Econ 362 Hanes Fall 2024. Second midterm. There are 31 multiple choice questions for 1 pt. each, and four written questions. Total points on exam: 49. Look over the whole test before you begin. Good luck!

1) Here is some information about an economy. Using the information, calculate the average annual rate of growth in "total factor productivity" from the year 1995 to 1999.
Share of capital in national income: 1/3
From 1995 to 1999, average annual rate of growth in: Real GDP: 9%
Labor input: 9%
Capital: 3%
a) 1% b) 2% c) 3% d) 4% e) None of the above

2) Economists have recently begun to consider the possibility that product markets have become less competitive in recent years. What economic development, apparent in statistics, has caused them to consider this possibility?
a) The rate of growth in total factor productivity ("A" in the aggregate production function) has slowed down.
b) Labor's share of national income has fallen.
c) The ratio of capital to labor input has risen.
d) The inflation rate in the CPI has been greater than the inflation rate in the PCE price index.
e) None of the above.

3) This is about the "marginal propensity to consume." Suppose that disposable income increases from 10 to 14, while consumption spending increases from 7 to 9. What is the "marginal propensity to consume" in the economy?
a) 2 b) 3 c) 3/4 d) 1/2 e) None of the above

4) What is the natural rate of output (or "potential output") $\overline{Y}$ if the aggregate production function is $Y = K^{1/2}L^{1/2}$, the capital stock $\overline{K}$ is equal to 4, the natural rate of unemployment $\overline{u}$ is 10 percent, and the labor force $\overline{L}$ is equal to 10?
a) 16 b) 12 c) 8 d) 6 e) None of the above

5) What happens to the real exchange rate ϵ (as defined in class) if the nominal exchange rate e does not change, the domestic price level P does not change, and the foreign price level P^* increases?
a) ϵ increases b) ϵ decreases c) ϵ does not change d) I need more information to say e) None of the above

6) What is the real interest rate if the following things are true?
- a firm that borrows \$100 this year and pays the loan back in full next year will be paying back \$110 next year
- people believe that in the future, from the beginning to the end of every year, something that cost \$1 at the beginning of the year will cost \$1.05?
a) 20 percent b) 10 percent c) 5 percent d) 1 percent e) None of the above

7) Suppose $I = 10 - 2r$. The nominal interest rate is 4 percent, and expected future inflation is 2 percent. What is investment spending I, assuming that r in the equation is measure in percent?
a) 2 b) 4 c) 6 d) 8 e) None of the above

The following information is for 8) - 10). Consider a closed economy in which:

$Y = C + I + G$ $\quad C = 3 + 0.5(Y - T)$

$I = 4 - 2r$ $\quad G = 10$ $\quad T = 9$

8) What is the "marginal propensity to consume" in this economy?

a) 3 b) 0.5 c) 4 d) 2 e) None of the above

9) If Y increases from 10 units to 14 units, what happens to C?

a) Increase by 1 unit b) Increase by 2 units c) Increase by 3 units d) Increase by 4 units e) None of the above

10) In this economy, which of the following events would increase the natural rate of interest $\overline{r}$, holding everything else fixed?

I. An increase in government purchases G

II. An increase in taxes net of transfers T

III. An increase in the amount of consumption spending C that would take place at a given value of disposable income $(Y-T)$.

IV. An increase in the amount of investment spending I that would take place at a given value of the real interest rate r.

a) I only b) I and II c) I, II and III d) I, III and IV e) II, III and IV

11) Which of the following are part of G as defined for our spending equations? Put a check beside the ones that are, then find the correct answer below.

i) a bank purchases new computers for its accounting department

ii) a state government purchases new computers for its tax department

iii) a state government makes unemployment insurance payments to laid-off workers

iv) a state government pays teachers

v) a state government pays for construction of a new school

vi) a state government buys 1000 acres of land to make a new state park

a) All of the above b) ii) - vi) c) ii), iv), v), vi) d) ii), v) e) Answers a),b), c) and d) are all wrong.

12) What is "national saving"?

a) Private saving plus public saving

b) Private saving minus the government budget deficit

c) Disposable income minus consumption, plus public saving

d) All of the above

e) None of the above

13) Which part of investment spending I, as defined for the National Income and Product Accounts, is undertaken by households rather than firms?

a) Increases in inventories of unsold goods or unused materials

b) Purchases of residential real estate by households

c) Purchases of newly constructed houses or apartment buildings by households

d) All of the above

e) None of the above

14) Which of the following does *not* directly affect "net capital outflow" NCO for the United States?

a) An American buys an apartment building in London.

b) A German-owned corporation buys a small machine-tool manufacturing company in the U.S.

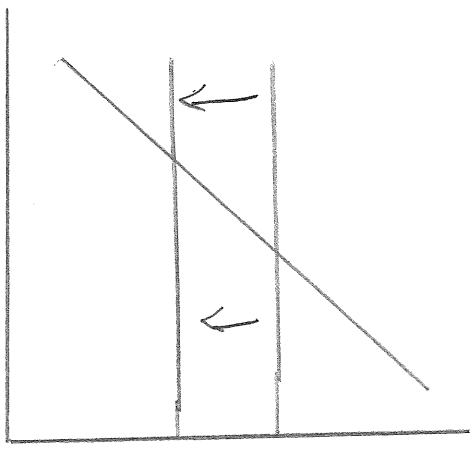
c) An American-owned bank makes a loan to a French-owned company.

d) An American company buys German-made machine tools.

e) None of the above directly affects U.S. NCO.

The following information is for 15) - 18). These four "loanable funds" graphs depict possible events in a closed economy in which output is always equal to potential output (natural rate of output). Below, I will ask you to tell me which graph corresponds to a particular event. More than one event may correspond to a given graph. Hint: start by writing down an equation for national savings $\overline{S}$.

a)



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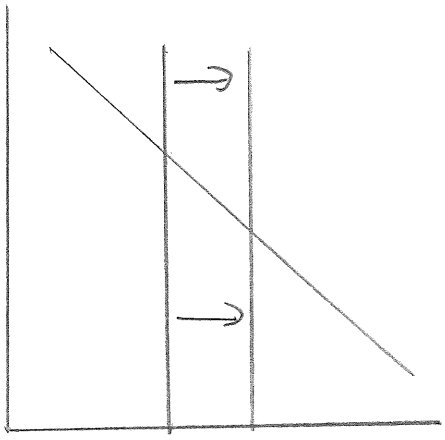

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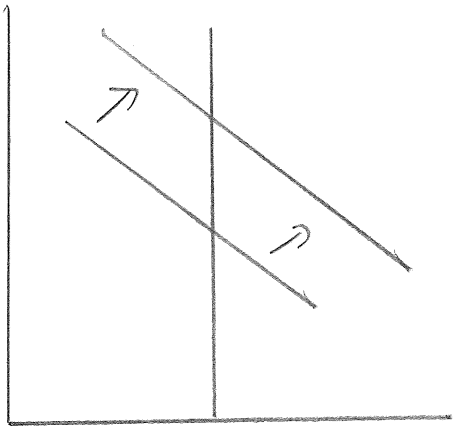

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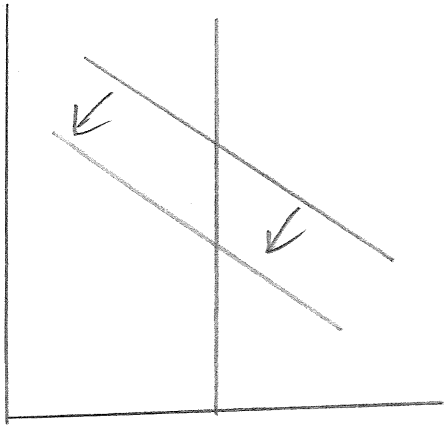


Which graph corresponds to each of the following events?

15) There is an increase in government purchases of goods and services.
a) b) c) d) e) None of the above

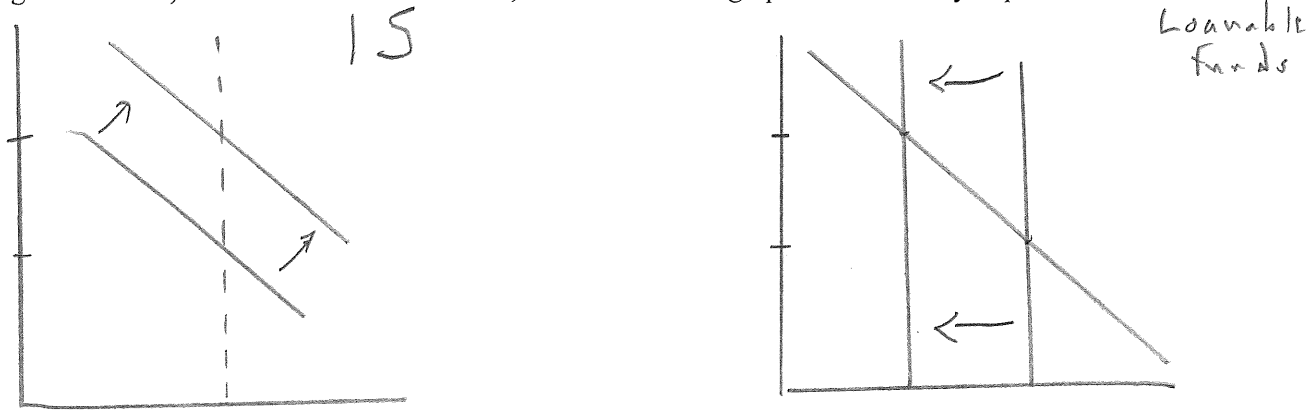
16) There is an increase in taxes net of transfers.
a) b) c) d) e) None of the above

17) New software is developed which many firms want to buy.
a) b) c) d) e) None of the above

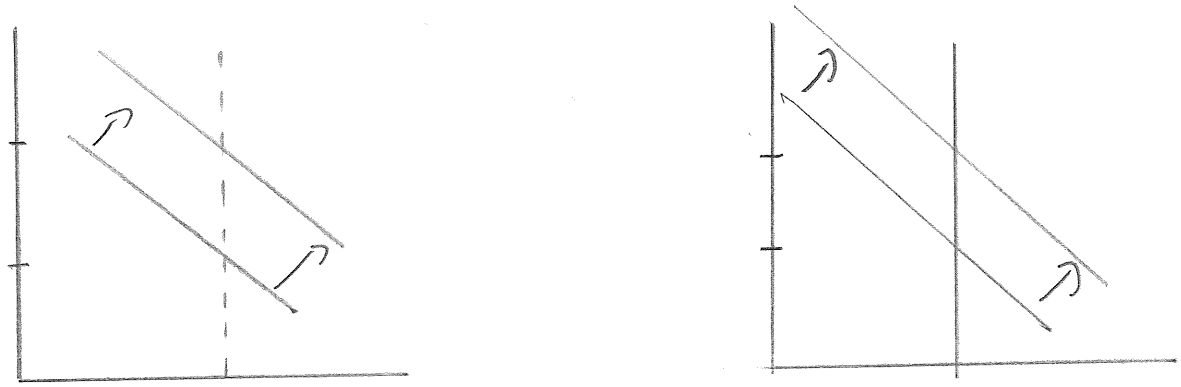
18) $C = a + b(Y-T)$ and there is a decrease in a.
a) b) c) d) e) None of the above

The following information is for 19) - 23). Consider a closed economy. Each of the four sets of graphs below shows what happens in that economy in response to an event, to the IS curve (on the left-hand side) *and* to the loanable funds graph (on the right-hand side). For the events listed below, choose the set of graphs that correctly depicts that event.

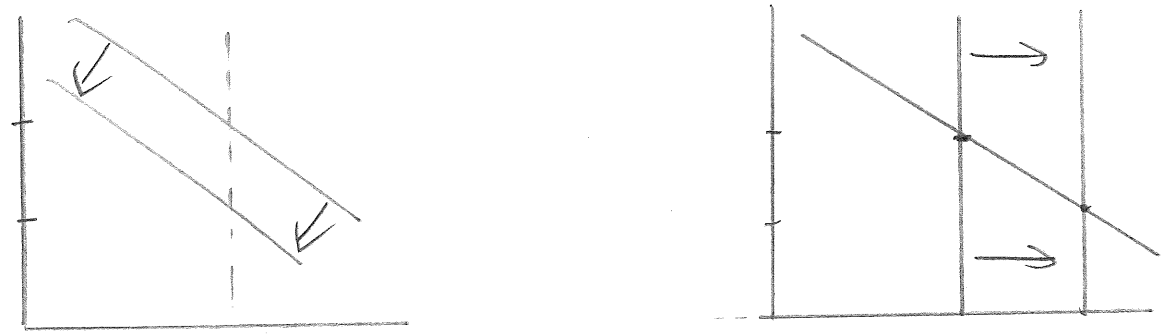
a)



b)



c)



d)

19) There is an increase in G. a) b) c) d) e) None of the above

20) There is an increase in T. a) b) c) d) e) None of the above

21) In the investment equation $I = c - dr$, there is an increase in c. a) b) c) d) e) None of the above.

22) In the consumption function $C = a + b(Y - T)$, there is an increase in a. a) b) c) d) e) None of the above.

23) There is an increase in $\overline{Y}$. a) b) c) d) e) None of the above.

For 24)- 29), consider a small open economy in the long run (that is, assume $Y = \overline{Y}$). In this economy, as in class:

$Y = C + I + G + NX$ $C = a + b(Y - T)$ $I = c - d\,r$ $G = \overline{G}$ $T = \overline{T}$

What happens to the economy's net capital outflow (NCO), net exports (NX) and real exchange rate in response to the following events, assuming everything else remains fixed? Hint: in the spaces I left below draw graphs, and for simplicity assume that "before" the economy is in a state of *balanced trade*.

24) There is a decrease in government purchases of goods and services.
a) NCO increases, NX increases, real exchange rate depreciates (ε decreases)
b) NCO increases, NX decreases, real exchange rate appreciates (ε increases)
c) NCO decreases, NX increases, real exchange rate depreciates (ε decreases).
d) NCO decreases, NX decreases, real exchange rate appreciates (ε increases).
e) None of the above.

25) There is a decrease in transfer spending (e.g., a decrease in Social Security payments).
a) NCO increases, NX increases, real exchange rate depreciates (ε decreases)
b) NCO increases, NX decreases, real exchange rate appreciates (ε increases)
c) NCO decreases, NX increases, real exchange rate depreciates (ε decreases).
d) NCO decreases, NX decreases, real exchange rate appreciates (ε increases).
e) None of the above.

26) Foreign demand for the economy's exports increases, so the value of exports would be larger at any given real exchange rate.
a) NCO increases, NX increases, real exchange rate depreciates (ε decreases)
b) NCO increases, NX decreases, real exchange rate appreciates (ε increases)
c) NCO decreases, NX increases, real exchange rate depreciates (ε decreases).
d) NCO decreases, NX decreases, real exchange rate appreciates (ε increases).
e) None of the above.

27) The domestic government imposes tariffs on imported goods, so domestic demand for imports would be smaller at any given real exchange rate.
a) NCO increases, NX increases, real exchange rate depreciates (ε decreases)
b) NCO increases, NX decreases, real exchange rate appreciates (ε increases)
c) NCO decreases, NX increases, real exchange rate depreciates (ε decreases).
d) NCO decreases, NX decreases, real exchange rate appreciates (ε increases).
e) None of the above.

28) There is a reduction in investment opportunities in the economy, so that investment spending is lower at any given real interest rate.
a) NCO increases, NX increases, real exchange rate depreciates (ε decreases)
b) NCO increases, NX decreases, real exchange rate appreciates (ε increases)
c) NCO decreases, NX increases, real exchange rate depreciates (ε decreases).
d) NCO decreases, NX decreases, real exchange rate appreciates (ε increases).
e) None of the above.

29) There is an increase in the world real interest rate r^*.
a) NCO increases, NX increases, real exchange rate depreciates (ε decreases)
b) NCO increases, NX decreases, real exchange rate appreciates (ε increases)
c) NCO decreases, NX increases, real exchange rate depreciates (ε decreases).
d) NCO decreases, NX decreases, real exchange rate appreciates (ε increases).
e) None of the above.

The following information is for 30) - 31). Consider the long-run equilibrium rate of unemployment in an economy. Like the model we used in class,
U is the number of unemployed people in the economy.
L is the number of people in the labor force (which is fixed, does not grow over time).
E is the number of employed people.
u is the unemployment rate (expressed as a fraction or decimal).
Also like the model we used in class, the number of unemployed people who become employed in a period is fU where f is a fraction less than one. *Unlike* in class, the number of people who become unemployed in a period is xL, where x is a fraction less than one.

30) Suppose I asked you to derive the long-run equilibrium unemployment rate in this economy.What is the first line of math you would write down? Hint: write down the first line in the space below, then choose the answer that matches what you wrote.

a) $fU = sE$
b) $fU = sE + xL$
c) $fU = xL$
d) $fU - xL = sE$
e) None of the above

31) Starting from your answer to 28), derive the long-run unemployment rate u in the space below. What is u?

a) $u = \frac{x}{f}$ b) $u = \frac{1}{1+\frac{s}{f}}$ c) $u = \frac{1}{1+\frac{f}{s}}$ d) $u = \frac{1}{1+\frac{f}{x}}$ e) None of the above

Written questions

All of the written questions are about a "closed economy" in which

$$Y = C + I + G$$
$$C = a + b(Y - T)$$
$$I = c - dr + zG$$
$$G = \overline{G}$$
$$T = \overline{T}$$

Note that this economy is somewhat different from the one in the model presented in the textbook and class: in this economy, investment spending is positively related to government purchases G. z is the coefficient that gives the magnitude of this relationship. Investment spending is positively related to government purchases because, in this economy, the government purchases infrastructure - roads, bridges, electrical generation projects - that increases the productivity of firms' capital equipment.

1) Using algebra, derive an equation that gives the natural rate of interest $\overline{r}$ as a function of $\overline{G}$, $\overline{T}$, and $\overline{Y}$ in this economy. Your answer should be an equation with $\overline{r}$ alone on the left-hand side. 5 pts.

2) In the model we used in class, an increase in government purchases $\overline{G}$ tends to increase an economy's natural rate of interest $\overline{r}$. Compare the magnitude of this effect in this economy with that in the economy presented in class. In this economy, is the effect of a change in $\overline{G}$ on $\overline{r}$ bigger than, smaller than or the same as the effect in the model in class? **Explain, using your answer to 1).** 4 pts.

3) Using algebra, derive the equation that gives national savings S when output is equal to the natural rate of output $\overline{Y}$. We called this $\overline{S}$. Your answer should be an equation with $\overline{S}$ alone on the left-hand side. Remember, I am asking about the economy set out on the previous page, not the one in the model presented in the textbook and class. 5 pts.

4) Draw a "loanable funds" graph for this economy below, showing what happens when government purchases increases from a lower value $\overline{G}_1$ to a higher value $\overline{G}_2$. Label the "before" natural rate of interest $\overline{r}_1$ and the "after' natural rate of interest $\overline{r}_2$. 4 pts.