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On the distributional effects of minimum wages. A note

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On the distributional effects of minimum wages. A note

by

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Abstract

In this note, we recall that unions traditionally pursue a policy of pushing higher average wages and, at the same time, for a compression of the structure of wages and salaries, which is some sort of equity. Given the precipitous fall of union density in many, if not all, OECD countries, the actual good climate for minimum wage policy comes at no surprise. Despite the fact that unions do dislike the intervention of labor market policy to the detriment of tariff autonomy, we can show that minimum wages are capable of serving both of the above-mentioned goals of unions and also help increase the overall wage quota in the economy. Hence, It can be concluded that the unions have a double dividend when inviting policy makers to pursue a policy of minimum wages: both the average wage rate can be increased and the dispersion of wages be lowered, *ceteris paribus*.

On the distributional effects of minimum wages. A note

1. Introduction

Unions traditionally pursue a policy of pushing higher average wages and, at the same time, for a compression of the structure of wages and salaries, which is some sort of equity. Given the precipitous fall of union density in many, if not all, OECD countries, the actual good climate for minimum wage policy comes at no surprise. Despite the fact that unions do dislike the intervention of labor market policy to the detriment of tariff autonomy, it can be shown easily that minimum wages are capable of serving both of the above-mentioned goals of unions and also help increase the overall wage quota in the economy. The latter, as it seems, continues to be a core variable when it comes to the discussion of the eternal conflict between labor and capital. This short paper is organized as follows: In the subsequent section, we recall briefly the other contributions on the subject. Thereafter, we present some simple algebra on the wage quota and possible strategies adopted by unions to raise the latter. Then, we present an analytical and graphical analysis of the impact of minimum wages on the density function of wages and salaries. A short conclusion at the end culminates the exposition.

2. What does the recent literature say?

The majority of contributions on this subject have analyzed empirically the impact of minimum wages on some measures of overall inequality of the economy or society in concern. Such is the case in the contributions of Escobar Toledo (2014) on Mexico; Groisman (2014) on Argentina; Butcher, Dickens, and Manning (2012) on UK; Bosch Mossi and Manacorda (2010) on Mexico; and Chun and Khor (2010) on Indonesia. Besides these, the more theoretical papers such as those of Belser and Rani (2015), Manning (2011) and Adam and Moutos (2006) either relate the issue to employment problems and possibilities or set up an institutional and sociological framework. In some cases, they also present the subject in a historical perspective. All these studies are thoughtful and have their own merits but leave aside the important aspect of regarding explicitly the distribution of wages and salaries before and after the introduction of minimum wages. This is what we address in the following section.

3. Some simple algebra

$$\text{(1)} \quad W = w_{ar} \cdot L$$

Total wage sum W is the product of the average wage rate, w_{ar}, and the number of employed, L. In turn, employment will be low (high) if the average wage rate w_{ar} is high (the dispersion of wages, measured by the standard deviation of wages, σ):

$$\text{(2)} \quad L = L(w_{ar}, \sigma) \text{ with } \frac{\partial L}{\partial w_{ar}} < 0; \frac{\partial L}{\partial \sigma} > 0$$

While the negative relationship between employment and wages is standard as long as the demand for labor is the short side of the labor market. The impact of a high standard deviation indicates a wage structure that resembles, as good as possible, the distribution of talents and capabilities and hence helps boost employment.

$$\text{(3)} \quad Y = \beta \cdot L(w_{ar}, \sigma) \text{ with } \beta = \beta(w_{ar}, \sigma) \text{ and } \frac{\partial \beta}{\partial w_{ar}} > 0; \frac{\partial \beta}{\partial \sigma} > 0$$

Total output, Y, is the product of employment, L, and labor productivity, β. The latter, due to the effect of efficiency wages, is a positive function of the average wage rate and increases further with the standard deviation of wages and salaries. This effect represents the virtue of an optimal degree of labor division.

The unions interested in the wage quota (which, by the way, is equal to the real unit labor costs, RULC) have to consider the following equation:

$$\text{(4)} \quad RULC = \tilde{R} = \frac{W}{p \cdot Y} = \frac{w_{ar}}{\beta(w_{ar}, \sigma) \cdot p}$$

The determinants of changes in RULC can be determined by the total derivative:

$$\text{(5)} \quad dRULC = d\tilde{R} = dw_{ar} \left[1 - \frac{\partial \beta}{\partial w_{ar}} \right] - d\sigma \frac{\partial \beta}{\partial \sigma} - dp$$

The growth rate of RULC, hence, reads as:

$$\text{(6)} \quad \frac{dRULC}{RULC} = \frac{d\tilde{R}}{\tilde{R}} = \frac{dw_{ar} \left[1 - \dfrac{\partial \beta}{\partial w_{ar}} \right] - d\sigma \dfrac{\partial \beta}{\partial \sigma} - dp}{\left[w_{ar} : (\beta \cdot p) \right]}$$

The unions striving for a positive growth rate of the wage quota/RULC should aim at raising the average wage rate ($dw_{ar} > 0$) and at reducing the dispersion of wages ($d\sigma < 0$). The development of the inflation rate seems to be out of reach for unions.

4. The distribution effect of minimum wages

Notice that in the most casual case of a log-normal distribution of wages, a higher dispersion of wages will elevate the average wage rate, *ceteris paribus*:

$$(7) \quad dw_{ar} = (d\mu + \sigma \cdot d\sigma) \cdot e^{(\mu + 1/2\sigma^2)}$$

(see Beichelt and Montgomery 2003, pp. 46-48)

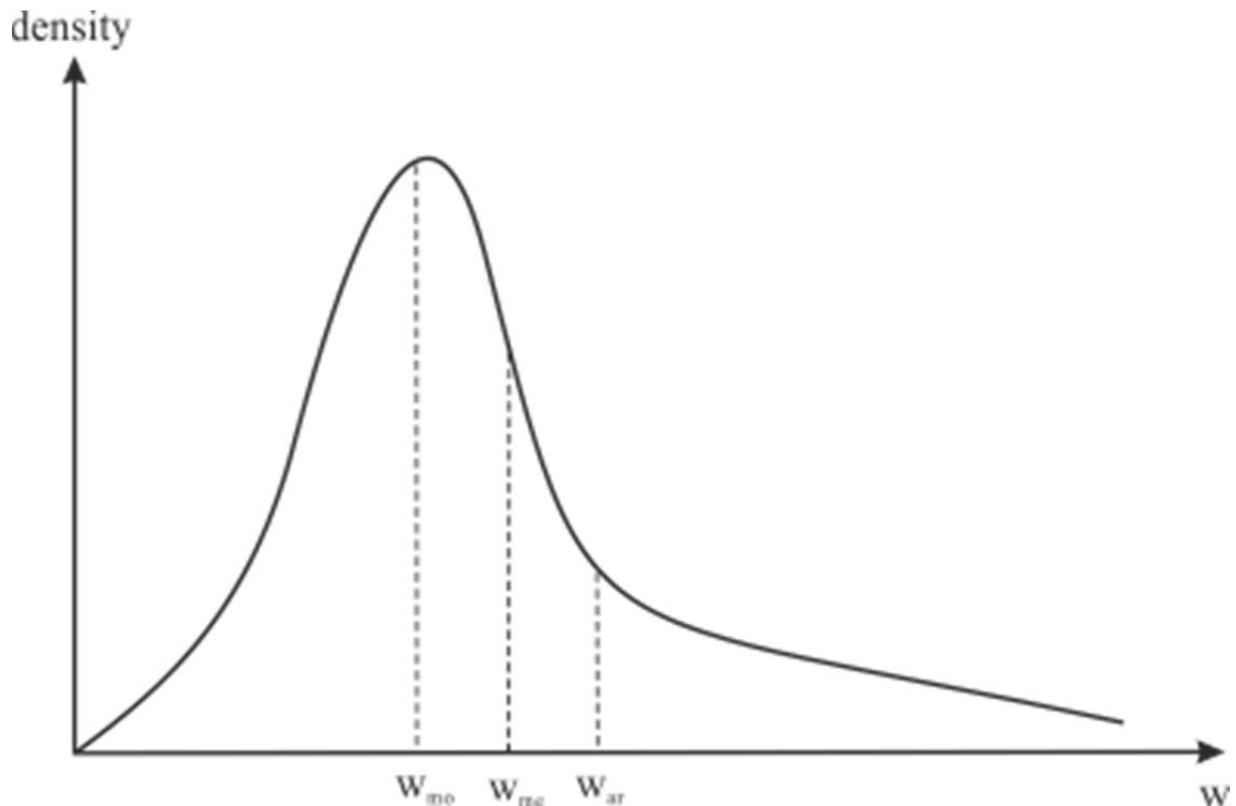**Figure 1** shows such a log-normal distribution of wages.

Figure 1: The stylized distribution pattern of wages. Source: Authors.

In order to determine the effect of introducing minimum wages, given such a distribution pattern, we used the statutory minimum wage rate of 8.50 € per hour, introduced in Germany on January 1, 2015, as an example. Two scenarios may emerge: the first one (**Figure 2**) distributes evenly the "lost density" sort over the rest of the density function. The second one (**Figure 3**) concentrates on the compensating density to the area on the right side of the minimum wage. This implies that the employees earning more than the minimum wage want to regain the distance to the lower wage group they already had before the minimum wage rate was introduced.

It is important to realize that, in both scenarios, the average wage rate increases ($dw_{ar} > 0$) and the standard deviation decreases $d\sigma < 0$.
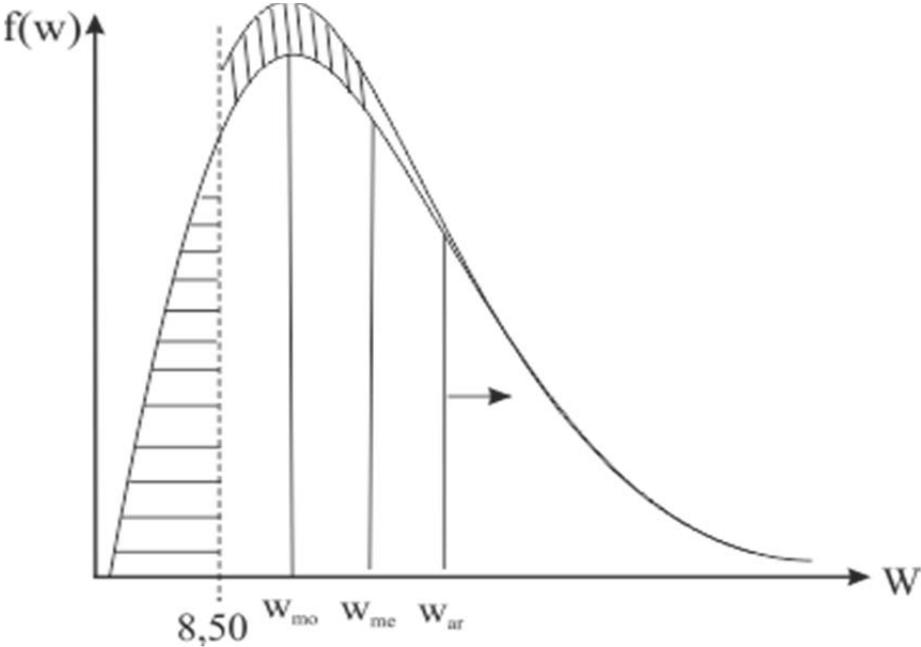

Figure 2: The subsidiary effect of a minimum wage rate, Case a. *Source*: authors.
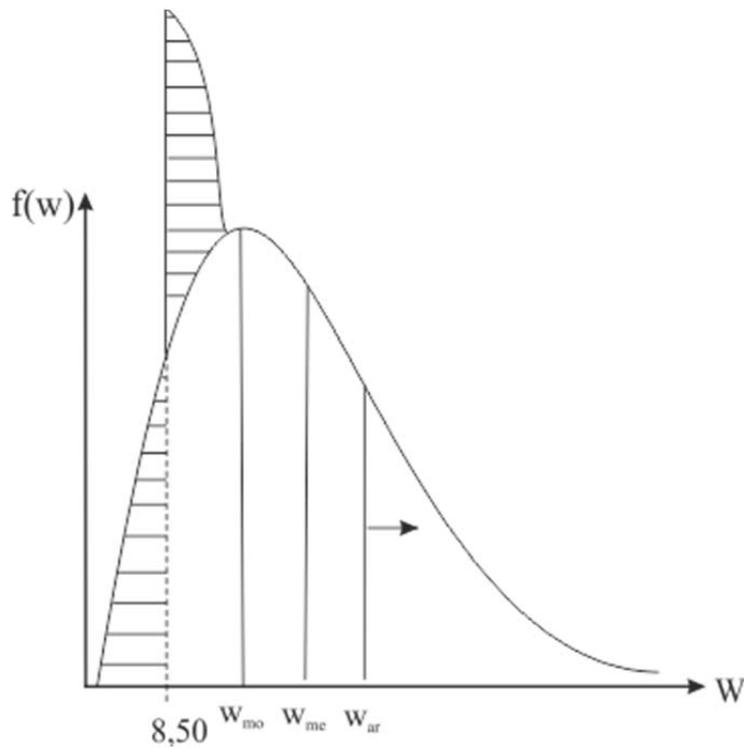
Figure 3: The subsidiary effect of a minimum wage rate. Case b. *Source*: authors.

5. Conclusion

It can be concluded that the unions have a double dividend when inviting policy makers to pursue a policy of minimum wages: both the average wage rate can be increased and the dispersion of wages be lowered, *ceteris paribus*.

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