

# Demand for low and medium skilled workers across Europe: between formal qualifications and non-cognitive skills

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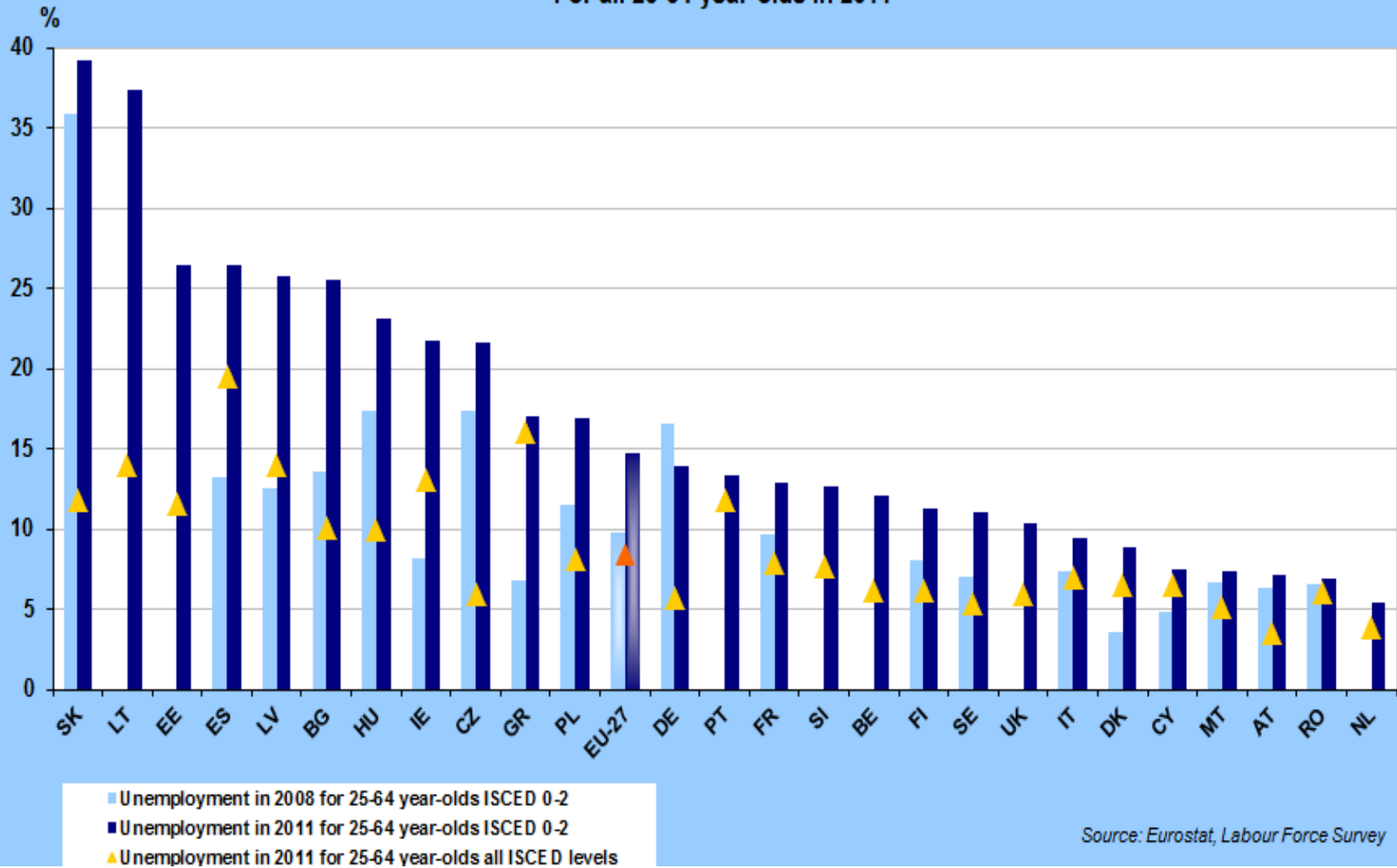


# Background

- Low-skilled workers
  - Higher risk of unemployment, social and economic exclusion
  - Impacted disproportionately by structural changes
  - Hit the hardest by recent economic crisis
  - Integration into labor markets: a policy challenge
- Which skills employers seek in low and medium skilled occupations?

# Low-skilled hit the hardest by the crisis

Unemployment rate for 25-64 year-olds with low educational attainment (ISCED 0-2) in 2008 and 2011  
For all 25-64 year-olds in 2011



Source: Eurostat, Labour Force Survey

Source: CEDEFOP, 2013

# Aims

- Understanding labor market demand at the micro-level - employers' perspective

- Research questions:

**RQ1:** What types of skills are demanded in low- and medium skilled occupations in different European labor markets?

**RQ2:** What is the combination of cognitive and non-cognitive skills and abilities demanded by employers and the importance given to formal education?

**RQ3:** Given the existence of global structural changes, what is the importance of national institutional set-up in shaping employers' demand?

# Comparative approach

- Analysis of online job vacancies – EURES data
- Comparative work:
  - Across occupations and skill levels (low and medium/ISCO)
  - Across sectors (service sector and industry)
  - Across countries
    - **Czech Republic**
    - **Ireland**
    - **Denmark**
- Similar size of labor market, but different economic structure and education and skill formation systems

# Literature

- **Role of formal qualifications in social mobility and labor market outcomes** (Abrassart 2013, Warhurst and Nickson 2007, Keep and James 2010, Jackson 2001, 2007)
  - **Merit versus social background** (increased merit selection hypotheses)
  - Overlooks other components of skills (soft, non-cognitive, experience)
- **Importance of non-cognitive and other non-meritocratic skills in educational and labor market outcomes** (Borghans et al. 2008, Brunello and Schlotter 2010, Glewwe et al. 2011)
  - Growth of **service sector** – interactive service work
- **Varieties of education regimes (institutionalist literature)**
  - **General, occupational and firm-specific** skill regimes (Atzmueller 2012, Lauder et al. 2008, Trampusch 2010, Thelen 2004)
  - **Different degree of employers' involvement in education process and transferability of skills** – affects the role of education/degrees as a screening device (Lucio et al. 2007, Busemeyer and Thelen 2013)

# Hypotheses

- H1: Non-cognitive skills are more important in interactive service occupations than in manufacturing occupations and non-interactive service work.
- H2: In the Czech Republic and Denmark, where industry/occupation-specific skills generated through dual systems of skill formation are produced, formal qualifications will be more important than in Ireland (general skill economy).

# Data and method

- **EURES** – European Job Mobility Portal
  - Covers 30-40% of European market for job vacancies
  - Collects vacancies from Public Employment Services
  - Standardized platform – predefined vacancy format
  - A list of standardized broad occupational groups (unified ISCO codes)
  - Unique identifier – national reference number
- **Text analysis of job description field** – written in national language – analyzing content of job ads
  - Binary logic and frequencies
- **March-July 2012**
- Number of job ads: Czech Rep.: 6 082, Denmark: 2748, Ireland: 2135





EURES

The European Job Mobility Portal

UROPA > European Commission > Employment, Social Affairs & Inclusion > EURES > Jobseekers > Search for a job

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## Search for a job

Today, 1 230 025 Job Vacancies are waiting for you.

### 1. Vacancy details selection

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or:

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or:

Enter a national reference number:

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- [National Employment Services](#)
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# Occupational groups

	Sector	Occupational group	ISCO
<i>Medium-skilled</i>	<i>Service sector</i>	<i>Hotel, catering and personal services staff</i>	5
		<i>Sales staff and fashion work</i>	5
		<i>Office staff</i>	4
	<i>Industry</i>	<i>Metal, machinery and electronic equipment workers</i>	7
		<i>Machine operators and assemblers</i>	8
<i>Low-skilled</i>	<i>Service sector</i>	<i>Sales, services and cleaning elementary occupations</i>	9
	<i>Industry</i>	<i>Laborers in mining, construction, manufacturing and transport</i>	9

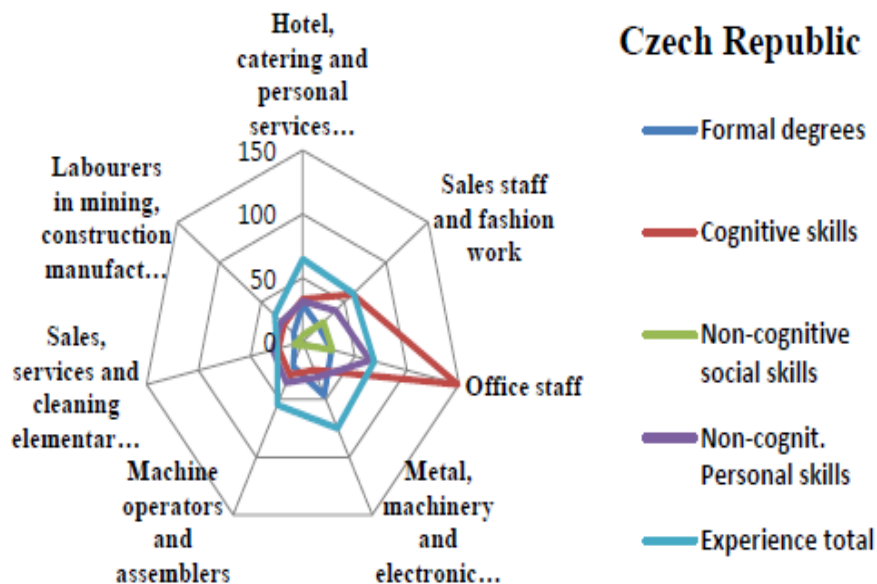
# Categorization of skills

<i>Education and formal qualifications</i>		<ul style="list-style-type: none"> <li>o <i>Formal degrees gained through full time study (can be measured by ISCED)</i></li> <li>o <i>Specialized training</i></li> </ul>
<i>Cognitive skills and abilities</i>		<ul style="list-style-type: none"> <li>o <i>ICT skills</i></li> <li>o <i>Language skills</i></li> <li>o <i>Driving skills</i></li> <li>o <i>Ability to learn</i></li> </ul>
<i>Non-cognitive skills</i>	<b>Social skills</b>	<ul style="list-style-type: none"> <li>o <i>Communication skills</i></li> <li>o <i>Service skills, customer approach</i></li> <li>o <i>Team-working skills</i></li> </ul>
	<b>Personal skills</b>	<ul style="list-style-type: none"> <li>o <i>Timeliness, punctuality</i></li> <li>o <i>Independence</i></li> <li>o <i>Reliability</i></li> <li>o <i>Creativity</i></li> <li>o <i>Flexibility</i></li> <li>o <i>Resistance to stress</i></li> </ul>
<i>Personal characteristics</i>		<ul style="list-style-type: none"> <li>o <i>Pleasant physical appearance</i></li> </ul>
<i>Experience</i>		<ul style="list-style-type: none"> <li>o <i>Experience</i></li> </ul>
<i>Other</i>		<ul style="list-style-type: none"> <li>o <i>Criminal record</i></li> <li>o <i>References</i></li> </ul>

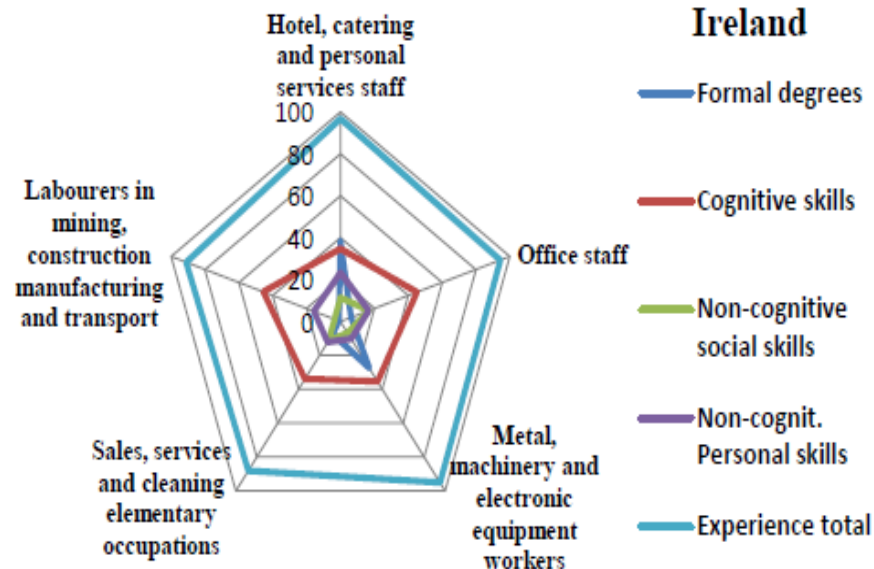
# Key findings: General

- Labor market demand across the three countries is quite different with respect to the importance given to formal education and skill-mix expectations within occupations
- Some general similarities:
  - Experience belongs to the most requested characteristic
  - Service occupations typically demand more non-cognitive skills than other types of occupations
  - Non-cognitive skills demanded in addition to formal education, not instead of it

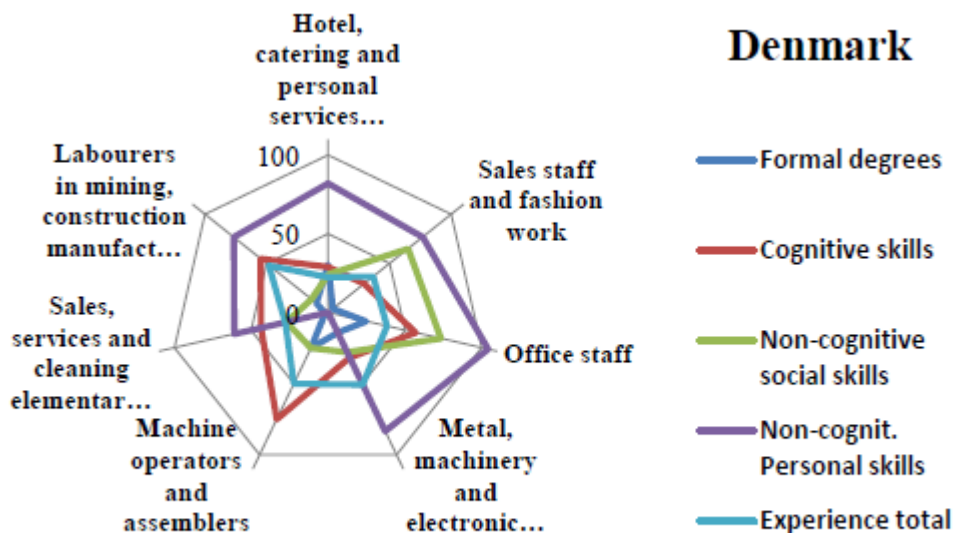
### Czech Republic



### Ireland



### Denmark



# Key findings: Czech Republic

- **Formalized, hierarchical and cognitively focused labor market where cognitive skills and formal education attain a key place in employers' demand**
  - Formal degrees demanded in about 28% of all jobs, but more so in skill-specific occupations (nearly 50% ads in metal and machinery workers category)
  - Low-skilled occupations – much less demanding than medium-skilled on all accounts, especially formal degrees and experience
  - Cognitive skills – widely requested across occupations (ICT, language)

# Key findings: Ireland

- **Formalized and non-hierarchical labor market where experience and a range of cognitive skills prevail**
  - Formal education demanded in about 1/5 of job ads, but more so in skill-specific occupations (40% of hotel, catering and personal services)
  - Spread in skill intensity between low and medium-skilled occupations is smaller – less hierarchy between the jobs
  - Experience nearly universally requested (94%)
  - Cognitive skills – more demanded than any other skills
  - English in particular important in interactive service occupations
  - No clear difference in non-cognitive skills between services and industry occupations

# Key findings: Denmark

- **Non-formalized and non-hierarchical labor market with high relevance of non-cognitive skills and emphasis on flexibility**
  - Formal education less important than in CZ and IR (only about 14% of job ads on average required formal degree)
  - Experience less important than in CZ and IR
  - No clear hierarchy between low and medium skilled occupational groups can be established
  - Non-cognitive skills widely requested across occupations and skill levels, but especially in service occupations (flexibility, team-skills, service-oriented, independence)



# Summary and conclusions

- **H1:** Service occupations require more non-cognitive skills (**partly confirmed**)
- **H2:** Czech and Danish labor markets are more formalized/formal qualifications oriented (**partly confirmed**)
- Recruitment market is strikingly diverse across the countries and across the occupation in the EU labor market markets: combination of requested skills (formal/cognitive and non-cognitive) is very different
- There is no 'universal' type of demand or synchronized shift towards 'other' skills across Europe: domestic institutions and structures shape strongly how demand is formulated

# Implications

- Cross-country comparison highlights potential challenges for labor mobility in the EU and limits on “skills union” and European occupational labor markets
- Online job ads data could be used as a rich source of data about micro-characteristics of labor market demand
- New approach to analyzing elements of recruitment process and labor matching
- Results can inform demand-led approach to labor market policy - what types of skills need to be offered to persons with disadvantaged position in the labor market to improve their labor market chances

Thank you.

Comments welcome at: [kurekova@governance.sk](mailto:kurekova@governance.sk)

# Descriptive data

	Occupational group	ISCO (2 digit)	Czech Republic (Count / %)	Denmark (Count / %)	Ireland (Count / %)
<i>Medium skilled</i>					
<i>Service sector</i>	Hotel, catering and personal services staff	51	1582 26%	606 22%	902 42%
	Sales staff and fashion work	52	876 14%	563 21%	- -
	Office staff	41	597 10%	378 14%	416 19%
<i>Industry</i>	Metal, machinery and electronic equipment workers	72	1718 28%	318 12%	223 10%
	Machine operators and assemblers	82	228 4%	28 1%	- -
<i>Low -skilled</i>					
<i>Service sector</i>	Sales, services and cleaning elementary occupations	91	621 10%	659 24%	480 22%
<i>Industry</i>	Laborers in mining, construction, manufacturing and transport	93	460 8%	196 7%	114 5%
	<b>TOTAL</b>		<b>6082 100%</b>	<b>2748 100%</b>	<b>2135 100%</b>

Table 7: Czech Republic: Overview of demanded skills and competences: share of jobs where a particular skill was demanded

		Hotel, catering and personal services staff	Sales staff and fashion work	Office staff	Metal, machinery and electronic equipment workers	Machine operators and assemblers	Sales, services and cleaning elementary occupations	Laborers in mining, construction manufacturing and transport	Total
<b>A. Formal education and certification</b>		29.5	19.2	27.8	46.4	21.1	7.6	10.9	28.7
<b>B. Cognitive abilities and skills</b>	ICT	5.4	31.5	62.1	7.4	9.6	9.5	9.3	16.2
	Czech language	0.90	0.80	3.40	0.30	0.00	2.10	1.30	1.10
	Foreign language	14.0	8.7	38.7	5.9	6.6	3.5	3.3	11.2
	English	7.6	9.1	28.3	3.3	4.4	2.3	0.9	7.50
	Driving license	2.7	5.8	12.4	5.8	4.8	2.4	5.2	5.2
	Ability to learn	2.9	3.9	4.0	1.8	3.1	3.1	2.2	2.8
	Total	33.4	59.8	149.0	24.4	28.5	22.9	22.2	44.0
<b>C. Non-cognitive social</b>	Communication	4.8	23.3	25.5	1.9	1.8	6.6	2.2	8.5
	Service-oriented	0.2	1.3	0.3	0.0	0.0	0.6	0.0	0.3
	Team skills	0.3	0.5	2.8	0.9	1.8	1.3	0.9	1.0
	Total	5.3	25.0	28.6	2.8	3.5	8.5	3.0	9.8
<b>D. Non-cognitive personal</b>	Timeliness	0.3	0.0	0.0	0.0	0.0	0.2	0.2	0.1
	Independence	10.1	11.4	21.1	13.7	10.1	6.3	5.2	11.6
	Reliability	9.5	13.0	17.1	9.5	12.7	12.1	12.4	11.4
	Creativity	1.6	1.3	1.0	0.2	0.4	0.2	0.9	0.9
	Flexibility	9.4	13.1	20.6	7.0	11.4	8.9	6.5	10.2
	Stress-resistant	1.0	0.7	4.7	0.4	0.9	1.3	0.2	1.1
	Total	31.9	39.5	64.5	30.8	35.5	28.8	25.4	35.2
<b>E. Experience total</b>		64.9	60.8	68.7	75.1	54.8	24.5	33.5	60.7
	Experience in job ads	63.0	52.9	53.4	68.0	49.1	21.6	31.1	54.8
<b>F. Appearance</b>		0.6	1.6	0.5	0.0	0.0	0.2	0.0	0.5
<b>G. Other</b>	Criminal record	11.4	10.2	8.2	3.0	11.0	17.6	7.2	8.8
	References	0.8	0.1	0.7	0.3	0.4	0.3	0.2	0.4
<b>H. Total sum of skills and competences (A-D)</b>		<b>92.5</b>	<b>134.4</b>	<b>241.6</b>	<b>101.1</b>	<b>84.2</b>	<b>65.5</b>	<b>60.6</b>	<b>110.1</b>
<b>F. Total including experience total (H + E)</b>		<b>157.3</b>	<b>195.2</b>	<b>310.3</b>	<b>176.2</b>	<b>139.0</b>	<b>90.0</b>	<b>94.1</b>	<b>170.8</b>

**Table 8: Ireland: Overview of demanded skills and competences: share of jobs where a particular skill was demanded (%)**

		Hotel, catering and personal services staff	Office staff	Metal, machinery and electronic equipment workers	Sales, services and cleaning elementary occupations	Laborers in mining, construction manufacturing and transport	Total
<b>A. Formal education and certification</b>		38.4	6.3	27.4	7.5	.9	22.0
<b>B. Cognitive abilities and skills</b>	ICT	0.3	27.1	4.9	2.9	5.3	6.8
	English	25.9	12.8	17.0	23.8	16.7	21.4
	Driving license	6.9	4.1	12.6	6.5	23.7	7.7
	Ability to learn	1.7	1.2	0.9	0.8	0.0	1.2
	<b>Total</b>	<b>34.7</b>	<b>45.2</b>	<b>35.4</b>	<b>34.0</b>	<b>45.6</b>	<b>37.2</b>
<b>C. Non-cognitive social</b>	Communication	4.8	13.0	4.5	8.1	0.0	6.8
	Service-oriented	1.2	0.7	0.0	0.4	0.9	.8
	Team skills	5.3	2.9	2.2	2.9	2.6	3.8
	<b>Total</b>	<b>11.3</b>	<b>16.7</b>	<b>6.7</b>	<b>11.5</b>	<b>3.5</b>	<b>11.5</b>
<b>D. Non-cognitive personal</b>	Timeliness	0.9	4.8	0.9	1.0	3.5	1.8
	Independence	0.1	0.0	0.4	0.2	0.0	.1
	Reliability	5.7	1.4	3.1	1.9	5.3	3.7
	Creativity	1.9	0.5	0.0	0.0	0.0	0.9
	Flexibility	13.2	8.7	4.9	8.5	7.0	10.1
	Stress-resistant	1.4	1.2	0.9	0.6	0.0	1.1
	<b>Total</b>	<b>23.2</b>	<b>16.7</b>	<b>10.3</b>	<b>12.3</b>	<b>15.8</b>	<b>17.7</b>
<b>E. Experience total</b>		96.8	94.4	95.1	88.1	91.2	93.9
	<b>Experience in job ads</b>	<b>67.6</b>	<b>44.0</b>	<b>69.1</b>	<b>64.8</b>	<b>54.4</b>	<b>61.8</b>
<b>F. Appearance</b>		0.3	0.5	0.0	0.2	0.0	0.3
<b>G. Other</b>	Criminal record	21.1	1.7	5.4	3.1	9.6	11.0
	References	2.6	0.2	3.6	2.9	0.9	2.2
<b>H. Total sum of skills and competences (A-D)</b>		<b>107.7</b>	<b>84.8</b>	<b>79.8</b>	<b>65.2</b>	<b>65.8</b>	<b>88.5</b>
<b>F. Total including experience total (H + E)</b>		<b>204.4</b>	<b>179.2</b>	<b>174.9</b>	<b>153.3</b>	<b>157.0</b>	<b>182.4</b>

Table 9: Denmark: Overview of demanded skills and competences: share of jobs where a particular skill was demanded (%)

		Hotel, catering and personal services staff	Sales staff and fashion work	Office staff	Metal, machinery and electronic equipment workers	Machine operators and assemblers	Sales, services and cleaning elementary occupations	Laborers in mining, construction manufacturing and transport	Total
<b>A. Formal education and certification</b>		30.5	3.9	24.7	14.1	25.0	2.0	9.4	14.0
<b>B. Cognitive abilities and skills</b>	ICT	3.9	10.4	25.8	6.7	25.0	2.5	4.2	8.4
	Danish	4.4	4.3	3.2	4.2	0.0	21.6	18.8	9.3
	Foreign language	2.9	7.7	18.5	8.8	50.0	5.8	4.7	7.8
	Driving license	12.8	6.3	2.7	9.5	0.0	13.1	24.5	10.5
	Ability to learn	5.0	.7	6.7	2.5	0.0	0.6	2.6	2.8
	Total	28.9	29.3	57.0	31.7	75.0	43.7	54.7	38.9
<b>C. Non-cognitive social</b>	Communication	1.7	1.6	9.9	1.8	0.0	2.2	0.5	2.9
	Service-oriented	9.4	42.1	36.0	11.6	0.0	19.4	1.6	22.0
	Team skills	13.1	21.3	27.4	14.4	25.0	5.6	11.5	15.1
	Total	24.2	65.0	73.4	27.8	25.0	27.2	13.5	40.0
<b>D. Non-cognitive personal</b>	Timeliness	0.5	0.2	2.7	1.1	0.0	4.5	0.0	1.7
	Independence	20.0	19.3	36.0	34.2	0.0	22.1	27.1	24.5
	Reliability	7.4	8.2	3.0	12.0	0.0	6.6	27.1	8.6
	Creativity	12.1	10.9	2.7	1.8	0.0	1.3	0.5	5.9
	Flexibility	37.4	32.0	43.5	31.0	0.0	24.3	20.8	31.9
	Stress-resistant	4.5	6.3	16.4	3.5	0.0	2.2	1.0	5.6
	Total	81.9	76.8	104.3	83.5	0.0	60.9	76.6	78.2
<b>E. Experience total</b>		22.5	36.6	38.2	50.7	50.0	27.7	47.9	33.9
	Experience in job ads	0	0	0	0	0	0	0	0
<b>F. Appearance</b>		1.8	20.2	0.8	0.4	0.0	1.6	0.0	5.2
<b>G. Other</b>	Criminal record	13.8	3.6	8.3	8.1	0.0	25.4	9.4	12.6
	References	2.2	0.5	3.2	2.8	0.0	2.2	2.6	2.1
<b>H. Total sum of skills and competences (A-D)</b>		165.4	175.0	259.4	157.0	125.0	133.8	154.2	171.0
<b>F. Total including experience (H + E)</b>		187.9	211.6	297.6	207.7	175.0	161.5	202.1	205.0