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EurOccupations: similarity of occupations and skills across countries

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. 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.

EurOccupations aimed to investigate the similarity of occupations across countries, utilising experts on occupations in seven of the eight participating countries. The EurOccupations team undertook great efforts to recruit experts from all countries. More than a thousand experts were recruited from interest organisations and social science research institutions.

Testing similarity through an expert survey

The similarity of occupations has been investigated for 150 occupations, selected from the EurOccupations source list of occupations, using the following criteria:

- variation in skill level and ISCO major groups;
- variation in gender composition (male-dominated, mixed, female-dominated occupations);
- the most frequent occupations (i.e., volume argument);
- 'blurred' occupations (e.g., managers, process operators, waiters).

In order to investigate the similarity of these occupations, unique task descriptions (10-12 tasks) were drafted for each occupation. These task descriptions were developed by means of international desk research, following standardised EurOccupations procedures (De Ruijter et al, 2007). These task descriptions, as well as a brief description of these occupations, were checked and translated by the national partners. Next, a web-survey was designed, discussed in the project team and translated. For each key occupation, a separate routing through the questionnaire was designed in order to measure the relevant task descriptions. The survey had questions concerning:

- the frequency with which the tasks occurred
- the importance of the tasks
- the required skill level of the occupation
- the required competencies
- additional occupational requirements
- employment prospects

The experts were asked to complete the questionnaire for the occupations they had knowledge of. In total, the experts completed 2,949 questionnaires. On average, between 2-3 experts responded per occupation per country. In addition, for a number of occupations the questionnaire was posted on the WageIndicator web-pages in the seven countries, asking jobholders to complete the questionnaire. Here, in total 1,254 questionnaires were completed. Finally, the team members undertook an effort to complete the survey for occupations for which few questionnaires had been completed. This so-called partner questionnaire totalled 251 responses for the United Kingdom and the Netherlands. All collected data is available from the EurOccupations website, thus collating detailed occupational information in the participating countries.

Conclusions on similarity of occupations across countries

The main conclusions about the occupational information on 150 key occupations are:

- The occupational content of the 150 key occupations is fairly similar in the seven countries
- Differences across countries exist with respect to the required educational levels and the occupational requirements
- Judgements of experts within countries differ with respect to the required educational levels of occupations
- Rapidly changing and new occupations vary quite substantially between the seven countries with respect to occupational content, skill level and occupational requirements

The EurOccupations project has shown that occupational boundaries, occupational tasks and job requirements can be made transparent across countries and that experts and policy makers can understand which national occupation they refer to. This transparency is a prerequisite for implementing European level job requirements, such as the European Qualification Framework, or for introducing Skill Cards in various branches of industry. During the EurOccupations conferences in Brussels (2009) and in Marseille (2008), this added value of the EurOccupations project was explicitly recognised by policy makers and experts of interest organisations at the national, European and sectoral level.

This dataset can also be searched via a dedicated tool on the Internet. Per occupation, a dedicated website shows graphs with the frequencies per task across countries: <http://eurocc.icares.com>.

Similarity of tasks and competences in transport occupations

The cluster *transport, logistics, travel & cleaning* included 16 key occupations, for which 344 experts completed a questionnaire. Here, the findings for three occupations are discussed.

For the occupation *long-distance truck driver*, the eleven tasks included: preparing the delivery, driving the lorry, manoeuvring the lorry, checking its technical status, performing minor repairs, loading and unloading, checking the load, maintaining documentation, maintaining logs, reporting to base, and obtaining receipts or collecting payments. The experts were in general agreement that most of these tasks were performed daily. However, loading and unloading was in most countries not done daily, and nor were minor repairs or checking the lorry's technical status.

Regarding the occupation *transport clerk*, similar views were found amongst the 29 experts who rated this occupation. Tasks are very similar across countries, with the exception of Belgium, where only one task occurs daily, namely developing work schedules and other tasks occur less frequently. Competencies concerning problem solving and following instructions and procedures are considered important in the majority of countries.

For the occupation *taxi driver*, again much agreement existed amongst experts, with tasks determined to be very similar across countries. In Germany, however, this occupation comprises two occupations, namely the taxi driver in waged employment and the self-employed taxi driver. In the Netherlands, too, this occupation includes several specializations. For example, driving a taxi for the elderly, handicapped or school children is considered a different occupation to that of taxi driver for the general public. Experts largely agreed

upon the importance of competencies concerning applying knowledge, following instructions and procedures, dealing with contingencies and coping with stressful situations.

Similarity of tasks and competences in IT and banking

Here, 20 occupations in the *IT- and Communication Industries* and 20 in *Finance, Banking, and Insurance* were judged by 350, respectively 241 experts. For most occupations the experts had converging opinions about the tasks. Here, the findings for one occupation are discussed.

A detailed look at the *Database designer* occupation shows the following. The daily tasks include 'Program databases in computer languages such as Structured Query Language (SQL); Testrun databases (weekly in the Netherlands, monthly in UK and Poland); Develop ways to disclose the data for users, for example by programming internet applications (monthly in UK and the Netherlands); Maintain and adapt existing databases following changing needs of users, or changing possibilities in programming (monthly in UK, Netherlands and Poland).' Weekly tasks included 'making reports based on the data in the database' (daily in France and Germany). Yearly tasks included 'drawing up a database structure (logical data model) to meet the needs and expectations of future users' (daily in Spain, France and Germany; monthly in the Netherlands); and 'perform an ICT-project study to assess the feasibility and/or cost of a database' (daily in Spain and Germany). In five out of eight countries experts indicated that providing data for the database is never a task for a database designer.

Important competencies are applying knowledge, professional expertise, problem solving, planning and organising (though opinions vary and some experts did not find this competency at all important for this occupation). Competencies of some importance include initiating action (of major importance in Germany), instructing co-workers (though for some countries experts indicated this was not a required competency), supervising (not at all important in the UK and the Netherlands), co-operating with colleagues, communicating, relating and networking (not at all important in Spain), developing new procedures and working methods (in the UK not at all important), reporting, dealing with contingencies, and commercial thinking (not at all important in Belgium and Spain).

As for the future of the *Database designer* occupation, the majority of experts in all countries expected the incidence of this occupation to increase over the next five years. Some thought it will remain stable, but no single expert expected a decrease.

Similarity of tasks and competences in clerical occupations

For the cluster of occupations in the area of *clerks, staff, management, army and police*, this Policy Brief focuses on the heterogeneity within and across occupations and countries. Variation in the nature of tasks associated with specific occupations is evident across countries. Simple occupations require low entry levels, and here consistency across countries is generally better. For complex occupations, significant variation is evident. EurOccupations data at their most detailed level highlight important differences and enable users to assess the extent of cross-country comparability.

Simple occupations are characterized by the fact that most tasks are predominantly daily tasks, which are highly structured and involve face-to-face customer/client relationships. In complex occupations, the frequency with which tasks are performed as well as the degree of

autonomy varies largely, according to the experts. Variation was found *across* and *within* countries. The required skill level of the *Company Director*, for example, ranged over 5 ISCED levels, while the *Security Guard* ranged over 4 ISCED levels. For the clerical occupations, the UK and the Netherlands show lower ISCED levels than other countries. In fact, the UK shows lower ISCED levels in general, particularly for Trade & Agriculture, and fewer additional formal/legal requirements. In contrast, Germany shows highly organised and prescribed occupations, both regarding the tasks and the entry requirements.

Regarding future employment prospects in this sector, the results revealed that there is some expectation of a decline in lower level, narrowly defined occupations, such as *Post Sorting Clerk*, *Receptionist* and in agricultural occupations also included in this cluster. Conversely, there was some evidence of an expected increase in service occupations, such as *Horse Riding Instructor* and *Hairdresser*. Overall, the responses on this issue were mixed.

Similarity of tasks and competences in construction and cars

Within this cluster, 24 occupations have been investigated, using the data of, on average, 20 experts per occupation. The data shows that educational entry levels vary quite significantly across countries. In the UK, the educational entry levels are relatively low compared to other countries. Additional formal or legal requirements for key occupations in construction and cars are more frequent in the Netherlands, Germany, and Poland.

Regarding the occupation of *house painter*, there was considerable agreement amongst experts, as the tasks are very similar across countries. In Germany and the Netherlands, this occupation comprises several specializations. Competencies concerning communicating, instructing and cooperating are especially important in Netherlands, Germany and Poland.

As for the *roofer* occupation, experts largely agreed that tasks are very similar across countries, although the task 'prepare drawings & specifications of the roof' is only relevant in Spain, France, Germany and Poland, whereas this task never occurs in Belgium, the Netherlands, or the UK. Unanimously, the entry level was judged at ISCED 1 in the UK and ISCED 3 in other countries. The competencies concerning applying know-how/professional expertise and following instructions are important in all countries.

Regarding the occupation *tile setter*, again much agreement existed amongst experts, as the tasks are very similar across countries. Specialised tiling work and repairs and renovation occur more frequently in Spain and Germany. Here again, a lower educational entry level (ISCED 1) can be noticed in the UK compared to the other countries.

As for the *civil engineering technician*, the study showed that the frequency of tasks varies substantially within and between countries. This occupation caused confusion, indicating that the occupational boundaries between *civil engineering technician*, *civil engineer* and *architect* are not clear. The correct occupational titles in this field of work as well as which kinds of task descriptions are appropriate should be subject to further investigation.

For the occupation *First line supervisor*, experts generally agreed that tasks are very similar across countries, with the exception of the frequency of budget preparation. Some variation existed with regards to the importance of certain competencies. In general, however, the task descriptions of the key occupations in the cluster 'construction & cars' were recognised by the experts from all countries, with minor variations between countries in task lists.

Similarity of tasks and competencies in manufacturing

This cluster focussed on food manufacturing (5 occupations), industrial production, manufacture, metal & plastics (12 occupations), and oil, gas, mining, utilities (4 occupations). Across countries, the frequency of most tasks was similar, particularly for tasks that were performed daily. Yet, huge diversity was observed as far as competencies are concerned. In Poland and Germany, many competencies were indicated as important. In Poland, relating and networking was very important even for a machine tool operator or pipe fitter, while in the remaining countries this was not the case. The experts indicated additional tasks in most occupations, and a number of different views could be distinguished.

Regarding the occupation *Aircraft mechanic or service technician*, no unanimity existed. In Germany, the occupation title was too broad, as this occupation exists in three specialisations there: production technology, maintenance, aircraft engine technology. In the United Kingdom, the occupation title itself was problematic - the mechanic is a skilled craft occupation, whereas the technician is an associate professional occupation on a higher skill level. In this country, the expert questionnaire has been completed for the *Aircraft mechanic*.

The data on the occupation *Wood processing plant operator* revealed conflicting competences. In the United Kingdom, the task list confuses different levels and ranges of competence. For example, setting and adjusting cutting devices is part of a technician's job and outside most operative jobs, 'operator' refers, in the UK context, to a person with specific, limited responsibility for setting machines and broad responsibility for initiating and monitoring performance.

The German experts judged the tasks list of the *CNC operator* as outdated, stating that the task list applied more to machine operators than to CNC professionals. As for the occupation *Confectionery maker*, in the UK and Germany a difference between craft and manufacturing had to be distinguished. Also in the UK, the occupation *Pipe fitter* is split into two occupations, specifically, pipe fitters employed in the heating and ventilating industry, and engineering pipe fitters. In the Netherlands and the UK, the task descriptions of the *Power production plant operator* are relevant for the operator in a conventional power station, but for operators in nuclear power stations, additional tasks need to be listed. Similarly, in these two countries the *Welder* is too broadly defined, because it includes great differences between welding metal materials and welding synthetic materials.

In Germany, the occupation *Meat processing machine operator* does not include slaughtering. The same is true of the preparation of carcasses for cutting, cutting carcasses for further processing, separating meat and by-products, and inspecting meat products for defects. Rather, this occupation includes the manufacturing of meat and sausage products.

Similarity of tasks and competences in education

Education, research and personnel is an occupational field highly exposed to cultural, political and administrative criteria. However the results of the expert survey indicate that the content of the occupations is fairly similar across countries. The differences seem to arise mainly from the variety of 'sub-occupations' or types of jobs and from the distinct contexts of the education (mainly the public or private nature of the provision). For example, in Germany, child carers apparently do little planning. In both France and Germany, the activities of planning, organization and conferring with parents seem not to be valued

highly. In other occupations, the differences seem more important. For example, in the UK, Belgium and Spain university occupations show less activity and responsibility in teaching.

Sometimes occupational realities are very specific to one country. For example, in contrast to other countries, in Germany the *Erzieher/innen* (educators) do not only work in the pre-school area, but also with schoolchildren, for example in day homes for schoolchildren or all-day schools. The difference between *Primary school principal* and *Secondary school principal* in Germany is weak, because the occupation *Schulleiter/in - allgemeinbildende Schulen* is common. Sometimes the occupational titles generate misunderstandings. For example, the title *Post secondary education teacher* may suggest employment in higher secondary education in some countries, for example Spain, and in other countries at university level, for example *Enseignant universitaire* in France. The occupational descriptions inevitably contain a degree of subjective definition. Sometimes it is difficult to identify if certain occupational aspects deserve their own definition or must be considered as a part of another occupation. For example, the tasks of the *Speech therapist* differ considerably depending on the area of work, be it hospital facilities, special pedagogic facilities, universities or research centres.

Another issue is that the occupations frequently diversify in two or more dimensions, as occurs with the occupation *University researcher*. The mix between research and teaching objectives in this occupation raises the question whether it is appropriate to recognise the occupation of 'researcher'. On the one hand, the objectives, general methodology and attitudes of researchers are common to a certain degree. On the other hand, there are many specificities resulting from the particular field the researcher is engaged in. In these cases the reality seems to require the consideration of both dimensions. Probably the best way of achieving this is to give the occupational typologies the character of a matrix.

Similarity of tasks and competences in health care

The examination of occupations in this cluster focused on the nursing occupations in hospitals. Three regimes were traced. In the first regime, only skilled nurses were present in hospitals (NL/ Ger/ Poland). In the second regime, nurses and skilled nursing assistants were employed (Fr/ Den/ Belgium/ UK). In the third regime, nurses and skilled and unskilled nursing assistants were employed (US/ UK). A *skilled nurse* supervises nurses and other hospital staff in the unit and consults and coordinates a health care team on a daily basis in all seven countries. A change in the job content towards more financial expertise was evident. Regarding the *nursing aid* occupation, across countries a large variation in required educational level was observed, ranging from ISCED 1 to 5, thus from unskilled to highly skilled. Moreover, the experts indicated an overlap with the caring occupations. According to the task descriptions, nursing aids appear not to be responsible for any medical task, but many perform basic medical procedures such as checking blood pressure, changing dressings, collecting specimens, assisting with rehabilitation, turning bedridden patients, bathing patients, cleaning rooms and sterilizing equipment. In Belgium, Germany, Poland and the Netherlands they also initiate action, develop procedures and strategies, and supervise co-workers.

Project information EurOccupations

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Websites

www.eurooccupations.org

<http://eurocc.icares.com>

www.wageindicator.org

Further reading

De Ruijter, J., E. de Ruijter, K.G. Tijdens and J. Jacobs. 2007. "Web-survey. Formats to classify key occupations, job content, skill level and competency profiles." EurOccupations Deliverable 6

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