Higher Education and the Graduate Labour Market in Serbia

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Context

- Part of a wider study on the Western Balkan region - *Higher Education Provision and Labour Market Needs in the Western Balkans* - commissioned by the EU Commission in 2015
  - Within activities of the Western Balkans Platform on Education and Training, launched in 2012 in cooperation with the Ministers of Education
- Main aim: assist Western Balkans in their EU integration → alignment to the EU acquis on education, provide a regional platform for policy dialogue

Context

- **Methodology:** same for all Western Balkan countries
- Collection of new information (May – Aug. 2015) through graduate surveys, employers surveys, interviews with key stakeholders
- Unique database on HE in the Western Balkans (type & number of HEIs, study programmes, students enrolment and completion rates …)
- 6 country studies + Synthesis Report, to be presented at the Ministerial meeting in Sarajevo, June 2016

Outline

Report on Serbia

1. Mapping the provision of Higher Education (HE)
2. Mapping the graduate labour market (LM)
3. Transition from HE to LM (skill gaps)
4. Skill mismatch
5. Conclusions and policy recommendations

Methodology

- Two internet surveys (May-August 2015)
- Graduate survey: 1,438 respondents
  - Graduated from Serbian HEI since 2010
- Employer survey: 177 respondents
  - Organisations that employ graduates, stratified by four size groups
- In-depth interviews with 12 stakeholders
- Focus groups: Erasmus+ alumni
- Databases: Statistical Office RS, Eurostat, LFS
- Literature review

1. MAPPING HIGHER EDUCATION

Higher education institutions

- Expenditure on higher education in Serbia has fallen during the crisis period
  - from 0.96% of GDP in 2009 to 0.86% of GDP in 2014
  - Government policy is to reach 1.23% GDP by 2020
- Number of private HEIs has increased in response to growing demand
- HE law 2005 implemented Bologna principles
  - Introduced a binary structure with universities and vocational colleges both issuing tertiary degrees

Number of HEIs in Serbia, 2015

	HEIs	Faculties	HEI/ 100,000 pop (regional average)	Faculties' /100,000 pop (regional average)
Total	**85**	**128**	**1.2 (1.3)**	**1.8 (2.3)**
Universities	16		0.2 (0.5)	
Colleges	69		1.1 (0.9)	
By ownership				
Public	51	67	0.7 (0.5)	0.94 (1.5)
Private	34	61	0.5 (0.8)	0.86 (1.4)

Study programmes (SPs)

- 2005 HE law introduced
  - Three-cycle studies
  - European Credit Transfer System (ECTS)
- Project database lists all study programmes
  - 664 BA programmes (63% last 4-years)
  - 553 MA programmes (91% last 1-year)
  - Bologna principles not adopted in practice!
- One third of SPs are offered by private HEIs

Number of study programmes

	Number of SPs	Proportion SPs
Total	**1,518**	**100.0%**
Public	1,108	73.0%
Private	410	27.0%
Level of qualification		
Bachelor	617	43.3%
Master	567	39.8%
Doctoral	241	16.9%

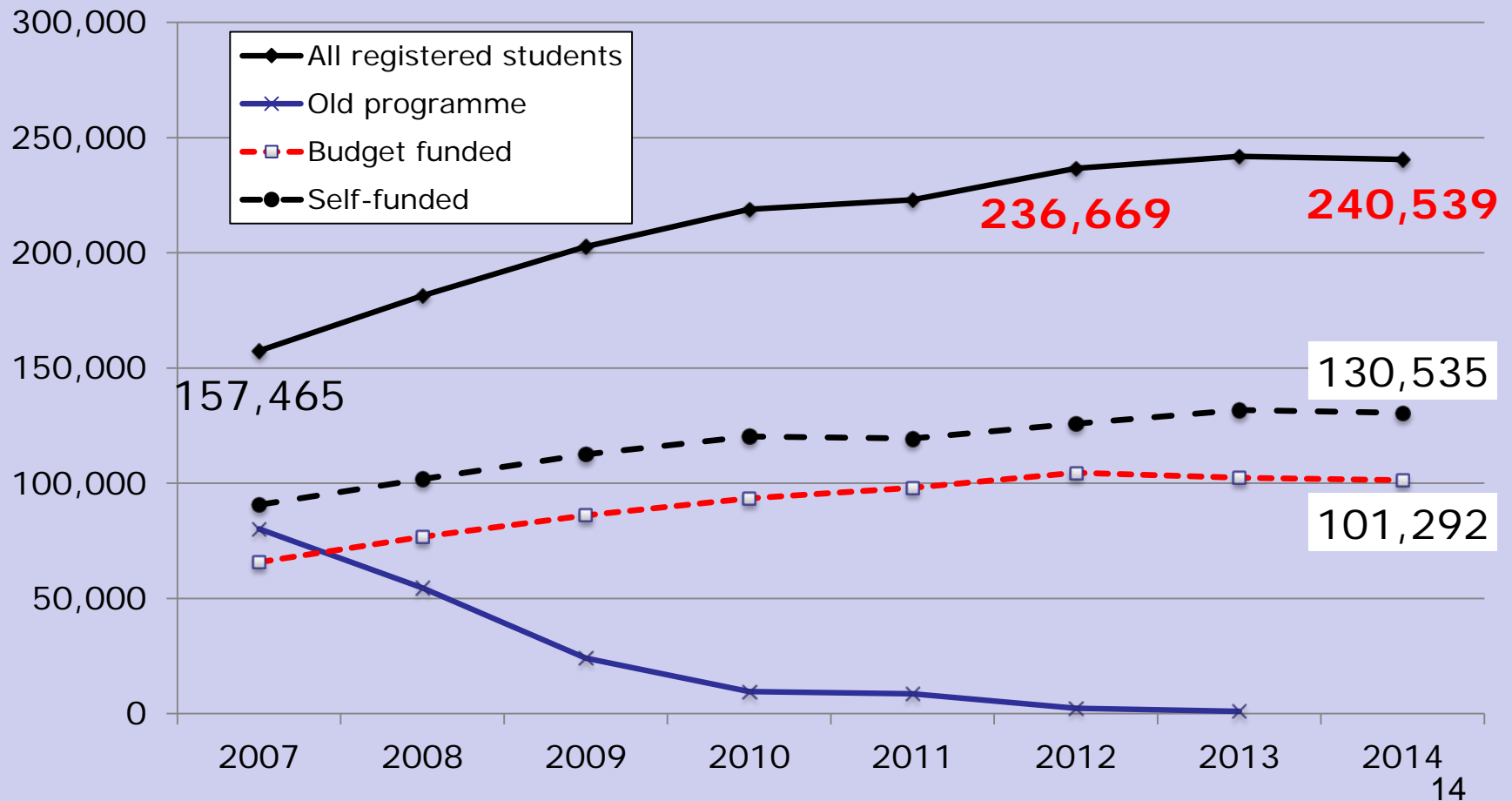| Field of study	Number	Proportion
Total	**1,518**	**100.0%**
Humanities and social sciences (HSS)	587	38.7%
Science, technology, engineering and mathematics (STEM)	551	36.3%

Tuition fees

- At Bachelor level, median annual fee:
  €600 at public HEI and €1,500 at private HEI
- Master level: €740 vs. €1,550
- Ratio between willingness to pay and actual fees ("value for money")
  - BA degree: 74% public HEI; 83% private HEI
  - Master degree: 70% pubic; 94% private

Partial introduction of Bologna system

- Since 2006/07 academic year 3-year Bachelor study programmes have been introduced
- Many HEIs retain 4-year BA as "Bachelor with Honours"
  - Only 38% of all study programmes are 3-year
- Few Master degrees have converted to two-year study programmes
  - Only 8% of Master programmes are 2-year

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Registered students, (2007-2014)

Legend:
- All registered students (black solid line with diamonds)
- Old programme (blue line with X markers)
- Budget funded (red dashed line with squares)
- Self-funded (black dashed line with circles)

157,465

236,669   240,539

130,535

101,292

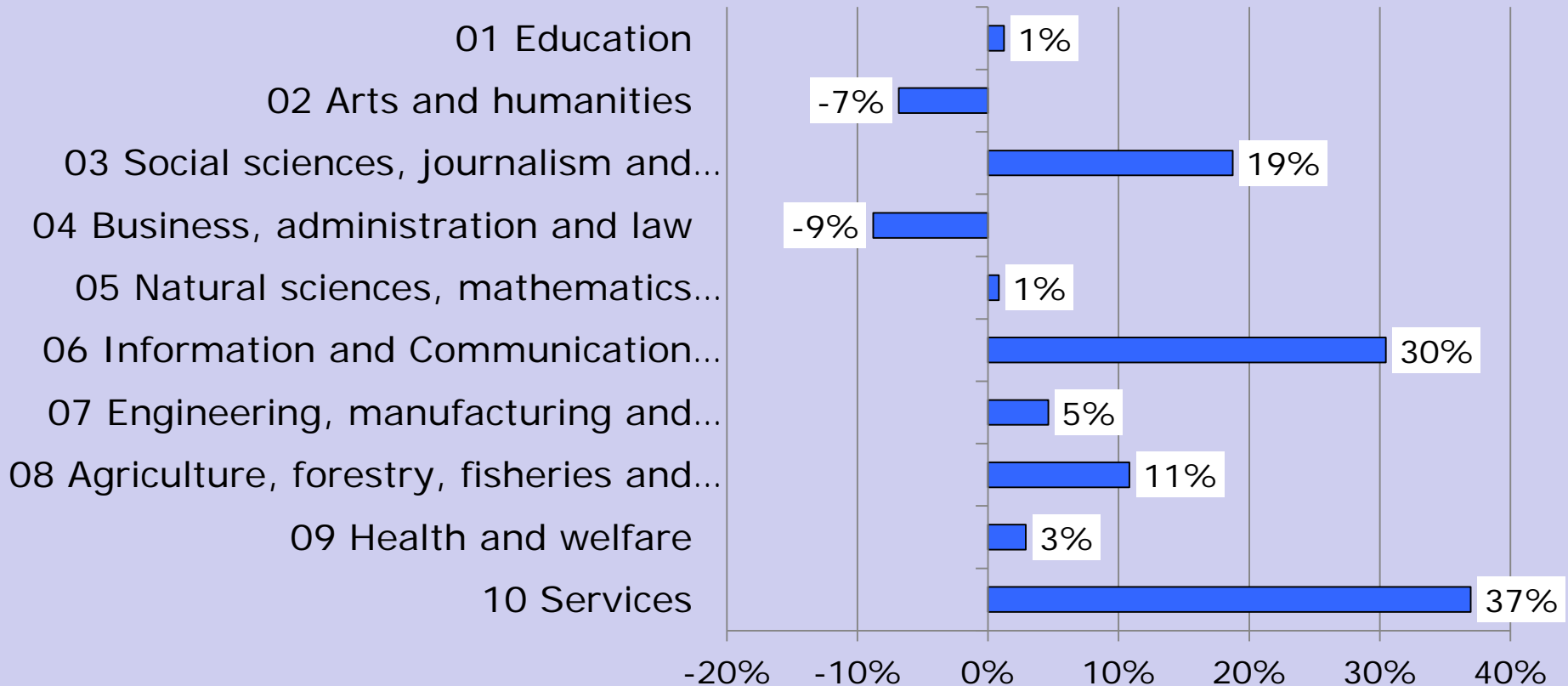2007   2008   2009   2010   2011   2012   2013   2014

Enrolment

- Each year about 52,000 new students enrol at HEI for first cycle studies
  - 15% of these enrol at private HEI
  - 50% of newly enrolled students are budget funded
  - 65% of students that enrol at public Faculties are budget funded
- Total number of new first-cycle enrolments has fallen over last two years
  - Mainly a fall in self-financed enrolments
  - Reflects economic conditions
- In 2013/14, 6,000 enrolled for Master studies, 2,000 for PhD studies

Enrolment by field of study (ISCED)

	Total	Public HEI	Private HEI
Business, administration and law	23%	19%	40%
Engineering, construction and manufacturing	20%	24%	3%
HSS	42%	36%	71%
STEM	31%	35%	12%

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Change in enrolment by field of study (2010/11 to 2013/14)

Field of study	Change
01 Education	1%
02 Arts and humanities	-7%
03 Social sciences, journalism and...	19%
04 Business, administration and law	-9%
05 Natural sciences, mathematics...	1%
06 Information and Communication...	30%
07 Engineering, manufacturing and...	5%
08 Agriculture, forestry, fisheries and...	11%
09 Health and welfare	3%
10 Services	37%

Student completions

- In 2013/14, completion ratio is in the range of 45%-85%
- At second cycle studies, 6,303 students enrolled, while 31,422 students completed => completion ratio of 499% (!)
  - Reason seems to be allocation of "Bachelor with Honours" graduates to second-cycle studies
  - Mainly happens at a few HEIs
- Relevant authorities should review the classification protocol for assigning courses to first and second cycle studies

Proportion of students completing studies (graduating) by broad field of study 2013/14

Field of study	Percentage
01 Education	10.1%
02 Arts and humanities	9.3%
03 Social sciences, journalism and…	9.1%
04 Business, administration and law	26.4%
05 Natural sciences, mathematics…	4.7%
06 Information and Communication…	5.5%
07 Engineering, manufacturing and…	17.6%
08 Agriculture, forestry, fisheries and…	2.4%
09 Health and welfare	8.0%
10 Services	6.8%

0% 5% 10% 15% 20% 25% 30%
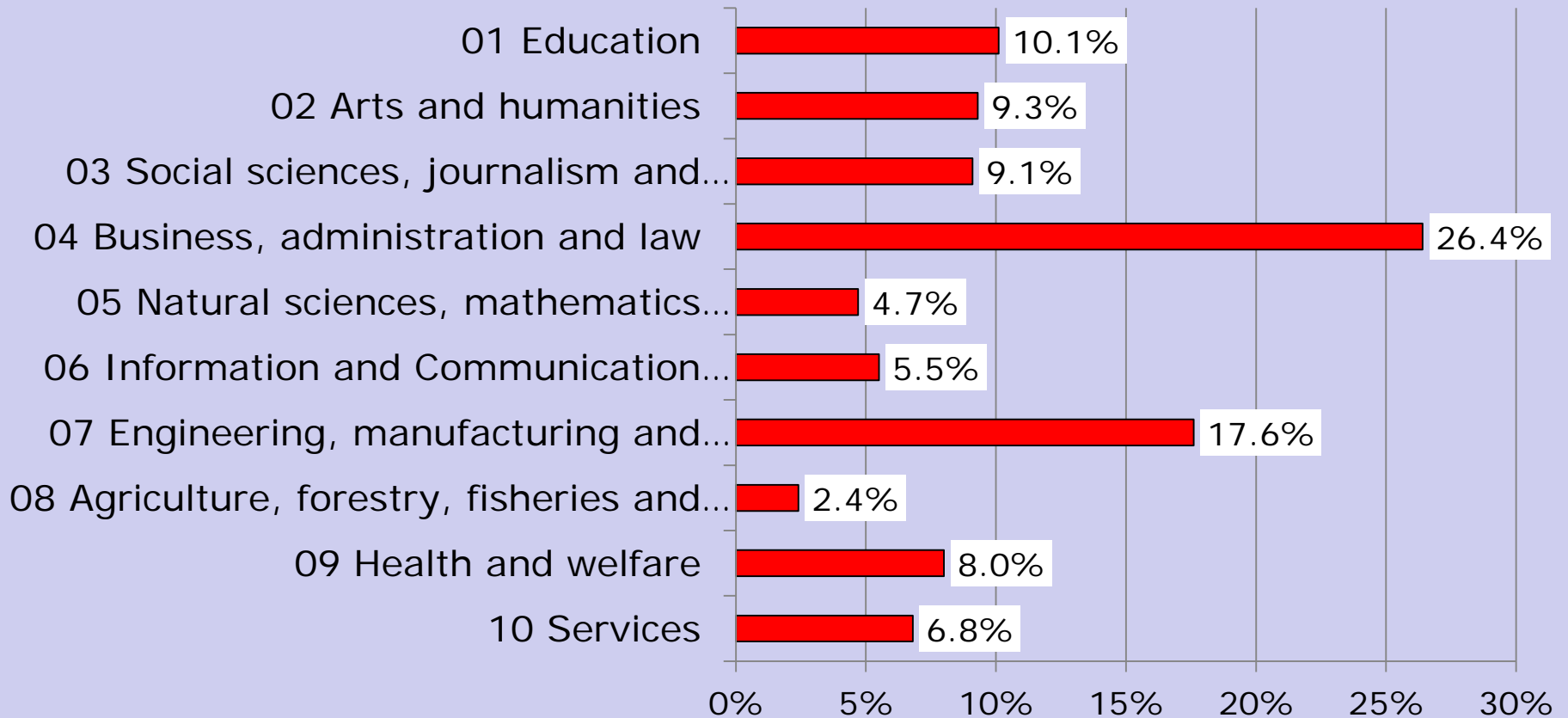
Quality issues - Accreditation

- Commission for Accreditation and Quality Assurance (CAQA) established 2005
  - Accreditation of all HEIs completed between 2007 and 2010
- Insufficient number of inspectors may limit effectiveness of quality assurance
- Some HEIs have only partially implemented CAQA recommendations
- No HEIs have implemented all accreditation standards

Quality issues - Evaluation

- Average score for graduate satisfaction with HE education = 7.2 out of 10 on a 1-10 scale.
- Graduates evaluate quality of education higher at private HEIs than public HEIs by 12 percentage points
  - Debate over whether profit motive stimulates or undermines quality in private HEIs
  - Student characteristics may differ across types of HEI
- "Webometrics" shows 8 public universities in the top 10 Serbian HEIs
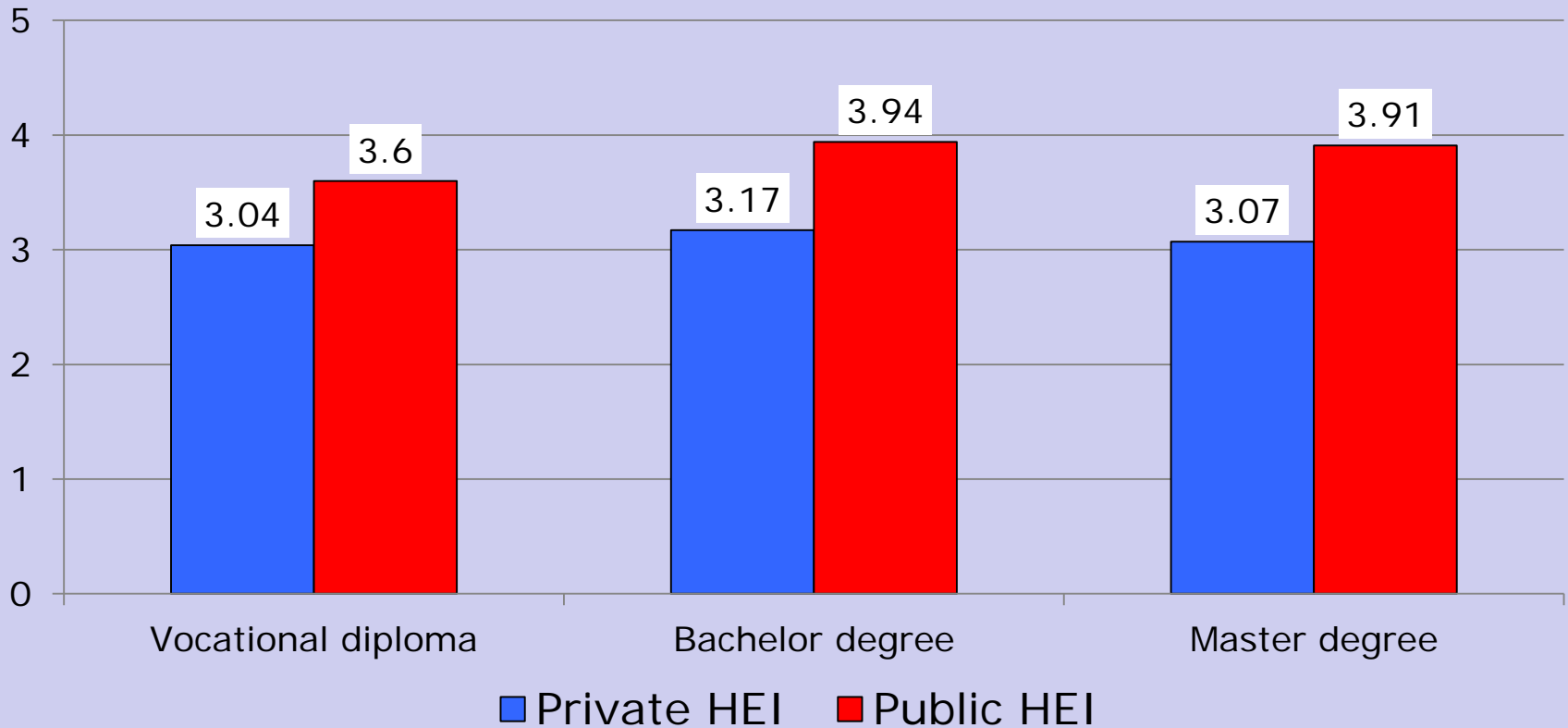 - But mainly based on observable research metrics

Graduates' satisfaction with quality of education

	Coefficient	t-statistic
Public HEI	-1.01***	-6.74
Specialist Diploma	0.57*	1.91
Doctoral degree	1.35***	3.23
Whether had any work experience during HE studies	1.14***	9.92
Constant	7.27***	44.32
Adj. R-Squared= 0.136; F=46.7; p=0.00; N=1,143		

Quality – teaching methods

- Teaching methods follow traditional patterns
  - Too many subjects taught
  - Rote learning
  - Oral examinations

- Job prospects would be improved by:
  - Better teaching methods (64% of respondents)
  - More relevant curriculum (66% of respondents)
  - Better qualified professors (40% of respondents)

Whether better teaching methods would have improved job prospects

Chart showing ratings (0–5) comparing Private HEI (blue) and Public HEI (red):

	Private HEI	Public HEI
Vocational diploma	3.04	3.6
Bachelor degree	3.17	3.94
Master degree	3.07	3.91

Legend: ■ Private HEI ■ Public HEI

Type of teaching methods

- Strong relationship between the type of teaching methods used and the perceived need for improvement in teaching methods
  - When teachers use problem solving and creative thinking as a teaching method, only 18% of respondents consider improvement are very much needed, compared to 62% when teachers do not use such methods
- Opposite result for rote learning methods

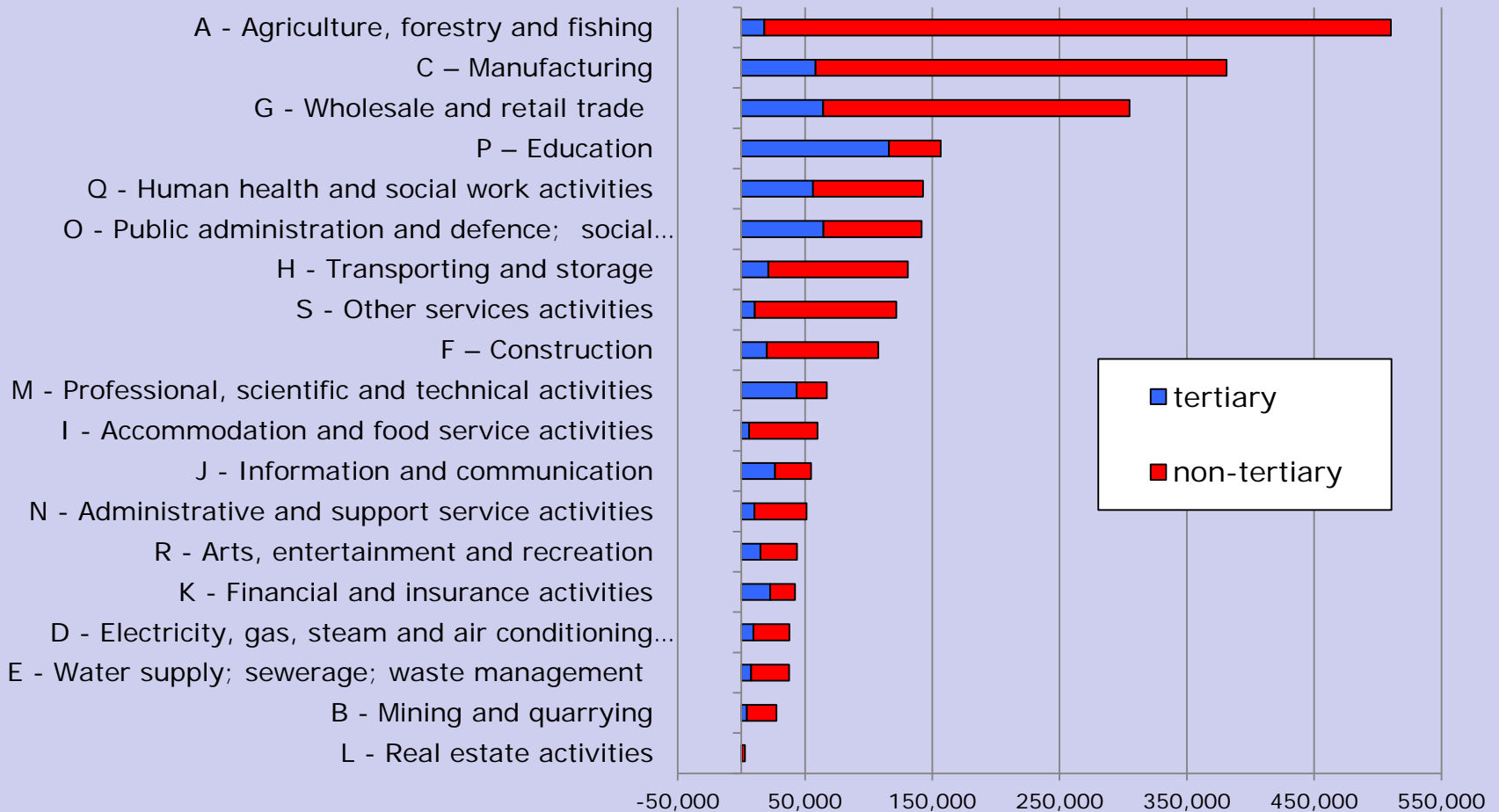# 2. MAPPING THE GRADUATE LABOUR MARKET

The graduate labour market

- Graduates have a lower unemployment rate than non-graduates
  - But higher than in the EU-28 (15% vs 5.5%)
- New graduates have a higher unemployment rate than all graduates
  - At 41.5% it is similar to 43.1% overall youth unemployment rate
- Fastest increase in graduate employment is in ICT sector (40% p.a. from a low base)
  - Faster in micro and large employers than others
  - Faster in "Gazelles" than others, which tend to be SMEs
- Current oversupply of graduates may become a shortage by 2018 at current capacity of HE sector

Graduate labour market, 2014
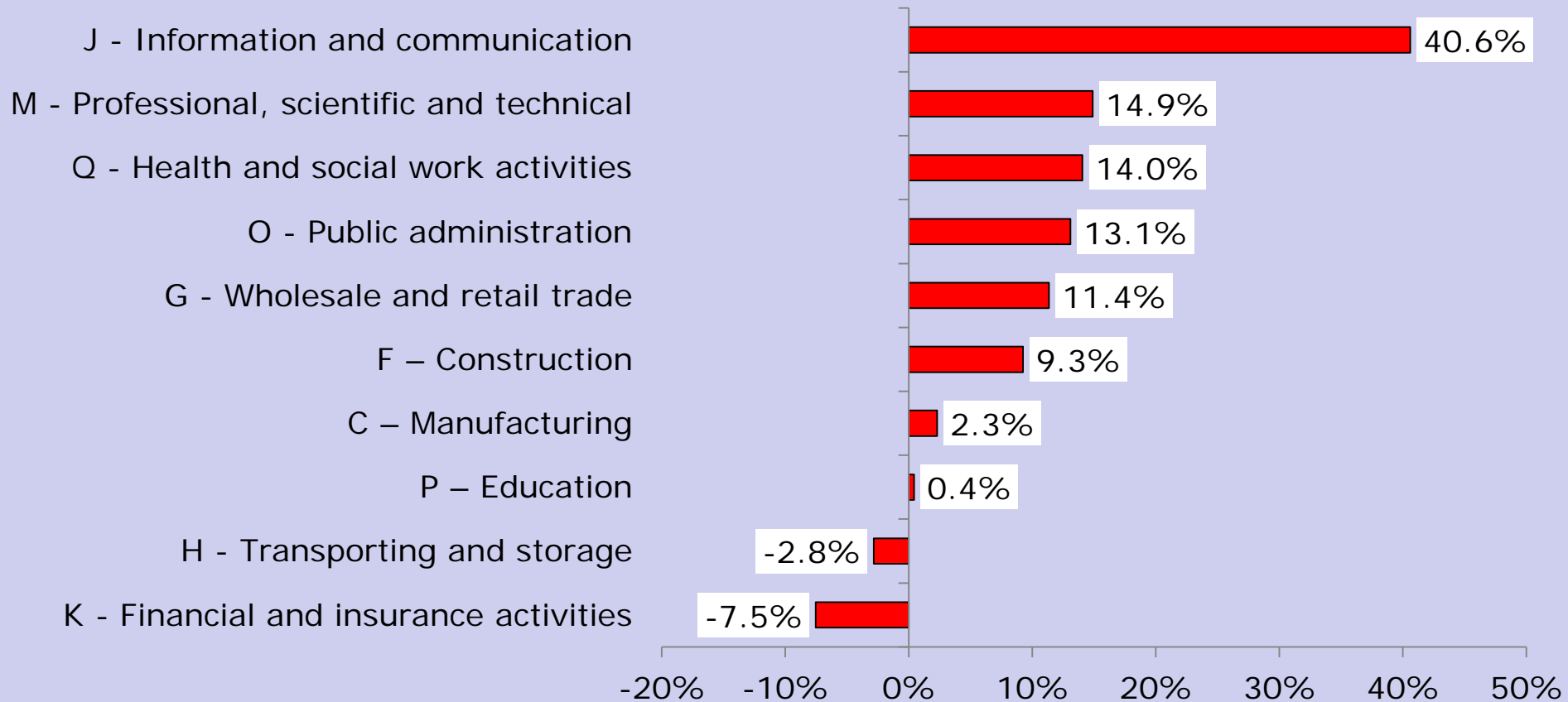
	Serbia	Serbia HE graduates	Western Balkans	EU-28	EU-28 HE graduates
Unemployment rate	19.4%	**15.0%**	24.2%	9.5%	**5.5%**
Employment rate	41.7%	**55.0%**	48.6%	58.5%	**76.7%**

Graduate employees by sector

Chart: Graduate employees by sector, showing tertiary (blue) and non-tertiary (red) employees.

Sectors (top to bottom):
- A - Agriculture, forestry and fishing
- C – Manufacturing
- G - Wholesale and retail trade
- P – Education
- Q - Human health and social work activities
- O - Public administration and defence; social...
- H - Transporting and storage
- S - Other services activities
- F – Construction
- M - Professional, scientific and technical activities
- I - Accommodation and food service activities
- J - Information and communication
- N - Administrative and support service activities
- R - Arts, entertainment and recreation
- K - Financial and insurance activities
- D - Electricity, gas, steam and air conditioning...
- E - Water supply; sewerage; waste management
- B - Mining and quarrying
- L - Real estate activities

Legend:
- tertiary
- non-tertiary

X-axis: -50,000   50,000   150,000   250,000   350,000   450,000   550,000

Annual % change in graduate employment (major sectors) 2012-14

Sector	% change
J - Information and communication	40.6%
M - Professional, scientific and technical	14.9%
Q - Health and social work activities	14.0%
O - Public administration	13.1%
G - Wholesale and retail trade	11.4%
F – Construction	9.3%
C – Manufacturing	2.3%
P – Education	0.4%
H - Transporting and storage	-2.8%
K - Financial and insurance activities	-7.5%

-20% -10% 0% 10% 20% 30% 40% 50%

Graduate employees by size group

- Most employment growth has taken place among a small proportion of employers (Employers Survey):
  - 80% of jobs are created by 10% of employers (last 3 years)
  - 82% of graduate jobs are created by 16% of employers
- One eighth (12.5%) of employers are Gazelles (employment growth > 20% p.a.)

Distribution of graduates by size of employer

	Distribution of employers in sample	Distribution of graduate employees	Average number of graduate employees	Median number of graduate employees	Density of graduate employment per employer
Micro	23.1%	0.3%	2.6	2.5	72%
Small	21.2%	3.5%	12.5	12.0	53%
Medium	30.8%	20.9%	52.3	33.5	42%
Large	25.0%	75.2%	297.0	237.0	35%
Total	**100%**	**100%**	**82.4**	**21.5**	**47%**

Graduate employment growth by size group

- Graduate employment among micro employers grew by 15% p.a., in large employers by 11% p.a. (over three years)

- One fifth of micro and small employers are fast-growth "gazelles" versus only 8% of medium and large employers

- Most dynamic source of graduate employment is among micro and small "gazelle" employers (in ICT industry)

3. TRANSITION FROM HE TO LM

Precarious entry to the labour market

- Unemployed graduates average duration of:
  - Unemployment: 17 months
  - Employment: 10 months
  - Initial job search: 8 months

- Employed graduates average duration of:
  - Employment: 2 years and 2 months
  - Initial job search: 9 months
  - 58% have been unemployed at least once

Lack of cooperation between HEIs and employers

- HEI-employer cooperation common in most EU countries
- In Serbia, 47% of employers have never cooperated over curricula with HEI, 36% rarely, 17% often
  - Yet, 71% say that such cooperation would be desirable and would improve matching of graduates to the needs of the employer
- Good example of opportunity for state support to bring about social improvement

Lack of assistance in finding a job

- Graduates more likely to turn to friends and family to find a job than to formal institutions
  - E.g. HEI career centre or National Employment Service
- Evidence of nepotism in job search
  - Employed graduates significantly more likely to have received assistance from family (or friends or professors) than unemployed graduates ($p < 0.01$)

Help to find a job from alternative sources

Source	Value
Family	3.0
Friends	2.6
Your professors	1.7
The Public Employment Service	1.3
Career Guidance Centre within the university	1.3
Private Employment agencies	1.2
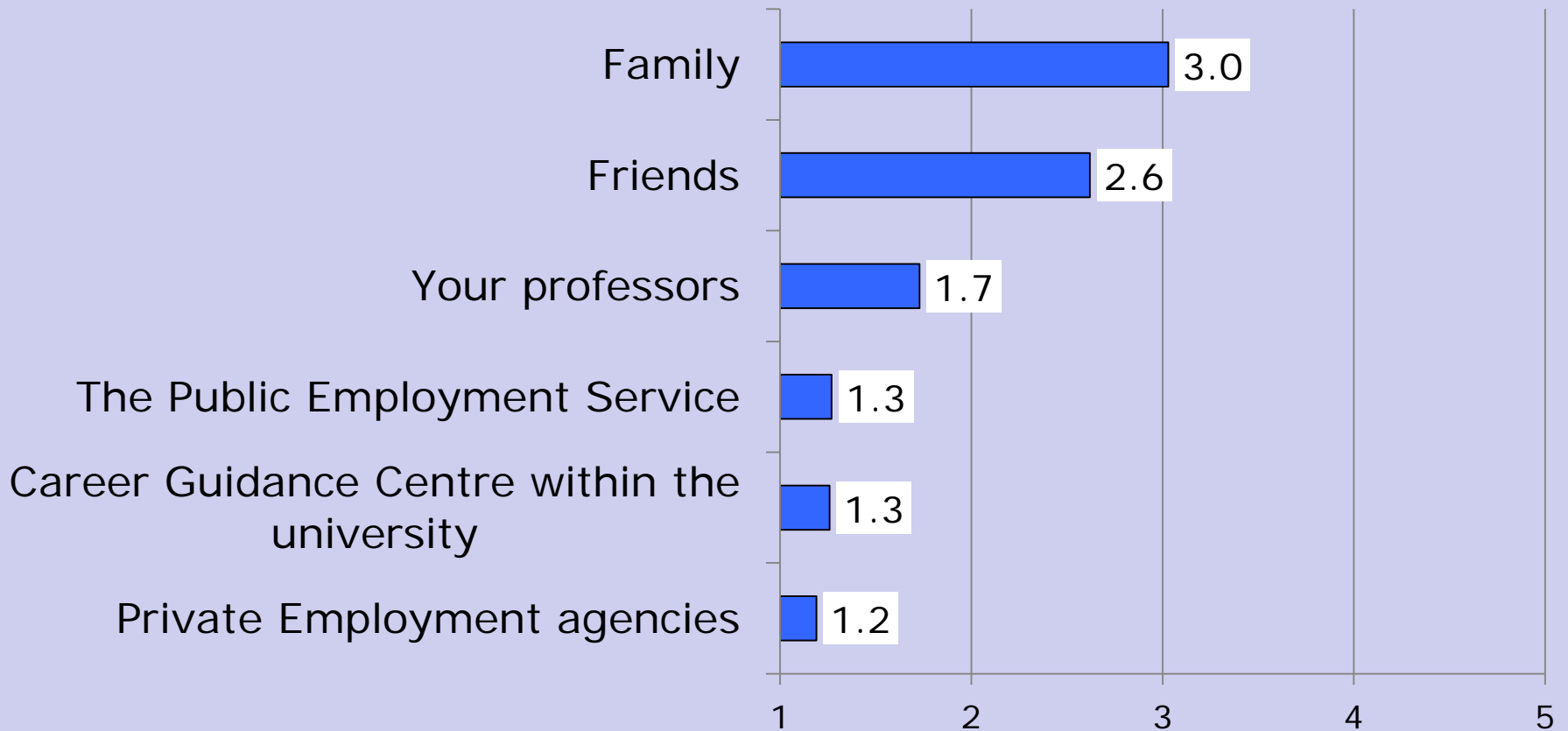
Lack of prior work experience

- Three quarters of employers attach at least some importance to graduate recruits having prior work experience
  - 57% of graduates with very much work experience have a job vs 42% of those with no work experience (p<0.01)
- Work experience helps efficient matching of graduates by field of study (p<0.01)
- National programmes for internship since 2011
  - 5,000 graduates involved in 2015
  - Many large foreign companies provide internships
  - Internship works well only when supported by HEI-employer cooperation (Radišić, 2011)

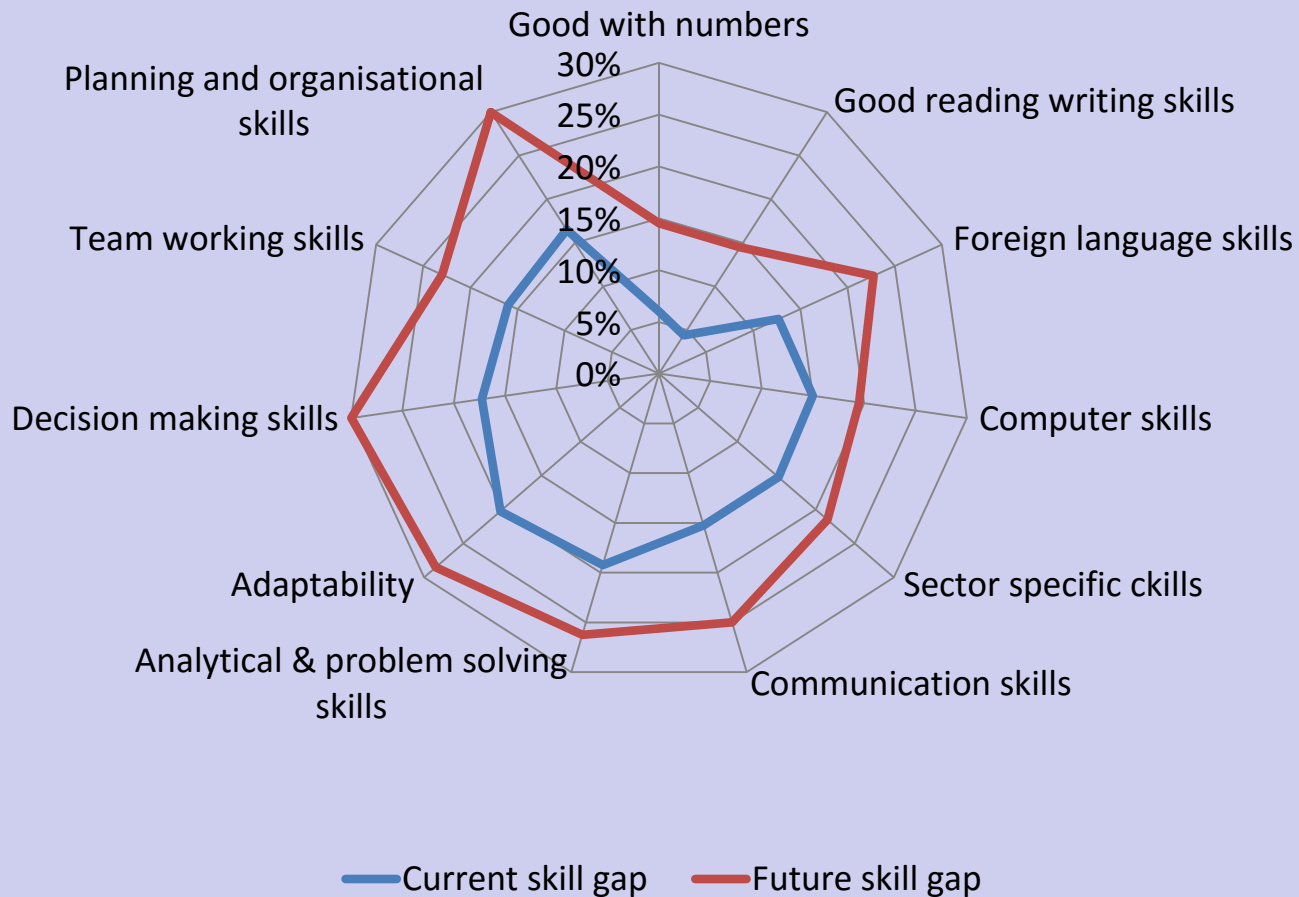# Employers' challenges in taking on graduates – dissatisfaction with skills

- Average score 5.9 on 1-10 scale of satisfaction with skills of new graduates
  - Foreign employers score 7.0, domestic 5.5
- 55% employers think HE graduates only bring "some" value-added compared to non-graduates
- Employers think graduates lack interactive skills
- Employers in hi-tech sectors less satisfied with skills of new graduates than others
- Employers that cooperate with HEIs have better perception of graduate skills than others

Employer challenges – skill gaps

- Rapid economic change in transition has led to new demands for skills
- HEIs have not adapted fast enough, so employers perceive graduates have skill gaps
- Skill gaps measured by difference between skills that graduates need, and skills that graduates possess, on a range of skill dimensions (employer survey)
  - Cognitive skills (e.g. reading, writing, numeracy)
 - Interactive skills (e.g. team working, adaptability, analytical and problem solving skills)

Graduate skill gaps – current and future

Radar chart comparing Current skill gap (blue) and Future skill gap (red) across: Good with numbers, Good reading writing skills, Foreign language skills, Computer skills, Sector specific ckills, Communication skills, Analytical & problem solving skills, Adaptability, Decision making skills, Team working skills, Planning and organisational skills. Axis scale: 0%, 5%, 10%, 15%, 20%, 25%, 30%.

Current skill gap   Future skill gap

Skill gaps

- Skill gaps mainly in interactive skills
- Skill gaps expected to increase in the future (next three years)
- Cognitive skill gaps
  - Graduates employed by Gazelles have no skill gaps in numeracy, reading and writing skills
- Employers identify classes in small groups and problem-solving teaching methods as most useful
  - Reform of teaching methods is important to resolve skill gaps

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Skill gaps and cooperation with HEI

Legend: ■ Current skill gap □ Future skill gap
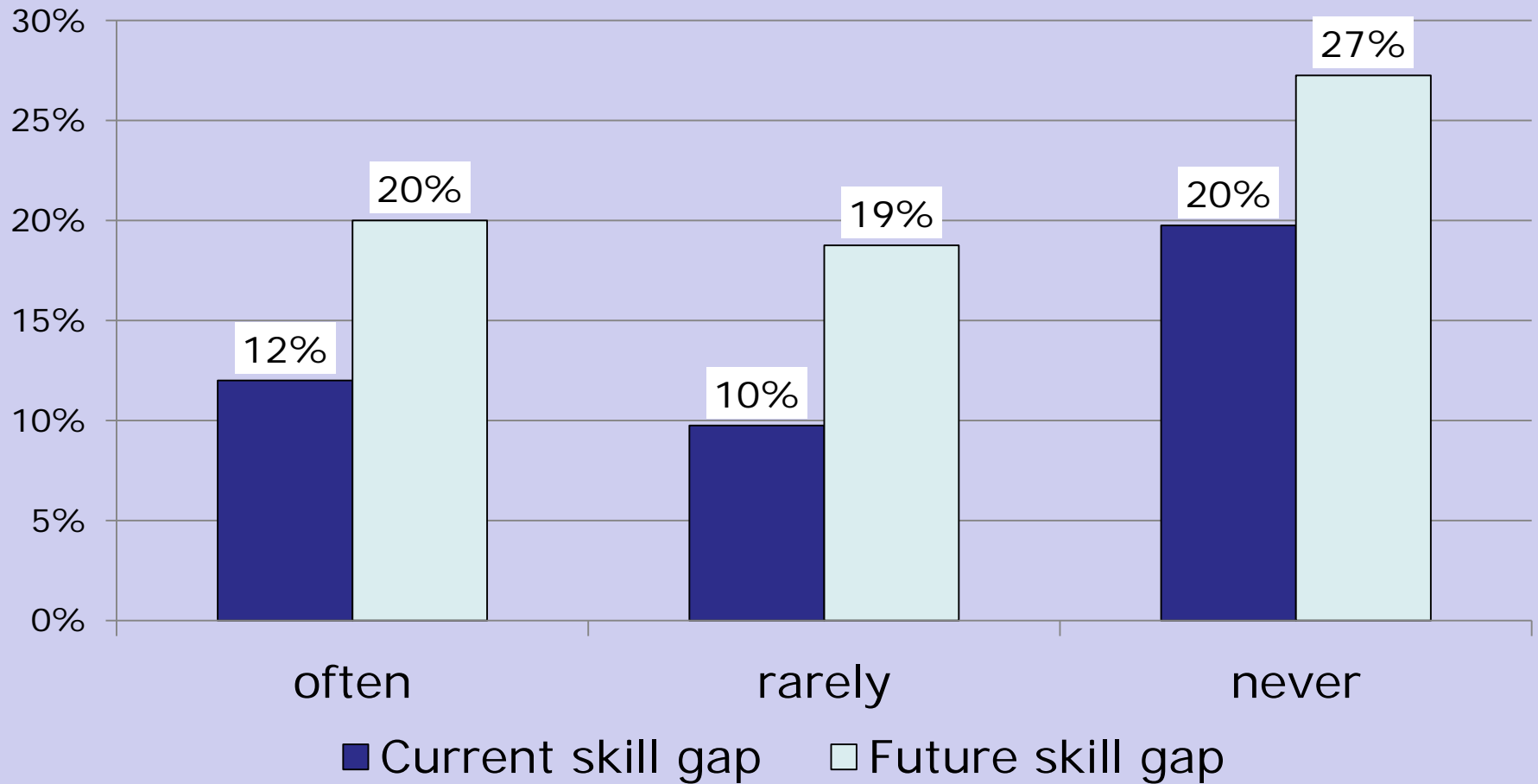
Employer challenges - Training

- 82% of employers find it necessary to provide additional formal training to their graduate recruits
  - 89% provide informal training
  - 93% of employers in high technology firms provide formal training
- However, practices of human resource management are weakly developed in Serbian companies (Bogičević Milikić, 2012)
  - Few employers follow up training with an employee development plan

4. SKILL MISMATCH
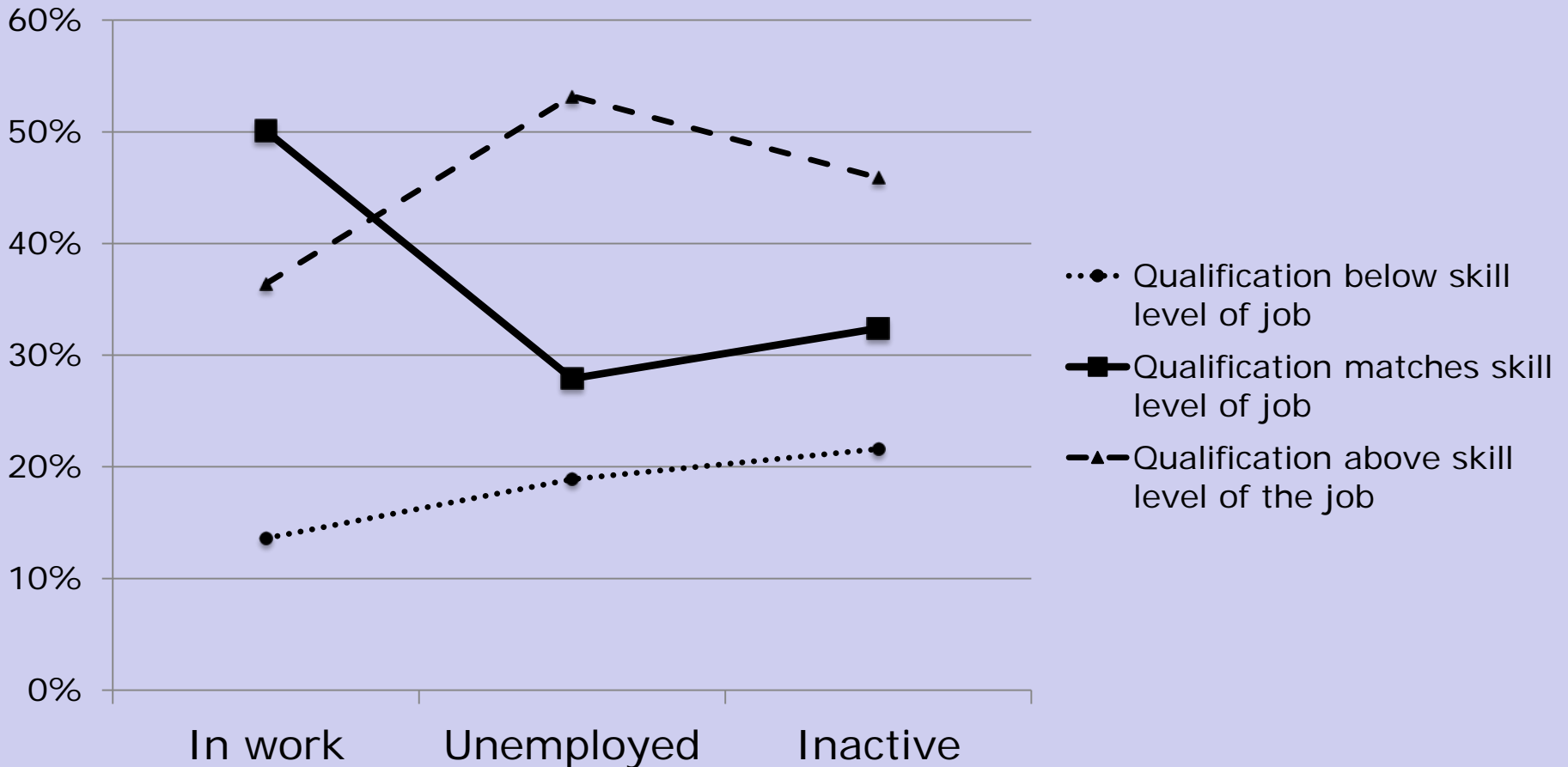
Horizontal mismatch

- Horizontal mismatch – field of study does not not correspond to the requirements of the job
  - More than one third of graduates are mismatched in this way
- Factors associated with good matching
  - Strong performance at HEI, good interactive skills, high level of support from HEI
- But
  - Help from friends to find a job negatively correlated with good matching
- Well matched graduates have higher pay than mismatched graduates
  - Median current salary of a well matched new graduate €400 per month, compared to €350 per month for mismatched graduate

Vertical mismatch

- Level of degree does not correspond to skills needed in the job
- 54% of graduates are mismatched in this sense
  - 39% are overqualified
  - 46% are well matched
- Well matched graduates have higher initial earnings
  - Differences narrow as graduates find better matched jobs

Vertical matching (% within labour force status)

Chart showing vertical matching percentages across three labour force statuses (In work, Unemployed, Inactive).

Y-axis: 0% to 60% (in 10% increments)

X-axis categories: In work, Unemployed, Inactive

Legend:
- Qualification below skill level of job
- Qualification matches skill level of job
- Qualification above skill level of the job

Factors associated with vertical matching

- Extent of help received from HEI in job search => good match ($p<0.01$)
  - Important role that HEI can play in assisting transition to the labour market
- Difficulties on labour market
  - Subject studied ($p<0.1$)

  (Implies importance of career guidance at early stage)
  - Reputation of HEI ($p<0.01$)
  - Economic situation ($p<0.01$)
  - Work experience ($p<0.05$)

5. CONCLUSIONS AND POLICY RECOMMENDATIONS

Summary of research findings (1)
HE provision

- Expansion in HE student numbers has come to an end
- Bologna principles have not been consistently implemented
  - Degree qualifications are misclassified leading to unreliable HE statistics
- Graduates from private HEIs are more satisfied with quality of education than those from public HEIs
- Graduates are dissatisfied with teaching methods, and think better teaching would improve job prospects.

Summary of research findings (2) Graduate labour market

- Graduate unemployment rate is 4.4 percentage points lower than of working population
  - For new graduates it almost the same as the overall youth unemployment rate
- Graduate employment has grown fastest in micro and large employers, but also in:
  - Small number of high growth SMEs
  - ICT sector
- By 2018 there may be a shortage of graduates if optimistic economic growth forecasts are fulfilled
  - Currently there is an oversupply

Summary of research findings (3) Transition to the labour market

- Graduates have a difficult entry to the labour market
  - Graduates rely more on family and friends than on formal institutions to find a job
  - Lack of work experience makes finding a job difficult
- Many employers are dissatisfied with graduates' skills
  - Mostly consider that graduates lack interactive skills
- Few employers cooperate with HEIs over curricula or recruitment
  - Most employers provide additional training to fill skill gaps

Summary of research findings (4)
Skill mismatch

- Both horizontal (HM) and vertical (VM) skill mismatch are widespread
  - One third graduates are horizontally mismatched
  - Two fifths are "overqualified" for their job
  - Mismatched graduates have lower productivity, lower pay, and weaker job retention
- HM: improved by academic performance, interactive skills, support from HEI in finding a job
- VM: improved by subject studied, HEI reputation, economic situation, support from HEI in finding a job

Policy recommendations for HE sector

1. Modernise curricula and teaching methods
2. Focus on improving students' interactive skills
3. Further integrate public HEIs
4. Improve quality assurance system and publish assessment scores
5. Improve HE information system and data collection including tracer studies
6. Improve career guidance services both at secondary schools (for prospective students) and at HEIs (for final year students) to reduce mismatch

Policy recommendations for graduate labour market

1. Give graduates more work experience in study programmes
    - Expand existing internship scheme for graduates
2. Support fast growth micro and small firms in ICT sector that employ graduates
3. Support improved cooperation between employers and HEIs
4. Support employer training programmes to enhance career development

Thank you for your attention!!!