On the optimality of a minimum wage: New insights from optimal tax theory ☆

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ABSTRACT

We build a theoretical model to study whether a minimum wage can be welfare-improving if it is implemented in conjunction with an optimized nonlinear income tax. We consider this issue in a framework where search frictions on the labor market generate unemployment. Workers differ in productivity. The government does not observe workers' productivity but only their wages. Hence, the redistributive policy solves an adverse selection problem. We show that a minimum wage is optimal if the bargaining power of the workers is relatively low. However, if the government controls the bargaining power, then it is preferable to set a sufficiently high bargaining power.

1. Introduction

The minimum wage is one of the most controversial economic policies. On the ground of equity considerations, a minimum wage aims to play a redistributive role by increasing income for the least-skilled workers. One might however counter-argue that redistributive taxation can achieve this goal in a more efficient way. On the ground of efficiency considerations, the minimum wage is often blamed for its adverse effects on labor demand. This is true as long as labor markets are perfectly competitive. However, the minimum wage can be helpful to correct for noncompetitive wage setting (see e.g. Robinson 1933 or Stigler 1946). It is therefore necessary to include optimal taxation and labor market imperfections when one considers the normative issue of the minimum wage. In this paper, we propose a theoretical model to study whether a minimum wage can be welfare-improving if it is implemented in conjunction with an optimized nonlinear income tax *à la* Mirrlees (1971). To integrate explicitly the unemployment effects of a minimum wage, we consider this issue in a framework where search frictions on the labor market *à la* Mortensen and Pissarides (1999) generate endogenous "involuntary" unemployment (i.e. some workers are willing to work at the equilibrium wage, but fail to find a job).

In our model, workers differ with respect to productivity. They decide whether to search for a job, while firms search for workers to fill their job vacancies. If a worker and a firm are paired, they Nash-bargain the wage. The government observes wages, but not productivity. Hence, it faces an adverse selection problem. Since the productivity of a match is revealed through the wage, and since the negotiated wage maximizes the Nash product, incentive constraints depend only on Nash products. However, and contrary to the standard model in contract theory, workers' participation constraints depend on a different variable than incentive constraints. In our case, the participation decisions depend on the workers' expected incomes while searching. We show that in such a context, bunching at the bottom of the wage distribution appears at the (second-best) optimum if the workers' bargaining power is relatively low. In our model where wages are negotiated, we interpret this bunching as a binding minimum wage.

This result holds under the assumption that the government cannot influence the workers' bargaining power. One might however argue, that the government can – especially in a long-run perspective – influence the workers' bargaining power to some degree. As we show, if the government can control the bargaining power, then it is desirable to increase a relatively low bargaining power, in which case our previous argument for the minimum wage disappears. The minimum wage thus acts in our model as an (imperfect) substitute for a rise in workers' bargaining power.

The impact of a minimum wage in the case of a monopsony in the labor market has been studied among others by Robinson (1933) and Stigler (1946). Firms do not face competition on the labor market and thus distort wages downwards, thereby reducing labor supply and eventually employment. Then, a binding minimum wage can restore efficiency and increase employment (along the labor supply), provided its level is not above the equilibrium wage in a perfectly competitive labor market. Our contribution differs in several ways from Stigler's. First, we integrate taxation into the framework. As already noted by Stigler, tax measures might achieve the same result as the minimum wage, and possibly even in a more efficient way. We however show that a minimum wage is – under certain conditions – even optimal when tax measures are available. Second, while Stigler only analyses the efficiency problem, we analyze the impact of the minimum wage in a framework where the government wants to redistribute from high-income to low-income individuals, and thus faces an efficiency-equity trade-off.[1] Third, we introduce "involuntary" unemployment. In Stigler's simple monopsony model, every individual who is willing to work at the (monopsony) market wage is able to find a job. We assume search and matching frictions, which imply that some people fail to find a job and become "involuntarily" unemployed.

Many papers have already investigated whether the minimum wage can be useful in combination with an optimized redistributive tax (see Allen 1982, 1987; Guesnerie and Roberts 1987; Drèze and Gollier 1993; Marceau and Boadway 1994; Boadway and Cuff 2001). In particular, Stephen Allen (1987) considers a model with two types of imperfectly substitutable workers and endogenous hours of work à la Stiglitz (1982). He shows that a minimum wage is never optimal in conjunction with the optimized nonlinear income tax, because a rise in the minimum wage strengthens the relevant incentive constraint. Lee and Saez (2008) challenge this result. Their model includes labor supply responses along both the intensive and the extensive margins. Another difference is that the rationing on the low-skilled labor demand induced by the minimum wage is "efficient" in the sense that workers with the lowest surplus at the minimum wage are the first ones to drop into unemployment. In their model, a minimum wage can be useful in addition to nonlinear taxation. We abandon this framework of two types of imperfect-substitute labor and instead base our labor demand margin on matching frictions. In our model, search frictions drive a wedge between (marginal) productivity and the wage, while productivity and hours of work are exogenous. Furthermore, we consider a model with a continuum of productivity which is – as we will show – more relevant for the optimal redistributive policy.

Finally, we extend the model of optimal redistributive taxation in a search equilibrium framework developed by Hungerbühler et al. (2006, henceforth HLPV). HLPV assume the Hosios (1990) condition, according to which workers' bargaining power is equal to the elasticity of the matching function with respect to the mass of unemployed. This condition implies that the economy without government intervention is efficient, and thus gives an interesting benchmark. There is however no reason – neither theoretical nor empirical – why this condition should hold in reality. Empirical studies show that a bargaining power below the elasticity of the matching function is the most plausible case. Then, a wage rise for a given level of the Nash product increases workers' expected income. This effect opens the room for a welfare-improving role of the minimum wage.

The paper is organized as follows. Section 2 presents the basic model, including incentive and participation constraints. Section 3 solves the model for a given bargaining power. In particular, we show that a minimum wage is optimal if the bargaining power is sufficiently low. Section 4 considers the case when the government can control the bargaining power. Finally, Section 5 concludes.

2. The model

Our model follows the framework built in HLPV to deal with the optimal tax problem of Mirrlees (1971) within the equilibrium unemployment theory of Mortensen and Pissarides (1999) and Pissarides (2000). To keep things as simple as possible, we consider a static setting which has become standard in the models of search equilibrium with taxation (see also Boone and Bovenberg, 2002). There is a unit mass of risk-neutral individuals. They can be either employed, unemployed or out

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[1] For the case of the (non-)desirability of minimum wages in the context of a monopsony and redistributive taxation, see Cahuc and Laroque (2007).