Name: _____ Section: _____

Date assigned: Tuesday, 11/17
Date due: Friday, 11/20 (**Place in slot on my office door by 5 p.m.**)

Instructions:

- This problem set has 4 questions, for a total of 35 points. The number of points for each question is indicated at the start of the question.
- Please solve the questions on separate pieces of paper that are to be turned in with your name written on top, **stapled**.

1: (12 points total; 3 each)

For each of the proposed reforms (i.e. changes) to the current Social Security system listed below, briefly discuss the pros and cons of the reform, paying attention in particular to efficiency implications (through potential behavioral responses to the change) and equity implications (who wins and who loses). Note that all reforms are intended to save the system money, so you do not need to list this as a benefit.

(a) Increase the number of years used to calculate benefits from 35 to 40.
Increasing the number of years used to calculate benefits could lower benefits, because more low-or zero-earning years would be included in a retiree's average wage. To avoid this reduction in benefits, workers might choose to delay retirement so that they had 40 high-earning years included in the calculation. Workers who spent many years in college and graduate school might be most vulnerable, as they would have had fewer full-time working years by the time they reach retirement age. Similarly, workers who had some interruptions in their employment-to raise a family or to retrain for a new career, for example-also have to delay retirement to avoid inclusion of zero-wage or low-wage years.

(b) Reduce benefits for beneficiaries with high asset levels (wealth).
Means-testing by considering asset levels would increase the redistributive nature of Social Security but would induce some perverse behavior. People might be able to in- crease their benefits by hiding assets by setting up trusts or other entities, for example. They might also change the timing of selling some of their assets to retain Social Security benefits, which distorts resource mobility, an efficiency concern. While this plan may appear to benefit the less wealthy at the expense of the wealthy elderly, it seems vulnerable to loopholes and evasive behavior.

(c) Add new state and local government workers to the pool of covered workers (i.e., they pay payroll taxes now and receive benefits when they are old).
Broadening the tax base to include these workers would yield a net increase to the system. Current Social Security participants would, over their lifetimes, pay in more than they would withdraw. Therefore, increasing the number of workers covered would pro- vide a net increase to the cash flow in the system. The new workers would stand to lose from this system relative to a plan in which they had their own retirement accounts (because with Social Security they would pay in more than they receive), but the Social Security system would benefit. This new rule might induce some to exit these jobs, but since most workers are covered by the system, they would have little choice as to where else to work to avoid this tax.

(d) Gradually increase the normal retirement age (NRA) from 65 to 70 (under current laws, the NRA will gradually rise to 67 by 2022; the proposal is to speed up this process so that the NRA will be 70 by 2022).
Gradually increasing the normal retirement age will save the fund money by reducing the number of years during which retirees can collect. People who need to retire earlier for health or physical limitation reasons will be adversely affected. If they are able to, they may attempt to find less physically demanding work or they may increase private savings in order to be able to afford to retire earlier.

2: (5 points)

Lalaland is an extremely stable country with 200,000 residents, half of whom are young workers and half of whom are retirees. At the end of each "year," the 100,000 retirees die, the 100,000 young workers retire, and 100,000 new young workers are born. Workers earn a total of $\$5,000$ for the year. Lalaland operates a "pay as you go" social security system, where each current worker is taxed $\$2,500$ and the revenue collected is used to pay a $\$2,500$ pension to each retiree. The neighboring country, Gogovia, is larger and more dynamic. Gogovia has an active stock market that Lalalandians can invest in and earn a 10% rate of return. It also has an active banking sector, which will gladly lend the Lalalandian government money, charging them 10% interest per year. Lalaland is considering moving to a system of personal accounts, where each Lalalander would take her $\$2,500$ and invest it in Gogovian markets (and earn a much higher rate of return!). The government would borrow \$250 million ($\$2,500 \times 100{,}000$) from Gogovian bankers to pay for current retirees. It would then tax retirees each year just enough to pay the interest on this debt. Would this new system be better or worse for Lalaland?

The new system would be neither better nor worse for Lalaland. In fact, it is an entirely equivalent system. The interest due on the debt would be 10% x (\$250m) = \$25, so taxes would have to be \$25m/100,000 = \$250 per retiree. This is exactly enough to offset the higher returns Lalalanders would earn in the stock market.

3: (5 points)

Suppose there are two types of people in the country of Dipolia: unskilled people who value only food and skilled, lazy people who value only alcoholic drinks. The government of Dipolia is considering moving from a cash-welfare system to a food stamps system. The new system will provide the same benefit levels, but recipients will get stamps allowing them to buy food instead of cash. Explain how this change will affect the work efforts and utility levels of the two types of people in Dipolia. How would your answer differ if unskilled people valued both food and alcoholic drinks?

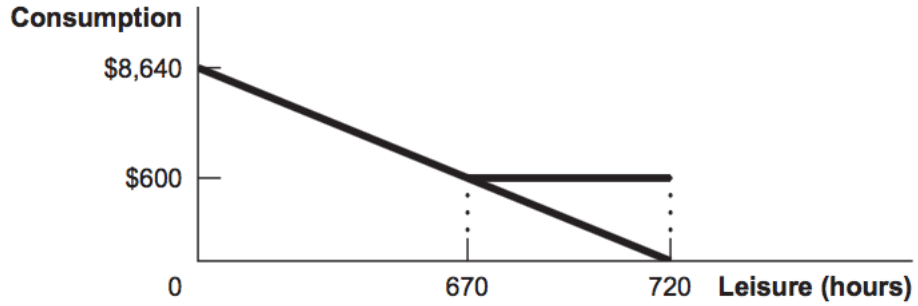
Under a cash-welfare system, skilled lazy people would face the trade-off between work- ing and earning money to buy drinks and not working, enjoying more leisure, and receiving welfare to buy drinks. Depending on their productivity and their preferences, these workers may choose the latter. When the policy change is introduced, the trade-off changes: they can either work and earn money to buy drinks or they can not work and receive food. Since they do not like food, they are now more likely to choose to work; the labor supply of skilled workers increases. Those who would have been on welfare before the change will be worse off as a result of the change since they can no longer be on welfare and drink.
Unskilled workers faced the trade-off between working and earning money to buy food or being on cash welfare and using the cash to buy food. Depending on their productivity and preferences, they may or may not choose to be on welfare. When the policy change is introduced, there will be no change in their trade-off. They can either work or receive welfare for food. Their labor supply would not change.
On the other hand, if unskilled workers valued both food and alcohol, they could be made strictly worse

off by the policy change, since they could no longer be able to purchase their optimal mix of goods.

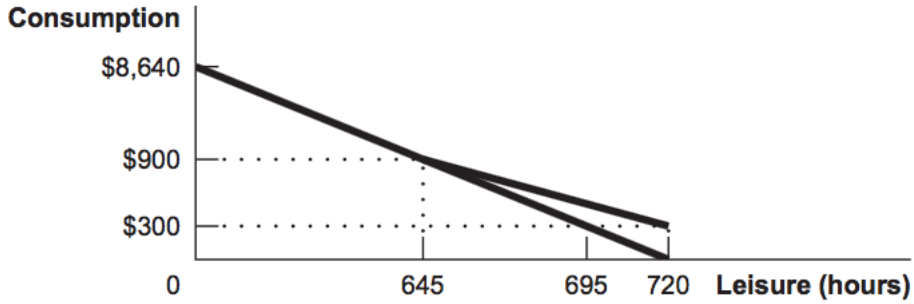
4: (9 points; 3 points each)

An individual can earn \$12 per hour if he or she works. Draw the budget constraints that show the monthly consumption–leisure trade-off under the following three welfare programs. In each graph, assume that a person can work at most 24 hours per day times 30 per month for 12 months.

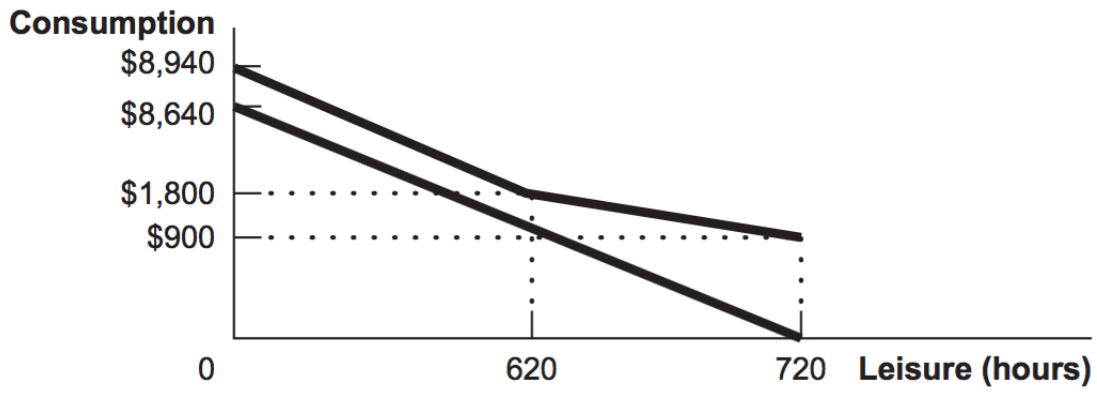
(a) The government guarantees \$600 per month in income and reduces the benefit by \$1 for each \$1 of labor income.
The equivalent of \$600 of income is 50 hours of labor (at the \$12 wage) or 720 - 50 = 670 hours of leisure.



(b) The government guarantees \$300 per month in income and reduces that benefit by \$1 for every \$3 of labor income.
The equivalent of \$300 of income is 25 hours of labor or 695 hours of leisure. The entire \$300 guarantee would be eliminated after the recipient earned \$900 or worked 900/12 = 75 hours, which yields 720 - 75 = 645 hours of leisure.



(c) The government guarantees \$900 per month in income and reduces that benefit by \$1 for every \$2 in labor income, until the benefit reaches \$300 per month. After that point, the government does not reduce the benefit at all. This program yields a wage rate of \$6 per hour up to 100 hours of work per month. The reduction ends after \$600 is deducted, which occurs at 100 hours per month (100 x 6 = \$600). Wages are 100 x \$12 = \$1,200, plus benefits of \$300, for total consumption of \$1,500 and 720 - 100 = 620 hours of leisure. At greater than 100 hours, the new budget line parallels the baseline \$12 per hour line but is \$300 higher. As a result, the new y- intercept is \$8,640 + \$300 = \$8,940.



5: (4 points)

The U.S. federal government definition of poverty is the same in all communities around the country. Is this appropriate? Why or why not?

It is not appropriate to define the poverty line by the same dollar amount in all communities. The cost of living varies substantially across communities, across states, and among rural, suburban, and urban dwellers. One of the biggest contributors to this variance is the price of housing. Because housing (either rental or owned) tends to be such a large component of a family's budget, the disparity in prices means that very different amounts of money are needed to adequately support a family depending on where that family lives.