

Guvenen et al, (2014)

Taxation of Human Capital and Wage Inequality:
A Cross-Country Analysis

Group 7 presentation

5303 - Advanced Macroeconomics

Research question

- ▶ **Can progressive labor income taxes explain wage inequality?**
- ▶ Comparing the US and continental European countries (CEU)
- ▶ Motivated by two empirical observations:
 - ① Countries with more progressive labor income taxes have **lower wage inequality**.
 - ② Countries with more progressive labor income taxes see **smaller rises in wage inequality** over time.

Research question: empirical observation

TABLE 1
Log Wage Differential between the 90th and 10th percentiles (Male Workers)

	1978–1982 average	2001–2005 average	Change
Denmark	—	0.97	—
Finland	0.89	0.94	0.05
France	1.22	1.14	−0.08
Germany	0.93	1.06	0.13
The Netherlands	0.84	1.05	0.21
Sweden	0.73	0.87	0.14
CEU	0.92	1.01	0.09
UK	0.99	1.28	0.29
U.S.	1.28	1.60	0.32

Motivation for the model

- ▶ **Life cycle model** where in each period, agent could choose to go to school, work, or enjoy leisure
- ▶ Idea:
 - ① Progressive income tax compresses after-tax wage distribution: high earners face higher tax rates
 - ② Higher tax rates discourage accumulation of **human capital**, in turn reducing the dispersion (inequality) in before-tax wages

Model: human capital accumulation

- The problem of an individual

$$\begin{aligned} \max_{\{c_s, n_s, a_{s+1}, i_s\}} & \sum_{s=1}^S \beta^{s-1} u(c_s, 1 - n_s) \\ \text{s.t.} \quad & c_s + a_{s+1} = (1 - \bar{\tau}(y_s))y_s + (1 + r)a_s \\ & h_{s+1} = h_s + A^j (h_s i_s n_s)^\alpha \\ & y_s = P_H h_s (1 - i_s) n_s. \end{aligned}$$

- The progressivity wedge

$$PW_i^*(y_s, y_{s+k}) = 1 - \frac{1 - \tau(y_{s+k})}{1 - \tau(y_s)} \left(\frac{n_i}{n_{\text{avg}}} \right)$$

Cross-sectional result: the 2000s

TABLE 5
Measures of wage inequality: benchmark model versus data

	L90-10					L90-50	L50-10
	Data		Model		Fraction explained	Fraction exp.	Fraction exp.
	Level (a)	Δ from US (b)	Level (c)	Δ from US (d)	(d)/(b) (e)	(f)	(g)
Denmark	0.97	0.63	1.22	0.38	0.60	0.97	0.31
Finland	0.94	0.66	1.27	0.33	0.49	0.78	0.25
France	1.14	0.46	1.44	0.16	0.35	1.23	0.12
Germany	1.06	0.54	1.29	0.30	0.56	0.90	0.28
The Netherlands	1.05	0.55	1.36	0.24	0.43	0.65	0.23
Sweden	0.87	0.73	1.28	0.31	0.43	0.75	0.26
CEU	1.00	0.59	1.31	0.29	0.48	0.84	0.24
U.K.	1.28	0.32	1.56	0.03	0.10	0.06	0.13
U.S.	1.60	0.00	1.60	0.00	–	–	–

Inequality trends over time: 1983-2003

TABLE 8
U.S. vs Germany: changing tax schedules and changing inequality

	Data	Model		
	(1)	(2) Fixed calibrated to U.S.	(3) Changing fixed	(4) Changing calibrated to U.S.
Taxes: SBTC:				
Panel A: Change in L90-10				
U.S.	0.32	0.32 ^a	0.21	0.32 ^a
GER	0.13	0.19	0.01	0.09
$\Delta(\text{U.S.}-\text{GER})$	0.19	0.13	0.20	0.22
Panel B: Change in L90-50				
U.S.	0.22	0.23	0.15	0.23
GER	0.05	0.14	0.01	0.06
$\Delta(\text{U.S.}-\text{GER})$	0.17	0.09	0.14	0.17
Panel C: Change in L50-10				
U.S.	0.10	0.09	0.06	0.09
GER	0.07	0.05	0.00	0.03
$\Delta(\text{U.S.}-\text{GER})$	0.02	0.04	0.06	0.06

^aSBTC (P_H) calibrated so that the model matches the rise in L90-10 for the U.S. exactly.

Strengths and weaknesses

► Strengths

- ① Good explanatory power of the model
- ② Diverse robustness checks and evidence from microdata
- ③ Incorporates real-world settings
- ④ Paper is well structured with a clear progression

► Weaknesses

- ① Relies on data from eight highly developed countries and UK emerged as an outlier
- ② Model struggles in explaining inequality among low earners

Suggestions for improvement

► **Expand Study for Global Relevance**

Inclusion of more countries ensures a comprehensive understanding. The observed relationship may not universally apply to recognize the diverse impact of tax policies.

► **Evaluate Education System Dynamics**

Investigate the influence of education financing and regulations.

► **Utilize Difference-in-Differences Approach**

Implement diff-in-diff approach with policy changes as treatments to verify the causal interpretation of tax on wage inequality.

Overall, strong paper!

- ▶ **Model** with decent explanatory power, especially in upper tail of wage distribution
- ▶ Contributes to the literature by providing **quantitative assessment** of role of tax structure in wage inequality, through lens of human capital
- ▶ Could benefit from a further look at internal validity – tax structure or other factors?
 - ▶ May not be able to explain wage inequality in other countries