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EurOccupations: the database of occupations

EurOccupations: Developing a detailed 7-country occupations database for comparative socio-economic research in the European Union

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Project summary

Occupation is the key unit in matching vacancies and job seekers, and it is used for occupational choice and for career consultancy. Occupation is a key variable in social research, particularly that which relates to the labour market, transitions from school to work, social stratification, gender wage gaps, occupational structures and skill requirements. The ILO's International Standard Classification of Occupations (ISCO) is the classification most commonly used, and it was recently updated to ISCO-08. Eurostat uses ISCO for its employment statistics. Some EU member states have their own occupational classifications, using cross-over tables to ISCO. Some countries maintain a dictionary of occupational titles.

The EurOccupations project aimed to build a publicly available database containing the most frequent occupations for use in multi-country data-collection, through the Internet or otherwise. It covered eight EU countries, notably Belgium, France, Germany, Italy, Netherlands, Poland, Spain, and United Kingdom. The database includes a source list of 1,594 distinct occupational titles within the ISCO-08 classification, country-specific translations and a search tree to navigate through the database.

The database with 1,594 occupational titles

EurOccupations aimed to provide an enhanced tool for self-identification of occupation in surveys or on forms and for measuring occupations with a greater precision than ISCO's 4-digit occupational units. This was achieved by adding further digits to ISCO, thus increasing the number of occupational titles included. EurOccupations did not aim for revising ISCO or any other occupational classification.

The primary aim of the database is its use for valid self-identification of occupation in web-surveys and web-based forms. Given that respondents prefer to indicate their job titles rather than aggregated categories, the source list of occupational titles had to be close to the wording used in job titles, thus requiring a long list of occupational titles. These occupations had to be distinct from each other because synonymous or overlapping occupational titles will confuse respondents. Yet, the longer the list, the higher the average respondent's reading-time and the higher the likelihood of dropout during survey completion. The source list therefore had to strike the optimal balance between including as many distinct occupational titles as possible to facilitate valid self-identification, and being as brief as possible to reduce reading time.

The database consists of:

- A source list of 1,594 distinct occupational titles in English with ISCO-08 codes
- Country-specific translations of these occupational titles
- A 3-tier search tree that allows respondents to navigate through the database

Method

EurOccupations started in May 2006. In September 2006 the ILO published draft 3 of ISCO-08. This list included occupational units of 4 digits, and was used as a basis for the EurOccupations source list of occupations. Then, occupational titles that were considered distinct were gradually nested in the occupational 4-digit units. These occupational titles were searched on the Internet, taken from the detailed alphabetical index of occupational titles for ISCO-88 and based on a review of the national occupational classifications from UK, Belgium, USA and Canada. For tracing newly-emerging occupations, new titles frequently reported in the 2004-06 German and Netherlands WageIndicator web-survey were used. Occupations with large numbers of jobholders were mostly added to the source list, while occupations with few job holders were omitted (Tijdens, 2009).

In early 2007, the initial source list held 1,433 occupational titles. This list was translated by professional translators and carefully checked by the national EurOccupations project teams. EurOccupations partner WageIndicator Foundation employs a continuous, worldwide web-survey, see www.wageindicator.org. Simultaneously, WageIndicator had translated and checked the source list for countries with a WageIndicator web-survey on work and wages. The comments of translators and teams mostly related to occupational demarcation lines, for

example, where two occupational titles in the source list were not considered distinct in a particular country. In these cases, either one occupation was removed from the source list or one occupation was not included in the national list. The results of the EurOccupations similarity test of 150 occupations were taken into account (see Policy Brief no 2). Finally, the source list, still based on draft 3 of ISCO-08, was critically reviewed with regard to internal consistency and suitability within the search tree. By mid-2007 the search tree and the translations of this initial source list were implemented in all countries with a WageIndicator web-survey. Some countries added country-specific occupational titles.

In Spring 2008, the ILO published the final version of its ISCO-2008 classification with 433 occupational units at 4-digit level. The most important changes related to a reduction of the list and to the assignment of different skill levels to a number of occupations. The source list was checked against this version, resulting in the final database with 1,594 occupations (Tijdens and Jacobs, 2009a). In June 2009, ILO published the draft definitions of these occupation units and a draft coding index. Subsequently, the ISCO codes in the source list again needed a few adaptations.

Preventing gender and skill biases in the database

EurOccupations has investigated possible gender bias in the database. In any occupation list, gender bias should be avoided. Special attention has been paid to the aggregation level in which male- and female-dominated occupations are defined as well as the levels of skill and responsibility for male- and female-dominated occupations. The initial source list of occupations was tested for whether the level of aggregation in which male- and female-dominated occupations were defined differed significantly. Analyses on Labour Force Survey data for 8 countries indicated that, on a 3-digit level, male-dominated occupations indeed appeared to be specified on a more disaggregate level than female-dominated occupations in the 2007 initial source list (De Ruijter, De Ruijter and Jacobs 2009). In the source list of occupations the issue was resolved by breaking down large female-dominated occupational units into detailed occupational titles. For example, the nurse occupation was broken down into 11 distinct occupational titles. Additionally, for the 150 key occupations statistical tests were applied to investigate whether female-dominated occupations generally are of lower 'worth' than male-dominated occupations (i.e. have lower skill levels and lower levels of responsibility).

The skill bias was investigated by means of a systematic comparison of the intrinsic 'worth' of occupations, including skill level, level of responsibility, average time to become competent in the occupation, and mental and physical effort of male- and female-dominated occupations. The findings indicate that male-dominated occupations are assessed significantly higher with respect to a) the average time it takes to become competent in the occupation and b) the required physical effort. For the other indicators of occupational worth, no significant differences were found.

Regarding these findings, an important reservation must be taken into account. The lack of adequate measures of occupational sex composition, thus the operationalisation of male- and female-dominated occupations based on labour force data for 3- and 1-digit ISCO occupational groups, may lead to an underestimation of the number of female- and male-dominated occupations and hence to an underestimation of the influence of the gender bias. Further research is needed, including the development of adequate measures of occupational sex composition for all occupations in both the extended and the key lists.

Database used in WageIndicator web-survey

From mid-2007 until the end of 2008, in total 171,443 respondents from 33 countries responded to the WageIndicator web-survey and this data was used for three usability tests of the new source list (Tijdens and Jacobs, 2009b). Test 1 was an inspection of the distributions over the ten 1-digit ISCO groups for the EurOccupations countries. The results seem reasonable, and no unusual outliers could be detected. Test 2 related to respondents' feedback. In the period in question, the WageIndicator web-sites received over five thousand emails from visitors but less than 20 complained about the search tree. Their comments referred to unlisted occupations and to the paths through the search tree. If relevant, these comments were taken into account in drafting the final database. For test 3, the distributions over the 3-digit ISCO-88 occupational groups were compared between the web-survey data and the 2001 ELFS for Poland, Spain and UK. This comparison was hampered by the fact that the years of survey were not similar, and because both variables were based on cross-over tables, notably from the NOC's into ISCO-88 (ELFS) and from ISCO-08_draft 3 into ISCO-88 (WageIndicator). Moreover, the sampling and survey modes are different: a random sampled face-to-face survey versus a volunteer web-survey. Taking into account these dissimilarities, the results are satisfactory, though better for the UK than for Poland, with Spain in between. The most striking differences reveal that the *Computing professionals* are largely overrepresented in WageIndicator and that the *Shop, stall and market salespersons and demonstrators* are underrepresented. The former may be explained by this group's self-selection into the web-survey and by growing employment in this sector since 2001. The major lesson learned was that the *shop, stall and market* occupations in the source list needed more detail.

WISCO Database of Occupations

In addition to the eight EurOccupations countries, the WageIndicator Foundation funded translations for Azerbaijan (Azeri), Brazil, Bulgaria, China, Czech Republic, Denmark, Greece, Finland, Hungary, Indonesia, Russia, Slovakia, Sweden, South Korea, Turkey, and Ukraine (Ukrainian). Next, national labour market experts checked translations for countries for which the language was already available or where only minor adaptations of the language were needed, e.g. Angola, Argentina, Azerbaijan, Botswana, Chile, Colombia, India, Malawi, Mexico, Mozambique, Paraguay, South Africa, United States, Zambia, and Zimbabwe. For 2010 translations in India-Hindi, Norway, Romania, the three Baltic States, as well as Cambodia, Nepal, Pakistan, and Sri Lanka are foreseen.

Taking into account the contribution of the WageIndicator Foundation to the occupation database leading to a worldwide coverage, it seemed appropriate to rename the database from EurOccupations database to the World Database of ISCO Occupations (WISCO).

In Summer 2009, the final WISCO Database of Occupations was implemented in the worldwide WageIndicator web-survey for 46 countries, in and outside Europe. Data collection started for some countries as of July 2009, but for most countries as of October 2009.

Data-collectors and academics from all over the world are invited to use and to contribute to the WISCO Database of Occupations. Suggestions for improvements of occupational titles in a particular country/ language are welcomed and so are reflections on the search tree. Additions for new countries/languages are particularly welcomed. The WISCO Database of Occupations is posted on www.wageindicator.org/main/occupation-data-base.

A research agenda for occupations

The social sciences may profit from the WISCO Database of Occupations in many ways. First, when used in multi-country web-surveys, it will increase comparability of the occupation variable across countries. Second, when used in web-surveys with large sample sizes, the detailed occupational titles allow for analyses of sub-samples previously not possible. Third, the database can be used in computer-assisted face-to-face surveys for the occupation question, when the interviewer turns the screen to the respondent. Fourth, the CASCOT software programs for multi-language use allow for automated coding of texts. Finally, the WageIndicator web-survey allows for the worldwide detecting of new and emerging occupations, because after the survey question “What is your occupation?” a follow-up open format question asks if respondents want to add additional information about their occupation. New occupations can be added to the WISCO Database of Occupations, both to the source list or to national lists

The ultimate use of the WISCO Database of Occupations is to collect worldwide survey data on education, training, working conditions, working hours, wages, benefits, and other variables, allowing for a breakdown into highly disaggregated occupations comparable across countries. If this data-collection develops satisfactorily, the data might be used for a research agenda focussing on three objectives. First, to empirically investigate the required skill levels for occupations as well as the tasks performed, aiming to understand cross-country similarities and differences. Second, to empirically investigate occupational dynamics over time, aiming to understand the mechanisms that explain the growth and decline of occupations within and across countries. Third, to empirically investigate the processes of job design and division of work within labour organizations, and particularly in corporate hierarchies, aiming to understand horizontal and vertical occupational demarcation lines.

Occupation web-pages in 2010

Jointly with partner WageIndicator Foundation, the EurOccupations coordinator has developed a plan for 436 occupation pages on the WageIndicator websites, using information from the WISCO Database of Occupations. The Foundation runs frequently visited websites with information on salaries of occupations in a growing number of locations, and will have reached a total of 50 countries by 2010.

The new web-pages will provide landing pages for frequently used search engine terms on wages and occupations. Each country will have 436 pages, one for each 4-digit level ISCO-2008 occupation. Apart from an occupational title, each page will include a job description, a list of tasks, salary and benefits information, information about average educational levels of job holders, a list of nested occupations with links to the WageIndicator Salary Check and questionnaire on work and wages, a list of related occupations for navigating through the pages, information about working conditions and working hours, news, feeds and a poll for testing job content and newly arising tasks. Job descriptions and tasks lists will be available in the major languages, though not in all languages.

Project information EurOccupations

Funding scheme

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Promotion and support for comparative research, methodologies and data generation
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Websites

www.eurooccupations.org

<http://eurocc.icares.com>

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Further reading

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