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# Ec317
## Labour Economics
Problem Set 6

1. A firm has an elasticity of demand for labor of -0.4. Suppose the firm experiences an increase in productivity such that at every level of employment its output is 2 percent higher than before. What will happen to the number of workers hired by the firm?

2. Firms' labor demand is given by the equality of

$$w = VMP$$

   For a competitive firm, $VMP = pf'(L)$. Suppose instead that a firm operates as a monopoly in the product market but faces perfect competition in the labor market.

   (a) Derive $VMP$ in this case. Is labor demand going to be higher or lower in this case than for a firm facing perfect competition in the product market? Explain why.

   (b) Suppose a firm's short-run production function is given by

   $$y = f(L) = 4\sqrt{L}$$

   and it's (inverse) product demand curve is

   $$P = 20 - \frac{1}{2}y$$

   The firm can hire labor at a wage rate of £12. How many workers will the firm hire? What level of output does the firm produce? What price will it charge?

   (c) One reason behind deregulation in many markets like air travel, telephones, and utilities was that regulation was not really effective, so that regulated firms would basically act like monopolies, and deregulation would make markets more competitive. Suppose the market in which the firm in (b) sells its product is deregulated and becomes competitive. The product price falls to £15. Also suppose that deregulation does not affect the labor market in which this firms hires workers. How many workers are hired now and how much output does the firm produce?

   (d) Discuss the effect deregulation would have in the long-run when the firm can also adjust its capital stock. Is the labor demand response of the firm going to be larger or smaller than in the short run?