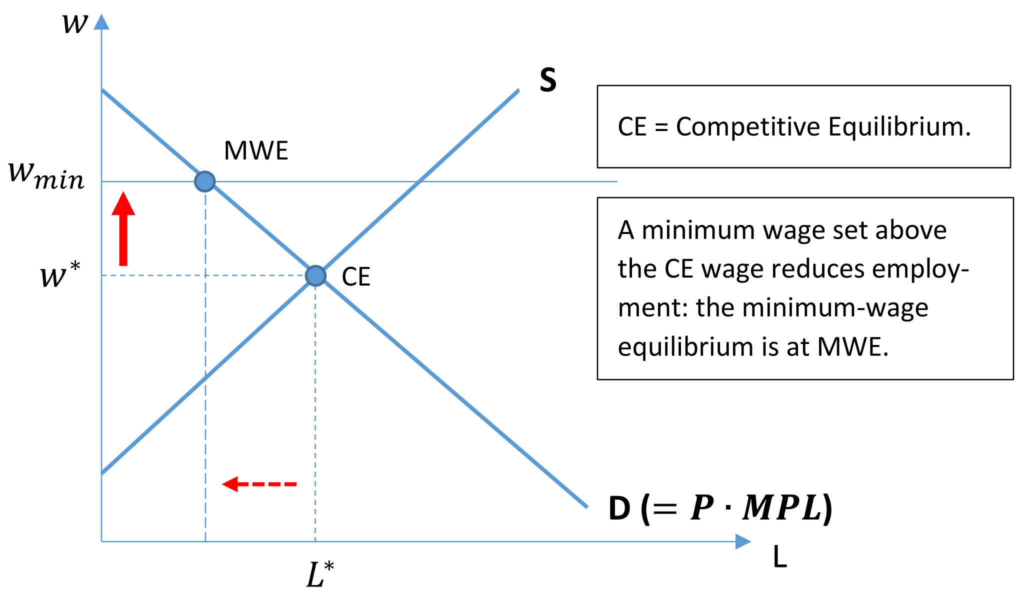
Handout 17 South Africa's labor market: the promise and peril of high minimum wages

Prof O'Connell / ECON 082 Political Economy of Africa / Spring 2018

1. **A minimum wage in a perfectly competitive labor market**

Figure 1 ***A minimum wage in a perfectly competitive labor market.*** *Producers maximize profits by equating the value of the marginal product of the last worker hired with the marginal cost of hiring that worker. If the firm is a price taker in its product market, then the value of the last worker's marginal product is just the market price multiplied by the* ***marginal product of labor*** *($= P \cdot mpl$). So the profit-maximizing level of employment satisfies $P \cdot mpl = mcl$ where mcl = marginal cost of labor. If the firm is also a price-taker in its labor market (i.e., too small to affect the market wage), then the marginal cost of labor is simply the wage. For a firm that is a price-taker in both its product market and its labor market, therefore, the profit-maximizing level of employment satisfies $P \cdot mpl = w$. This means that if we measure the wage on the vertical axis, we can trace out the total market demand curve for labor as the horizontal sum of all individual producers' marginal product curves (call this sum MPL), multiplied by the market price. The equilibrium wage (w^*) and employment level (L^*) are determined by the intersection of the labor demand curve with the supply curve of labor.*



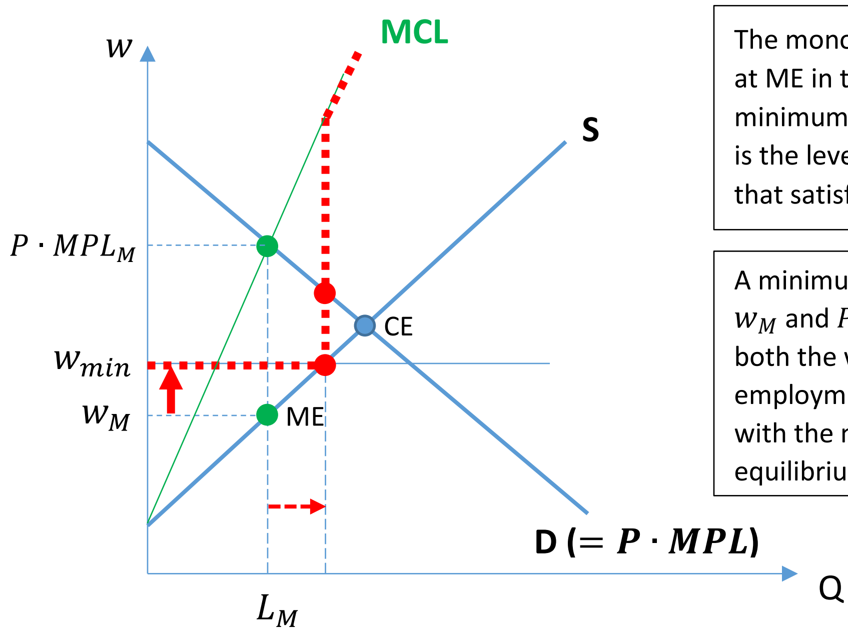
1.1. The figure above shows **the standard analysis of a minimum wage, which reduces employment in a competitive labor market** because it is profitable for firms to shed workers as long as the output given up by letting the worker go (the mpl) is less than what the firm has to pay to retain the worker (w_{min}). This process stops at the point MWE (Minimum Wage Equilibrium).

1.2. Note that the total **impact on employment depends on the elasticity of the market demand curve for labor**. If the schedule is very inelastic (steep) through the point CE, employment does not fall by much. If it is very elastic (flat) through the point CE then employment falls by a lot.

1.3. The impact of the minimum wage on total labor earnings ($= w \cdot L$) also depends on the elasticity of the labor demand schedule. If the schedule is inelastic, total labor earnings rise even though employment falls. If the schedule has an elasticity of 1, then total labor earnings do not change, because employment falls by exactly the same percentage amount that the wage rose. If the schedule is elastic, total labor earnings falls because employment falls by a larger percentage than the percentage increase in the wage.

2. **A minimum wage in an industry that is a monopsony buyer of labor**

Figure 2 ***A minimum wage in an industry that is a price taker in its product market but a monopsony in the labor market.*** *There is now a single big employer in the market. As in the competitive case, if the firm is a price-taker in its product market it maximizes profits by choosing employment to achieve $P \cdot MPL = MCL$. But the marginal cost of the last worker hired is now above the wage, because the firm is the only employer in the market. Hiring an additional worker requires the firm to move up the labor supply schedule and pay a higher wage to all other workers as well. The profit-maximizing amount of labor is therefore determined at the intersection of the solid green MCL curve and the solid blue MPL curve (in the absence of a minimum wage, ignore the red!). Monopsony employment (L_M) is lower than in the competitive equilibrium. The monopsony wage (w_M) is also lower because the firm only pays workers "what is necessary" to hire them, which comes from the supply curve of labor. In the same way that a product-selling monopolist restricts supply in order to elevate the price to "what the market will bear" and increase profits, a monopsonist restricts demand in order to lower the wage and increase profits.*



The monopsony equilibrium is at ME in the absence of a minimum wage, because this is the level of employment that satisfies $P \cdot MPL = MCL$.

A minimum wage between w_M and $P \cdot MPL_M$ increases both the wage and the level of employment by comparison with the monopsony equilibrium.

2.1. The impact of a minimum wage is now strikingly different than in the competitive case, because **a minimum wage that is set at any level between the monopsony wage w_M and the monopsony value of the marginal product of labor ($P \cdot MPL_M$) will increase both the wage and the level of employment by comparison with the monopsony equilibrium.** To demonstrate this we derive the MCL curve in the presence of a minimum wage as the broken red dashed line in the figure. For labor inputs between 0 and the labor supply (S) schedule, the new MCL schedule is flat at w_{min} because the firm pays the minimum wage to all workers despite the fact that they would work for less. As soon as this flat line hits the supply schedule, however, the only way to hire an additional worker is to pay a higher wage – not only to the new worker but also to all other workers. So the marginal cost of an additional worker jumps upwards at that point – in fact (by construction) it is way up on the old MCL schedule. Further increases in employment require the firm to move further up the supply curve, so the MCL schedule continues northeast along the original green MCL line. The intersection of the new MCL curve and the value of the marginal product of labor ($P \cdot MPL$) occurs at the upper red dot, where employment has risen.

3. Questions

In order to simplify the discussion, suppose that each worker can supply one unit of labor along the *x*-axis in these diagrams, so that L measures the number of people employed. In this case, the market labor supply curve simply lines up workers along the x axis, from the one willing to work for the lowest wage to workers willing to work at successively higher wages. (Usually the labor supply curve also incorporates movements from part-time to full-time, and other adjustments in hours of individual workers.) We can now define the labor force (LF) unambiguously, as the number of workers who either ARE working full time (i.e., supplying their 1 unit) or WANT to work full time at the prevailing wage. We can also define the unemployment rate unambiguously, as the percentage of the labor force that is not currently working: i.e., $u = 100 * (L - LF)/LF$.

3.1. Explain that the size of the labor force (as defined here) depends on the wage and is given by the labor supply curve. Does it make economic sense that a higher market wage would increase the size of the labor force?

3.2. Is there any unemployment in the competitive equilibrium?

3.3. In the competitive case, an increase in the minimum wage reduces employment (as long as $w_{min} > w^*$). What happens to the unemployment rate?

3.4. Is there unemployment in the monopsony equilibrium, in the absence of a minimum wage?

3.5. **Show that an increase in the minimum wage may actually <u>increase</u> employment in a monopsonistic labor market.** To do this, start in the monopsony equilibrium without a minimum wage, and then impose successively higher minimum wages starting with $w_{min} = w_M$. Show that initially, higher minimum wages bring a combination of higher wages and higher employment.

3.6. Show that once the minimum wage is sufficiently high, further increases have the same employment-reducing and unemployment-creating effects under monopsony conditions as they do under competitive conditions.