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*This documentation refers to the full skills forecast dataset. The data distributed contain only a sub-section of the tables mentioned here. Please, ignore any reference to tables not publically available.*

# Cedefop Skills Forecast Full Dataset

Accompanying the *Country Workbooks* is a database workbook for each country and for each of the three groups of countries (an Excel file) and a SQLite database which contains the data for all of the 33 countries (EU27 + UK, NO, CH, IS, TR and MK). These contain the data presented in the *Country Workbooks* in a raw format. The individual country database files are named 'CountryCode_Database.scenario name.xlsx' (e.g. BE_Database.Base.xlsx). The SQLite database is called 'AllCountries.scenario name.sqlite'.

The database and excel files contain the same data[1] but with slightly different table names as follows:

| Excel sheet name | Database table name | Description |
|---|---|---|
| Info | About | Information about the file and the versions of the source data used |
| Values Lookup | Lookups | A table to decode the variable values used within these database files. It contains the variable name, the value given in the database and the name of each value (see Appendix B for full list description). |
| Supply | Supply | Population and labour force numbers by gender, age band and qualification |
| Demand unconstrained | DemandNC | The unconstrained demand data. Numbers employed by industry, |

[1] Except that the SQLite database contains a country variable in each table.

| | | |
|---|---|---|
| | | occupation and qualification. |
| Demand | Demand | The demand data which has been constrained by the available supply. Numbers employed by industry, occupation and qualification. |
| RD occs original[9] | RdOccs_Original | The replacement demand data provided by ROA. An annual RD proportion projected for a ten year period for each occupation. |
| RD quals original[9] | RdQuals_Original | The replacement demand data provided by ROA. An annual RD proportion projected for a ten year period for each qualification level. |
| RD occs_quals computed | RdOccQuals_Computed | The calculated level of replacement demand by occupation and qualification |
| Unemployment | Unemployment | The calculated level of unemployment |
| Imbalance indicators[2] | OtherIndicators | The imbalance indicators calculated by Ben Kriechel at Economix |
| Other indicators result[9] | OtherIndResult | Used in the calculation of the imbalance indicators |
| Other indicators result[9] wage | OtherIndResultWage | Used in the calculation of the imbalance indicators |

An adjustment variable is found in the Supply and (constrained) Demand tables. The adjusted numbers are the results from the model where we have adjusted the occupation shares (for demand) and qualification shares (for supply) based on feedback from the ICEs.

The database workbooks are the files that feed the Country Workbooks. You have the option in the Manager sheet to select a different database workbook, if, for example, you wanted to look at the results tables for the EU27 or a different scenario (when these are produced in the future).

## Accessing SQL Results with Statistical Software

To access and process results from workbooks statistical software can provide an adequate environment to compare and process further any of the results. It allows to shift between the different levels of aggregation and to calculate further indicators or results.

The SQL database provides the possibility to directly access all results from within one file. This can in some cases be done directly, or by exporting the underlying data-tables in order to extract and potentially combine the data into a format.

One easy way to export the data using freely available tools is by using SQLitebrowser[3] that allows the export in flat CSV files.

[2] These tables aren't available for the aggregate country database workbooks.

[3] The project is hosted at Github: https://github.com/sqlitebrowser/sqlitebrowser

## *Example of code accessing the SQL results*

```
* cdfp-fcst-reader.do
* Cedefop Forecast 2017
* Ben Kriechel
* 2017-08-25

/*
       Takes the CSV files generated from IER SQLite Database
       and calculates all indicators for all countries
       It is presumed that the data are translated into CSV files
       From the database and stored into a subdirectory "data"
*/

* ------------------------------------------
*      Sources
* ------------------------------------------

local data="../data"
local adjustment = 2       /* with country specific adjustments *

* ------------------------------------------
*      Reading CSV files
* ------------------------------------------

              * -------------------------
              * Constraint
              * -------------------------
              insheet using "`data'/Demand.csv", clear

              rename weight UC_demand
              compress
              save "`data'/Demand", replace

              * -------------------------
              * Supply
              * -------------------------
              insheet using "`data'/Supply.csv",  clear

              rename weight supply
              compress
              save "`data'/Supply", replace

              * -------------------------
              * Unconstraint
```

```
            * -------------------------
            insheet using "`data'/DemandNC.csv",  clear

            rename weight C_demand
            compress
            save "`data'/DemandNC", replace

* ----------------------------------------
*      Combine data
* ----------------------------------------

use "`data'/supply", clear

keep if adjustment==2            /* with country specific adjustments */
collapse (sum) supply, by(year country qualification)
save ../data/agr_supply, replace


use "`data'/Demand", clear
keep if adjustment==`adjustment'        /* with country specific adjustments
*/
merge m:1 year country industry occupation qualification using
"`data'/DemandNC"
tab _merge
drop _merge
save "`data'/combined_demand", replace

merge m:1 year country qualification using "`data'/agr_supply"
tab _merge
drop _merge
save "`data'/combined_demand", replace

merge   m:1   year   country   occupation   qualification   using   "`data'/
OtherIndicators"
tab _merge
drop _merge
bys country occupation qualification year: keep if _n==1
save "`data'/combined_data", replace


* ----------------------------------------
*      Adding names to countries &  occupation 1 digit
* ----------------------------------------
use "`data'/combined_data", clear
keep if adjustment == `adjust'
* adding country names & occupation 1 digit
merge m:1 country using `data'/nameEUR33
tab _merge
```

```
capture drop occ10
recode occupation (1 = 0 "Armed Forces") ///
(2/5 = 1 "Legislators, senior officials and managers") ///
(6/11 = 2 "Professionals")  ///
(12/16 = 3 "Technicians and associate professionals") ///
(17/20 = 4 "Clerks") ///
(21/24 = 5 "Service workers and shop and market sales workers") ///
(25/27 = 6 "Skilled agricultural and fishery workers") ///
(28/32 = 7 "Craft and related trades workers") ///
(33/35 = 8 "Plant and machine operators and assemblers") ///
(36/41 = 9 "Elementary occupations") ///
,gen(occ10)

* ----------------------------------------
*      Generate Outputs
*      whatever you prefer …
*      use table, graph, …
* ----------------------------------------

* e.g. a table of the 25th 50th and 75th percentile of the IFIOD
* by country in the year 2025
table country if year==2025, cont(p25 IFIOD p50 IFIOD p75 IFIOD)

* or rather the same one by occupation?
table occupation if year==2025, cont(p25 IFIOD p50 IFIOD p75 IFIOD)

* the median of the demand country and 1-digit occupation
table country occ10, cont(p50 demand)
```

## Data sources

Next to the model input, the main data source is the LFS. This provides detailed information on education and occupation as well gender and age groups. The LFS will also be used as the source of data on educational attainment levels both for those in employment and those in the potential labour force. The published LFS data relate only to very broad ISCED categories. There is a need to assemble more detailed data. For the experimental indicator using field of qualification, we rely on the fixed relation based on the scientific use LFS data (Humburg and Kriechel, 2012).

Data on wages by occupation and qualification level use the information on wage deciles provided within the EU-LFS microdata. We use weighted averages by occupation by qualification. This is extending on the approach described in Kriechel (2014).

## Literature

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# Appendix: Values lookup list

| variable | value | name |
|---|---|---|
| adjustment | 1 | unadjusted |
| adjustment | 2 | adjusted |
| ageband | 1 | 0-14 |
| ageband | 2 | 15-19 |
| ageband | 3 | 20-24 |
| ageband | 4 | 25-29 |
| ageband | 5 | 30-34 |
| ageband | 6 | 35-39 |
| ageband | 7 | 40-44 |
| ageband | 8 | 45-49 |
| ageband | 9 | 50-54 |
| ageband | 10 | 55-59 |
| ageband | 11 | 60-64 |
| ageband | 12 | 65+ |
| country | 1 | Belgium |
| country | 2 | Bulgaria |
| country | 3 | Czech Republic |
| country | 4 | Denmark |
| country | 5 | Germany |
| country | 6 | Estonia |
| country | 7 | Ireland |
| country | 8 | Greece |
| country | 9 | Spain |
| country | 10 | France |
| country | 11 | Croatia |
| country | 12 | Italy |
| country | 13 | Cyprus |
| country | 14 | Latvia |
| country | 15 | Lithuania |
| country | 16 | Luxembourg |
| country | 17 | Hungary |
| country | 18 | Malta |
| country | 19 | Netherlands |
| country | 20 | Austria |
| country | 21 | Poland |
| country | 22 | Portugal |
| country | 23 | Romania |
| country | 24 | Slovenia |
| country | 25 | Slovakia |
| country | 26 | Finland |
| country | 27 | Sweden |

| | | |
|---|---|---|
| country | 28 | United Kingdom |
| country | 29 | Iceland |
| country | 30 | Norway |
| country | 31 | Switzerland |
| country | 32 | Republic of North Macedonia |
| country | 33 | Turkey |
| gender | 1 | Males |
| gender | 2 | Females |
| imbalance indicator | 1 | MC |
| imbalance indicator | 2 | IC |
| imbalance indicator | 3 | ICQ |
| imbalance indicator | 4 | IOE |
| imbalance indicator | 5 | IFIOD |
| imbalance indicator | 6 | IRWEI |
| industry | 1 | Agriculture |
| industry | 2 | Forestry |
| industry | 3 | Fishing |
| industry | 4 | Coal |
| industry | 5 | Oil and Gas |
| industry | 6 | Other mining |
| industry | 7 | Food, Drink & Tobacco |
| industry | 8 | Textiles, Clothing & Leather |
| industry | 9 | Wood and wood products |
| industry | 10 | Paper and paper products |
| industry | 11 | Printing |
| industry | 12 | Manufactured fuels |
| industry | 13 | Other chemicals |
| industry | 14 | Pharmaceuticals |
| industry | 15 | Rubber and plastic products |
| industry | 16 | Non-metallic mineral products |
| industry | 17 | Basic metals |
| industry | 18 | Metal products |
| industry | 19 | Optical & electronic equip |
| industry | 20 | Electrical equipment |
| industry | 21 | Other machinery & equipment |
| industry | 22 | Motor Vehicles |
| industry | 23 | Other Transport Equipment |
| industry | 24 | Manufacturing nes |
| industry | 25 | Repair & installation of machinery |
| industry | 26 | Electricity |
| industry | 27 | Gas, steam & air conditioning |
| industry | 28 | Water supply |
| industry | 29 | Sewerage and waste |
| industry | 30 | Construction |
| industry | 31 | Trade and repair of motor vehicles |
| industry | 32 | Other wholesale trade |

| | | |
|---|---|---|
| industry | 33 | Other retail trade |
| industry | 34 | Land transport |
| industry | 35 | Water Transport |
| industry | 36 | Air Transport |
| industry | 37 | Warehousing |
| industry | 38 | Postal and courier activities |
| industry | 39 | Accommodation & Catering |
| industry | 40 | Publishing activities |
| industry | 41 | Motion picture and broadcasting activities |
| industry | 42 | Telecommunications |
| industry | 43 | Computer programming, info serv |
| industry | 44 | Financial services |
| industry | 45 | Insurance |
| industry | 46 | Auxiliary to financial & insurance activities |
| industry | 47 | Real estate activities |
| industry | 48 | Legal and accounting |
| industry | 49 | Architectural & engineering |
| industry | 50 | Research & Development |
| industry | 51 | Advertising |
| industry | 52 | Other professional activities |
| industry | 53 | Rental and leasing activities |
| industry | 54 | Employment activities |
| industry | 55 | Travel agency, tour operators |
| industry | 56 | Security and office administrative |
| industry | 57 | Public administration and defence |
| industry | 58 | Education |
| industry | 59 | Human health activities |
| industry | 60 | Residential care and social work |
| industry | 61 | Arts and entertainment activities |
| industry | 62 | Sports activities |
| industry | 63 | Membership organisations |
| industry | 64 | Repair of household goods |
| industry | 65 | Other personal service activities |
| industry | 66 | Households as employers of domestic personnel |
| occupation | 1 | Armed forces |
| occupation | 2 | Chief executives, senior officials and legislators |
| occupation | 3 | Administrative and commercial managers |
| occupation | 4 | Production and specialised services managers |
| occupation | 5 | Hospitality, retail and other services managers |
| occupation | 6 | Science and engineering professionals |
| occupation | 7 | Health professionals |
| occupation | 8 | Teaching professionals |
| occupation | 9 | Business and administration professionals |
| occupation | 10 | Information and communications technology professionals |
| occupation | 11 | Legal, social and cultural professionals |

| | | |
|---|---|---|
| occupation | 12 | Science and engineering associate professionals |
| occupation | 13 | Health associate professionals |
| occupation | 14 | Business and administration associate professionals |
| occupation | 15 | Legal, social, cultural and related associate professionals |
| occupation | 16 | Information and communications technicians |
| occupation | 17 | General and keyboard clerks |
| occupation | 18 | Customer services clerks |
| occupation | 19 | Numerical and material recording clerks |
| occupation | 20 | Other clerical support workers |
| occupation | 21 | Personal service workers |
| occupation | 22 | Sales workers |
| occupation | 23 | Personal care workers |
| occupation | 24 | Protective services workers |
| occupation | 25 | Market-oriented skilled agricultural workers |
| occupation | 26 | Market-oriented skilled forestry, fishery and hunting workers |
| occupation | 27 | Subsistence farmers, fishers, hunters and gatherers |
| occupation | 28 | Building and related trades workers, excluding electricians |
| occupation | 29 | Metal, machinery and related trades workers |
| occupation | 30 | Handicraft and printing workers |
| occupation | 31 | Electrical and electronic trades workers |
| occupation | 32 | Food processing, wood working, garment and other craft and related trades |
| occupation | 33 | Stationary plant and machine operators |
| occupation | 34 | Assemblers |
| occupation | 35 | Drivers and mobile plant operators |
| occupation | 36 | Cleaners and helpers |
| occupation | 37 | Agricultural, forestry and fishery labourers |
| occupation | 38 | Labourers in mining, construction, manufacturing and transport |
| occupation | 39 | Food preparation assistants |
| occupation | 40 | Street and related sales and service workers |
| occupation | 41 | Refuse workers and other elementary workers |
| popLF | 1 | Population |
| popLF | 2 | Labour Force |
| qualification | 1 | Low |
| qualification | 2 | Medium |
| qualification | 3 | High |
| qualification | 4 | All |