KILM 5. Employment by occupation

Introduction

The indicator for employment by occupation comprises statistics on jobs classified according to major groups as defined in one or more versions of the International Standard Classification of Occupations (ISCO). The most recent version of the International Standard of Occupation, ISCO-08, distinguishes 10 major groups: (1) Managers; (2) Professionals; (3) Technicians and associate professionals; (4) Clerical support workers; (5) Service and sales workers; (6) Skilled agricultural, forestry and fishery workers; (7) Craft and related trade workers; (8) Plant and machine operators and assemblers; (9) Elementary occupations; and (10) Armed forces occupations. Since 2008 countries have progressively adapted their national systems to permit them to report data according to ISCO-08. Data for earlier years, and for countries that have not yet adapted their national systems, are classified according to earlier versions of the classification: ISCO-88 and ISCO-68 (see box 5a for the occupational groups covered by these two classification standards).

Table 5a presents data for the major groups of ISCO-08, which are available for 98 countries, and table 5b presents data for the major groups of ISCO-88 for 149 countries. Although at least some observations are available for every region, data are lacking for numerous countries in sub-Saharan Africa, and are sparse for the Middle East and North Africa. Table 5c presents data according to ISCO-68. This table mostly covers earlier years, but some countries continue to report major groups from ISCO-68 alongside those from ISCO-88. Table 5c contains data on 7 countries.

All tables include both the number of workers by occupation and the share of workers in an occupational group as a percentage of the total number of persons employed, and for men and women separately.

Use of the indicator

Occupational statistics are used for research on labour market topics ranging from occupational safety and health to labour market segmentation. Occupational analyses also inform economic and labour policies in areas such as educational planning, migration and employment services. Occupational information is particularly important for the identification of changes in skill levels in the labour force. In many advanced economies, but also in developing economies, occupational employment projection models are used to inform policies aiming to meet future skills needs, as well as to advise students and jobseekers on expected job prospects. Ideally, these are conducted on a more detailed level than the ISCO Major groups and go beyond tables 5a through 5c of the KILM.

Changes in the occupational distribution of an economy can be used to identify and analyse stages of development. In the textbook case of economic development, when labour flows from agriculture to the industrial and services sectors, these flows will be visible in the occupational distribution as well. The share of skilled agricultural and fishery workers will typically decrease, while rising skill requirements are likely to be reflected in a decreasing share of elementary occupations, rising shares of high-skilled occupational groups such as professionals and technicians, and the need for rising educational attainment levels.

In developed economies, which already have relatively well-educated labour forces, increases in the shares of high-skilled occupational groups (see box 5a) are associated with the advance of the knowledge economy and additional changes in the structure of economies. Furthermore, shifts within occupational groups may be equally important. For example, the growing importance of information and communication technology (ICT) has resulted in a proliferation of ICT-related jobs.

The breakdown of the indicator by sex allows for an analysis of gender segregation of employment. Division of labour markets on the basis of sex is one of the most pervasive characteristics of labour markets around the world, which is reflected in differentials in occupational distributions between men and women (as well as in sectoral distributions).[1] Such differentials can be analysed at detailed levels of the occupational classification,[2] but even at the most aggregated level, large differences by sex are evident.

Definitions and sources

Tables 5a to 5c classify jobs by occupation. A job is defined, according to ISCO-08, as a set of tasks and duties performed, or meant to be performed, by one person, including for an employer or in self-employment. An occupation is defined as a set of jobs whose main tasks and duties are characterised by a high degree of similarity.[3] Occupational classifications categorize all jobs into groups, which are hierarchically structured in a number of levels. The International Standard Classification of Occupations 2008 has a four-level hierarchy and breaks down its 10 major groups into sub-major groups, minor groups and unit groups of occupations at its most detailed level. At the most aggregate level, there are ten major groups (see box 5a). The box also lists the major groups defined in ISCO-88 and ISCO-68. For more details on the International Standard Classifications of Occupations 2008, please refer to box 5b.

The ten major groups in ISCO-08 (and in the previous ISCO-88), are associated with four broad skill levels. These levels are defined in relation to the levels of education specified in the International Standard Classification of Education (ISCED).[4] In ISCO-08, the nature of the work performed in relation to characteristic tasks, defined for each skill level, takes precedence over formal educational requirements. The relationship between major groups and skill levels are summarized in box 5a.[5] The use of ISCED categories to assist in defining the four skill levels does not imply that the skills necessary to perform the tasks and duties of a given job can be acquired only through formal education. The skills may be, and often are, acquired through (informal) training and experience. In addition, it should be emphasized that the focus in both ISCO-88 and ISCO-08 is on the skills required to carry out the tasks and duties of an occupation, and not on whether a worker employed in a particular occupation is more or less skilled, or more or less qualified, than another worker in the same occupation.

Although the ten major groups defined in ISCO-88 and ISCO-08 are similar in content and in name, some occupations are classified in different major groups according to each of these two versions. These changes reflect

[1] See for example, ILO, *Global Employment Trends for Women 2012* (Geneva, 2012); http://www.ilo.org/global/research/global-reports/global-employment-trends/WCMS_195447/lang--nl/index.htm.

[2] See, e.g., Anker, R.: *Gender and jobs. Sex segregation of occupations around the world* (Geneva, ILO, 1998).

[3] Resolution concerning updating the International Standard Classification of Occupations, adopted by the Tripartite Meeting of Experts on Labour Statistics on Updating the International Classification of Occupations (ISCO), 3-6 December 2007; http://www.ilo.org/public/english/bureau/stat/isco/docs/resol08.pdf.

[4] For further details about ISCED, see the manuscript for KILM 14. The relevant documents related to the latest version of the ISCED (2011) are available at: http://www.uis.unesco.org/Education/Pages/international-standard-classification-of-education.aspx

[5] The concept of skills level was introduced with ISCO-88, and was not used explicitly or systematically in ISCO-68.

changes in skill requirements arising from technological change as well as changes in the way the skill concept of skill level was applied to the design of the classification, to give less emphasis to formal educational requirements. Data classified at major group level according to the two versions are therefore not strictly comparable, and represent a break in series.

Information for this indicator has primarily been assembled from international repositories, which have been augmented by some data gathered directly from publications or websites of national statistical offices. The main repositories for this indicator are ILOSTAT and EUROSTAT. Additional information is obtained from National Statistical Offices. Most of the information derives from labour force surveys, but in a limited number of countries, the information is gathered from other household surveys, population censuses, official estimates and, in particular for table 5c, establishment surveys.

Box 5a. International Standard Classifications of Occupations: major groups

Occupational classification		ISCO skill level (see Key below)
ISCO-2008 – Major groups		
1	Managers	3+4
2	Professionals	4
3	Technicians and associate professionals	3
4	Clerical support workers	2
5	Service and sales workers	2
6	Skilled agricultural, forestry and fishery workers	2
7	Craft and related trade workers	2
8	Plant and machine operators and assemblers	2
9	Elementary occupations	1
0	Armed forces occupations	1+2+4
ISCO-1988 – Major groups		
1	Legislators, senior officials and managers	--
2	Professionals	4
3	Technicians and associate professionals	3
4	Clerks	2
5	Service workers and shop and market sales workers	2
6	Skilled agricultural and fishery workers	2
7	Craft and related trades workers	2
8	Plant and machine operators and assemblers	2
9	Elementary occupations	1
0	Armed forces	--
ISCO-1968 – Major groups		
0/1	Professional, technical and related workers	n.a.
2	Administrative and managerial workers	n.a.
3	Clerical and related workers	n.a.
4	Sales workers	n.a.
5	Service workers	n.a.
6	Agricultural, animal husbandry and forestry workers, fishermen and hunters	n.a.
7/8/9	Production and related workers, transport equipment operators and labourers	n.a.
X	Workers not classifiable by occupation	n.a.

Y	Members of the armed forces	n.a.

Key: ISCO skill levels

(1). The first ISCO skill level was defined with reference to ISCED category 1, comprising primary education which generally begins at the age of 5, 6 or 7 and lasts about five years.

(2) The second ISCO skill level was defined with reference to ISCED categories 2 and 3, comprising first and second stages of secondary education. The first stage begins at the age of 11 or 12 and lasts about three years, while the second stage begins at the age of 14 or 15 and also lasts about three years. A period of on-the-job training and experience may be necessary, sometimes formalised in apprenticeships or traineeships. This period may supplement the formal training or replace it partly or, in some cases, wholly.

(3) The third ISCO skill level was defined with reference to ISCED category 5, comprising education which begins at the age of 17 or 18, lasts about four years, and leads to an award not equivalent to a first university degree.

(4) The fourth ISCO skill level was defined with reference to ISCED categories 6, 7 and 8, comprising education which also begins at the age of 17 or 18, lasts about three, four or more years, and leads to a university or postgraduate university degree, or the equivalent.

Box 5b. International Standard Classification of Occupations – 2008

ISCO-1988, which was until recently the most widely used international classification of occupations, is now superseded by ISCO-08. The revised classification aims to provide:

- a contemporary and relevant basis for the international reporting, comparison and exchange of statistical and administrative information about occupations;
- a useful model for the development of national and regional classifications of occupations; and
- a system that can be used directly in countries that have not developed their own national classifications.

It should be emphasized that, while serving as a model, ISCO-08 is not intended to replace any existing national classification of occupations, as the occupation classifications of individual countries should fully reflect both the structure of the national labour market and information needs for nationally relevant purposes. However, countries whose occupational classifications are aligned to ISCO-08 in concept and structure will find it easier to develop the procedures to make their occupational statistics internationally comparable.

Even though the framework and the concepts underpinning ISCO-08 are essentially unchanged from those used in ISCO-88, there are significant differences in the treatment of some occupational groups. Some of the more significant changes include (see source for a comprehensive overview):

- The sections of the classification dealing with managerial occupations have been reorganized so as to overcome problems experienced by users of ISCO-88.
- Occupations associated with information and communication technology have been updated and expanded, allowing for the identification of professional and associate professional occupations in this field as sub-major groups.
- Occupations concerned with the provision of health services have been expanded, in order to provide sufficient detail to allow ISCO-08 to be used as the basis for the international reporting of data on the health workforce. These occupations have been grouped together, where possible, to provide two sub-major groups and a separate minor group devoted to occupations in health services.

Source: International Standard Classification of Occupations: ISCO-08 (Geneva, ILO), see: http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_172572.pdf

Limitations to comparability

Information on a country provided by the employment by occupation indicator can differ according to whether the armed forces are included in the estimate. Armed forces constitute a separate major group, but in some countries are included in the most closely matching civilian occupation, depending on the type of work performed by the individual armed forces member concerned, or are included in non-classifiable workers. In some countries, members of the armed forces are excluded from important data sources, such as labour force surveys. Furthermore, in several countries, certain major groups are combined into one more aggregated group. These

differences introduce elements of non-comparability across countries.

If information is based on establishment surveys, which is mostly limited to table 5c, only employees are covered, which results in non-comparability with sources covering all employment such as labour force surveys. In terms of the number of countries affected, an even more important difference is the non-comparability of data if occupational information relates to urban areas only. Urban coverage is available for some Latin American countries, and caution should be used in the analysis of such data.[6]

[6] When performing queries on the employment by occupation tables (5a to c), we strongly recommend removing countries that are not of national coverage from the selection when making comparisons across countries. On the software, this can be done by performing the query for all data and then refining the parameters to select "national only" under "Geographic coverage".