

Gerhard Bosch

**"Digitalization (or the fourth industrial revolution)
and the related labor and employment issues."**

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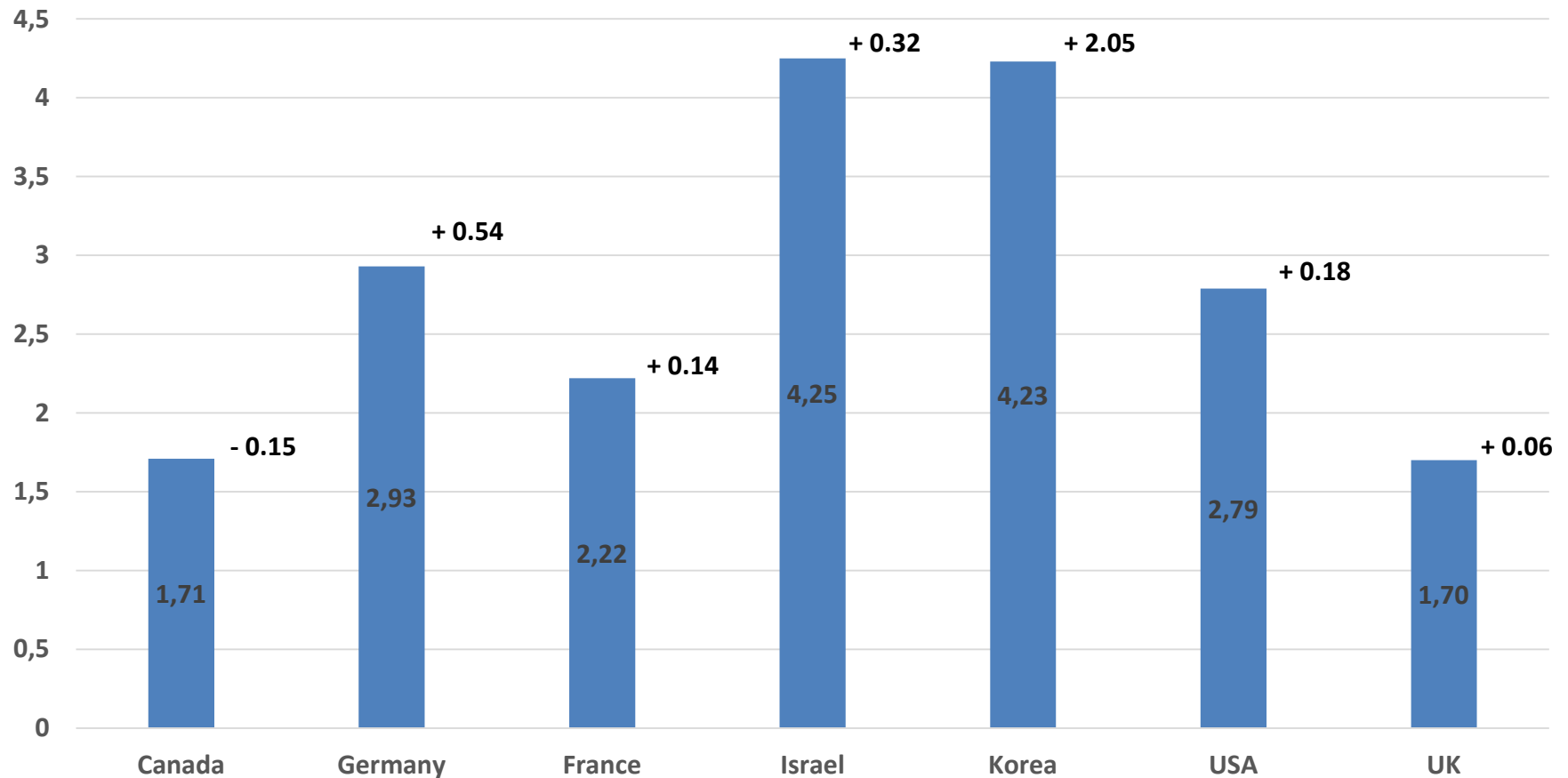
Structure of presentation

1. The high-Tech Strategy of Germany
2. Impact on employment
3. Pro-active trade union policy
4. Modernization of the dual system of vocational training
5. Reducing low wage work

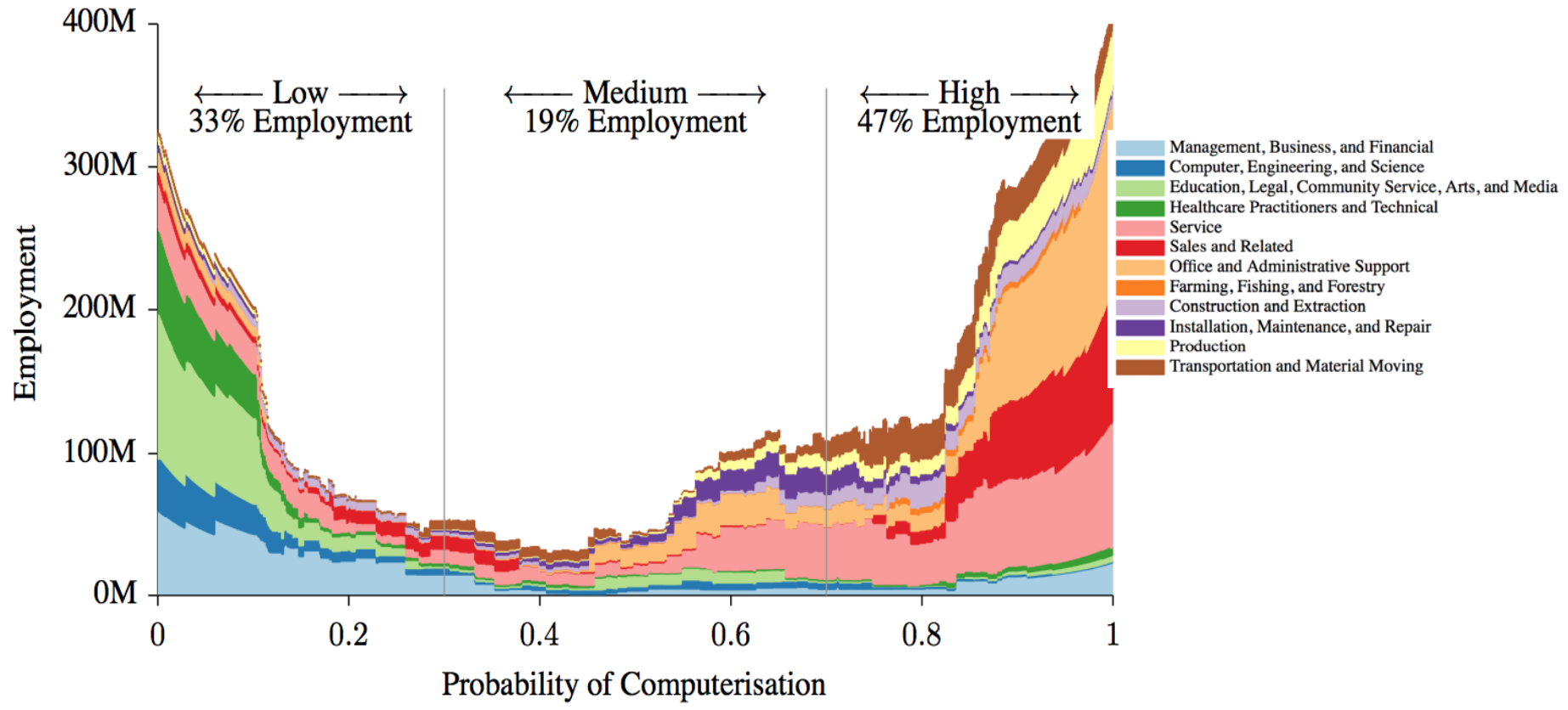
1.1 High-Strategy in Germany since 2010

- Since 2010 focus on society's need to develop forward looking solutions in the 5 fields:
 - *Climate / energy,*
 - *Health / nutrition,*
 - *Mobility,*
 - *Security*
 - *Communications*
- Digitalization cross-cutting aspect in all fields
- In 2015 due to union pressure addition of „*Future of Work*“ program in the tradition of the „*Humanization of Work*“ programs in the 70's/ 80's

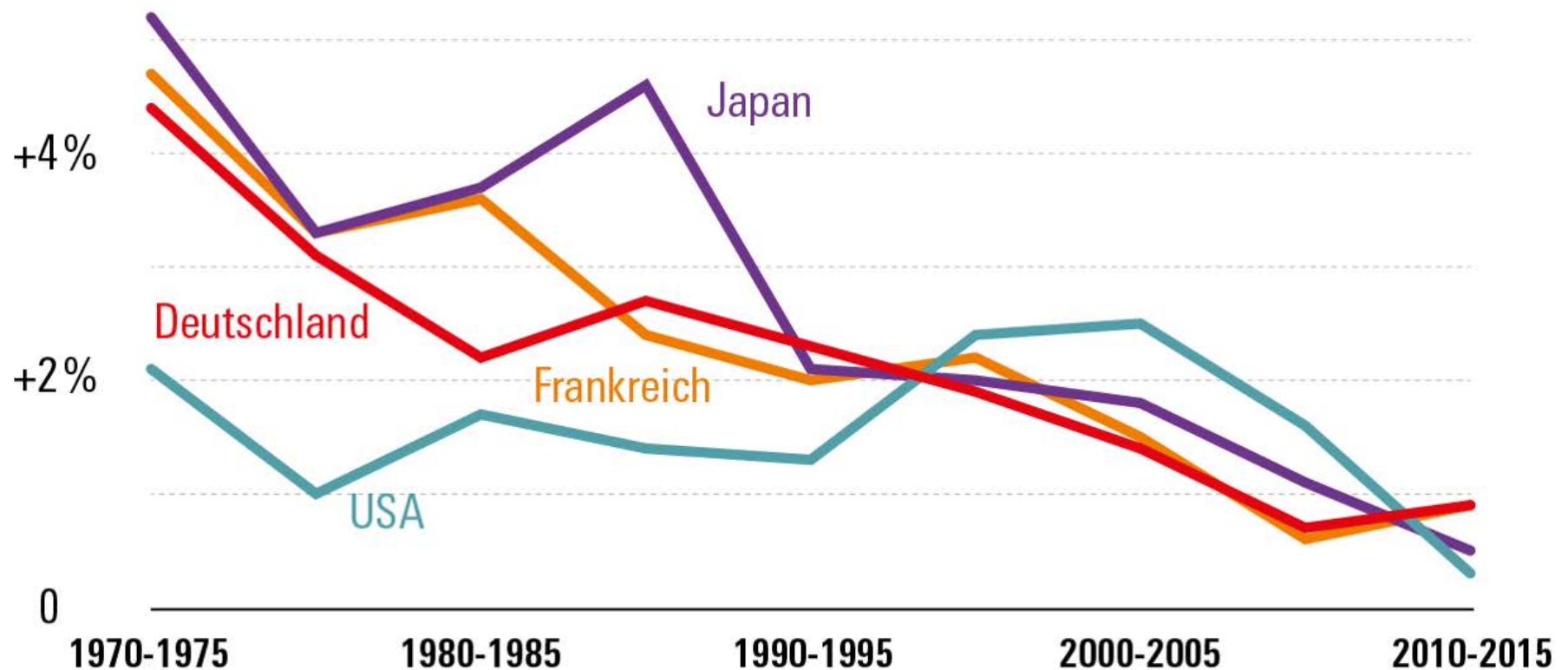
1.2 R&D as percentage of GDP 2016 (change 2000-2016 in pct. points)



2.1 Impact on employment: uncredible horrorscenario of Osborne/Frey



2.1 But productivity growth declining: productivity puzzle



2.3 Impact on German employment

German prognosis on impact of industry 4.0:

- **Structural change towards service sector**
- **Only small overall employment effects (*IAB-Studie 2015 -2025 – 60 000 Beschäftigte / minimal changes of assumptions positive effects*)**
- **More dangerous for Germany: technological backlog and loss of competitiveness**
- **But: Loss of jobs in some industries**

Problems:

- **Loss of well-paid jobs covered by CA's**
- **Intensification of work**
- **High risks with transitions in other companies (*lower wages, de-skilling*)**

3.1 Pro-active trade union policy

- German manufacturing regard industry 4.0 as an necessary innovation push
- Pro-active approach needed – to avoid job risks through underinvestment in skills and innovative work organization
- What do unions do?
 - Encourage/coordinate of „Future of Work“ projects
 - Own projects on industry 4.0
 - Integrate new themes in CB like further training
 - Old themes (*protection against dismissals, employer dominated working time flexibility, low wages*) remain important

3.2 Pro-active trade union policy

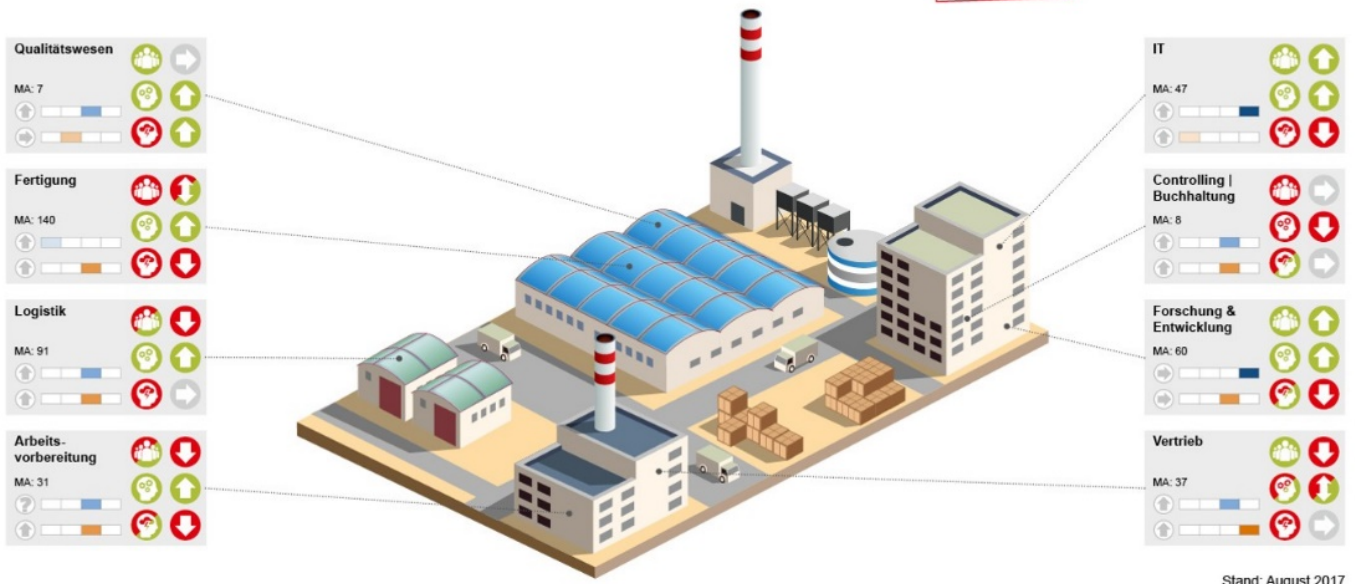
- **Example Project „Work 4.0 - North-Rhine-Westphalia 2010“ of three manufacturing unions**
- **Identifying 40 enterprises with pro-active works councils**
- **6 - 8 all day workshops in each enterprise with the help of consultants - goals:**
 - **stock-taking of industry 4.0 in all departments**
 - **summarizing conflicts and problems**
 - **debate with employees and management**
 - **Development of pro-active strategies – best case „Future Plant Agreement“**
 - **evaluation by IAQ**

3.3 Company map of industry 4.0

Betriebslandkarte Arbeit und Industrie 4.0



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Stand: August 2017

Erklärung zu den verwendeten Symbolen

Einschätzungen zur Technik – Status Quo

Grad der Vernetzung			
Stand alone	In Abteilung	Abteilungsübergreifend	Mit externen Unternehmen
Grad der Steuerung durch Technik			
Entscheidungsunterstützung	Entscheidungsvorgaben	Teilweise technikgesteuert	Voll technikgesteuert
<small>(Maschine = reines Arbeitsmittel / Werkzeug)</small>			

Einschätzungen zur Technik – Ausblick

- ↑ Verstärkter Einsatz von Industrie 4.0-Lösungen
- ↓ Verlassen des technik-zentrierten Pfades
- ↔ Keine Veränderung
- ?? Unklar

Wirkungen auf Arbeit – Status Quo

- 👤 Beschäftigung
- 🧠 Anforderungen an Arbeit
- 🏢 Arbeitsbedingungen
- 🟢 positive Entwicklung
- 🔴 negative Entwicklung
- ⚪ keine Veränderung
- 🟡 keine eindeutige Entwicklung

Wirkungen auf Arbeit – Ausblick

- 🟢 ↑
- 🔴 ↓
- ⚪ ↔
- 🟡 ↻

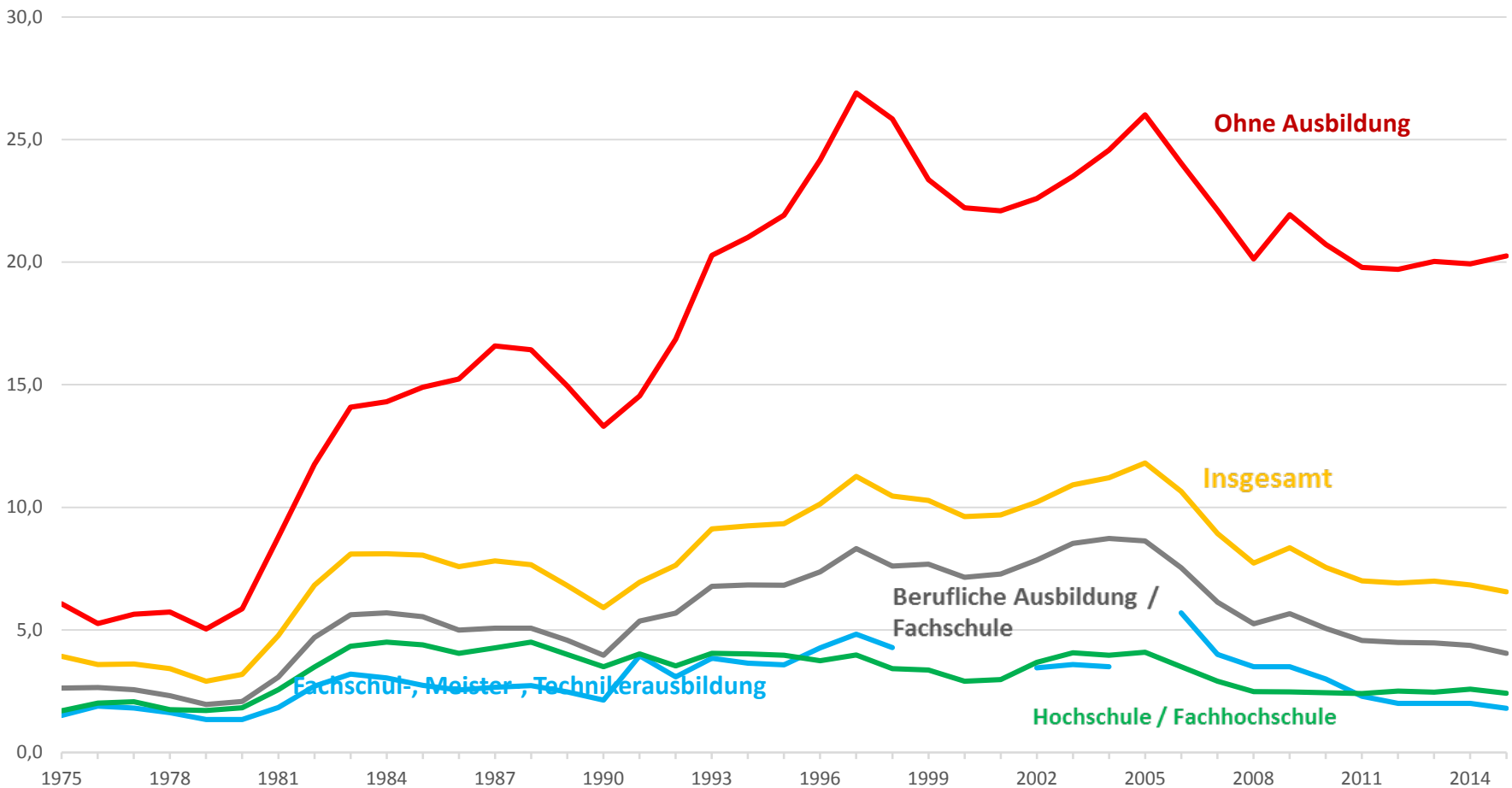
MA = Mitarbeiter/-innen

3.4 Some intermediate results

- Mostly gradual and not disruptive change
- *The old problems are also the new* like overtime or high stress but sometimes more urgent like
 - Underinvestment in further training is decoupling mainly older workers from the technological development
 - Delocation of work
- Compromises on flexible working hours and pay system already found in the past – sufficient for I 4.0
- „Future Agreements“ in 6 companies - content: joint working groups, regular meetings and information, avoidance of dismissals, agreements on necessary training etc.

Offen im Denken

4.1 Unemployment rates by skill level 1975 – 2015: Increasing problems of unskilled workers



Quelle: IAB. Qualifikationsspezifische Arbeitslosenquoten. 2016 (Eigene Darstellung)

1) Ab 2006 Fachschul-, Meister-, Techniker Ausbildung, Daten aus Mikrozensus

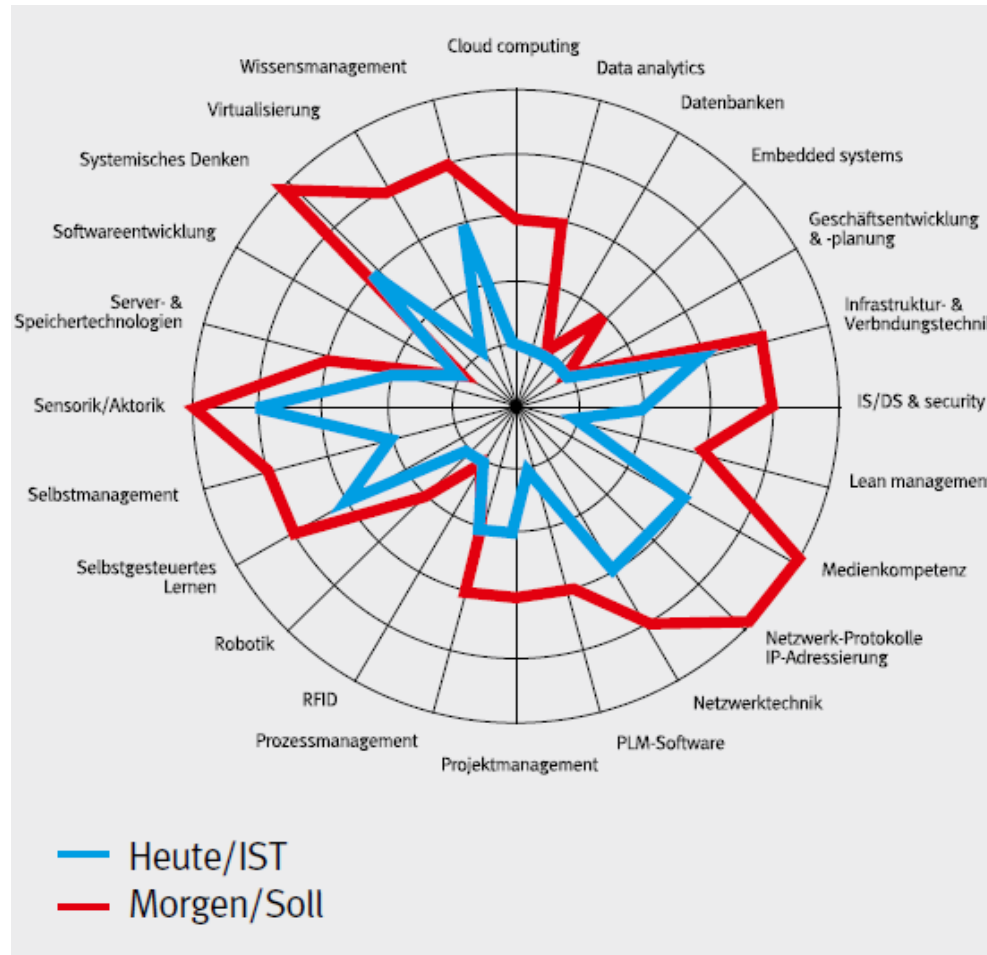
4.2 Modernization of vocational training

- **Between 5 and 6% of the employees apprentices in the dual system of vocational training**
- **Training in around 350 white and blue collar occupations**
- **Most employees in manufacturing skilled (VET or tertiary education)**
- **Broad skill base supports learning on the job**
- **Job tenure increasing since companies rely on the tacit knowledge also of new digital tools of the employees**

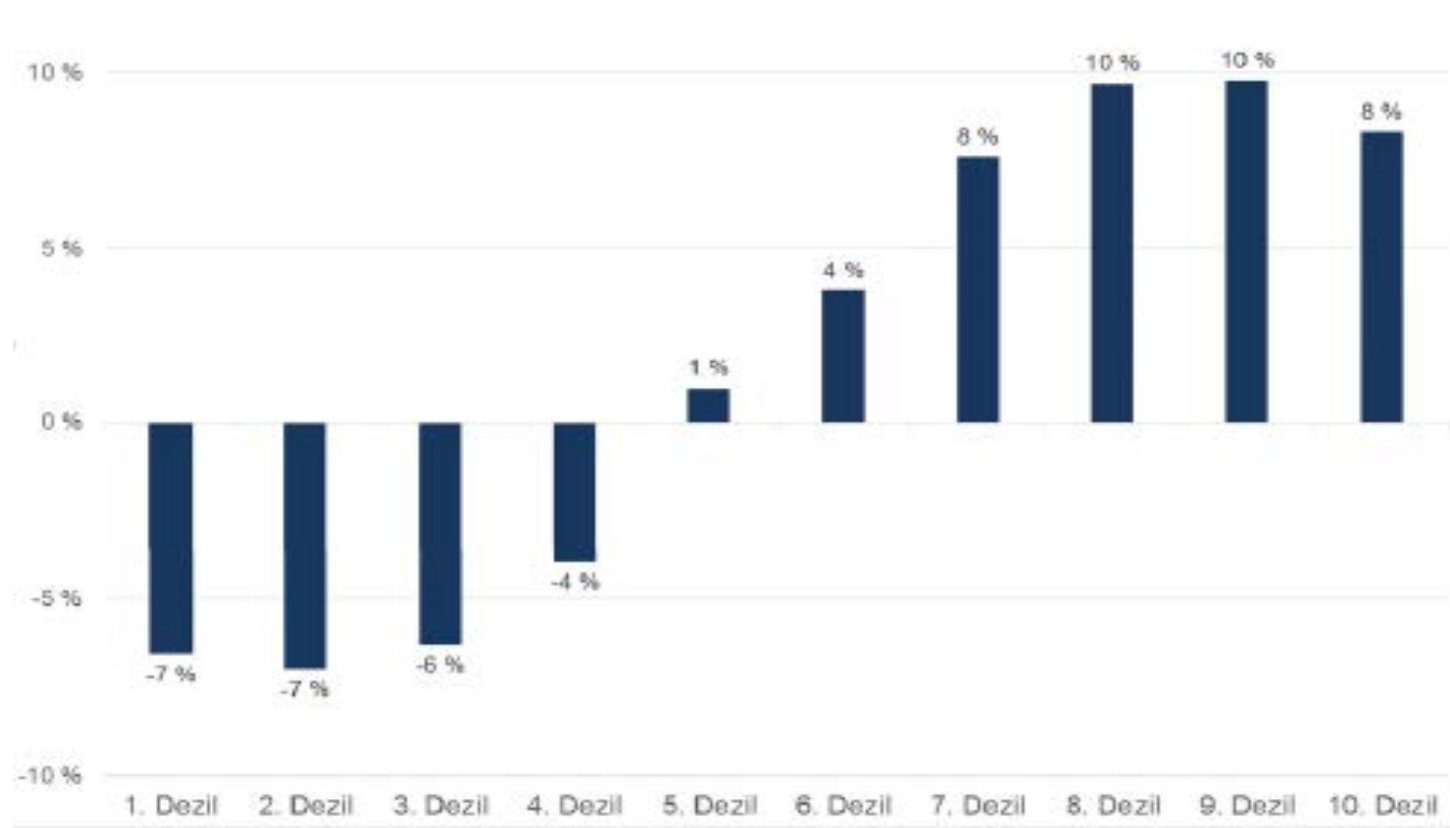
4.3 Modernization of vocational training

- **Most occupations modernized in the last decade**
- **Occupational profiles technology open - broad occupations – skill reserves needed to be able to manage changing demands**
- **Industry 4.0 an important push to reflect on the curricula, the learning tasks and tools**
- **At present:**
 - **Social partners check 20 occupational profiles at national level**

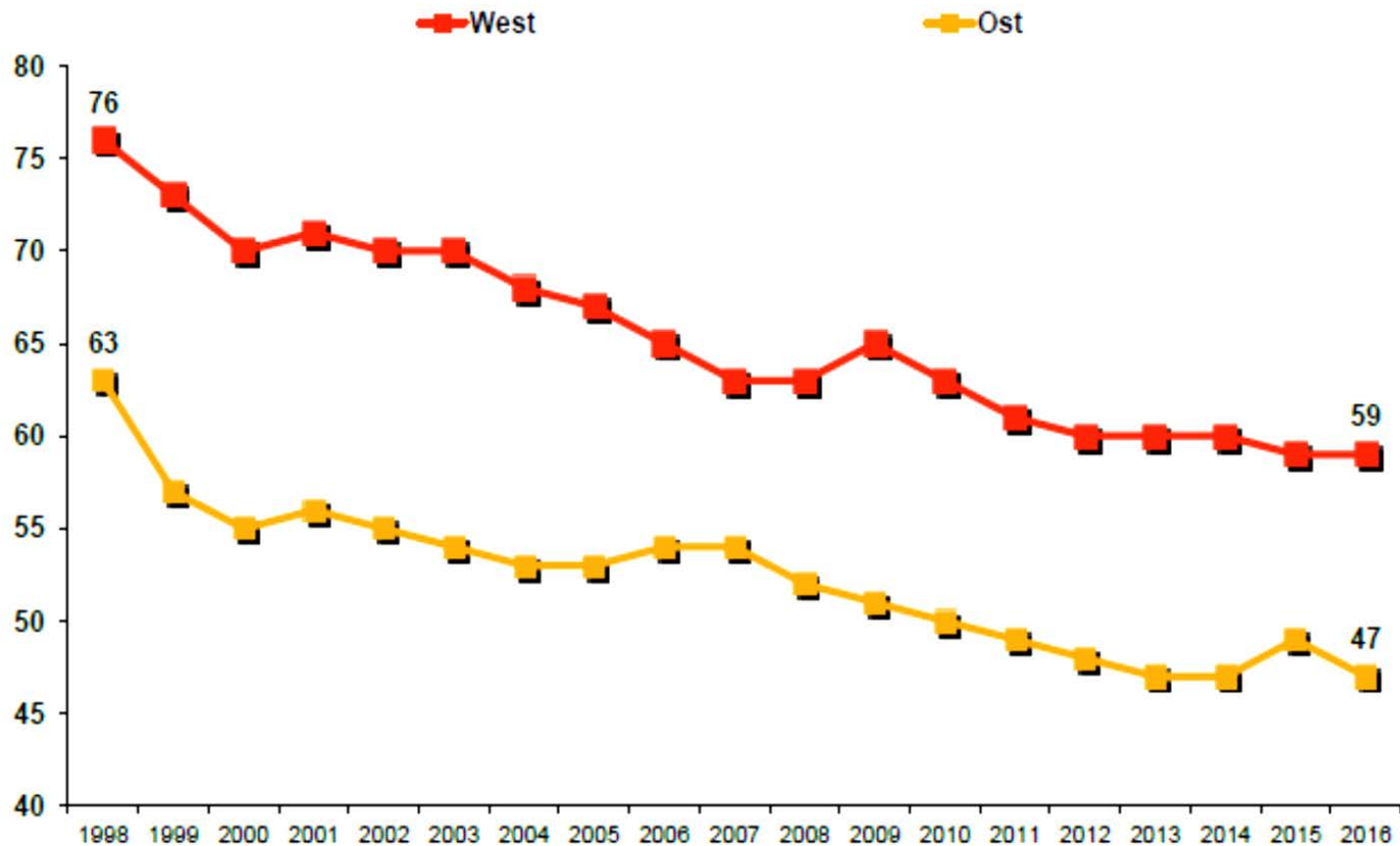
4.5 Occupational profile of a repairperson today (blue) and tomorrow including further training (red) (Siemens)



5. 1 Increasing wage inequality: Change of real hourly wage by deciles 1995-2015 in Germany

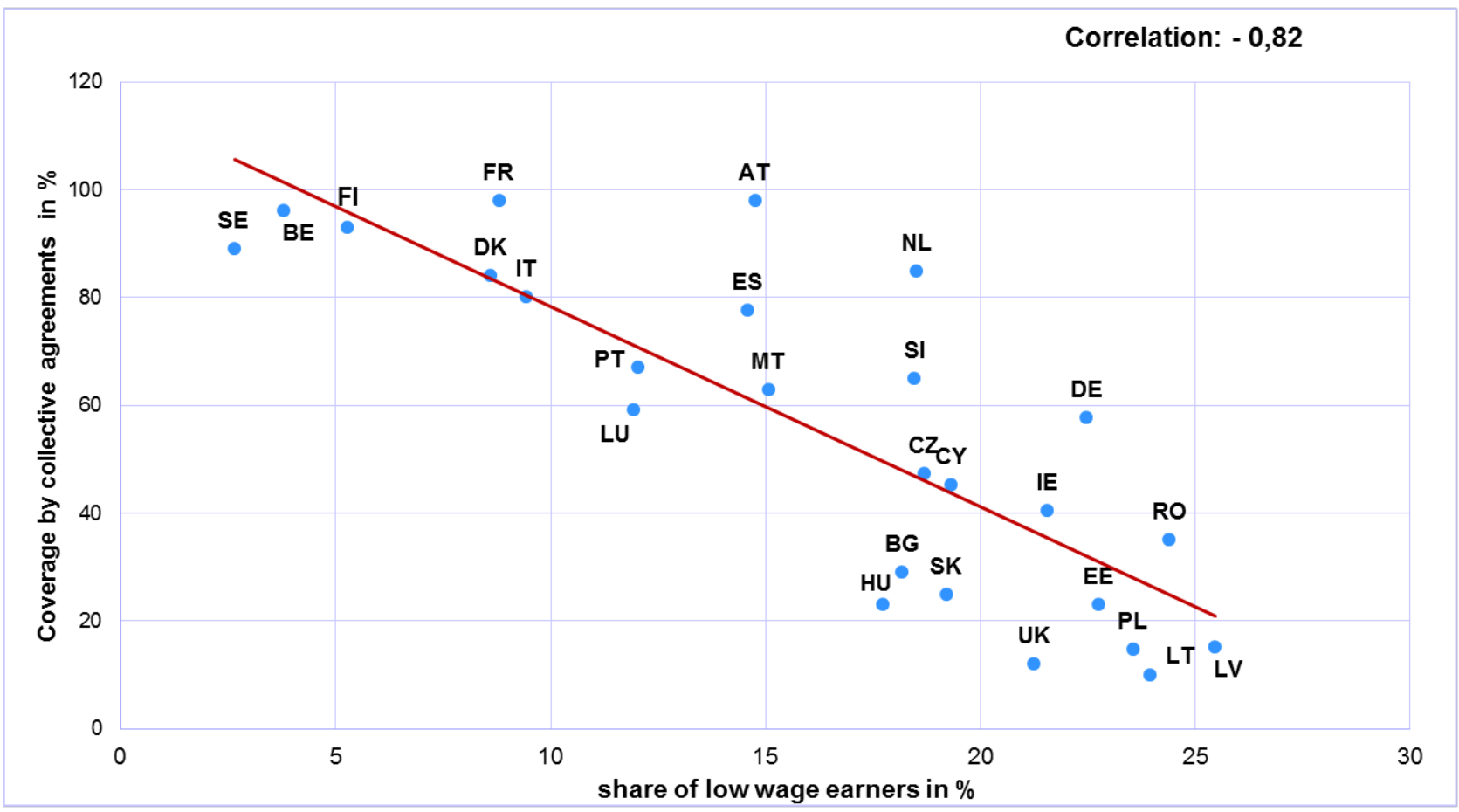


5.2 Evolution of coverage by collective agreements in Germany 1998 - 2016



Source: WSI Tarifarchiv (based on IAB Establishment Panel data)

5.3 Rate of coverage by collective agreements and share of low-wage work (2014)



Source: Visser 2015, Eurostat, own calculations

Conclusions

- **I-4.0 not new – digitalisation started earlier but I 4.0 hype creates an atmosphere of departure helps focussing R&D priorities, employer and also union strategies**
- **Work 4.0 an appendix of I-4.0, but**
 - **unions succeeded to implement the „Future of Work“ program as well as own industry and company initiatives**
 - **Main issues: safeguarding employment, re-skilling, and high coveragy by CA's**
- **Work 4.0 includes many other aspects like the status of click and crowd workers and other bogus self-employed, the role of the employer (*Ubersation*)**