

4616- Labor Economics- Midterm Exam #1- 2/23/06 SOLUTIONS

A: 88-100 (14% of exams)

B: 70-87 (33% of exams)

C: 50-69 (33% of exams)

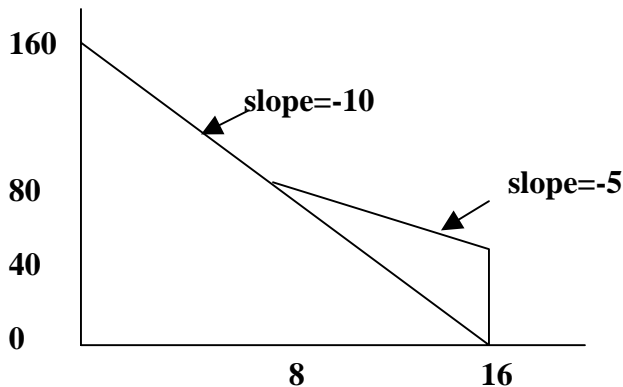
D: 30-49 (19% of exams)

F: <30 (0% of exams)

If you would like me to re-consider some aspect of your grade, submit a written request no later than Tues, March 7

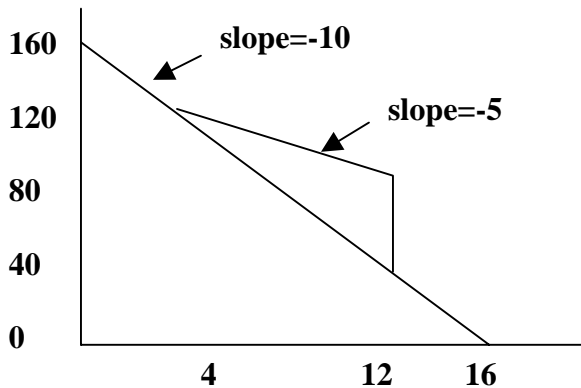
1) Consider a worker with 16 hours of discretionary time a day and a wage of \$10/hr.

a) Draw this worker's budget constraint if she has no unearned income ($V=0$).



b) Now suppose that a government welfare program will supplement her income. If she has no earnings, she will receive a check for \$40. For every dollar she earns, her welfare check is reduced by 50 cents. So, for example, if she works and earns \$10, her welfare check will be \$35. Show *on the graph above in part A* how this welfare program changes her budget constraint. *Label important points and slopes.*

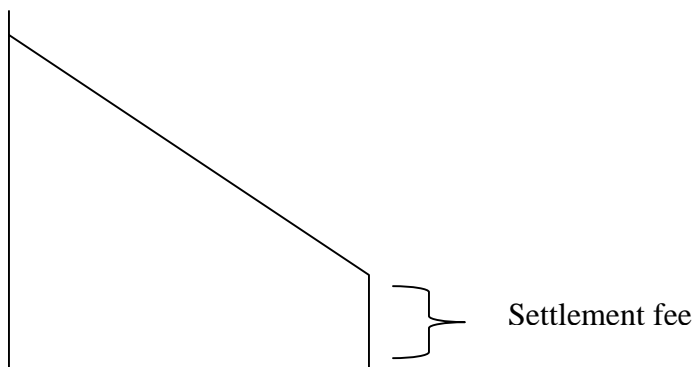
c) Now suppose the welfare program institutes a work requirement. There is no check for anyone working less than 4 hours a day. If she works 4 hours a day she will receive the \$40 welfare check (in addition to her paycheck). For every dollar earned beyond her first 4 hours of work, her welfare check is reduced by 50 cents. Graph the new budget constraint below.



2) Suppose a town settles a lawsuit against the government (perhaps, for example, over some past environmental contamination). The settlement requires that the government pay each current adult resident of the town a monthly settlement fee for the next 20 years.

a) How does this affect the budget constraints of residents of this community?

This will shift up their budget constraint by the amount of the settlement fee. Assuming 0 non-labor income without the settlement:

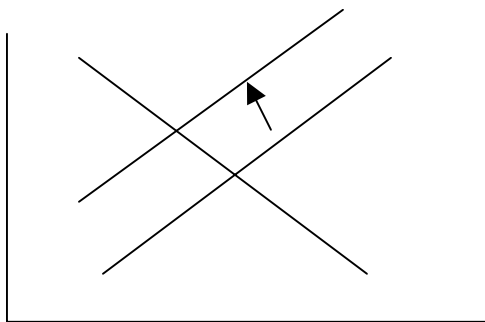


b) How does this affect the reservation wages of residents of this community?

This will increase the reservation wages of the residents. With higher non-labor income, they have higher consumption in the absence of work. This diminishes the benefit to working as they already enjoy a higher level of consumption without working. As a result, it will take a larger incentive (higher wage) to induce them to give up leisure and work.

c) How does this affect the market labor supply curve for this community?

Because fewer people are willing to work at any given wage, the market labor supply curve will shift in.



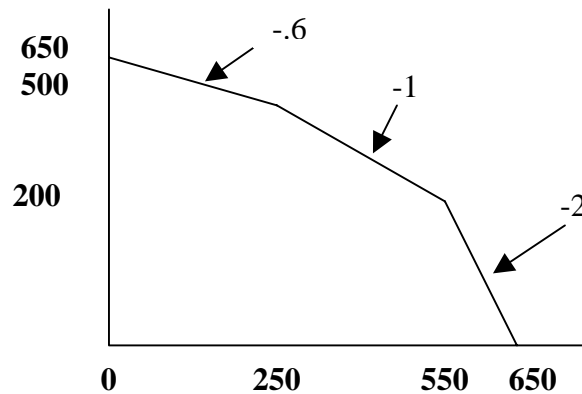
3) Consider a household that consists of three adults:

Person 1 has a market wage of \$20/hour and marginal productivity in the household of \$10/hour.

Person 2 has a market wage of \$15/hour and marginal productivity in the household of \$25/hour.

Person 3 has a market wage of \$30/hour and marginal productivity in the household of \$30/hour.

For simplicity, assume each person has 10 hours of discretionary time a day. Draw the household budget constraint (production possibility frontier) for this household. *Label important points.*

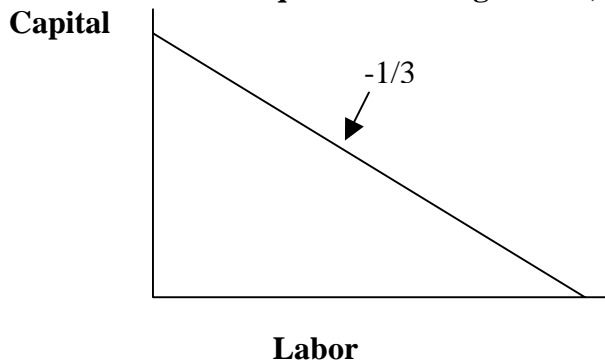


4) Over the past 30 years, offices have become increasingly computerized. Some have argued that the increasing affordability of high-quality computers generated a decline in employment of clerical (office) workers. Evaluate this argument. Should increasingly affordable computers result in fewer clerical jobs? **Be Specific.**

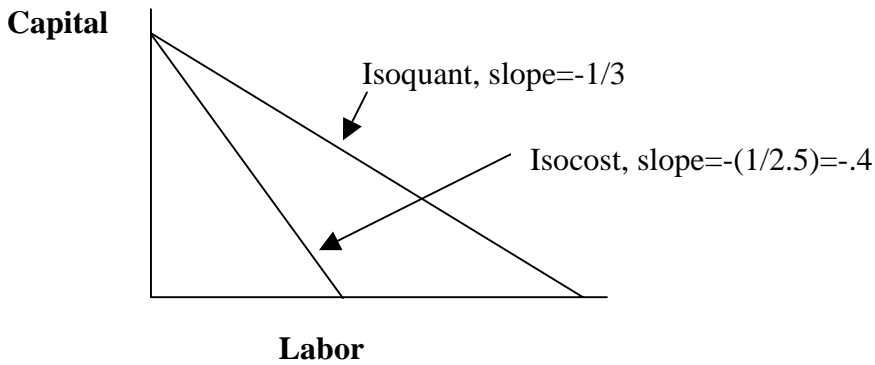
The total effect of the declining price of office computers on office employment is unclear. While the declining price of capital will cause substitution away from clerical labor towards capital, there will also be a scale effect as inexpensive computers lower the costs of production—the resulting “scaling-up” of production will increase both the use of computers and clerical workers.

5) Consider a firm for which labor and capital are perfect substitutes. In particular, assume that one machine can do the work of three workers. Suppose that the price of capital is \$750/week and the market wage is \$250/week. Draw the relevant isoquant-isocost graph, *label the graph carefully*, and discuss the employment decision of the firm.

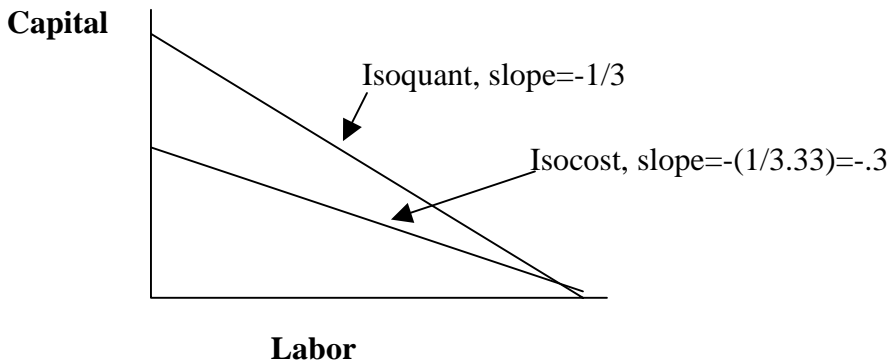
This is almost identical to the example we did in class. In class, we discussed the case in which labor and capital are perfect substitutes, with one machine doing the work of 3 workers. We showed that the isoquant is a straight line (with a slope of 1/3):



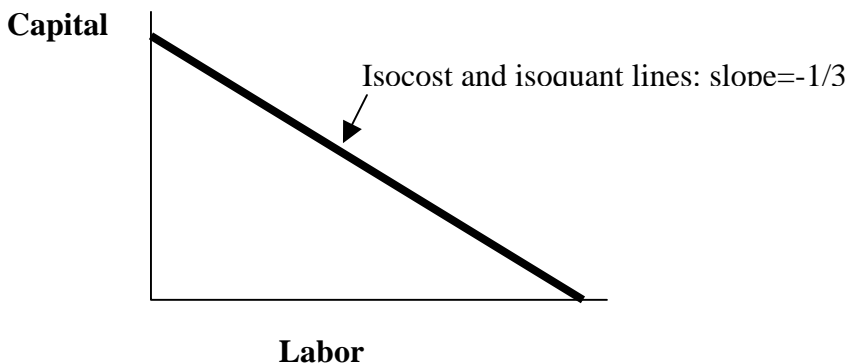
In the example we did in class, we considered the case in which the price of capital is \$750/week and the price of a worker is \$300/wk. For this case, we figured out that the firm would use all capital. This is because capital is 3 times as productive as labor, but costs less than 3 times as much as labor ($750/300=2.5$). We showed this on the graphically by realizing that the isocost line would be steeper than the isoquant line, and therefore the cost-minimizing solution would be to use all capital:



We then asked what happens if the wage goes down so that the wage is less than 1/3 of the price of capital. Suppose for example, $w = \$225/\text{week}$. In this case, capital is 3 times more expensive than labor, but is more than 3 times more expensive ($750/225 = 3.333$). Therefore, the cost-minimizing strategy is clearly going to be to use all labor. We showed this graphically by realizing that the isocost line will now be flatter than the isoquant line:



Now, this exam question asks you to consider the case in which the wage is \$250. Now, capital is 3 times as productive as labor and capital is exactly 3 times as expensive as labor ($750/250$). Therefore, one unit of output generated by capital will cost exactly the same to produce as one unit of output generated by labor. Therefore, the firm will be indifferent as to whether it generates output using capital or by labor and any combination of capital and labor will be cost-minimizing. Graphically, we see that the isocost line and the isoquant line now have the same slope, so that any point on the isoquant line will be cost-minimizing:



6) A union organizing workers employed by a monopsonist will generally be

Circle One: **More Successful** or Less Successful

than a union organizing workers employed in a competitive market. Explain why. Be Specific.

In a competitive labor market, a union cannot bargain for a higher wage without suffering reductions in employment. In a monopsonistic labor market, a negotiated wage increase can actually induce the employer to increase employment as well (as we showed in class for a minimum wage mandate). This provides an incentive for workers to join and support the union, because they can organize to raise their wages without generating reductions in employment.