



How does digital economic transform working conditions?

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Innovation technologique, changements organisationnels, quels enjeux pour la prévention?

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The economic model

- Not the first time that ICT and economic model/work/employment are questioned
- Looking beyond digital technologies in order to pinpoint the founding principles of a new era of economic and social development
- *What are the real changes ?*
 - Five founding principles.

1. Digitised information as a strategic economic resource



2. ✓ Innovations with growing returns and zero marginal (



3. ✓ New business models in the digital economy: two-sided markets (platforms)

4. Innovative features of Industry 4.0 model



5. The productivity paradox



Technological changes

- Broadening the perspective in order to avoid distorting effects of emphasising only on what is new and novel



Which are really the new new technologies?

The cloud (cloud storage / cloud computing)



A driver for the growth of all forms of remote and virtual work, but also a tool for implementing outsourcing and offshoring strategies.



"Your recent Amazon purchases, Tweet score and location history makes you 23.5% welcome here."

Big data

Implications in terms of surveillance and monitoring in the workplace and the tracking of employee activities.

Not new but more powerful.

Mobile apps



Excellent example of the **pervasive computing**, or the ubiquitous presence of computers in all professional and domestic settings, with their users being ever more frequently unaware of their presence or unable to understand their real purpose

Geolocation



From a **work-related point of view** > planning, monitoring and tracking of mobile workers and goods

What is really new > the **combination** of geolocation with other new digital technologies such as big data, apps, IoT, online platforms and **peer-to-peer networks**



Learning machine and mobile robots

From a work-related point of view, the impact will not be limited to sectors with a history of automation

However, it is difficult to evaluate the real potential of such systems in vastly diverse real-life working situations based on the performance of prototypes in experimental settings.

Internet of things (IoT)



Miniature interconnected objects > in work settings, public spaces and private spaces.

Connecting objects boosts their value creation potential, since services can be embedded in them and data mined from them.

- Transformative potential of the NNT in the workplace
 - A shift in the boundary between human and machine capabilities
 - Increased codification of **tacit knowledge** due to big data processing and learning machine
 - Increased codification of **non-routine manual and cognitive tasks** (maintaining technical facilities, driving vehicles, production and translation of standardised texts)



- Will robots **substitute or complement** human labour?
 - Learning to work with robots
 - Complementarity (cf. inclusive robotics)

• An uncertain vision of the future

- A vision of the future which is heavily shaped by the front-runners in the digital industry > **technological determinism**
- + a discourse which sounds yet another death knell for the paid employment model
- Difficult to put forward an **alternative perspective** (peer-to-peer arrangements, pooling of tangible or intangible assets through sharing platforms, sharing economy).

!!! The lessons of the past

- **Show that the relationship between technology and jobs is complex and frequently misjudged due to a failure to take account of key parameters such as the take-up rate of innovations by society.**

Employment

- Alarmist forecasts

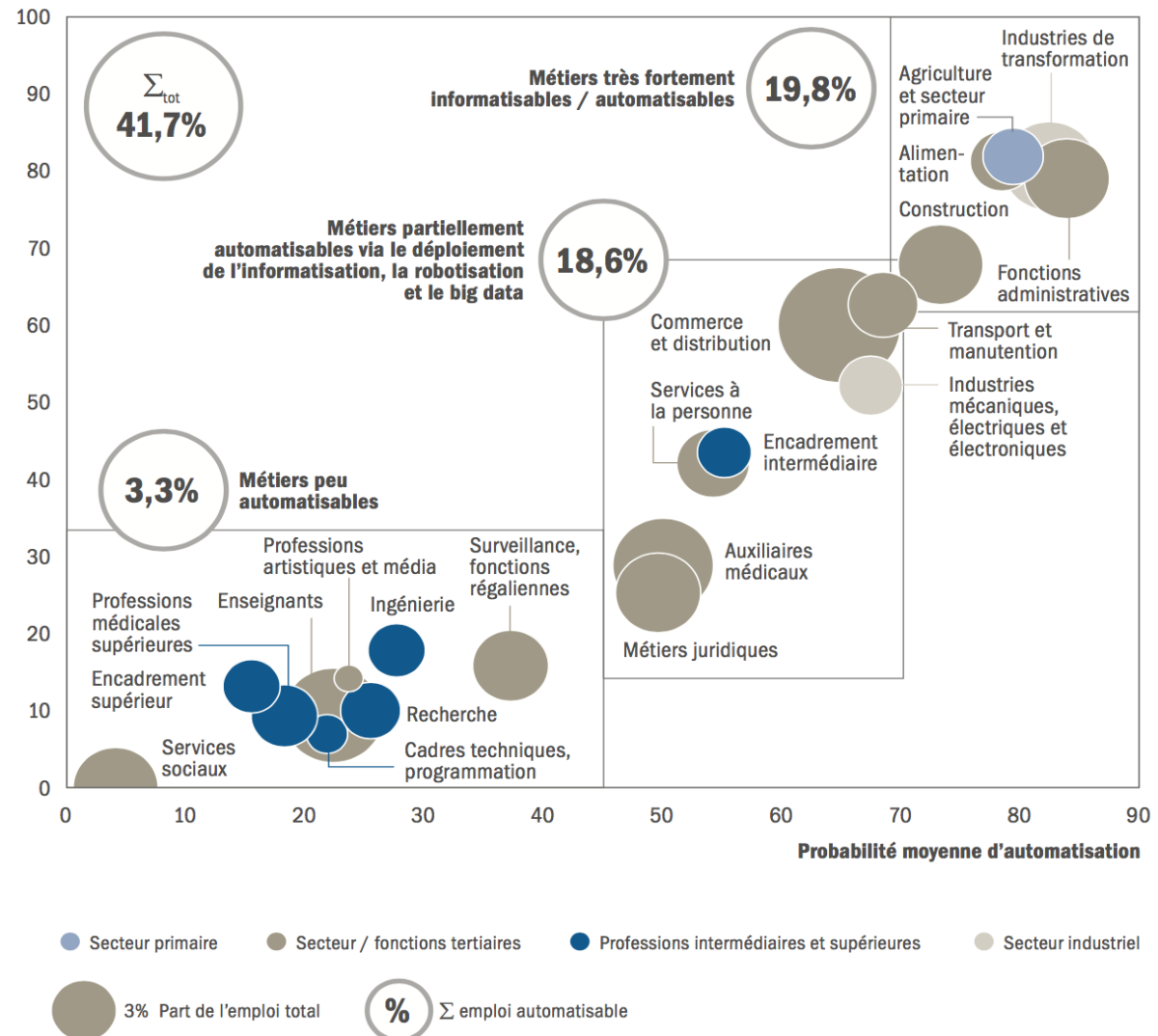
- Frey & Osborne, Breugel, Deloitte, Roland-Berger, ING...
- Controversies on substitution potential: 50% within 15-20 years (Frey & Osborne) vs 9% (OCDE)

!!! Changes in tasks ≠ occupations ≠ jobs

- Limits of the methodology of Frey & Osborne

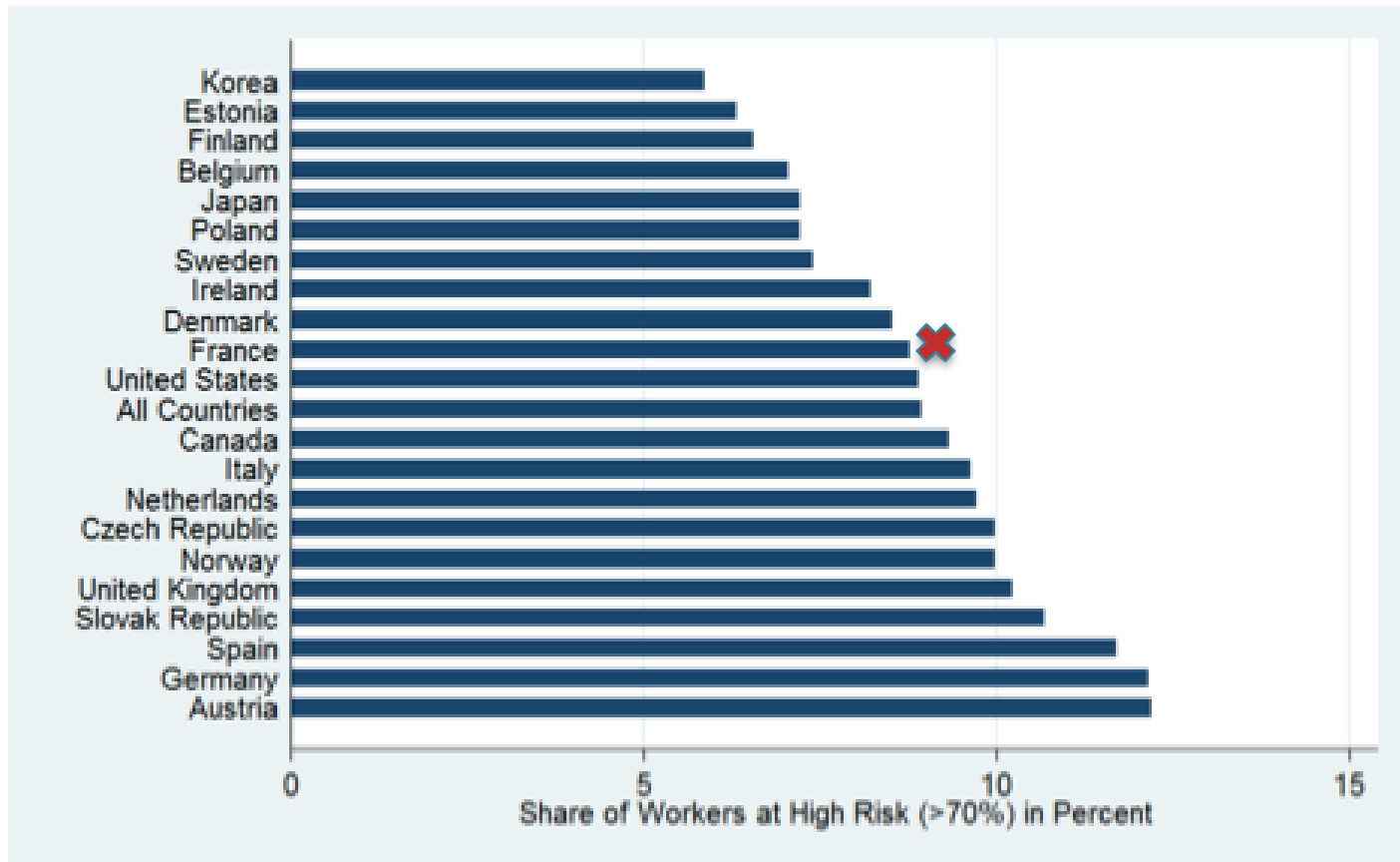
France

Probabilités d'automatisation par métier établies par Frey & Osborne, appliquées à la structure de l'emploi français (INSEE) (Roland Berger, 2014, p. 9)



OCDE forecasts

Figure 3. Share of Workers with High Automatability by OECD Countries



Source: Authors' calculation based on the Survey of Adult Skills (PIAAC) (2012)

Work

- Digitalisation and working conditions
 - Key features: changes in tasks, qualifications, organisation, employment relations + increased polarisation
- New and quasi-new forms of employment



- **ICT-based mobile workers**

- In line / no fixed place / no fixed time
- Diverse locations, including home, clients, shared locations...
- Mobile work > real and virtual (virtual teams and meetings, remote maintenance and monitoring, virtual forms as avatars...)

- > Increasing (EWCS data)

- Working for online platforms
 - Crowd working for micro-tasks distributed to the crowd
 - Ex. Amazon Mechanical Turk
 - Crowd working for free lancers tasks
 - Ex. PeoplePerHour
 - Crowd working for material tasks and services
 - Ex. TaskRabbit, Listminut, Uber, AirBnB
 - Platform-based on-call work + geolocation

- Working with robots

- Challenges for employment relation and working conditions
 - Blurring boundaries in the subordination link
 - Between salaried and self-employed
 - The concept of workplace
 - Multiple locations, blurring boundaries
 - Meaning and measure of working time
 - Project-based work, task work, with no link to working time
 - Wage setting
 - Flexible wage, piecework, auction, unpaid work
 - Blurring boundaries between private and professional life
 - Privacy protection, time management

- **Health and well-being**

- Technostress,
- Technology addiction
- Information overload
- Burn-out
- Permanent exposure to electromagnetic fields
- Postural disorders
- Cyber-bullying
- ...

- Distinction between the physical risks attributable to online work (screen-based work, ergonomics, stress, etc.) and those linked to offline work which lacks visibility due to the fact that it is organised through platforms (taxi driving, managing aggressive clients, etc.).

- **Gender**

- « Thanks to virtual technology, women can continue to multi-task – they opt in and opt out of work/family tasks, and by doing so, they can “do it all”, without challenging conventional gender roles, without threatening their marriages or the belief that they are good mothers » (Rafnsdóttir 2014).

- **Ecological transition**

- Digital technologies also give rise to concerns in connection with the exponentially growing collateral damage they cause, including the consumption of electricity and rare metals and the production of electronic waste .



- **Challenges**

- No **clear prospects** regarding work and employment
 - Need of meso level analysis (group of technologies, areas of activity, regions...)
- No **clear perspective** as regards **qualification and training**
 - Need for sector studies
- **Meaning of work** in a digital society
- Labour market and **social role of work** within society
 - Identity, place

Reference



Gérard Valenduc, Patricia Vendramin, *Le travail dans l'économie digitale: continuités et ruptures*, Working paper 2016.03, Brussels, ETUI.

Also available in English

<https://www.etui.org/fr/Publications2/Working-Papers/Le-travail-dans-l-economie-digitale-continuites-et-ruptures>