Name _Post Mortem_____ Mike Lovell
Sign the pledge: 9:00-12:00, December 18, 2006
No Aid; No Violations _____ Science 121

Econ 110-2: Final Examination

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PART 1: IDENTIFICATION (20 points):

Here are 10 equations followed by a number of key concepts that we have studied during the semester.

Please place in front of each equation the letter corresponding to the most relevant key concept.

Ten equations::

1. k_ $C = \alpha + \beta Y_d$
2. _i_ $\alpha L^{\lambda} K^{1-\lambda}$
3. _h_ $i^{fed} = \dot{p} + 2\% + 0.5(\dot{p} - 2\%) - 0.5Y^{gap}$
4. _q_ w/p
5. _p_ $\frac{dq}{dy}\frac{y}{q}$
6. _n or f_ $-\frac{dq}{dp}\frac{p}{q}$
7. _c_ w(L) + L dw/dL
8. _r_ w(L) < p dw/dL
9. _j_ Y = C+I+G+X-M
10. _o_ $i - \dot{p}$

Key concepts

a. Demand equation
b. Income effect
c. Marginal labor cost
d. Labors share
e. Marginal revenue product of labor
f. Price elasticity of demand (η)
g. Okun's Law
h. Taylor Rule
i. Cobb-Douglas Production Function
j. national income accounting identity
k. consumption function
l. Marginal revenue
m. Price discrimination
n. Price elasticity
o. Real interest rate
p. Income elasticity
q. Real wage
r. Exploitation (Pigou)

PART 2: Please answer FOUR (only 4) of the following 5 questions in the space provided, continuing on the back of the preceding page (20 points each).

2.1 Suppose that the Central Bank purchases $10 billion worth of government securities on the open market.

a. How would this transaction affect the reserve position of the commercial banks? Explain
Deposits at the FED: $10 billion
Government securities: – $10 billion
Reserves up by $10 billion; excess reserves up by $10 billion

b. How would the change in reserves of the commercial banks affect their willingness to make loans to the public, assuming that banks always strive to remain loaned up.
They would be more willing to make loans because they do not earn interest on excess reserves

c. Estimate the magnitude of the change in the money supply resulting from the Central Bank's open market operation? Explain
ΔMoney supply = 10 × excess reserves = $100 billion!

d. How would you expect the change in the money supply to affect (+ or -) interest rates, investment, output, employment, prices, imports and exports? Explain.
i down (demand for money equation) , I up (investment function), Y up (multiplier), U down (Okun:s law), p up (Phillips curve or aggregate demand supply interaction), M up (positively related to GDP)
If exchange rates are flexible, the fall in interest rates in the US may lead to a fall in the value of the dollar because funds will be more likely to be invested in foreign securities instead of in the US. The fall in the exchange rate would stimulate exports and discourage imports, which would have a positive multiplier effect on GDP.

2.2 Mary has utility function $U = X^2Y$

a. Does this utility function satisfy the Law of Diminishing Marginal Utility? Explain: The marginal utility of X is $\partial U/\partial X = 2XY$. Now $\partial^2 U/X^2 = 2Y > 0$, contradicting the law of diminishing marginal utilitity.

b. Determine Mary's demand function for Y
Its easier to find the demand for X first.
$M = p_xX + p_yY$ implies $Y = (M - p_xX)/p_y$.
Therefore, $U^*(X) = X^2(M - p_xX)/p_y$.
$dU^*/dX = (2XM - 3X^2p_x)/p_y = 0$ is a necessary condition for a maximum.
Hence
$(p_y/X)\, dU^*/dX = 2M - 3Xp_x = 0$, implying $X(p_x,p_y,M) = 2M/3p_x$.

$Y(p_x,p_y,M) = (M - p_xX)/p_y = M - p_x(2M/3p_x)/p_y = M/3p_y$

2.3 Max had been making $100,000 a years working for Hardnose Software Company, but he quit in January of 2006 to start his own software business. He used his savings to purchase $35,000 worth of equipment. His supplies cost $5,000. He had no employees, but because he worked 12 hour days he managed to sell $130,000 worth of software his first year.

a. Now it is April of year 2007, and he hires an accountant to figure out his income tax return. How much profit will the accountant say he make in his business in 2006? Show your computations. [Your grade will not depend on detailed knowledge of the tax code]

Accounting profit = $130,000 revenue less $5,000 supplies less $7,000 depreciation (assuming accelerated depreciation of property over 5 years) or $118,000.

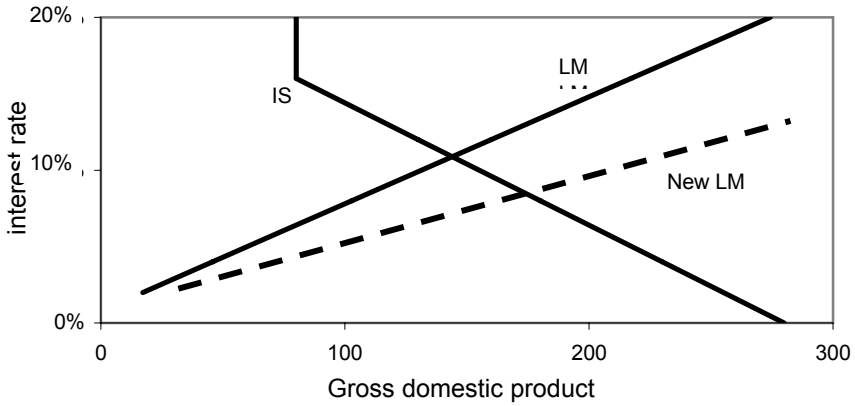
b. Economic profit deducts the opportunity cost of owner supplied capital and labor and uses a more realistic estimate of depreciation expense, say 10 year straight line. If the interest rate is 5%, say, then the foregone interest on the owner supplied capital is $1,750; his labor is worth at least the $100,000 he would have made working for the software company (perhaps more since he is working a 12 hour day). Thus we have

Economic Profit = $130,000 revenue – $5,000 supplies – $1,750 opportunity cost of owner supplied capital – $100,000 opportunity cost of owner supplied labor – $3,500 depreciation = $19,750.

(Economic profits may not be as precise as accounting profit because there is ambiguity in measuring the various concepts.)

Any reasonable estimate of depreciation rates and interest costs were accepted in grading this question.

2.4 Consider the following IS-LM Graph:



a. The IS curve has a positive slope; the LM curve negative. The equilibrium rate of interest is _10%_. The equilibrium level of GDP is __150_____.

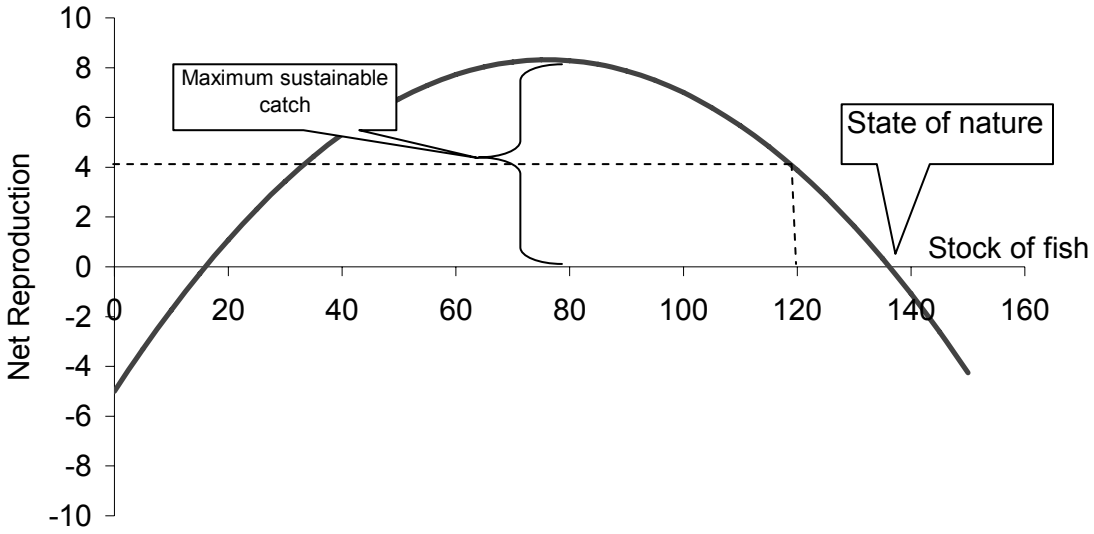
b. Suppose that the Central Bank increases the money supply by 25% through open market operations. Indicate how this might affect the position of the curves. The LM curve will shift to the right by about 25% (see equation (20) page 465 and Figure 10.13 page

473). The new equilibrium level of GDP would be about _175____ and the interest rate 7%___, assuming that there is plenty of excess capacity in the economy.

c. Suppose instead that in fact the economy was already operating at full employment. How would the increase in the nominal money supply affect the economy in the long run. Explain carefully.

The increased demand for the nation's output generated by the outward shift of the LM curve would create an inflationary gap. The FED controls the nominal money supply, M_1, but what happens to the real money supply depends also on the price level: $M^r = M_1/p$. Assuming that the FED did not accommodate the inflation by creating still more money, the rising prices would reduce the real value of the nominal money supply, leading to a rise in interest rate, reduced investment, and a decline in demand for the naiton's output. This process would gradually reduce the inflationary gap and the speed of inflation. Eventually the LM curve would return to its original position when the real money supply was reduced to its initial level. Eliminating the inflationary gap would require a 25% increase in the price level. (See Figure 0.15, page 478)

2.5 The graph shows the Net-Reproduction Function for the fish in Lost Lake.



a. In the absence of fisherman, the equilibrium stock of fish will be about 135 _____ (State of Nature).

b. Lost Lake is found.
If fishermen take 4 fish from the lake every year, the equilibrium stock of fish will be about 120.

Grammatical Note: There are not *less* fish in the lake than in the State of Nature; there are *fewer* (see http://www.grammarmudge.cityslide.com/articles/article/992333/8731.htm
Also, it is the *number* of fish in the lake; not the *amount* of fish

c. The Maximum Sustainable Catch that can be removed from the lake is _8_____.

d. If fisherman were to persist in taking 10 fish from the lake every year, what would happen to the stock of fish?
The fish stock would "crash" – no more happy fish; extinction.

e. Senator Foghorn suggests that the government should privatizing the lake by selling it to the highest bidder in order to prevent the outcome you predicted in d. Would this be an appropriate strategy? What other types of government policy intervention might be considered? What would you recommend?

Economists argue that the purchaser of the property will have an incentive to maximize the return from owning the lake. This would involve harvesting 8 fish a year for ever more, assuming for simplicity a zero rate of interest and no cost of fishing,. Or the owner might rent access to the lake to the highest bidders, but limit their catch to 8 fish a year so that he can get the maximum stream of revenue from the property. One student pointed out that this assumes that the owner sells the fish (or fishing rights) on a perfect market. If the owner has monopoly power, the owner might maximize profits by restricting output below the optimum level. *Moral: Private property works (sometimes) in the absence of monopoly power.*

Alternatively, the government could limit the number of days the lake is open for fishing, or limit the size of the catch, sell fishing licenses, or restock the lake.

Grades on the final ranged from 51 to 101; average was 80.