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# An OECD Take on Measuring Skill Needs

Glenda Quintini

Senior Economist

OECD Directorate for Employment Labour and Social Affairs  
Employment Analysis and Policy division



# What use for skills requirements data

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- Identify a broader range of skills that are attracting either a premium or a penalty in the labour market
- Source of occupational information for career counsellors and students to understand education and training requirements and other job demands;
- Study changes in skill requirements over time:
  - Skill demands are changing rapidly in response to technological change and globalisation
  - But only a limited range of skills – albeit important ones – can be measured by direct assessment
- More precise characterisation of low-skilled and high-skilled jobs
  - Or to compare skill requirements between jobs (job transition analysis)
- Assess differences in skill requirement across countries
- Develop measures of mismatch between job requirements and education and skills endowments of the labour force
- Improve understanding of the links between skills and:
  - Labour market outcomes
  - Work organisation
  - Education/training systems



# The task-based approach of measuring skill requirements

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- Asks workers about the actual activities involved in performing their job (typically, importance and/or frequency)
- Takes into consideration work duties, responsibilities and functions
- Skill requirement indices are derived aggregating tasks with Item Response Theory or just Cronbach's Alpha (sum scales)

Main criticism: asks workers not employers

- Some evidence of systematically different perceptions between managers and workforce about skills required in jobs
  - Burchell et al. (1994) for UK: managers attributed less organisational skills and discretion than workers did
  - Stasz et al. (1996) for US: managers do not understand requirements for generic skills, they are better informed on academic skills
- Green and James (2003) run small survey to verify how perceptions differ and find a reasonable match for most skills, particularly when line manager interviewed, although little agreement on autonomy and small perception bias from employees



# Data sources

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- Several national surveys have used the JRA method (e.g. O\*NET in the US, UK Skills Survey, Italian Organisation, Learning and Competences Survey, Canadian Essential Skills Survey)
- Until now OECD has used O\*NET to assess changes in skills requirements over time
- Forthcoming PIAAC will be first international survey to use the Job Requirement Assessment (JRA) approach



# O\*NET: strength and limitations

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- Comprehensive survey of 239 items on:
  - Education and training
  - Knowledge, skills, abilities and work activities
  - Work context
  - Work styles
- Eight surveys:
  - Seven surveys to employees (employees do not answer all but only subset)
  - One survey to job analysts (more abstract questions)
- Mostly 2-part questions on importance and level of tasks
- Occupation-focused:
  - Assumes within occupation variation across jobs is spurious
  - Individual responses not available to public
- Next O\*NET dataset in 2013 (key for within occupation changes in skill requirements)



# OECD Work on Skills Demand using O\*NET

“Trends in Jobs Skill Demands in OECD Countries” by Michael Handel  
(SEM WP 143, 2012)

- Validates the use of O\*NET for other countries
  - Correlations with UK Skills Survey, Canadian Essential Skills Survey, European Survey of Working Conditions and International Social Survey Programme)
- Defines skill measures using sum scales:
  - Required education
  - Math requirements
  - Verbal requirements
  - General cognitive demands
  - People skills
  - Craft skills
  - Gross physical requirements
  - Repetitive motions
- Assesses changes in Job Skills Demands based on changes in occupation shares



# Changes in skill requirements over time

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# Changes in skill requirements over time: results

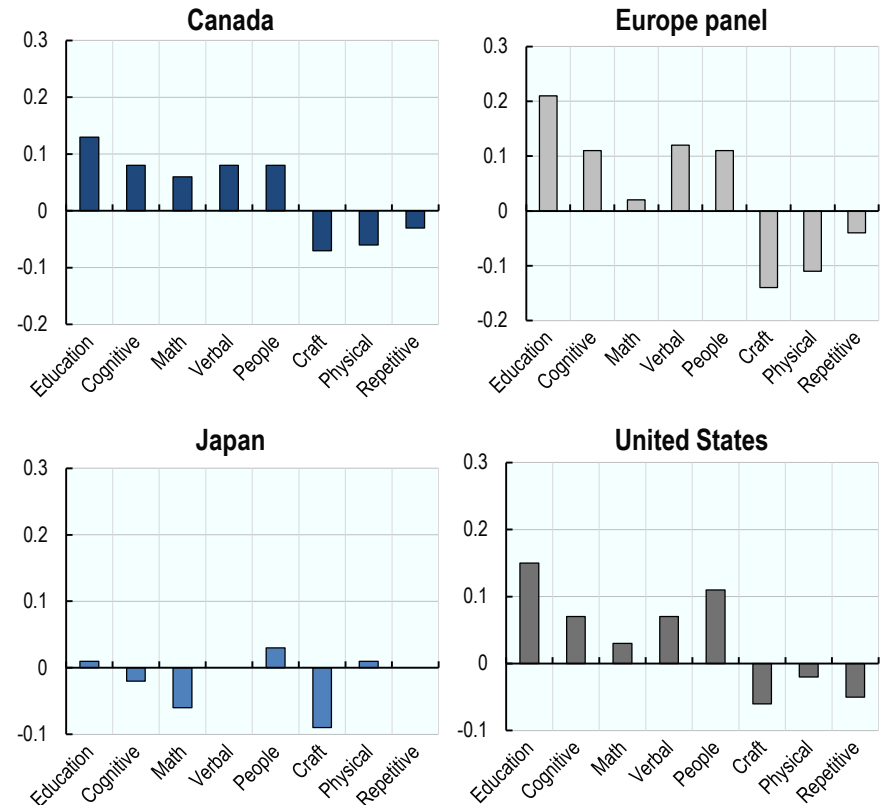
## Mean job skill demands for US and a panel of European countries using O\*NET skill measures, 1997-2009

*Change in scores in 1997-2009*

➤ Both in US and Europe, trend towards post-industrial society involves rising demand for both cognitive and interpersonal skills and declining demand for both skilled and unskilled physical tasks

➤ Chart implies it would take 80 years for job education requirements to rise by 1 year and for cognitive and verbal skill demands to rise by 0.5 std

➤ With within-occupation changes as large as between changes, it would take 40 years – if twice as large, 27 years



*Note:* Education is measured in years, the variables “cognitive” through “physical” are in standard deviation units with respect to U.S. means in 1992, and “repetitive” is measured on a 5-point frequency scale (see Handel, 2012 for details).

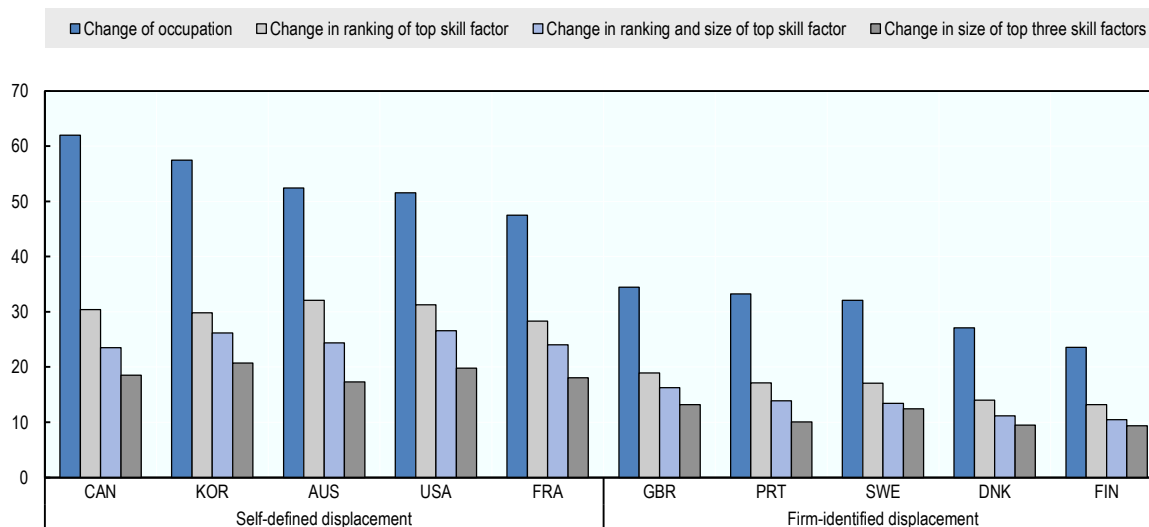


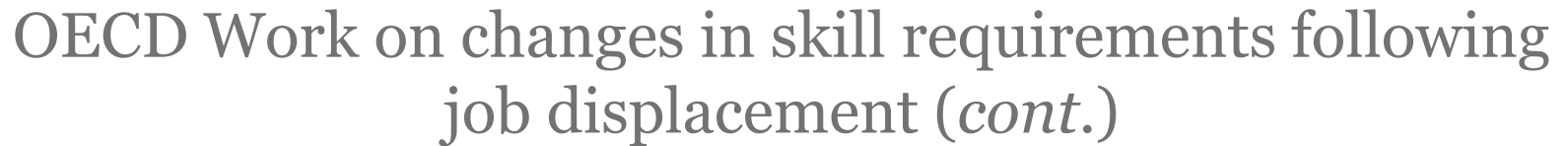
# OECD Work on changes in skill requirements following job displacement using O\*NET

- Looks at skill requirements before and after displacement (dismissal for economic reasons – e.g. mass dismissal, firm closure and individual dismissal for economic reasons)
- Uses skill requirements from Handel (2013) adapted to 2-digit level ISCO88
- Develops measures of distance between jobs in terms of skills, based on ranking (two positions) and/or intensity of use (half standard deviation):

**Share of re-employed displaced workers who experience a change in skills set**

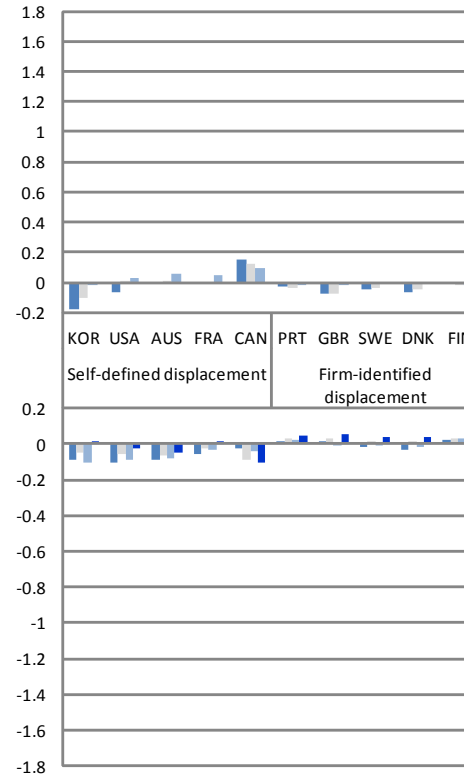
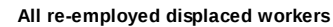
percentages





- ## Changes in skills use following displacement, 2000-2010

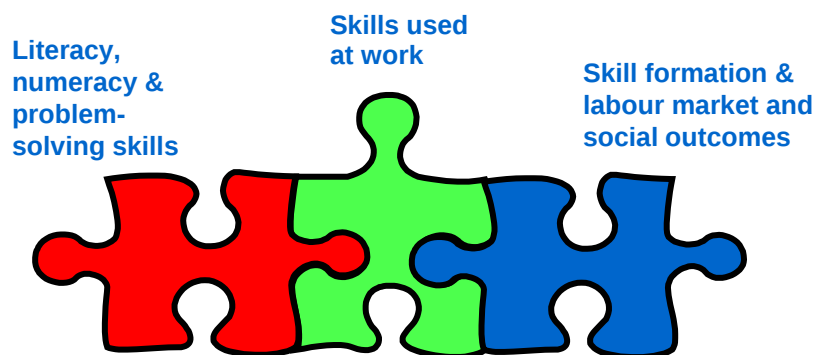
### Displaced workers suffering professional down-grading





# *The OECD Programme for the International Assessment of Adult Competencies (PIAAC): a new window on adult skills*

- ✓ Household-based survey of population 16-65 (minimum of 5000 respondents per country) to be held in 2011-2012
- ✓ 24 (mainly OECD) countries participating



PIAAC extends and improve on the work of previous international surveys of adult skills by:

- Expanding direct assessment to problem-solving skills in context of IT and component literacy skills
- **Extending skill measures to broader range of skills used at work**
- **Tightening focus on links between skills and labour market outcomes**
  - Determine importance of “soft” skills
- Measuring comparably both formal and less formal training and barriers to training



# PIAAC: the JRA module

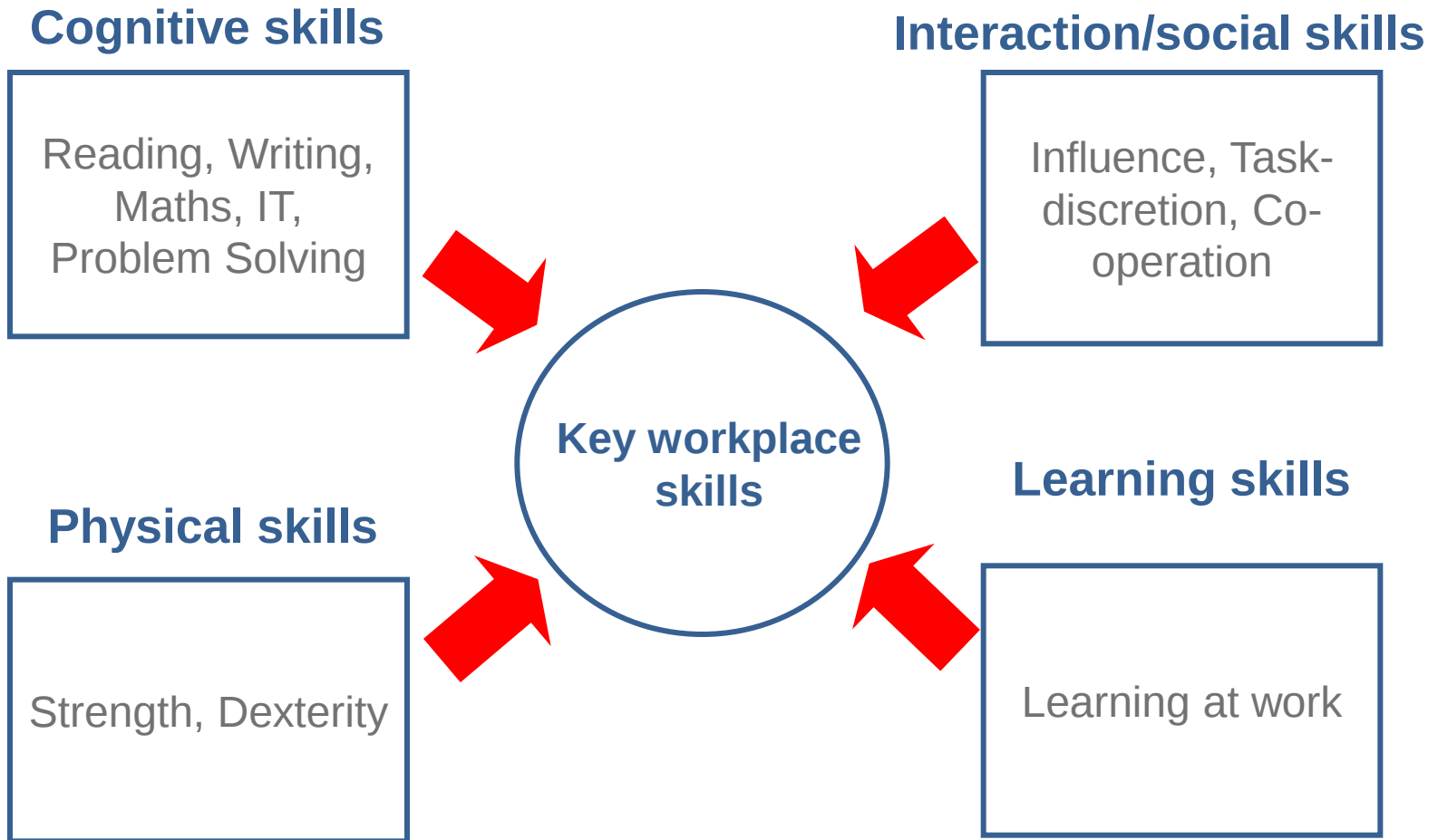
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## What does the JRA measure and how?

- The JRA is designed to measure job demands for a wide range of broad and generic skills
- It is based on self-assessment by workers of the importance of specific job requirements (measured as the frequency with which tasks and activities are carried out in their jobs)
  - E.g. How often a worker interacts with clients or performs various reading tasks
- The JRA module in PIAAC breaks new ground by providing an extensive and internationally comparable set of measures of skill use in the workplace



# Generic workplace skills covered by PLAAC





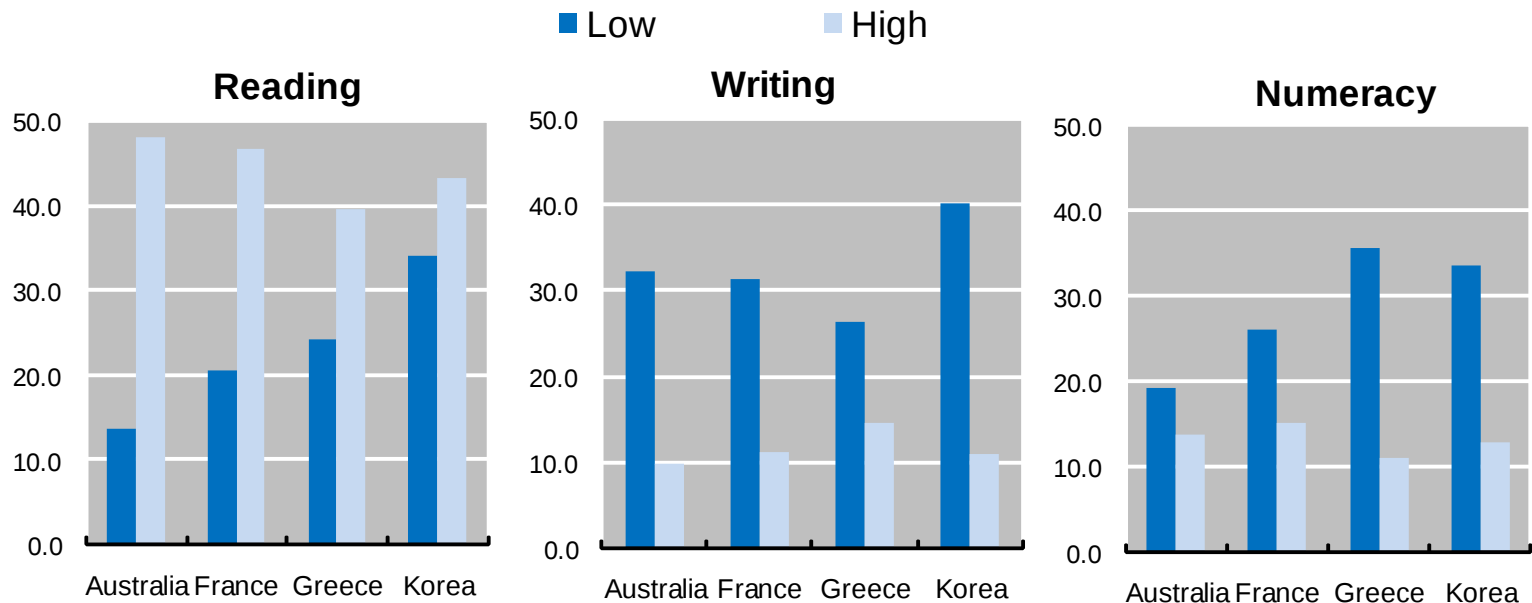
# Insights from JRA Pilot (2008)

## ➤ A richer picture of skill use

- Despite the rhetoric, a large proportion of workers still only require low levels of literacy and numeracy in their jobs
- And only a small share require a high level of writing and numeracy skills

### Distribution of workers by level of cognitive-skill use

% of workers at each level of skill use



Source: OECD JRA Pilot Study (general sample).



# Insights from JRA Pilot (2008), *cont.*

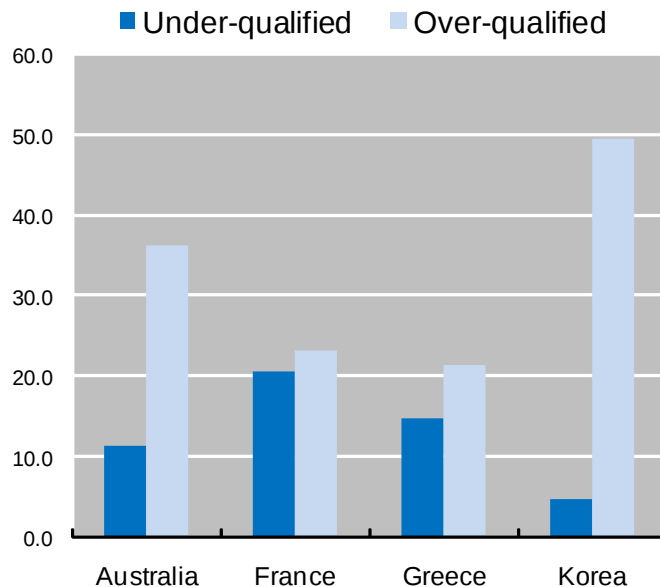
## ➤ Better measures of skills mismatch

- High proportion of workers over-qualified in Korea but relatively fewer over-skilled workers
- More objective measure of mismatch will be available using the full PIAAC survey

### Education and skill match

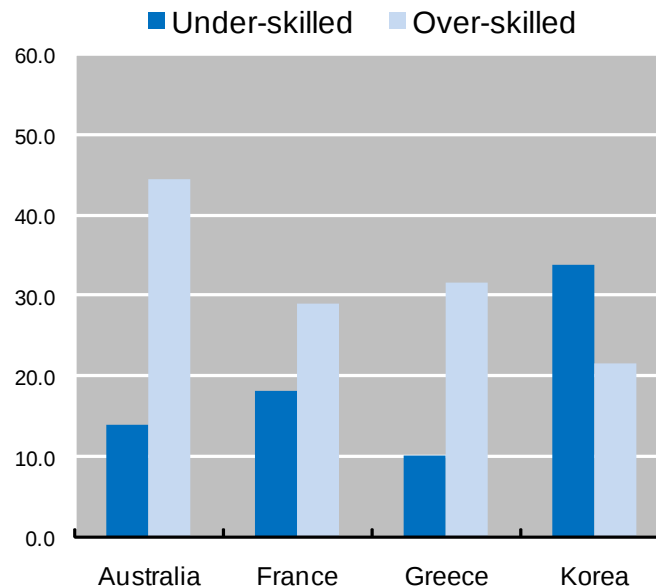
#### A. Education match

% of workers by match category



#### B. Skill match

% of workers by match category



Source: OECD JRA Pilot Study (general sample).

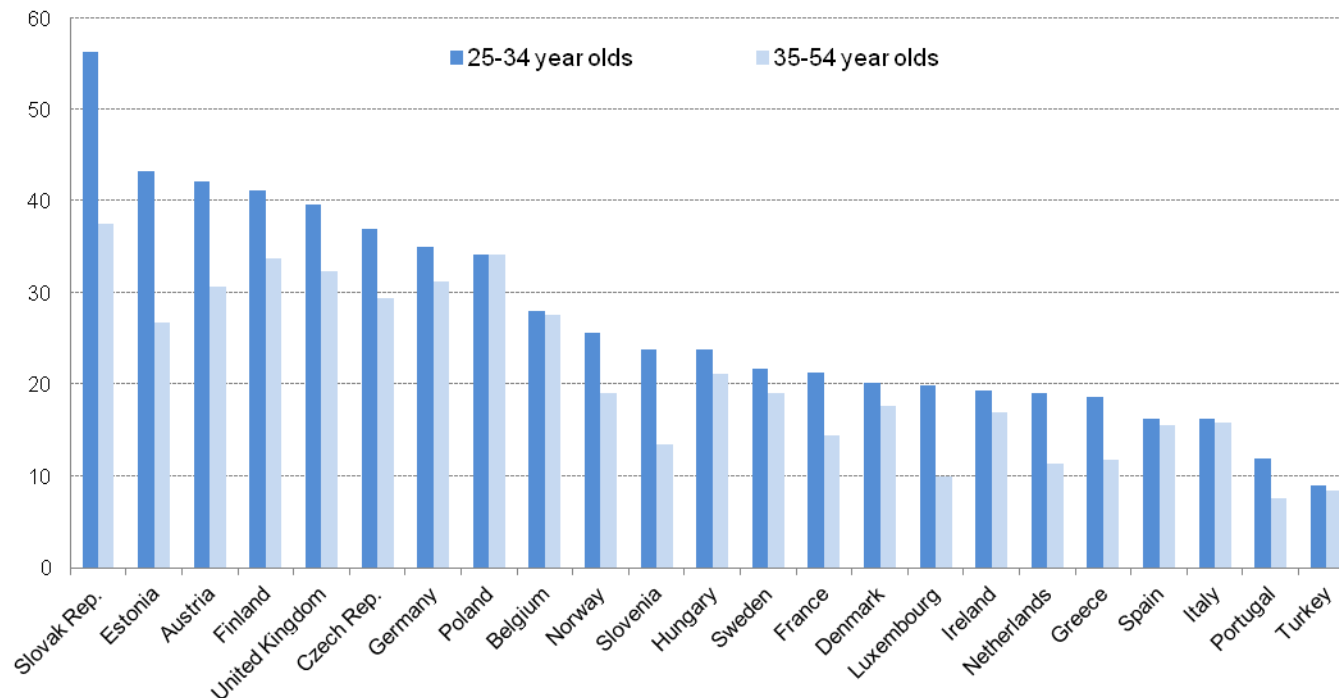


# How all this matters for policy

- Skill requirements are changing but not always in predictable ways
- Consequently, mismatch is substantial

## Over-qualified workers by age, 2010

As a percentage of all employed



Source: OECD estimates based on the 2010 Eurofound Survey of Working Conditions.

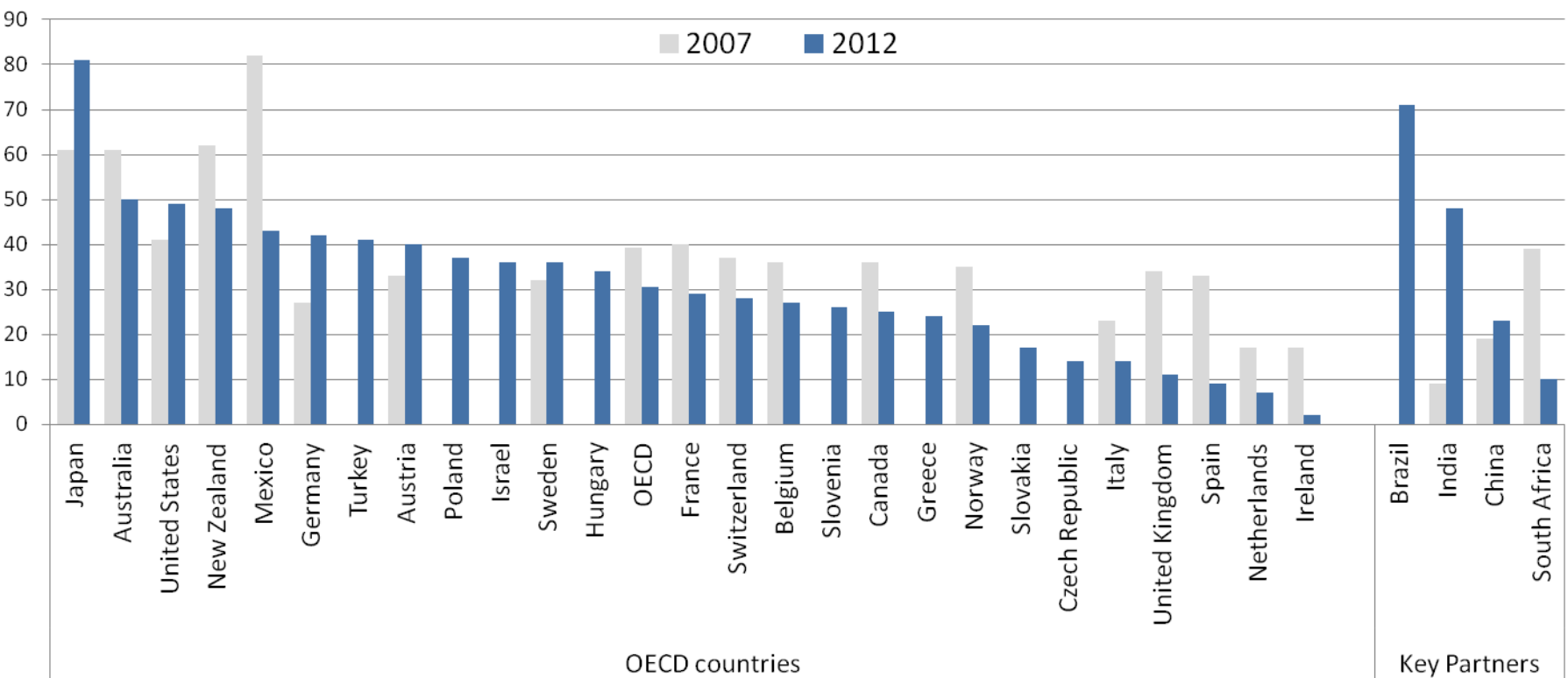


# How all this matters for policy (*cont.*)

- And persistent skills shortages exist despite acute unemployment

## Employers facing difficulties recruiting skilled workers, 2007 and 2012

As a percentage of all employers



Source: Manpower, 2007 and 2012 Talent Shortage Surveys.



# The state of skills shortage assessment and forward-looking estimates of skill demand

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- Very few countries make formal assessments of current skills shortages and, where such efforts exist, they are often linked to points-based migration systems
- In contrast, most countries in the OECD already have elaborate skills forecasting systems in place, but these have not always had the desired impact on education, employment and migration policy





# Costs of “getting it wrong” are substantial

## For individuals

- Lower earnings
- Lower job satisfaction
- Higher risk of job loss and unemployment

## For employers

- Higher recruitment and training costs
- Lower productivity
- Product/service quality might suffer
- All leading to a potential loss of competitiveness

## For society

- Wasted investment in education and training
- Higher unemployment
- Lower economic growth



# OECD Launching a new activity: Assessing and Anticipating Changing Skill Needs

## Evaluating methods for identifying current and future skill needs

- Critical assessment of importance of skill shortages and mismatch and their consequences
- Evaluation of skills anticipation methods across the OECD
- Identify good practice

## Identifying effective labour market information systems for skills

- Responsibilities of, and interactions between, different stakeholders
- Coordination and decision-making mechanisms
- Dissemination of information and use of careers advice
- The role of employers and trade unions

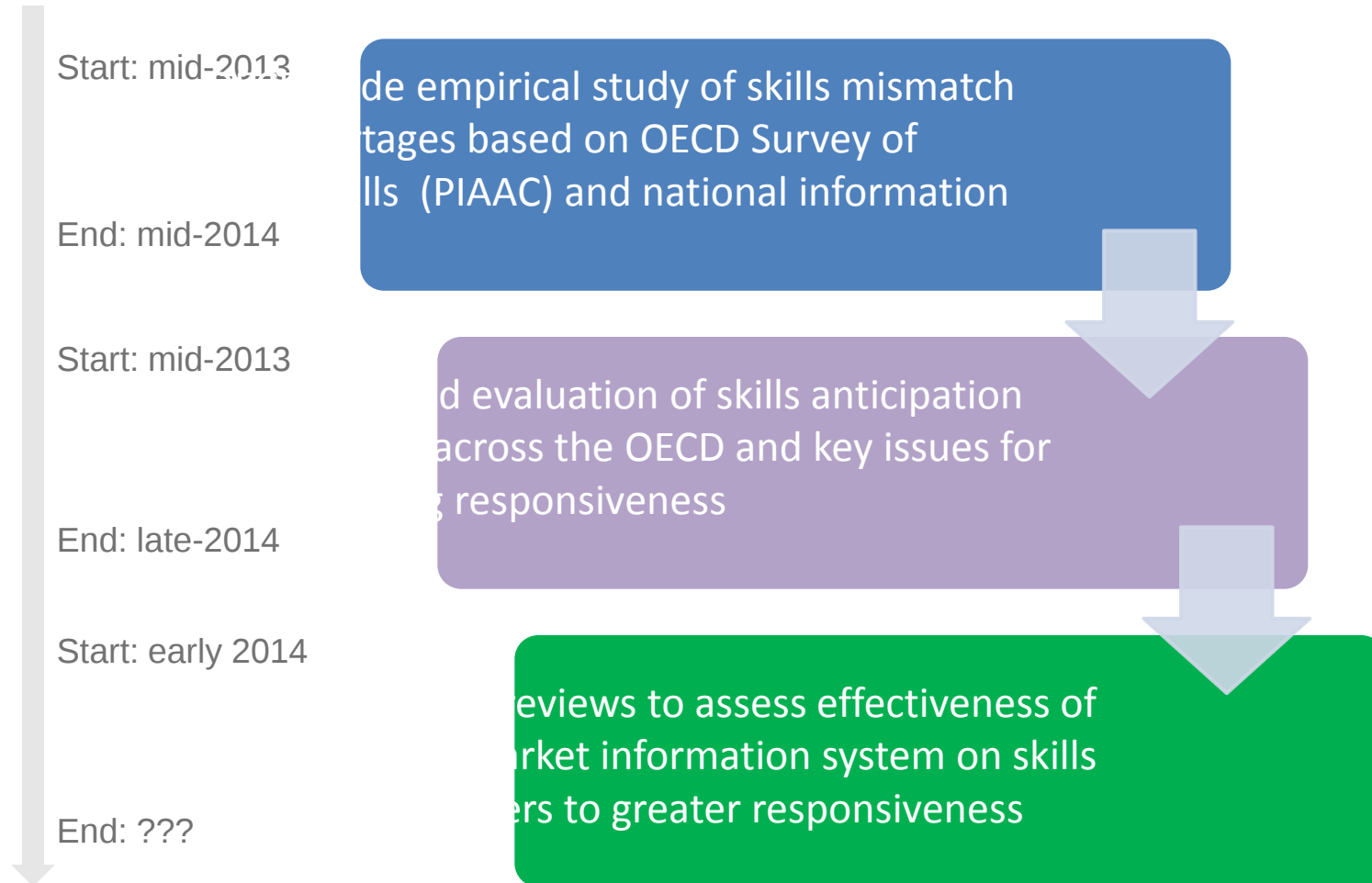
## Helping countries to better meet changing skill needs

- Strengthening responsiveness of education and training system
- Removing obstacles to work-based training
- Managing migration
- Reforming labour market institutions and regulations



# Outputs and timeline

## Timeline





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Thanks

