New Developments for French Occupational Outlooks

Cambridge Econometrics’ E3ME Macro-econometric Model

Quantitative and qualitative methods used for employment projections

Rachel Beaven, Director
International Expert Workshop, France Stratégie
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Quantitative and qualitative methods used for employment projections

• The rationale for making quantified projections of employment and skills
• Cambridge Econometrics’ E3ME macro-econometric model
  – the production of Cedefop’s skills supply and demand forecasts
• Scenario analyses to investigate uncertainties
The rationale for making projections of employment and skills

- Identify labour market trends and skills shortages
- Inform policy and planning for the provision of education and training
- Inform active labour market policies to retrain the unemployed or reintegrate individuals who are economically inactive
- Improve the information available to guide the decisions of those making investments in human capital and career choices
- Better match labour market needs and skills supply
Cedefop’s skills supply and demand forecasts

• Original methodology for Cedefop’s skills supply and demand forecasts was developed in mid-2000s
• Our consortium developed the original methodology and has delivered the forecasts under four successive contracts since 2006
• A quantitative modelling framework…
• …supplemented by qualitative judgement through validation by Skillsnet experts
Quantitative modelling framework

**Module 1:** Multi-sectoral macro-econometric model (E3ME)
- Economic activity
- Wage rates
- Employment
- Labour market participation rates
- Active labour force
- Benefit rates
- Unemployment

**Supply of skills**
- **Module 5:** Stocks of people by qualifications, 3 ISCED levels & by economic status (STOCKMOD)
- **Module 6:** Stocks & Flow numbers by ISCED category (STOCKFLOWMOD)
- Numbers in the population by ISCED category
- Numbers in the labour force by ISCED category

**Demand for skills**
- **Module 2:** Employment levels and Expansion Demand by occupation (EDMOD)
- **Module 3:** Employment levels and Expansion Demand by qualification (QUALMOD)
- **Module 4:** Replacement demand by occupation / qualification (RDMOD)
- Job openings by Qualification (ISCED category)
- Job openings by Occupation (ISCO 2 digit)

**Module 7:** Imbalances (Supply-Demand), 3 ISCED levels (BALMOD)

**Module 8:** Occupational Skills Profiles (OSPs)
The outputs delivered

<table>
<thead>
<tr>
<th>Skills demand</th>
<th>Skills supply</th>
<th>Mismatch and imbalances</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Sector /industry (41 NACE Rev 2 industries)</td>
<td>• Age group (5-year age bands starting from 15-19 until 65+)</td>
<td>• Unemployment by country and qualification level</td>
</tr>
<tr>
<td>• Occupation (one and two-digit level ISCO08 occupational groups)</td>
<td>• Gender</td>
<td>• Imbalance indicators (indicators focussing on the reconciliation of the demand and supply measures by highest qualification level)</td>
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<tr>
<td>• Qualifications (3 broad ISCED qualification/education levels)</td>
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<tr>
<td>• “Expansion” demands</td>
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<td>• “Replacement” demands</td>
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<td>• “Total Net Requirements”</td>
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</tbody>
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A common and consistent economy-wide overview of skill needs, allowing detailed comparisons across countries and sectors
The E3ME macro-econometric model

- Computer-based model of the world’s economic, energy and the environment system
- Based on an accounting framework and designed for projections for business and policy analysis
- Collection of stochastic behavioural equations and accounting identities
- Macro-econometric model based on a post-Keynesian framework
  - institutional behaviour (e.g. of an industry) is specific to a region over a time period
  - demand-led: consumer demand made effective by income
  - optimisation not assumed, no general equilibrium
E3ME - the treatment of the labour market

• Labour markets
  – disaggregated by industry and region with interactions across industries and regions in wage equations

• Labour demand
  – derived from demand for goods and services
  – Number of jobs determined by output, costs of labour relative to value of output produced, unemployment and benefit rates

• Labour supply
  – derived from working age population and participation rates by gender (in turn affected by regional unemployment)

• Wage rates
  – set in an employer-union bargaining model adapted to industry-region labour markets
Scenario analysis to investigate uncertainties

- It is best practice to use a multi-sectoral macroeconomic model for employment projections
  - captures secondary impacts (often termed *multiplier effects*)
  - links developments in labour market to economic, technological and social trends
  - provides a systematic framework to examine alternative assumptions about key economic, technological and social trends

- Cedefop’s skills supply and demand forecasts
  - baseline forecast consistent with Eurostat demographic projections and DG ECFIN macroeconomic projections
  - sensitivity analyses using alternative macroeconomic assumptions
  - scenario of increased labour market participation and migratory flow across member states
Other examples of E3ME analyses

• Impacts of macroeconomic drivers and policy changes
  – R&D and innovation
  – fiscal policy, tax reform
  – trade agreements
  – resource efficiency

• Assess the feasibility of a European unemployment and benefit scheme

• Estimate the impacts of increased gender equality

• Green jobs – the employment consequences of policies to achieve key EU environmental targets
Summary

• The rationale and methods for making quantified projections of employment and skills are now well established

• The projections provide evidence to help improve the match between labour market needs and skills supply

• Ongoing developments are required
  – to better meet the needs of users, for example: measuring jobs and skills; communicating the results and their value
  – to adapt to and measure the changing nature of the labour market
Cambridge Econometrics

• Offices in Cambridge and Brussels
• Rigorous, independent economic modelling to deliver practical insights based on evidence
• www.camecon.com/how/e3me-model
• www.camecon.com/how/our-work
• Rachel Beaven
  – rb@camecon.com
  – +44(0)1223 533100