

Forecasting skill supply and demand in Europe 2013

Session 4:

Measuring potential skills imbalances

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Expert seminar on methodology and new ideas

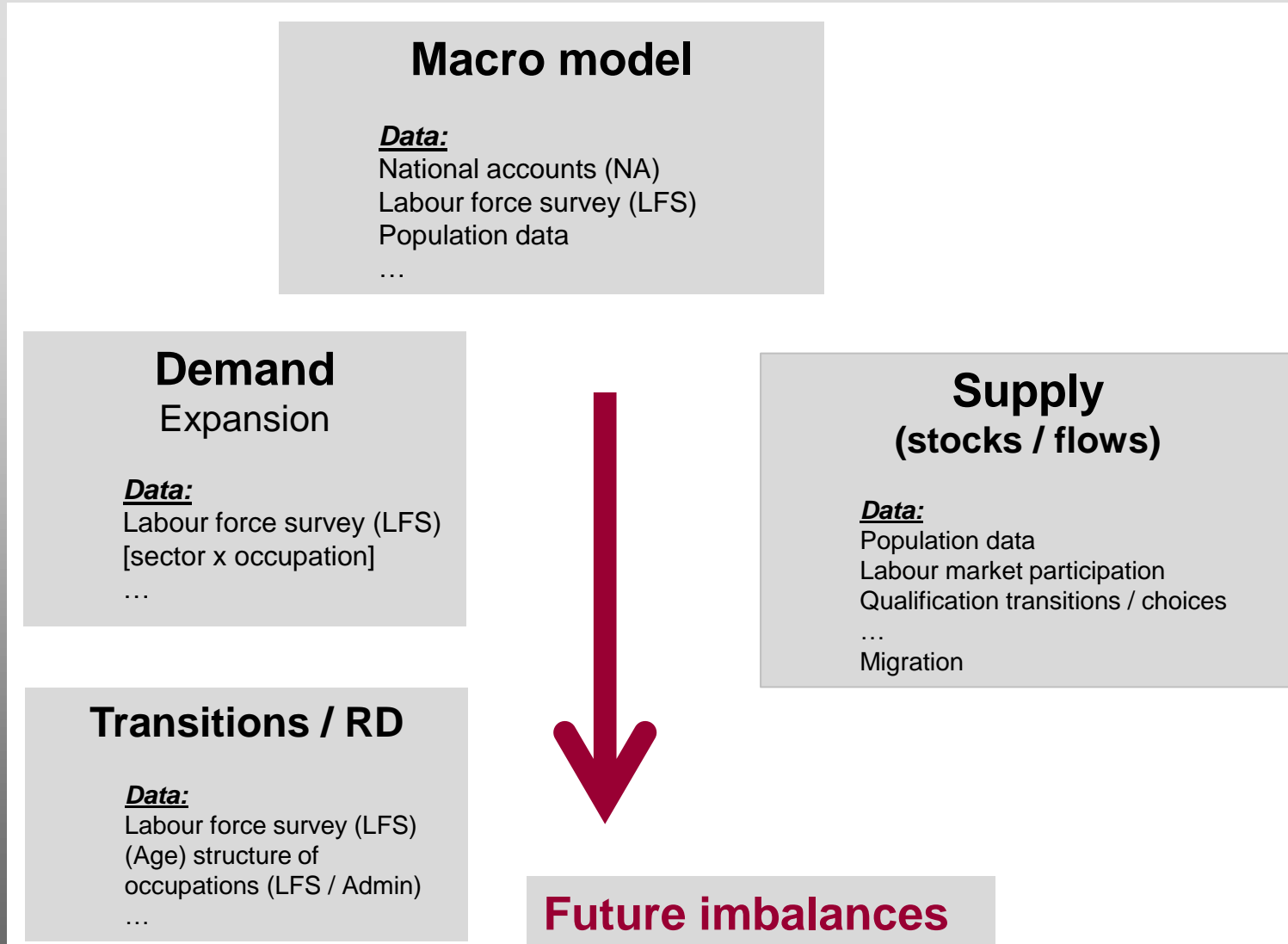
3rd October 2013, Thessaloniki

Imbalance indicators

Imbalance indicators are useful in skills forecasting to:

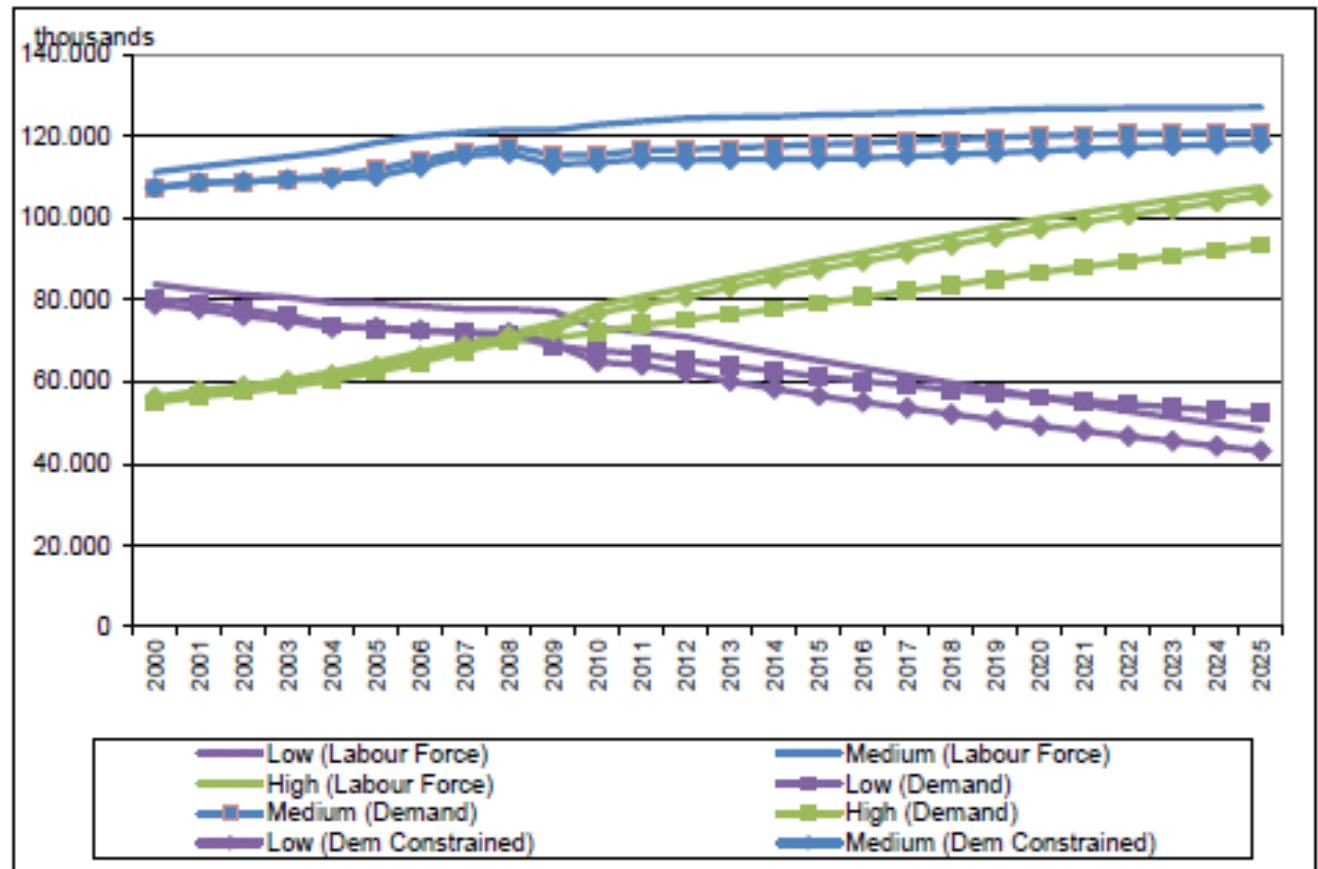
- summarize the degree of imbalances;
- compare across occupations and /or education;
- compare across countries.

A generic quantitative skill forecasting model



Supply – Demand EU33

Figure 1: Overall demand and Supply by Qualification 2000-2020, EU33



Source: Eur33DemandConstrained.BaseC.xlsm

RAS based imbalance indicators

Measure of total change (MC) and Indicator of constraint (IC)

Indicator of constraint (IC)

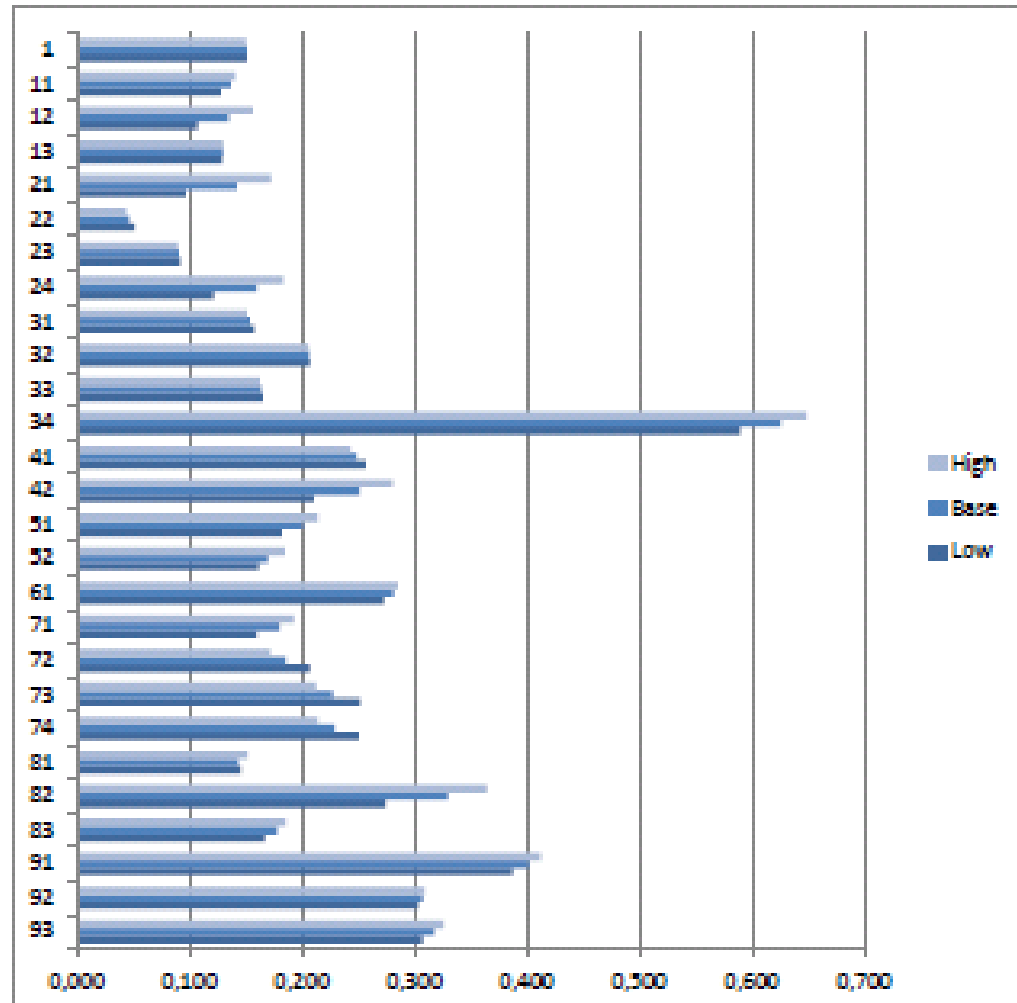
Measures total adjustment across education level to reach the level of constraint demand (D_c) from the unconstraint demand (D_u). High levels of the indicator of change indicate significant adjustment processes necessary.

Measure of change (MC)

Measures total adjustment between constraint demand (D_c) to the base year counts (D_1). It gives the adjustment that is necessary from base year to the forecast.

Measure of change (MC)

Figure 3: Measure of Change (MC) 2010-2020 for low, base and high scenario, EU28



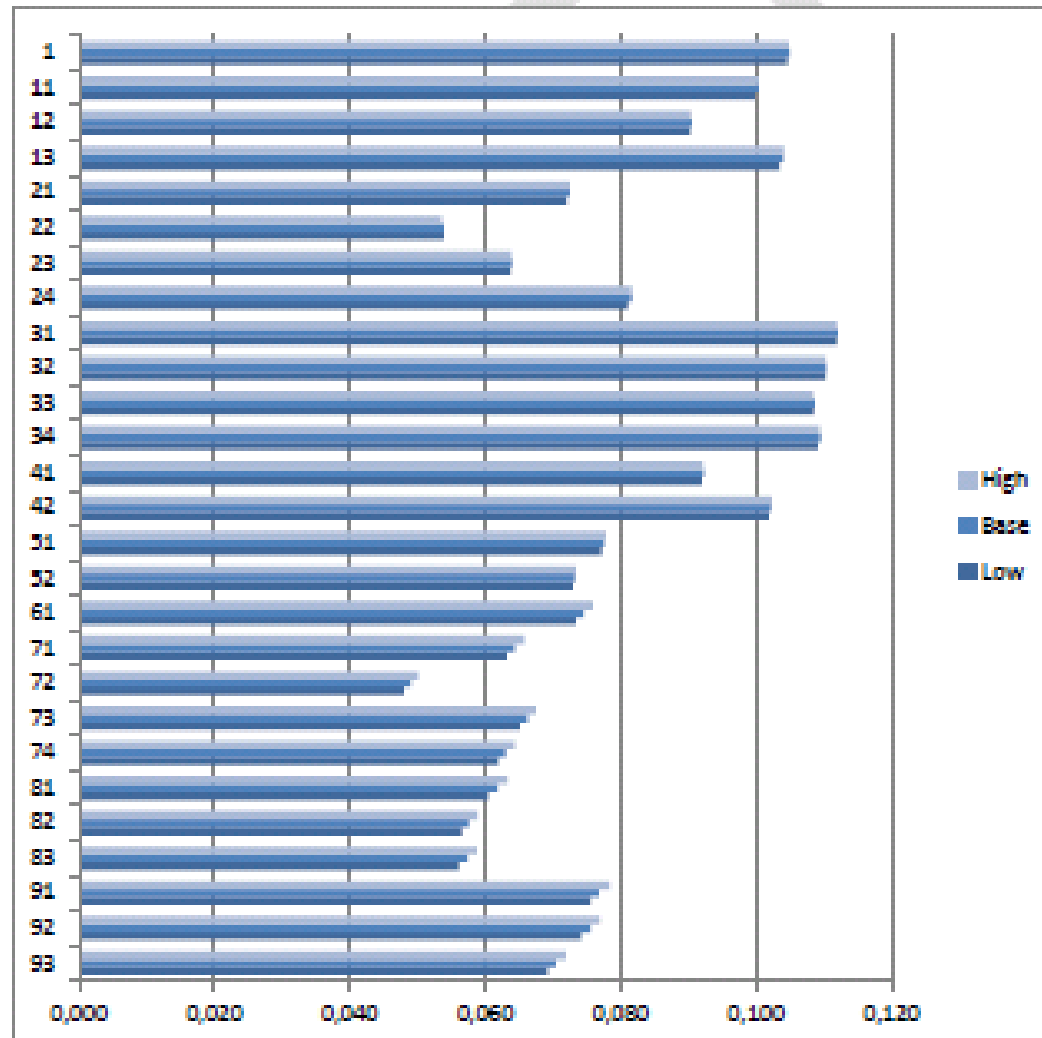
Source: CE, IER, ERC; based on EU28 Base, High and Low scenario

Measure of change (MC)

	AT	BE	BG	CY	CZ
01. Armed forces	0,381	0,261	0,366	0,204	0,189
11. Chief executives, senior officials and legislators	0,154	0,155	0,165	0,112	0,222
12. Administrative and commercial managers	0,095	0,493	0,365	1,023	0,657
13,14. Managers in services	0,418	0,217	0,203	0,578	0,207
21. Science and engineering professionals	0,678	0,106	0,178	0,162	0,018
22. Health professionals	0,107	0,064	0,110	0,120	0,132

Indicator of constraint (IC)

Figure 4: Indicator of Constraint 2010-2020 for low, base and high scenario, EU28



Source: CE, IER, ERC; based on EU28 Base, High and Low scenario.

Indicator of constraint (IC)

	DE	IT	LT	NL
23. Teaching professionals	0,082	0,126	0,101	0,060
24,25,26. Business and other professionals	0,092	0,122	0,261	0,080
31,35. Science and engineering associate professionals	0,092	0,102	0,417	0,118
32. Health associate professionals	0,106	0,126	0,153	0,107
33. Business and administration associate professionals	0,091	0,119	0,562	0,134

IFIOD

Indicator of future imbalances of demand

The indicator takes imbalance of supply and demand of the underlying education types in an occupation to determine a measure of “difficulties” in hiring workers of a specific type in the future.

$$p_{if} = \min \left(1, \frac{\text{supply}_{if}}{\text{demand}_{if}} \right)$$

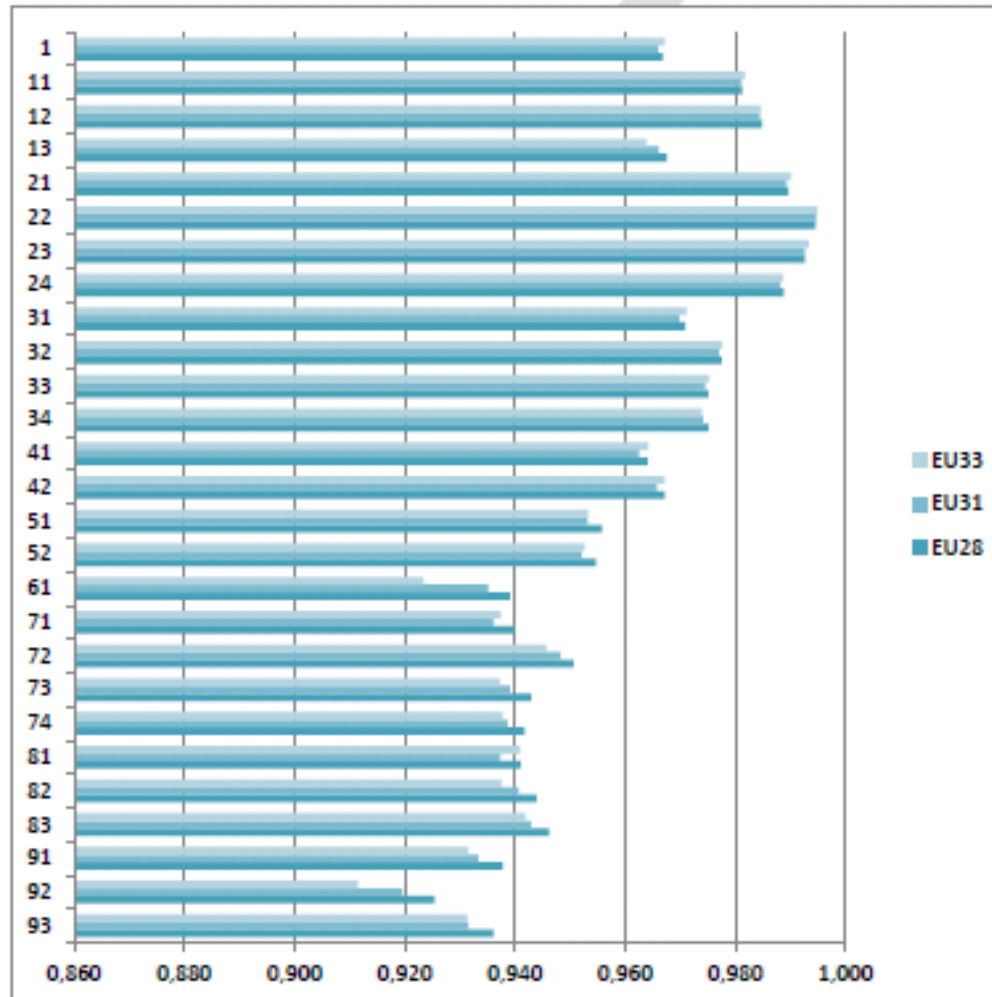
$$IFIOD_j = \frac{\sum_i p_i x_{ij,t-1}}{\sum_i x_{ij,t-1}}$$

$$0 \leq IFIOD_j \leq 1$$

$$IFIOD_j = \frac{\sum_i \sum_f p_{if} x_{ifj,t-1}}{\sum_i \sum_f x_{ifj,t-1}}$$

IFIOD for EU28

Figure 5: Indicator of future imbalances of demand (IFIOD) 2010-2020 for EU33, EU31 and EU28



Source: CE, IER, ERC; based on EU28, EU31 and EU33, base Imbalance workbook

Extending IFIOD

Fields of Qualification

The indicator takes imbalance of supply and demand of the underlying education types in an occupation to determine a measure of “difficulties” in hiring workers of a specific type in the future.

Relative wage position of occupation

The indicator takes imbalance of supply and demand of the underlying education types in an occupation to determine a measure of “difficulties” in hiring workers of a specific type in the future.

Extending IFIOD

Slovakia, 2010-20; IFIOD including fields of qualification.



Source: Imbalances country workbook, Slovakia, Base scenario, 9/2013

Extending IFIOD with wages

Spain, 2010-20; IFIOD versus IRWEI

Spain	IFIOD	IRWEI
81. Stationary plant and machine operators	0,944	0,957
75. Food processing, wood working, garment and other craft and related trades	0,946	0,960
73. Handicraft and printing workers	0,928	0,921
41,43,44. General office clerks	0,916	0,906
34. Legal, social, cultural and related associate professionals	0,909	0,906

Source: Imbalances country workbook, Spain, Base scenario, 9/2013

Taking stock

- Adjustment needed to solve imbalances by numbers;
- RAS procedure gives (implicit) weights to status quo in order to solve future imbalances;
- Indicator of future imbalances by occupation (IFIOD) 'distributes' shortages by skill (level) across occupations by the weight they use.

Taking stock II: Underlying processes

- Adjustments might not be feasible;
- Substitution processes can run across levels or within levels;
- Having sufficiently high educated might not solve a shortage in teachers, medical personnel, engineers.
- Combining fields and education level might overcome some of this.
- Including wage information makes the reallocation more realistic.

But:

- No consistent estimate of supply by fields

Conclusions

- Modeling imbalances should include as much information as possible and mimic the economic processes on the labour market.
- Indicators help in summarizing and comparing outcomes across various dimensions (occupation, country, etc.)
- Summarizing imbalances should include the important information that is needed for policy action;
- Fields of education can be a crucial information in measuring imbalances;
 - Future work should include fields and extrapolate future field-related trends in recruitment and enrolment.
- Wage information can include information on imbalances and means to reallocate scarce qualifications.

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