

Erasmus

The next EU programme for
Education, Training, Youth and Sport
2021-2027

Lloyd Anthony Huitson
Directorate-General for Education, Youth, Sport and
Culture
European Commission

A European Education Area

The Commission's **vision for a European Education Area by 2025:**

"a Europe in which learning, studying and doing research would not be hampered by borders. A continent, where spending time in another Member State – to study, to learn, or to work – has become the standard and where, in addition to one's mother tongue, speaking two other languages has become the norm. A continent in which people have a strong sense of their identity as Europeans, of Europe's cultural heritage and its diversity."

The next Erasmus programme (2021-2027) – a key instrument for building a European Education Area

Erasmus programme 2021-2027 at a glance

Enriching lives, opening minds

through EU-funded learning opportunities abroad, partnerships, support to reform

2014 – 2020

14.7 billion EUR

Opportunities abroad for over

4

million people



2021 – 2027

30 billion EUR

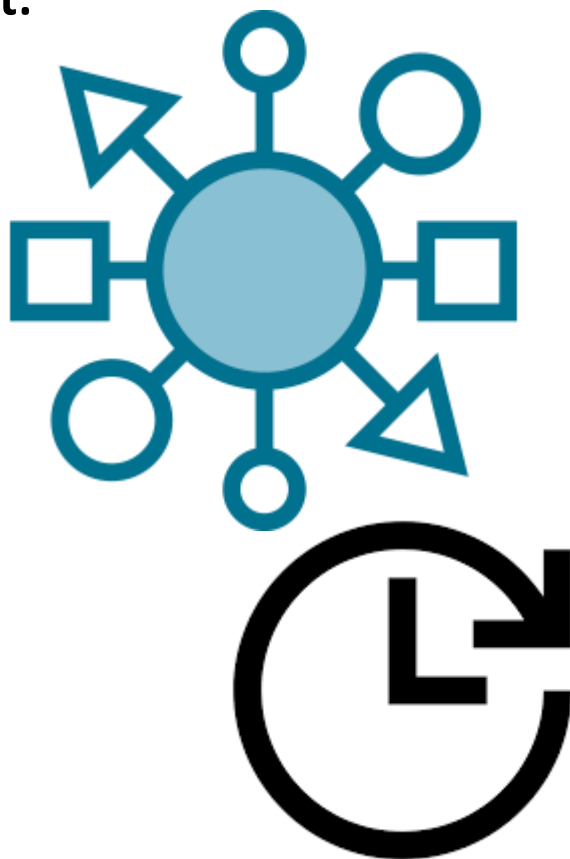
Opportunities abroad for over

12

million people

Erasmus programme 2021-2027 at a glance

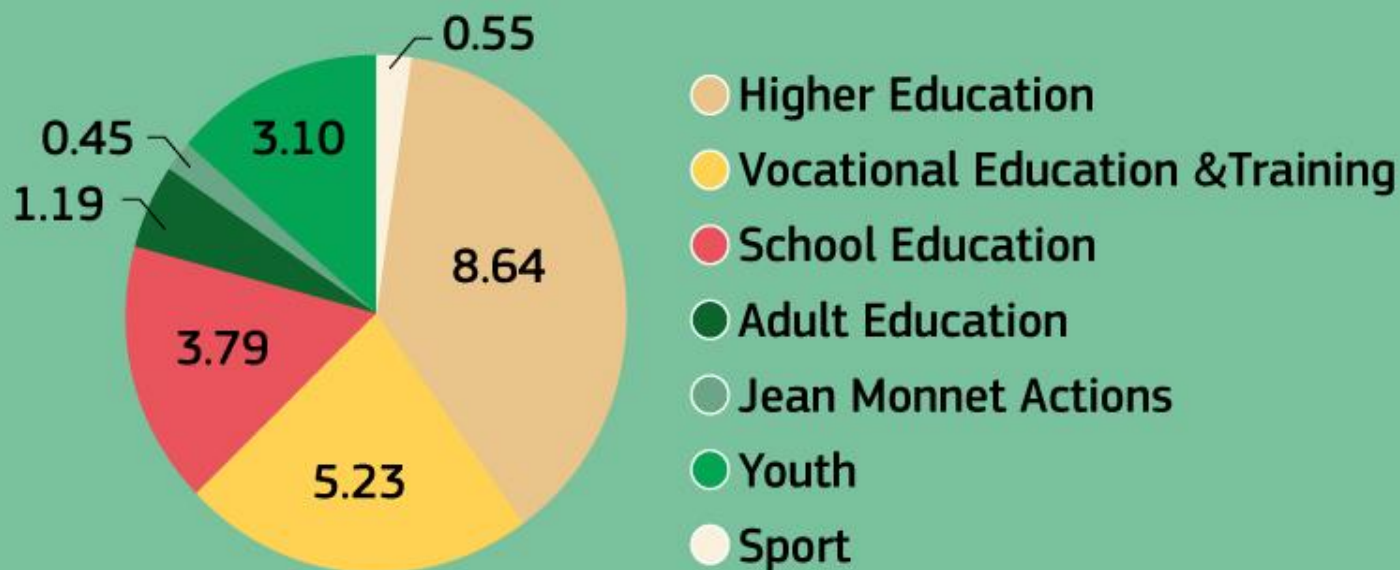
- "Evolution not revolution", building on 30 years of success
- while making it:



Budget allocation 2021-2027

Erasmus will provide increased support to all education and training sectors as well as to the youth and sport sectors

Erasmus allocation to sectors in billion €*



* only reflecting the minimum pre-allocated funding

What's new for higher education?

- New ambitious formats of cooperation, such as European Universities, and partnerships for innovation
- Targeted mobility in forward looking fields
- Increased international mobility and cooperation
- Increased virtual cooperation and blended mobility
- European student card

“.....Member States, Council and the Commission encourage the emergence by 2024 of some twenty 'European Universities', consisting in **bottom-up networks of 4 to 6 universities across the EU** which will enable students to obtain a **degree by combining studies in several EU countries** and contribute to the international **competitiveness** of European universities.”



European Council conclusions on the
Communication on Strengthening European Identity
through Education and Culture

14 December 2017

Objectives of 'European Universities'

- Education Council -

A more united and
stronger Europe with...

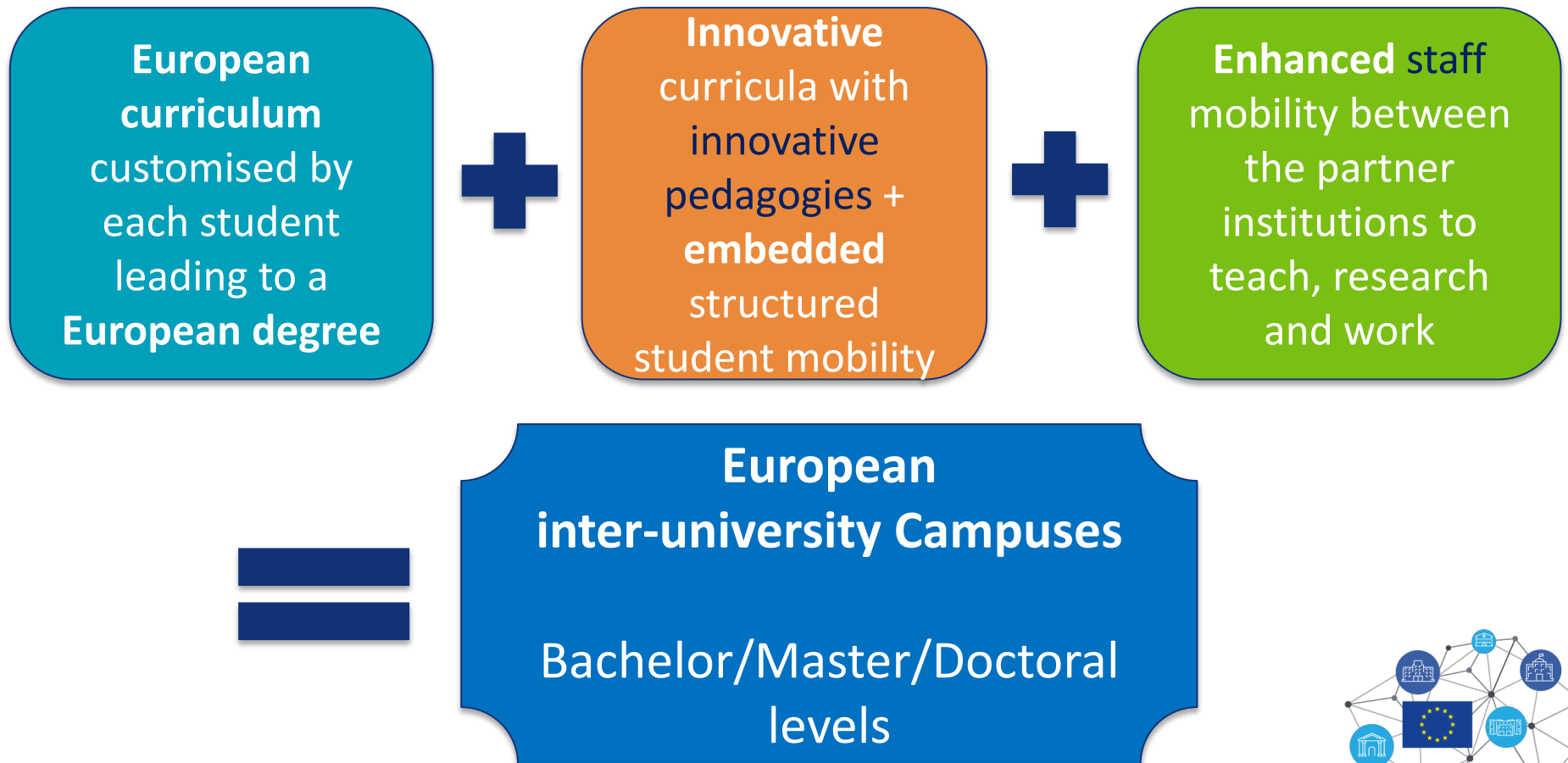
...increased **quality**,
performance and
competitiveness of European
higher education institutions

KEY PRINCIPLES

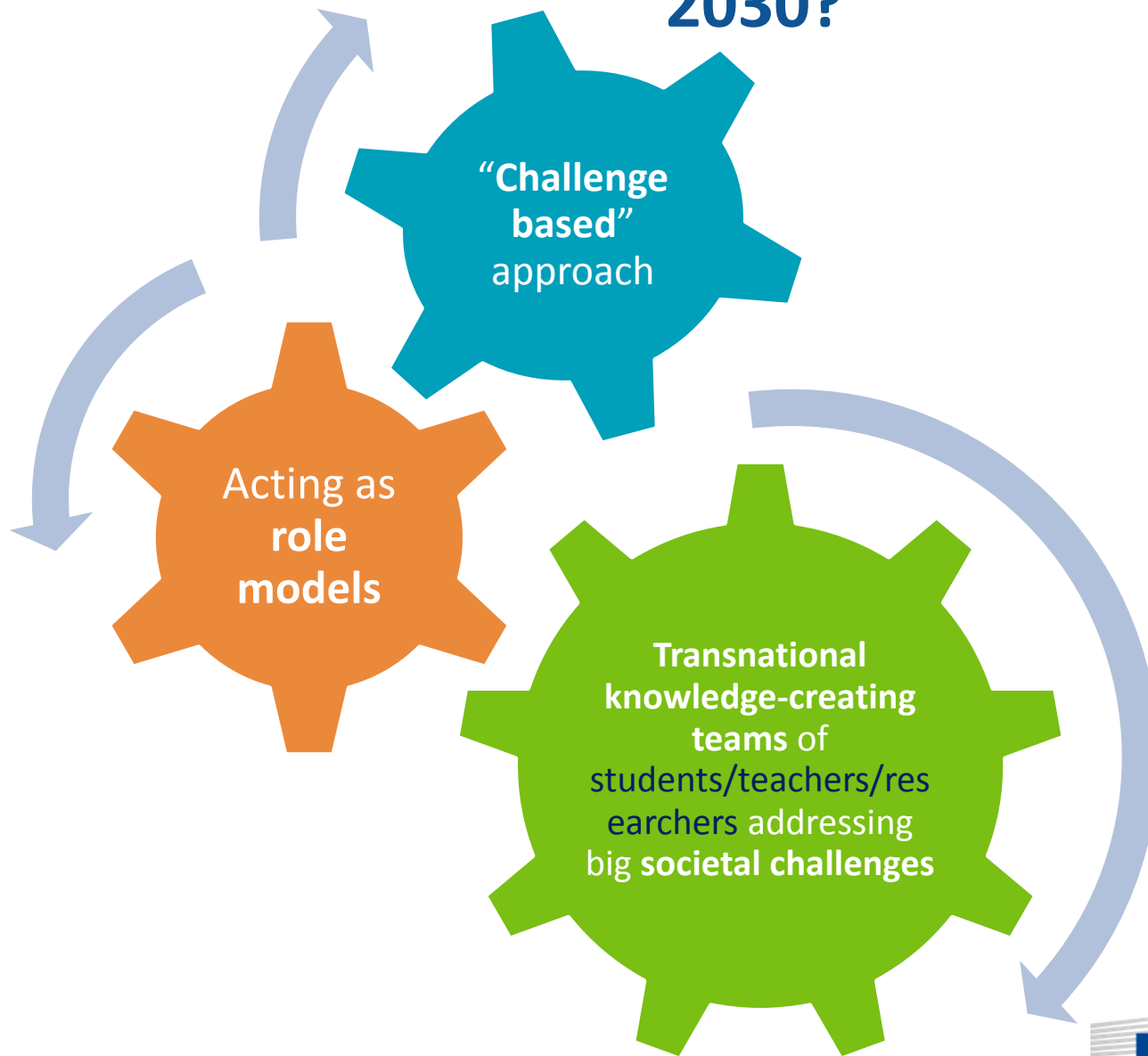
- ✓ bottom-up alliances of higher education institutions
- ✓ open to all types of Higher Education Institutions
- ✓ geographically balanced
- ✓ Socially inclusive



How will 'European Universities' look in 2025-2030?

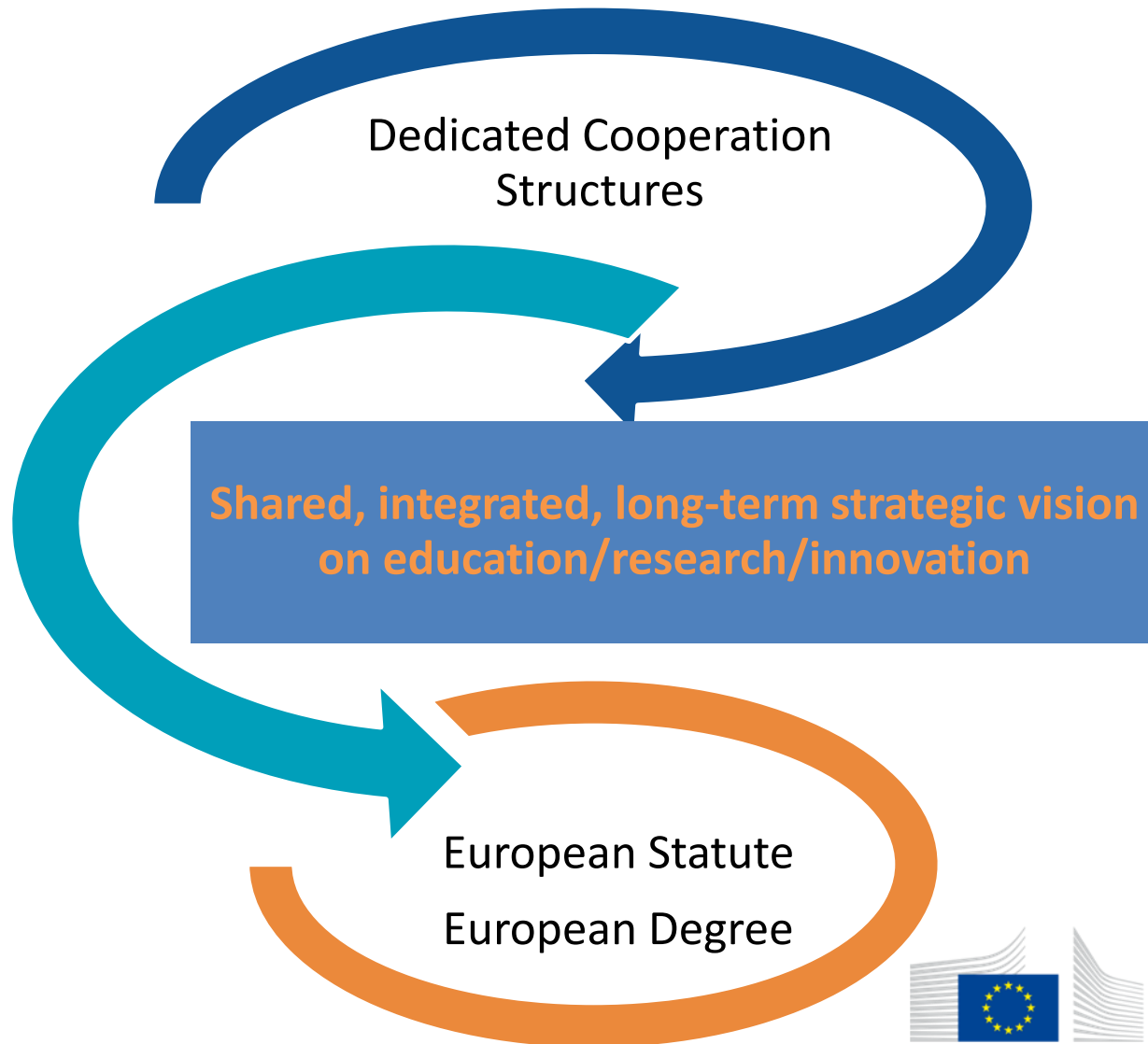


How 'European Universities' will look like in 2025-2030?



European
Commission

How European Universities will look like in 2025-2030?



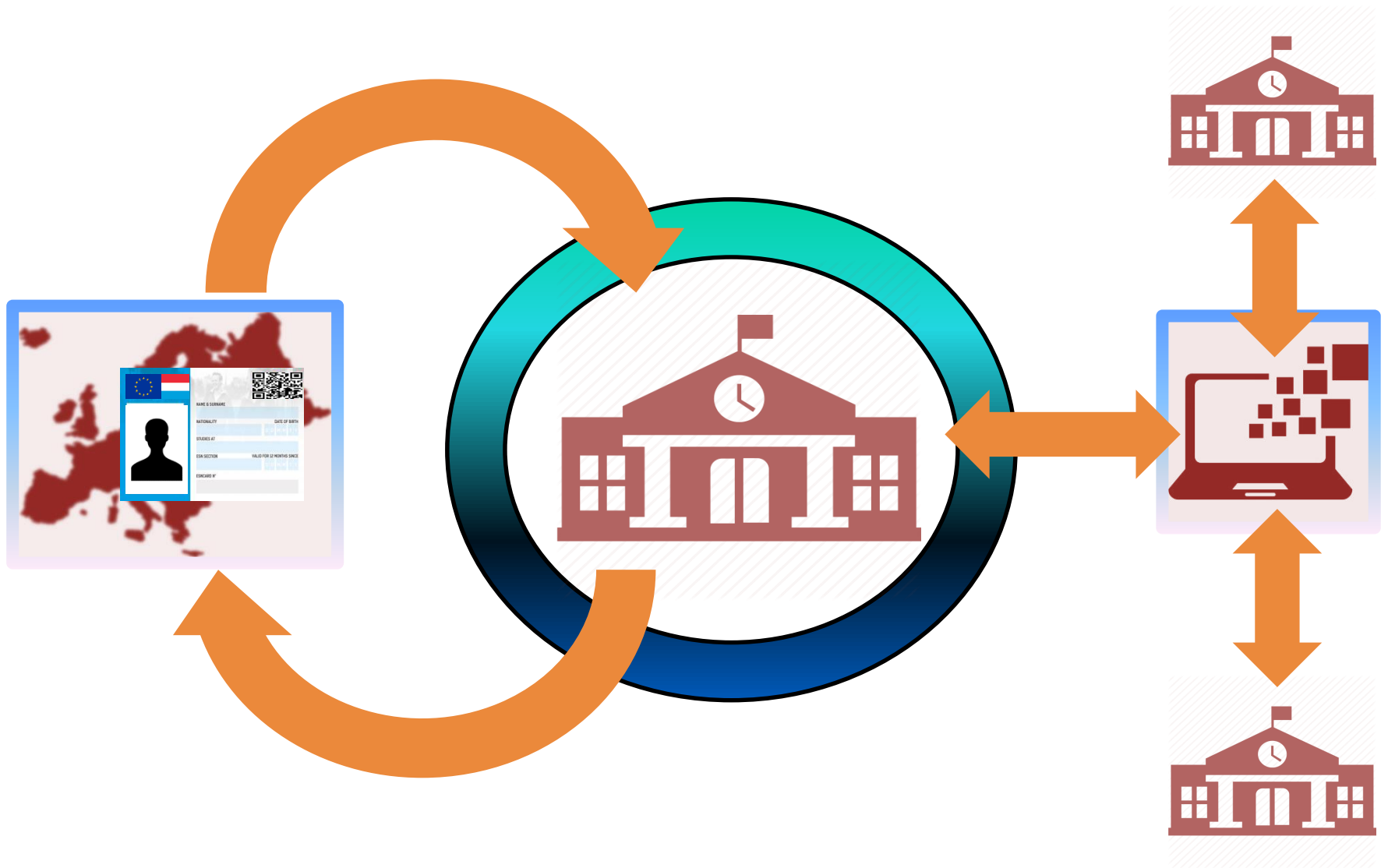
Testing phase 2019 and 2020

2 calls for European Universities to be launched under 2019 and 2020 Erasmus+ Work Programmes as centralised actions

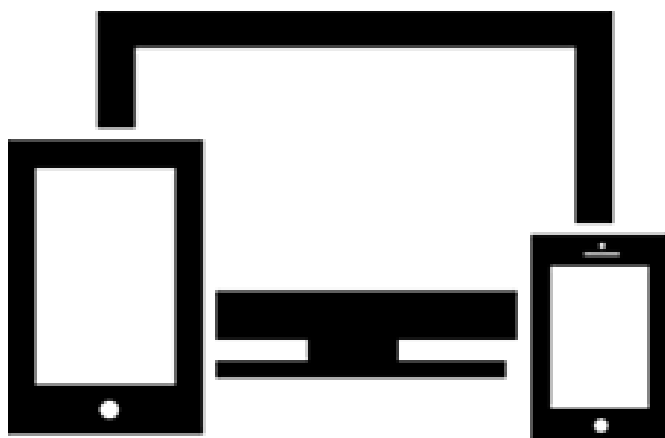
Funding duration of 3 years

Possibility to reapply under the next MFF after a positive evaluation

European Student Card



A more inclusive and accessible Erasmus



ERASMUS+ STUDENT AND ALUMNI ASSOCIATION

Main activities for higher education as proposed in Erasmus 2021-2027

Key action 1:

- mobility of higher education students and staff
- language learning opportunities (Online Linguistic Support)



Key action 2:

- partnerships for cooperation
- partnerships for excellence: European universities and Erasmus Mundus Joint Master degrees
- partnerships for innovation: alliances and forward-looking projects

Main activities for higher education as proposed in Erasmus 2021-2027

Key action 3:

- Different activities to support policy cooperation and dialogue with key stakeholders at European level

Jean Monnet actions:

- Jean Monnet Modules
- Jean Monnet Chairs
- Jean Monnet Centres of Excellence

More information?

- Erasmus+ website:

https://ec.europa.eu/programmes/erasmus-plus/news/commission-adopts-proposal-next-erasmus-programme-2021-2027_en

- Link to press release:

http://europa.eu/rapid/press-release_IP-18-3948_en.htm

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www.ceps.eu

Work in the Platform Economy

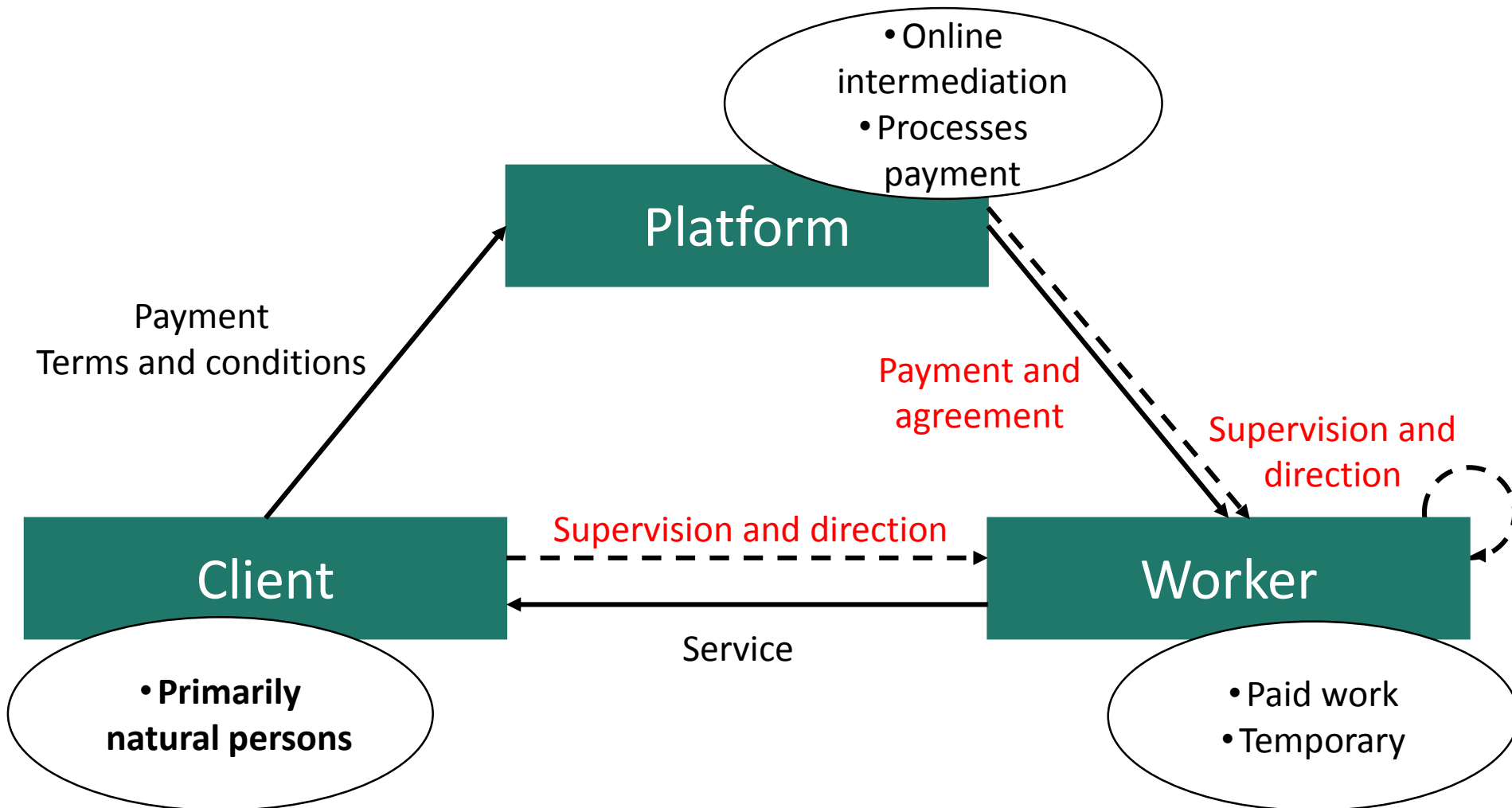
Willem Pieter de Groen and Karolien Lenaerts

IPEPS Final Conference – Brussels, 4 July 2018

Outline

- Definitions
- Size, structure and scope
- Remuneration
- Working time and organisation of work
- Social environment
- Skills and training
- Regulatory issues
- Conclusions

Definition of the platform economy



Size

- **No official statistics** on platform economy
- **Three methods have been used to determine its size:**
 - Surveys: online vs. offline, capture number of clients and workers
 - Administrative data: data made available by platforms and workers
 - Big data: social media, platform website

→ All may lead to over- or under-estimations of the size

→ Combination of methods is needed to validate estimates
- **Overall results:**
 - Platform economy represents less than 1% of total labour force, many more are engaged in platform economy as clients (17%)
 - Concentrated in a number of sectors → disruptive effects
 - On the rise and expected to continue growing
 - Most platform workers do this as a side activity and are motivated by the flexibility of work and the additional income

Size

Our own estimation of EU gross revenues and active workers using a bottom-up approach

Step 1: Select platforms

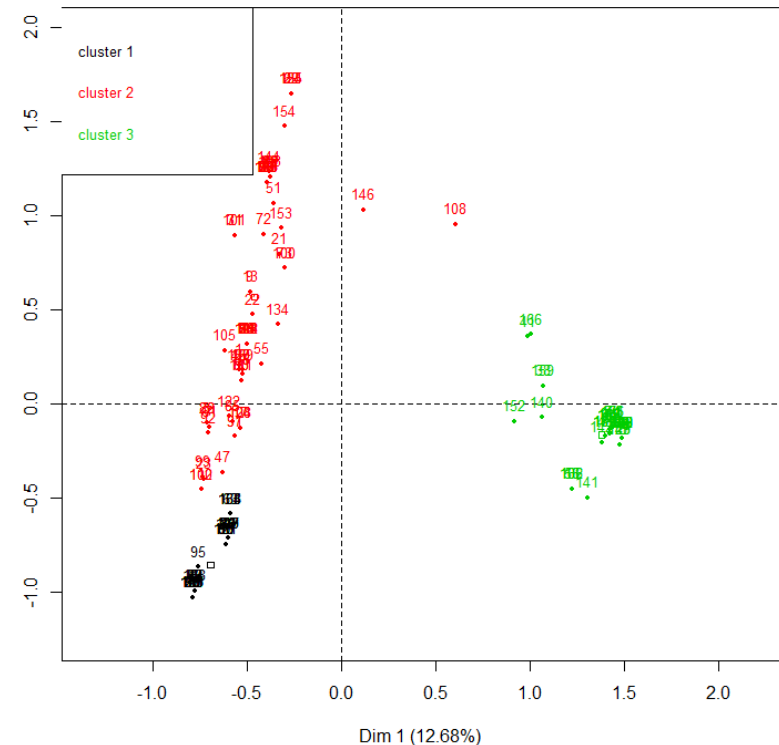
- 125 platforms in the EU (JRC, 2017)
- Limited information available on their revenues and number of active workers

Step 2: Scale to EU-level

- Figures are translated to EU-level using the number of unique visitors (Amazon Alexa)
- Proxy for platform activity

Step 3: Find similar clusters

- Hierarchical clustering based on 6 criteria (employees, services offered, business sector, profit model, work assignment method and worker skills)



Size

Step 4: Estimate relation between revenues/workers and activity

- Activity based on estimated unique visitors for 3 clusters of platforms
- Relation between revenues and activity determined for every individual cluster

Step 5: Extrapolation to all platforms

- For every platform in the cluster, revenues and active workers are estimated using the number of unique visitors and the relation between revenues/active workers and activity in the cluster

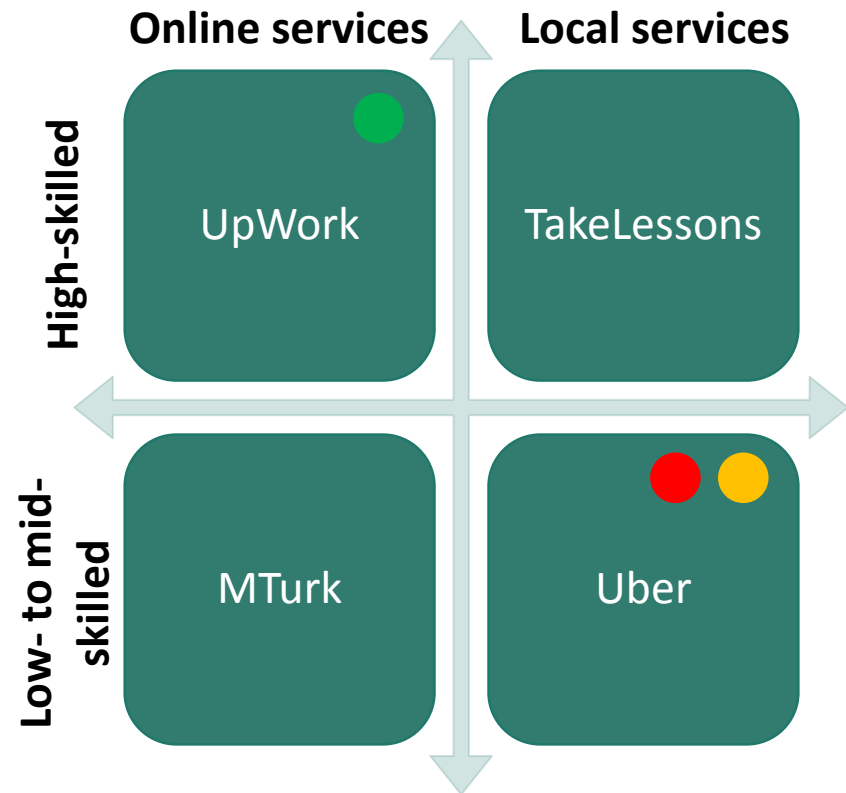
Step 6: Aggregating the results

- When there is information on the gross revenues and active workers, the actual figures are used, otherwise estimates
- The (estimated) gross revenues/number of active workers is summed

Results: Overall, platforms had an estimated total gross revenues of €4.5 billion and about 5% of total employment for 2016

Scope

- Micro and smaller tasks
- Professional services, transport, food delivery
- Locally-delivered services (BE, EE, SI), online service (BG, HR, PL), both types
- Variety of skills required



→ **Initial typology (matrix)** – has become insufficient

→ **Platform economy becomes more heterogeneous as it develops**

10 most common types of platform work



| Type No. | Label | Service categorisation elements | | | Platform categorisation elements | | Share in number platforms | Share in workers (estimated) | Examples |
|----------|---|---------------------------------|-----------------------------|----------------|----------------------------------|------------------|---------------------------|------------------------------|--------------|
| | | Skill Level | Format of service provision | Scale of tasks | Selector | Form of matching | | | |
| 1 | Local client-determined routine work | Low | Local | Larger | Client | Offer | 13.7% | 1.3% | Go More |
| 2 | Local platform-determined routine work | Low | Local | Larger | Platform | Offer | 31.5% | 31.2% | Deliveroo |
| 3 | Local client-determined moderate skilled work | Low to medium | Local | Larger | Client | Offer | 11.3% | 10.9% | Oferia |
| 4 | Local worker-initiated moderate skilled work | Low to medium | Local | Larger | Worker | Offer | 4.2% | 5.5% | Listminut |
| 5 | Online moderate skilled click work | Low to medium | Online | Micro | Platform | Offer | 0.6% | 5.3% | Crowd-Flower |
| 6 | Local client-determined expert | Medium | Local | Larger | Client | Offer | 2.4% | 3.3% | appJobber |
| 7 | Local platform-determined expert | Medium | Local | Larger | Platform | Offer | 1.2% | 4.2% | Be My Eye |
| 8 | Online platform-determined expert | Medium | Online | Larger | Platform | Offer | 0.6% | 1.9% | Clickworker |
| 9 | Online client-determined specialist | Medium to high | Online | Larger | Client | Offer | 5.4% | 30.3% | Freelancer |
| 10 | Online contestant specialist | High | Online | Larger | Client | Contest | 5.4% | 4.6% | 99Designs |
| Total | | | | | | | 76.2% | 98.4% | |

In-depth examination of three types of platform work

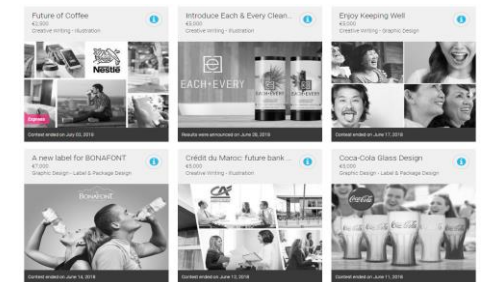
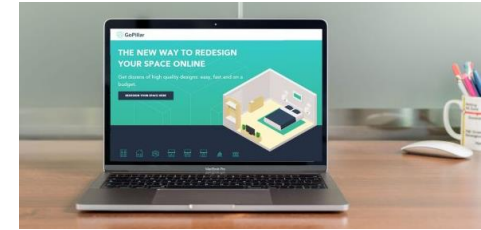
Local platform-determined platform work (low-skilled)



Local worker-initiated platform work (low- to medium-skilled)






Online contestant platform work (high-skilled)



- Physical environment depends on the **specific type of activity**; its benefits and risks are not necessarily so different from conditions in the traditional labour market
- Availability of equipment and provision health and safety measures depends on platform

Remuneration for different types of platform work

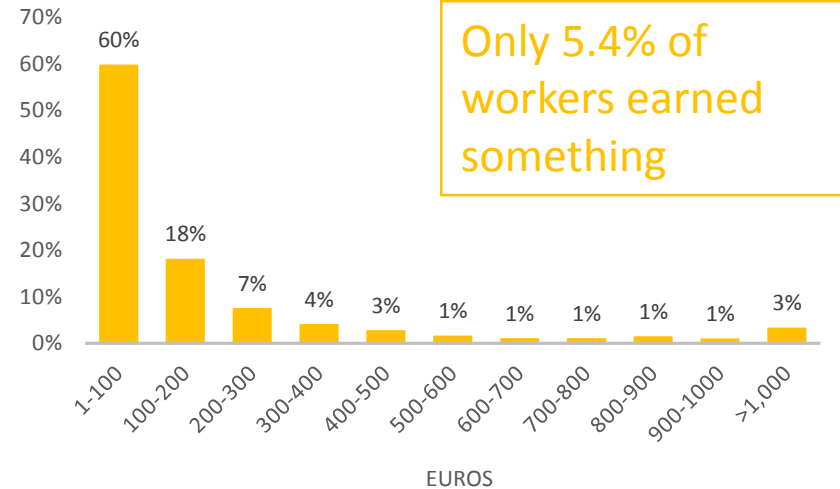
Comparing hourly earnings:

| | Virtual/global services | | | | Physical/local services | |
|---------------------|---|-------|-----------------|-------|---|--|
| | High-skilled | | Low-skilled | | Low/Mid-skilled | |
| | CoContest  | | Mechanical Turk | | ListMinut  | Uber  |
| Country | IT | RS | US | IN | BE | US |
| Average (EUR) | €9.3 | €10.3 | €5.1 | €2.9 | €15.4 | €17.2 |
| Minimum (%) | - | 759% | 74% | 1373% | 166% | 283% |
| Country average (%) | 70% | 318% | 23% | 549% | 84% | 88% |
| Std. dev. (EUR) | €7.1 | €10.2 | €3.6 | €3.9 | €6.1 | - |

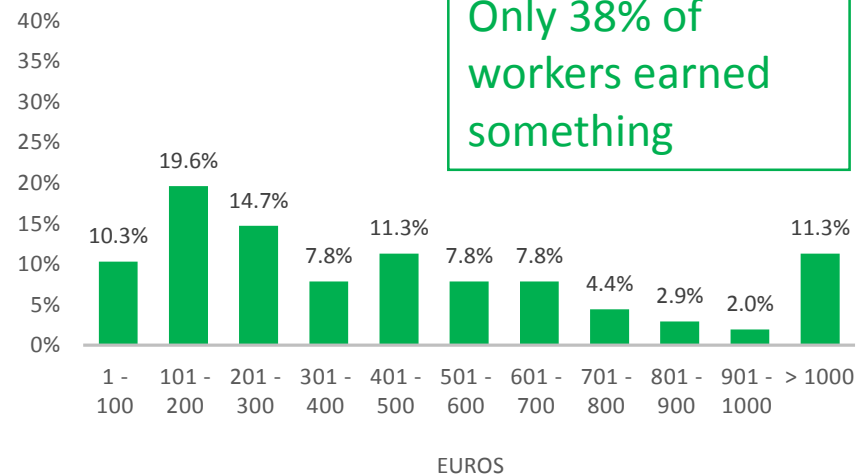
Remuneration for different types of platform work

- Earnings from the platforms do not substitute for a full-time job!
- But unknown how much workers accumulate

ListMinut



CoContest



Working time and work-life balance

- **General:**

- Duration of activity depends on the task
- Schedules are unstable and unpredictable, little control
- Work on evenings and in weekends
- Satisfied with work-life balance (organise so it fits into their life)

- **Platform-determined:**

- Work at 'normal' pace (intensity!), swap shifts, most work 10-15 or 15-20 hours per week, algorithm determines schedule

- **Worker-initiated:**

- Spend little time to look for work, clients may understate work

- **Online contestant:**

- Only participate when interested in topic and it fits their schedule, unpaid search and preparation time

Autonomy and control

- **General:**

- Depends on type of activity and platform
- Ratings systems/rankings are common, though often asymmetric and not transparent

- **Platform-determined:**

- No rating system, but careful monitoring of performance (speed)
- Overall, platform has a lot of control (schedule, contracts, app)
- Issues can be reported to dispatcher/platform (physical person?)

- **Worker-initiated:**

- Some control
- Ratings given by client only, but welcomed (trustworthiness)

- **Online contestant:**

- No supervision by platform or client, more feedback welcome
- Ranking system has no impact on access to contests or income

Social environment

- **General:**

- Not well established, especially relations with platform and clients
- No conflict resolution mechanisms in place – but much needed
- Mixed opinions of family and friends

- **Platform-determined:**

- Relation with platform is sometimes difficult (waiting for reply)
- More contact between crowd workers, community
- Discrimination and harassment (language, gender)

- **Worker-initiated:**

- No real relationship with platform, client or other crowd workers
- Discrimination: example of Arabic name

- **Online contestant:**

- No real relationship with platform, client or other crowd workers

Skills development and training

- Skills development is **increasingly important, however access to training is a challenge**
- **Variety of skills** used, depending on the type of work
 - From low-skilled to high-skilled, depending on type of work
 - Most workers use skills they had already acquired and many are over-qualified for the work they do on the platform
 - Many workers do not see platform work as opportunity to learn new skills (e.g. online contestants only participate if they master skills needed; though others do perceive it differently)
- **Access to training is very limited:**
 - Information sessions, instruction videos, and guidelines on safety, use of platform

Regulatory frameworks

- **No specific framework** in most EU Member States; hardly any new or adapted regulations (BE, EE, FR are exceptions)
- **Existing regulatory frameworks apply**, but often a **poor fit** with platform economy and **enforcement** is a challenge
- **Formal relationships** between the three parties are usually governed by civil law contracts (terms and conditions)
- **Employment status:**
 - Legally unclear, and thus follows from the terms and conditions → self-employed (determines access to social protection, etc.)
 - Workers generally not worried about it: platform work is a second activity for most; access to social protection through main job

Conclusions

- Platform work is one of the recently emerged **new non-traditional forms of work** that come with opportunities and risks
- Research so far is hampered by a **lack of data, empirical evidence, and a common definition** of platform economy
 - A common definition or conceptualisation is necessary
 - Further analysis and continued monitoring are needed
 - Call for greater transparency
- Focus on **regulatory issues among academics and policy-makers**:
 - Applicable framework? Role of the EU level?
 - Employment status? Third status? Social protection?
 - Self-regulation?
- **Workers have rather different priorities and concerns**:
 - Taxation, insurance, access to clients and the market
 - Employment status is often a 'special status'
 - Platform work is not all good or bad

Further reading

Select references of our previous work on the platform economy:

- De Groen, W.P.; Kilhoffer, Z.; Lenaerts, K.; & E. Felten (2018) “Platform work in Austria: National context analysis”, *Study prepared for the Austrian Presidency of the Council of the EU and Eurofound*.
- De Groen, W.P.; Kilhoffer, Z.; Lenaerts, K.; Bosc, R. & N. Salez (2018) “Online Talent Platforms, Labour Market Intermediaries and the Changing World of Work”, *prepared for WEC-Europe and UNI Europa*.
- De Groen, W.P.; Kilhoffer, Z.; Lenaerts, K. & N. Salez (2017) “The Impact of the Platform Economy on Job Creation”, *Intereconomics*.
- Kilhoffer, Z.; Lenaerts, K. & M. Beblavý (2017) “The Platform Economy and Industrial Relations: Applying the old framework to the new reality”, *CEPS Research Report*, No. 2017/12, August.
- De Groen, W.P.; Lenaerts, K.; Bosc, R. & F. Paquier (2017) “Impact of digitalisation and the on-demand economy on labour markets and the consequences for employment and industrial relations”, *Study prepared at the request of the Employers’ Group of the EESC*.
- Lenaerts, K.; Beblavý, M. & Z. Kilhoffer (2017) “Government Responses to the Platform Economy: Where do we stand?”, *CEPS Policy Insights*, No 2017/30, July.
- De Groen, W.P.; Maselli, I. & B. Fabo (2016), “The Digital Market for Local Services: A one-night stand for workers? An example from the on-demand economy”, *CEPS Special Report*, No. 133.
- De Groen, W. P. & I. Maselli (2016), “The Impact of the Collaborative Economy on the Labour Market”, *CEPS Special Report*, No. 138.

And more at <https://www.ceps.eu/topics/platform-economy> - New materials will be added soon!

THANK YOU!

Contacts:

Willem Pieter de Groen

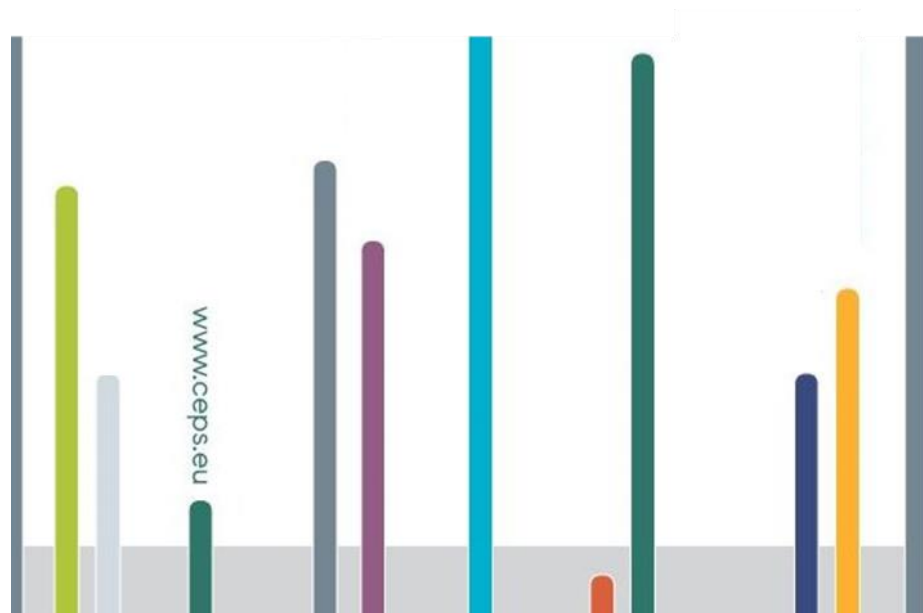
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Appendix

Some additional results

Remuneration and taxation

- **General:**
 - Depends on type of activity, platform, employment status, etc.
 - Main source of income for very few crowd workers
 - Taxation often unclear
- **Platform-determined:**
 - Platform sets earnings per hour, clients pay tips to crowd workers
 - Number of hours and when you work matters for remuneration
- **Worker-initiated:**
 - Workers can set their own rate, platform charges a fee
 - Platform automatically collects taxes for occasional workers, self-employed responsible for declaring taxes
- **Online contestant:**
 - Prices can be large or small: for example €3,000- €7,000
 - Too unpredictable as source of income, supplementary earnings
 - Declare prices to tax authorities if minimum threshold surpassed

Example: online services (CoContest)

CoContest: the Uber of designers

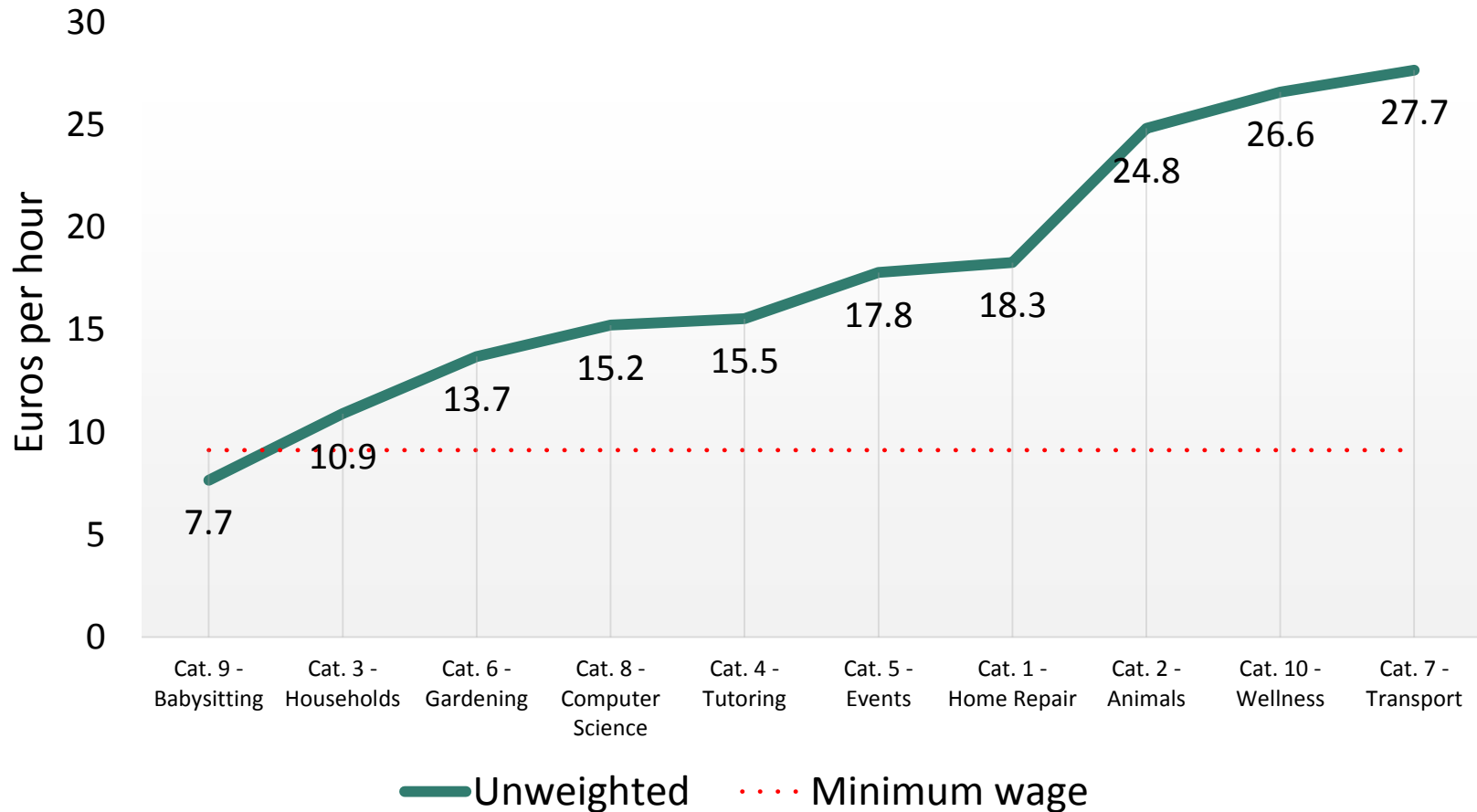
- 516 designers registered (Sept. 2015, at least 2 contests)
- Fixed prices (€300 to €2,450) → **Average of €47 per contest**

| Average monthly net salary (Numbeo) | |
|---|--------|
| Italy | Serbia |
| € 1,477 | € 334 |
| Average earnings per submission | |
| Italy | Serbia |
| € 36 | € 69 |
| No. of contests needed to earn a living per month | |
| Italy | Serbia |
| 41 | 4.8 |



Example: offline services (Listminut)

Hourly earnings per category



Representation

- Industrial relations and social dialogue take **different shapes**:
 - Workers are not employees, platforms are not employers, new types of intermediaries/organisation, need for a critical mass
- **Trade union activities** in AT, BE, DE, DK, ES, FI, FR, IE, IT, NL, SE, UK
- **Other bodies** (cooperatives, etc.) in BE, DK, ES, FI, HR, IT, UK
- **Worker initiatives** (social media, etc.) in AT, BE, BG, DE, ES, FR, IT, NL, UK; strikes and protests of workers in BE, ES, FR, IT, NL, SI, UK
 - However, only few workers are aware of organisations representing them
 - Especially platform-dominated workers are aware and involved
- **Platform organisations** in DE, EE, ES



IPEPS Final Conference | 4 July 2018 | Anita Vella | EU Commission

Future of Work

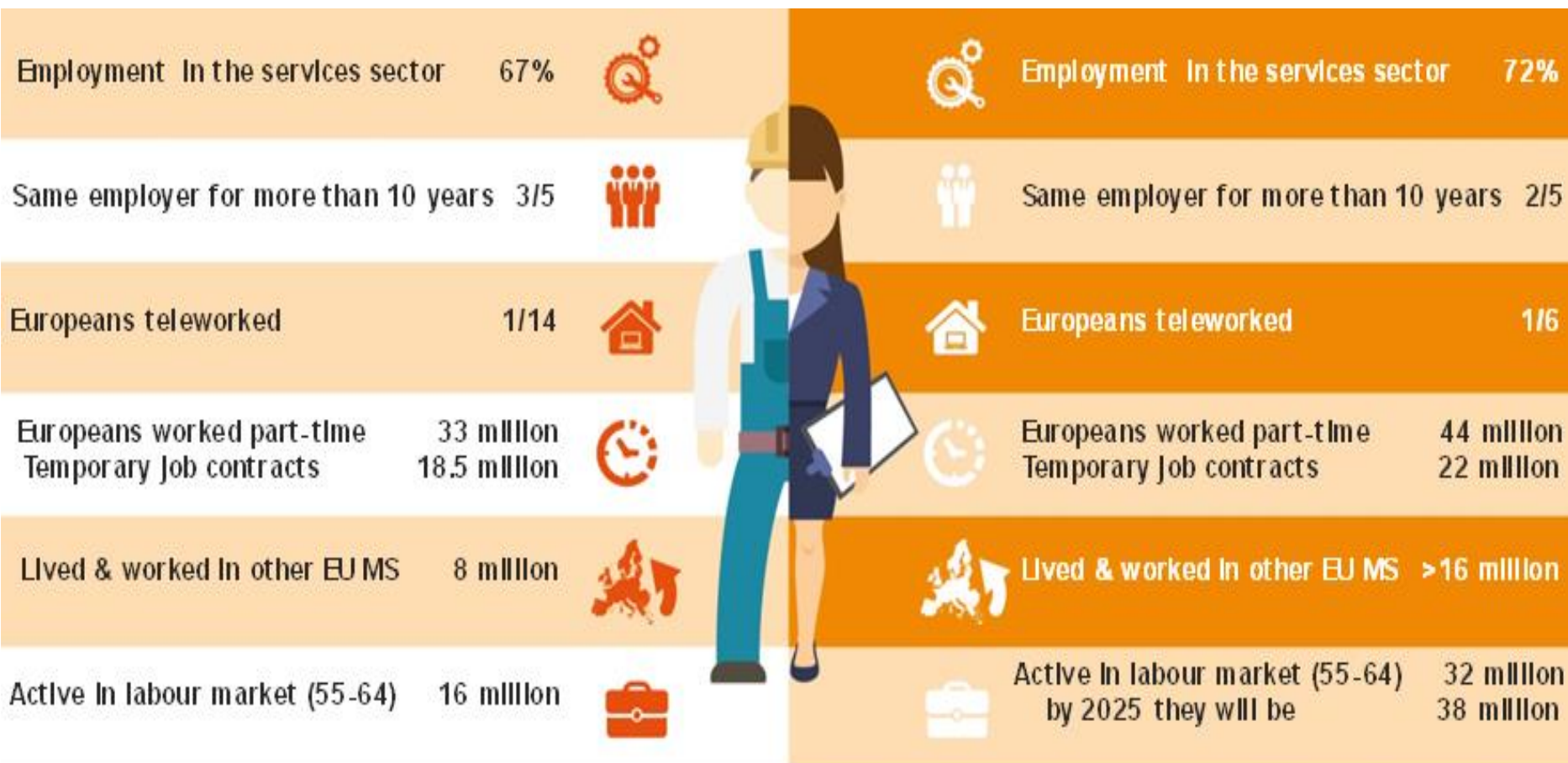
Challenges & opportunities

Changing world of work

Working life radically transformed

10 years ago

Today



Under the spotlight

Commission
**A European Agenda for the
Collaborative economy
(2016)**



Council
Conclusions:
**Future of Work: Making it e-
Easy (2017); The Future of
Work: A Lifecycle Approach**

**Presidency conferences
(2017, 2018)**

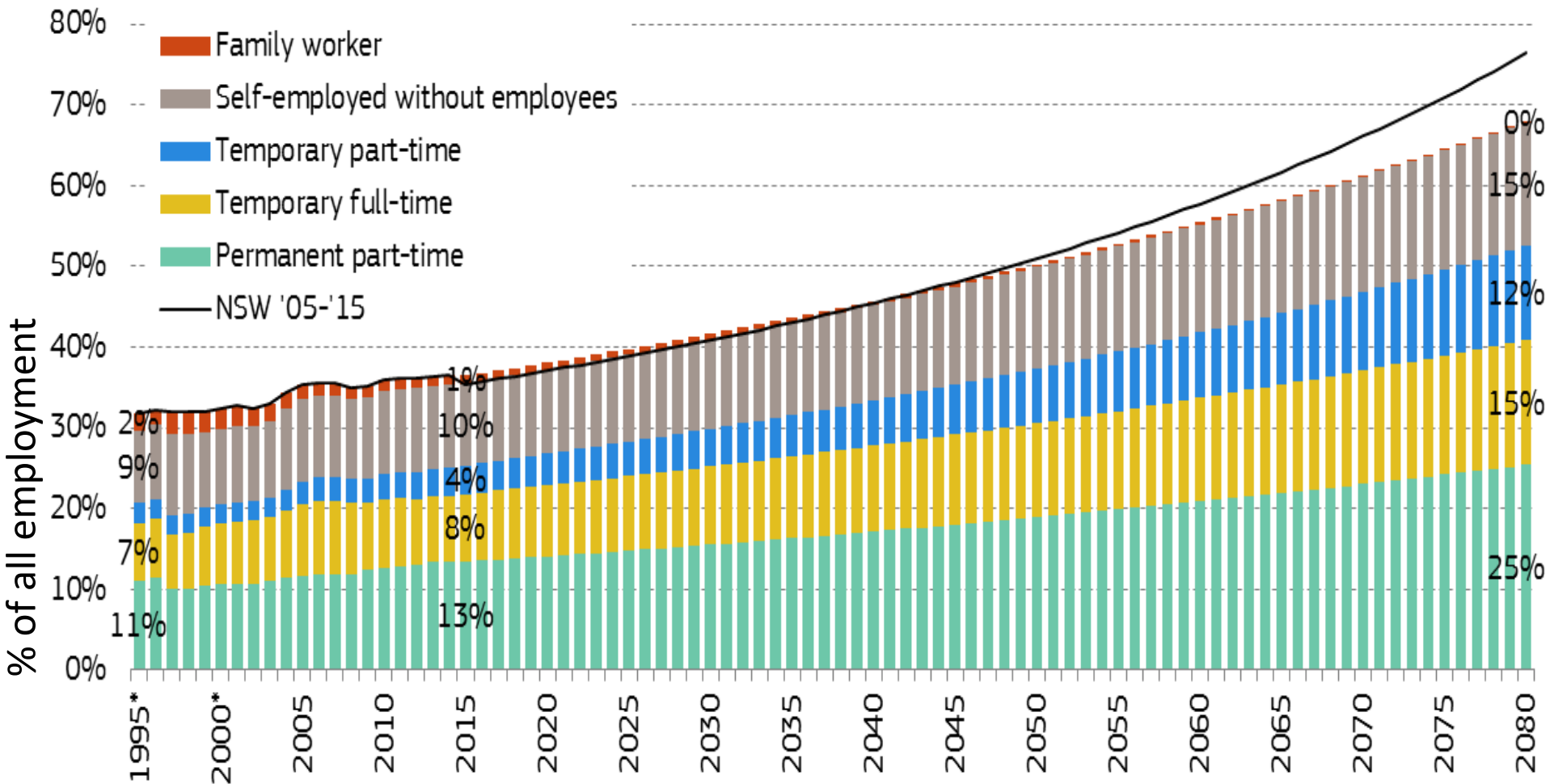
**Economic and Social
Committee and Committee of
the Regions
Opinions (2017)**



European Parliament
Own Initiative Report (2017)

New forms of work

New forms of employment spreading with digital technology



A broadening grey area

- Bogus self-employment
- Increase in % of younger workers in non-standard forms of work
- Variety of new forms of contracts: e.g. 'Civil law contracts for a specific task' (PL), 'Mini-job' (DE), on-demand work

The European Pillar of Social Rights

A Commission's policy framework

A reference
framework for
upwards
convergence

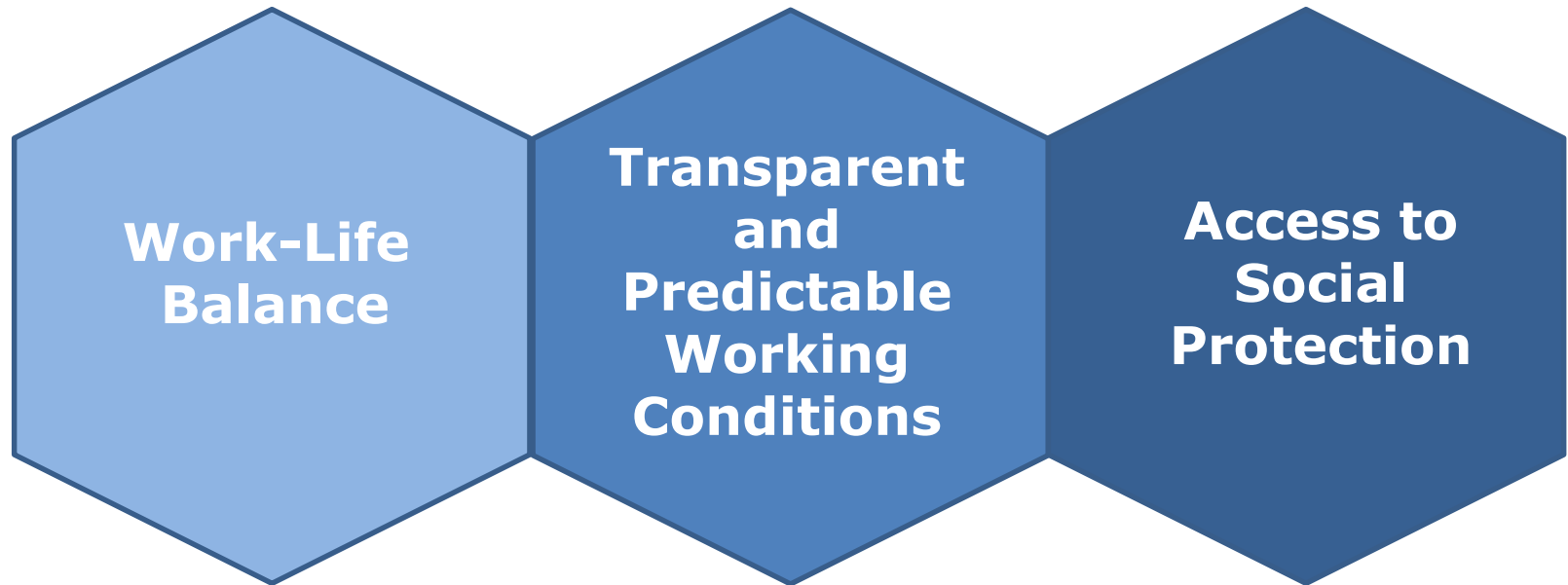
20 principles and
rights

Building on the
existing EU social
law

A scoreboard of
employment and
social indicators

Several concrete
initiatives

Three key initiatives



Other relevant EU initiatives

| | |
|----------------------------------|--|
| New Skills Agenda for Europe | <ul style="list-style-type: none">• Digital Skills and Jobs Coalition, Blueprint for Sectoral Cooperation on Skills, Upskilling Pathways |
| Communication on AI and robotics | <ul style="list-style-type: none">• Job creation, smooth labour market transitions, and need for digital skills |
| High level expert group | <ul style="list-style-type: none">• On the impact of digitalisation on the labour market |
| 2018 ESDE | <ul style="list-style-type: none">• Future of work with five chapters (upcoming) |
| Public Employment Services | <ul style="list-style-type: none">• Impact of digitalisation on the access to labour market and service provision |
| Next MFF | <ul style="list-style-type: none">• Align funding so that it can better address challenges related to digitalisation |
| OECD project | <ul style="list-style-type: none">• Mapping policy responses on the new forms of work at Member State level |

THE FUTURE OF WORK ...AND WHAT THE EU SHOULD DO ABOUT IT

László Andor

Head of Department (Corvinus University of Budapest)

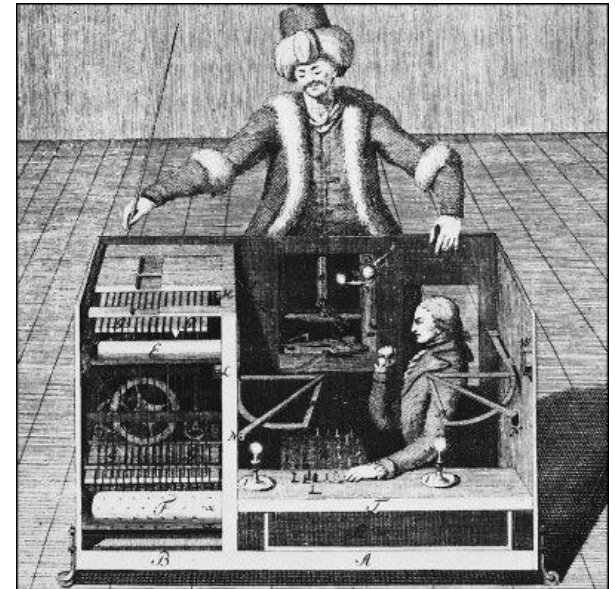
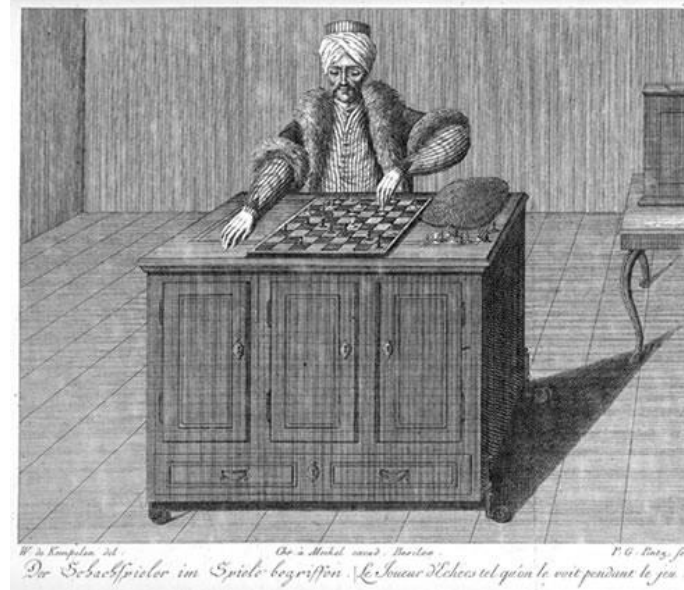
Senior Fellow (FEPS, Brussels)

EFOP-3.6.2-16-2017-00017

IPEPS Final Conference -- Brussels, 4 July 2018

Contents

- Technological change and EU initiatives
- Skills strategy – public and private investment
 - Territorial dimension
- New forms of employment – legislative tasks



EU initiatives – future of work

- Europe 2020 Strategy (2010)
- Grand Coalition for Digital Jobs (2013)



- **Main EU initiatives (2016-2017)**
 - **European Pillar of Social Rights (+EP Report by MJR)**
 - **New EU Skills Agenda**
 - **Occupational Health and Safety legislation: musculoskeletal disorders**
- **Analysis: *The Future of Work - Skills and Resilience for a World of Change* by EPSC (June 2016); using ILO, OECD and CEDEFOP studies**

START

6 MONTHS

12 MONTHS

18 MONTHS

Overview:

Programming Basics

Web

Target Tech.
Basics

Advanced

Internship, Modules

Technologies:

Python

Web

Java or C#

Spring, Android,
full stack web, ...

Company specific coaching

Software
Theory:

OS

OOP

Services

Shell and CMD

Memory

UI/UX

Design Patterns

SOLID

Processes

I/O. Cache

Requirement
engineering

Performance

i18n

UML

Networks

Security

Misc. Techs and
methodologies:

Pair
Programming

Testability

Agile

TDD

Company specific

Version Control

Project approach

XML

BDD

DB

JSON

Soft skills:

Communication

Team Work

Problem Solving

Business oriented
thinking

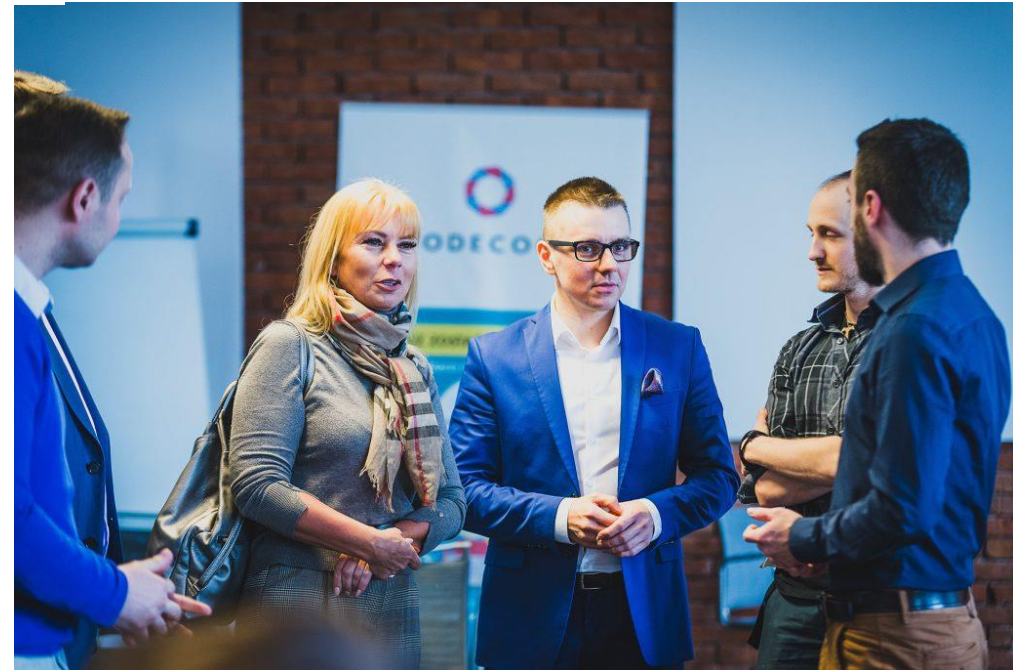
Adaptability

Investment in human capital

Training enterprise

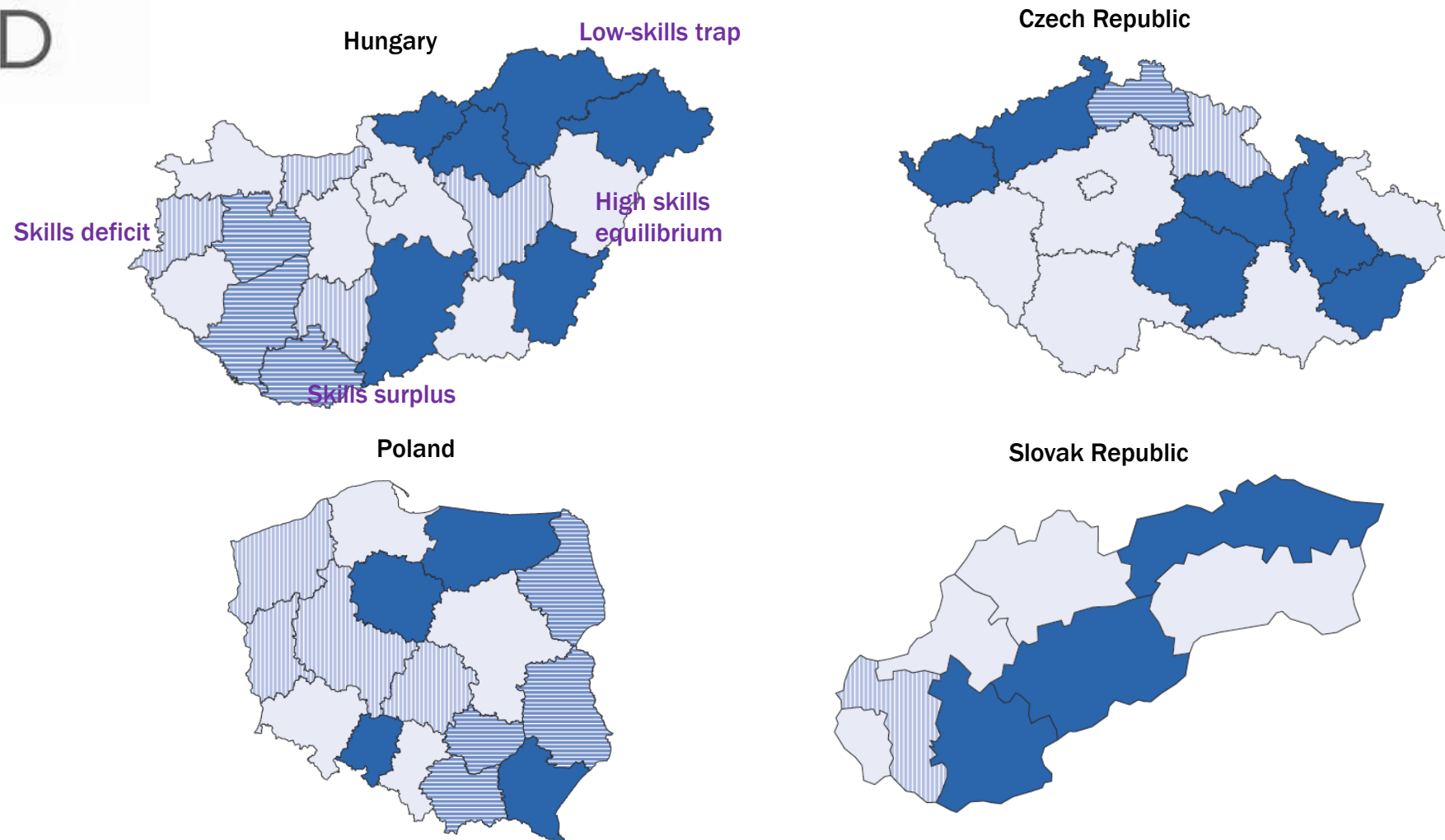


EU support?



Bringing in the regional dimension

Skills supply and demand by region, 2013



Note: Skills supply is measured by the percentage of people with post-secondary education and skills demand is measured by the percentage of medium- and high-skilled occupations and Gross Value Added per worker.

Source: OECD, *Job Creation and Local Economic Development 2016*.

Employment legislation

Key challenges for social regulation:

- Employment – the risk of job displacement and the need for requalification
- Working conditions – the risk of insecurity and precariousness
- Social protection – the risk of staying out of the welfare system + income inequality

Complication: new forms of employment:

- Employee sharing
- Job sharing
- Interim management
- Casual work
- ICT-based mobile work
- Portfolio work
- Crowd employment
- Collaborative employment

New forms of employment

- **Employee sharing**, where an individual worker is jointly hired by a group of employers to meet the HR needs of various companies, resulting in permanent full-time employment for the worker;
- **Job sharing**, where an employer hires two or more workers to jointly fill a specific job, combining two or more part-time jobs into a fulltime position;
- **Interim management**, in which highly skilled experts are hired temporarily for a specific project or to solve a specific problem, thereby integrating external management capacities in the work organisation;
- **Casual work**, where an employer is not obliged to regularly provide work to the employee, but has the flexibility of calling them in on demand;
- **ICT-based mobile work**, where workers can do their job from any place at any time, supported by modern technologies (shared computer networks, the Internet, e-mail);
- **Voucher-based work**, where the employment relationship is based on payment for services with a voucher purchased from an authorised organisation that covers both pay and social security contributions;
- **Portfolio work**, where a self-employed individual works for a large number of clients, doing small scale jobs for each of them;
- **Crowd employment**, where an online platform matches employers and workers, often with larger tasks being split up and divided among a 'virtual cloud' of workers;
- **Collaborative employment**, where freelancers, the self-employed or micro enterprises cooperate in some way to overcome limitations of size and professional isolation.

• Source: Presentation by Armindo Silva in the European Parliament

Automata buffet „Quisisana“.

Alulírott a n. é. közönség b. tudomására adom, hogy a Váci-körút 12. sz. alatti buffeten kívül egy elegáns stílusban készített

Automata buffet

VII. ker. Koröpesi-út 22. szám alatt

mai napon megnyílik, hol hideg ételeken kívül gulyás, pörkölt, kórhelyleves, virstli tormával vagy lével kapható. Mint különlegesség egy champagne automata is készítettett.

Számos látogatásért esedezik

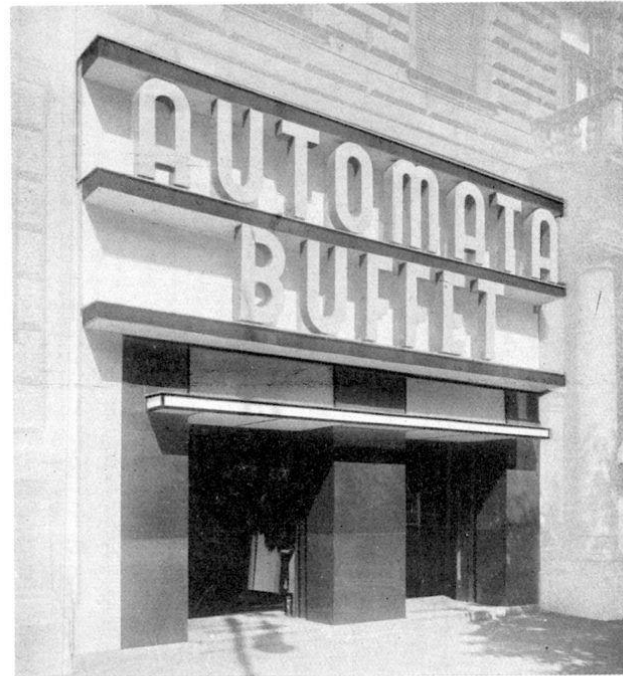
50798

Berté Ede tulajdonos.

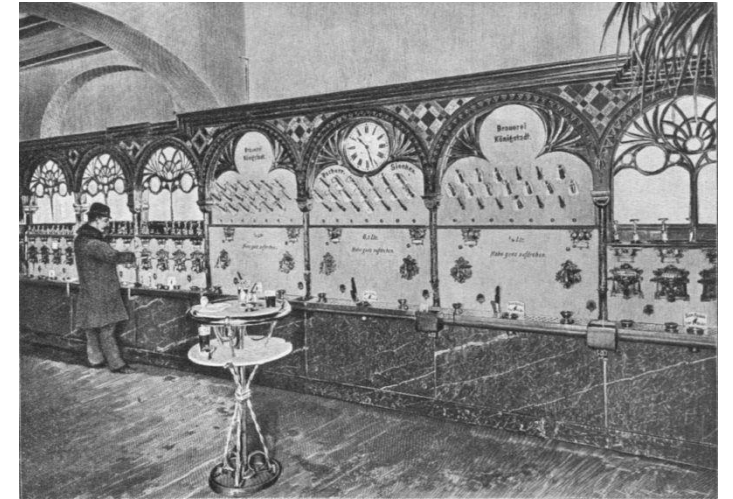
Központ: Váci-körút 12. szám. Fiók: Koröpesi-út 22. szám.



Automated restaurant (Budapest)



Automata-büfék a József körúton és a Teréz körúton, Budapesten. Fém és színes opálüveg. Tervezte és készítette: Haas és Somogyi, Budapest



Conclusions

- Direction and speed of change require careful (and repeated) analysis
- EU can use three arms of governance to tackle „future of work” related challenges: legislation, policy coordination and fiscal capacity (budget)
- Technological change (digitalisation and automation) requires a new skills strategy. Investment in new skills requires (joint) public and private effort
- Employment legislation has to tackle risks associated with new forms of employment (potentially leading to review of EU social acquis)
- Concerns about income distribution and social security must be addressed, together with impact on territorial imbalances
- Social dialogue must play a role in analysis, decision making and implementation at all levels

Thank you for your attention!



UNIVERSITY
OF TRENTO - Italy

School of International Studies

Falling labour share and job polarization: what implications for education and skills?

Stefano Schiavo

(School of International Studies – University of Trento)

IPEPS Final Conference

Brussels - 4 July 2018

Starting Point

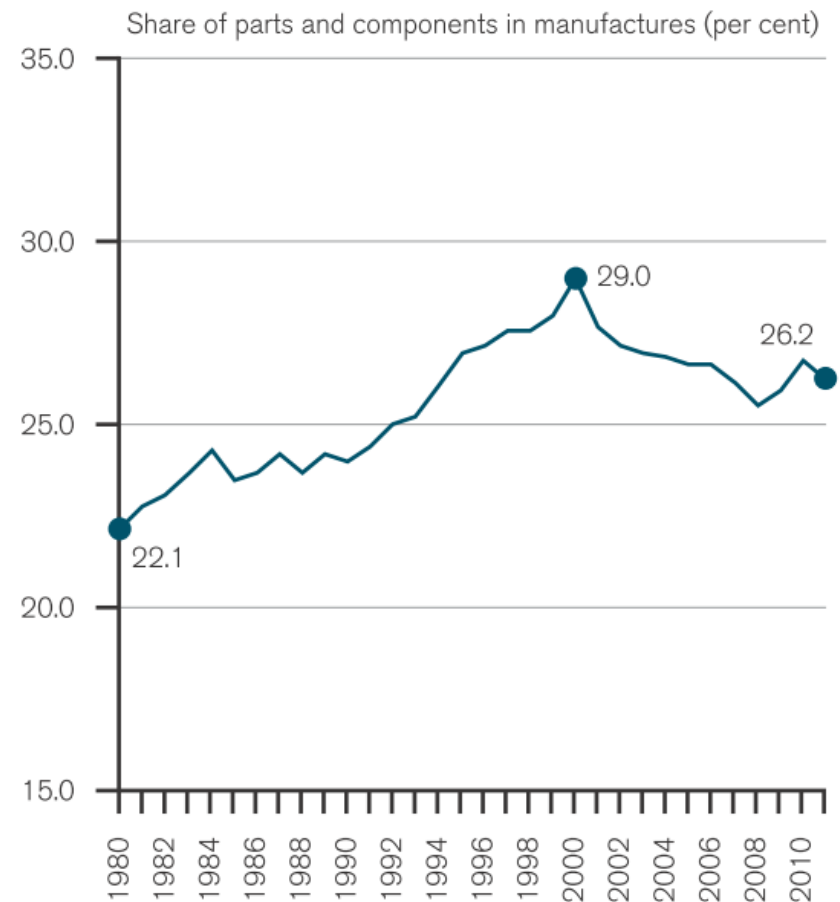
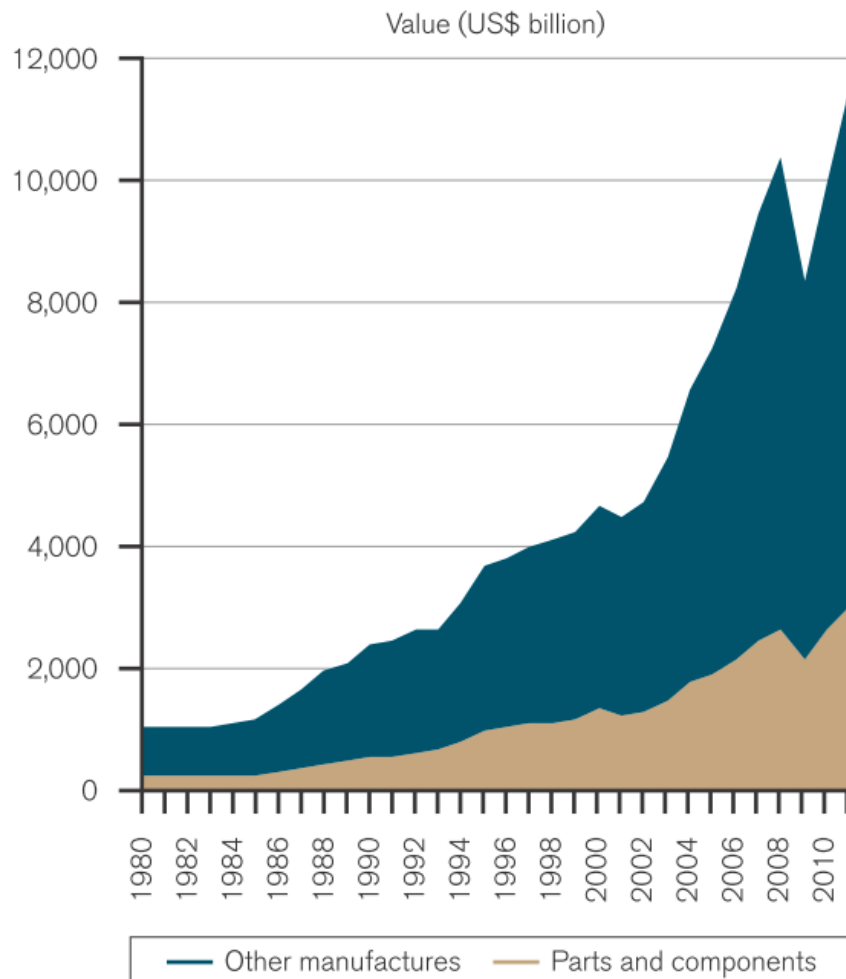
- There is a widespread concern about the effects of “globalisation” on labour markets
- The need to protect domestic workers and jobs from foreign competition, has been featured prominently in recent electoral campaigns.
- The **effects of trade** on countries and workers is **very heterogeneous** and can hardly be cast in terms of exports are good; imports are bad

Stylized Facts

Over the last 30 years

- trade has grown faster than GDP (more integration)
 - trade in *parts and components* has grown even faster
 - since the 1990s, the ICT revolution has reduced the cost of moving information, knowledge, ideas
- *offshoring revolution*: combine advanced knowledge with cheap labour

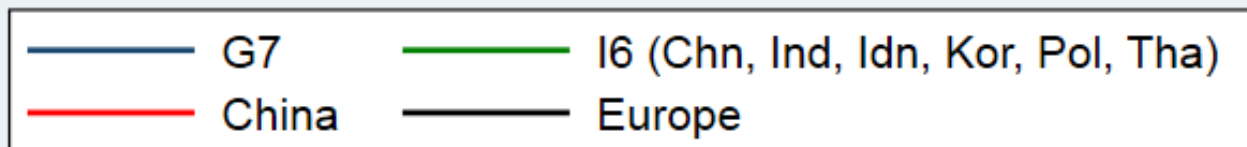
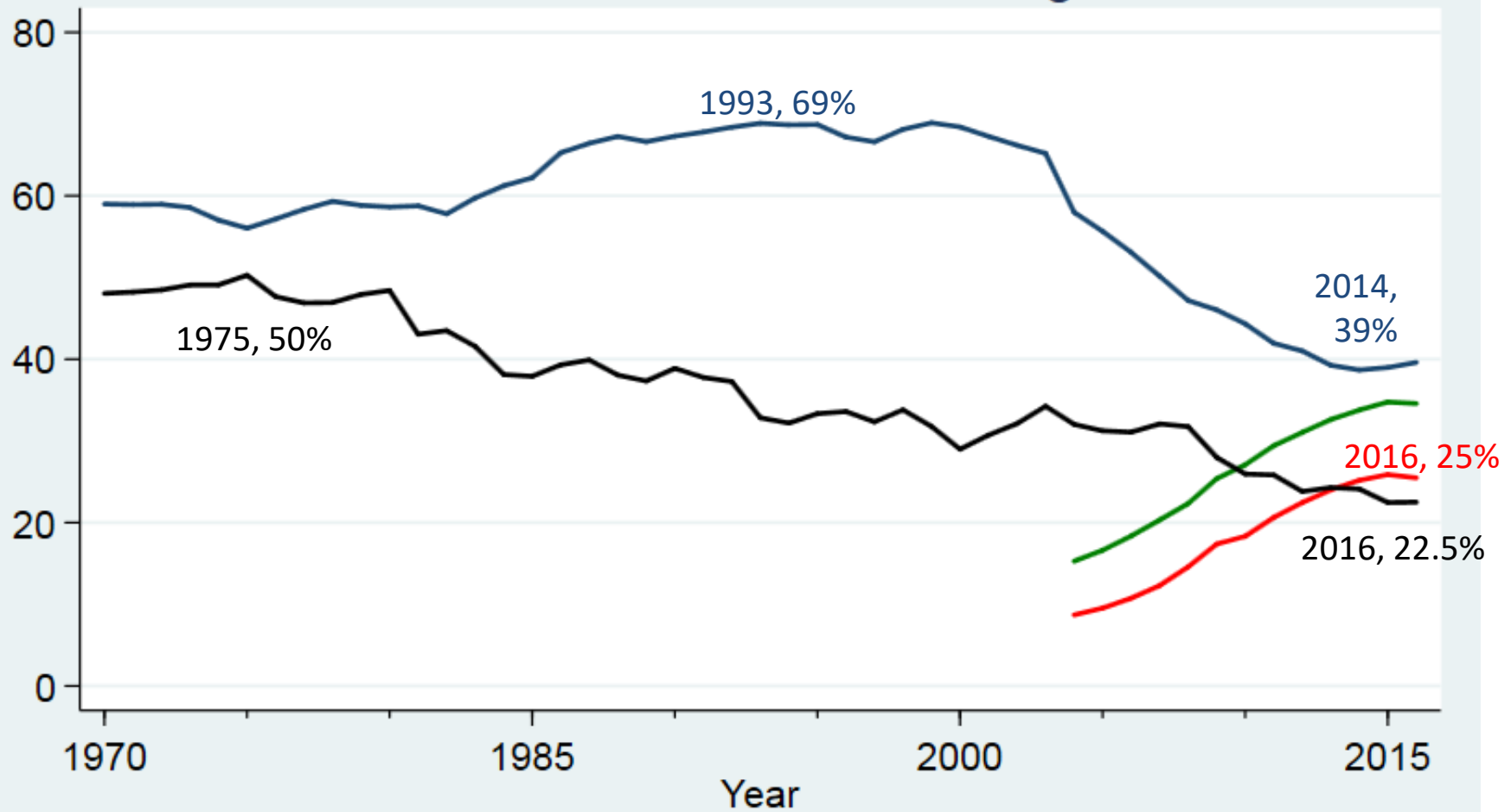
Trade in Parts and Components



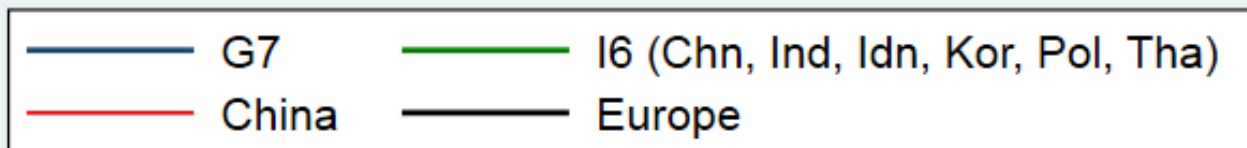
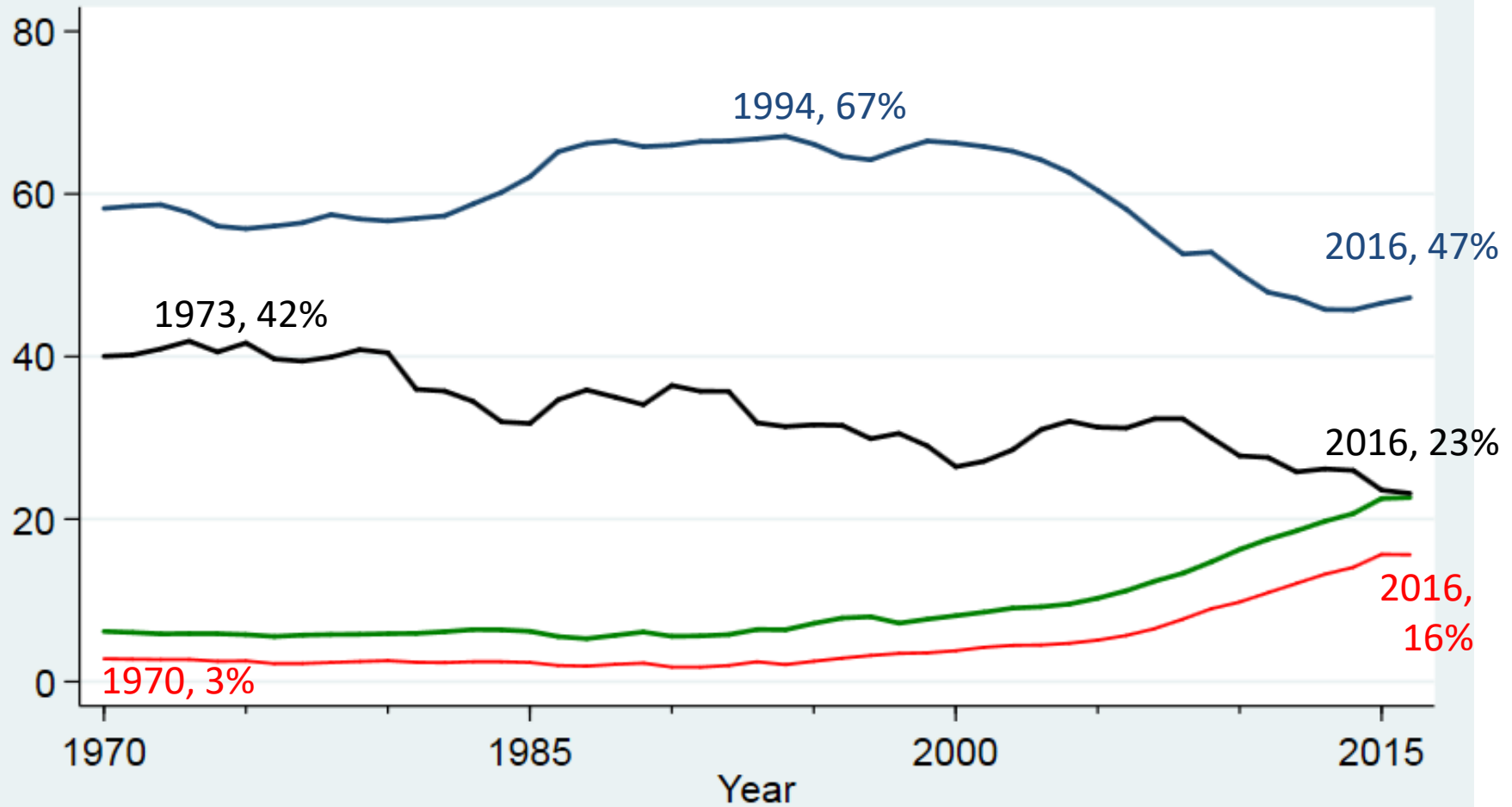
Outcome

- G7 economies
 - share of global manufacturing output declined
 - share of global income declined
 - hollowing of the middle in labour market
 - New Industrializers (only a handful...)
 - middle class flourished
 - income inequality increased
 - catching up
- the “*Great Convergence*” (Baldwin)

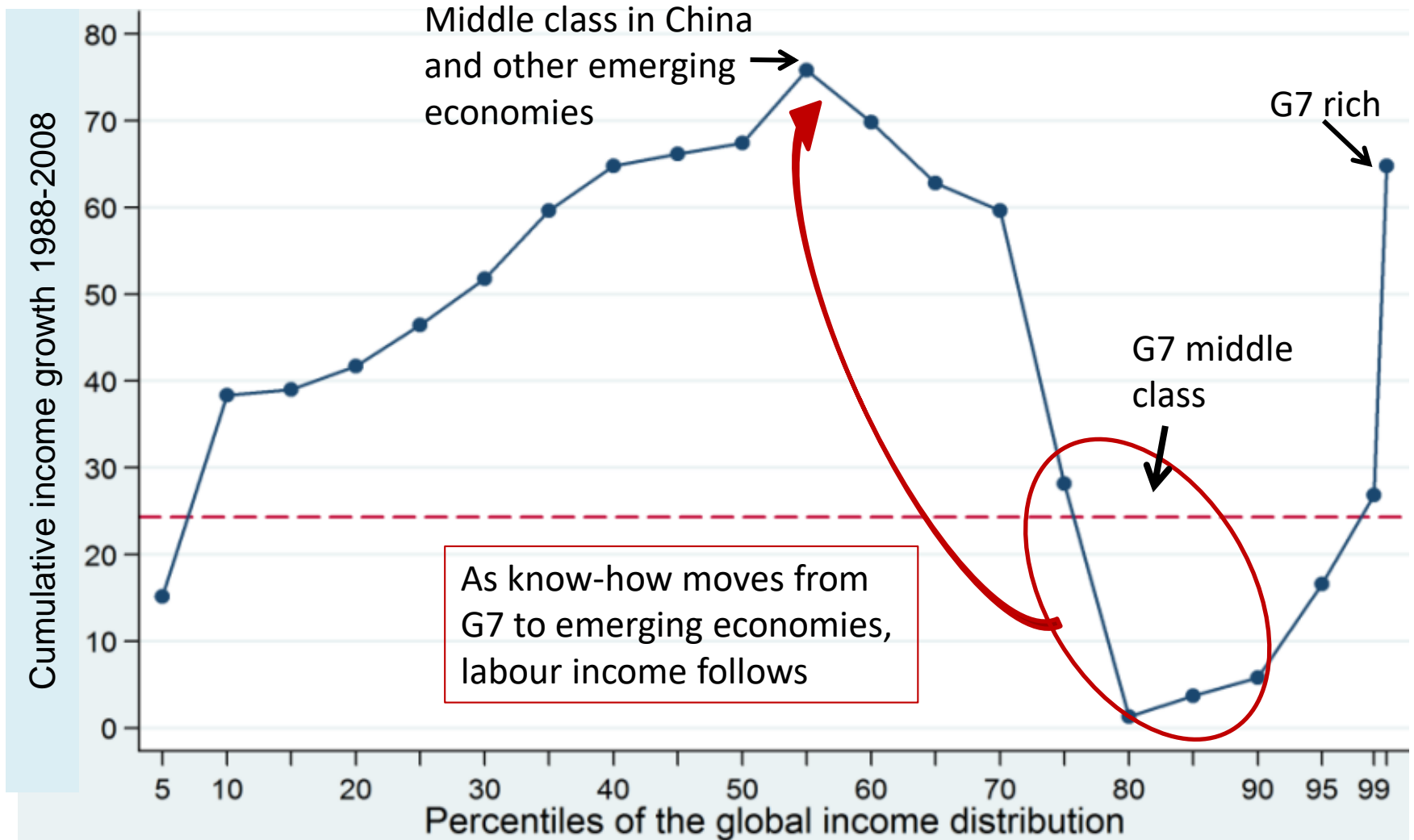
Share of World Manufacturing VA



Share of World GDP



An Elephantine Problem

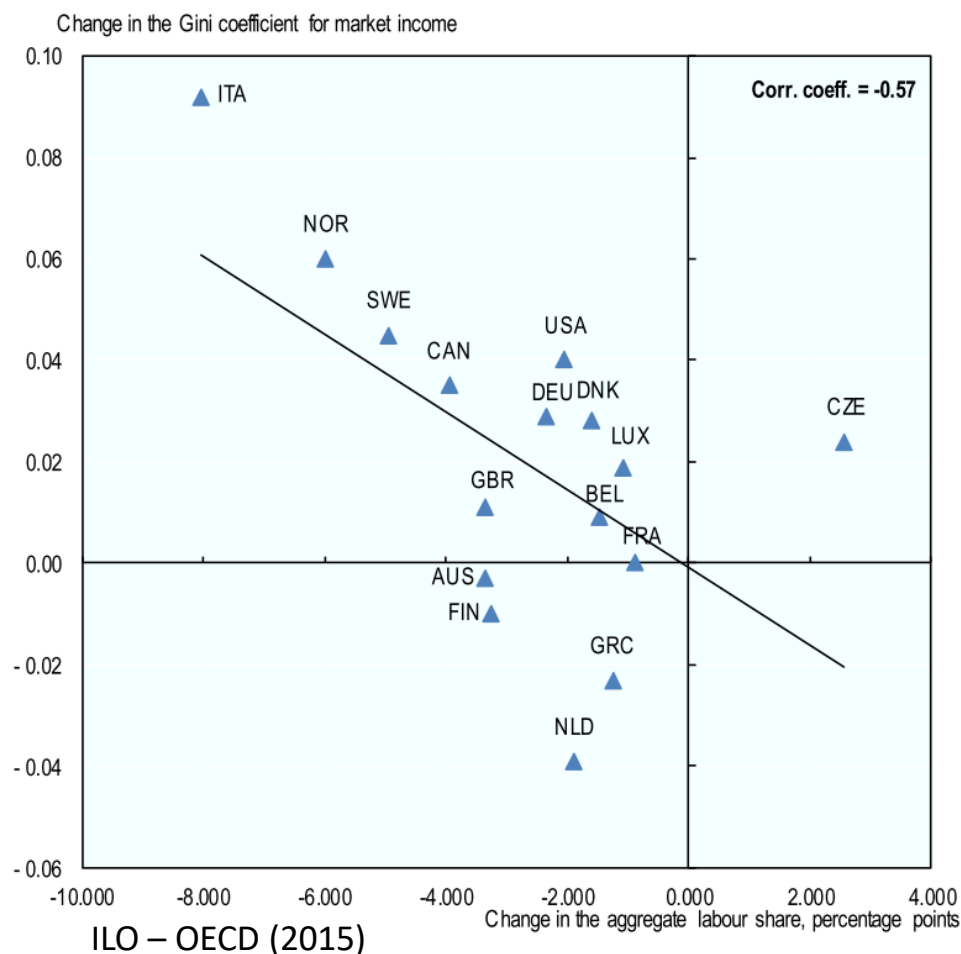


Labour Market Implications

- Hollowing of the middle
- Fall in the labour share
 - outsourced jobs are low-skills in G7 countries
 - they are high-skill in developing countries
- Knowledge flows tend to increase the returns to human and physical capital
- Increased inequality

Labour Shares and Income Inequality

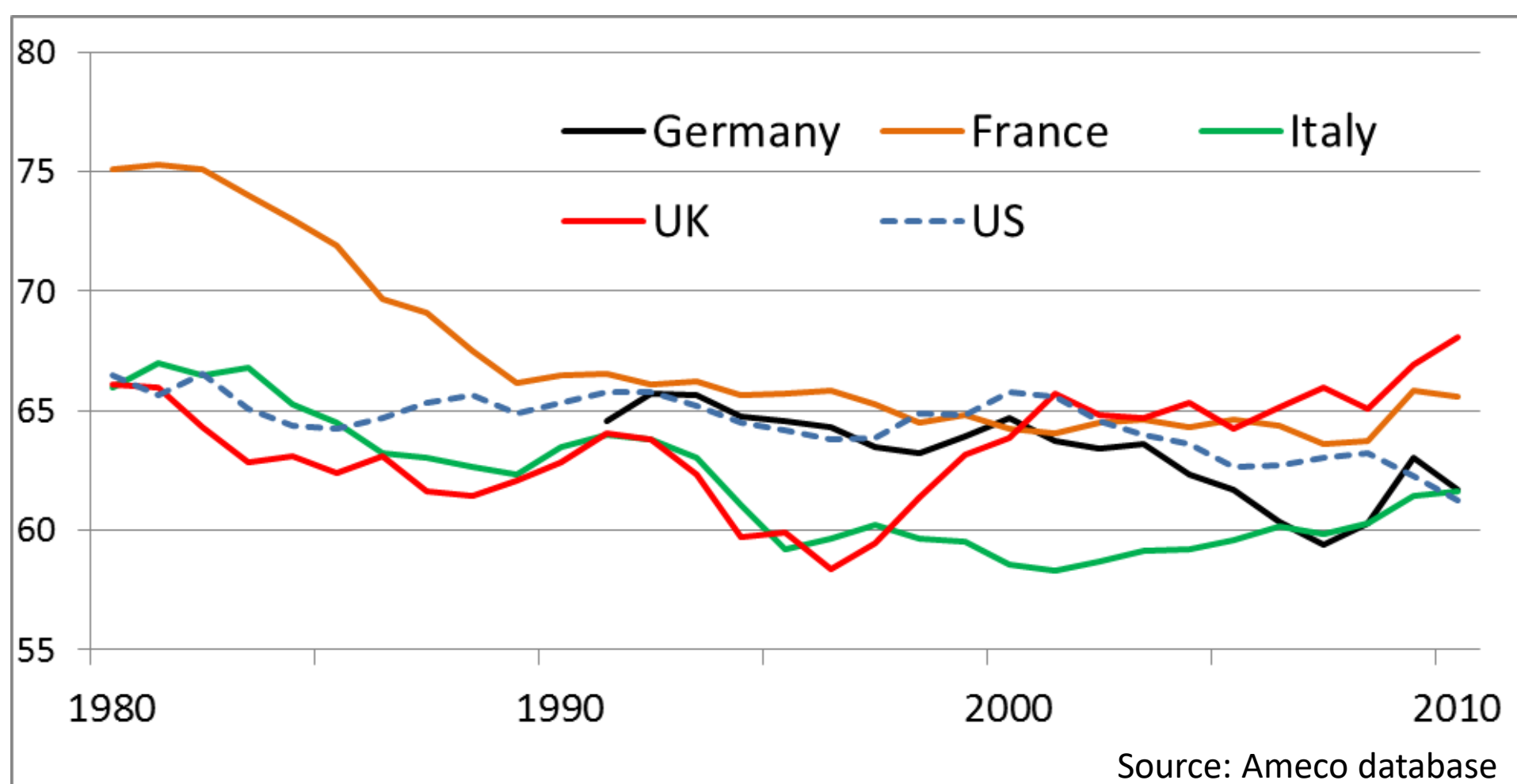
Changes in the labour share and in income inequality in OECD countries, 1990s to mid-2000s^a



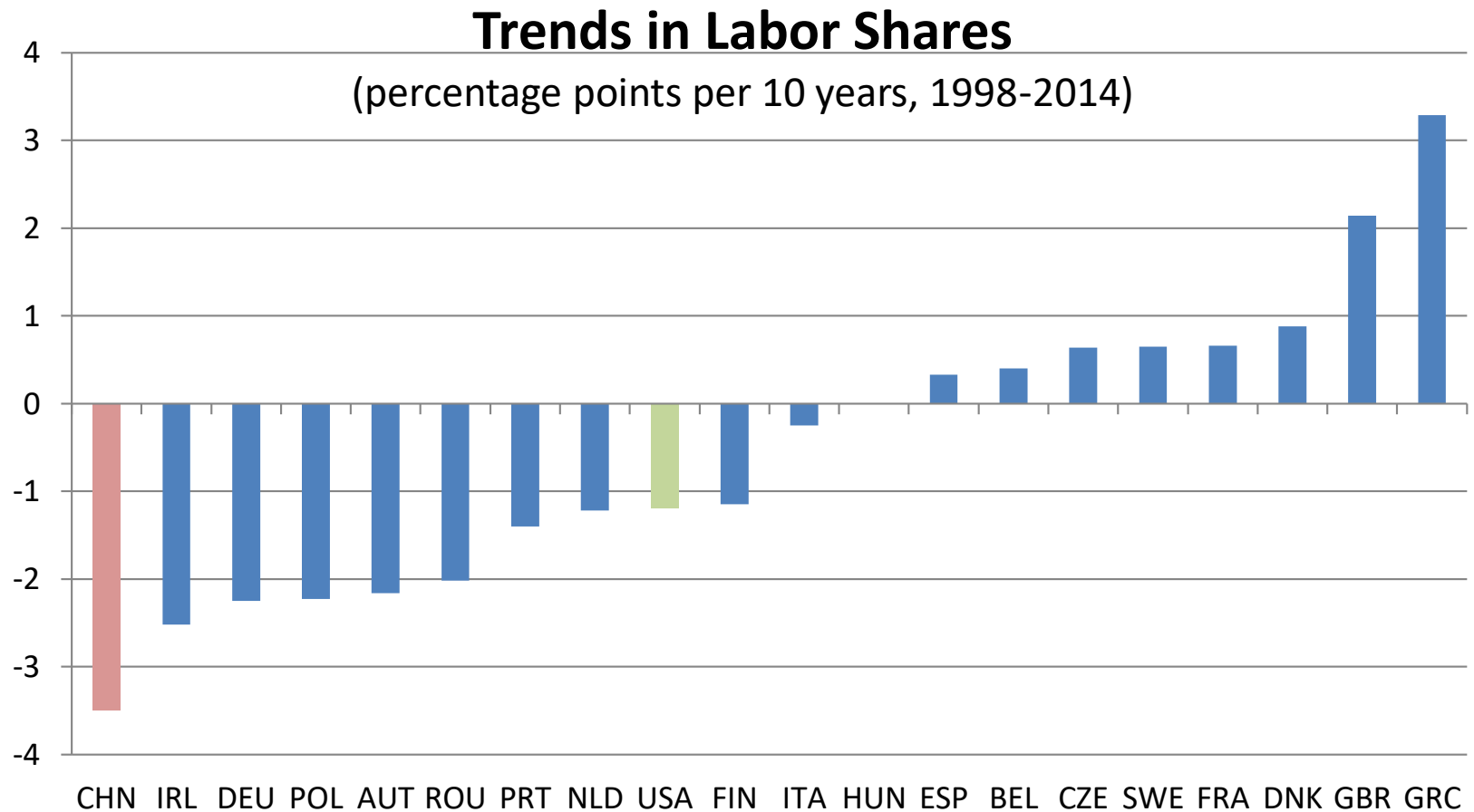
Heterogeneity

- The effects of the “outsourcing revolution” are heterogeneous
 - across countries (only a handful benefited)
 - across and *within* sectors (not all firms are alike)
 - across skill levels and occupations
- The rapid pace of technical progress and its ease of deployment everywhere makes it hard to predict what is going to happen and where
 - uncertainty and insecurity

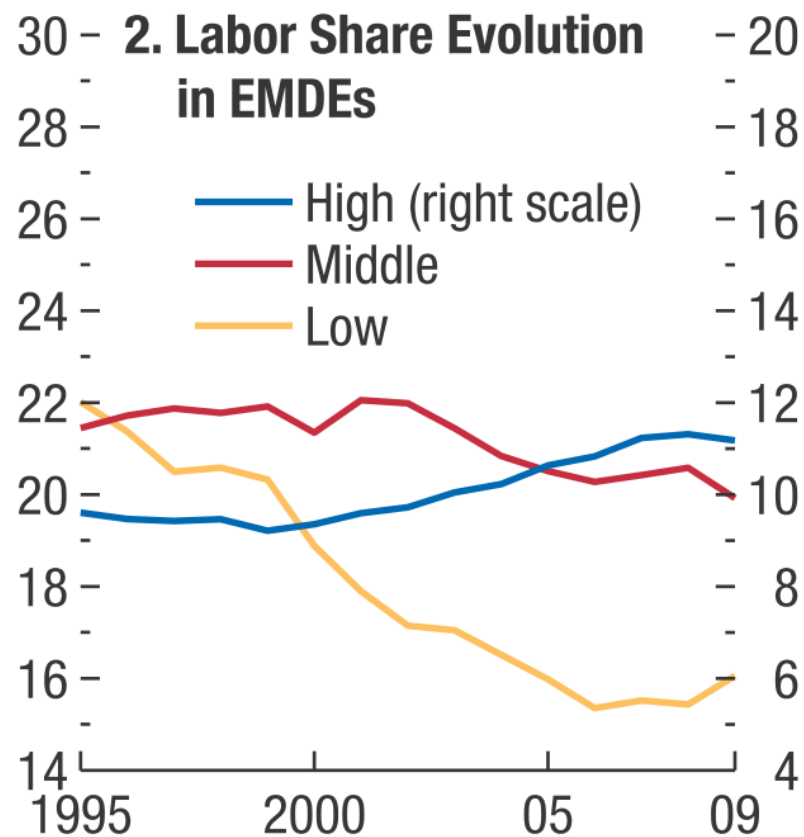
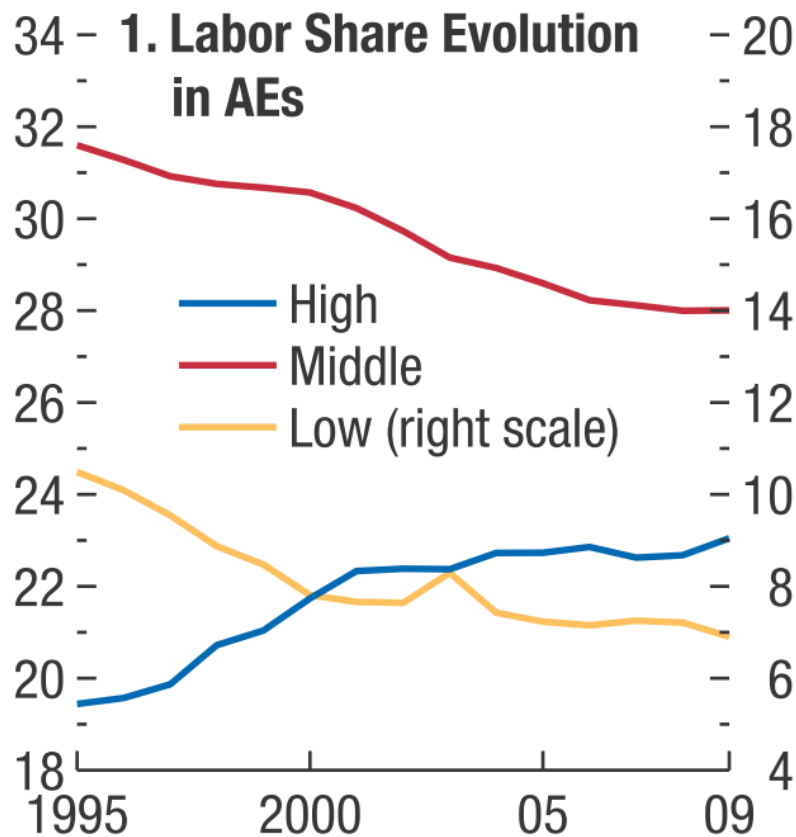
Adjusted Labour Shares: selected countries



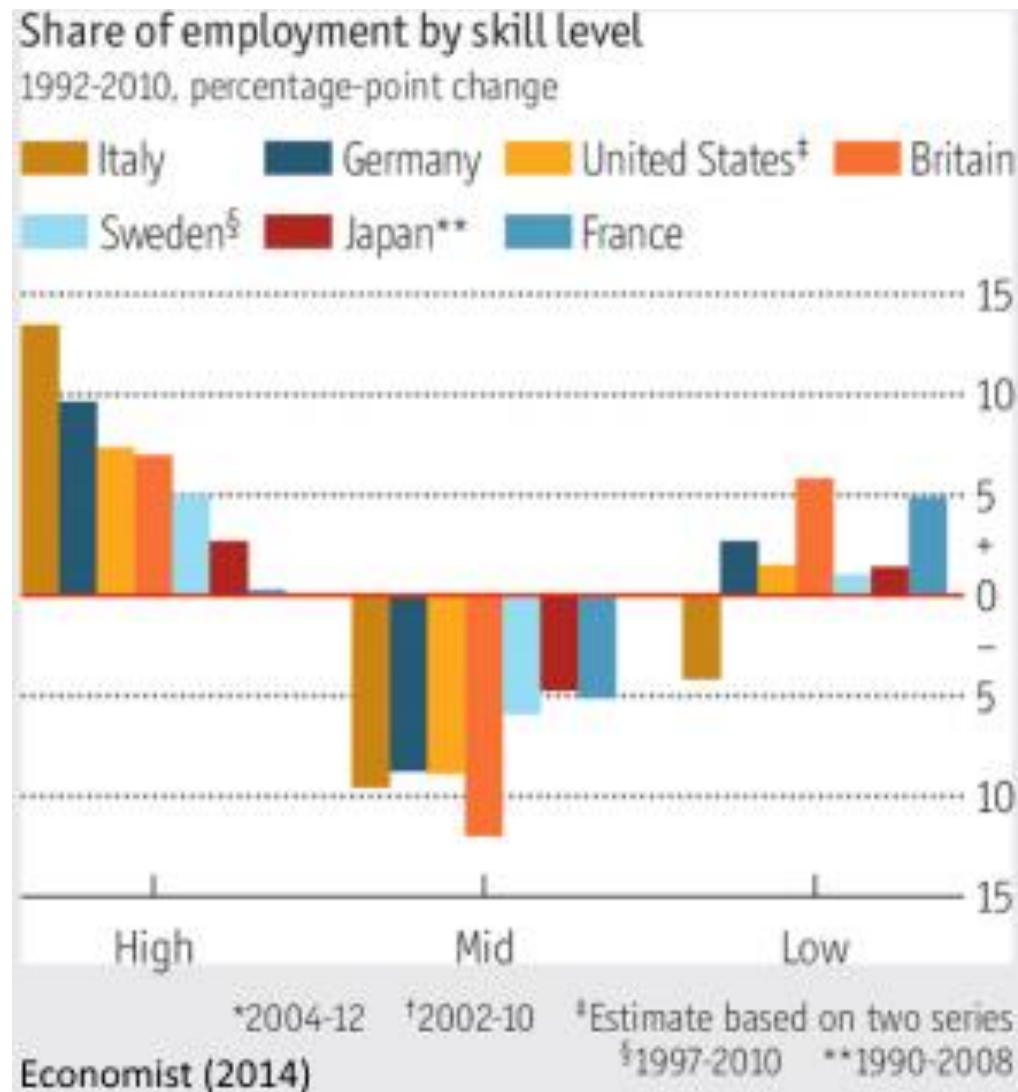
Labour Share Dynamics



Labour Share Dynamics by Skill Level



Employment Share Growth by Skill Level



Revenge of the Nerds...?

- We are all university graduates here...
- ...should we really care if skill-biased technical change compresses the income share of low-skilled workers?

Revenge of the Nerds...?

- We are all university graduates here...
- ...should we really care if skill-biased technical change compresses the income share of low-skilled workers?

Yes, we do, at least for two reasons:

1. growing inequality is threatening social cohesion and fueling discontent
2. we can't really be sure that our job won't be next! (unpredictability)

Unpredictability of Unbundling

- Technology, Artificial Intelligence, robotisation allow individual jobs to be replaced by “virtual workers”
 - just think of MOOC Vs. traditional teaching, translation, telemedicine, financial advising, remote assistants...
- Even jobs that were not considered *offshorable* (shop assistants, supermarket cashiers, but also translators and financial advisors) are being replaced by apps...

→ ...so what?

The Future of Skills: my two cents

- Universities should not teach students a job (esp. in social sciences)
- Not even skills are «for life» (let alone jobs...)
- The ability to **adapt**, **solve** new **problems**, **combine** different bits of **knowledge** and come up with **new solutions** are key in a fast-moving environment
- Interdisciplinary curricula and broad-based competences are increasingly important

The End



Further Implications

- Trade is *no longer* about goods or *products*, it is about *tasks*
- A country's competitiveness is not determined by ability to *produce a good*, but rather to *perform a certain task*
- Imports are not (only) threats, but (also) key inputs
 - raising tariffs to keep foreign products out has unintended consequences
(e.g. Harley Davidson has announced plans to relocate production aimed at the EU market from the US to Brazil & India in response to the EU tariffs triggered by US tariffs on steel)

Firm-level Evidence

- Studying the impact of import penetration on (French manufacturing) firms and workers we find that
 - foreign competition lowers rent-sharing (smaller income share to labour)
 - the effect is much smaller in firms with a high share of skilled workers

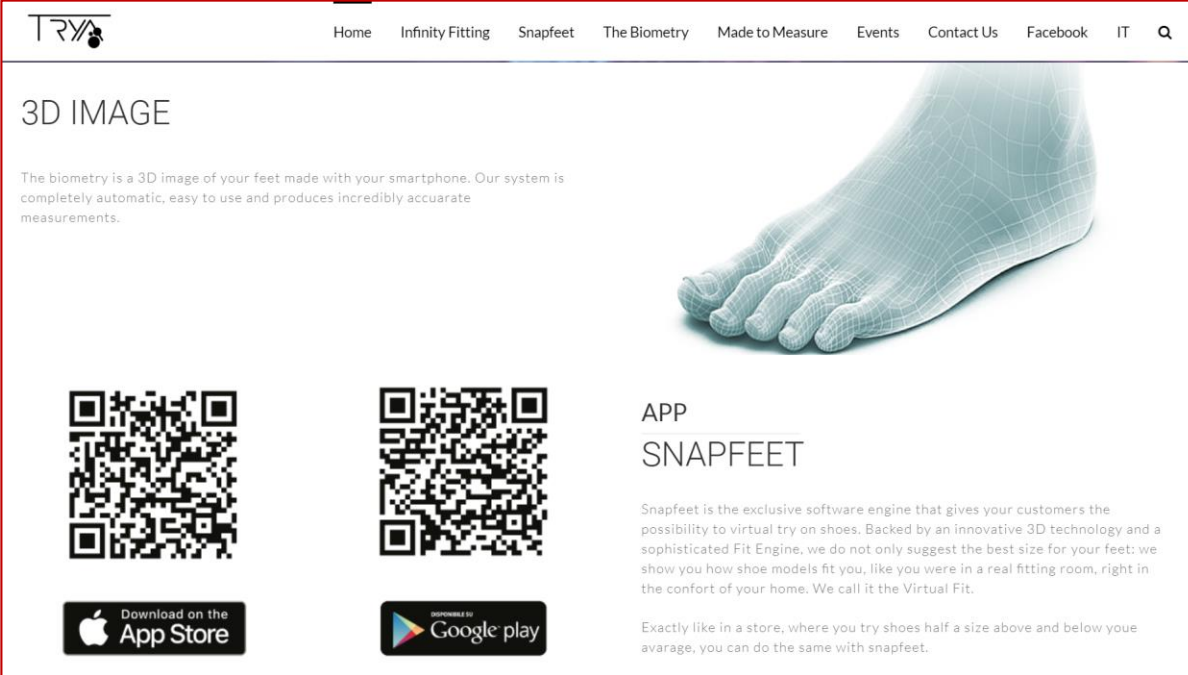
Routinization

- a task is *routine* if it can be accomplished by machines following explicit programmed rules
- routine tasks are those which “. . . *require methodical repetition of an unwavering procedure . . . exhaustively specified with programmed instructions and performed by machines.*” (Autor et al. 2003)

Just One Example

- Some friends have developed an app that allows to virtually try on shoes
- Bye bye shop assistants...?
- We all have an example like this in mind...

→ ...so what?



The screenshot shows the Snapfeet website. At the top is a navigation bar with links: Home, Infinity Fitting, Snapfeet, The Biometry, Made to Measure, Events, Contact Us, Facebook, IT, and a search icon. The main content area features a large 3D wireframe model of a foot on the right. To the left of the model, the text reads: "3D IMAGE" followed by "The biometry is a 3D image of your feet made with your smartphone. Our system is completely automatic, easy to use and produces incredibly accurate measurements." Below this text are two QR codes. Under the first QR code is the "Download on the App Store" logo. Under the second QR code is the "GET IT ON Google play" logo. To the right of the QR codes, the text reads "APP SNAPFEET" followed by a paragraph: "Snapfeet is the exclusive software engine that gives your customers the possibility to virtual try on shoes. Backed by an innovative 3D technology and a sophisticated Fit Engine, we do not only suggest the best size for your feet: we show you how shoe models fit you, like you were in a real fitting room, right in the confort of your home. We call it the Virtual Fit." At the bottom right, another paragraph states: "Exactly like in a store, where you try shoes half a size above and below your average, you can do the same with snapfeet."



IPEPS

Integrated
Programme in
European
Policy
Studies

Transferable Skills & Social Science in Higher Education

IPEPS Final conference
5th July 2018

John Peterson
John.peterson@ed.ac.uk

Transferable Skills

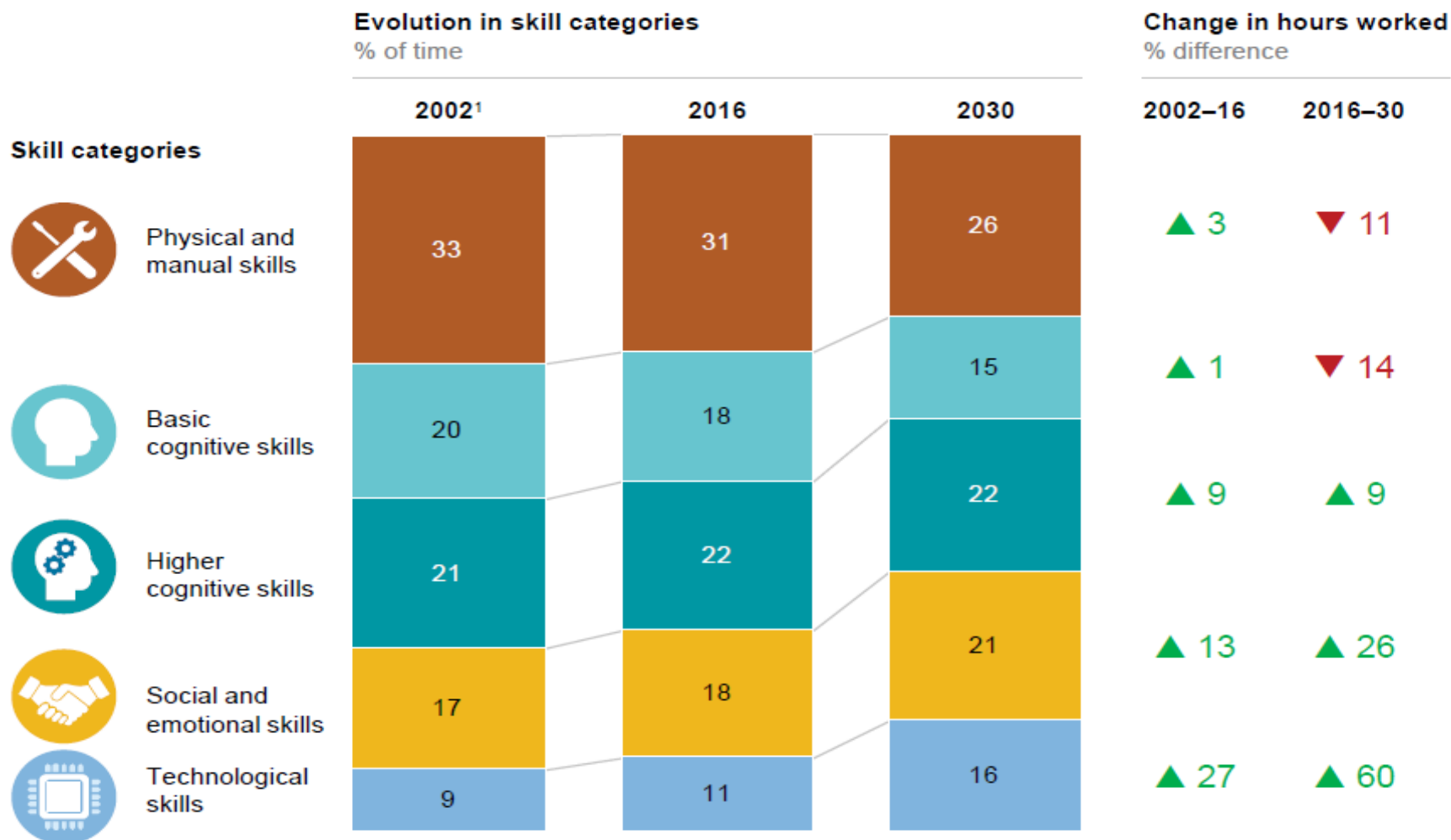
- Team working
- Motivation, enthusiasm and drive
- Interpersonal & communication skills
- Commercial awareness
 - Self-awareness & ability to identify own training needs
 - Organisational skills - project & time management.
 - Communication skills
 - Networking & team-working skills
 - Career management



Exhibit 2

Automation and AI will accelerate skill shifts.

Based on McKinsey Global Institute workforce skills model
United States, all sectors, 2002–30



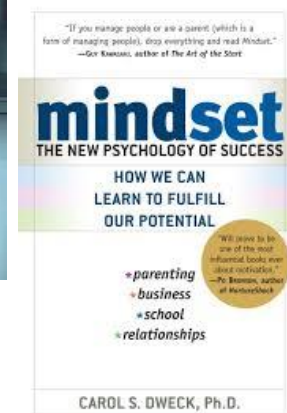
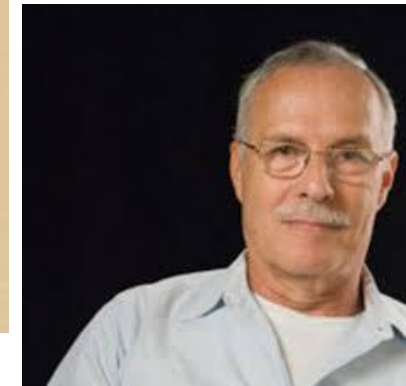
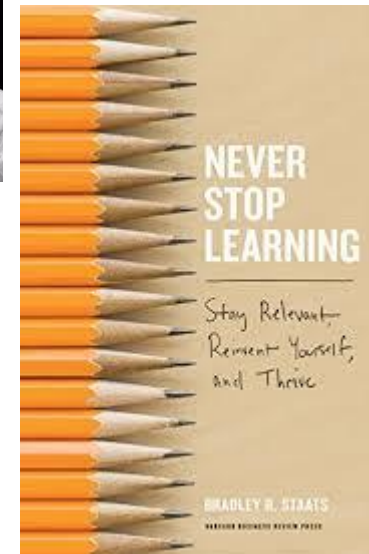
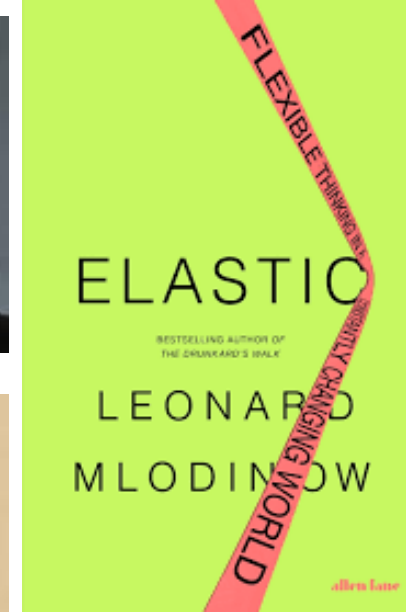
¹ Calculated using the 2004 to 2016 CAGR extrapolated to a 14-year period.

NOTE: Based on difference between hours worked per skill in 2016 and modeled hours worked in 2030. Numbers may not sum due to rounding.

SOURCE: U.S. Bureau of Labor statistics; McKinsey Global Institute workforce skills model; McKinsey Global Institute analysis

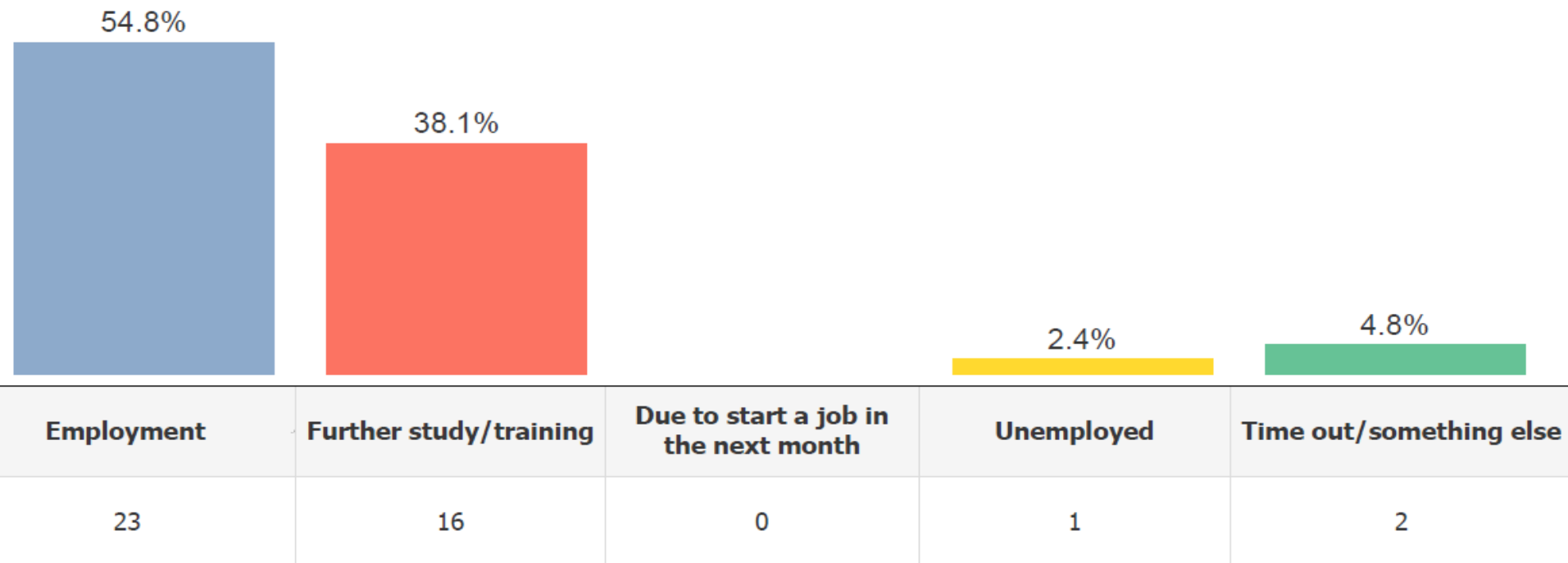
Adaptability!

- ‘small personal challenges’
- learning = **behaviour**
 - **daily** reflections on work
 - **codifies** knowledge
 - easier – see **problems**
- ‘growth mindsets’
 - ability/talent – **developed**
- careers paths – **messy**
 - **ok** if we **adapt**





MA (Hons) International Relations (Single and Joint)



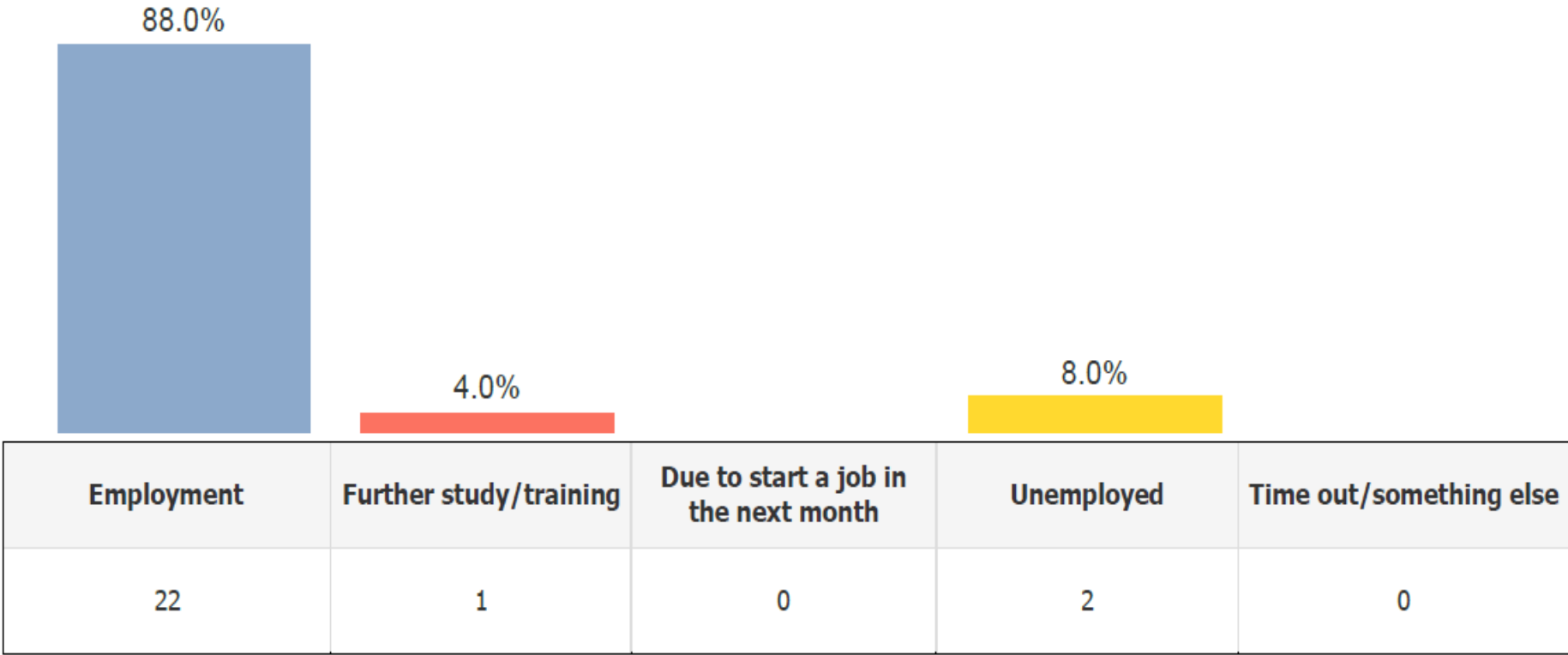
Response rate: 58.3%

Employment

| Job Title | Employer Name | Place of Work | Number |
|-----------------------------------|--------------------------------------|---------------|--------|
| Management Trainee | Waitrose | Reading | 1 |
| Audit Associate | EY | London | 1 |
| Associate Consultant | PwC | Edinburgh | 1 |
| Desk Officer | Minsitry of Foreign Affairs (Sweden) | Stockholm | 1 |
| PR and Digital Assistant | Tangerine PR | Manchester | 1 |
| Project Worker | Barnardos | East Lothian | 1 |
| Underwriting Supervisor | AIG | London | 1 |
| Analyst | Accenture | Edinburgh | 1 |
| Investment Banking Associate | Osprey Capital Partners | Toronto | 1 |
| Accountant Executive | The University of Edinburgh | Edinburgh | 1 |
| Campaign Director | Jubilee Scotland | Edinburgh | 1 |
| Participation Giving Officer | The University of York | York | 1 |
| Embassy Trainee | Royal Norwegian Embassy in Tallinn | Tallinn | 1 |
| Research Associate | Perrett Laver | London | 1 |
| Chair of National Labour Students | Labour Party | London | 1 |
| Administrative Assistant | Macmillan Cancer Support | York | 1 |
| Administrator | Scottish Enterprise | Bellshill | 1 |
| Course Administrator | Informa | London | 1 |
| Front Desk Associate | Philippa Gordon and Associates | Brooklyn | 1 |
| Teaching Assistant | A private school | Edinburgh | 1 |
| Sales Adviser | A clothes retailer | Glasgow | 1 |
| Sales Assistant | A clothes retailer | High Wycombe | 1 |



MSc International Relations



Response rate: 51.0%

Employment

| Job Title | Employer Name | Place of Work | Number |
|--|--|------------------|--------|
| Researcher on Foreign Affairs, House of Represe... | House of Representatives | Tokyo | 1 |
| Officer | Local Lawfirm | Rockwell | 1 |
| IT and Business Consultant | FDM | Glasgow | 1 |
| Account Associate | William Mills Agency | Atlanta, Georgia | 1 |
| Communications Officer Volunteer | Amnesty International | Edinburgh | 1 |
| Support Worker | Refugee education trust | Mardin | 1 |
| Administrative and Production Assistant | International Telecommunication U... | Geneva | 1 |
| Film Promoter | Sil-Metropole | Guangzhou | 1 |
| Stock broker | Charles Schwab | Phoenix | 1 |
| Account Team Control Analyst | J.P. Morgan | Edinburgh | 1 |
| Insolvency Administrator | Shimmin Wilson | Isle of Man | 1 |
| Data Analyst | Globe Technical Services | London | 1 |
| Political Affairs Intern | United Nations Office for Disarmament Affa... | Vienna | 1 |
| Program Manager | Università della Svizzera Italiana | Lugano | 1 |
| Project Administrator | Chatham House | London | 1 |
| Research Analyst | Wikistrat; The Sentinel Analytical Group | Washington DC | 1 |
| Public Relations | International Musican League | New York | 1 |
| Attache | Ministry of Foreign and European Affairs of C... | Zagreb | 1 |
| Administrator | European Commission | Brussels | 1 |
| Customer Service Case Manager | Klarna INC | Columbus | 1 |
| Waiter | Civerinos | Edinburgh | 1 |
| Waiter | Ten Ten Tapas | Vancouver | 1 |





From Work 4.0 to Skills 4.0 – implications for industrial business models

IPEPS Final Conference



Agenda

1

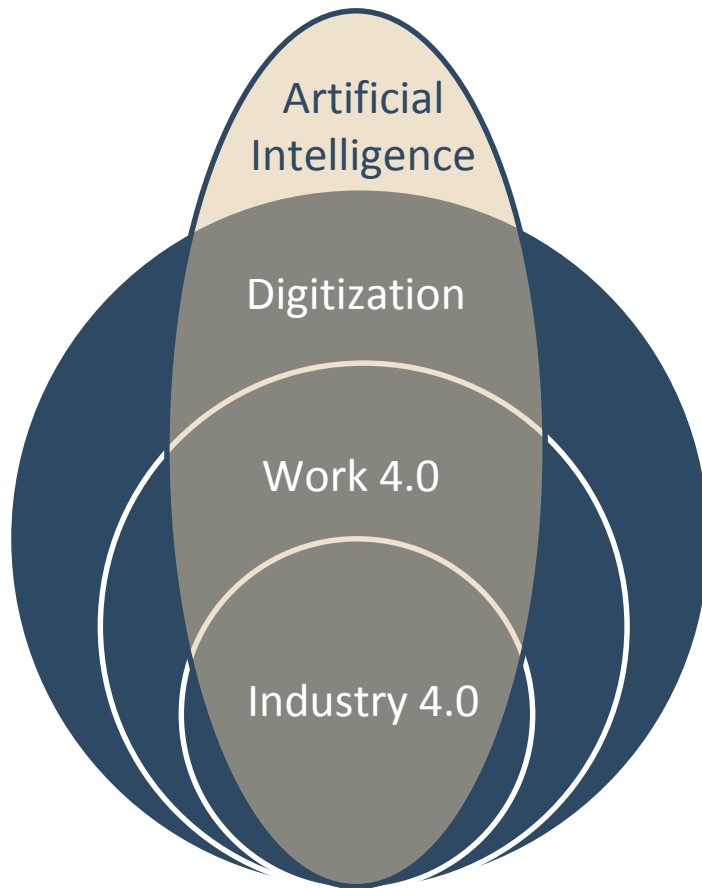
Digitization and industrial business models

2

From Work 4.0 to Skills 4.0

Digitization and Work 4.0

Conceptual classification

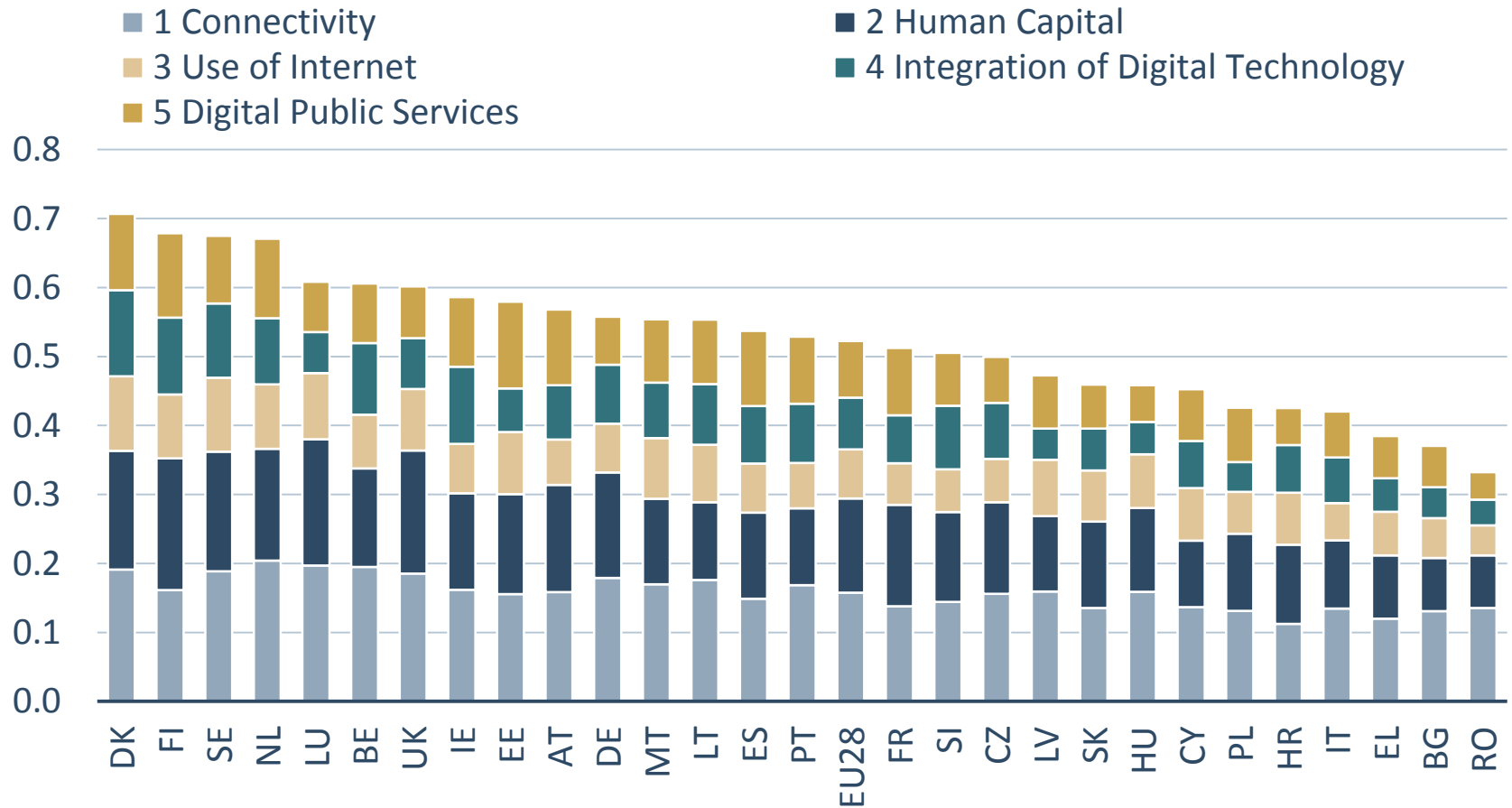


- ▶ **Artificial Intelligence:** Automation of intelligent behaviour (machine learning, deep learning, neural networks)
- ▶ **Digitization:** Transformation of analogous information into digital binary signals
- ▶ **Work 4.0:** Impact of digital technologies and business models on the labour market
- ▶ **Industry 4.0:** Collaboration of humans, machines, workpieces etc. in real time

Source: own classification

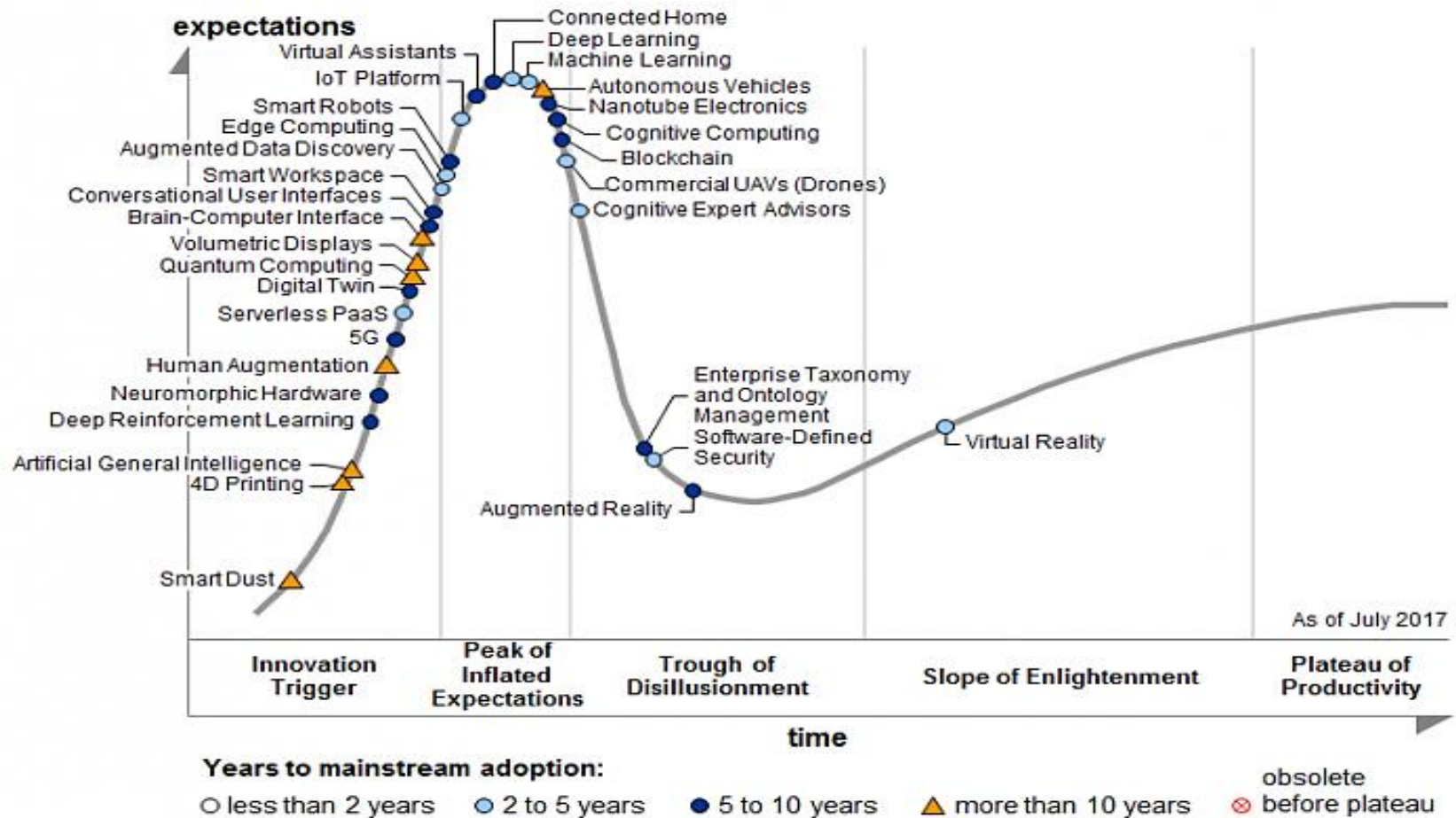
Digitization in Europe

Digital Economy and Society Index (DESI) 2017 ranking



Source: Europe's Digital Progress Report, EDPR, 2017

Gartner Hype Cycle for Emerging Technologies



Source: Gartner, 2017

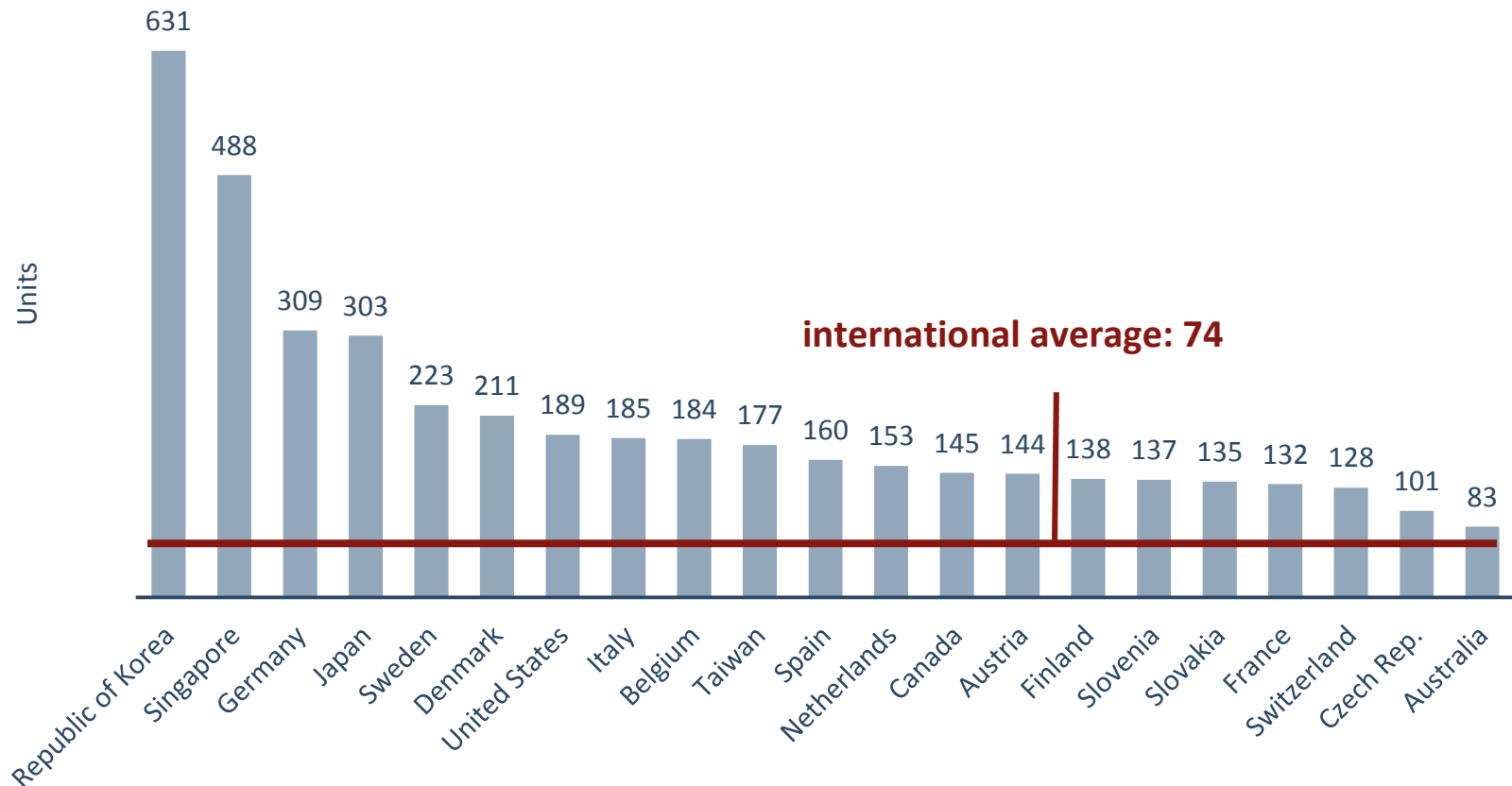
Leading future technologies in Europe

| Field of technology | Rank 1 | Rank 2 | Rank 3 |
|-------------------------|----------------|----------------|-------------------|
| Artificial Intelligence | United Kingdom | France | Germany |
| Crypto/block chain | United Kingdom | Switzerland | Estonia |
| Cybersecurity | Germany | United Kingdom | Estonia |
| Autonomous vehicles | Germany | Sweden | Norway |
| Robotics | Germany | United Kingdom | several countries |
| Genomics | Germany | United Kingdom | Switzerland |
| Virtual Reality | Germany | Finland | United Kingdom |
| Augmented Reality | Germany | United Kingdom | Sweden |
| Quantum computers | Germany | United Kingdom | Switzerland |
| Drones | France | United Kingdom | Germany |

Source: Atomico, Crunchbase, 2017; IW Consult, 2018

Distribution of robots worldwide

Industrial robots installed per 10,000 employees*, 2016

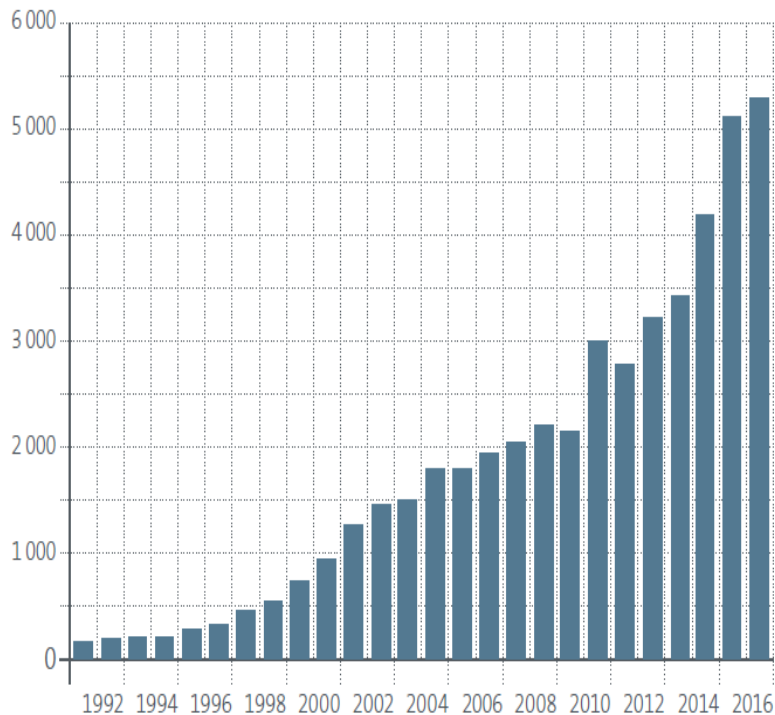


*= Manufacturing industry

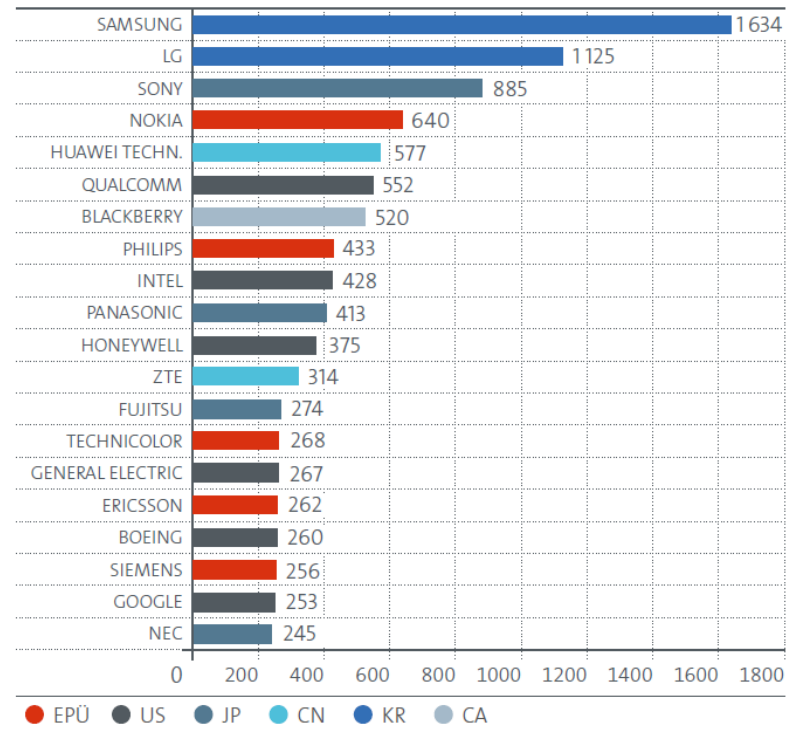
Source: International Federation of Robotics

Patents and the Fourth Industrial Revolution

4IR patent applicants at the EPO

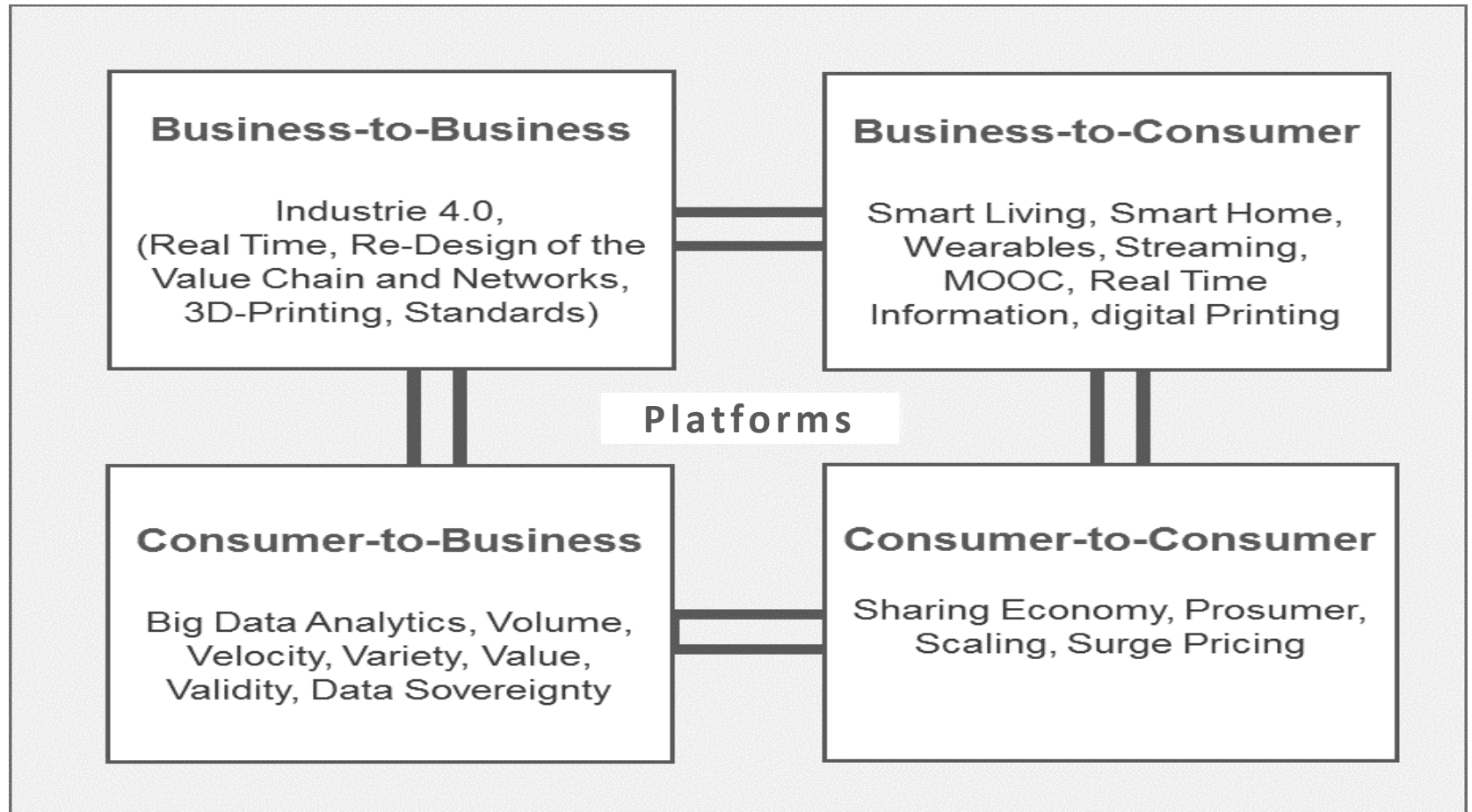


TOP 20 4IR applicants at the EPO



Source: European Patent Office, Patents and the Fourth Industrial Revolution, 2017

Digitization of business models



Source: German Economic Institute

Key messages

- › Digitization is no new phenomenon, but breadth, depth and velocity are rapidly increasing.
- › Prevalence of and readiness for digitization are heavily depending on branches and the structure of market relations.
- › Artificial Intelligence is more and more a key enabler of business processes and markets.
- › Platforms are recombining industrial value chains.
- › Managing complexity in high-end technologies with strong export orientation requires:
 - › Development and implementation of patents and innovation
 - › Academic and vocational *qualifications and skills* in STEM fields

Agenda

1

Digitization and industrial business models

2

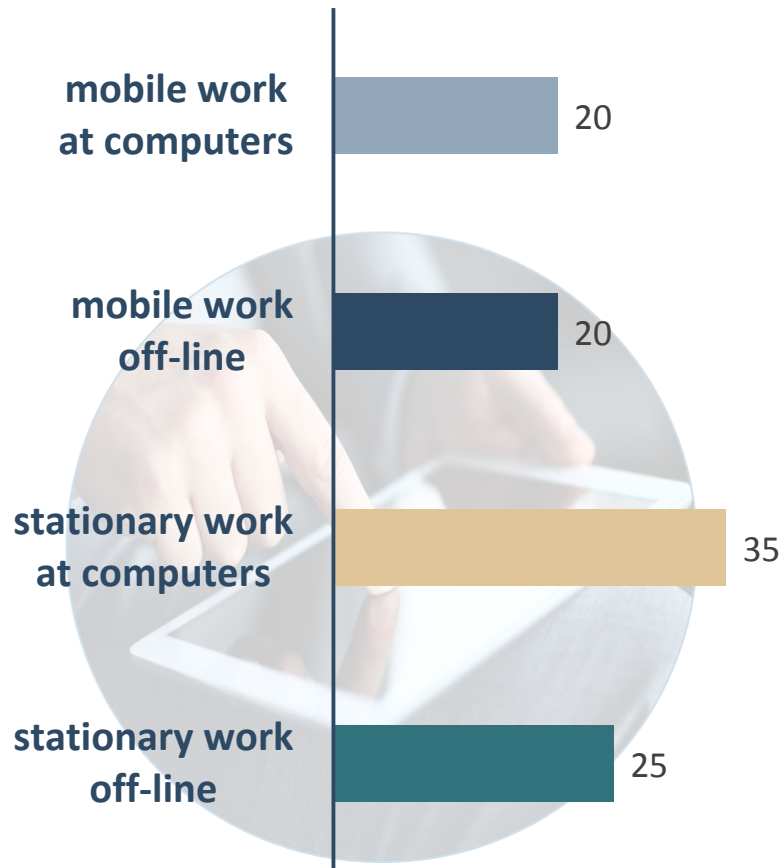
From Work 4.0 to Skills 4.0

Trends at a glance



Digital Work

Percentage of employees according to degree of digitization in Germany, 2015



| | work outside the company | |
|--|-------------------------------------|---------------------------------|
| work at computers, laptops, smartphones etc. | several times a month or more often | less than several times a month |
| ¼ of the time or more | | |
| less than ¼ of the time | | |

Source: EWCS, 2015; German Economic Institute; Source of photo: Fotoalia

Autonomous Work

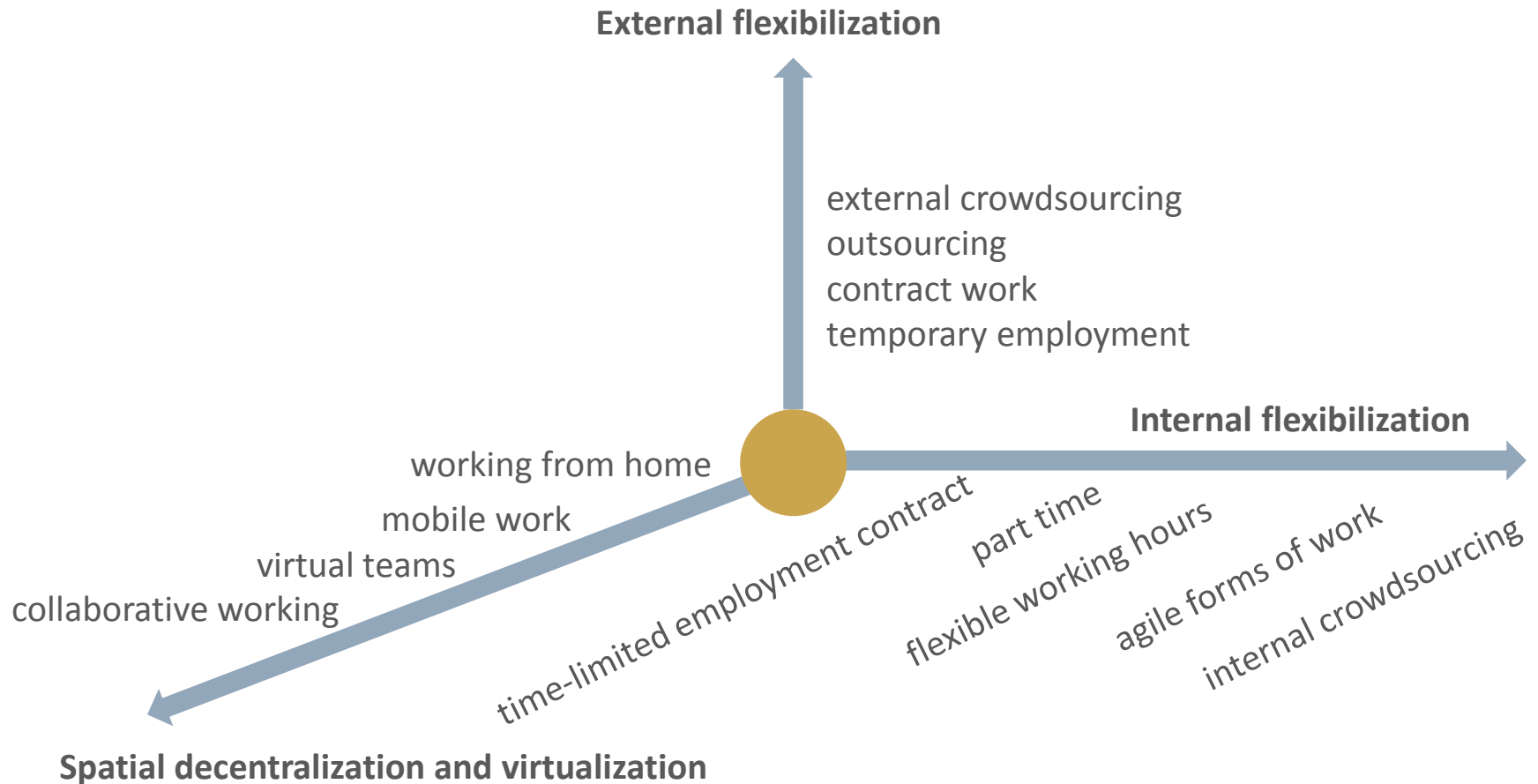
Percentage of employees, Germany, in 2012, who...

| | Work 3.0 | Work 4.0 |
|---|----------|----------|
| ... are frequently able to plan and structure their work by themselves | 43 | 84 |
| ... are frequently able to determine the quantity of work assigned to them | 21 | 38 |
| ... are frequently able to decide themselves when to have a break | 41 | 69 |
| ... work rather independently | 56 | 79 |
| ... are frequently able to consider family and private issues when scheduling their working hours | 54 | 61 |

Work: 3.0: Non-integrated work, without internet; Work 4.0: Integrated work via internet

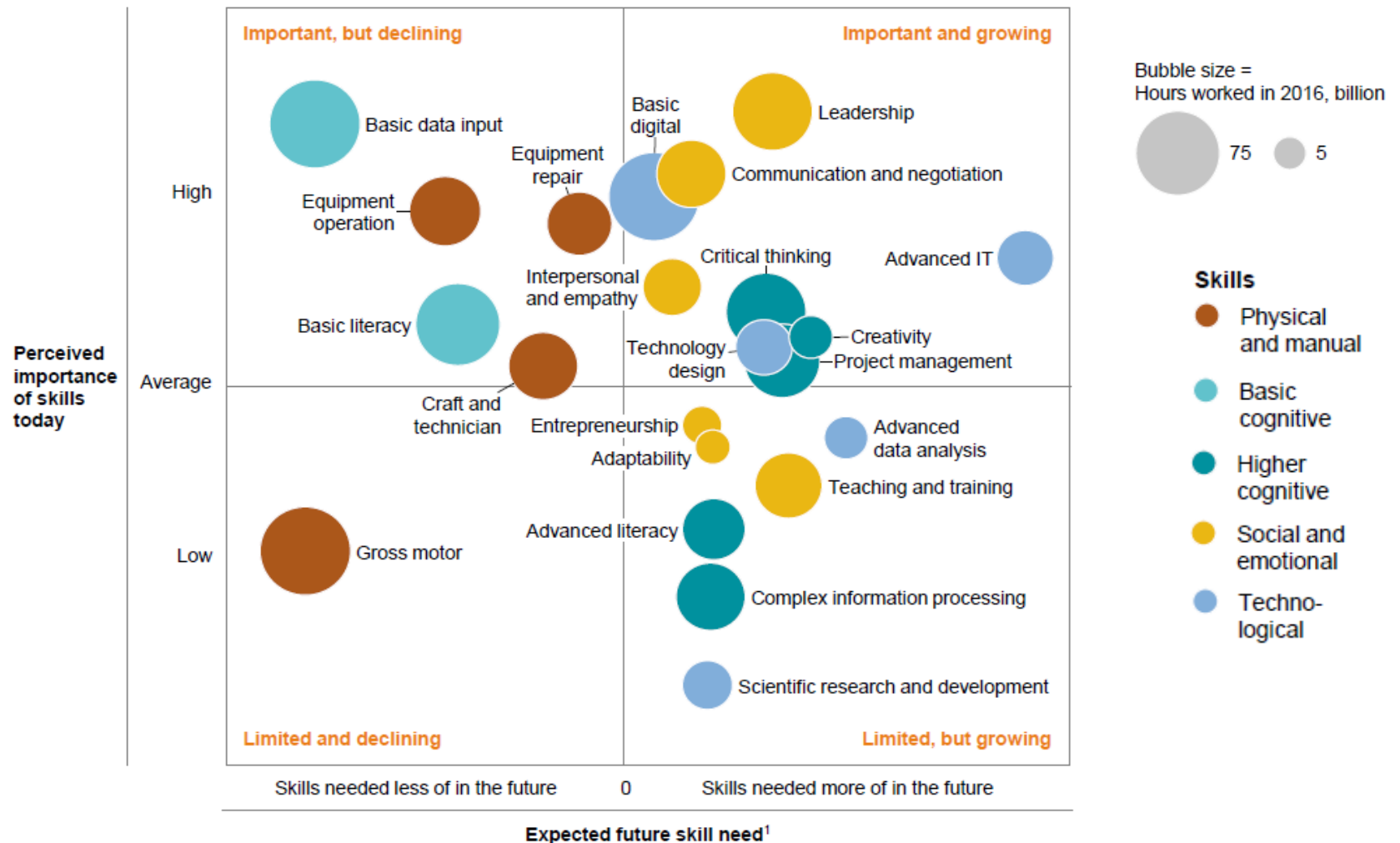
Source: BIBB/BAuA-Erwerbstätigenbefragung, 2012; German Economic Institute

Flexible work



Source: Federal Ministry of Labour, White Paper Work 4.0, 2016

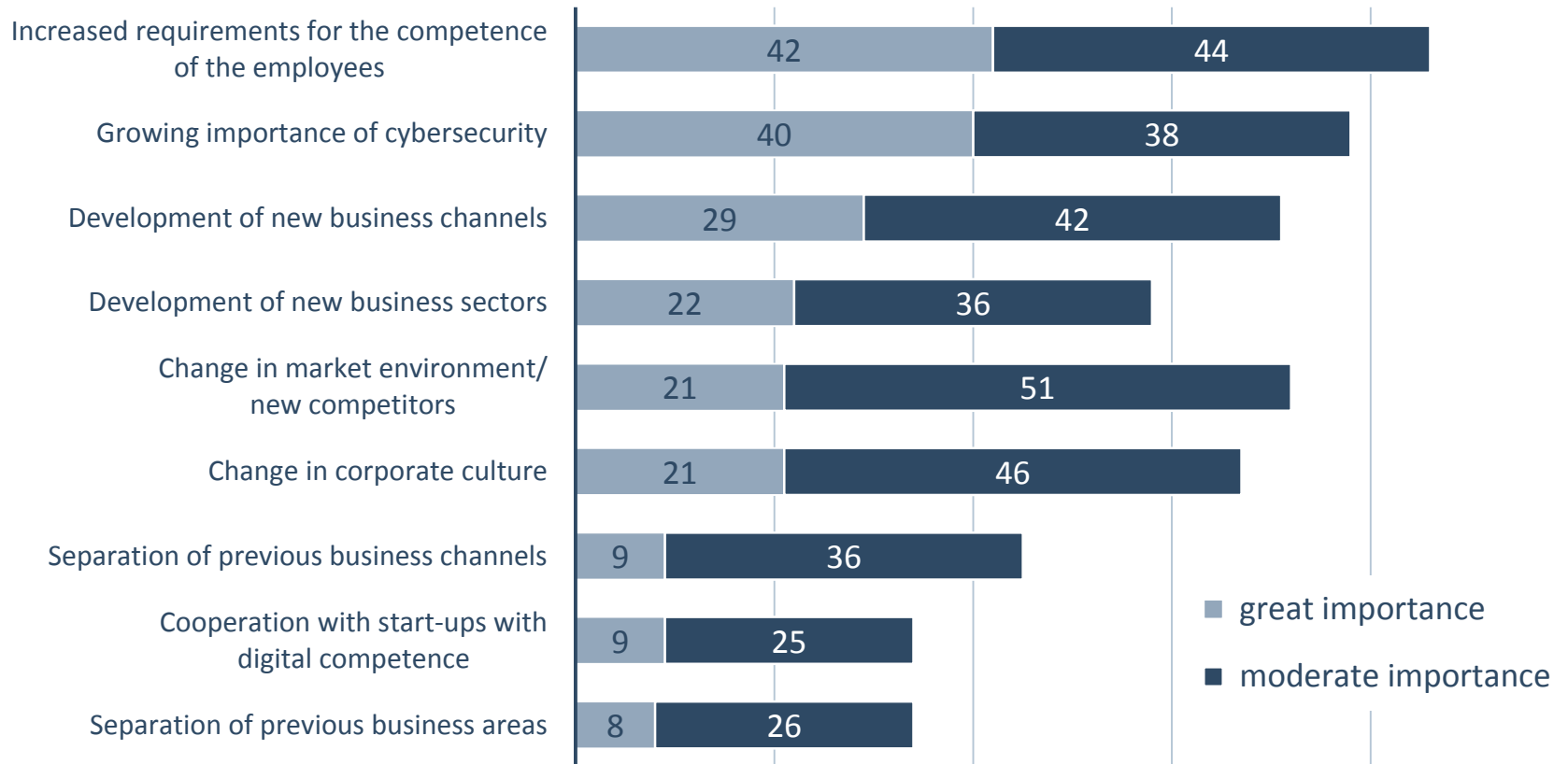
Skills shift: projection



Source: McKinsey Global Institute, workforce skills executive survey, based on results of March 2018 survey of 3,031 business leaders in Canada, France, Germany, Italy, Spain, the United Kingdom, and the United States

Challenges by digitization

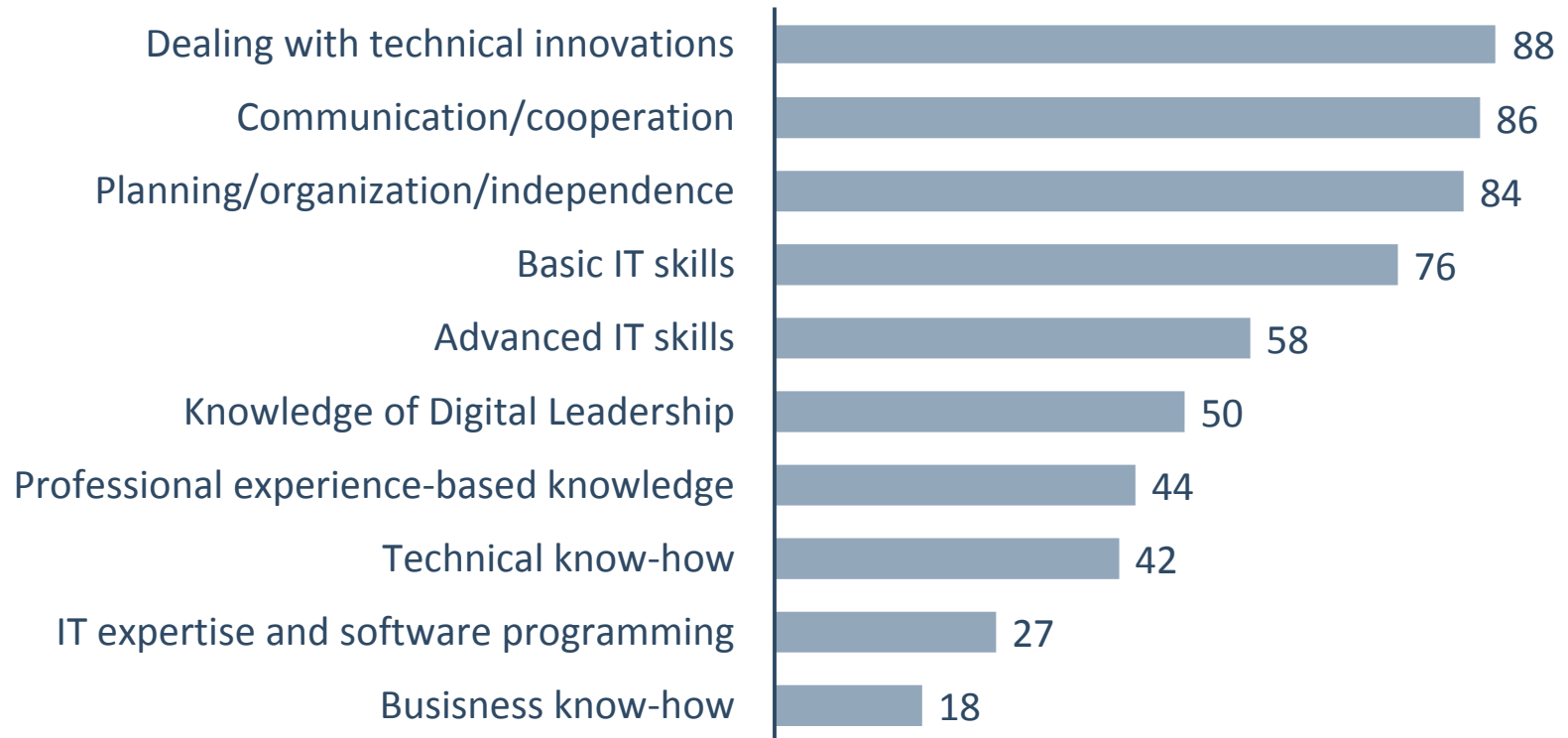
„How important are the following challenges driven by digitization for your company?“, in percent



Quelle: E&Y-Mittelstandsbarometer, March 2018

Shift in required competencies

Difference between shares of “increasing” and “decreasing”,
SME, in percent



Quelle: IW Consult, 2018

Industry 4.0 and the future of skilled work

Automation scenario

- monitoring and controlling through technology
- *Cyber-physical systems* (CPS) steer workers, who are mainly executing
- highly-qualified workers install, modify and maintain CPS

workers:

skilled workers in general:

specialist skilled workers:

highly-skilled workers:



Specialization scenario

- CPS support the decision-making process
- workers steer CPS
- skilled work is still dominant
- increasingly informational, organizational, mechatronical content

workers:

skilled workers in general:

specialist skilled workers:

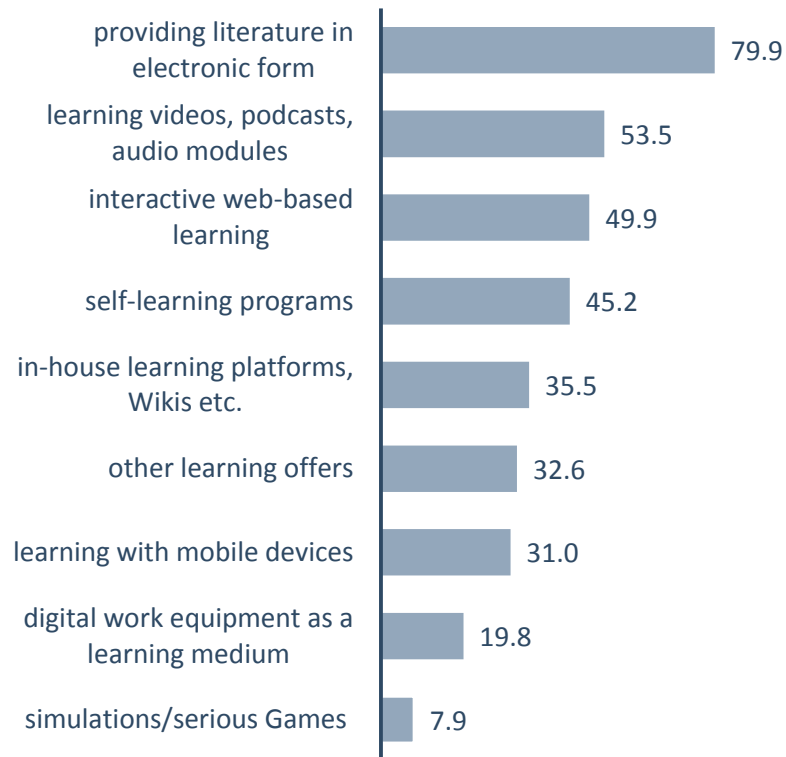
highly-skilled workers:



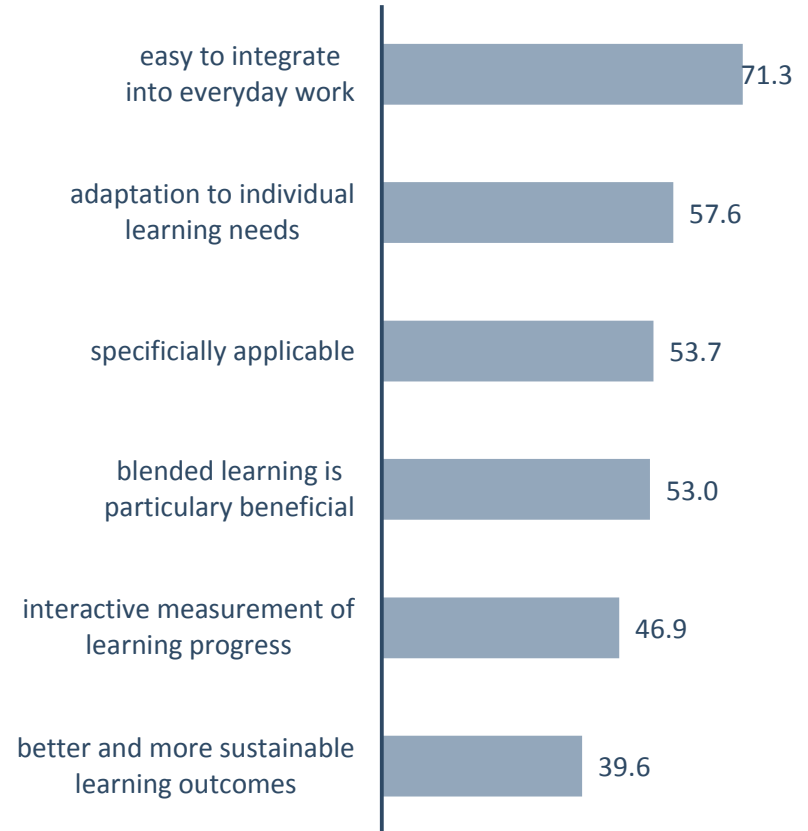
Source: Fraunhofer IAO, 2014

Digital training for adults

Further education tools in educationally active companies, in %



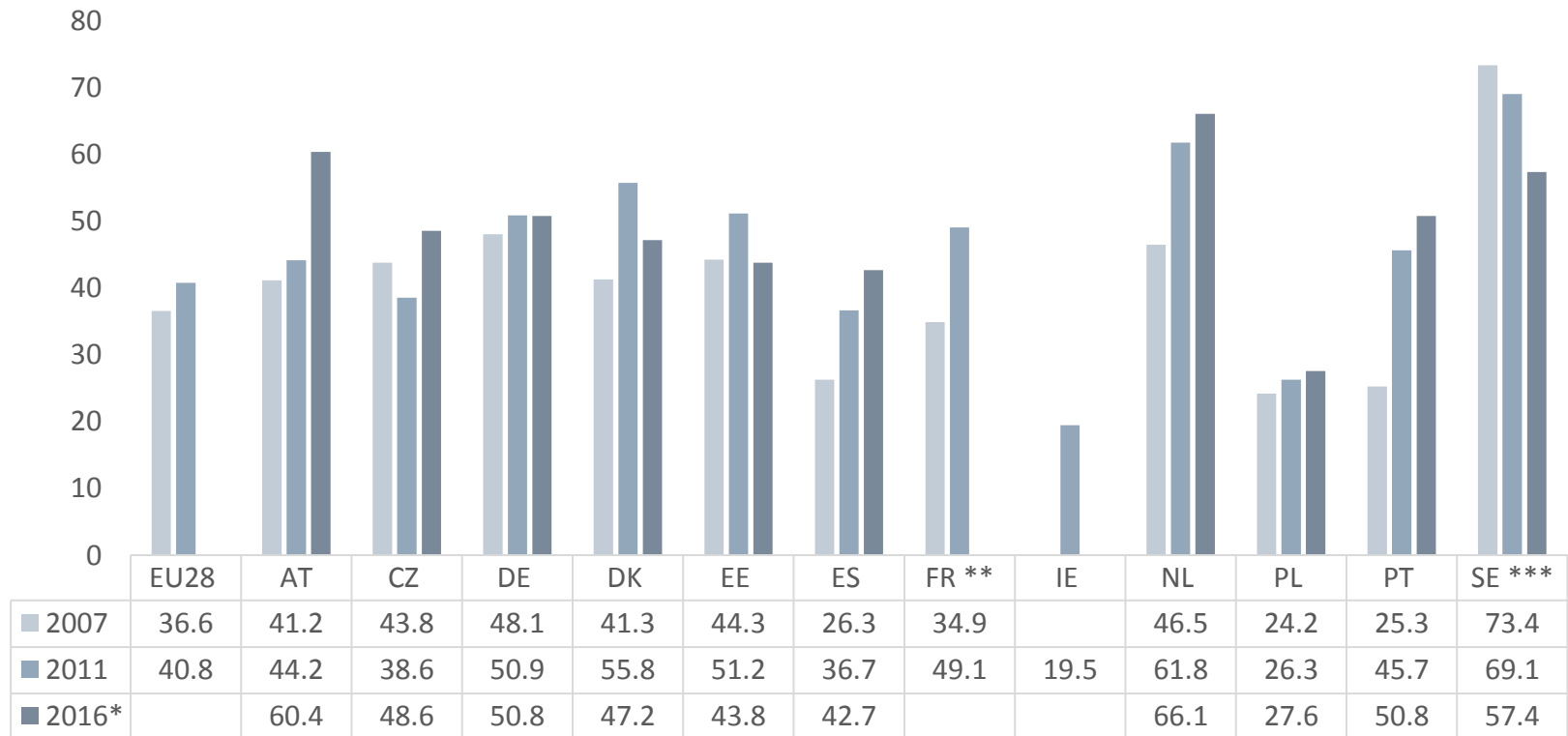
Reasons for the use of digital learning tools, in %*



*percentage of enterprises that use at least one digital learning tool „completely applies“ / „rather applies“
Source: IW-Weiterbildungserhebung 2017

Employed persons' participation rate in job-related non-formal education and training

In percent, persons from 25 to 64 years



* Break in time series for all countries between 2011 and 2016.




** Break in time series for France between 2007 and 2011.

*** Sweden changed data collection mode between 2011 and 2016.

Source: Own illustration based on AES, 2007, 2011, 2016; special evaluation of Eurostat

Employee training at a glance

Social partners' assessment of employee training along four selected dimensions

| |  |  |  |  |  |  |  |  |  |  |  |  |
|--|---|---|---|---|--|---|---|---|---|---|---|---|
| Country | AT | NL | CZ | ES | PL | DE | PT | DK | EE | FR | IE | SE |
| Anticipation and identification of skills needs | *** | *** | * ↑ | ** | ** | *** | * ↑ | *** | ** | ** | ** | *** |
| Mobilising resources | *** | *** | * | ** | * ↑ | ** | ** | *** | * ↑ | ** | ** | ** |
| Information, support and guidance | ** | ** | * | ** | ** | ** | * | ** | ** | ** ↑ | ** | ** |
| Validation of skills, competences and qualifications and recognition | ** ↑ | ** ↑ | ** | * | * ↑ | * ↑ | ** | *** | ** | ** | ** | ** |

Based on country reports. Prominence of issues shown on a scale from 1 to 3 stars

* = low; ** =intermediate; *** = strong; arrows indicate trends (↑ ↓).

Key messages

- › Digitization influences the anticipated (future) skills needs.
- › Employers and employees need support in defining which skills are needed, in particular SMEs and low-skilled employees.
- › Big data analytics contributes to a better skills anticipation.
- › Company-specific further training must be adapted to changing business models at short notice.
- › Informal and non-formal training becomes increasingly important.
- › E-learning offers flexibility concerning the place and the timing of learning and can respond flexibly to the needs of SMEs.
- › The link between initial VET and university offers and employee training should be improved for a more efficient provision of training.

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