wages statistics and are carried out at rather long intervals (every five or ten years). They usually require many visits by interviewers. They can provide a snapshot of the needs and living standards of population groups at given points in time, but do not provide data for an analysis of wages trends, for which more frequent statistics are needed.

⁷ The sample size of these surveys has to be sufficient to provide an adequate number of observations for a particular population group (such as households headed by unskilled wage-earners).

In spite of these difficulties, HIES provide data which are essential for determining household sector consumption and other major components of national accounts, the incidence of taxation (direct and indirect), the weighting to be used in consumer price indices, and so on. They are a rich source of supplementary personal information (including education levels, number of dependents, migration status, ethnic status) which may not be available from an establishment survey, and which are required for wage determination..

Labour Force Sample Surveys (LFSS) and related household surveys appear to be a more appropriate source of data on wages and salaries and hours of work than HIES. They focus on individuals, rather than on households, and on the characteristics of the economic activities carried out by individual household members. They provide data on the level and trend of employment, unemployment and sometimes underemployment, thereby meeting part of criterion 6 of Recommendation No. 135, and very often provide data on wages and salaries and hours of work from the main and secondary activities. They are a unique source of information on casual, occasional or temporary employment, earnings and hours of work, for which the establishment approach is not suitable. The data on wages collected through these surveys can be related to demographic and other aspects of individual employees, as well as to the socio-economic characteristics of the household.

Like all field inquiries including questions on wages and/or income, they are subject to bias, underestimating or under-reporting, and non-sampling errors. However, they can provide detailed information on the structure of income from paid employment by main components (basic wages, additional bonuses and allowances, payments in kind, etc.) which are relevant to the determination of minimum wages, as well as on the distribution of employees by level of wages.

As regards *population censuses*, the situation varies a lot between countries. While some countries appear to be successful in combining data on income by source (i.e. income from paid and self-employment, property income, etc.) with data on the characteristics of the currently or usually active population and data on hours of work, others seem to be reluctant to include questions on income in their census questionnaire. However, the information on wages collected in censuses can provide some insight on the distribution of income among various small groups of the population, various regions, etc. In particular, data on income levels may help identify the location of the disadvantaged and provide an input to the establishment of minimum wages (and other support programmes and welfare provisions). In spite of the risks of non-response, response errors, burden of work, etc. and a clear tendency for wages to be understated, the census enables data for small areas and small groups of the population to be obtained, which may supplement the detailed data available from other surveys for large groups and areas (see the United Nations recommendations for the 2000 Round of Population and Housing Censuses, which include some recommendations on this topic).

Establishment surveys

Establishment surveys are likely to provide the most reliable source of information on wages paid to various categories of employees (criterion 2). They can be identified easily by economic activity (industry) and region. The information is usually based on business records or payroll sheets and therefore easily accessible. Establishment surveys are also the most relevant source of information on labour productivity and employers' capacity to pay a given minimum wage (criterion 6). However, for the purposes of minimum wage fixing, the relevance of the data obtained depends on the type and method of the survey and the industry and employment size of the units involved (see later paragraph).

A large number of countries conduct regular (i.e. monthly, quarterly, half-yearly or annual) *surveys of employment, earnings and hours of work* which use the payroll as the source of information on wages. Generally speaking, total cash wages paid (with information on a few components) and total days and hours of work are obtainable from payroll records. Occasionally data on payments in kind, and annual premiums and bonuses are provided. Such surveys generally do not attempt to collect data for individual employees nor for specific occupations. Consequently, they do not provide data useful for the distribution of employees by level of earnings and hours of work nor the distribution of earnings by individual occupations.

More useful sources of information consist of *occupational wage surveys*. The main objective of these surveys is to compile statistics of average wage rates and normal hours of work, or average earnings and hours of work (hours paid for or hours actually worked), by occupation or occupational group, in the principal industries. Occupations are usually classified on the basis of trade, profession or type of work performed and provide the best unit for which data can be obtained. These surveys can provide data on time rates of wages of wage earners, wage rates of piece workers, and salary scales of salaried employees, generally classified separately for adults and youths, and for men and women, and consequently, are of direct relevance to the establishment or review of minimum wages.

Surveys designed to collect data on the *structure of employment and wages* are not often conducted in developing countries. However, they are of direct relevance to the establishment of minimum wages. They consist of in-depth inquiries into the structure and distribution of wages and conditions of work and the statistics compiled through these surveys reveal the principal factors influencing the level, distribution and trend of wages. The main focus of attention is the individual employee and information on wages and hours of work is collected with reference to a number of employee characteristics such as sex, age, education, level of skill, length of service, nature of employment and occupation. The surveys thus provide detailed data on wage rates with reference to individual occupations which can be used as indicators of the wage levels of the workers likely to be affected by the establishment or adjustment of minimum wages. Wage structure surveys provide comprehensive benchmark data for the conduct of subsequent occupational wage surveys.

Labour cost surveys provide estimates on the structure of labour cost and on the relative importance of employers' expenditure under each of the components (direct wages for time worked or work done, indirect wages for time not worked and employers' social security expenditure, versus other non-wage labour cost such as vocational training, welfare services, transport expenditure, taxes on labour, etc.), which throw light on the **influence** and **impact** of minimum or basic wages on total labour cost. It may be relevant to try and obtain estimates for each industry and by geographical region, size and other characteristics of establishments, in order to assess the respective capacity of these sub-groups to adapt to the establishment or adjustment of a minimum wage. However, unfortunately, the majority of developing countries do not conduct labour cost surveys and similar or complementary information may be obtained from industrial surveys and censuses.

Many countries undertake *industrial censuses and surveys*. Such censuses are often restricted to mining, manufacturing, water supply, electricity generation and construction branches of economic activity, and exclude other industrial sectors which employ large numbers of low-income wage-earners (such as retail trade, agriculture, personal services). In addition, the surveys are rarely designed to provide regional estimates. The primary objective of these censuses is to obtain statistical data on input, output, value added, capital formation, etc. They generally provide data on the wage measure "compensation of employees" used in national accounts (i.e. wages and salaries plus employers' contributions to social security and pension schemes) as part of other inputs, which can be used for the analysis of the various factors influencing the growth of production and the share of the labour input versus other factors of production. Data are usually not collected in sufficient detail to provide figures for the different components of wages, nor is information on sex, age, occupation, skill, education of employees collected in these surveys. However, various types of analyses can be made of these data, such as the share of wages or compensation of employees in sales and in total production costs, and other economic indicators such as competitive conditions, economic prospects, levels of profits, etc.

It should be noted that in practice, the majority of existing establishment surveys relate to large and medium-size establishments (i.e. establishments above a given number of employees) or registered establishments in the "formal" or "modern" sector, which are of most relevance for the application and monitoring of minimum wage levels. Smaller and unregistered establishments, and especially those in the informal sector, tend to be excluded from these surveys. Such establishments are more likely to employ casual workers and family members, and are less likely to be affected by minimum wage determinations.

However, casual workers, workers employed in small establishments or workers employed for less than the normal duration of work, who are perhaps more likely to be employed in household enterprises or in the informal sector, are precisely the type of workers who might be affected by the absence of effective wage regulations (by collective agreement or otherwise). These workers should be protected from the risk of being paid unduly low wages and the minimum wage would act for them as a safety net. Equally important is the assessment of their employer's capacity to pay a given minimum wage and the impact such a wage could have on the employment level and workers' conditions of employment.

Information on small and unregistered establishments may be better compiled through a combination of household and establishment surveys, or through surveys of household enterprises or economic activities, as recommended in the *Resolution concerning statistics of employment in the informal sector* (Bulletin of Labour Statistics 1993-2),

Another possible source of basic data on wage levels and distribution consists of *agricultural censuses and surveys*. These surveys (which often use household survey methodologies to identify the agricultural establishments) provide information on hired labour and wages of agricultural workers, in kind and in cash, which can be related to the nature of employment (permanent, temporary, occasional), number of days or hours worked, etc. Generally, they provide information on wage rates actually paid to, and on the distribution of, agricultural workers.

In the absence of the establishment-based surveys mentioned above, special investigations of the wages paid and the financial conditions of all or a sample of establishments in an industry may be conducted, in which economic data can be directly obtained by means of specifically designed questionnaires.

Administrative records

Data on wages can also be obtained from existing secondary sources, such as income tax and social security systems, and labour inspection reports.

Income tax records provide an alternative source of information on the distribution and average levels of personal income. For most developing countries, the taxation system excludes income earners below a particular threshold. It is a matter of debate as to whether income data are more accurately reported, and to what extent those above the income threshold omit to supply information. Delays in the reporting and processing of tax information also affect the timeliness and hence the usefulness of these results. Nevertheless, for those countries with reasonable coverage of wage income earners in their taxation system, it is recommended that reported wage income be analysed to show the distribution of wage earners by income as well as various measures of distribution (including the mode, mean, median and other selected quantiles).

Information on low-income households may also be provided as a by-product of *reporting to social security schemes*. Statistics of this type are constrained by the scope of the social security scheme and the concepts and definitions used in the legislation supporting the scheme. Users of such data need to be aware of these limitations and to use the data appropriately. The statistics derived from social security sources are subject to legislation which may change over time. Their coverage is limited and low income employees, or employees working less than a given number of hours or weeks, may be excluded from the records, and the amounts recorded may be subject to upper or lower thresholds, etc. In addition, access may be restricted by legislation or confidentiality rules. Generally speaking, it is difficult to identify minimum wage earners from social security sources.

Labour inspectors may obtain information on the wages of unskilled workers during inspections and include this information in their reports. Statistics based on these *wage inspection reports* may be more biased than other sources because inspections may be conducted more frequently at certain types of establishment (such as those suspected of breaching labour law, those in a particular industrial group, or those which are more accessible to the inspectors).

In order for the wages statistics derived from administrative sources to be useful for the fixation of minimum wages, the data on the structure of wages should be sufficiently detailed (basic wages, payments in kind, additional bonuses and allowances) and classifiable at least by industry, status in employment and occupation or occupational group. Failing this, they can at least provide information on the general level of wages paid in the country and fulfil the requirements of criterion 2 of Recommendation No. 135.

Administrative records present limitations which are inherent to the administrative systems in force. The definition of wages or earnings may differ from that adopted in wages statistics programmes. Very little information is generally available on hours of work, although tax and social security returns may provide information on work duration in terms of weeks or months. ILO/EASMAT (1997) outlines many of the strengths and weaknesses of using administrative systems as a source for labour statistics, and provides developing countries with guidelines for their compilation and presentation.

Section 6: Concluding remarks

Assessing the **impact** of minimum wages on the level of employment is a complex issue and has given rise to a large amount of literature and debates. Analyses can be based on the findings of available studies and an examination of a variety of statistical series considered to shed light on this issue, or to assess the impact by means of econometric models. Very often, national authorities have to rely on a limited number of indicators, such as trends in and distribution of current and real average wages, total national income and wage employment, at the national or regional level, for important sectors of the economy, various groups of people (e.g. youths, unskilled workers, apprentices), etc., in order to identify possible inter-relationships between levels of wages and employment and unemployment levels and their movement over time, and to assess whether a wage increase of a particular size is likely to be absorbed without detrimental repercussions on the employment situation. Gains in the form of greater equality in wages and increases in income for the poor should be weighed against costs in the form of increased unemployment or higher prices. The sources of data mentioned above can be useful in this difficult exercise.

In summary, a system of minimum wage determination requires a supporting system of labour statistics based on a programme of regular establishment surveys, frequent household labour force surveys, less frequent household income and expenditure surveys, and on-going compilation of statistics from administrative systems. The various statistics are summarized in the annex.

This article has attempted to highlight the types of statistics which might be useful in setting and revising minimum wages. Some general comments have been included on the likely availability of such statistics in the statistical systems of developing countries, and hence possible areas requiring further statistical development have been identified. Countries which regularly collect, compile and publish the basic labour statistics specified in the ILO *Labour Statistics Convention, 1985 (No. 160)* and *Labour Statistics Recommendation, 1985 (No. 170)* should be able to satisfy most, if not all, of the statistical requirements for minimum wage determination.

References:

- Asian Productivity Organization: *Comparative information on productivity levels and changes in APO member countries* (Tokyo, 1995).
- Eyraud, F.: "Wage-fixing policies: Consequences on wage data gathering" in *Bulletin of Labour Statistics* 1992-2.
- ILO: *Minimum wage fixing in Brazil*, Labour Law and Labour Relations briefing note No 2, April 1996.

ILO/EASMAT: *Labour statistics based on administrative records: Guidelines on compilation and presentation* (Bangkok, 1997).

Starr, G.: *Minimum wage fixing: An international review of practices and problems* (Geneva, ILO, 1993).

Turvey, R. (ed.): *Developments in international labour statistics* (Geneva, ILO, 1990).

United Nations: *Handbook of Population and Housing Censuses*, Department for International Economic and Social Information and Policy Analysis (ST/ESA/STAT/SER.F/54).

Acknowledgment:

The authors are grateful to the Remuneration Section of the ILO Labour Law and Labour Relations Branch for their comments and suggestions, which have been taken into account in this article.

**ANNEX: Statistical aspects of minimum wage determination
(Data needed for different criteria)**

Criterion	Types of statistics	Objective	Possible source	Observation
I. Meeting basic needs of worker households	Poverty level data in general, and of wage-earning households in particular	To measure household income distributions and averages	Household Income and Expenditure Surveys Other income distribution sources (eg income tax statistics)	Complex and expensive, often only conducted 10-yearly, but a rich data source. Subject to limitations of coverage, definition, stability, etc.
	Average expenditure by low income households on average household goods and services	To measure structure of household expenditure (regimen or "basket of goods and services")	Household Income and Expenditure Surveys	Complex and expensive, often only conducted 10-yearly, but a rich data source.
	Related data (average household size)	To measure household income distributions and averages, and data per capita, for different groups of households	Labour force and household surveys and censuses	Readily available in most countries CriterionTypes of statisticsObjectivePossible sourceObservation

2 General level of wages	Wage distribution and average wages in general and for unskilled workers separately in different industrial groups, locations, and/or occupations	To measure general level and distribution of wages for different groups	Establishment surveys of wages Household Income and Expenditure Surveys Labour inspection data	Limited coverage of industry groups. Excludes small businesses. More reliable measures of wage data Complex and expensive, often only conducted 10-yearly, but a rich data source Limited coverage and reliability
3 Cost of living and changes therein	Measures of changes in prices Average expenditure by a specified type of household	To measure price change To measure changes in structure of average household expenditure patterns	Consumer Price index Household Income and Expenditure Surveys	Readily available in most countries Complex and expensive, often only conducted 10-yearly, but a rich data source
4 Social security benefits	Level and distribution of benefits paid to different types of beneficiaries	To measure access to social security benefits and other measures to alleviate poverty.	Data derived from social security system.	Subject to limitations of coverage, definition, stability, etc. CriterionTypes of statisticsObjectivePossible sourceObservation
5 Relative living standards of other social groups	Data in respect of each of these different groups	To compare living standards of different vulnerable groups	Household Income and Expenditure Surveys Other household censuses and surveys Administrative sources	Complex and expensive, often only conducted 10-yearly, but a rich data source Readily available in most countries Subject to limitations of coverage, definition, stability, etc.

<p>6 Economic factors (economic development, productivity, employment)</p>	<p>Labour productivity, real value added and output per employee in different industries and regions</p> <p>Wages paid relative to other labour costs (social security expenditure and non-wage labour costs) and to returns to other factors of production (profits, return on investment, etc.) in different industries and regions.</p>	<p>To measure payment levels relative to performance</p> <p>To measure capacity of employers to pay</p>	<p>Establishment surveys of industrial production (value added and value of inputs and outputs)</p> <p>Establishment surveys of industrial production (value of inputs and outputs).</p> <p>Labour cost surveys</p> <p>National accounts statistics.</p>	<p>Limited coverage of industry groups. Excludes small businesses. More reliable measures of wage data</p> <p>Need to be based on reliable original sources for sound estimation.</p>
--	--	---	--	---