Employment and distribution effects of the minimum wage☆

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A R T I C L E   I N F O

A B S T R A C T

This paper analyzes the effects of the minimum wage on wage inequality, relative employment and over-education. We show that over-education can be generated endogenously and that an increase in the minimum wage can raise both total and low-skill employment, and produce a fall in inequality. Evidence from the US suggests that these theoretical results are empirically relevant. The over-education rate has been increasing and our regression analysis suggests that the decrease in the minimum wage may have led to a deterioration of the employment and relative wage of low-skill workers.

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1. Introduction

This paper analyzes the effects of changes in the minimum wage on wage inequality, relative employment and the prevalence of mismatch (over-education) in the labor market.

Studies by DiNardo et al. (1995) and Lee (1999) have suggested that changes in the minimum wage and other labor market institutions have been important for the observed increase in inequality. This claim has obvious appeal. It is easy to see how these institutional changes may have put downward pressure on low-skill wages. However, in a standard model the change in relative wages will raise the demand for low-skill workers. Contrary to this prediction, low-skill workers appear to have lost ground in terms of both wages and employment.

The simultaneous increase in the relative wage and employment of high-skill workers has been interpreted as evidence of skill-biased technical change (e.g. Levy and Murnane, 1992; Acemoglu, 2002). Other interpretations are possible, however: in this paper we show that a fall in the minimum wage can generate a deterioration in the position of low-skill workers, both in terms of wages and employment. The presence of mismatch is central to the argument. As shown by Sattinger (2006) and Skott (2005, 2006), relative wages and employment can move in the same direction, even in the absence of any skill bias,

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if the prevalence of mismatch is determined endogenously. Induced changes in mismatch, moreover, can contribute to an explanation of changes in within-group or residual inequality.

To keep matters as simple as possible, we assume that high-skill workers can get two types of jobs ('good' high-tech jobs and 'bad' low-tech jobs), whereas low-skill workers have only one type of employment opportunity (low-tech). We show that mismatch – some high-skill workers having low-tech jobs – is compatible with a variety of labor market theories, including extended versions of standard efficiency wage models in which the monitoring of workers' effort is imperfect, contracts are incomplete, and workers cannot convincingly pre-commit to not shirking. In this setting, one solution is for firms to use the threat of dismissal as a way to elicit effort (Shapiro and Stiglitz, 1984; Bowles, 1985). For this threat to work, both good and bad jobs must be rationed to ensure that employed workers receive a rent over and above their best alternative. Good jobs pay more than bad jobs, which in turn must pay more than unemployment. In equilibrium there will be both un- and under-employment (some high-skill workers have bad jobs that do not utilize their skills), and inequality between groups will depend not only on the wage gap between good and bad jobs, but also on the degree of mismatch. As long as some matches of high-skill workers and bad jobs are sustained in equilibrium, changes in exogenous variables will affect not only wages and employment rates but also the degree of mismatch. These induced changes in the degree of underemployment of high-skill workers lie behind the monopsonistic effects. An increase in the minimum wage can reduce the employment of high-skill workers in low-tech jobs, and this deterioration of the employment conditions for high-skill workers relaxes the no-shirking condition in high-tech jobs and stimulates employment.

Monopsonistic effects have been introduced into efficiency wage models by Rebitzer and Taylor (1995) but our mechanism is different. Rebitzer and Taylor assume that firms have fixed monitoring resources, so that the probability of detecting a shirking worker is decreasing in the total number of employees. Thus, firms are forced to increase wages, and thereby the potential penalty of dismissal, *pari-passu* with employment. In other words, firms face an upward sloping labor (effort) supply curve, and a binding minimum wage may induce an increase in employment, just as in the classical monopsony case. Unlike Rebitzer and Taylor, we have two different types of workers, and this heterogeneity, in combination with the presence of mismatch, implies that monopsonistic features can arise even with exogenously given probabilities of detection.[1] In our setting, unemployment, mismatch and monopsonistic effects are generated by the same efficiency–wage mechanism.[2]

The monopsonistic effects provide a link to another strand of literature. The monopsony model, literally interpreted, may have little relevance (for example see Stigler, 1946) but as argued by Manning (2003, 2004), labor markets can be monopsonistic, even if there is a multiplicity of buyers of labor. Indeed, the survey by Boal and Ransom (1997) describes several alternative multi-agent models that lead to many of the same conclusions as classic single-buyer monopsony. We contribute to this literature by showing that efficiency wages can generate economy-wide monopsony effects as well as skill mismatch.

The significance of the theoretical analysis depends on the degree of mismatch. While measuring mismatch has proved challenging, studies suggest that over-education is widespread in all OECD countries. Estimates range between 10 and 40%, and the evidence also shows large differences in the returns to education to different workers, depending on whether they are over- or under-qualified for their jobs (Sicherman, 1991; Groot and Maassen van den Brink, 2000).[3] Combining data from the Dictionary of Occupational Titles and the Current Population Survey, our own estimates in this paper produce over-education rates of about 15–25% in the US, and the rate of over-education changes substantially between 1973 and 2002 (the period for which we have data).

Our theoretical model generates predictions for the effect of the minimum wage on unemployment, over-education, relative wages and relative employment. We estimate the relevant reduced-form equations using time series variation for the US as a whole and supplement these regressions with panel regressions using state-level data. This approach is unlike most recent empirical work on the employment effects of the minimum wage, which looks at specific groups or industries that are likely to be strongly affected, such as teenagers and restaurants (see Card and Krueger, 1995; Dube et al., 2010, and Brown, 1999 and Neumark and Wascher, 2006 for surveys). Our theoretical argument, however, concerns macro effects on the entire labor market, and these macro effects can not be captured by a partial study of employment effects for a small subset of workers or industries. Nothing in our argument precludes adverse employment effects in some industries or for some groups of workers.[4] The argument for positive employment effects in this paper is not that the individual employer has monopsonistic power and therefore increases employment and output in response to a rise in the minimum wage. Nor do we rely on inelastic demand for the output of sectors with a high proportion of low-skill workers.

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[1] The model can be extended to include fixed monitoring resources, as in Rebitzer and Taylor. An appendix with this extension is available on request.

[2] This is unlike the analysis in Manning (2003, pp. 256–262), where efficiency wage elements and involuntary unemployment are added to models with monopsonistic features.

[3] Some studies have suggested that individual ability bias explains these results. Slonimczyk (2008), however, shows that differences in the returns to surplus and required qualifications persist when fixed effects are introduced. Slonimczyk (forthcoming) studies the effect of increasing skill mismatch on earnings inequality in the U.S.

[4] The model in Section 3 suggests that an increase in minimum wages may lead to expansion of employment of low-skill adult workers (their no-shirking condition has been relaxed), but the expansion may happen at the expense of both teenage workers and mismatched high-skill workers. This outcome would be in line with Neumark and Wascher's (2006) finding that an expansion of the earned income tax credits generate a displacement of teenage women by low-skill adult women.