

Economics 11; Weekly Assignment Sheet for Week 4 -- The Household as Supplier

A. Text and workbook

1. Text: Chapter 5; omit nothing.
2. Study guide: Chapter 5; omit nothing.
 - a. NOTE: The answers given in the back of the Study Guide to the following questions are wrong either in whole or in part (thus it is left to you, at least for now, to find the right answers!): p. 48, #s 3&4; p. 55, #7; p. 56, #9.

B. Reading(s)

1. One of the "stylized facts" of macroeconomics is the inverse relationship that exists within any given period of time between the average level of unemployment and the percentage increase in the wage rate. High unemployment is associated with low wage increases; low unemployment, with high wage increases. What kinds of behavior on the part of firms and/or job seekers could lead to such a relationship?

C. Puzzles

1. A self-sufficient farmer lives on food that she grows herself under conditions of decreasing average returns (and thus, decreasing marginal returns as well). The length of her working day can be determined in terms of a utility-maximizing choice between food and leisure. There is, however, some minimum hourly wage (which she would spend on food) that will JUST induce her to leave the joys of field and fen to join the industrial labor force. If this minimum wage were offered her, would the length of her working day a) remain the same, b) become shorter, or c) become longer than when she was a self-sufficient farmer? Explain why this is in words.
HINT: What does her transformation frontier between units of food and hours of leisure look like in the two cases -- working on the farm, in industry? What is its slope in each case?
2. Katz and Rosen look at "Present value in action" without really examining the use of present value in making decisions about investments. In the investment decision making context, the relevant concept is Net Present Value (NPV), which is simply the present value of the stream of "net" returns; here "net" refers to the algebraic value of cash receipts minus cash outlays (or, expenses). The NPV criterion for capital investment decisions is to undertake any investment that has a positive NPV; equivalently, to undertake any investment for which the present value of receipts exceeds the present value of outlays. The NPV criterion is in fact not the only popular criterion for investment decision making. The other, seemingly no less sensible, criterion is the Internal Rate of Return (IRR) of an investment. The IRR is the value of the discount rate that would make the investment's NPV equal to zero; in other words, it is the investment's effective yield or rate of return. According to the IRR criterion, one should undertake an investment only if its IRR exceeds the opportunity cost of capital (that is, the interest -- or, discount -- rate appropriate for computing the investment's NPV). The two criteria are NOT in conflict except in SOME cases where one is choosing among mutually exclusive investment

opportunities. The NPV criterion is then to choose the project with the highest NPV, while the IRR criterion is to choose the project with the highest IRR. This puzzle illustrates the conflict that may arise between the two criteria and should serve to demonstrate why the NPV criterion is the superior one.

- a. Persuade yourself that the NPV criterion, considered only on its own merits, is indeed a sensible one.
- b. Persuade yourself that the IRR criterion, considered also only on its own merits, is also a seemingly sensible one.
- c. Consider the following investment projects:

Project Net Cash Flow in Year:

	<u>Zero</u>	<u>One</u>	<u>Two</u>
A	-100	130	0
B	-100	0	144
A'	-100	0	169
B'	-100	120	0

1. What is each project's IRR? [Example: To find project B's IRR, solve the equation $100 = 144/(1+IRR)^2$; here, $IRR = 0.2$ or 20 percent.]
2. What is each project's NPV if the interest rate is 5%?
3. Suppose you had only \$100 to invest and that you wanted to maximize the value accumulated at the end of year two by investing that amount. Assume that any cash flow received at the end of year one can only be lent at the going rate of interest; that is, the projects are available for investment only in year zero.
 - ◆ Suppose the going rate of interest is 5%. Compute the value accumulated at the end of year two from investing in each of the projects [Example: The accumulated value from investing in project A is $\$130 * (1.05)$; in B, \$144.]
 - ◇ If the investor's choice is between projects A and B, which should the investor choose?
 - ◇ What if the investor's choice is between projects A' and B'?
4. Answer questions 2 and 3 above for an interest rate of 15%.
5. Contemplating your answers to the foregoing questions, what rationale would you provide to explain why the NPV the superior criterion?