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A case for maximum wage☆

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HIGHLIGHTS

- We embed a maximum wage rule into a standard optimal income tax framework.
- We demonstrate that a maximum wage serves to mitigate mimicking incentives.
- We prove that introducing a binding maximum wage results in a *Pareto* improvement.

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ABSTRACT

In this paper we demonstrate that supplementing the optimal non-linear income tax system with a binding maximum wage rule attains a *Pareto* improvement, by serving to mitigate the mimicking incentives of the high-skill individuals without entailing distortions.

1. Introduction

The idea of using maximum wage rules is not a new one. It reaches back to Aristotle, who suggested that no one should have more than five times the wealth of the poorest person. During the second world-war, concerned by war profiteering, Franklin D. Roosevelt proposed a maximum income of 25,000 USD in 1942, accompanied by a 100% tax on all income above this level. More recently, the debate about enacting maximum wage rules and salary caps has been revived in earnest in light of the stratospheric rise in chief-executives' pay relative to the median earners over the last decade.[1]

Following Mirrlees (1971) the literature on redistribution usually assumes that there exists some underlying distribution of earning capacities which is the source of inequality and the reason for government intervention on equity grounds. A possible channel via which the government can affect earnings inequality is by designing policy rules that directly influence this underlying distribution supplementing the tax-and-transfer system. One such policy rule which has received much attention is minimum wage legislation (see Lee and Saez, 2012 for a broad review of this literature). Somewhat surprisingly, the literature has by and large overlooked the potential re-distributive role played

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[1] An indirectly related issue is the implementation of salary cap arrangements, which are common in major sports leagues in the world (e.g., the NBA, the NHL and the NFL). The main objective of these arrangements is to attain enhanced competition (promotion of 'equal opportunities') across teams.

by a binding maximum wage rule that sets an upper bound on the compensation of the high-skill (wealthiest) individuals. The objective of this paper is to examine the potential welfare-enhancing role of a maximum wage rule as a supplement to the tax-and-transfer system. Embedding a maximum wage rule into a standard optimal non-linear tax framework, we demonstrate that supplementing the labor income tax system with a binding maximum wage would result in a *Pareto* improvement and explain the mechanism at work.

2. The model

In order to simplify the exposition we choose the simplest setting possible.[2] Consider an economy which produces a single consumption good employing labor inputs with different skill levels. We assume that the production technology exhibits constant returns to scale and perfect substitution across skill levels. Individuals differ only in their innate earning ability/skill level. We assume that population is equally divided between low- and high-skill individuals and denote by w_1 and w_2, their respective abilities (and corresponding real wage rates in a competitive labor market), where $w_2 > w_1 > 0$. We normalize the population of each skill level to unity with no loss in generality. We follow Mirrlees (1971) by assuming that skill levels are private information unobserved by the government.

Individuals' preferences are represented by the following additively *separable* utility function:

$$U(c, l) = g(c) - h(l), \tag{1}$$

where c denotes consumption, l denotes labor, $h(\cdot)$ is strictly increasing and strictly convex, and $g(\cdot)$ is strictly increasing and strictly concave. INADA conditions are assumed to ensure interior solutions throughout.

For later purposes, as is common in the optimal tax literature, we reformulate the utility function and represent it as a function of gross income (y), net income (c) and the individual skill level (w):

$$V(w, c, y) \equiv g(c) - h(y/w). \tag{2}$$

3. The government problem

We first introduce our benchmark setting. The government is assumed to maximize a weighted *Utilitarian* welfare function given by:

$$W \equiv \alpha \cdot V(w_1, c_1, y_1) + (1 - \alpha) \cdot V(w_2, c_2, y_2), \tag{3}$$

where α, $0 < \alpha < 1$, denotes the weight assigned to the low skill individual in the social welfare function and is assumed to be sufficiently large,[3] subject to a revenue constraint (assuming with no loss of generality no revenue needs),

$$(y_1 - c_1) + (y_2 - c_2) \geq 0, \tag{4}$$

and two self-selection constraints, ensuring that each type of individual is as well-off with his bundle as he would be with mimicking the other type:

$$V(w_1, c_1, y_1) \geq V(w_1, c_2, y_2), \tag{5}$$

$$V(w_2, c_2, y_2) \geq V(w_2, c_1, y_1). \tag{6}$$

The constrained optimization program is fairly standard and technical details are therefore omitted for abbreviation purposes (for details see e.g., Balcer and Sadka, 1982 and Stiglitz, 1982). The standard properties hold: both the revenue constraint (4) and the self-selection constraint of the high-skill individual (6) are binding, the marginal tax rate levied on the high-skill individuals is zero (efficiency at the top); whereas, the marginal tax rate imposed on the low-skill individuals is strictly positive (downward distortion at the bottom). We turn next to introduce our new instrument and prove our main result.

4. A case for maximum wage

Suppose that the government sets an upper bound on the hourly wage rate paid in the labor market. Formally let the upper bound wage rate be denoted by $\overline{w}$, where $w_1 < \overline{w} < w_2$. Several remarks are in order. First, notice that any firm hiring the labor services of high-skill workers would earn strictly positive profits. Clearly, these rents (pure profits) could be taxed away by the government, without entailing any distortions. Second, as noted by Lee and Saez (2012) in the context of minimum wage (see also a related discussion in Blumkin et al., 2007 in the context of anti-discrimination rules), there exists, apparently, some informational inconsistency between the implementation of any policy directly regulating the wage rates and policy focusing on affecting the distribution of earnings (a labor income tax). In reality governments do combine minimum wage policies (based on hours of work) and income taxes (based on earnings). Hence, Lee and Saez (2012) find it useful to consider the constrained optimization problem combining taxes on earnings and minimum wage rates.[4] We follow suit, by allowing the government to combine a maximum wage policy as a supplement to an income tax. Third, to ensure the effective implementation of the maximum wage rule it is assumed that the government takes into account all forms of remuneration paid by the firm to the high skill worker (measured per hour of work) including salary, bonuses and benefits. Finally, our choice to confine attention to (a pure) intensive margin model (choice of the hours of work rather than the decision on labor market participation) stems from our focus on policy regulating the wage rate of the high skill worker (the upper end of the skill distribution). We turn now to re-formulate the government constrained optimization program in the presence of a maximum wage rule. The government is seeking to maximize the following welfare function:

$$W \equiv \alpha \cdot V(w_1, c_1, y_1) + (1 - \alpha) \cdot V(\overline{w}, c_2, y_2), \tag{3'}$$

subject to a revenue constraint,

$$(y_1 - c_1) + (y_2 - c_2) + \frac{y_2}{\overline{w}} \cdot (w_2 - \overline{w}) \geq 0, \tag{4'}$$

[2] Our analysis carries over in a straightforward manner to more general specifications of the production technology, individuals' preferences and the number of skill levels considered.

[3] Two remarks are in order. First, the set of optimal tax schedules associated with maximizing a weighted utilitarian social welfare function for different weights is equivalent to the set of second-best *Pareto* optimal tax schedules (examined in Stiglitz, 1982). Second, assuming α is large enough ensures that the government is redistributing from the high-skill towards the low skill, in which case the binding incentive constraint in the government optimization program would be that of the high-skill individual. In the case not considered where α is sufficiently small, the redistribution would go in the other direction, hence the binding incentive constraint would be that of the low-skill. In such a case, as shown by Allen (1987), a *minimum* wage would be a desirable supplement to the optimal non-linear income tax schedule.

[4] In order to render our analysis tractable we eschew from incorporating misreporting considerations and the entailed enforcement/compliance issues with respect to the maximum wage rule, without discounting their importance. Notice that by doing so we follow the bulk of the literature on optimal taxation and minimum wage legislation, which raises similar concerns about cheating. Clearly and as correctly pointed out by the referee, the incentives to cheat become stronger as the level of taxation of firms' profits increase.