Monopsony, minimum wages and migration

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ABSTRACT

We show in a theoretical monopsony model that in response to a small increase in migration compliance with the minimum wage will increase if the share of minimum wage workers employed in firms that are constrained by the labour supply curve is large enough. If minimum wage firms are constrained by the labour demand curve an increase in migration will leave employment unchanged and employment in non-compliant firms will rise. Using data from Thailand we provide evidence that increases in inward net migration are associated with a proportionately greater increase in workers employed at the minimum wage relative to non-compliance.

1. Introduction

It is well known in textbook monopsony models that if a minimum wage is introduced, there is a range of values for the minimum wage where employment will increase [See Borjas (1996) chapter 5 for example]. A straightforward implication of this result is that if a minimum wage is set in the range where employment increases, a small increase in migration will increase employment of workers employed at the minimum wage. If, in contrast, the minimum wage is above the range where employment is increasing, firms are on their labour demand curve and we have the standard competitive result that an increase in the minimum wage lowers employment while an increase in migration leaves employment unchanged for a binding minimum wage.[2] Arguably, whether this result holds true more generally is of considerable importance as it identifies a channel through which low skill employment can increase in response to inward migration without lowering wages. However, to this best of our knowledge there is no study that has pointed out or tested this implication of the monopsony model. This is the task of the current paper.

Hirsch and Jahn (2012) and Hotchkiss and Quispe-Agnoli (2009) investigate empirically whether migrants or undocumented workers respectively have different labour supply elasticities motivating the empirical test with an appeal to monopsony models.

Theoretically our paper highlights the simple result that an increase in inward migration may increase minimum wage employment, that

this is only true for an increase in migration associated with a shift in labour supply (not demand induced migration) and to formulate empirically testable hypothesis. Given that there is non-compliance with the minimum wage to some degree in most countries and that this is a major issue in developing countries in particular, we extend the theoretical analysis to incorporate non-compliance. To test the empirical implications of our model we use data on wages and internal migration flows in Thailand. Hirsch and Jahn (2012) and Hotchkiss and Quispe-Agnoli (2009) show empirically that migrant or undocumented workers have different labour supply elasticities than other employees, thus providing a greater degree of monopsony power on employers who hire migrants.[3] Our results from the empirical analysis using the Thai data suggest that an increase in inward migration does indeed increase compliance (and possibly employment) of minimum wage workers, results that are consistent with our theoretical predictions outlined but that would be difficult to rationalise if the labour market is competitive rather than monopsonistic.

There is of course already a large literature looking at the employment effects of minimum wages, with some very prominent studies finding either no negative employment effects or some small positive effects. Such studies often cite imperfectly competitive models, such as monopsony models, as a way of rationalising their results; see Card and Krueger (1995) or Giuliano (2013) for example. Factors such as search frictions or turnover costs [see Manning (2003) or Dickens et al. (1999) for example] or firm specific preferences [see Bhaskar and To (1999) or

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  [2] We illustrate this result in a simple textbook example at the beginning of our theoretical section in Section 1 below.
  [3] For example Hirsch and Jahn (2012) suggest that when migrants enter a new labour market they face higher search costs which confers a greater degree of monopsony power on employers who hire migrants.

Walsh (2003)] are often cited to motivate why firms may have monopsony power in markets for low skilled labour.[4] The degree of monopsony power in these frameworks often differs across firms [as in the model of Dickens et al. (1999)], so that generalising the model to allow for this heterogeneity is important.[5] After spelling out the model in a very simple framework, we introduce non-compliance with the minimum wage into our model where workers are homogeneous but there is variation in firm productivity. Non-compliance is an important issue, particularly in many developing countries, including Thailand, the country we look at in the empirical section. Since the empirical evidence presented here and in the broader literature suggests that non-compliance tends to be concentrated in small firms, in our theoretical framework whether the firm finds it profitable to be compliant with minimum wage rules or not is determined by firm size.[6] Our model predicts that while migration increases employment in non-compliant firms, the positive effect of migration on employment is proportionately higher in firms that pay the minimum wage but where the labour supply constraint is binding. For firms that comply with the minimum wage but who are on the labour demand curve, migration leaves employment unchanged. One can thus conclude that the bigger the share of minimum wage employment that is accounted for by firms who are constrained by the labour supply constraint relative to the share in firms who are on the labour demand curve, the more likely it is that minimum wage employment will rise by proportionately more than employment in non-compliant firms. This is the prediction of the model that we test in the empirical section.

There is a large literature that analyses the labour market impact of migration [See Hanson (2010) for a review that concentrates on the literature in relation to the developing world]. Given the size of these flows and the widespread application of minimum wages that are binding, the predictions of the model presented here add a potentially important element to our understanding of how migration affects employment and wages in the host economy if they are shown to have empirical support. Arguably an advantage of the approach we adopt here is that there are many examples where exogenously determined shifts in labour supply can be modelled in countries with minimum wages, whereas a fundamental difficulty in empirically testing the prediction that employment may increase in response to a minimum wage is that exogenously determined changes in the minimum wage are difficult to observe. For example the influential study of Card and Krueger (1995) spends a good deal of time convincing the reader that the natural experiment they examined, i.e., where the minimum wage increased in New Jersey but not in neighbouring Eastern Pennsylvania, did actually represent an exogenous change in the minimum wage. The empirical test we conduct in this paper will depend on being able to observe an exogenous change in migration in a labour market with a binding minimum wage. We utilize rich labour market data for Thailand and, following Boustan et al. (2010), use regional weather variation to construct arguably valid instruments for inter-regional migration in our econometric analysis. Our results support the predictions of the model.

Strobl and Walsh (2011) show that using a standard competitive

model of the labour market, where firms choose a combination of the number of workers and hours in labour markets that are competitive with fixed hiring costs, theory predicts that the change in the number of workers and total hours in response to an increase in the minimum wage is ambiguous The implication is that even if we do observe small or positive employment effects from a minimum wage, this can sometimes occur in a competitive labour market. Testing the empirical prediction of our model that employment at the minimum wage and perhaps the share of minimum wage employment may increase in response to an increase in migration/labour supply can thus be viewed as an alternative test of the monopsony model.

The remainder of the paper is organized as follows. In the subsequent section we introduce our theoretical model. Section II. describes our data set and provides some summary statistics. The econometric framework and its results are given in Section III. Finally, concluding remarks are provided in the last section.

2. A simple monopsony model

2.1. Full compliance with the minimum wage and homogeneous workers

As a starting point for our theoretical analysis we outline a standard textbook monopsony model illustrating the impact of minimum wages on employment.

Our objective in the model developed below is not to develop a complete general equilibrium model of the labour market. Rather we provide a very simple partial equilibrium framework to illustrate a how the empirical hypothesis could be true. In the empirical section of the paper below, we look to the data to see if the predictions have empirical validity.

Each firm is at the end of a unit interval. There is a mass μ of workers uniformly distributed along the interval, where each worker type has a zero reservation wage. The production function is: $y = F(l)$ where l is the number of workers. We assume that $F_l(l) > 0$ and $F_{ll}(l) < 0$. The transport costs associated with travelling a distance x to go to work is tx for all workers. Since workers have a reservation wage of zero a worker who is within distance x^0 of the firm will be willing to work for firm i as long as the wage exceeds transport costs:

$$x^0 = \frac{w}{t} \tag{1}$$

As a result the labour supply curve facing a firm is:

$$l = \frac{\mu}{t} w \tag{2}$$

We assume that firms cannot discriminate across workers. That is, all workers at a firm must be paid the same wage. We also note that we have simplified the model by assuming that firms are far enough apart that the labour supply curve facing an individual firm does not depend on wage offers by other firms as in Bhaskar and To (1999) for example. In equilibrium firms will fall into one of the following categories: (a) pay workers more than the minimum wage, (b) pay workers the minimum wage but the firm is constrained by the labour supply constraint, (c) pay workers the minimum wage but the firm is not constrained by the labour supply constraint. We note that if a firm chooses an amount of labour such that: $l < \mu \frac{\bar{w}}{t}$, it can choose to either pay the minimum wage or pay the wage implied by the labour supply curve of that labour type, which is less than the minimum. However, if they pay less than the minimum, then there is a chance that they will be prosecuted for non-compliance and face a penalty. Initially we assume the penalty is large enough and enforcement technology is effective enough to ensure full compliance. Later we will deal with non-compliance in a model with heterogeneity over firm productivity. Given these assumptions the profit function in the absence of a minimum wage can be written as:

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[4] Arguably the increased mobility of workers and firms suggest that more traditional monopsony models where large employers dominate local labour markets by virtue of their size may be less important than in earlier times as suggested by Brown et al. (1982) for example.

[5] The April 2010 edition of the Journal of Labor Economics was a special issue focussing on Monopsony in the Labor market. Ashenfelter et al. (2010) summarises the papers in this volume. Many of the studies in the volume provide evidence of monopsony power for particular groups of workers, labour markets.

[6] We show below that this stylised fact holds for the data from Thailand used in the empirical section of this paper, while the evidence presented in Leckcivilize (2014) suggests that weak compliance with the minimum wage may explain the failure of the minimum wage to lower inequality. Also see Bhorat (2014) for a discussion of factors that are correlated with minimum wage compliance across countries or Strobl and Walsh (2003) for a discussion om minimum wages and non-compliance.