

Indirect Taxation of Monopolists: A Tax on Price by Henrik Vetter

Review

The paper examines an interesting problem. It asks the question whether a given amount of tax revenue can be secured from a monopolist firm without resulting in a further loss of inefficiency. It considers replacing ad valorem tax structure, partially or entirely, by a tax on price structure.

The paper considers a situation where the monopolist firm would not close down when a given amount of tax revenue, R^1 , is secured from it using an ad valorem tax; i.e. the after tax profits to the firm is non-negative. Without any tax being imposed on it, a monopolist firm produces at the profit-maximizing output level, x_{π_max} . It is less than the welfare maximizing output level, x^* , resulting in efficiency loss. Under an ad valorem tax, the monopolist firm produces an output level x_a that is smaller than q_{π_max} , resulting in further efficiency loss.

The paper then considers the question of replacing part (or the entire amount) of ad valorem tax by a tax on price. That is, the same amount of tax revenue (R^1) is secured from the monopolist firm through a combination of an ad valorem tax and a tax on price instead of using just an ad valorem tax.

Assumption 1 in the paper asserts that there exists a pair of ad valorem tax and tax on price under which the monopolist will not close down.

Equation 1 in the paper states the marginal tax revenue of ad valorem tax and marginal tax revenue of a tax on price. When both tax rates are zero, the marginal tax revenue of ad valorem tax is positive and that of the tax on price is zero.

Assumption 2 in the paper asserts that the marginal tax revenue of tax ad valorem tax is positive and decreasing.

Proposition 1 aims to show that under assumptions 1 and 2, using a combination of an ad valorem tax and a tax on price instead of just an ad valorem taxation to secure that same amount of tax revenue the firm can be induced to produce the same level of output as the profit maximizing output q_{π_max} .

Proposition 2 aims to show that starting at the profits maximizing output q_{π_max} , an increase in ad valorem tax (which increases tax revenue) and an increase in tax on price (which reduces tax revenue) can reduce price (or increase output towards q^* and hence efficiency) and be tax revenue neutral.

Proposition 3 aims to show that using a combination of the two taxation (ad valorem tax and tax on price) to minimize P subject to revenue constraint results in Ramsey pricing.

While most of the algebra is correct the following mathematical results require clarifications:

- (1) (p.7; third line from bottom). Since with a combination of an ad valorem tax and a price on tax, the after tax profits to the firm equals to $p(x)x - ap(x)x - c(x) - sp$, the condition that the monopolist would not close down should be $(1-a)p(x)x - c(x) - sp > 0$. Why is it $(1-a)x - s > 0$ (as stated on p7; third line from bottom)?

- (2) (p.9, line 3). The paper states that x_t is >0 . Is that true? Does an increase in ad valorem tax increase output?
- (3) (p.9, line3). The paper states that “..... more unit taxation”, is that a typo? This is confusing as the discussion in this part of the paper does not include an unit tax.
- (4) (p.9, 4TH line from the bottom), should profits be $xp-c(x)-R$ (not $xp-c-R$)?

The following parts of the proof of propositions 1 and 2 also requires clarification:

- (1) Proof of proposition 1: The part of the proof that shows tax revenue stays the same with just the ad valorem tax (with output level x_a) and under the combination of two taxes (with output x_{π_max}) is not clear.
- (2) Proof of Proposition 2: the part that shows an increase in ad valorem tax and an increase in tax on price results in a price reduction (from the profit maximizing level) is not clear.