

ECON 133 Global Inequality and Growth

Section 12: Optimal taxation

Jakob Brounstein

1 Optimal taxation

The field of optimal taxation studies taxation from a normative perspective (while also incorporating positivistic insights), focusing on the setting of tax rates in order to maximize certain objectives. The objectives typically deal with 1) revenue maximization (from the perspective from the perspective of the government), and 2) social welfare maximization under some revenue-raising constraints. These methodologies can also be used to study optimal non-tax policy, such as minimum wage.

Some notes on these points:

Main approach: The researcher typically abstracts to a population, modeling their incentives, behaviors, and how they respond to a certain kind of taxation.

1.1 Revenue maximization and the effects of taxation

In a revenue maximization approach, the government calculates how much revenue it receives from each taxpayer; changing the tax parameters will alter behavior (which will affect tax revenue). The revenue maximization problem optimizes over the different effects (e.g. mechanical, behavioral, avoidance, etc.).

Mechanical effects refer to the computational effect of taxation ignoring any behavioral/strategic responses on part of the taxpayer. Example 1) say you tax income above 100k at 50%, someone earning 200k would pay 50k in taxes on income above the 100k threshold). Example 2) if taxpayers claim 10 trillion Dollars in capital income, taxing capital income at 50% is associated with a mechanical effect of raising 5 trillion Dollars. Example 3) say you introduce a 10% excise tax on sugary beverages in Berkeley, and people consumed 10 million Dollars worth of sugar beverages prior to the tax. Then the mechanical effect of the tax will be to raise 1 million Dollars in revenue. All of these examples ignore responses from the taxpayer

However, **behavioral** responses on part of the taxpayer will cause the actual collections to differ from the mechanical effect. There are many different kinds of behavioral responses.

The **substitution effect** is a common behavioral response where the relative price of similar goods/activities has changed, so agents adjust in response in the changes in relative price. Example 1) in response to labor income taxation, an individual perceives the opportunity cost of leisure to be less expensive than before, so they

change their labor supply, previously earning 200k so that now they earn 180k. The **income effect** induces another behavioral response that refers to the change in demand of a good/activity when one's income changes, but relative prices stay the same. Another example: you win 100 million Dollars from the lottery. You are a lot richer now, so you have different preferences over work and leisure, even though the cost of leisure relative to your wage is the same.

There are other kinds of behavioral responses such as avoidance responses—not mutually exclusive with substitution and income effects (which just describe the effects of changing prices and income on the demand for goods/services/activities). These other responses highlight the breadth of ways in which taxpayers can behaviorally respond to changes in incentives. For example, if labor income is taxed more, taxpayers may donate more to charity, which is tax-preferred or engage in more evasion (income underreporting), if possible. Empirical (positivistic) works inform the researcher on the magnitudes of these behavioral responses.

The revenue maximization approach will trade off the mechanical effects and the various behavioral responses to maximize revenue. In the simplest cases, this process will just require taking a derivative, setting equal to zero, and solving for the revenue-maximizing tax rate. For what it's worth, it's often not so simple—even just to maximize revenue.

1.2 Social welfare maximization

Social welfare maximization will consider some aggregation of the utilities of the economic agents as the objective function, instead of simply maximizing collected revenue (these objectives occasionally coincide). This process implicates several different procedures:

- Assign “social welfare weights” to each part of the population: the social planner determines how much they care about the additional consumption of certain kinds of individuals. This step can take many different forms: maybe weight is assigned based on skill or pretax income. Maybe the weight is implicit based on marginal utility. This just boils down to giving parts of the population greater or less weight in considering how their well-being functions into aggregate social welfare.
- Decide if revenues will factor into social welfare. Sometimes, these problems will consider tax or spending programs as revenue-neutral or will consider allocating all spending toward a certain segment of the population (or all of the population), which needs to be considered in the welfare calculation
- Weigh off the revenue raising aspects of the tax with the changes in social welfare to yield an optimal policy

When do revenue maximization and social welfare maximization coincide?

1.3 Scope

These approaches can vary also in how the planner considers different taxpayers. In typical formal analyses of labor income taxation, the revenue maximization problem ignores the effect on firms. A more complete approach might also study the impact of a labor income tax on different kinds of economic agents. For example, an optimal policy analysis of minimum wage policy might consider the welfare of high-skilled workers, low-skilled

workers, and firm owners. You can see how things can get *really* complicated *really* quickly. It's often necessary to isolate only the most central parts of the problem.

2 Labor taxation

How should the government tax labor income?

What are some of the revenue tradeoffs of an increase in the labor income tax rate?

- Mechanical increase in revenue (positive)
- Behavioral response from substitution effect (negative)
- Behavioral response from income effect (positive)
- Behavioral response from substitution to other kinds of tax-preferred activities (negative)

Key simplifications to the problem:

- Assume a linear tax τ
- Assume some guaranteed base income G
- Rawlsian social welfare function \implies the government only cares about the worst-off individual \implies here, optimizing a Rawlsian criterion is akin to maximizing the transfer to the worst-off individual (i.e. maximizing G).

The Laffer curve is the revenue-raising curve in the tax rate. It has an interior maximum, and starts and ends at zero (i.e. at a zero-rate the government raises no revenue, at a 100% tax rate, no one works, so the government raises no revenue). The Laffer rate is the rate corresponding with the maximum of the Laffer Curve (revenue maximizing rate). The Laffer rate is special, as it is the optimum under a Rawlsian social criterion and represents the upper bound of an optimal tax (considering the welfare impacts on other taxpayers disregarded in the Rawlsian framework).

2.1 Optimal tax formulae

The revenue-maximizing tax linear income tax rate is

$$\tau^* = \frac{1}{1 + e}$$

for tax elasticity elasticity of labor earnings e . Interpretation of e : increase the tax rate by 1% induces an e percent decrease in earnings (here e is defined as positive). **Central heuristic: greater elasticity \implies lower optimal rate.** Empirical estimates find low values of e (between .05 and .3).

What about the non-linear income taxation? In practice, the income tax schedule is piecewise linear (i.e. changing marginal rates). A central area of focus is the optimal *top* rate.

Without going into the math, assuming the top of the income distribution follows a Pareto distribution, the optimal top marginal rate can be expressed as

$$\tau_{top}^* = \frac{1}{1 + e_{top} \cdot a}$$

for elasticity of labor earnings at the top of the income distribution e_{top} and Pareto coefficient a . Main difference here from the optimal linear rate: higher inequality \implies lower $a \implies$ higher optimal top marginal tax rate.

There are many other ways to consider this problem. Other studies focus on the optimal labor income tax rate so as to optimize innovation, charitable giving, and other kinds of economic activity.

3 Capital taxation

Capital taxation is ostensibly more complicated than labor taxation because there are many forms of capital and capital-income to tax and many different kinds of responses to taxation.

One of the impetuses for taxing capital is that it is more unequally distributed than labor income. However, capital taxation may induce distortion into the use of capital inputs and may prove more mobile/elastic than labor (e.g. maybe countries can easily avoid national capital taxes by shifting capital from high-tax jurisdiction to low-tax jurisdictions). Many efficiency arguments boil down to 1) the elasticity of substitution between capital and labor and 2) the ratio of the tax elasticities of capital and labor (i.e. which input is more price responsive).

There are also issues with income shifting. If there is a gap between the capital and labor income tax rates, either capital or labor will be seen as tax-preferred, and might host avoidance activity. E.g. if there is no capital income taxation, maybe high earners will opt to take all their income in the form of equity instead of salary.

Special types of capital taxation:

- Inheritance/estate/bequest taxation
- Capital income taxation (realized gains/losses, dividends, interest)
- Corporate income taxation
- Property rents taxation
- Property taxation
- Wealth taxation

Most research suggests that capital income is more tax-responsive than labor income. Additionally, wealth is notoriously difficult to measure. In spite of these challenges, equity concerns and shifting margins provide impetus for taxing capital. In thinking about capital taxation, it is crucial to consider 1) tax-price responsiveness, 2) different avoidance margins, 3) and shifting incentives.