

# Much Ado About Social Outcomes?

Skill Effort, mismatches, and their relation with  
non-economic outcomes and job satisfaction

Marie-Christine Fregin  
Ineke Bijlsma  
Rolf van der Velden

*Presentation for the  
4th OECD PIAAC Conference in Singapore  
November 2017*



# Skill Mismatch

= Sub-optimal allocation of workers to jobs resulting in over- or under-qualification [OECD, 2015]

Concerns: Scientists, policy-makers, public perception

Negative effects  
for economies

Negative effects  
for individuals?

Association with  
social outcomes?

Association with  
job satisfaction?

# What we show

1. Skill effort and skill **mismatches are related to social outcomes**, such as political efficacy.
2. There is **no effect of mismatches on job satisfaction** if we use objective measures for the skill match. Job satisfaction is driven by skill use.

# Objectives

1. We seek to capture the broader impact of skills mismatches, investigating **non-economic, social outcomes** [Sloane, 2003; OECD, 2016] such as:
  - Political efficacy
  - Generalised trust
  - Job satisfaction
2. We contribute to sociological research by adapting a new approach to measure skill mismatch: The **Skill Effort Concept** [van der Velden & Bijlsma, 2017]

# The 'Skill Effort' Concept [van der Velden and Bijlsma, 2017]

## Measuring skill mismatch with a **new theoretical perspective**

- Self-efficacy theory [Bandura, 1977]
  - *Proficiency increases with experience*
- Use-it-or-lose-it theories [e.g. Salthouse, 2006]
  - *Without frequent use, skills depreciate*

# The 'Skill Effort' Concept

## [van der Velden and Bijlsma, 2017]

Skill Effort is defined as  
the multiplicative function of two inputs:

$$\text{Skill Effort} = \text{Skill Proficiency} * \text{Skill Use}$$

**Intuitive Understanding:** Skills can have no effect if they are not put to productive use – and, vice versa, using skills can only have a small effect if proficiency is low.

# Previous studies on mismatches...

- ... merely focused on **wages**.
- ... often focused on **educational mismatches** instead of skill mismatches.
- ... are often based on self-reported, **subjective mismatches** instead of objective measures of the skill match.

# Theory driven model specification

- Standard **ORU-model specification**  
[see Duncan and Hoffman, 1981]
- **Matching models** assume that the combination of supply and demand of skills determines outcomes
- Whether the effects of mismatches (e.g. on job satisfaction) are negative or positive depends on the **reference group**:  
*Workers in same job as reference → positive returns*



# Hypotheses

- H1: **Required skills and required skill effort have a positive effect** on social outcomes and job satisfaction.
- H2: **Overperformance has a positive effect** on social outcomes and job satisfaction as additional skills pay off, whereas **underperformance negatively affects the outcomes** under study.

# Data & Methods

- OECD Survey of Adult Skills (**PIAAC**); Round I
- Sample: 31.387 **male fulltime working employees**
- Focus on **numeracy** skills (literacy as robustness check)
- **Dichotomised** dependent variables
- **Multilevel mixed-effects logistic regression** models
- Goodness of fit: **Log likelihood ratio tests**
- Weighting: **Rescaling to cluster size** approach

# Comparison of existing (skill) mismatch measures

## Objective skill mismatch measures

(= alternatives to the skill effort concept)

- **Allen, Levels, and van der Velden, 2013:** Relative use of skills
- **Pellizari and Fichen, 2013 (OECD):** Realised Matches

## Educational mismatch

- **ORU-model** capturing years of education

## Subjective skill mismatch measure

- **Direct worker self-assessment**

# Findings

Relation between **skill effort, mismatches, and**

1. political efficacy,
  2. generalised trust, and
  3. job satisfaction,
- each as **binary outcome**.

Comparison of **different mismatch models**

**All tables display odds ratios**, obtained using weighted multilevel-mixed effect logistic regression models

# DV: Political Efficacy

Variables	Skill effort (2017)	Allen et al. (2013)	Pellizari & Fichen (2013)	ORU model	Direct self-assess.
Required skill effort (standardised)	1.737***				
Overperformance (std)	1.202***				
Underperformance (std)	0.825***				
Skill use (D. = Dummy)		1.508***	1.395***		1.388***
Overskilled (D.)		1.453***			
Underskilled (D.)		0.581***			
Overskilled (D.)			1.210***		
Underskilled (D.)			0.919		
Required Edu. (std)				1.595***	
Overeducation (std)				1.155***	
Undereducation (std)				0.919***	
Overskilled DSA (D.)					1.076
Underskilled DSA (D.)					1.226***
N <sub>individuals</sub>	32,242	32,242	31,823	31,922	32,003
N <sub>countries</sub>	22	22	22	22	22

# DV: Generalised Trust

Variables	Skill effort (2017)	Allen et al. (2013)	Pellizari & Fichen (2013)	ORU model	Direct self-assess.
Required skill effort (standardised)	1.706***				
Overperformance (std)	1.145***				
Underperformance (std)	0.864***				
Skill use (D. = Dummy)		1.429***	1.324***		1.324***
Overskilled (D.)		1.606***			
Underskilled (D.)		0.616***			
Overskilled (D.)			1.139*		
Underskilled (D.)			1.007		
Required Edu. (std)				1.672***	
Overeducation (std)				1.197***	
Undereducation (std)				0.895***	
Overskilled DSA (D.)					0.907
Underskilled DSA (D.)					1.000
N <sub>individuals</sub>	32,304	32,304	31,885	31,984	32,058
N <sub>countries</sub>	22	22	22	22	22

# DV: Job Satisfaction

Variables	Skill effort (2017)	Allen et al. (2013)	Pellizari & Fichen (2013)	ORU model	Direct self-assess.
Required skill effort (standardised)	1.290***				
Overperformance (std)	0.993				
Underperformance (std)	0.962				
Skill use (D. = Dummy)		1.190***	1.177***		1.175***
Overskilled (D.)		0.966			
Underskilled (D.)		0.857**			
Overskilled (D.)			0.934		
Underskilled (D.)			1.118		
Required Edu. (std)				1.302***	
Overeducation (std)				0.968	
Undereducation (std)				1.029	
Overskilled DSA (D.)					0.669***
Underskilled DSA (D.)					0.770**
N <sub>individuals</sub>	32,368	32,368	31,947	32,046	32,121
N <sub>countries</sub>	22	22	22	22	22

# Conclusion

1. There is **no relation between objective mismatches and job satisfaction.**
2. Skills and skill **mismatches are related to social outcomes**, such as political efficacy.
3. ‘Skill effort’ combination of proficiency and skill use as **empowering combination?** → Out-of-the-box thinking
4. Further research needed to explore the potential of PIAAC and the **skill effort logic as framework for the investigation of the relation btw. skills, mismatches, and non-economic outcomes**



**Thank you  
very much  
for your  
attention.**

## **Contact**

Marie-Christine Fregin  
Maastricht University, NL  
[m.fregin@maastrichtuniversity.nl](mailto:m.fregin@maastrichtuniversity.nl)

# Appendix

# Literature

- Allen J, Levels M and van der Velden R (2013) *Skill mismatch and skill use in developed countries: Evidence from the PIAAC study*. ROA Research Memorandum (ROA-RM-2013/17), Maastricht: ROA.
- Bandura A (1977) Self-efficacy: Toward a unifying theory of behavioural change. *Psychological Review*, 84(2): 191–215.
- Duncan GJ and Hoffman SD (1981) The incidence and wage effects of overeducation. *Economics of Education Review* 1 (1): 75–86.
- OECD. (2015) *OECD Skills Outlook 2015: Youth, Skills and Employability*. Paris: OECD Publishing.
- OECD. (2016) *Skills Matter: Further Results from the Survey of Adult Skills, OECD Skills Studies*. Paris: OECD Publishing.

# Literature (continued)

- Pellizari M and Fichen A (2013) A New Measure of Skills Mismatch, Theory and Evidence from the Survey of Adult Skills (PIAAC), *OECD Social, Employment and Migration Working Papers*, No. 153, Paris: OECD Publishing.
- Salthouse T (2006) Mental exercise and mental ageing: Evaluating the validity of the “use it or lose it” hypothesis. *Perspectives on Psychological Science*, 1 (1): 68–87.
- Sloane PJ (2003). Much ado About Nothing? What does the Overeducation Literature Really Tell us? In: Felix Büchel, Andries de Grip und Antje Mertens (Eds.): *Overeducation in Europe. Current Issues in Theory and Policy*. Cheltenham, UK, Northampton, MA: E. Elgar, pp. 11–48.
- Van der Velden R and Bijlsma I (2017) Skill effort: A new theoretical perspective on the relation between skills, skill use, mismatches, and wages. *ROA Research Memorandum*, ROA-RM-2017/5, Maastricht: ROA.

# Measuring the impact of skill effort

$$Y_{ic} = \alpha_c + \beta_1 RSE_{ic} + \beta_2 OSE_{ic} + \beta_3 USE_{ic} + \beta_4 C_{ic} + u_{ic} + \omega_{ic}$$

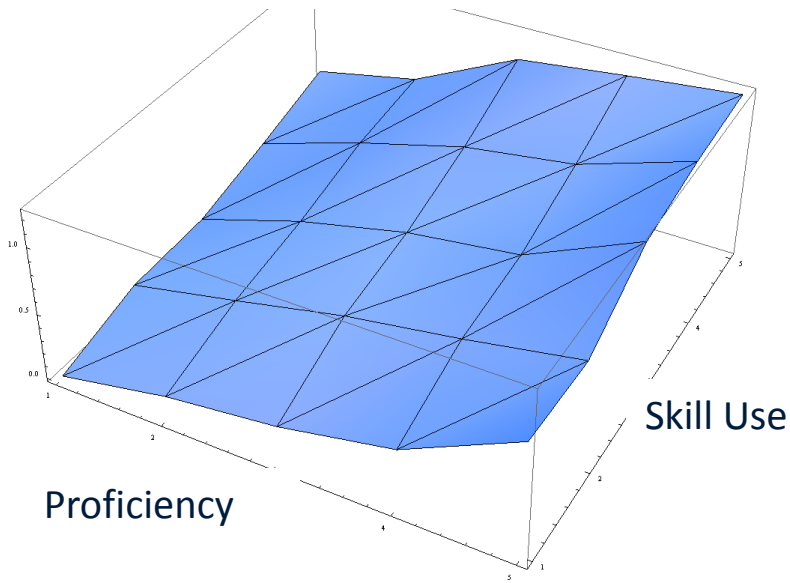
or

$$Y_{ic} = \alpha_c + \beta_1 SEM_{ic} + \beta_2 C_{ic} + u_{ic} + \omega_{ic}$$

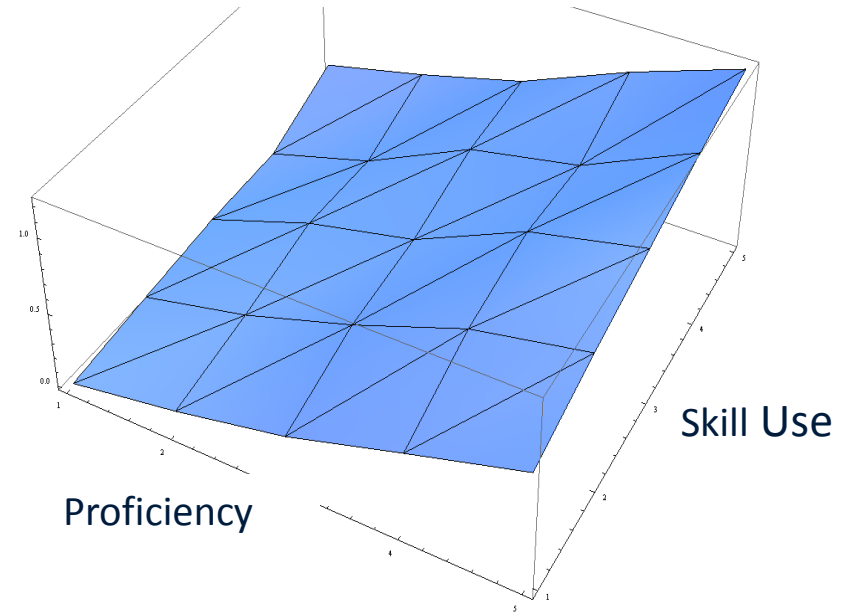
where  $SEM_{ic}$  is a vector of the three skill effort match variables: Required Skill Effort  $RSE_{ic}$ , Overperformance in Skill Effort  $OSE_{ic}$ , and Underperformance  $USE_{ic}$ .

# Quantile regressions

## Political efficacy



## Generalised Trust



## Job satisfaction

