Brief Comments on Quiz #2, Econ 220.   April 13, 1998

Part I: Both questions required indifference maps. I was disappointed on seeing indifference curves with positive slopes, which implies that an individual is not made better off when given more of both goods (e.g., more leisure and more income)!

1.   The stronger answers to question 1 carefully explained how the welfare step may discourage work activity (Rosen, p 180). They then went on to clearly articulate how the negative income tax was supposed to work and showed how the break-even point, the extent to which work is discouraged, and the cost of the program depends upon the two tax parameters: the lump-sum payment and the size of the tax rate (Rosen p 182). Some showed that it was quite possible to get either more or zero work with a negative income tax, again depending on the payout parameters and the shape of the indifference map. Some pointed out that a negative income tax tends to be expensive if it is generous enough to avoid excessive discouragement of work effort.

2.   The graph was familiar from class discussion (Or see Stiglitz, p 351). The efficiency argument is clear when the objective is to maximize the welfare of consumers and it is assumed that consumers are the best judges of their own welfare. The case for "in kind" transfers is sometimes based on a paternalistic argument that people on welfare are not capable of making wise consumer choices. (In kind transfers involving agricultural commodities are supported by the farm sector as a way of disposing of surplus stockpiles that accumulated as a result of farm price supports. Thus the food-stamp program was supported by an alliance of inner city and farm-belt congressman and is administered by the Department of Agriculture.)

Part II: Because these projects yield a constant benefit for evermore, it is particularly easy to calculate the net present value of the benefits. The expression

$$P = b_1 / (1+r) + b_2 / (1+r)^2 + \ldots + b_n/(1+r)^n + \ldots$$

simplifies to $P = b/r$.

        The discounted present value of the benefits for project A is \$2 million/0.05 = \$40 million. Thus the benefit/cost ratiol is \$40/\$20 = 2.0 and the discounted present value of the gain from the project is B-C = \$20 million. Or to put it another way, the annual cost of paying interest on the investment of \$20,000,000 is \$1 million and so the annual net gain is \$1,000,000.

        For Project B we have discounted benefits of \$10/.05 = \$200 million, a benefit cost ratio of \$200/\$150 = 1.5. The gain is B-C = \$50 million.. This is over and above the cost of borrowed funds. So the larger project yields a greater net return.

        To build the smaller project is to prevent the attainment of a higher dollar return on Project B. If 5% accuraely reflects the costs of funds, the larger project should be undertaken. This is one type of case where the use of benefit/cost ratios can be misleading. See Rosen, p 245, for his argument about B-C being better than B/C as a criterion for choosing among competing projects.

Part III: Briefly, in all three cases market failure is cited as a reason for government intervention. #1: It is argued that the government should intervene in the provision of public health services because private markets cannot offer appropriately priced health insurance because of adverse selection. That is to say, consumers who believe they are particularly healthy will not buy insurance, which tilts the odds against those selling health insurance, forcing them to raise their rates, and discouraging still others who are reasonably healthy from buying insurance. Group health policies are designed to get around this. And government health insurance, because it is mandatory, also avoids the problem of adverse selection.
#2: Those who save for retirement face uncertainty about how long they will live: they may die before they have spent their savings or they may live too long, running out of their retirement kitty. In principle, annuities issued by private insurance company can guarantee a fixed payment for life; the problem is again adverse selection. Those who think, perhaps on the basis of family history, that they will not live to a ripe old age will not buy annuities, which tilts the odds against the insurance company unless they push up the premiums substantially. Mandatory social security escapes this problem.
#3.The student loan market is imperfect because there is no property that can be repossessed in the case of student loans, unlike business loans, mortgages, or consumer loans for autos and home appliances. Hence it is argued, without direct government loans or loan guarantees there will be insufficient investment in human capital.
        The grades ranged from 66 to 100 with a mean of 85.