



Researchcentrum voor Onderwijs
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Medium-term forecasts of skill supply in Europe: an overview

Rob Wilson

Medium-term forecast of skills supply in
Europe: interim results

SKILLSNET TECHNICAL WORKSHOP

11-12 December, Cambridge , UK

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Overview

- **The Team (CE, IER & ROA)**
- **Aims and approach**
- **Data sources**
- **The main elements**
- **Draft final results**

Aims & General Approach

- **Aims: Consistent Pan-European skills supply projections using existing data**
- **Skills measured by qualifications**
- **Linked and consistent with previous projections of skills demand (which focused on occupations as well as qualifications)**



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**Labour supply forecast by age
and gender – E3ME**

**Labour supply forecast
of *population* by
qualification (stocks)**

**Labour supply forecast
of *graduates* by
qualification (flows)**

**Feedback from individual country experts and Cedefop;
comparisons with demand side projections**

Final report

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Role of the E3ME model in the project

- To provide the link between economic developments and overall labour supply
- This forms a key input to modelling and projecting the supply of skills
- Also provides a link with the demand side projections produced in the earlier Cedefop project

Description of E3ME

- **Econometric model**
 - covers EU27 + Norway and Switzerland
 - based on the system of national accounts
 - detailed sectoral disaggregation
 - long and short term specification
- For more details see www.e3me.com

Data Sources

- Eurostat National Accounts data
- OECD Structural Analysis (STAN)
- Eurostat Labour Force Survey
- Other
 - AMECO database
 - national statistical agencies
- Model parameters are estimated on time series covering 1970-2007
 - 1993-2007 for New Members

Model Enhancements

- Labour supply previously modelled for just for total male and female populations
- This has now been further disaggregated into age groups
- E3ME's equations modified to take into account factors relevant to particular age groups, such as hours worked, unemployment, measures of benefits and qualification mix

Forecasting Overall Labour Supply

- Population projections to match Eurostat baseline
- Economic forecast to match EC publication
- Labour participation rates are modelled as a function of:
 - cyclical indicators (output)
 - average wage rates
 - unemployment rate
 - benefit rates
 - qualifications held
 - economic structure (services / manufacturing)
- Initial forecasts discussed with individual country experts before being finalised
- Two scenarios run to test key sensitivities



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Forecasting labour supply of by qualification

- Predicting the distribution of people in the total population and labour force by qualification;
- Ideally need a detailed and comprehensive stock flow model, with behavioural links;
- In practice what is feasible is currently more limited due to lack of a full set of demographic accounts
- Two main strands:
 1. Focus on Stocks of people by 3 broad qualification levels (high, medium and low);
 2. Flows of those undertaking courses and acquiring qualifications

Stock models

- Propensity of a representative individual to obtain a level of highest qualification
- Use of Labour Force Survey (LFS) micro data; &
- alternative approaches based on aggregate data
- Both using data from the Eurostat version of the LFS

Multi-logit method

- **Multinomial logistic regression model, estimated using micro data on individuals;**
- **Focus on probability of attaining certain qualifications levels**
- **Independent variables:**
 - **age**
 - **gender**
 - **time trends differentiated by country**

Alternative methods for stocks

- **Analysis of aggregate data;**
- **Simple linear or non linear extarploations of historical patters differentiated by country**

Data issues

- Use of LFS microdata for EU-27 (plus Norway and Switzerland)
- Problems of consistency (over time and across countries, especially for more detailed categories)
- Therefore focus on 3 broad levels of qualification:
 - low: ISCED 1, 2, 3C
 - intermediate: ISCED 3,4
 - high: ISCED 5,6



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Forecasting labour supply of graduates by qualification

- **Participation ratio method, focusing on Flows**
- **Predictions of:**
 - **Flows through the education system**
 - **Transitions from education to the labour market; attainment & qualifications**
- **Complementary to focus on stocks**

Similar data issues

- **EU-27 (plus Norway and Switzerland)**
- **Three levels of qualification:**
 - **low: ISCED 1, 2, 3C**
 - **intermediate: ISCED 3,4**
 - **high: ISCED 5,6**
- **Fields of education whenever possible**
- **Aggregate data 1998-2005:
Unesco/OECD/Eurostat**

Graduation rates

- **Two broad age groups: 15-19 and 20-24 years old**
- **‘Estimation’ of trends in graduation rates per country and education**
- **Use of E3ME population forecasts**
- **Check with stock forecasts**



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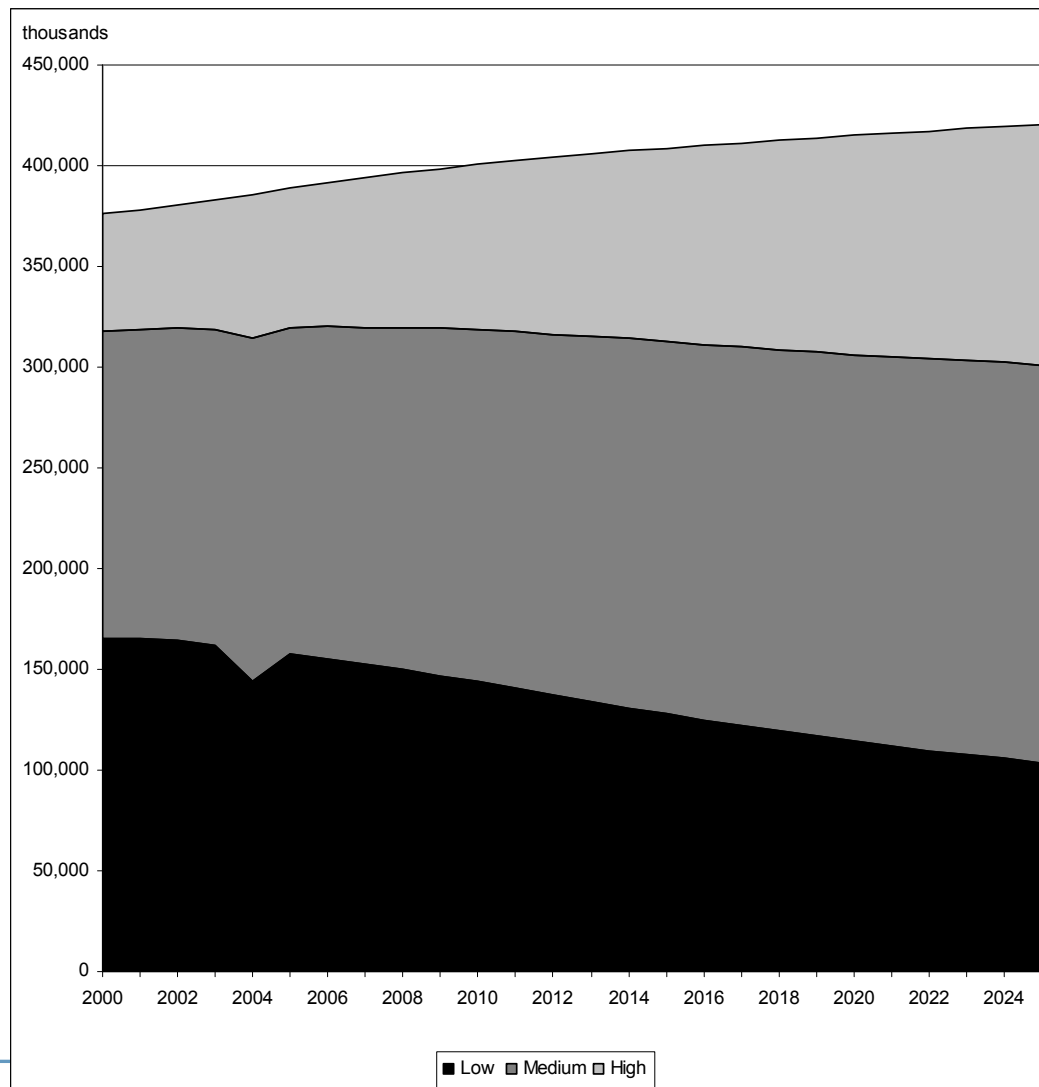
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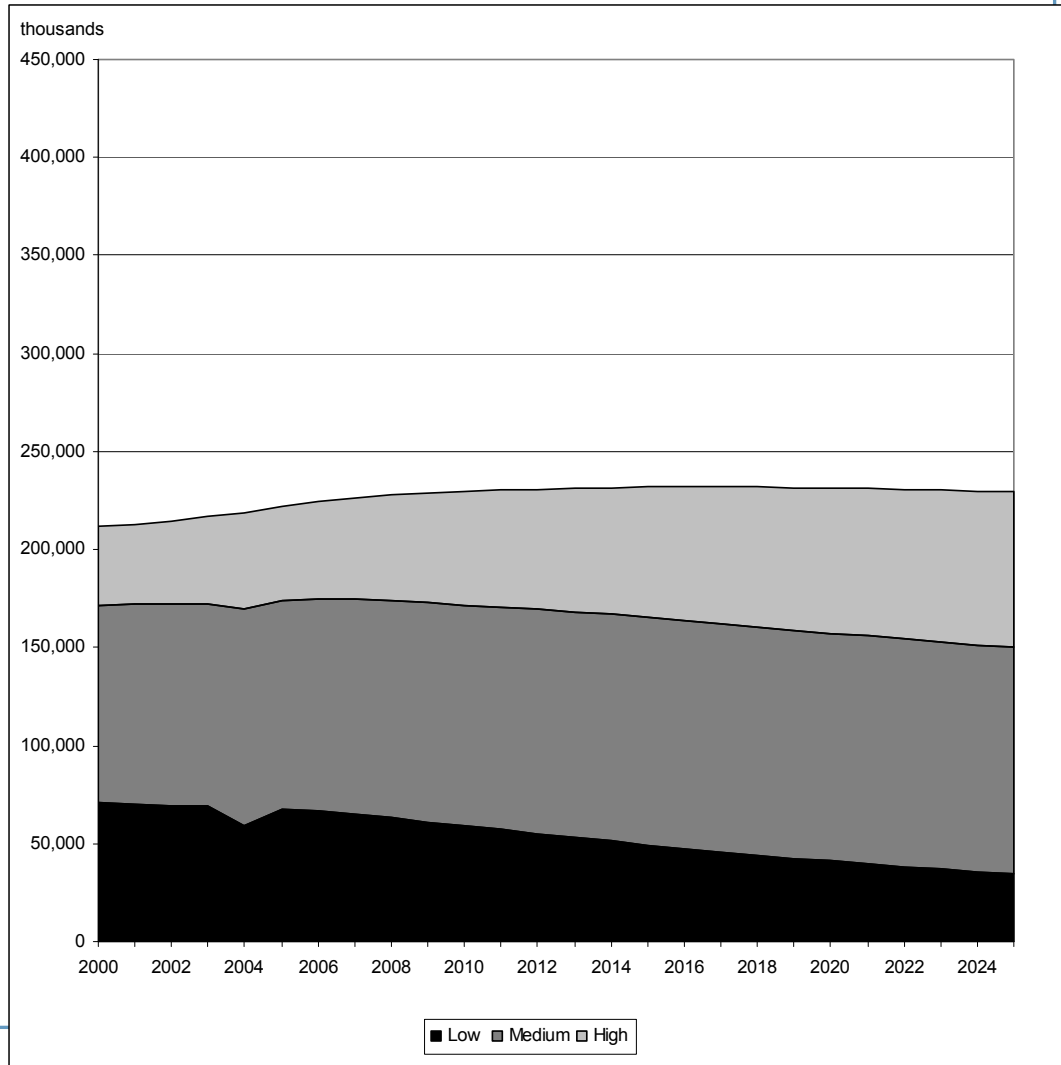


Overview of Results: Population

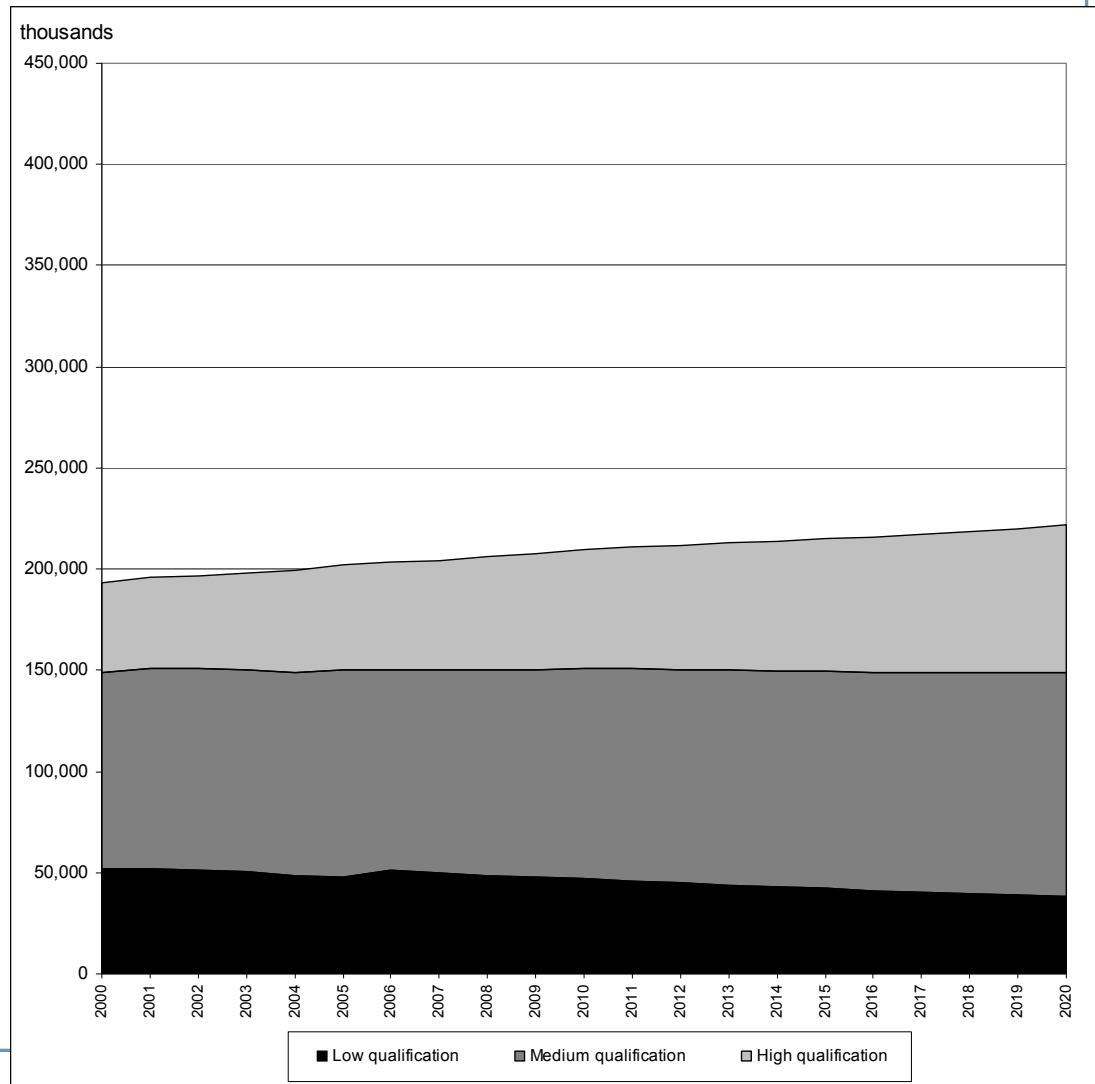
- **Greece**



Labour force:



Employment



Imbalances

	The Sort model	Year:	2020			(Eur27+2)
					Supply	
	Demand	Supply	Unemployment	Supply in	Constrained	Ratio of
	(employment)	(labour force)		Employment	Totals	D/S
Totals	231,009	231,446	16,058	215,388	231,009	1.000
ISCED 1-2	42,751	41,041	5,938	35,102	37,648	1.136
ISCED 1-2	115,423	116,376	7,890	108,487	116,355	0.992
ISECD 5-6	72,835	74,029	2,230	71,799	77,006	0.946

Over and under qualification?

Illustrative imbalances	(demand/supply)		
	ISCED 1-2	ISCED 3-4	ISCED 5-6
All occupations	1.136	0.992	0.946
Armed forces	1.136	0.992	0.946
Legislators, senior officials and managers	1.136	0.992	0.946
Professionals	1.136	0.992	0.946
Technicians and associate professionals	1.136	0.992	0.946
Clerks	1.136	0.992	0.946
Service workers and shop and market sales	1.136	0.992	0.946
Skilled agricultural and fishery workers	1.136	0.992	0.946
Craft and related trades workers	1.136	0.992	0.946
Plant and machine operators and assemblers	1.136	0.992	0.946
Elementary occupations	1.136	0.992	0.946



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Feedback and Consultation

- From individual country experts & Cedefop on:
 - General approach
 - Data and trends (especially for individual countries)
- Comparisons with demand side projections
 - thoughts on measuring imbalances

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“Draft Final Results”: General Issues

- **New “benchmark” macro supply scenarios (linked to previous demand ones)**
- **Overall labour supply by gender and age for each country**
- **Supply of skills (focus on stocks and flows)**
- **Draft final results**
- **Final opportunity for comment in this round**

Key similarities and differences across countries

- **Many common trends:**
- **Increase in high level decrease in low level qualifications**
- **Concerns about consistency of data over time and across country – need for further refinement**
- **Some differences:**
- **Stage of economic development?**

Conclusions

- Consistent and comprehensive projections for Eur27
- Data problems: need to refine basic data
- The *Framework* and modular approach offers a sound foundation for further development

Future research priorities

- Continuing dialogue- importance of individual country expert input
- Outstanding data problems: need to refine basic data on employment by industry, occupation and qualification as well as on supply side
- Scope for further refinement in modelling (both demand and supply side initiatives)
- **Drawing in other funding**

Timetable for completion of the present project

- **Following final comments, finalise results**
- **Complete report by end of January**
- **Final results to be published at a Cedefop AGORA event, in the spring of 2009).**



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