Chapter 4 Questions

Figures not included. Problems/Short Answer followed by Multiple Choice.

1. Consider the ‘debt-finance’ policy which gives $T$ dollars to those old in $t$ and has subsequent generations of old households service the debt.
   A. In the graph below depict the implications of this policy for transitional and steady state capital accumulation.

   B. In what two ways are generations young in $t$ and later hurt by such a policy (in the context of our model)?

2. Assume (counterfactually) that $r = n + v$. Would unfunded and fully funded social security systems have the same or different effects on national saving (and therefore capital accumulation)? **Why?**

3. Consider the ‘debt-finance’ policy: Suppose that at time $t$ the government announces it will give a tax cut of $T$ to each old person alive in period $t$. Suppose the policy is to be financed by taxing each subsequent old generation $rT$ which services, or pays the interest on, the debt initially issued to cover the government’s shortfall in $t$.
   a. Using the graph below, show the effects of this policy on the economy’s steady state, and on the transition between steady states.

   b. What are the effects for the steady state wage and interest rate?

   c. Policies (like this one) which shift the burden of taxation to households younger and as yet unborn when the policy is instituted ______ capital accumulation since they________ aggregate private consumption in year $t$.
   A. increase, increase
      B. increase, decrease
      C. decrease, decrease
      D. decrease, increase

d. What were the two ways noted by which this policy would affect the welfare of subsequent generations?

4. Consider a **fully funded** social security system in long run equilibrium in the absence of economic growth (i.e., $n = v = 0$) where the young of period $t$ (when the program started) pay social security taxes of $T$.
   A. Taxes when young in $t$ are $T$. What relationship is there between those taxes and the benefits received when old in $t+1$?
B. What is the value of the asset substitution effect?

C. Determine the effect on $d_{k_{t+1}}$.

D. What are the implications for the magnitude and composition of National Savings?

5. T F Fiscal policies having the same effect on the federal budget deficit or surplus necessarily have the same effect on capital accumulation.

6. Consider a fully funded social security system in long run equilibrium in the absence of economic growth (i.e., $n=v=0$) where the young of period $t$ (when the program started) pay social security taxes of $T$.
   A. Taxes when young in $t$ are $T$. What relationship is there between those taxes and the benefits received when old in $t+1$?

   B. What is the asset substitution effect in the context of social security?

7. Consider an unfunded social security system in long run equilibrium in the absence of economic growth (i.e., $n=v=0$) where the old of period $t$ (when the program started) received a transfer of $T$.
   A. Taxes when young in $t$ are $T$. What relationship is there between those taxes and the benefits received when old in $t+1$?

   B. What is the value of the asset substitution effect?

C. Determine the effect on $d_{k_{t+1}}$.

D. What are the implications for the magnitude and composition of National Savings?

E. Consider an alternative policy in which the old of $t$ are given a tax cut of $T$, and subsequent generations of old people service the debt. Compared to unfunded social security, what are the implications for consumption of those young in $t$?

8. The next two questions are based on the following information. Suppose $\beta=.4$ and $r = 1$. Imagine that a young worker (starting the first period of life) learns her taxes will be cut by 100 when she is old (in the second period of life).
   I. What is the effect of this policy on this worker’s generational account?
   A. 100
   B. 50
   C. -100
   D. -50
   E. 40
II. What does our model predict will be the effect on this worker’s savings when young?

A. 20  
B. -20  
C. 30  
D. -30

9. Consider a policy which postpones the timing of taxes within each generation but which has no effects on the generational accounts of any generation. Assuming there are no liquidity constraints, such a policy

A. will increase aggregate consumption and decrease capital accumulation.  
B. will decrease aggregate consumption and decrease capital accumulation.  
C. will increase aggregate consumption and increase National Savings.  
D. will affect neither aggregate consumption nor capital accumulation.

10. Consider a policy which postpones the timing of taxes within each generation but which has no effects on the generational accounts of any generation. Assuming young households would be liquidity constrained in the absence of the policy, such a policy

A. will increase aggregate consumption and decrease capital accumulation.  
B. will decrease aggregate consumption and decrease capital accumulation.  
C. will increase aggregate consumption and increase National Savings.  
D. will affect neither aggregate consumption nor capital accumulation.

11. T F The existing unfunded liabilities greatly limit the extent to which privatizing social security can raise the return from participation to young workers.

12. Consider unfunded social security in the presence of economic growth. Steady state or long run SSW is unambiguously positive if

A. B = T 
B. n + v > r 
C. r > n + v 
D. T > B

14. SSW was on average positive for those retiring in the 1930s, since they had few if any years during which they made contributions. However, SSW remained positive on average for those retiring during the next 50 years. This was possible because______ over that interval.

A. r was lower than usual  
B. r was higher than usual  
C. aggregate social security payroll taxes were growing above the steady state rate  
D. aggregate social security payroll taxes were growing below the steady state rate

15. A fully funded social security program would______ private savings and _________ National Savings.

A. increase, not affect 
B. increase, decrease
C. increase, increase  
D. decrease, decrease  
E. decrease, not affect  

16. Policies which redistribute from the young to the old ____ aggregate consumption and_______ capital accumulation. 
   A. increase, increase  
   B. increase, decrease  
   C. decrease, decrease  
   D. decrease, increase  

17. The social security Trust Fund _______dollars in 1999. The amount of the unfunded liabilities is estimated to _______.  
   A. owed about $700 billion, be about $2.5 trillion  
   B. had about $700 billion, go to zero in the 2030s  
   C. owed about $700 billion, go to zero in the 2030s  
   D. had about $700 billion, be about $2.5 trillion  

18. Unfunded social security policy was shown to be equivalent in terms of the effects on capital accumulation to  
   A. giving the old of period t each T , financed by issuing debt, and having the old of each subsequent generation pay interest on the debt.  
   B. taxing the old of period t each T , using the proceeds to retire debt, and giving the old of each subsequent generation a tax cut equal to the interest savings on the retired debt.  
   C. taxing the old of period t each T , financed by issuing debt, and giving the old of each subsequent generation a tax cut equal to the interest savings on the retired debt.  
   D. giving the old of period t each T , financed by issuing debt, and having the old of each subsequent generation pay back T.  

19. Assume the population grows at rate n, wages at rate v, and that the rate of interest is r. The steady state rate of return to the average participant alive in the steady state is _________ for unfunded social security and _________ for fully funded social security.  
   a. r, n+v+r  
   b. n+v, r  
   c. n+v, r-n-v  
   d. r, n+v  
   e. r-n-v, n-v  

20. T F Fiscal policies having the same effect on the federal budget deficit or surplus necessarily have the same effect on capital accumulation.  

21. Suppose the economy is in steady state (also that n=v=0). Suppose this long run equilibrium is disturbed by war-bombing at the start of period t which largely destroys the productive capital of the economy (much more so than the population) available for period t. In the periods following the bombing, this economy will experience _______growth than
had the bombing not occurred. In those same periods, the wage will be _______ than if the bombing had not occurred.
   A. faster, higher
   B. faster, lower
   C. slower, higher
   D. slower, lower

The next four questions are based on the introduction of an unfunded social security system: Suppose the government announces at the start of period t that it will tax the young of each period by T, beginning in period t. Also, beginning in t+1, the old of each period will receive social security benefits of B=T. As necessary, the government will increase or decrease its outstanding debt to finance its operations.

22. The effect of this policy on the generational account of someone young in t is
   A. $\frac{T}{(1+r_{t+1})} - T$
   B. $\frac{r_{t+1}T}{(1+r_{t+1})}$
   C. $-(1-?)T + ?(1+r_{t+1})$
   D. 0.

23. What is the intuitive explanation of the source of the effect on the generational account?

24. The effect on government savings per young person in period t is
   A. 0.
   B. T.
   C. $T(1+r_{t+1})$.
   D. -T.

25. This unfunded social security policy was shown to be equivalent in terms of the effects on consumption and capital accumulation to
   A. giving the old of period t each T, financed by issuing debt, and having the old of each subsequent generation pay interest on the debt.
   B. taxing the old of period t each T, using the proceeds to retire debt, and giving the old of each subsequent generation a tax cut equal to the interest savings on the retired debt.
   C. taxing the old of period t each T, financed by issuing debt, and giving the old of each subsequent generation a tax cut equal to the interest savings on the retired debt.
   D. giving the old of period t each T, financed by issuing debt, and having the old of each subsequent generation pay back T.

26. Assume the population grows at rate n, and wages and labor productivity at rate v, while the rate of interest is r. The steady state rate of return to unfunded social security is
   a. r - n
   b. v
   c. n+v
   d. r
The next two questions are based on the following information. Suppose \( \beta = 0.4 \) and \( r = 1 \). Imagine that a young worker (starting the first period of life) learns her taxes will be cut by 200 when she is old (in the second period of life). There is no change in her net taxes to be paid in the first period of life.

27. What is the effect of this policy on this worker’s generational account?
   A. -100
   B. 100
   C. -200
   D. 200
   E. 80

28. What does our model predict will be the effect on this worker’s savings when young?
   A. -40
   B. 40
   C. 60
   D. -60

The next four questions are based on the following: Suppose the government announces at the start of period \( t \) that it will increase taxes on those young in \( t \) by \( x \) in period \( t \). However, in \( t+1 \), the old of \( t+1 \) will receive a tax cut of \( x(1+r_{t+1}) \). As necessary, the government will increase or decrease its outstanding debt to finance its operations. The old of \( t \) are not affected in any way by this policy.

29. The effect on government debt per worker is, \( db_{t+1} = \)
   A. -\( x \)
   B. \( x \)
   C. -(1-\( \beta \))\( x \) + \( \beta x(1+r_{t+1}) \)
   D. 0

30. The effect of this policy on the generational account of someone young in \( t \) is
   A. -(1-\( \beta \))\( x \) + \( \beta x/(1+r_{t+1}) \) - \( x \)
   B. -(1-\( \beta \))\( x \) - \( \beta x \)
   C. \( x + x/(1+r_{t+1}) \)
   D. 0

31. The effect on aggregate private consumption in period \( t \) is
   A. 0
   B. \( x \)
   C. \( \beta x \)
   D. -\( \beta x \)

32. The effect on private savings in \( t \) is _____ and the effect on national savings in \( t \) is
A. positive, negative.
B. negative, positive.
C. positive, positive.
D. negative, negative.
E. negative, zero.

33. Assume the population grows at rate n, and wages and labor productivity at rate v, while the rate of interest is r. The steady state rate of return to unfunded social security is
a. r - n
b. v
c. n+v
d. r
e. r-n-v

34. Under current legislation, the burden of social security for cohorts born after WWII was expressed as a net lifetime tax rate (i.e., taxes minus benefits, each in present value, as a percent of life wealth). This rate was calculated to be about_____ percent.
   A. 5
   B. 15
   C. -10
   D. 0