**Effects of Public Sector Employment on Inequality: An Analysis of the German Private-Public Wage Gap**

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### 1 Motivation
- Government largest employer in Germany
- More than 4.6 million including approx. 1.77 million civil-servants
- Share has decreased in the past decades
- More marginal and irregular part-time positions
- Overall increasing wage inequality in Germany:
  - Higher density in the lower and upper end of the wage distribution
- Previous studies:
  - Private-public wage gap varies highly along the wage distribution

**Research question:**
- What influence has the government as an employer on the labor income inequality development?

**1. Wage gap**
- 2. Share of employees

**Compression of overall distribution**
- Higher variance within quartile

**Our contribution:**
- Large sample, including civil-servants
- Detailed information on socio-demographics, education, employment history and employment status
- Detailed inequality decomposition

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### 2 Data & Strategy
- **Data:**
  - German Socio Economic Panel (SOEP): Years 1990 – 2011
- **Observations:**
  - Between 4000 and 8000 observations per year
  - Calculation of equivalent wages for civil-servants
- **Estimation strategy:**
  - Estimation of private and public sector wages for each subgroup
  - The wage gap is then calculated as:
    \[
    \Delta = \hat{w}_{q,p} - \hat{w}_{q} \Rightarrow \Delta = \frac{E(\hat{w}_{q,p} | q) - E(\hat{w}_{q} | q)}{E(\hat{w}_{q} | q)}
    \]

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### 3 Wage Distribution
- Private sector wage distribution is more spread
- Higher density of private sector wages at the lower tail → this effect increases with time
- Share of public sector employees:
  - Number of public sector employees has decreased by approx. 5 percentage-points

### 4 Wage Gap
- For the lower quartiles, the private-public wage gap is negative
- Given their characteristics employees would earn more in the public sector

### 5 Theil
- Theil index is an entropy index for measuring inequality
  - Equals 0 in the case of a uniform distribution
  - Increases with rising inequality
- Theil index of a population is defined as:
  \[
  GE(1) = \frac{1}{N} \sum_{i=1}^{N} \frac{w_i}{\pi} \ln \left( \frac{w_i}{\pi} \right)
  \]
  → Nested decomposition in three steps:
  1. decomposition by quartiles
  2. decomposition by type of employment (public/private)
  3. implementation of public private wage gap

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### 6 Theil Estimation
- The entropy index differs for the estimated quartiles:

### 7 Conclusion
- Wage Gap for first quartile tends to become more negative
- In contrary, the private-public wage gap increases for the highest wage group
- Decline in number of employers working in the public sector
- Decomposition of Theil index:
  - Inequality is higher for the lowest and highest quartile
  - Equalizing effect of public sector employment?

### 8 Outlook
- **Idea:**
  - Influence of a 1% change of public private wage gap on inequality
  - Influence of a 1% change of number of employees in the public sector on inequality
  - Calculation of Elasticity of Theil Index:
    \[
    \eta_q = \frac{\partial GE(1)}{\partial N_q} \Delta_q = \frac{GE(1)}{GE(1)}
    \]
    \[
    \eta_q = \frac{\partial GE(1)}{\partial N_q} N_q = \frac{GE(1)}{GE(1)}
    \]

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