Problem set 1 84/100

1. True/False
   1. False. Imported goods are not calculated in GDP.
   2. True. Price vector in two years are multiple of each other, and thus the ratio can be canceled.
   3. True. Capital increase -> MPN increase -> real wage increase
   4. False. The shorter duration, the less increase in wealth, the les the income effect.
   5. True. (-8) False.
2. Macro data
   1. See table

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| t | Nominal GDP | Real GDP, base 2000 | Real GDP, base 2001 | Real GDP, base 2002 |
| 2000 | 5 | 5 | 10 | 8 |
| 2001 | 12 | 6 | 12 | 10 |
| 2002 | 9 | 5 | 10 | 9 |

* 1. See table above
  2. GDP deflator = 50 in year 2000, 100 in year 2001, 90 in year 2002, using 2001 as base year. Inflation = 100% from 2000 to 2001, -10% from 2001 to 2002.
  3. . Using 2001 as base, Inflation = 100% from 2000 to 2001, -22.2% from 2001 to 2002. Comparison自己看。More deflation between 2001 and 2002 because more weight in B.
  4. What is chain weighted? (-8)

1. Production functions

1.

* 1. Yes
  2. No
  3. Yes

2. No affect marginal product, but affect labor productivity.

Problem set 2 90/100

1. True/False
   1. False. The relative price of current consumption (to future consumption) is 1+r, so when real interest rate increases, current consumption is relatively more expensive.
   2. True. -3
   3. False. Liquidity constraint does not prevent people from saving. And in face of unexpected increase in transitory income, people usually save part of that income. -7 True. If agents are liquidity constrained and consume less than smooth consumption, then they may consume all the extra income.
2. Labor market
   1. . It decreases as N increases. For given capital, increasing labor has diminishing marginal product.
   2. . The chart is , for on y-axis, on axis.
   3. Demand becomes , so Demand becomes lower than in the absence of tax. The solution uses as a fraction, but in the question it says pay . So mark correct although not the same as solution.
   4. Max
   5. MU(C)/MU(L)=price(C)/price(L)=P/w, so Plug into , we can solve
   6. The same. Because n is independent of w.
   7. Labor supply decreases.
   8. ,
   9. , solves and
   10. A. increase in T, will lead to decrease in w and increase in n. supply shift up. Intuition is, if every one has more time, then every one will work for longer, but wage goes down.

B. increase in K, will lead to increase in w and n not change. Demand shifts up, and supply is a vertical line. Intuition is, if capital increases, then MPN increase and thus wage increase, but hours wont change in this case.

C. increase in , will lead to decrease in and n not change. Demands shifts down, and supply is vertical line. Intuition is, if tax increase, then given the same MPN, firm is willing to pay less wage to labor, but hours wont change in this case.

1. Consumption
   1. Plot according to (a)
   2. Interest rate increases, then the intercept in the will increase.
   3. Solve
   4. . A borrows from B in the current period.

Problem set 3

1. True/False
   1. False. The steady state is determined by saving rate, production function, etc. Not by the initial state of .
   2. True. Real income decrease -> money demand decrease -> interest rate decrease
   3. True/Uncertain. It has no effect on Y and r, but has effect on individuals.
   4. True. Government does not produce.
2. Solow model
   1. Assume no G and NX, then
   2. , so . =.
   3. Sub questions
   4. Plot omitted
3. IS-LM
   1. , . implies , or . When T increase, Y will decrease, and both and will decrease. S curve shifts left, and S/I decrease, r increase.
   2. gives . When M increases, money supply increases and interest rate decreases.
   3. . And solve it.
   4. Tax increase ->