

Chapter 7: Markets for Labor

Appendix



Appendix to Chapter 7 of Essentials of Economics in Context, Second Edition

APPENDIX: A FORMAL MODEL OF A FIRM'S HIRING DECISION

Suppose that a firm produces disposable razors. Holding all other inputs fixed, the relationship between the number of workers (the “quantity of labor”) hired and the number of razors that can be produced in a day is given in the first two columns of Table 7A.1. From these first two columns, the **marginal physical product of labor** (MPP_L) of each additional worker can be computed. For example, one worker can produce 5 razors, but adding an additional worker makes possible the production of 12 razors, so the *marginal* physical product of the second worker is 7 razors. Note that the marginal physical product of labor first rises and then falls.

marginal physical product of labor (MPP_L): the amount that a unit of additional labor contributes to the physical product of a firm

We further assume that the firm sells razors in a competitive market and that the price received per razor is constant at \$3. Hence the marginal revenue product of labor (MRP_L), the monetary value of the additional physical production, is always just $\$3 \times MPP_L$. We assume that the firm buys labor in a perfectly competitive labor market, at a constant wage of \$12. Hence the marginal factor cost of labor (MFC_L) is constant at \$12.

Table 7A.1. Labor Analysis of Hypothetical Razor Firm

Quantity of labor	Quantity of razors	mpp_l	mrp_l	mfc_l
1	5	5	15	12
2	12	7	21	12
3	18	6	18	12
4	23	5	15	12
5	27	4	12	12
6	30	3	9	12
7	32	2	6	12
8	33	1	3	12

The MRP_L and MFC_L curves are graphed in Figure 7A.1. The MRP_L curve has an initial hump, because the MPP_L initially increases and then declines. For all workers up to the fifth worker, hiring the additional worker adds more to revenues than to costs. The profit-maximizing firm should stop hiring workers when $MRP_L = MFC_L$, at an employment level of five workers.

Figure 7A.1. Marginal Revenue Product of Labor and Marginal Factor Cost of Labor

