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Can a minimum wage increase employment and reduce prices in a neoclassical perfect information economy?

George Deltas *

University of Illinois, U.-C., 1206 South Sixth Street, Champaign, IL 61820, United States

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Abstract

This paper investigates the possibility that the imposition of a minimum wage increases employment in the affected sector, measured in terms of hours of work, and lowers product prices. Unlike related prior theoretical research, I consider a neoclassical perfect information economy. Both labor and product markets are assumed to be perfectly competitive. Workers choose the number of hours of work and their effort level. Workers can potentially, but not necessarily, differ in their preferences over income, leisure, and effort. Effort is perfectly observable by the employers. The general framework that highlights the channels through which a minimum wage can increase employment and reduce prices is introduced and necessary and sufficient conditions derived. The paper also develops a number of comparative statics and some illustrative examples. The results provide a simple theoretical foundation that explains some recent findings of the empirical literature on minimum wages. Auxiliary results help explain the effects of minimum wage on the entire wage distribution in a way that is consistent with empirical findings. Finally, welfare analysis shows that worker welfare and employment tend to go in opposite directions; in particular, if employment increases after the imposition of the minimum wage, worker welfare will be reduced, though not necessarily vice versa (the opposite is true for consumer welfare). Strikingly, if a minimum wage increases worker welfare, the chief beneficiaries are not the affected workers but those with incomes that exceed the minimum wage.

JEL classification: J22, J38

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* Tel.: +1 217 333 4678.
E-mail address: deltas@uiuc.edu.
URL: http://netfiles.uiuc.edu/deltas/www/index.htm.

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1. Introduction

Recent empirical studies of the impact of minimum wage on employment show its effect to be at odds with that predicted by the simple classical model of the labor market: increases in the minimum wage are found to increase employment (or not affect it significantly) and decrease output prices (or not affect them significantly).[1] These empirical studies, which cover a number of different geographic areas, time periods, and estimation methods, are also at odds with much of the older empirical literature and are hotly contested.[2] This paper takes no position in the measurement debate about the effects of the minimum wage on employment and prices.[3] Its contribution lies in the development of a simple, neoclassical, perfect information model that nests the traditional model of labor markets and allows for the (so-called) "perverse" results described in these recent empirical studies to arise in equilibrium. Unlike other theoretical models that seek to explain the empirical findings, and which are summarized below, this model does not rely on market imperfections, asymmetric information, or labor market frictions. The only modification of the traditional, textbook model, of labor markets is the incorporation of endogenous, observable effort. Simply put, I allow workers to choose how long and how hard they work and employers to perfectly observe worker performance.

This natural and seemingly minor extension of the standard model generates a wealth of new results and provides us with a new way to interpret data in the minimum wage policy debate. The effects of an increase in the minimum wage on both price and employment become ambiguous. In particular, a minimum wage can lead to increased employment and reduced output prices, or it can lead to decreased employment and output prices, or it can lead to the "textbook" results of reduced employment and higher output prices. However, the possibility that employment increases with the minimum wage does not imply that workers are better off. In order to retain their jobs, workers have to expend greater effort. Since utility is decreasing in effort, even workers who are receiving more money may be worse off. If utility, rather than income, is the appropriate measure of worker welfare, then the exclusive focus on the financial effects of a minimum wage increase can be poor guide on whether such an increase is desirable.

The key intuition and mechanics of the model are as follows. When workers choose their effort level and employers observe worker output, worker compensation, in the absence of a minimum wage, is a function of their effort level. Even though workers are formally paid an hourly wage, they are implicitly compensated via "piece rates;" a worker whose productivity increases can expect raises, while a worker whose productivity sags can expect a reduction in his real wage over time or loss of his job. The imposition of the minimum wage has the effect of specifying a minimum acceptable worker effort. If a worker who was paid less than the minimum wage does not increase his effort, he will not be able to retain his job. This increased level of effort has a direct impact on the number of hours worked. In particular, holding the marginal revenue product of

[1] Throughout this paper, we limit our attention to publicly determined and imposed minimum wages, not to publically enforced minimum wages that are determined endogenously from bargaining between private actors (see Petrakis and Vlassis, 2004; Houba and van Lomwel, 2001).

[2] See Katz and Krueger (1992) for Texas restaurants, Card (1992a) for California, Card and Krueger (1994) for the Pennsylvania/New Jersey market, and Card (1992b) and Schiller (1994) for a multi-state analyses of the US Federal minimum wage.

[3] For dissenting views see Newmark and Wascher (1992), an exchange between these two authors and Card, Katz and Krueger in the *Industrial and Labor Relations Review*, Currie and Fallick (1996), and related work by Grossberg and Sicilian (2004).