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on Measurement of the Quality of Employment
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Measurement of the Quality of Employment: Introduction and Overview

Invited paper submitted by the European Communities (EUROSTAT) and the
Bureau of Statistics, International Labour Office (ILO)¹

1. Introduction

The creation of employment opportunities is legitimately considered to be a great step forward towards the goal of reducing the level of unemployment. However, among policy-makers, social partners, researchers and the general public, employment growth and labour market reforms have given rise to the question as to whether or not the "quality" of jobs created is improving parallel to the increase of employment. There is a growing awareness of the need to shift attention from a merely quantitative dimension (number of jobs/employed persons and volume of employment) to a more qualitative dimension. The ultimate desirable goal is the securing of equal and "decent work" opportunities for women and men. Decent work means more than providing jobs in sufficient number and with adequate levels of productivity and remuneration. It also means adherence to a core set of internationally agreed labour standards in areas such as rights at work, the possibility to reconcile work with family life, conditions of employment and work including occupational safety and health, social protection, and social dialogue.

Whether a job is considered good or bad by its incumbent depends to some extent on individual perceptions and preferences that may change over time according to variations in the business cycle and changes in the incumbent's personal situation. It thus seems to be impossible to measure the quality of employment as such. What is possible, however, is to collect data on important aspects of the employment situation, which are often not covered in regular labour statistics programmes and for which no established system of indicators exists. "Quality of employment" then

1 Paper written by Aloïs van Bastelaer (EUROSTAT) and Ralf Hussmanns (Bureau of Statistics, ILO)

refers to a set of characteristics that determine the capability of employment to satisfy certain commonly accepted needs. The measurement of the quality of employment involves the identification of relevant employment characteristics and the collection of statistics for these characteristics. These statistics are useful in identifying jobs by region, economic activity, occupation and other characteristics where quality needs to be improved.

Developmental work on statistics on the quality of employment is included in the work programme of the ILO Bureau of Statistics for the biennium 2000-2001. This work builds on past and current activities concerning the measurement of status in employment, working time, underemployment, employment-related income and occupational injuries, but will also add new dimensions such as job security, social protection, and industrial relations. It is linked with the ILO strategic objective of creating greater opportunities for women and men to secure decent employment and income, and with the ILO in-focus programmes on economic and social security and on safe work: security and productivity through safety and health at work.

The seminar is meant to be a forum for presenting relevant statistical data and analyses, for exchanging views and experiences, for discussing methodological issues related to data sources, coverage, definitions, classifications, question formulations, measurement problems, etc., and for pointing out possible areas for further work at the national or international level.

This paper presents a first overview of possible indicators for different characteristics of the quality of employment. Further work will be needed to define relevant indicators and classifications and to collect data about these indicators following the exchange of views and experiences in this seminar on the measurement of quality of employment. Since the various dimensions of quality of employment are interrelated, the user needs to be able to do a multivariate analysis of the different aspects of quality of employment covered by different data sources (for example, the relationship between forms of employment contracts and job content aspects raises a particular problem to solve).

2. Quality of employment dimensions

Quality of employment is an important issue of the European Employment Strategy. The European Employment Strategy is provided for in the Amsterdam Treaty (art. 109). Member states are called on to "... work towards developing a coordinated strategy for employment and particularly for promoting a skilled, trained and adaptable workforce." These are essential conditions for the quality of employment. The Treaty refers further to the need to maintain competitiveness "[... for promoting...] labour markets responsive to economic change." Productivity should increase so that enterprises can improve their competitive position and employment growth continues. Increase in productivity can be achieved through a better organisation of work, a better utilisation of human capital and a greater business agility. A model of the type of enterprise that seems best suited to compete in a global economy is put forward by the EU. According to the

Green Paper "Partnership for a new organisation of work" (1997), a better organisation of work, based on skill, trust and quality as well as a high level of involvement of workers, can make a valuable contribution to the competitiveness of European firms, to the improvement of the quality of working life and to the employability of the workforce.

The labour market is changing due to globalization, technological changes and industrial restructuring; in some countries, the transition from a centrally planned to a market economy and the privatization of formerly state-owned enterprises have also induced fundamental changes in the labour market. A new balance is to be found between flexibility and security. New opportunities are offered to employable persons and to those who can adapt to new requirements of labour demand ⁽²⁾. On the other hand, those who cannot adapt to flexible work patterns nor acquire the skills to perform new jobs and new tasks may become marginalized. There is a risk of social exclusion when there is unequal access to learning opportunities. Furthermore, there are many low-paid jobs on the labour market which enable people to gain work experience and to improve their employment prospects. But these jobs may not be sufficient to escape from social exclusion and to gain access to better jobs. It shows that quality of employment in addition to employment growth is important to combat social exclusion.

The development of the new work organisation requires a set of actions. These actions are a part of the policy programme of employment guidelines and of the broad economic policy guidelines for the EU Member states. These policy objectives indicate different dimensions of the quality of employment. The relevant employment guidelines concern the diversification of employment relationships (' 3), the new forms of working time arrangements (' 5), the development of entrepreneurship (' 4) and the improvement of workers' skills (' 7). The broad economic policy guidelines refer to a strategy for wage developments (' 6) compatible with price stability and strengthening the investment to secure job growth. A first action to enhance the adaptability of businesses and their employees is to develop new and adaptable types of employment relationships. It implies a reconciliation of the need of enterprises for flexibility and the need of employees for security. Persons working under these new types of employment contracts should at the same time enjoy adequate job security and social protection.

3. Contractual arrangements (employees)

3.1. Labour market trends and policy objectives

Macroeconomic changes, changes in production processes as well as in the regulation of the labour market have contributed to a diversification of forms of employment. These newly emerging forms of employment deviate to a greater or lesser extent from the conventional model of full-time regular

2 Commission communication (2000) 79. Building an inclusive Europe

wage employment. Their major characteristic is that they are contingent employment: these employed persons do not have a contract for continuous, stable employment. The reason for contingent employment may be only the (time-limited) duration of the contract. Examples are fixed-term contracts, part-year employment (seasonal work) and all forms of trial employment or probationary periods and trainee work or apprenticeship. Other forms of contingent employment deviate from standard wage employment on more aspects than only the time-limited duration. In the case of mediation by a temporary work agency, the clear relationship between employer and employee is replaced by a triangular form of employment where, for example, the work is controlled by one firm but the employed person is paid by another firm. Contingent employment may also be due to the distribution of the economic risk between labour demand and labour supply. In the case of notional self-employment or labour-only contractors, the contract is terminated when the product or services specified in that contract are provided. On-call workers (or zero-hour contracts) are only performing work according to the employer=s demand. In the case of outworkers or homeworkers, the employed persons perform work outside the employer=s premises. Outworkers have to pay certain production costs themselves and may also have to buy equipment and materials. Outworkers may have an on-call employment contract.

Contingent employment can be precarious but does not have to be. The condition would be an equal treatment as far as possible between persons in contingent employment and those in standard full-time wage employment. However, forms of temporary employment or other atypical employment tend to be partially or completely unregulated. Furthermore, the criteria in law and case-law to classify an employed person as an employee (the subordinate relationship, the economic risk of an own account worker) may be difficult to determine. As a consequence, persons in contingent employment may not have the status of an employee and may be deprived from the benefits and entitlements of persons in standard full-time wage employment. Their treatment may be different in several domains: non-wage benefits and leave entitlements, their coverage by social security and social assistance, entitlements to employer-provided training, and protection against the arbitrary renewal of these contingent employment contracts.

The non-wage benefits for which persons in contingent employment may qualify differently from standard wage employment are sickness benefits, invalidity benefits, paid annual leave, paid maternity/parental leave, severance pay, retirement pension and unemployment benefits. Some of these benefits (for example, sickness benefits) can only be given when persons are at work. As a consequence, they do not qualify for these benefits when they are not at work. Other benefits (for example, unemployment benefits) depend on the status of an employee. Many persons in contingent employment have the obligation to make social security contributions during their limited spells of employment. However, eligibility thresholds in terms of a minimum duration of work are applied to the receipt of benefits.

The protection against an arbitrary renewal may be a limitation to the maximum number or maximum cumulated duration of successive temporary employment contracts with the same employer. Alternatives of these limitations may be the right to a renewal of the contract, the entitlement to severance pay and a notice period or the right to a contract of

unlimited duration when the number or cumulated duration of the contracts exceeds a threshold.

3.2. Indicators

Persons in contingent employment relationships first need to be identified as deviating from the standard wage employment and self-employment situations. Secondly, their particular situation as regards their job security, their entitlements and their social security can be described. Statistics should be provided on:

- (i) the trends in employment by form of employment (permanent employment, time-limited temporary employment, other atypical employment) and by total duration of the employment contract;
- (ii) the conditions of employment for the different forms of contingent employment in terms of entitlements to non-wage benefits (comparing the hourly wage rates plus non-wage benefits with the hourly wage rates only), social security coverage, participation in employer-provided training, protection against arbitrary renewal of contingent employment contracts, and other features embedded in labour legislation and collective agreements;
- (iii) the employment duration and labour turnover (account being taken of other factors including the business cycle); an interesting variable would be the cumulated duration with the same employer as well as the cumulated duration of all back-to-back employment spells (even with different employers);
- (iv) the differences in the before-mentioned by economic activity, occupation, region and other characteristics such as sex, age and educational level of the worker.

4. Entrepreneurship

4.1. Labour market trends and policy objectives

For self-employed persons, the employment quality characteristics depend on the conditions for developing entrepreneurship rather than on the contractual work conditions. These conditions are related to the legal framework within which businesses operate, the administrative and tax burden, the access to financial services tailored to their specific needs, and the availability of support and advice services when a business is set up.

4.2. Indicators

A first set of indicators would describe the effect of making the environment conducive to entrepreneurship. These indicators would describe the trend in self-employment and the trend in newly created businesses by size of enterprise (own account workers without employees, small enterprises (<50 employees) and medium sized enterprises (< 250 employees)).

Indicators need to be developed to describe the favourable environment for the creation and expansion of viable enterprises. These indicators should cover the domains of the administrative regulation, the provision and

availability of capital and the assistance provided by business support agencies and innovation centres. Examples regarding the simplification of administrative procedures could be the delays and number of procedures in company registration. The simplification of administrative procedures would imply a single location for registration purposes ("single business window"), a single registration document, a simple application procedure for licenses, permits and authorisations and the sharing of the data between the authorities involved in registration.

5. Length and patterns of work

5.1. Labour market trends and policy objectives

To increase productivity and competitiveness new forms of work and new working time arrangements are introduced or used on a wider scale. By introducing these new forms or using them on a wider scale, employers adapt their work organisation to their production and service needs. The changes in the forms of work may be an increase in part-time work and shift work. Shift work is a work organisation under which different crews of workers succeed each other at the same work place to perform the same operations. Shift work allows a more extensive use of the capital goods beyond the working hours of an individual employee. But, many shift work patterns involve work during unsocial hours at night or during the weekend. This work during unsocial hours may disrupt a normal way of life. Other changes in the working times may be a reduction of the average weekly working hours in full-time employment, a reduction of overtime, the expression of total working hours as an annual figure and working time banking. Flexibility of working times is only possible when there is simultaneously the desire of employed persons for flexibility. Flexible working times are concurrent with an individualisation of the working times.

Changes in total working hours may also be due to career breaks, mainly parental and study leave. These leave arrangements do not concern the adjustment of the workforce to production and service needs but they accommodate the needs and commitments of the employee. They allow the employee to reconcile work with other activities.

Employed persons may be in a situation where they are working less hours than the number of hours they are able and also prefer to perform. Their part-time job may be involuntary or temporarily they may perform fewer hours than normally because of economic or technical reasons. Time-related underemployment identifies persons who due to reduced labour demand or insufficient job creation are forced to perform shorter hours. Persons are in time-related underemployment when they are willing and available to work additional hours and worked less in the reference week than a threshold relating to working time (16th ICLS, 1998).

Employed persons may be also in another situation where they would like to work less hours than their hours usually worked and are willing to accept a corresponding reduction of their pay. Examples are persons who want a part-time job instead of their current full-time job to combine work and other activities or employed persons who are compelled to work overtime.

5.2. Indicators

The interpretation of the trend in average weekly working hours of full-time employment is straightforward because it excludes the effect of changes in the share of part-time employment and the variation in the number of hours worked in part-time. The average weekly working hours relates to the hours actually worked, it includes all time spent to perform a job but it excludes hours paid but not worked, e.g., annual holiday leaves, public holidays leave and paid sick leave. When it is based on a continuous labour force survey, it describes the trend in hours actually worked due to changes in the contractual hours, leave entitlements and overtime, although the effects are contaminated by changes in days of sick leave and days lost due to labour conflicts or technical reasons.

A widely used indicator is the part-time employment rate. A second indicator describing changes in the structure of the workforce is the shift work employment rate. Because shift work usually involves work outside the normal working hours on weekdays, a complementary indicator can be derived from the combination of work in the evening, at night or during weekends. These indicators can be calculated already from the current labour force survey of the European Union countries.

An indicator whether the (volume of) hours worked meets the employer=s demands can be derived from the combination of the variables on overtime, short-time work, annualized hours and on-call work. Within this combination of working time arrangements, the trend of the share of overtime could be determined. The complementary indicator of the employee=s sovereignty over her/his working hours covers all employed persons with a working time banking schedule, a min-max contract or who can entirely determine their own work schedule.

Besides on the duration of statutory leave (annual leave, maternity leave, parental leave), statistics could be provided on entitlements and the duration of non-statutory leave, for example to take care of a sick child or other family members and study leave. An additional indicator could be the autonomy of the employed person to take days off or to schedule her/his annual leave.

Time-related underemployment is a complementary indicator of unemployment. Although time-related underemployed persons have a job, they tend to behave like unemployed persons, they want and are available to work additional hours. The definition adopted by the 16th ICLS fits entirely within the labour force framework and the definition of unemployment. The measurement tools must be adapted because this definition deviates from the former definition adopted by the 13th ICLS. Some time is needed until cross-nationally comparable indicators on time-related underemployment can be produced and published.

Indicators to measure inadequate employment related to excessively long hours of work need to be developed. Similar to the identification of involuntary part-time work, other involuntary working time arrangements can be identified. This indicator describes whether working time arrangements (for example shift work, annualized hours, on-call work or min-man contracts) correspond with the type of job a person was looking for.

6. Employment-related income

6.1 Income from paid employment

6.1.1 Labour market trends and policy objectives

Employment-related income is probably the indicator of employment quality that is most often mentioned in the socio-economic literature. The majority of the population, i.e. employed persons and their families, depend almost entirely on the income they derive from their jobs to provide themselves with food, clothing, housing and all the other necessities of life. The payments in cash and in kind which they receive serve as one of the indicators of their level of living. In addition, their relative status in society, their spirits and motivation to work productively are conditioned by the income they receive. In countries such as some of the transition countries of the former Soviet Union, where unemployment benefits and other social transfers are low, most people cannot afford not to work. In such situations, earnings is likely to be a more sensitive labour market indicator than the unemployment rate, labour force participation rate and hours of work, which show little short-term fluctuation. Pay in the form of minimum wages, collectively agreed wage rates and similar basic remuneration, is at the centre of collective bargaining and many other aspects of industrial relations. A clearer indication of the actual development of workers' incomes is provided by data on earnings which, in addition to basic wages and salaries, include elements such as bonuses and overtime pay. In labour statistics, these types of income have been traditionally measured by means of statistics on the level of wages (average wage rates or earnings) of employees, generally broken down by kind of economic activity (industry), occupation(al group) and sex, and statistics on earnings distributions.

During the past decades, remuneration systems have broadened considerably, mainly through two mechanisms: the proliferation of non-wage benefits and forms of compensation offered by employers to attract and retain employees; and the expansion of employment-related social security benefits. Both aspects, which have an impact on income levels and income security, are not reflected in the existing wage statistics. At the other end of the spectrum, the stability of regular full-time wage employment has declined and many workers have had to resort to other types of income-earning activities, such as casual or temporary paid employment, part-time employment, multiple job holding, etc., in either the formal or the informal sector of the economy. Measuring changes in wage or income levels has therefore become a complex task. The resolution adopted by the 16th ICLS (1998) on the measurement of income related to paid employment seeks to account for all the various forms of remuneration which accrue to persons in paid employment by virtue of their current or former involvement in paid employment jobs, irrespective of the form of employment.

6.1.2 Indicators

The level of earnings and income related to paid employment is influenced by a number of factors: some of these factors characterize the job or the

enterprise/establishment (industry, occupation, type and size of enterprise, work duration, whether full- or part-time, etc.), while others characterize the individual (age, sex, educational attainment and skill level, seniority in the job and/or enterprise, number of jobs held, etc.), and still other factors are linked to the institutional context in terms of industrial relations and protection of income, such as minimum wage regulations, wage indexation mechanisms, collective bargaining, etc. In addition to statistics on the level of employment-related income, it would be useful to have statistical information on these characteristics which affect the quality of employment. This information could be used to refine measures of income distribution and income inequality, such as gender-specific wage differentials. It would also represent a first step towards the measurement of income-related inadequate employment.

6.2 Income from self-employment

6.2.1 Labour market trends and policy objectives

In recent years, the number of self-employed persons and their share in total employment have increased in most countries. The self-employed comprise a wide range of workers who carry out their activities in various types of enterprises (such as corporations, unincorporated or household enterprises, professional practices), with or without the help of partners, employees, contributing family workers, etc. The measurement of the incomes of self-employed persons presents different problems compared to that of persons in paid employment. When statistics on income generated by self-employment are available, they follow a variety of concepts and methodologies, they are often available only at the household or enterprise level, and little information is available on the relationship between the income and the characteristics of the self-employment job and its incumbent. The 16th ICLS resolution on the measurement of employment-related income proposes a definition and measurement method of income related to self-employment at the individual level and by types of components of income. It also proposes to analyze income related to self-employment in relation with some of the factors which affect the quality of self-employment: type, legal status and size of enterprise, sector, industry, occupation, existence of partners or contributing family workers, duration of employment and time worked, socio-economic characteristics, etc.

6.2.2 Indicators

As in the case of income from paid employment, it would be useful to have statistical information on the different forms and components of income related to self-employment and on their impact on income security, income distribution, inequality measures, etc. Additional factors, which are not accounted for in the above-mentioned resolution, affect the quality of employment of the self-employed. These include the legal framework within which businesses operate, the administrative and tax systems in force, the access to financial and support services, etc. Further work may therefore be required to refine the quality dimensions of self-employment, and in the years ahead, to define and measure the concept of inadequate self-employment in terms of income.

The new guidelines on the measurement of employment-related income are still at the developmental stage. Further work will be required to test their applicability, the problems of measurement and the validity of the statistics produced.

7. Job content

7.1. Labour market trends and policy objectives

Division of labour is a main characteristic of the work organization. But new trends are becoming important. The new work organization means the end of the traditional "Fordist" or "Taylorist" work organization. Social relationships become a major part of the job tasks. Contacts with clients and colleagues in other units within the enterprise are more frequent. The other trend is the increasing importance of the utilization and development of skills. The educational level of the labour force increases. These new trends do not fit within the model of the division of labour because this model is an obstacle for skill development and maintaining social relationships.

These new aspects of work have an effect on the quality of employment and require a new work organization. A widely accepted model - developed by R. Karasek ⁽³⁾ identifies the most salient characteristics of the job content and tasks in relationship with quality of work. The two basic characteristics are the job decision latitude and the work demands. The job decision latitude is a measure of control over her/his tasks and conduct to accomplish the work load demands. It is a combination of job decision-making authority and use of skills. These two characteristics determine the interest of the work to a large extent. The requirement of using skills or making decisions represents an opportunity, it enhances the individual's efficacy and ability.

When this model is applied, the findings are that a discrepancy of low decision latitude and heavy job demands is associated with the risk of exhaustion and reduced productivity. Conversely, an interaction of high job decision latitude and heavy job demands has a positive effect. When jobs can be redesigned with opportunities for taking responsibility and participating in decision making, job demands would be seen as challenges and would be associated with increased learning and motivation and with more effective performance. This simple two-dimensional model can be expanded by including the social support at the workplace and physical exertion.

These two job characteristics are related to the organizational level with output and authority structure. Job or workload demands express the output level of the enterprise, the job decision latitude is related to the management and technology in the enterprise.

The use of skills is one of the characteristics of the job decision latitude. It is a variable that can be modified by the process of job

3 Karasek R. and T. Theorell. 1990. Healthy work: stress, productivity and the reconstruction of working life. New York, Basic Books

design. Jobs should be designed to match the workers= skills. An overeducated worker is clearly an underutilized production factor. Such inadequate utilization and mismatch of occupational skills is characteristic for a situation of skill-related inadequate employment.

Several trends show that there is a need to continuously improve skills and capabilities. First, improving skills is the basis for productivity growth, innovation and the development of a knowledge-based economy but it is also a necessary condition to adjust to structural changes. The demands for a particular set of skills are changing and skill requirements tend to increase. Another reason is the personal aim for career advancement and occupational upward mobility. Finally there is the trend that our society becomes more diverse and requires a more active involvement. Life-long learning is the learning process to develop and upgrade knowledge and social and occupational skills throughout life, in different contexts and in different forms of formal or informal education and training. In this case, quality of employment depends on the access or obstacles to training, which a job offers. Obstacles may be financial, lack of motivation and the absence of certification or recognition of the training programme.

7.2. Indicators

There are two approaches to measure the job content as an aspect of the quality of employment. A first approach consists of asking how the employed person perceives her/his job demands and job decision latitude. Common items for the three dimensions are the following (the six items marked with an asterisk were included in the EU wide survey in 1991 and 1996 on working conditions, organized by the European Foundation for the Improvement of Living and Working Conditions, sample size was 1000 persons per Member state):

job demands or work pressure: job requires working very fast (work pace)(*), job requires working very hard (hardship of work), excessive amount of work to be done, no time to finish the work (*), faces conflicting demands;

decision authority: can make own decisions, sovereignty to decide how to do the work (*) have say on the job;

skill utilization: job requires to learn new things (*), job involves a lot of repetitive work (work loses its capacity for challenge), job requires finding solutions (creative) (*), job requires high skill level, job involves a variety of different things to do (non-monotonous work) (*), opportunity to develop own special abilities.

A second approach consists of collecting data from managers in enterprises about the work organization. The characteristics of decision authority, skill discretion and social support have close parallels to aspects of the work organization, viz. responsibility for a complete product, job enrichment and work group formation. Possible indicators to describe the work organization are job enrichment or job rotation, delegation of responsibility and involvement in decision making, flat organization with reduced hierarchical levels and self-directing work-teams or autonomous task forces ⁽⁴⁾.

Skill-related inadequate employment was identified by the 16th ICLS as a particular type of inadequate employment. Persons in this type of inadequate employment comprise all persons in employment who during the reference week wanted or sought to change their current work situation to use their current skills more fully and were available to do so. A variable on the reasons why somebody is looking for a job is usually included in the labour force survey but the specific reasons, for example, a job that better corresponds to someone's skills, may not be distinguished.

Data on participation in schooling and training are available already from the labour force surveys of many countries. However, complementary statistics would be useful on offers of schooling and training, the support received to renew or improve skill and the reasons for non-participation. Other indicators are needed also on the place and type of training attended (for example, workplace training, labour union education program, participation in a new work organization) and the outcome in terms of the particular skills improved or acquired.

8. Institutional context

8.1 Labour market trends and policy objectives

In addition, there is the institutional context of industrial relations and voice representation that determines many aspects of the quality of employment. If one is interested in assessing the quality of employment, the question of whether or not an employed person has the potential for representation of his or her interests will be a critical determinant of that quality. Particularly if the person is "vulnerable" for some reason, such as a low level of education or marketable skills, or assurance of income support other than from the work in question, a lack of collective representation rights is likely to be a source of personal insecurity and thus low quality of involvement in work. In many countries, there is a shift in industrial relations from collective agreements and bargaining at industry level towards agreements and bargaining at the enterprise, workplace or individual level. This trend coincides with a decline in trade union membership, which used to be the standard measure of voice representation. However, in the more informal and flexible labour markets that are spreading, it is apparent that trade unions are not the only possible form of representation and collective voice, and that other forms of representation should also be taken into account. As the context of industrial relations and negotiation processes changes, statistics of strikes, lockouts and other action due to labour disputes are an important source of information when assessing the impact of such changes. For self-employed persons, the legal status and recognition of their enterprise and membership in employers' organizations, business associations, etc. are essential elements that determine their protection, organization and voice representation.

8.2 Indicators

Trade union membership continues to be a prominent indicator of voice representation. Two methods are being used by countries to compile trade

union membership statistics: (i) household or establishment surveys, and (ii) administrative records kept or questionnaires completed by individual trade unions or trade union federations. Household or establishment surveys make it possible to calculate detailed union density rates by sex, status in employment/type of contract, branch of economic activity, enterprise size, educational attainment, level of earnings or other characteristics. They are likely to provide better results than other methods, provided it is clear to respondents what is meant by "trade union" and "membership", and an appropriate sample design is chosen.

Data obtained from administrative records kept or questionnaires completed by trade unions are likely to offer advantages for a study of membership developments in relation to union type, membership concentration, inter-union competition, union politics and union ideology. One of the main difficulties with this method is statistical coverage or the identification of unions. The major problem consists of locating and identifying the existence of small, new unions, rather than whether an organization should be considered as a trade union. This poses a problem in the case of unaffiliated unions as well as in countries where there is no obligation for a union to register. Many of the available data on trade union membership are based on self-reporting, i.e. membership claims made by unions. Self-reporting of membership reflects different administrative and political practices and may yield incomparable and unreliable results. Unions may have reasons to overstate or understate their membership figures. They may apply different norms regarding who is to be considered as a member, be slow to remove those who have left or no longer pay their contributions, and include persons who no longer consider themselves as members. Comparisons with survey data suggest that some overstatement in reported membership is general but, in most cases, small.

Union density rates are better suited to making comparisons, especially across countries, than absolute membership figures. Union density expresses union membership as a proportion of the eligible workforce, i.e. employees. Ideally, groups who are not legally permitted to join a union (e.g. senior civil servants, the armed forces, police officers, security staff, teachers, domestic servants) should be excluded from the denominator of union density rates. However, the eligibility to join a union shifts over time and across countries, and the strict application of such a criterion for calculating union density rates would make comparison across countries extremely difficult, if not impossible. It should be noted that many unions, at least in Europe, retain membership of unemployed and retired workers.

Supplementary indicators include: the proportion of employees covered by other forms of representation (e.g. works councils); the proportion of self-employed persons who are members of employers' organizations, business associations, etc.; the proportion of employees covered by collective agreements (collective bargaining coverage rate); the degree of workers' participation (consultation, delegation) in decision-making and in changes of the work organization.

Revised international guidelines concerning statistics of strikes, lockouts and other action due to labour disputes were adopted by the 15th ICLS (1993). According to these guidelines, the following basic data should be

made available on a regular basis: the number of strikes and lockouts; the number of workers involved in strikes or lockouts; the duration of strikes or lockouts; the amount of time not worked by workers involved in strikes or lockouts; other important characteristics relevant to the labour disputes (including the branch of economic activity and the reason for the dispute). Where relevant, information should also be collected on the number of establishments involved and the number of other forms of action due to labour disputes.

9. Physical work environment

9.1 Trends and policy objectives

Last but not least, quality of employment depends on the physical work environment in terms of occupational safety and health. According to the best available estimates, occupational injuries and diseases kill worldwide at least 1.3 million workers each year, and probably cause at least 9.6 million years of lost work and cost about 4 percent of GDP. In 1996 in the EU, there were 4.8 million accidents at work resulting in more than three days of absence from work, and 5,550 fatal accidents at work. 146 million work days were lost in 1996 in the EU and Norway owing to these accidents. The total direct costs for insurance schemes covering accidents at work (medical care, daily allowances, present and future compensation for cases of permanent disability and death) is 20 billion Euro per year in the EU.

Occupational injuries and diseases are the *outcomes* of a combination of many factors. Statistics on occupational injuries and diseases provide the means for the monitoring of safety and health at work and of the social cost of work-related accidents and health problems. They can identify problem areas and high-risk groups and sectors at which preventive action may be targeted. One of the factors contributing to the risks consists, to a greater or lesser extent, of the environment in which people work. Information about the working conditions and the work environment may provide some insight into the *causes* of occupational injuries and diseases.

Such insight can be used to formulate occupational safety and health policies and laws, and to assess the efficiency of regulation in this field. Policies and legislation are crucial for reducing the incidence of occupational injuries and diseases; however, their reach is unsatisfactory in many countries.

Statistical information on occupational injuries and diseases is rarely comprehensive and is subject to a number of limitations. This is mainly due to the sources of these data, which are almost exclusively the administrative records of compensation schemes or systems for the notification of occupational injuries and/or diseases to competent authorities, such as labour inspectorates. Many compensation schemes and notification systems cover only employees and, where the self-employed are included, this is usually on a voluntary basis. Certain economic activities (e.g. agriculture, public administration) are often excluded. The use of minimum thresholds on the duration of absence from work for the purposes of compensation in many countries means that many occupational injuries fall outside the scope of the statistical system. In addition,

there is a widely acknowledged underreporting of occupational injuries, so that the current national statistics of occupational injuries generally present only a partial picture. At the EU level, however, the European Statistics on Accidents at Work (ESAW) of Eurostat, implemented from 1993 reference year, have achieved a certain level of harmonisation and comparability regarding accidents with more than three days of absence from work and fatal accidents. The main comparable results from ESAW concern the branches of agriculture, industry, energy, construction, trade, transport and business.

The situation is similar for national statistics of occupational diseases, which usually cover only recognised cases of occupational diseases. Problems of international comparability result from differences in the definition of the reference population or coverage by the compensation scheme, in the inclusion criteria for the classification of diseases, in the coding of the medical diagnosis, and in the recognition of mild cases.

Alternative methods of data collection, such as household surveys or household survey modules, are used to evaluate the work-related injury and/or disease burden, which is not identified by the conventional data sources (notification systems and compensation schemes), and to obtain statistics that are more comparable across countries. Moreover, household survey methods make it possible to study the labour market situation of persons after an accident at work or an occupational disease. Surveys of working conditions, which are being carried out in a growing number of countries, provide useful information on the work environment. Factors such as exposure to noise, vibration and dust, or undue physical efforts or mental burden contribute to the risks of occupational accidents and diseases. It is estimated that world-wide 340,000 deaths each year could be caused by occupational exposure to hazardous substances at work.

9.2 Indicators

Revised international guidelines on statistics of occupational injuries resulting from occupational accidents were adopted by the 16th ICLS (1998), which include concepts and definitions, coverage, classifications, comparative measures, and data sources, with a view to generating comprehensive and timely information needed principally for prevention purposes.

Standard statistical indicators of occupational injuries include: (i) the incidence rate, relating the number of accidents at work to the number of persons in employment; (ii) the frequency rate, relating the number of accidents at work to the aggregate number of hours worked; (iii) the severity rate, relating the number of days lost as a result of accidents at work to the total amount of time worked (only for temporary incapacity for work); and (iv) the number of days lost per accident at work. The variables used for classification refer to characteristics of: (i) the person concerned (sex, age, occupation, status in employment); (ii) his/her enterprise/ establishment/local unit (location, kind of economic activity, size); (iii) the injury (fatal/ non-fatal, type of injury, part of body injured, days lost); and (iv) the causes and circumstances of the accident.

A similar set of indicators can be defined for occupational diseases. Variables that are used to classify data on occupational diseases include

sex, age, characteristics of the disease (diagnosis) and its cause (exposure), occupation, kind of economic activity, and degree of incapacity or disability (see, for example, the European Occupational Diseases Statistics (EODS) project of Eurostat).

A number of other input and output indicators for determining the quality of employment from an occupational safety and health standpoint can be suggested for discussion. The indicators may cover different areas including: policies and legislation; availability of occupational health services; infrastructure and manpower for occupational health services; information systems (data collection, recording and notification systems, etc.); establishment of advisory bodies and voluntary mechanisms; proportion of workforce exposed to (i) excessive physical effort and postural constraints, (ii) smoke, dust, toxic materials, radiation, (iii) accident risks, (iv) poor physical conditions, and (v) extreme mental burden; proportion of workforce using and trained in the use of protective clothing and equipment; proportion of workforce with access to occupational health service/unit at the workplace.