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Can taxes raise output and reduce inequality? The case of lobbying*

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Abstract

One of the key institutional elements for reducing inequality is the tax and transfer system. However, economists and policymakers usually view high taxes as detrimental to economic growth. We isolate one important mechanism by which higher taxes reduce inequality and raise per capita gross domestic product (GDP) at the same time. This mechanism operates in the presence of unproductive lobbying. Higher taxes induce a reallocation from lobbying toward production. This raises overall output and reduces the consumption gap between those who benefit from lobbying and those who bear its negative effects.

KEYWORDS
equity-efficiency trade-off, inequality, lobbying, rent-seeking, taxation

JEL CLASSIFICATION
D63; D72; H20

1 | INTRODUCTION

Since the 1970s, income inequality has been increasing in most industrialized countries (Atkinson, Piketty, & Saez, 2011; Piketty, 2014). Prominent explanations are that globalization and automation widen the earnings distribution (Autor, Dorn, Hanson, 2016; Acemoglu & Restrepo 2018; Prettner, Strulik, 2019), while the trend

toward assortative mating implies rising concentration of income and wealth at the household level (Greenwood et al., 2014). Against this backdrop, the set of policy instruments to reduce inequality seems limited. Technological developments can hardly be stopped, globalization is not likely to go into full reverse despite recent efforts in many countries, and mating patterns are typically outside the scope of policymakers. Scheidl, (2017) even claims that inequality is only reduced by cataclysmic events such as wars, revolutions, and natural disasters. While Piketty, (2014) argues in support of a global wealth tax to address rising inequality, he questions the political feasibility of its implementation.

More conventional policies to keep inequality in check involve income taxes and transfers (see, for example, Brandolini & Smeeding, 2006, 2011). However, economists and policymakers are often concerned that high taxes reduce per capita GDP, implying an equity-efficiency trade-off. In our contribution, we isolate one important channel by which income taxes reduce inequality and raise per capita GDP at the same time. This is the case in a simple general equilibrium model of consumption, production, and taxation in the presence of unproductive rent seeking. In setting up the framework, we follow a standard interpretation of rent seeking according to which agents acquire extra profits/income through lobbying expenditures (Peltzman, 1976; Posner, 1975; Stigler, 1971; Tullock, 1967). In such a situation, taxation may lead to a reallocation of employment away from unproductive lobbying toward productive activities. Due to this reallocation, overall production increases and inequality between those who benefit from lobbying and those who suffer by its negative effects shrinks. All of our results follow directly from this interpretation of lobbying and do not require any additional assumptions or mechanisms that would tilt the results in favor of taxation and redistribution.

For the European Union, lobbying became increasingly relevant during the so-called 'Brussels lobbying explosion'. As a recent example, Google increased its spending from about 600,000 Euro in 2013 to more than 4 million Euro in 2017. Given the increases observed in rent-seeking activities in the United States, the European Union, and in developing countries (Iqbal & Daly, 2014; Dutta, Kar, & Roy, 2013, Kar et al., 2019), the mechanism we identify is likely to become more important over time.

Our main contribution is to provide an accessible theoretical formulation of an important argument in favor of income taxation, namely that it discourages unproductive lobbying. Our results should not be misunderstood as the claim that the overall effects of taxation and redistribution were positive. The channels by which taxation exerts negative effects on output are well known (e.g., income taxes might distort labor market decisions, etc.). We deliberately abstract from these well-known aspects for the sake of clarity and tractability of the basic economic arguments.

2 | THE MODEL

Consider a country with N inhabitants and two types of individuals. A population share θ of type-1 individuals benefits from lobbying, for example, because these individuals have access to lobbyists or because they do not adhere to moral standards that would deter them from rent-seeking. The remaining population share $1-\theta$ of type-2 individuals suffers from lobbying because successful lobbying transfers some of their income to type-1 individuals. By definition, lobbying does not generate income but only redistributes it. There are three types of goods: consumption goods c are produced in the manufacturing sector by workers, governmental goods/services g are tax-financed and provided by public sector employees, and a separate good/service l is generated by lobbyists out of the income that is taken from type-2 individuals.

Individuals are identical with respect to innate abilities and productivity. Utility of type-1 individuals is given by

$$U_1 = \log\left(c_1\right) + \xi \cdot \log\left(l\right) + \log\left(g\right), \tag{1}$$

where c_1 is their consumption, l refers to goods/services delivered by lobbyists, and g are the goods/services that the government provides for each individual.

The budget constraint of type-1 individuals is given by

$$(1-\tau)\,hw = c_1 + \eta l, \tag{2}$$

where h is exogenously given work effort measured as hours of work, w is the hourly wage, τ is the tax rate that reduces wage income, and $\eta \in (0,1)$ is the price of lobbying services.[1] Maximizing (1) subject to (2) yields the demand for consumption and lobbying services as

$$c_1 = \frac{(1-\tau)\,hw}{1+\xi}, \tag{3}$$

$$l = \frac{\xi\,(1-\tau)\,hw}{\eta\,(1+\xi)}. \tag{4}$$

The government provides g in a lump-sum manner such that it is no choice variable for the individual. We are purposefully conservative in our assumptions on the potential positive effects of governmental spending: (a) if g were a non-rival public good (as many governmentally provided goods are) then this would strengthen our conclusions because it makes taxation more beneficial for each individual; (b) if the provision of the public good enhanced the productivity of workers in the manufacturing sector as in Weinzierl (2018; see Equation (12)), overall income may increase with the tax rate and, thus, provide another beneficial effect of taxation.

The disposable income of type-2 individuals as a group is lowered through lobbying by the amount $N_l hA$, where N_l is employment of lobbyists and A is overall labor productivity and, thus, also the labor productivity of lobbyists. The reason why disposable income of type-2 individuals as a group is lowered by $N_l hA$ is that this amount represents effective employment in lobbying (consisting of employment in lobbying multiplied by labor productivity of lobbyists) and we assume a linear production function in lobbying as described below. Perfect competition on goods and factor markets implies that the wage rate in the economy (w)—and therefore also the wage rate of lobbyists—is equal to productivity (A). Under these circumstances lobbying reduces the income of one single type-2 individual by

$$\frac{N_l hA}{(1-\theta)\,N}$$

because the burden of successful lobbying falls on the population share $1-\theta$ of type-2 individuals. Thus, the budget constraint of a type-2 individual who suffers from lobbying pins down to

$$\left[1 - \tau - \frac{N_l h}{(1-\theta)\,N}\right] w = c_2, \tag{5}$$

with the consumption level of type-2 individuals being equal to their disposable income (after taxation and redistribution by lobbyists).

Aggregate expenditures on consumption (C), lobbying goods/services (L), and governmental goods/services (G) are derived by multiplying individual demand by the size of the corresponding population group:

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[1]We treat h as exogenous and acknowledge that this is a strong assumption. An appropriate utility function with endogenous effort can be specified such that h depends on the wage rate (w) and the tax rate (τ). If effort does not depend on the tax rate in equilibrium, the central results described below, however, would still hold true. Empirical evidence for the labour supply elasticity, summarized in the excellent survey by Keane (2011) indicates that this special case is not far from reality.

$$C = c_2 (1-\theta) N + c_1 \theta N = \frac{[1+(1-\theta)\xi](1-\tau) hwN}{1+\xi}, \tag{6}$$

$$L = \eta l \theta N = \frac{\theta \xi (1-\tau) hwN}{1+\xi}, \tag{7}$$

$$G = \tau hw \theta N + \tau hw (1-\theta) N = \tau hwN. \tag{8}$$

Recalling that labor is the only factor of production, we determine the supply of C, L, and G according to the following linear production functions

$$C = AhN_c, \tag{9}$$

$$L = AhN_l, \tag{10}$$

$$G = AhN_g. \tag{11}$$

In these expressions, N_c, N_l, and N_g denote employment in the manufacturing sector, in lobbying, and in the governmental sector, respectively. Solving for the labor market equilibrium by setting demand equal to supply and isolating sectoral employment yields

$$N_c = \frac{[1+(1-\theta)\xi](1-\tau)}{1+\xi} N, \tag{12}$$

$$N_l = \frac{\theta \xi (1-\tau)}{1+\xi} N, \tag{13}$$

$$N_g = \tau N. \tag{14}$$

Equations (12-14) provide the allocation of employment across productive and non-productive sectors at the economy's general equilibrium.

3 | RESULTS

Given manufacturing employment N_c and governmental employment N_g, per capita output y is the sum of per capita output in manufacturing C/N and per capita output of the government $g = AN_g/N$ such that

$$y = \frac{C}{N} + g = \frac{[1+(1-\theta)\xi](1-\tau)}{1+\xi} hA + \tau hA. \tag{15}$$

Using employment in lobbying N_l, we can compute the fraction of lobbyists $n_l = N_l/N$ as

$$n_l = \frac{\theta \xi (1-\tau)}{1+\xi}. \tag{16}$$

Analyzing expressions (15 and 16) yields the first central result.

Proposition 1 *(i) The higher the tax rate, the more employees choose to work in productive sectors instead of in the lobbying sector.*

(ii) Per capita output increases with the tax rate.

Proof   (i) With the derivative of n_l with respect to τ, we obtain the tax elasticity of employment in the productive sectors as

$$e_{1-n_l} \equiv \frac{\partial 1-n_l}{\partial \tau} \frac{\tau}{1-n_l} = \frac{\tau}{1-\tau} > 0.$$

(ii) Taking the derivative of per capita output with respect to the tax rate yields

$$\frac{\partial y}{\partial \tau} = \frac{\theta \xi h A}{1+\xi} > 0. \tag{17}$$

The elasticity of per capita output with respect to the tax rate is then equal to the tax elasticity of employment in the productive sector

$$e_y = e_{1-n_l} > 0.$$

To see this, define

$$e_y \equiv \frac{\partial y}{\partial \tau} \frac{\tau}{y} = \frac{\theta \xi \tau}{1+\xi-\theta\xi+\theta\xi\tau}. \tag{18}$$

The elasticity e_{1-n_l} can be written as

$$e_{1-n_l} \equiv \frac{\partial 1-n_l}{\partial \tau} \frac{\tau}{1-n_l} = \frac{\theta\xi}{1+\xi} \frac{\tau}{1-n_l},$$

and with the share of the population that does not work as lobbyists

$$1-n_l = \frac{1+\xi\left[1-\theta\left(1-\tau\right)\right]}{1+\xi}$$

as

$$e_{1-n_l} = \frac{\theta\xi\tau}{1+\xi\left[1-\theta\left(1-\tau\right)\right]} = e_y. \qquad \blacksquare$$

While it might come as a surprise that raising the tax rate increases per capita output, the intuition for this result is straightforward. Taxation reduces the demand for lobbyists and thereby also their fraction in the labor force. However, the work of lobbyists does not generate any additional output but only transfers income between population groups. The more lobbyists an economy exhibits, the fewer workers are available for manufacturing and governmental production such that lobbyism is wasteful. Since a higher tax rate reduces lobbyism, it also raises per capita output.

We are grateful to one anonymous referee who inspired us to discuss the intuition in light of the following extreme cases:

Remark 1   (i) If $\xi = 0$, a tax increase leads to a directly proportional reallocation of employment to the government sector (see Equations [12] through [14]), such that per capita income remains constant.

(ii) If $0 < \xi < 1$, a tax increase raises income to a greater extent in the government sector than it decreases it in the manufacturing sector. This is possible because—in addition to employees who switch from manufacturing to the government—lobbyists would also switch, such that unproductive employment decreases.

(iii) If $\xi = 1$ (and $\theta = 1$), we obtain the simple case in which $n_c = 0.5(1 - \tau)$ and $n_l = 0.5(1 - \tau)$. This implies that $n_g = \tau$ because $n_c + n_l + n_g = 1$. An increase of the tax rate by one percentage point reduces employment in the productive and in the unproductive sectors by half of a percentage point.

Considering that governmental goods/services provided per capita are given by $g = \tau h A$, the amount of overall consumption in terms of manufactured goods (c), lobbying goods/services (l), and governmental goods/services (g) for the members of the two types of individuals in the population are given by

$$D_1 = c_1 + \frac{hAN_l}{\theta N} + g = hA, \tag{19}$$

$$D_2 = c_2 + g = hA - \frac{hA\theta\xi\,(1-\tau)}{(1-\theta)\,(1+\xi)}. \tag{20}$$

Here D_1 denotes overall consumption of individuals who benefit from lobbying and D_2 refers to overall consumption of individuals who suffer by it. Note that, without any differences in innate abilities or in the treatment by the government, there is inequality because the beneficiaries of lobbying are able to consume more, that is, $D_1 > D_2$.

With two types of individuals, the Gini index of consumption pins down to $Gini = F - \theta$, where $F = \theta D_1 / [\theta D_1 + (1-\theta) D_2]$ is the fraction of consumption of the beneficiaries of lobbying and θ is their population share. Using this formula we get the following Gini coefficient of consumption:

$$Gini = \frac{\theta n_l}{1 - n_l}. \tag{21}$$

Now we can state our second central result.

Proposition 2 *Consumption inequality decreases with the income tax rate. This effect is stronger the greater the number of lobbyists is.*

Proof   With the derivative of the Gini coefficient with respect to τ, we obtain the following elasticity

$$\frac{\partial Gini}{\partial \tau}\frac{\tau}{Gini} = -\frac{\tau}{1-\tau}\frac{1}{1-n_l} < 0. \tag{22}$$

Again, the intuition is straightforward. The more lobbying, the greater is the wedge between consumption of type-1 and type-2 individuals. A higher tax rate lowers the amount of lobbying and therefore reduces consumption inequality. The results of Propositions 1 and 2 establish that taxation has the potential to raise per capita GDP and to reduce inequality at the same time if lobbying is present. Our results are obtained for the simplest case of a general equilibrium model with lobbying and they do not depend on any additional assumptions or mechanisms apart from the very definition of lobbying as a socially wasteful activity. Overall, our results are consistent with the findings of Piketty, (2014), Rothschild and Scheuer, (2016), and Lockwood, Nathanson, & Weyl, 2017) in more complex settings and with additional benefits of taxation for overall efficiency.

4 | CONCLUSIONS

We propose a simple general equilibrium model of consumption, production, and taxation in the presence of lobbying and show that a rise in the income tax rate has the potential to reduce inequality and increase per capita GDP at the same time. Thus, the equity-efficiency trade-off might vanish in the presence of lobbying even if other prominent channels by which rent-seeking leads to distortions—such as those described by Piketty, (2014), Rothschild and Scheuer, (2016), and Lockwood et al., (2017)—are absent.

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