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Cross-national income differences in branches and occupations providing “societally necessary services”

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Introduction



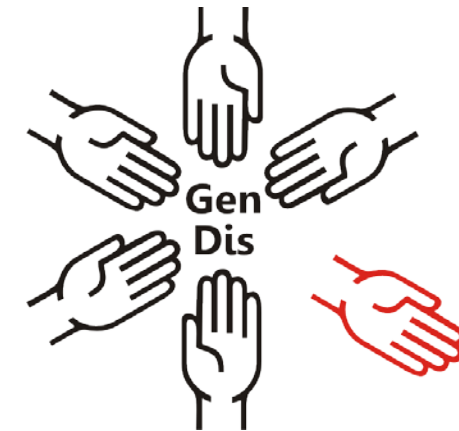
- Increased public attention for care workers, teachers, partly also employees in public administration in the context of the Corona pandemic
 - workload and danger greater than usual
 - shortages of labour can be fatal
- Praise for persons engaged in these functions (“heroes”), and trade unions highlighted the need to translate public esteem into higher wages
- There seems to be a consensus that work for the common good is underpaid, but it is hard to find empirical analyses
- This is a real gap, because the attractiveness of jobs in branches and occupations of public interest is a crucial topic for the near future: baby boomers are going to retire
- Research questions:
 - **What do workers in societally necessary, person-oriented services earn?**
 - **What are the differences between occupations, branches and countries?**



Background

■ Research project **GenDis**

- analyses for “societally necessary, person-oriented services”
 - conditions of work and employment
 - workers’ professional motivation and availability
 - provision of public goods from regional perspective
- 11/2019 – 02/2023
- research institutes: SOFI + GWS + BIBB
- funding: German Federal Ministry for Education and Research (BMBF)



■ (1) Societally necessary, (2) person-oriented services are

- (1) indispensable for individual participation and the well-functioning of a democratic society
 - (2) exchanged between persons in an interactive way (thus hard to standardise or automatise)
- (1) + (2) = qualified workers needed now and in the future to meet the demand for services

Societally necessary, person-oriented services by branches (NACE) and occupations (ISCO minor groups)



| Public administration and defense, compulsory social security | Education | Human health and social work activities |
|--|--|--|
| Professional services managers | University and higher education teachers | Medical doctors |
| Legal professionals | Vocational education teachers | Nursing and midwifery professionals |
| Regulatory government associate professionals | Secondary education teachers | Other health professionals |
| Protective services workers | Primary school and early childhood teachers | Vocational education teachers |
| | Other teaching professionals | Social and religious professionals |
| | Social and religious professionals | Nursing and midwifery associate professionals |
| | Legal, social and religious associate professionals | Other health associate professionals |
| | Child care workers and teachers' aides | Legal, social and religious associate professionals |
| | Personal care workers in health services | Child care workers and teachers' aides |
| | | Personal care workers in health services |

Adapted from Lehweß-Litzmann et al. (2020)



Datasource: EU labour force survey (EU-LFS)

- EU labour force survey (EU-LFS): a cross-national data source from Eurostat (European Commission), based on data provided by individual countries (largely harmonised)
- Why EU-LFS instead of EU-SILC or EU-SES?
 - EU-LFS features a particularly high sample size and (thus) three digits on ISCO-08 item
 - EU-SILC: lower sample size than LFS and only two digits on ISCO-08 item, and income information usually on the precedent year (unlike most of the information on work)
 - EU-SES: three digits on ISCO-08 item only in Safe Centre (currently closed). Firms below 10 employees and branch “public administration” only partly covered
 - (LIS not used due to its lack of input harmonisation)
- EU-LFS particularly suited for the analysis of labour-market structures...
- ... but – in its current form – less for comparative income analysis



Income deciles: implications for research

- In EU-LFS, income information only given as *income deciles*: a number between 1 and 10, indicating the (net) income of an employee compared to other employees in the same country and year
- Some quality problems of the income data (e.g. harmonisation issues)
- Deciles cause some limitations and problems for income analysis:
 - No absolute comparison between countries possible
 - Less precise than amounts in currency units
 - Unequal (absolute monetary) distances between deciles
 - Deciles also influenced by the income of *other* workers (e.g. part-timers)
- Implication of the latter: descriptive analysis of earnings not possible. Only multivariate analysis can control for the unequal part-time share between countries

Literature:

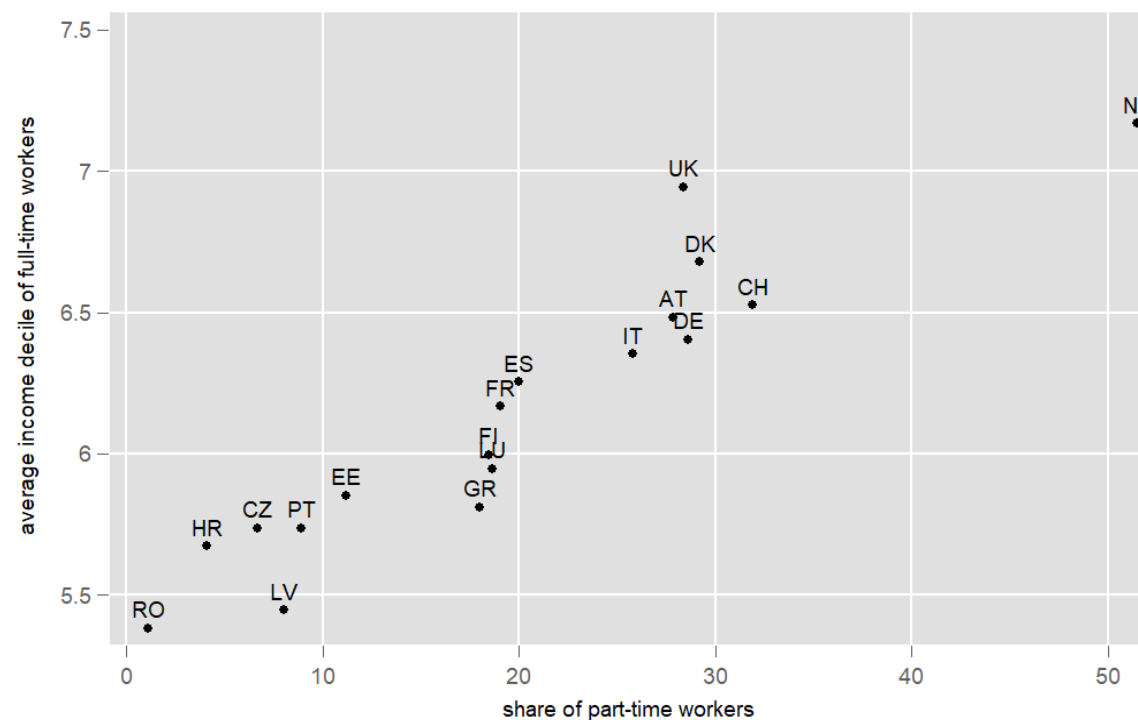
Eurostat (2012): "Quality Report INCDECIL". Brussels: European Commission

Stehrer, Robert, and Terry Ward (2012, unpublished): "Forecasting Skill Supply and Demand in Europe to 2020: Employment and Wages: Selected Detailed Accounts of Structures and Changes". Technical Paper 12. Alphametrics

Regression model

- Linear regression model (income deciles as quasi-metrical dependent variable)
- Micro-level variables:
 - personal characteristics, features of the job, and occupation OR branch
- Macro-level variables:
 - share of employees in part-time (<35 hours/week), in %
 - average weekly working time of part-timers (hours)
 - country, year and quarter
- Cluster variable at person level
- Weights important due to very unequal sampling rates of countries

Graph: share of part-time workers (<35 hours) and average income decile of full-time workers, by country



Source: EU-LFS, own calculations. Weighted values. Year 2016.



Sample of earnings analysis

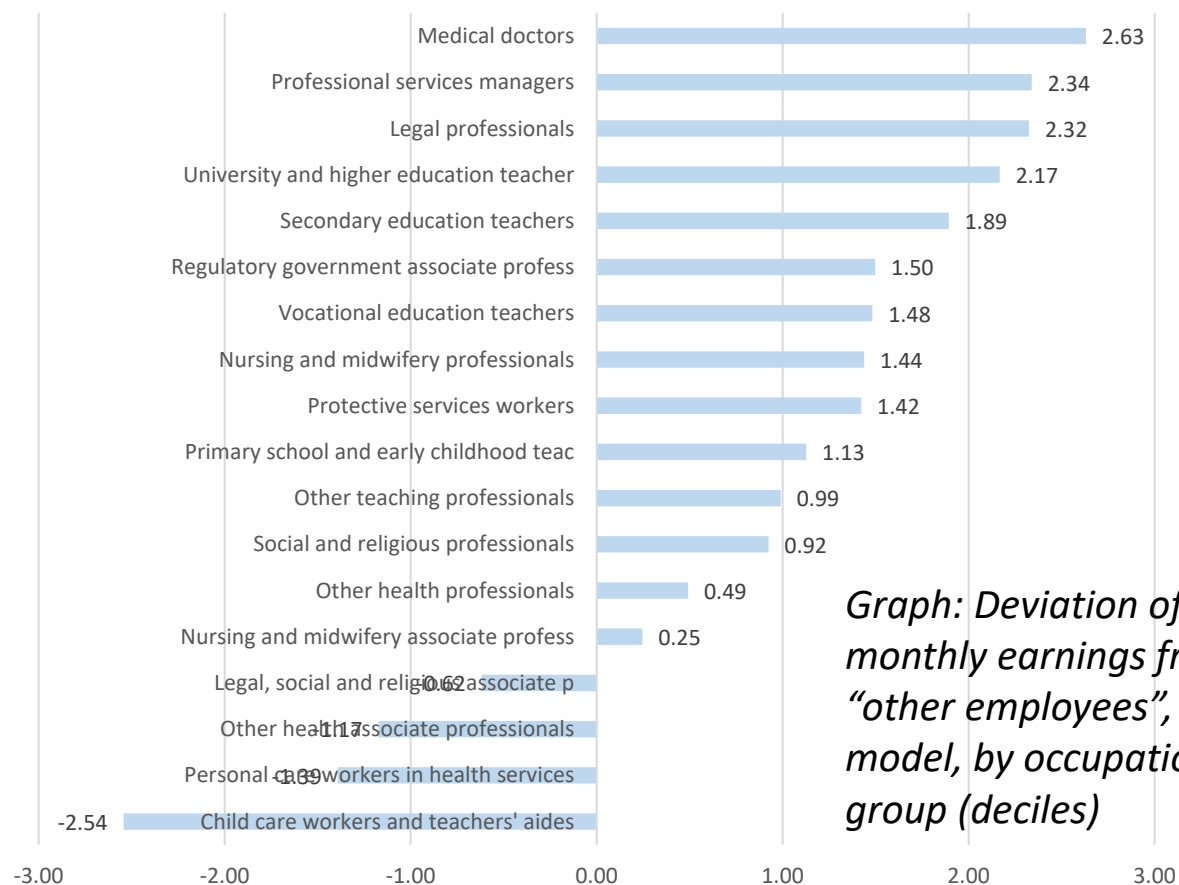
- Only employees, no self-employed or family workers
 - who work in their country of residence, not abroad
 - who did any work for pay during the reference week
 - working full time: at least 35 hours per week
 - BG, MT, PO, SI dropped due to insufficient ISCO information
 - Countries with income information of sufficient quality:
 - deciles not provided in Iceland, Norway and Sweden
 - distribution not plausible in Belgium, Cyprus, Hungary, Ireland, Lithuania and Slovakia
 - Data delivery delayed in some “register countries”
- 18 countries, data for most but not all years (see table)

Table: unweighted sample of observed service jobs

| Country | 2012 | 2014 | 2016 | 2017 | 2018 | 2019 |
|---------|--------|--------|--------|-------|--------|--------|
| AT | 2,746 | 2,772 | 2,865 | 2,883 | 2,800 | |
| CH | 2,183 | 2,119 | 2,211 | 2,313 | 2,350 | 2,350 |
| CZ | 1,536 | 1,600 | 1,564 | 1,593 | | |
| DE | 16,931 | 16,898 | 19,069 | 8,396 | 19,464 | 19,844 |
| DK | 3,587 | 3,629 | 3,300 | 3,293 | 3,545 | 3,236 |
| EE | 683 | 786 | 733 | 855 | 947 | 942 |
| ES | 3,396 | 3,303 | 3,341 | 3,276 | | |
| FI | 1,364 | 1,381 | 1,390 | 1,317 | | 336 |
| FR | 5,532 | 2,628 | 2,678 | 2,726 | 2,607 | 2,605 |
| GR | 1,481 | 1,464 | 1,670 | 1,633 | 1,530 | 1,590 |
| HR | 508 | 583 | 641 | 84 | 680 | 670 |
| IT | 7,366 | 7,539 | 7,516 | 7,723 | 7,494 | 7,552 |
| LU | 605 | 411 | 355 | 335 | 257 | 362 |
| LV | 878 | 1,064 | 1,071 | 385 | 404 | 382 |
| NL | 1,523 | 1,550 | 1,416 | 1,458 | 1,663 | 1,476 |
| PT | 2,736 | 2,995 | 3,363 | 3,268 | 3,362 | 3,454 |
| RO | 3,685 | 3,561 | 4,183 | 4,337 | 4,383 | 4,232 |
| UK | | 2,687 | 2,447 | 2,456 | 2,493 | 2,641 |

Results: gross model, in lieu of a descriptive analysis

- Gross model estimates earnings differences by occupation, including only some obvious controls (working hours, country, year, quarter, and share of part-timers in country)
- Medical doctors are the best-paid group across countries, earning 2.6 deciles more than the reference group (“other employees” outside of societally necessary, person-oriented services)
- These are earnings differences „as they are“. In the following, we introduce controls in order to isolate the effect on earnings which is proper to the occupational groups



Graph: Deviation of monthly earnings from “other employees”, gross model, by occupational group (deciles)



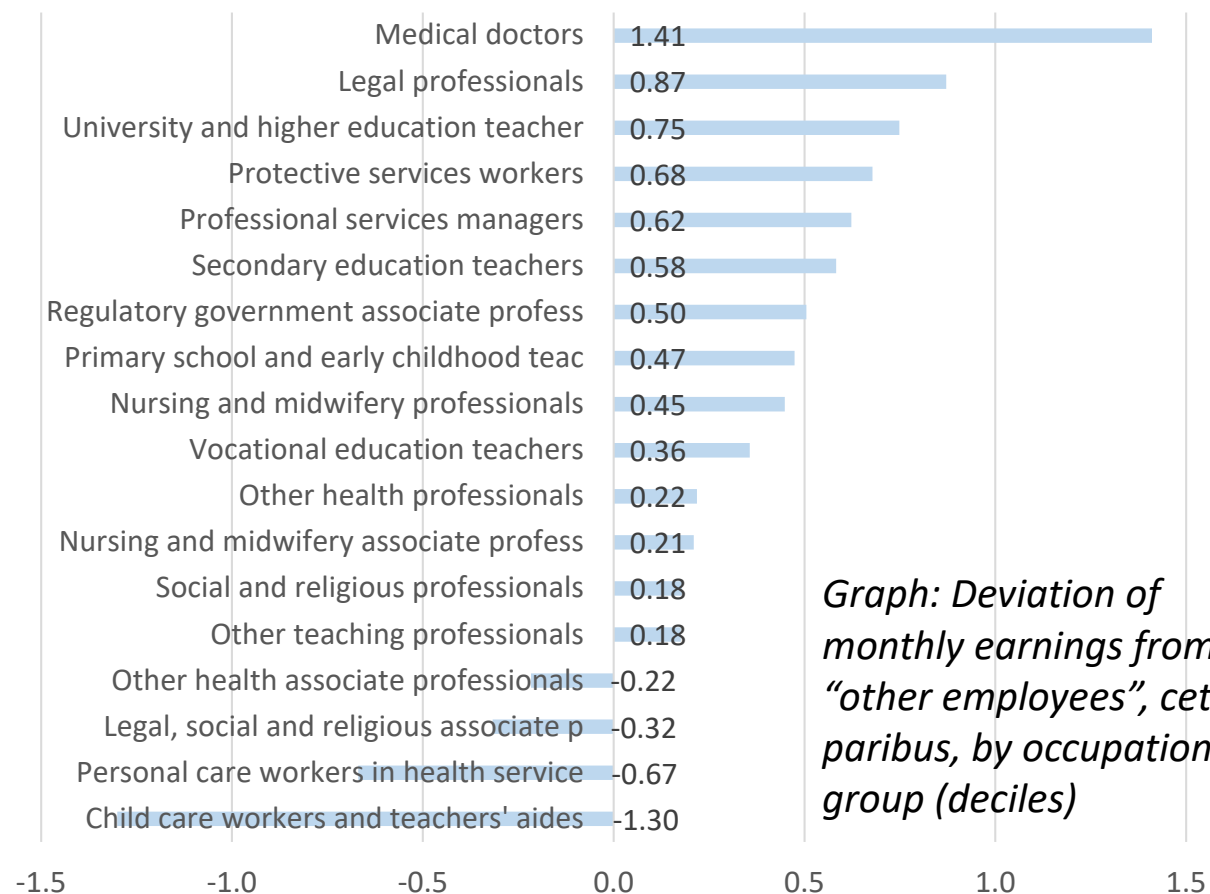
Results: net model, earnings by occupation (part 1)

- Ceteris paribus, earnings deciles of a person tend to be significantly ($p=0.000$) higher if
 - male (+0.79 deciles cp. to females)
 - higher age (though earnings rise at decreasing rate in higher age)
 - higher education (lower secondary education -0.75 deciles cp. to upper, tertiary 1.4 more)
 - higher usual number of working hours (but decreasing marginal effects)
 - permanent work contract (around 1 decile more than fixed-term)
 - longer tenure with same employer
 - supervisory responsibilities (+0.88 deciles)
 - employed in large firm (-0.93 deciles less if 10 persons or less)
 - no temporary employment (-0.15 deciles if temp)
 - share of part-time workers in country is high
 - (but no significant effect of number of usual working hours of part-timers)



Results: net model, earnings by occupation (part 2)

- Controls reduce occupations' effects cp. to the gross model, but occupations still contribute significantly to explaining earnings
- Medical doctors still the best-paid group across countries, earning 1.4 deciles more than the reference group, ceteris paribus. "Personal care workers" in health services earn 0.7 deciles below "other employees"
- Most occupations in the educational branch earn relatively well, in particular if subject matters are sophisticated and specialized
- All person-oriented occupations in "public administration and defense" tend to earn significantly more than the reference group



Graph: Deviation of monthly earnings from "other employees", ceteris paribus, by occupational group (deciles)



Results: earnings by branch of economic activity (model version)

- The branch “public administration and defence, compulsory social security” is the best earning branch: 0.6 deciles more than other branches
- In “human health and social work activities”, earnings are not different from the rest of branches of economic activity. Medical doctors are in this branch, but also personal care workers
- In education, employees still tend to earn 0.3 deciles above other branches. High earnings of some groups of teachers partly cancelled out by “child care workers and teachers' aides”
 - ➔ Polarisation within branches
- Controls have similar effects as in former model

Table: regression output (extract)

| Dependent variable: income decile | Coef. | Std. Err. | P>t |
|---|--------------|------------------|---------------|
| female | -0.821 | 0.004 | 0.000 |
| age (linear) | 0.203 | 0.001 | 0.000 |
| age ² (squared) | -0.002 | 0.000 | 0.000 |
| level of education (ref: medium: upper secondary) | | | |
| Low: Lower secondary | -0.812 | 0.005 | 0.000 |
| High: Third level | 1.482 | 0.005 | 0.000 |
| branch (ref: all other branches) | | | |
| Public administration and defence, compulsory social security | 0.614 | 0.011 | 0.000 |
| Education | 0.290 | 0.009 | 0.000 |
| Human health and social work activities | -0.002 | 0.007 | 0.736 |
| (...) | | | |

Results: earnings differences among workers in societally necessary, person-oriented service jobs (model version)



- Model fitted exclusively for a reduced sample of workers in the observed service jobs: in order to find out about impacts of determinants specifically for this group
- Reference for occupational variable: nursing and midwifery assoc. professionals
- Findings: in the “relevant-services model”,
 - occupations are even more important to explaining earnings differences than in “all-employees model”
 - while personal and job features (control variables) tend to have a smaller impact. ← Due to public services being an important employer?

Table: regression output (extract)

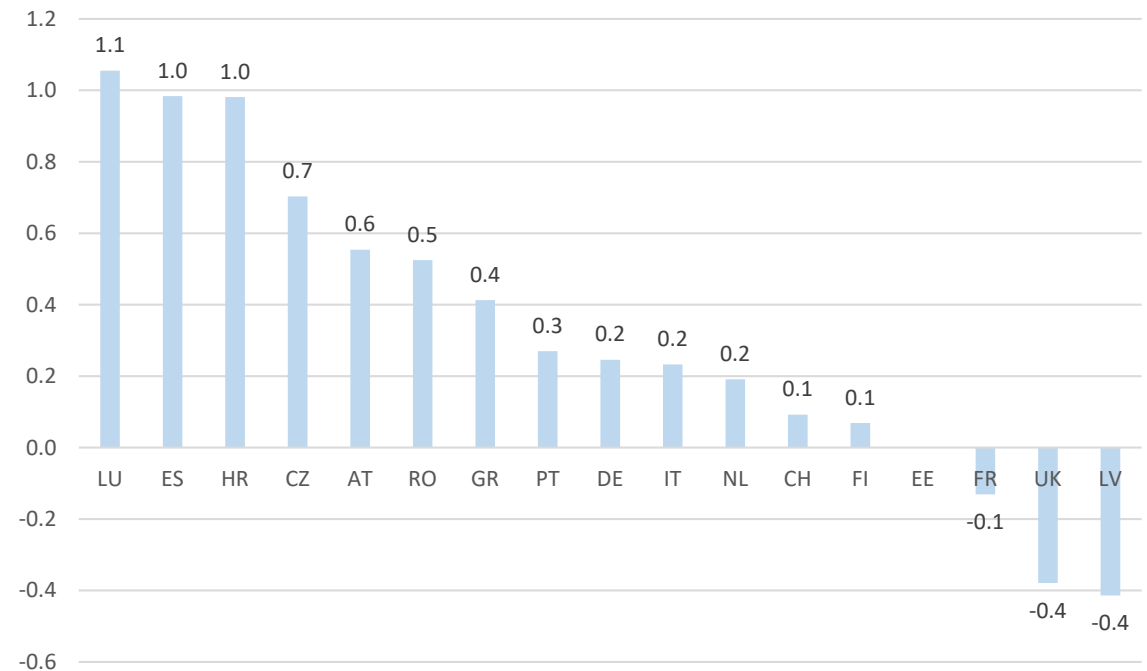
| Dependent variable: income decile | relevant-services model | all-employees model |
|---|-------------------------|---------------------|
| female | -0.396*** | -0.792*** |
| age (linear) | 0.186*** | 0.204*** |
| age ² (squared) | -0.002*** | -0.002*** |
| level of education (ref: medium: upper secondary) | | |
| Low: Lower secondary | -0.697*** | -0.810*** |
| High: Third level | 0.708*** | 1.401*** |
| occupation (ref: nursing and midwifery associate professionals) | | |
| Professional services managers | 1.202*** | 0.413*** |
| Medical doctors | 1.941*** | 1.200*** |
| Nursing and midwifery professionals | 0.598*** | 0.238*** |
| Other health professionals | 0.271*** | 0.008 |
| University and higher education teacher | 1.332*** | 0.538*** |
| ... | | |

Results: earnings in societally necessary, person-oriented services as a whole, by country (model version)



- How are workers paid in different countries?
- Changes to regression model:
 - all societally necessary, person-oriented service jobs together in one category, added to main model as a dummy
 - regression run seperately for each country
- Result:
 - country differences span 1.5 deciles
 - observed jobs best paid in countries as different as Luxemburg, Spain, Croatia
- Limitation: structural effects: if e.g. the share of care workers is high in one country, the mean earnings across the observed occupations tend to be smaller. Next step: country-comparison by occupation

Graph: earnings premium in observed service jobs: mean difference to all other jobs, by country (deciles)





Summary and discussion

- Workers in societally relevant, person-oriented service jobs are not generally low-paid. Ceteris paribus, they tend to earn more than other workers in most countries (except Latvia, United Kingdom, Denmark)
- But wage polarization between occupations, even within branches of economic activity (e.g. medical doctors vs. health care workers; teachers vs. child care workers)
- To make matters worse for care workers: they are often only offered part-time jobs
- Determinants of earnings differences by occupations: regulated professions, trade unionization, ...
Earnings in societally relevant, person-oriented service jobs tend to be the result of a political instead of a market process (delinquents, pupils, patients... usually don't pay the police officer, teacher, doctor...)
- But deliberation outcomes are constrained by public funds and the supply of qualified workers. If demand for services grows (and it does), earnings should tend to rise to attract more workers
- Methodological limitations due to income deciles could be mended in the context of the new regulatory framework (IESS): revision of EU-LFS as of the survey year 2021
- The present analysis is work in progress, will soon be published as a working paper

Thank you for listening and for questions



■ GenDis online

- <http://www.sofi-goettingen.de/projekte/gesellschaftlich-notwendige-dienstleistungen-sicherstellen-ist-arbeit-am-gemeinwohl-attraktiv/projektinhalt/>

■ Publications from the project

- Lehweß-Litzmann, René; Krebs, Bennet; Maier, Tobias; Sonnenburg, Anja; Thobe, Ines; Vogel, Berthold; Wolter, Marc Ingo (2020): Was sind gesellschaftlich notwendige Dienstleistungen? Eine konzeptionelle Eingrenzung - Grundlagen des Projekts GenDis. SOFI Arbeitspapier / SOFI Working Paper, 2020–20
- Lehweß-Litzmann, René (2020): Problems of the Welfare State as an Employer: Assuring the Availability and Commitment of Street-Level Bureaucrats. A Literature Review. In: Social Work & Society, Vol 18, Issue 1, p. 1–21