Solutions

Exam 2: Version B, M/W
Spring 2019

Do not open this exam until instructed to do so.

- You have 75 minutes to complete this exam
- You may use a calculator; you may **not** use any other device (cell phone, etc.)
- You may consult one page of notes (both sides); you may not use books, notebooks, etc.
- Show your work

I understand that the honor code applies: I will not lie, cheat, or steal to gain an academic advantage, nor tolerate those who do.

Michael

Signature

Michael Waugh

Printed Name

For each question below, **write the letter of the most correct answer to the left of the question.**

1. (3 pts.) As the US budget deficit shrank in the 1990s, the increase in national savings was _____ than the _____ in US investment demand resulting in a trade deficit.
   A. weaker; decrease
   B. stronger; decrease
   C. stronger; increase
   D. weaker; increase

D

2. (3 pts.) The gains from trade in the Ricardian model arise from
   A. differences in product variety
   B. differences in preferences/tastes
   C. differences in country size and increasing returns to scale technologies
   D. differences in productivity

D

3. (3 pts.) In 1975, wage levels in South Korea were roughly 5% of those in the United States. Then
   A. If Korean goods were freely imported into the United States at that time, this would have caused devastation to the standard of living in the United States
   B. No producer in the United States could possibly compete with such low wages
   C. It's likely free trade with South Korea would lead to a large trade deficit
   D. This fact simply means that South Korea was less productive in absolute terms relative to the United States

D

4. (3 pts.) In the article discussing NAFTA, one quote was "Mexican workers in a Foxconn facility assemble Dell computers that were designed in Texas and will be sold all over the world... Because of that, Dell can employ thousands of highly paid engineers in the United States." This is an example where
   A. economist are often incorrect in their prediction that trade can be beneficial
   B. trade leads to the outsourcing of jobs which cause a trade deficit
   C. trade leads to inequalities between US and Mexican workers
   D. trade allows the US to specialize and move from one place on the production possibility frontier (with both assembly and engineering) to a corner where only engineering takes place

D

5. (3 pts.) In an open economy, being a net borrower
   A. is bad if property rights or debt contracts are enforced
   B. is always good
   C. is always bad
   D. may be good or bad

D

Consider the following information for the next three questions: The technology to produce wheat and beef only use labor and they have constant marginal products of labor. The marginal products are

	Beef/hr	Tons of Wheat/hr	Total Labor Hours
USA	100	300	100
Argentina	20	20	20

6. (3 pts.) Argentina has a comparative advantage in

C

A. wheat
B. does not have a comparative advantage in either good, because it has absolute disadvantages
C. beef
D. wheat and beef

7. (3 pts.) The United States's opportunity cost of producing beef is

B

A. 1 wheat
B. 3 wheat
C. 3 beef
D. 1/3 beef

8. (3 pts.) The United States has

B

A. a comparative advantage in beef
B. absolute advantage in beef and wheat
C. an absolute advantage in wheat, but not beef
D. an absolute advantage in beef, but not wheat

9. (3 pts.) Starting from trade balance, in a small open economy, if the world interest rate increases

B

A. there will be a trade deficit
B. there will be a net capital outflow
C. no change because national savings is not affected
D. investment will increase

10. (3 pts.) If the government of a small open economy wishes to reduce a trade deficit, which policy action will be successful in achieving this goal?

B

A. impose protectionist policies, i.e. tax imports, subsidize exports.
B. increasing investment demand
C. increasing government spending
D. increasing taxes

11. (35 pts.) **The Power of Productivity.** This is the title of a book written by a former Mckinsey consultant and it emphasizes that improvements in productivity are very powerful... it just leads to a lot of good outcomes. Lack of productivity can lead to bad outcomes. Let's see this ourselves by considering the following situation

    - Due to an increase in cumbersome regulations, total factor productivity (TFP) **decreases.**

    Given this information, please answer the following questions.

    a. (7 pts.) How would a decrease in TFP affect GDP? Carefully explain your answer.

$Y = AK^{\alpha} L^{1-\alpha}$

Lower TFP leads to Lower GDP !!! Bad !

b. (7 pts.) How does a decrease in TFP affect real wages? Carefully explain your answer.

Real wages reflect the MPL, which is . . .

$$\frac{W}{P} = MPL = (1-\alpha)\frac{Y}{L}$$

So if Y ↓ (from A), then MPL, $\frac{W}{P}$ ↓. Intuitively, the workers are less productive, so they must get paid less.

c. (7 pts.) In an OPEN ECONOMY, how does an decrease in TFP affect each expenditure component of GDP? To simplify matters assume that the demand curve for investment does not change and that government spending and taxes are unchanged and that the country's trade deficit initially is zero. Carefully explain your answer.

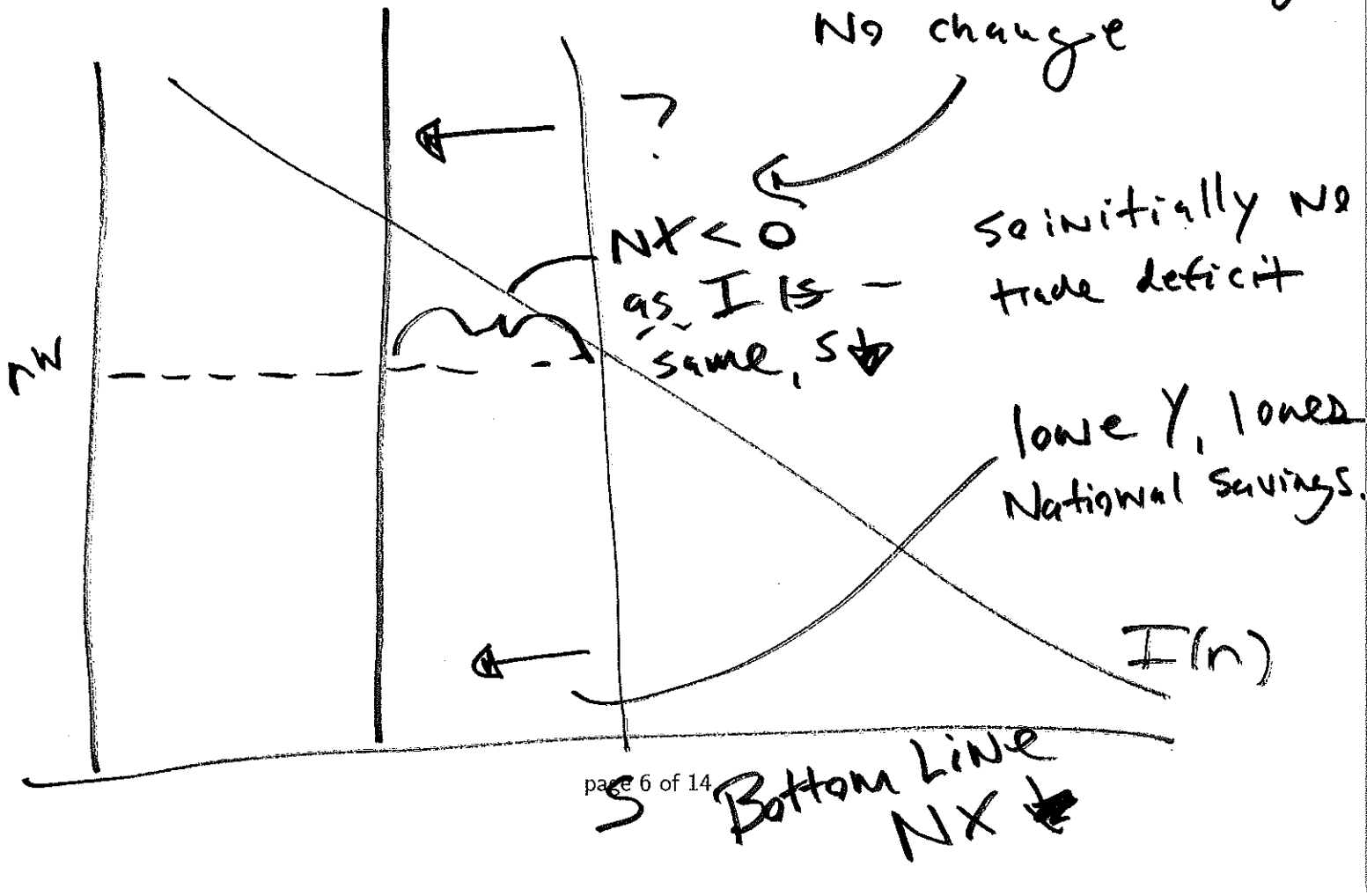
expenditure components . . . . Nothing

$Y = C + I + G + NX$

C: $\beta(Y-T)$

I: In an open economy, depends on $I(r_W)$, so unless world rate changes No change

So if $Y \downarrow$, then $C \downarrow$



d. (7 pts.) Answer this question for an OPEN ECONOMY. Suppose that TFP decreases by one percent today and remains lower for the indefinite future, **in the future (not today)**, how will wages change: one percent, less than one percent, or more than one percent? Please carefully explain why.

~ We should suspect that it will stay lower by just the 1%... Why??? Since there is no change in I from (c), then there should be no change in K. So A is down by 1%, K is not changing.. thus our best guess should be just the 1%.

e. (7 pts.) How would your answer in part **D.** change (if at all) if the country were a CLOSED ECONOMY. Please carefully explain why or why not?

Totally different... ~~Lags~~ (A) would decrease ~~increase~~ National savings.... In a CLOSED ECONOMY, this means that I will ~~increase~~ decrease as well as $S = I$,

Ok... so this means we should suspect Higher Capital formation in future.

So... (1) A ↑%

(2) K is ~~increasing~~ decreasing

(1) + (2) => ~~↑~~ Y ~~↑~~ by more than 1%

12. (35 pts.) **Technology Transfer.** As an aid to United States Trade Representative Robert Lighthizer you are studying Chinese trade and technology practices.

    A summer intern complied some information that may be of use:

    - China is a small open economy and their economy can produce GPUs and toys.
    - The technology to produce GPUs and toys both only use labor and they have constant marginal products of labor. The marginal product of labor in GPUs is 5. The marginal product of labor in toy production is 20.
    - The total quantity of labor in the economy is 100 units.

    a. (7 pts.) What is China's autarky price of GPUs relative to toys, that is $\frac{P_{gpu}}{P_{toy}}$?

$$\frac{P_{GPU}}{P_{TOY}} = \frac{MPL_{TOY}}{MPL_{GPU}} = \frac{20}{5}$$

$$= 4$$

Which means to buy one GPU China must give up 1 toy.

b. (7 pts.) Please carefully explain two issues (i) at what world prices would China export GPUs? and (ii) at what world prices would China export toys?

As before, its autarky price means that to buy a GPU it must give up 4 toys.... what this implies is if $\frac{P^W_{GPU}}{P^W_{TOY}} < 4$ it will be cheaper to buy the GPU's on the world market, and export toys.

The flip is if $\frac{P^W_{GPU}}{P^W_{TOY}} > 4$ it will export GPU's... why? Well it can get more toys on world market for a GPU than it can at home!

For the next three parts, consider the following situation. The current world price of GPUs relative to toys equals two, $\frac{P_{gpu}}{P_{toy}} = 2$

c. (7 pts.) Given the prevailing world relative price and assuming complete specialization according to comparative advantage, compute wages in both units of GPU's and toys. From wages, how do we see that there is a gain to trade?

(1) This ⇒ Specilizes in toys.

In units of toys ... $W = MPL_{TOYS}$

$= 20$

In units of GPU's $W = \frac{P_{toy}}{P_{GPU}} \cdot MPL_{TOYS}$

$= \frac{1}{2} \cdot 20 = \underline{\underline{10}}$

(2) To see the gain, look at autarky wages in units of GPU's. These are

$W = MPL_{GPU} = 5$ ... open $= 10$

So wages (in units of GPUs) doubled!!!

d. (7 pts.) Your boss Robert Lighthizer suggests that China is trying to "steal" technology and be the world leader in GPU production. At what level of GPU productivity would China require to become an exporter of GPUs?

So world price is ...

$\frac{P^W_{GPU}}{P^W_{Toy}} = 2$, so if it sells 1 GPU it only gets 2 toys....

Idea here is MPL_{GPU} must change so that it's autarchy price (or a.c.) is so that it gets less than 2 toys at home or...

$2 > \frac{MPL_{Toy}}{MPL_{GPU}}$ ← 20

What value makes this true?

If $MPL_{GPU} = 10$ or Larger, then it is in China's interest to change its pattern of specialization.

e. (7 pts.) A fellow intern suggests the following "this is bad politics from China's perspective, China's move into exporting advanced technology (GPUs) will upset the workers doing low-skill manufacturing (e.g. Toys) and lead to a revolution." Assuming that people only care about their economic gains or losses, please provide two arguments:

(1) • Why might the intern be correct? What is the issue here?

(2) • Under what circumstances is the intern wrong?

(1) Basic issue with this is toy guys may not be able to work in GPU's... so as production shifts, they may be out of a job, upset, etc... Key issue is same form of Labor market friction

(2) If there is NO labor market friction its no big deal! Workers just move/ ~~get~~ or retrain, and enjoy the ~~gains~~ (A) gains from trade and (B) Fact the economy overall is more productive.