Final Exam Solutions
Economics 101 - Spring 2013

Multiple Choice

Versions A:	1) e	2) a	3) b	4) c	5) a	6) d	7) c	8) a	9) d	10) b
Versions B:	1) d	2) c	3) a	4) d	5) b	6) e	7) a	8) b	9) c	10) a
Versions C:	1) a	2) e	3) a	4) b	5) c	6) b	7) d	8) c	9) a	10) d
Versions D:	1) b	2) d	3) c	4) a	5) d	6) a	7) e	8) a	9) b	10) c

.Problem 1: Neoclassical Model

a) versions A and C:

$Y^s = 100 \times 4^{1/2} \times 16^{1/2} = 100 \times 2 \times 4 = 800.$

$Y^d = C + I + G = [100 + 0.5(800\text{-}200)] + [400 - 1000r] + 200$

setting $Y^s = Y^d$: $800 = 1000 – 1000r$

so $-200 = -1000r$ so <u>r = 0.20 or 20%</u>

Real wage = MPL = $(1/2)\ 100(K/L)^{½} = 50(16/4)^{½}$ <u>W/P=100</u>

M*4 = P*Y, so P = M*4/Y = 100*4/800 P = 0.5

Nominal wage = W/P * P = 100 * 0.5 =<u>50</u>

Versions B and D:

$Y^s = 100 \times 4^{1/2} \times 16^{1/2} = 200 \times 2 \times 4 = 1600.$

$Y^d = C + I + G = [100 + 0.5(1600\text{-}200)] + [700 - 1000r] + 200$

setting $Y^s = Y^d$: $1600 = 1700 – 1000r$

so $-100 = -1000r$ so <u>r = 0.10 or 10%</u>

Real wage = MPL = $(1/2)\ 200(K/L)^{½} = 100(16/4)^{½}$ <u>W/P=200</u>

M*4 = P*Y, so P = M*8/Y = 100*8/1600 P = 0.5

Nominal wage = W/P * P = 200 * 0.5 =<u>100</u>

Equilibrium in the financial market requires that investment equals total national saving. The interest rate will adjust to make investment satisfy this requirement, as it affects the cost of getting loanable funds to carry out an investment project.

b-d) A rise in taxes lowers consumption, which lowers the interest rate and raises investment. Private saving falls because the fall in disposable income is larger than the fall in consumption.

A rise in velocity requires a rise in price to maintain money market equilibrium, and this affects other nominal variables.

A fall in capital stock lowers output. This will raise the real interest rate. It also lowers the marginal product of labor, lowering the real wage. The nominal wage is tricky, because it turns out that the fall in output raises the price level the same amount that it lowers the real wage. So the nominal wage is unchanged:

$P = MV/Y = MV / (100\ K^{1/2}\ L^{1/2})$

$W/P = (1/2)\ 100(K/L)^{½}$

So $W = (W/P)\ P = [(1/2)\ 100(K/L)^{½}\ MV] / [100\ K^{1/2}\ L^{1/2}] = [(1/2)\ MV/L].$

MC 11- 22):
Version A: b b b a a c a b b a b c
Version B: b a b c b b b a a c a b
Version C: c c c b b a b c c b c a

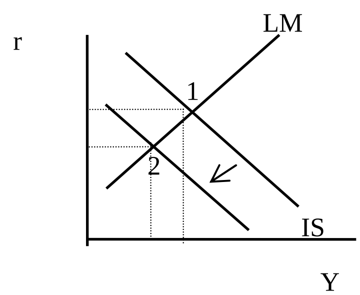
Version D: c b c a   c c c b   b a b c

Problem 2: Growth:

a) Steady state condition: s f(k) = $(\delta+n)k$,
   versions A and C:
   $0.2 \times 2k^{0.5} = 0.2k$, $2 = k^{0.5}$, $k = 4$
   $c = (1\text{-}s)\, f(k) = (1\text{-}0.2) \times 2\text{x}2 = 3.2$
   versions B and D:
   $0.2 \times 2k^{0.5} = 0.4k$, $1 = k^{0.5}$, $k = 1$
   $c = (1\text{-}s)\, f(k) = (1\text{-}0.2) \times 2\text{x}1 = 1.6$

b) golden rule condition:
   MPK = δ+n.
   The level of consumption per person will be at its maximum if the marginal benefit of an extra unit of capital, which is the marginal product, equals the marginal cost of maintaining that capital, which is depreciation plus population growth rates.
   Since the real rental rate equals the marginal product of capital at the golden rule steady state, we know it will equal
   Versions A and C: R/P = MPK = δ+n = 0.15 + 0.05 = 0.2
   Versions B and D: R/P = MPK = δ+n = 0.3 + 0.1 = 0.4.

Problem 3: IS/LM



A fall in the exogenous part of investment shifts the IS curve left, because it lowers output for a given interest rate.

a) Y falls, r falls, C falls, I falls.

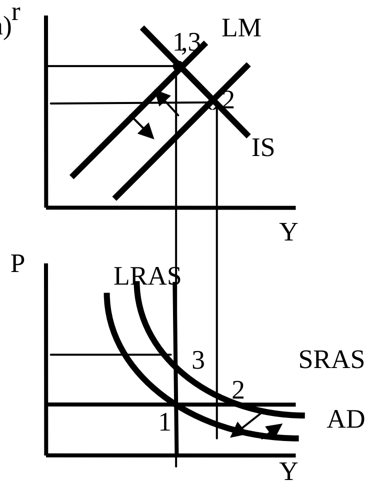
b) The IS curve becomes steeper, with no effect on the shape of the LM curve. So output moves more, and r more, given that the horizontal shift in the IS curve is the same. While it might seem that the effect on I is ambiguous (a lesser sensitivity to r but a largerer change in r, we also know that $\Delta I = \Delta S = \Delta Y - \Delta C = (1 - MPC)\Delta Y$. So if output changes more, so does investment.

c) The LM curve is flatter with no change in slope of IS. The IS shift now changes output more and changes r less than before.

MC 23- 37): Version A: b c b b b b   a c a a a   c b a b
             Version B: a c a a a a   b c b b b   c a b a
             Version C: c a c c c c   b a b b b   a c b c
             Version D: b a b b b b   c a c c c   a b c b

Problem 4: Short Run and Long Run

a)



The rise in money supply lowers the interest rate for a given level of output, shifting the LM curve right. This also raises the output level for a given price level, shifting the AD curve right In the long run the rise in price reduces the real money supply back to its original level, so the LM and AD curves return to their original positions

b) Short run: Y rises, r falls c, I MD and private saving all rise

c) Long run: all these variables return to their original levels except price, which is higher

MC 38- 48):	Version A:	a b a a a a	c c a c	b
	Version B:	b a b b b b	c c b c	a
	Version C:	b c b b b b	a a b a	b
	Version D:	c b c c c c	a a c a	a

Problem 5: Consumption Theory:

a-b) The rise in interest rate is just like the case studied in class (slide 20). Because Mr. Mankiw is a saver in period 1, a rise in interest rate generates a positive income effect:

	C1	C2
substitution effect:	fall	rise
income effect:	rise	rise
net effect:	ambiguous	rise

since saving is Y1-C1, it too is ambiguous.
So: C1 ambiguous, saving ambiguous, C2 rise
APC = C1/Y1: also ambiguous

A rise in income in period 2 alone is the direct counterpart of the case studied in class (rise in income in period 1 in slide 17). The rise in income in period 2 will raise total lifetime income, so the income effect raises consumption in both periods.
So C1 rises, saving = Y1-C1falls, C2 rises, APC=C1/Y1 rises

c) All of the above enter the Fisher model.
The Keynesian model implies that a rise in current income leads to a fall in APC.

MC 49- 58):	Version A:	d d a d	a b a a	d b
	Version B:	a b a a	d d a d	d b
	Version C:	d d b d	b c b b	d b
	Version D:	b c b b	d d b d	d b