Revealing Equity Principles from the Tax System

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Overview

Question: How can we reveal equity concerns that would support current tax policy?
Contribution: I disentangle the roles of *vertical* and *horizontal* equity in determining taxes in *theory* and in an *empirical* application.

Background

- **Optimal income tax** formulas (*Mirrlees 1971*, *Saez 2001*, and *Saez and Stantcheva 2016*) depend on the **marginal social welfare weight** society attaches to giving one more dollar to individuals with income z.
- Following *Bourguignon and Spadaro*'s (*2012*) **inverse optimal tax** approach, one can use the *actual tax system* to back out the weights that makes the actual system the optimal one.

The three **sufficient statistics** for *inverse* optimal tax:

1. **Elasticities of taxable income** (ETI): $\varepsilon(z)$
2. **Marginal tax rates**: $T'(z)$
3. **Elasticities of the income distribution**: $\rho(z)$

which produce **marginal welfare weights** $g(z)$

$$g(z) = 1 - \frac{T'(z)}{1 - T'(z)}\rho(z)\varepsilon(z) \tag{1}$$

- **Tagging**: Taxes can in principle be conditioned on characteristics, such as age, height or gender (*Akerlof 1978, Mankiw and Weinzierl 2010*, and *Alesina, Ichino and Karabarbounis 2011*).
- **Vertical equity** (VE) is society's aversion to inequality across income levels. Here defined by the willingness to forgo aggregate income increases for reductions in inequality across income levels.
- **Horizontal equity** (HE) is society's aversion to treating individuals with the same income unequally. Here defined by the willingness to forgo aggregate income increases to exclude tagging.

Theory

Consider two tax systems that produce different welfare weights:
No tagging $g(z)$ and **tagging** $g^t(z)$.
I use these to measure the local value of VE and HE.

$$VE(z) = g^t(z) - 1 \tag{2}$$

is the loss of aggregate income society incurs per dollar increase in income at income level z, when all instruments are exploited.

$$HE(z) = g(z) - g^t(z) \tag{3}$$

is the extra loss of aggregate income society incurs per dollar increase in income at income level z by excluding tagging.

$$(2) + (3) \implies g(z) = VE(z) + HE(z) + 1 \tag{4}$$

shows that the welfare weights measured from the actual tax schedule can be **decomposed** into the concern for VE and HE.

- **Idea**: Exploit the welfare weights schedule from the actual tax system $g(z)$ in an optimal tax problem with tagging to reveal the counterfactual welfare weight schedule $g^t(z)$.
- **Approach**: *Iterating* the inverse optimal tax with tagging formulas, starting with $g(z)$, to find the *fixed point* for the counterfactual welfare weight schedule $g^t(z)$.
- **Key condition**: Allowing for tagging, society would like to *transfer* from one characteristic to another until they have the same *average* welfare weights.

Tagging reduces the cost of redistribution when either:

1. The within-characteristic income distributions differ
2. The within-characteristic ETIs differ

Hence, three types of inputs to the tagging iteration **algorithm**:

1. Average and characteristic-specific **ETIs**
2. **Marginal tax rates**
3. Joint and marginal **income distributions**

Empirical application

Gender tax: Consider the hypothetical experiment of introducing different taxes for male and female wage earners in **Norway** in 2010.

1. **ETIs** for males (=0.04) and females (=0.08) from panel estimation.
2. **Tax rates** from Norwegian tax-benefit calculator.
3. **Income distributions** for males and females.

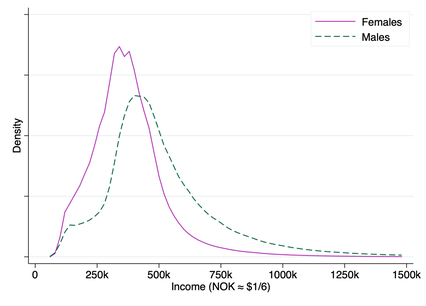

Figure 1: Income distributions for males and females

- I use these estimates to calculate welfare weights for the actual tax system and **counterfactual tax system**.

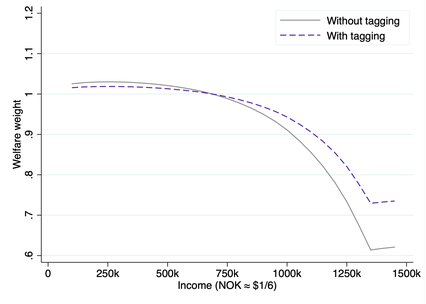

Figure 2: Welfare weights without tagging $g(z)$ and with tagging $g^t(z)$

Main result

- Figure 2 shows that the welfare weights schedule with tagging is *flatter*.
- Now, **decomposing** $g(z)$ into VE(z) and HE(z), I measure the relative contributions from the two forms of equity.

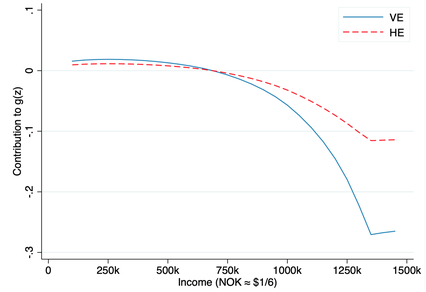

Figure 3: Contribution of vertical equity and horizontal equity to $g(z)$

Conclusion

- The results imply that society's valuation of **horizontal equity makes the welfare weight schedule steeper**.
- The intuition is that the horizontal equity concern increases the cost of redistribution.
- Welfare weights as measures of the *vertical* equity concern are **upward biased** if one fails to account for the *horizontal* equity concern.
- The application illustrates that how redistributive we consider a society to be should depend on what **instruments** it is willing to employ to reduce inequality.