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Skills, Wages and Inequality

American Academy: The Effects of Automation on Employment, Wages and Inequality in Germany

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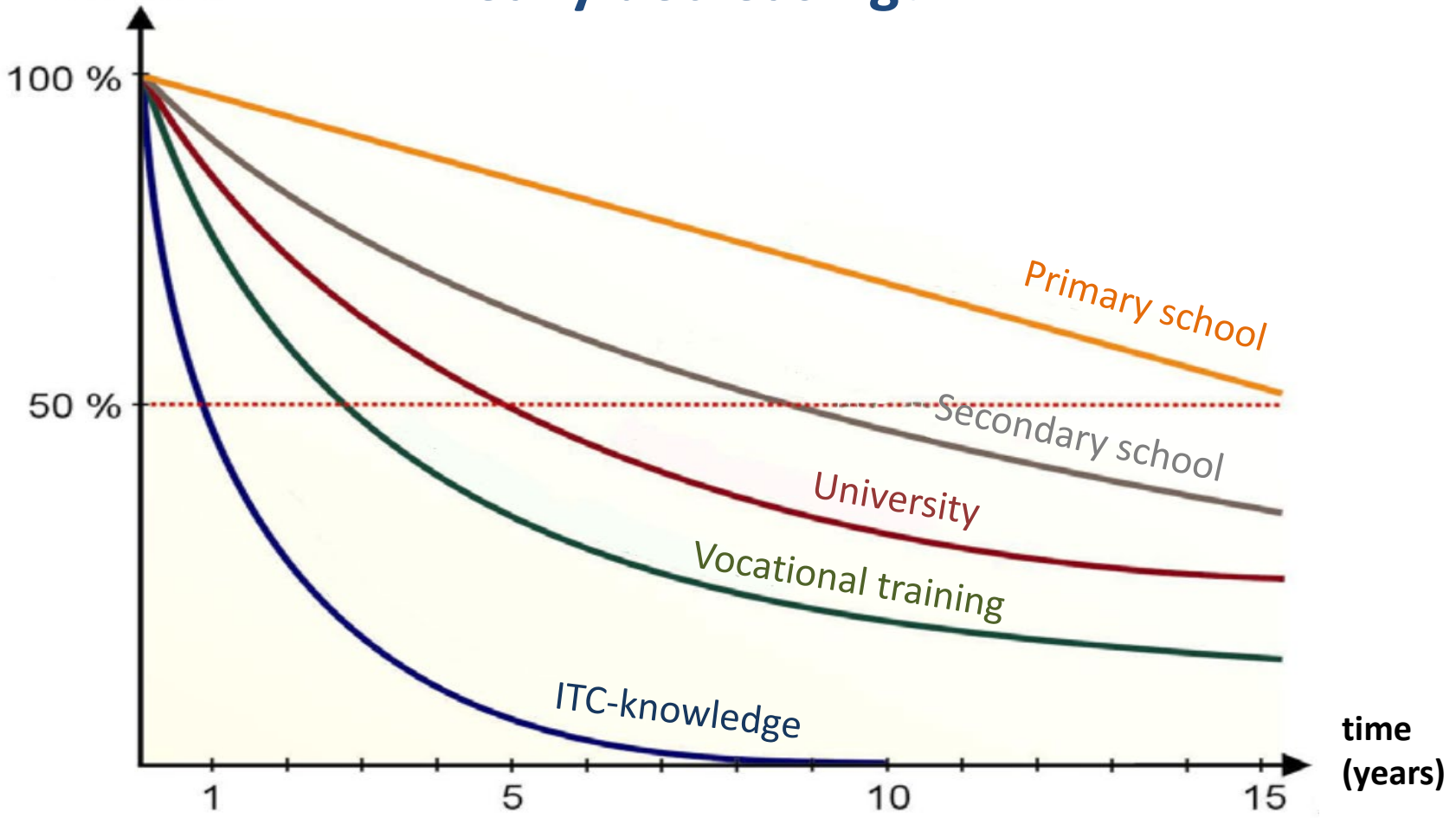
Structure of presentation

- 1. Myths in the debate on future skills**
- 2. Occupational labor markets in Germany**
- 3. The modernization of the dual system of vocational training**
- 4. Skills skills and inequality**

1.1 Myths in the debate on future skills

Is the half-life-time of knowledge really decreasing?

up-to-dateness
of knowledge



1.2 Myths in the debate on future skills

- No decay of general skills (language, mathematics, problem solving) over work life if they are used
- Long half-time of basic vocational skills in broad occupations and professions / lower in narrow occupations and some occupations may become obsolete
- But shorter half-time of special skills

Not necessarily true that we have to change our occupation more often than in the past – depends on the content of VET and tertiary education (*broad vs narrow*)

2.1. Occupational labour market

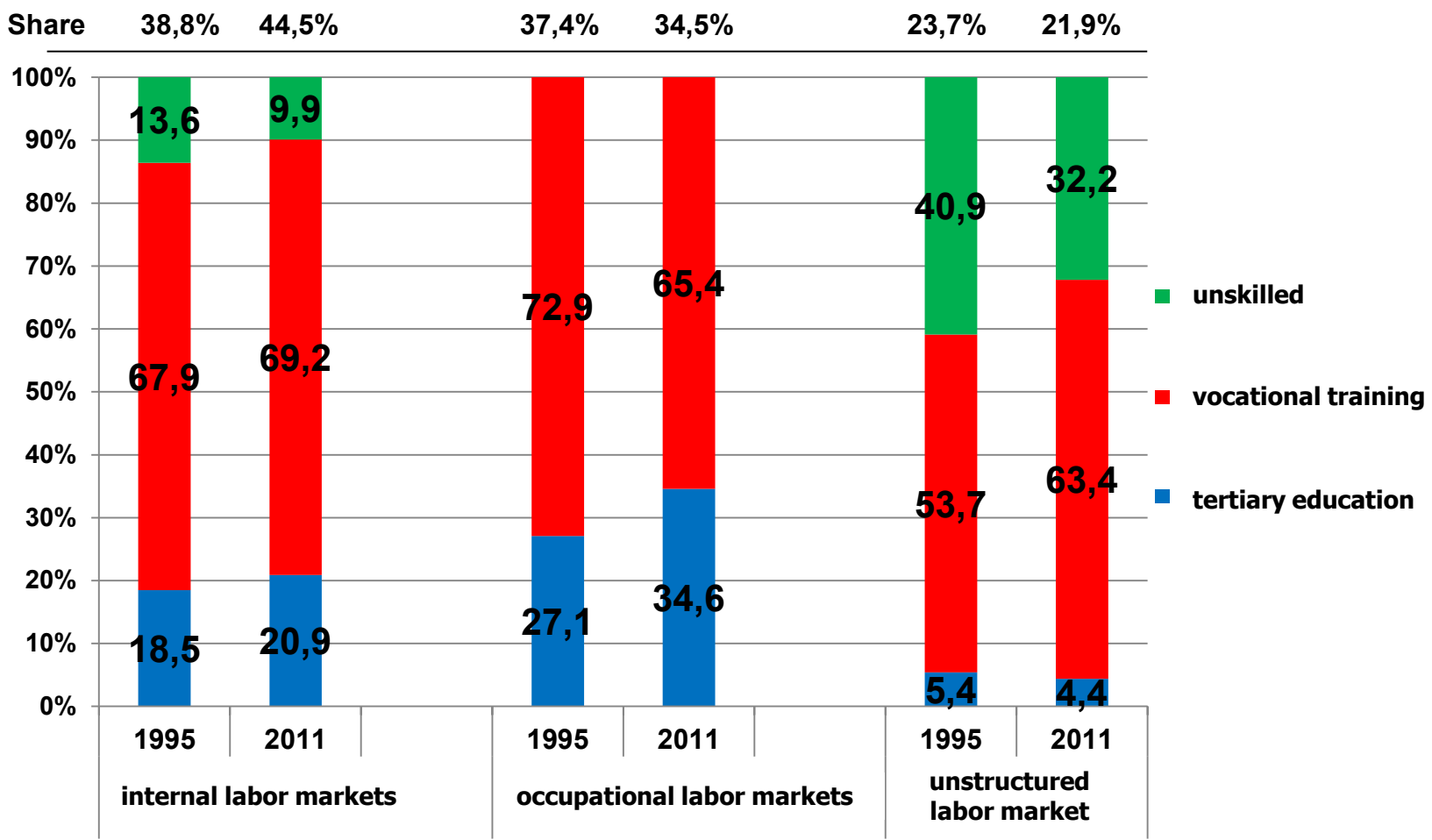
World-wide same technologies but different skill structures

- Assembling of Airbus by skilled workers in DE and with on-the-job-trained in UK, FR, ES (*Bremer 2008*)
- Retail trade trains apprentices in DE – in FR, UK, USA unskilled are employed (*Carré u.a. 2010*)
- Broad brick-layer training in DE + DK (3,5 years), short training (1 year) in IT und UK (*Clarke/Winch 2014*)
- Middle managers coming from the shop floor via promotional training

Impact on work organization: less supervisors, more complex job tasks, steep learning curve after re-organization, communication between shop floor and management at eye level

Skilled workers (Facharbeiter) – secret of German competitiveness

2.2 Skills structure in the segments of the German labor market 1995 and 2011 in DE in % (SOEP)



Source: Bosch, G., 2014: Facharbeit, Berufe und berufliche Arbeitsmärkte. WSI-Mitteilungen 67 (1), S. 5-13

3.1 Modernization of vocational training

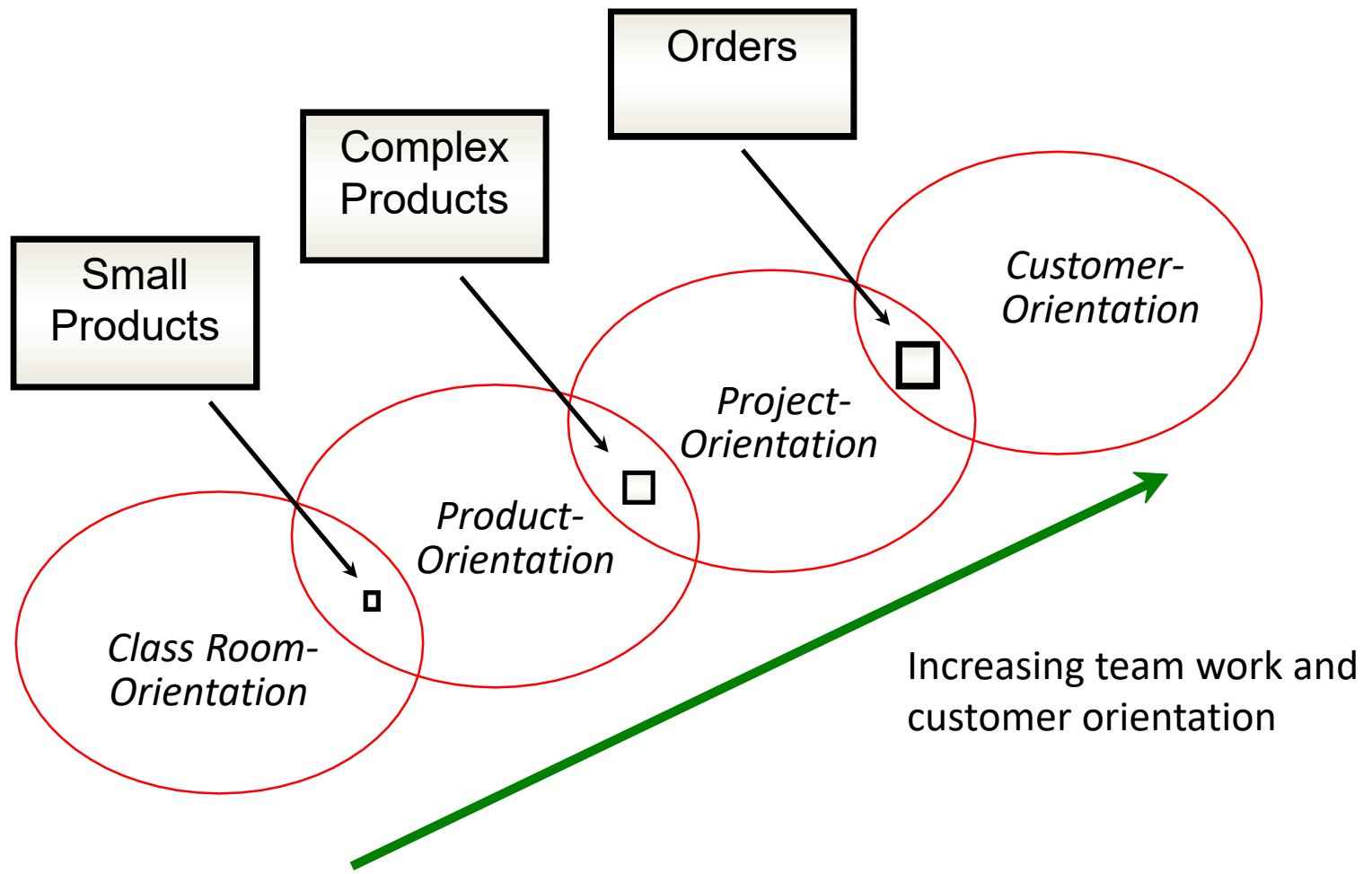
- **Between 5 and 6% of the employees apprentices in the dual system of vocational training**
- **Most of the 350 occupations in the dual system have been modernized in the last decade**
 - **Occupational profiles broader than in the past and technology open**
 - **Learning in teams and in real business processes to acquire social skills and understand the context of the job**
 - **Creation of optional modules for initial or further training**
 - **Debated: joint module „media competence“ across all occupations**
- **Parallel: Modernization of promotional training for masters, technicians, business administrators**

3.2 Profile of the "Industrial mechanic"

- Organise and check production and manufacturing processes
- Make structural components and subassemblies and assemble them to produce technical systems
- Identify and document faults and their causes in technical systems
- Repair technical systems - Retrofit machines and systems
- Complete maintenance work and inspections - Select testing procedures and testing equipment
- Deliver technical systems and products to customers and provide instructions in the use of the plant
- Ensure the functionality of technical systems
- Monitor and extend electrical control components
- Consider business processes and apply quality management
- Act autonomously in completion of activities taking into account relevant regulations and safety provisions
- Coordinate work with upstream and downstream departments
- Set up workstations - Communicate with internal and external customers in a manner appropriate for the situation; work as part of a team
- Check and document maintenance and assembly work with due regard to company quality management systems
- Use IT systems, including in digitalized processes
- Apply regulations relating to data protection and information security

Offen im Denken

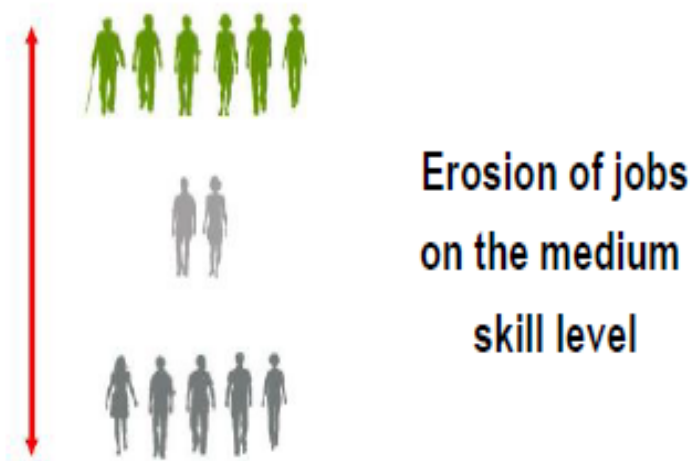
3.3 New learning forms: From product towards team work and customer-or business process orientation



3.4 VET the key to create flexible work organizations in the world of industry 4.0

Polarization

Segmented organization



*„lousy and lovely jobs“
(Goos/Manning)*

Upgrading

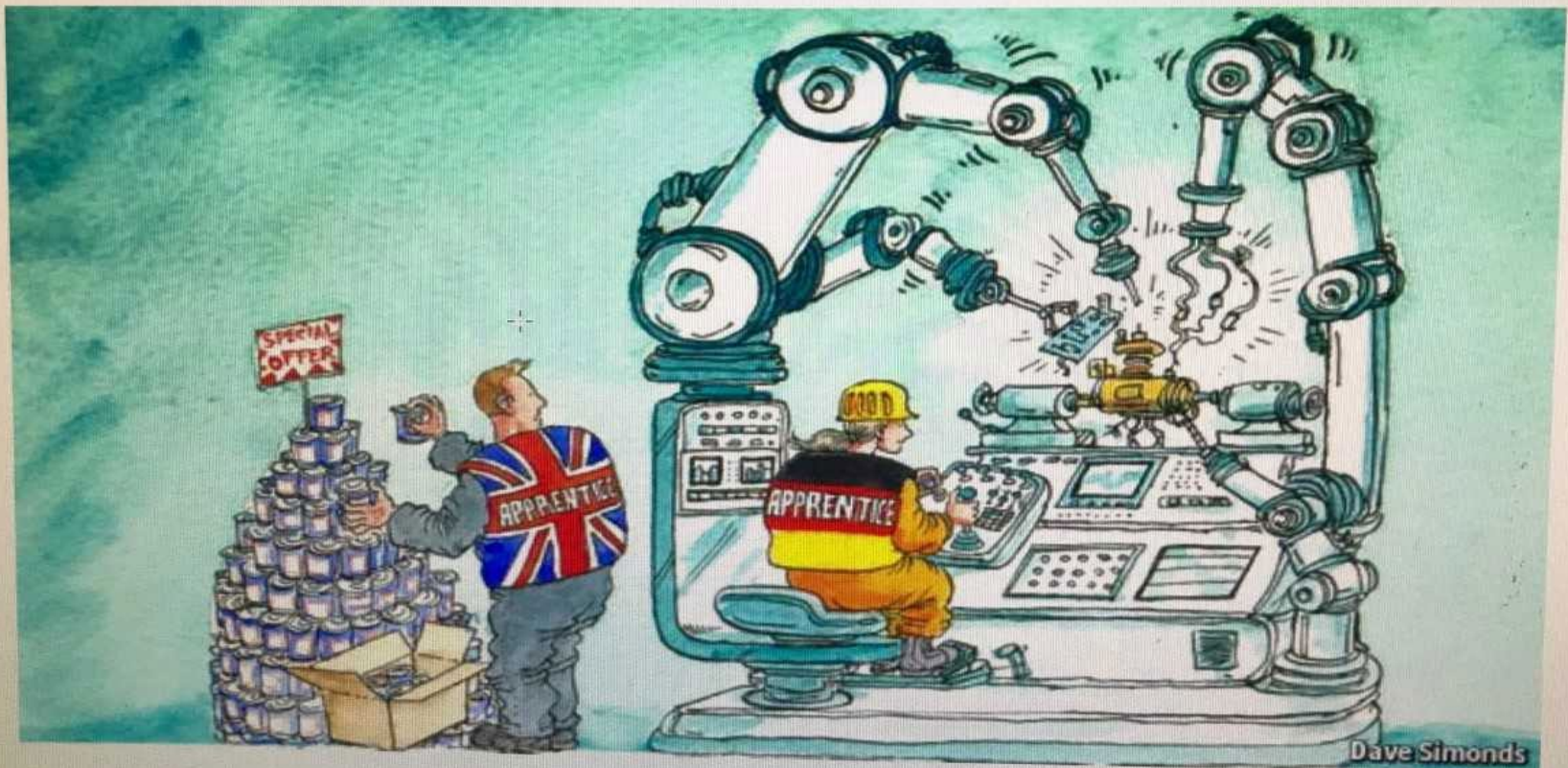
Integrated, highly flexible organization



„better jobs at every level“ (Zuboff)

„Keeping up with the Schmidts“ -- ??

„Attempts to build a snazzy, German style apprenticeship system crash into cultural and economic differences“ [*The Economist*, 26.04.2014]



Cartoon von David Simonds©

4.1 Skills and inequality

- **The thesis of the „skill biased technological change“ cannot not explain the increasing inequality of market wages: (a) *It only looks at demand and (b) forgets the supply side and is blind to market power***
 - **If the labor supply is upgraded by higher investment in the education and training system no increased pressure on wages of the unskilled**
 - **Wages depend not only on skills but also on bargaining power – wage setting systems crucial**
- **Germany a case for the „underinvestment in education and training thesis“ and the „erosion of the inclusive wage setting system thesis“**

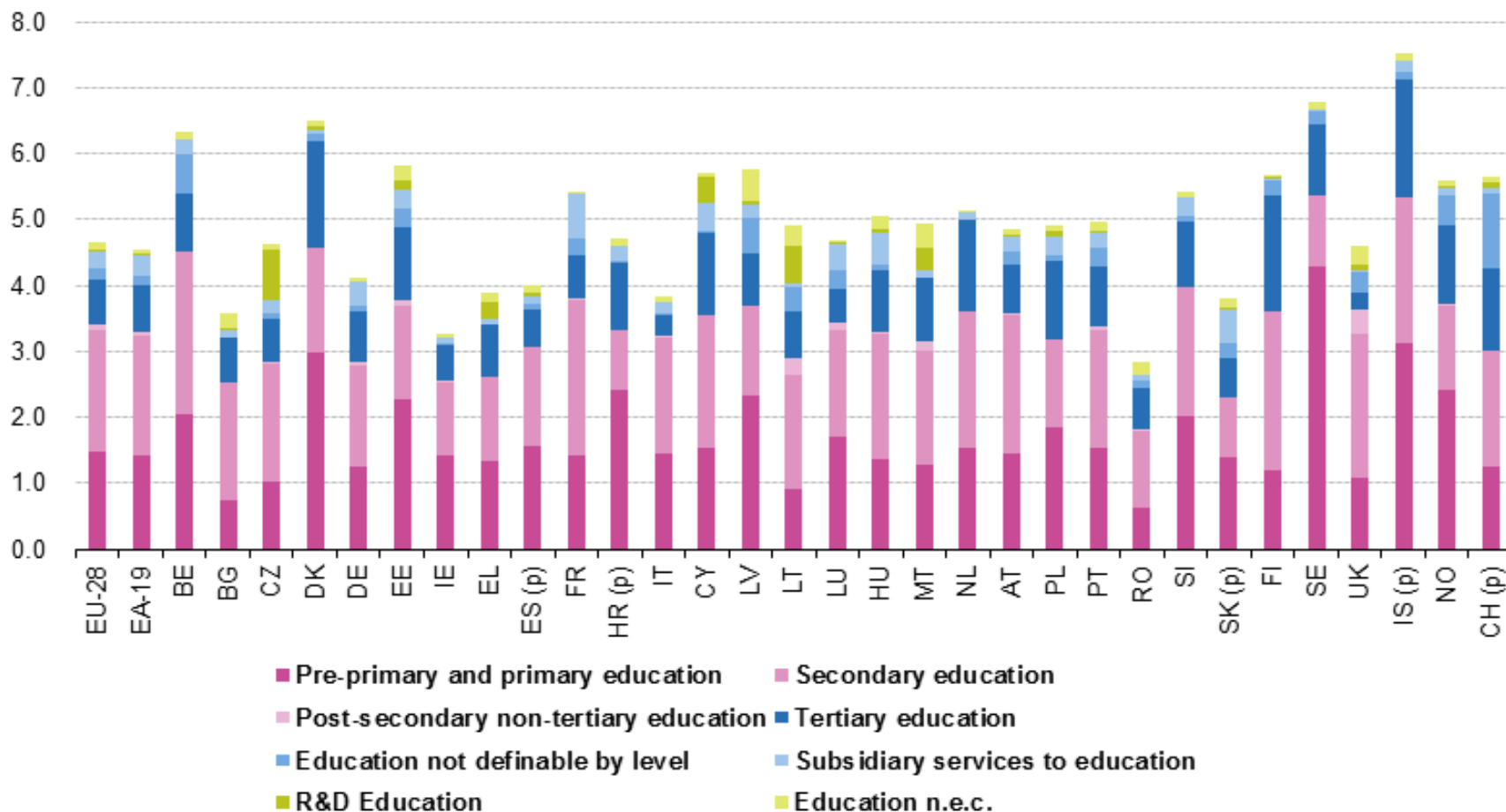
4.2 Paid working hours per employed (25 - 65 years) by skill level

Year	Low	Middle	High	Total
1991	1.074	1.609	1.863	1.528
1995	1.010	1.457	1.791	1.417
2000	1.227	1.445	1.837	1.477
2005	1.059	1.475	1.743	1.453
2010	1.082	1.562	1.878	1.545
2015	1.129	1.565	1.820	1.551

4.3 Paid working hours by skill level in Million hours per year 1991 - 2015

Year	Low	Middle	High	Total
1991	9.266	46.781	12.511	69.496 (100%)
1995	8.426	43.297	13.895	66.547 (100%)
2000	9.213	43.913	15.632	69.536 (100%)
2005	6.937	44.266	14.721	67.163 (100%)
2010	6.534	44.291	18.418	69.956 (100%)
2015	7.317	41.716	20.832	70.663 (100%)
1991 – 2015	-21,0%	-10,8%	+66,5%	+1,5% (100%)

Total general government expenditure on education, 2017 (% of GDP)

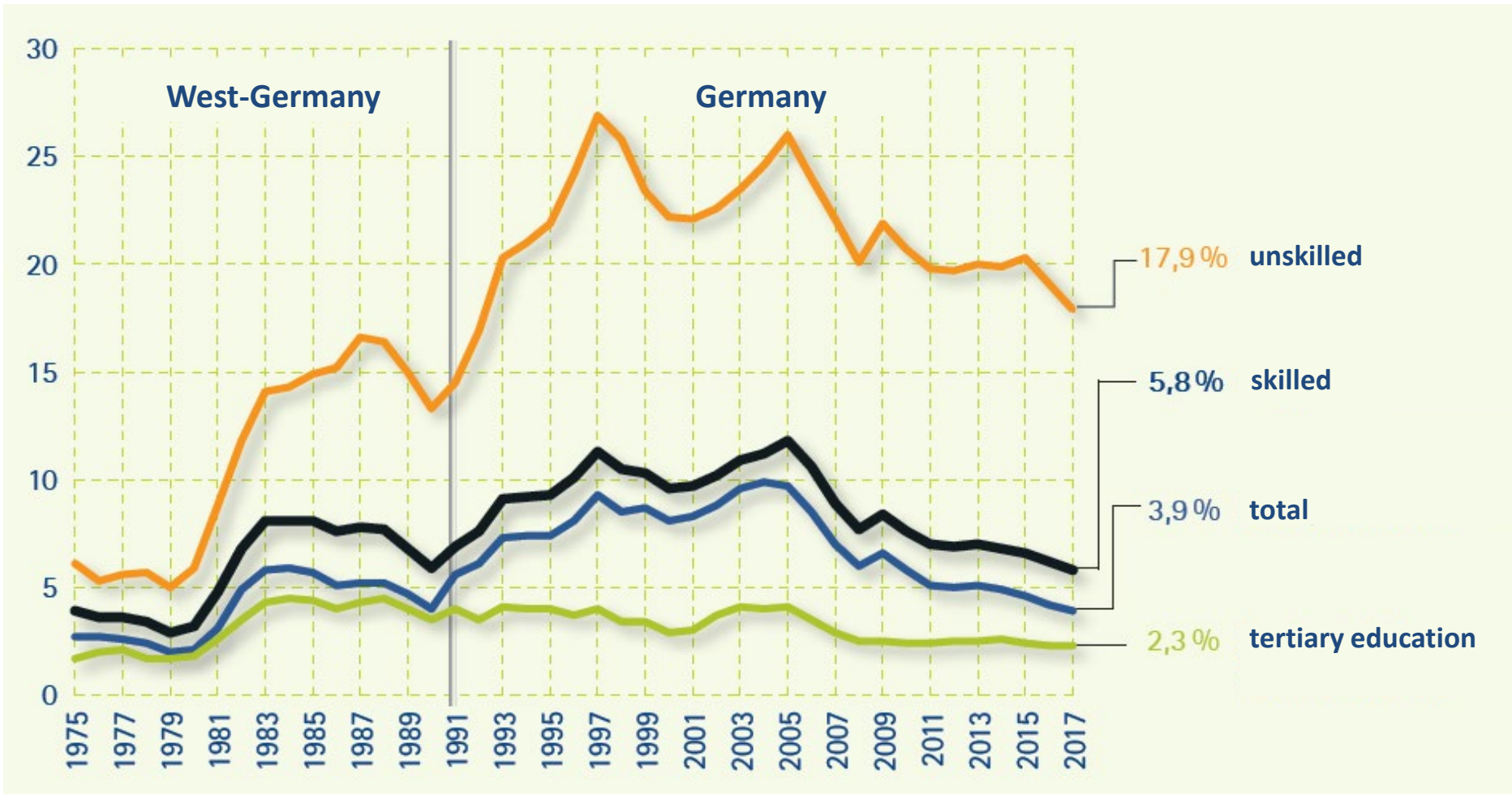


Source: Eurostat (gov_10a_exp)

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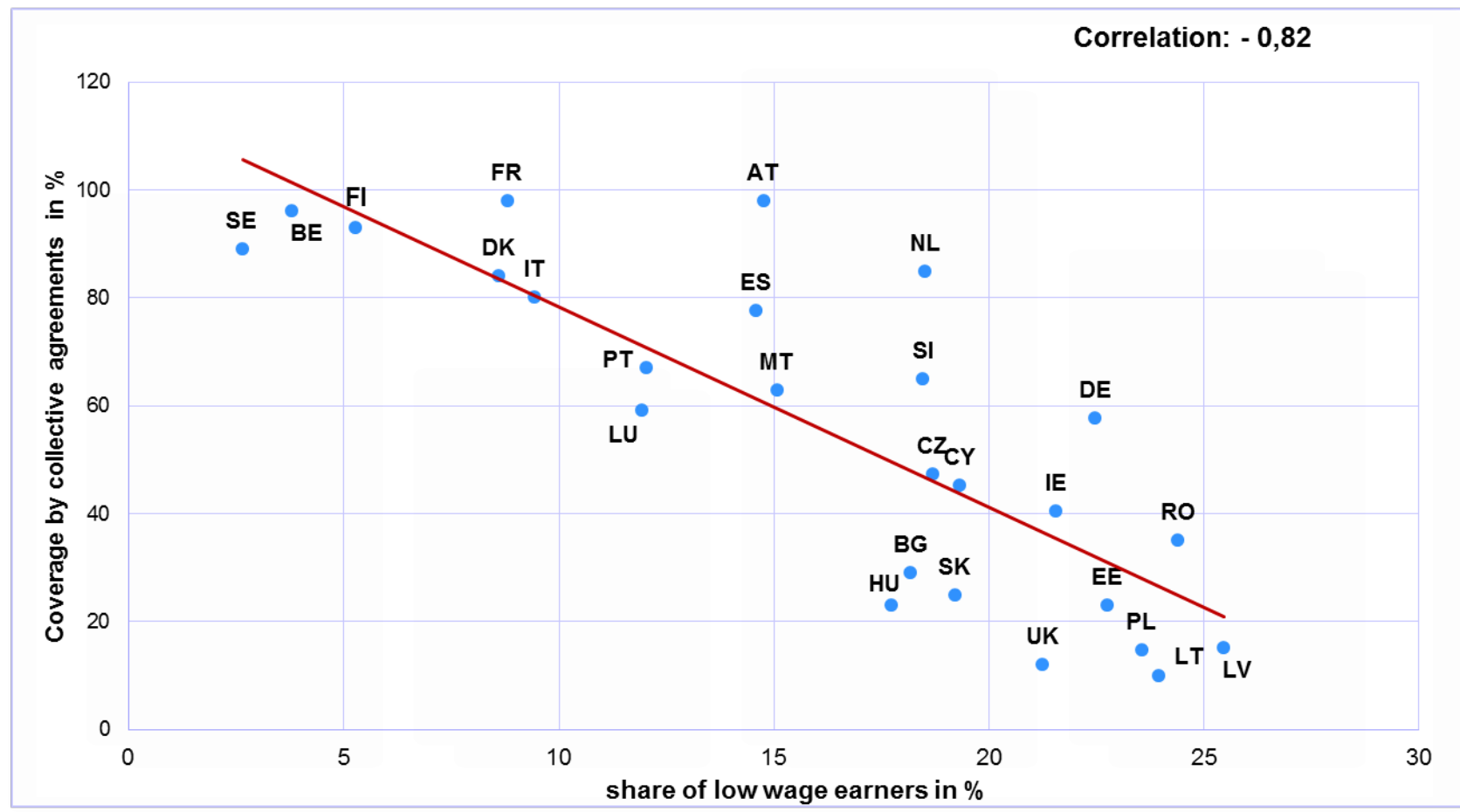
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4.5 Unemployment rate by skill level in Deutschland 1975 – 2017



Source: IAB. Qualifikationsspezifische Arbeitslosenquoten. 2019

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



Source: Visser 2015, Eurostat, own calculations

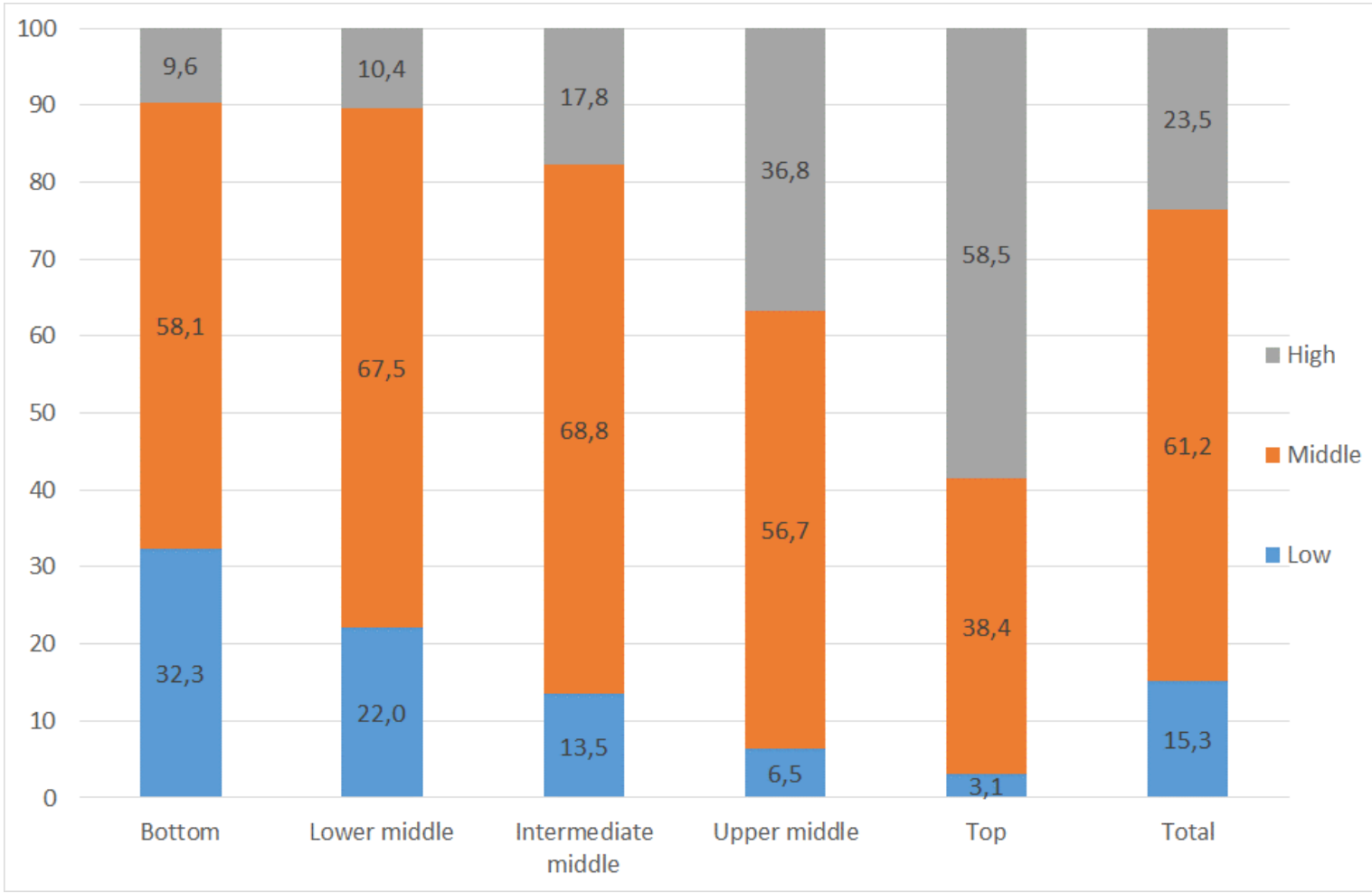
4.7 Relative earnings by skills level (2016) 25-64 years, Full and Part-timers; ISCED 3 = 100

ISCED 2011	1 - 3	4	5	6	7 + 8	Total	Range 1-8
Denmark	80	136	116	111	166	129	86
Germany	76	114	151	165	183	169	107
Sweden	82	109	98	105	135	115	53
USA	74	m	112	169	233	175	159

4.7. Incidence and distribution of low wage earners by skill level 2016

Skill level	Incidence of low wage earners	Distribution of low wage earners by skill level
Low	44,0 %	25,6 %
Middle	22.1 %	63.5 %
High	9,1 %	10,9 %
Total	22.7 %	100,00 %

4.8 Educational level of the head of the household by income class (equivalized post government income of household in the previous year) 2011-2013



Source: SOEP v30, own calculation

Conclusions

- **Strong occupational labor markets in Germany because of the dual system of vocational training**
- **Continuous modernization of the dual system – incentives for flexible work organization**
- **Underinvestment in education and training – oversupply in the „unstructured labor market segment“ with high unemployment**
- **Increasing wage inequality mainly due to the erosion of the former inclusive wage systems – also leads to high shares of skilled low-wage earners**

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