

Being specific: what do we mean by specificity of skills?

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Aleksandr Christenko, Žilvinas Martinaitis

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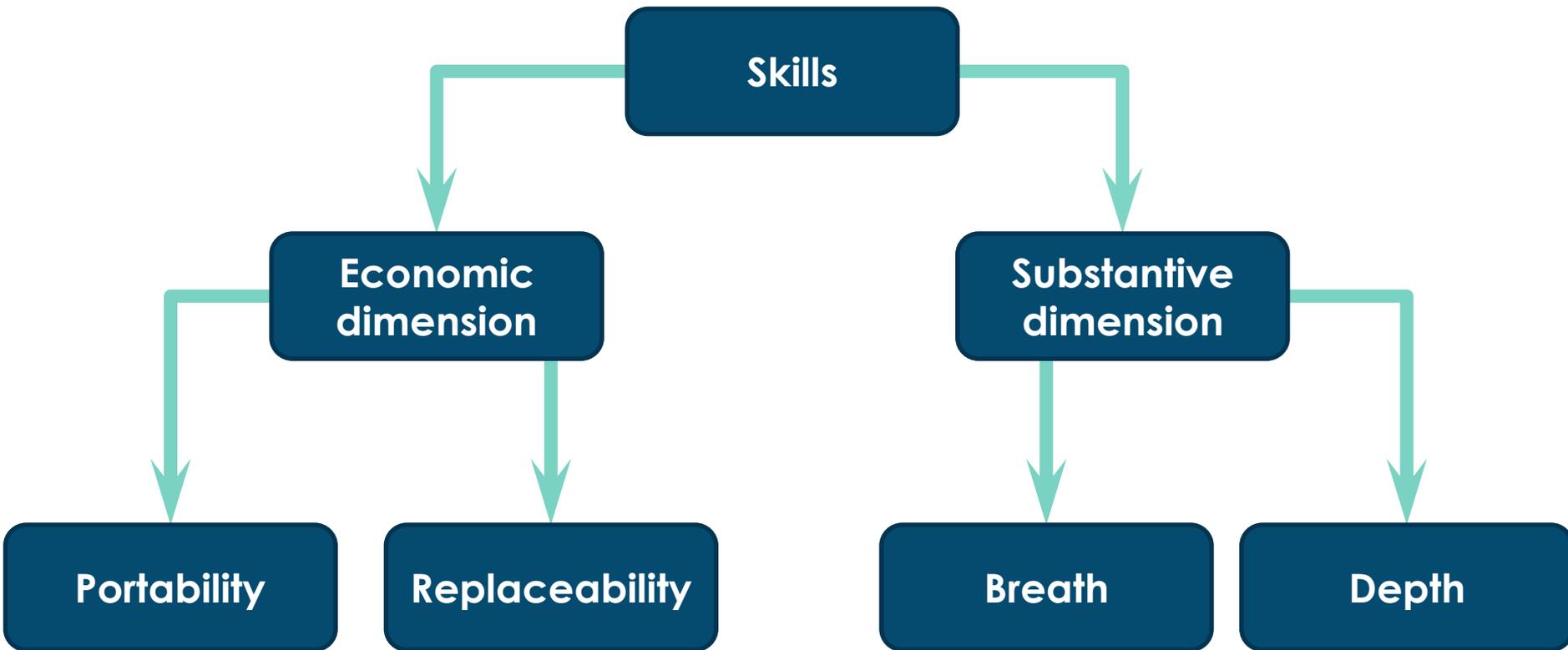
Why skills matter?

- The discussion started with Becker (1964) who distinguished between general and specific skills
- Specific skills are those that only a select number of firms can use while general skills can be used by many
- Many academics used this separation to explain:
 - When employers will invest in education of employees (Acemonglu & Pichke, 1999)
 - Which employees have transferable skills (Politaev and Robinson, 2008)
 - And many other things

Issues with this classical view of skills

- Streeck (2011) argues that some authors use incompatible definitions of general-specific skills:
 - Unskilled (general) vs. Craft (specific)
 - Portable (general) vs. Nonportable (specific)
 - Broad (general) vs. Narrow (specific)
- Others (e.g., Lazear (2003)) claim that all skills are general, but their combination makes them specific
- Finally, in the academic literature scholars used a number of proxies to estimate general-specific skills (e.g., education level, length of tenure, etc.), which often do not correlate (Hainmueller and Hiscox, 2007)

Alternative view of skills



Source: Authors, based on Streeck (2011)

Aim of the presentation

- Expand further the topology proposed by Streeck (2011)
- Economic dimension - compare different measures of skill specificity as these measures are less eclectic than the substantive ones
- Substantive dimension - propose and test a new general approach of estimating skill

Economic dimensions: Portability

- Refers to the ease of changing jobs by employees
- It depends on two factors:
 - Level of structural demand: number of firms hiring workers with a given skill set
 - Labour market friction: the costs of changing jobs

Economic dimensions: Portability measures

Indicators	Authors	Estimation
Density: share of employees in each occupation	Brunello and Gambarotto (2007)	$\frac{\text{Number of employees in occupation}}{\text{Total number of employees}}$
Specialisation of work according to ISCO-88 structure	Iversen and Soskice (2001)	$\frac{\text{Share of ISCO – 88 4 level}}{\text{Share of the labour force}} \Big/ \text{ISCO level of skill}$
Perception of workers regarding portability of skills	Iversen and Soskice (2001)	Answer to the following questions from ESS (2010): How difficult or easy would it be for you to get a similar or better job with another employer if you had to leave your current job? (0 Extremely difficult, 10 Extremely easy)

Table 1. Portability of skills measures

Data sources: LFS and the European Social Survey

Note: Estimation is done on the occupational level (ISCO lv. 3)

Economic dimensions: comparing portability of skills measures

	Density: share of employees in each occupation	Specialisation of work via ISCO-88 structure	Portability of skills via perception of workers
Density: share of employees in each occupation	1	-0.56 (0.01)	-0.07 (0.06)
Specialisation of work according to ISCO-88 structure	-0.56 (0.01)	1	-0.11 (0.02)
Portability of skills via perception of workers	-0.07 (0.06)	-0.11 (0.02)	1

Table 2. Average Kendall correlation coefficient of the portability of skills measures in BG, CZ, EE, LT, PL, and SK regions

Note 1: First number is the correlation, while second is the standard deviation

Note 2: N varied from 28 to 120

Economic dimensions: Replaceability

- Refers to the ease of changing employees by an employer
- Replaceability is influenced by the elasticity of substitution of employees (Hainmueller and Hiscox, 2007)
- In the academic literature, Replaceability of skills is mainly discussed on the theoretical level

Economic dimensions: Replaceability measures

Indicators	Estimation
Difference between the average wage and wage at different sectors and education levels	$\frac{\text{Average wage}_{(\text{sector}, \text{educ.})} - \text{Average wage}_{(\text{All}, \text{educ.})}}{\text{Average wage}_{(\text{All}, \text{educ.})}}$
Return to tenure in different sectors	$\frac{\sum_{\text{tenure}=1}^{n-1} \left(\frac{\text{Wage}_{(\text{sector}, \text{tenure}+1)} - \text{Wage}_{(\text{sector}, \text{tenure})}}{\text{Wage}_{(\text{sector}, \text{tenure length})}} \right)}{(n-1)}$
Replaceability of skills via perception of workers (survey based)	<p>Answer to the following question from the ESS (2010): In your opinion, how difficult or easy would it be for your employer to replace you if you left? (0 Extremely difficult, 10 Extremely easy). The results were average for each sector and country.</p>

Table 3. Replaceability of skills measures

Data sources: LFS and European Social Survey

Note: Estimation is done on the sectoral level (NACE Rev.2 lv. 1)

Economic dimensions: comparing replacability of skills measures

	Diff. in wages for Low educ. level	Diff. in wages high educ. level	Return to tenure	Perception of workers
Diff. in wages for low educ. level	1	0.53 (0.07)	NA	-0.4 (0.05)
Diff. in wages high educ. level	0.53 (0.07)	1	NA	-0.37 (0.1)
Return to tenure	NA	NA	1	NA
Perception of workers	-0.4 (0.05)	-0.37 (0.1)	NA	1

Table 4. Average of statistically significant (at alpha 0.1) Kendall correlation coefficient of the portability of skills measures in BG, CZ, EE, LT, PL, and SK

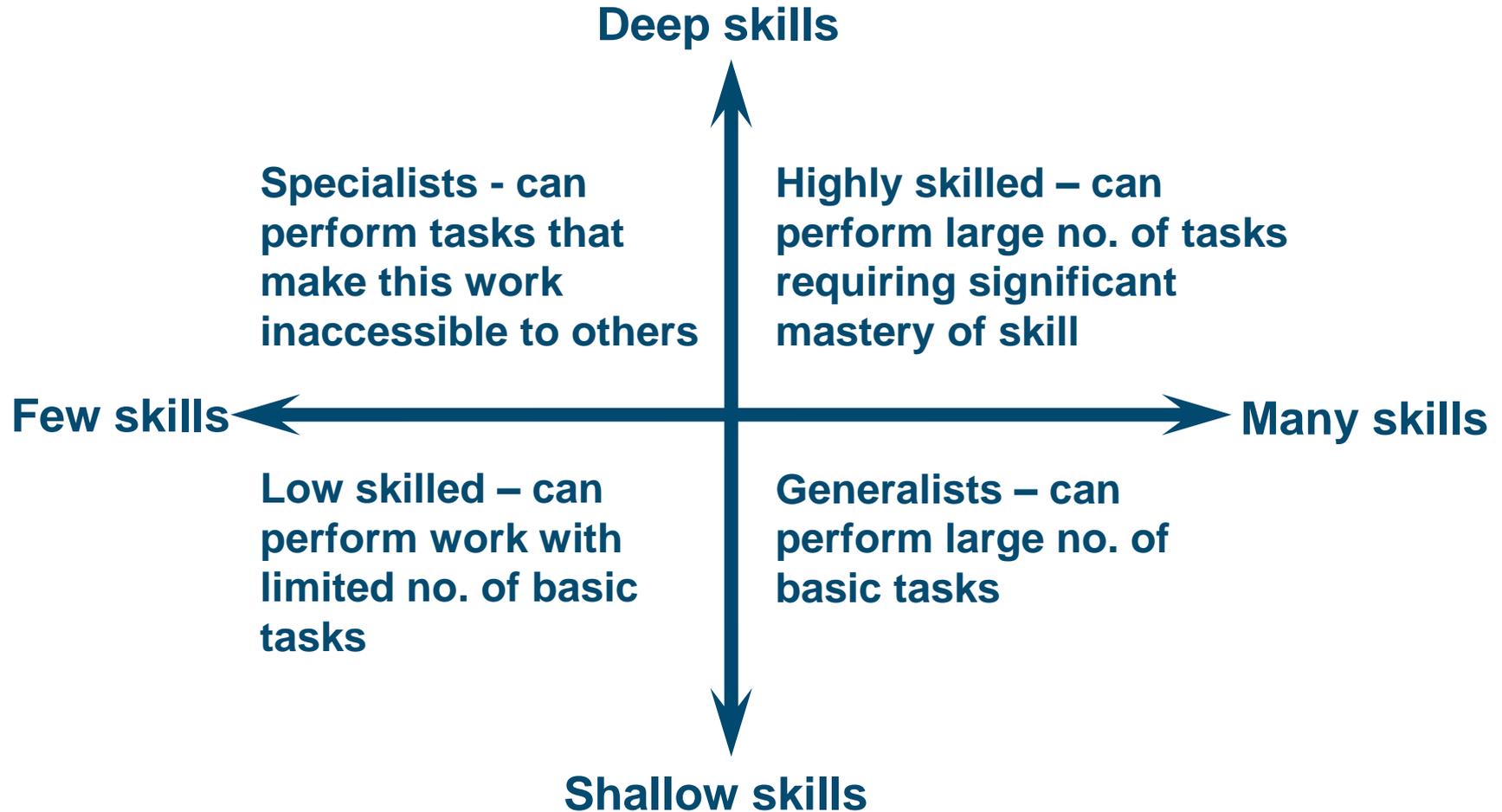
Note 1: First number is the correlation, while second is the standard deviation

Note 2: N for all countries was 18

Substantive dimension: Breath & Depth

- **Breath of skills: spread of skills, knowledge, abilities, etc. that an individual has to possess to carry out different task that a job entails.**
- **Depth of skills: level of skill that is necessary to be proficient in a particular task**

Substantive dimensions: Four “ideal” types of workers



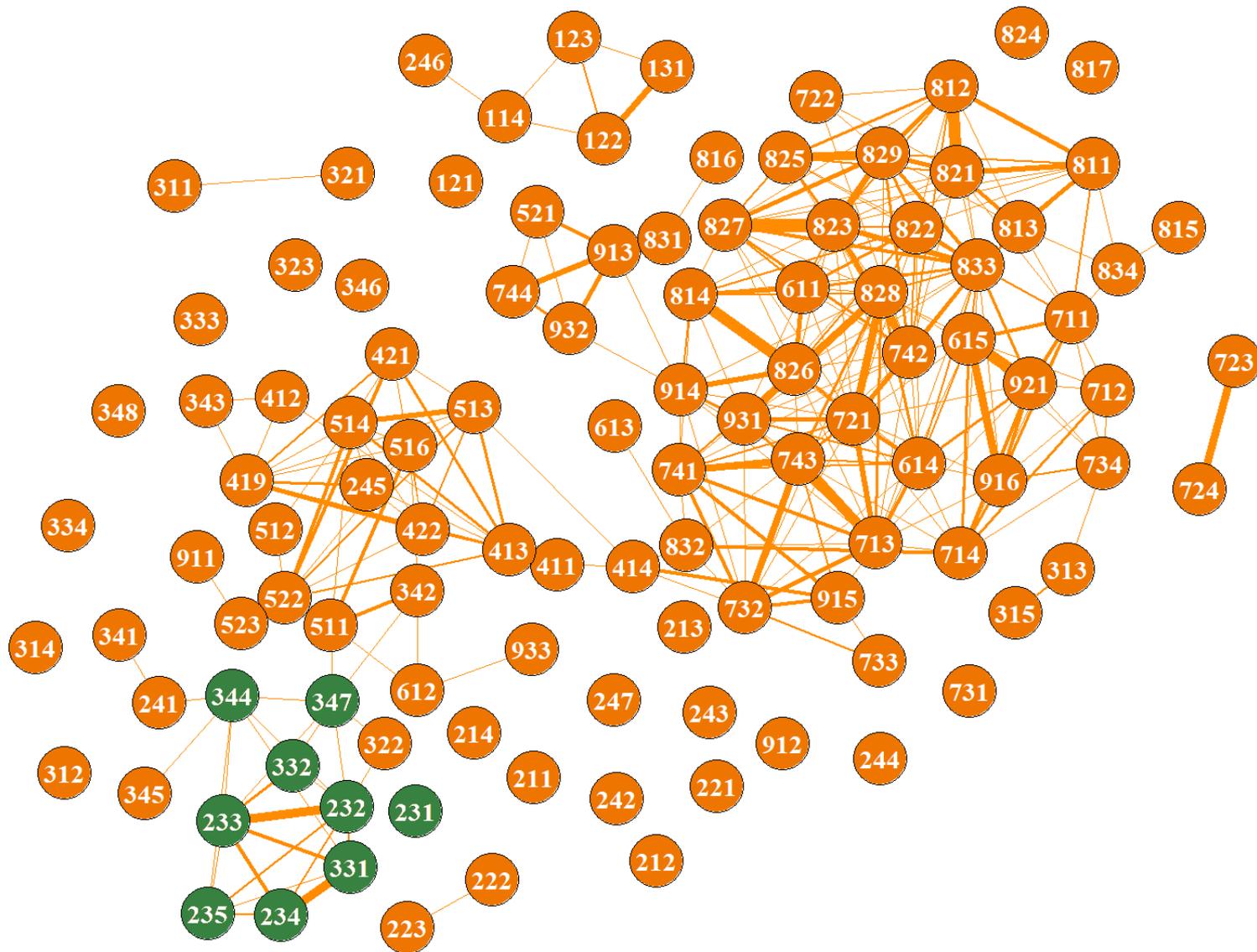
Estimating Breath & Depth in the academic literature

- Many scholars used education level to estimate the depth of skills
- Geel, Mure, and Beckes-Gellner (2010) looked at the composition of skills (a.k.a. skill profiles) of employees in Germany
- Leping (2009) estimated the number of critical skills through job adverts
- Ingram and Neuman (2009) used the Dictionary of Occupations (DOT) to identify unique skills for each occupation

Estimating breath and depth of skills: our approach

- By using O*NET occupational database, which provides information about skills, knowledge, and abilities for over 1000 occupations, we estimate skill profiles (i.e., depth and breath of different skills for each occupation)
- Skill profiles are created by looking at the importance and level of utilisation of each skill (information provided by O*NET) in each occupation
- Additionally, to prevent double counting of skills, similar ones are grouped together through Hierarchical clustering and Principle Component Analysis algorithms

Social network of closest occupations (ISCO-88 lv. 3) according to skill profiles



Conclusions

- Many academics that talk about general and specific skills talk about different things
- To prevent these issues, an alternative approach is recommended, where skills are assessed on an economic and/or substantial dimensions
- However, even after reclassifying currently available skill measures, they do not always correlate inside groups, implying that, additional work still has to be done.