Homework 4: Solutions
Principles of Macroeconomics: ECO 212

Question 1.

A decrease in interest rates means US assets are less attractive than foreign assets, since US assets pay less interest. Thus, there is less demand for US assets by foreigners, and therefore less demand for US dollars by foreigners to purchase US assets. The fall in demand for dollars causes a decrease in the price (value) of the dollar, which is the nominal exchange rate. A fall in the nominal exchange rate means the less valuable US dollar buys less foreign goods, making imports more expensive. Similarly, foreigners can buy more dollars and therefore more US goods. Thus exports rise, imports fall, and net exports rise.

Question 2.

a.
- For the initial (temporary) tax cut, disposable income rises, so consumption rises by $b \cdot \Delta T$, where ΔT is the size of the tax cut and savings rises by $(1 - b)\,\Delta T$. Most of the tax cut is consumed since the after tax MPC is above 0.9.
- According to the constant MPC model, today's consumption is affected only by today's income. Thus, a promise to cut taxes in 2010 has no effect on today's income.

b.
- The initial tax cut is a temporary (6 year) change in income, so consumption may rise a little, but most of the tax cut is saved.
- A permanent tax cut is a permanent change in income, so consumption will rise signicantly, and a little or none of the income will be saved.

c.
- The students and working aged persons will increase consumption a little but save most of the initial tax cut and consume the tax cut slowly over their lifetimes. On the other hand retirees will consume most of the tax cut as they have little years left to save for, assuming retirees do not desire to bequest wealth to their children.
- If the tax cut is permanent, consumption rises significantly at all three stages in life, while savings rises little or not at all.

Your answer may differ if you view students as credit-constrained: unable to smooth income because they cannot borrow as much as they would like. In that case, students may need to consume the temporary tax cut to smooth consumption.

Question 3.

According to the Taylor rule, the FED reacts to a decrease in inflation by loaning printed money in the FED Funds market, lowering the FED Funds rate (and therefore other rates fall as well, since the cost of funds for banks falls).

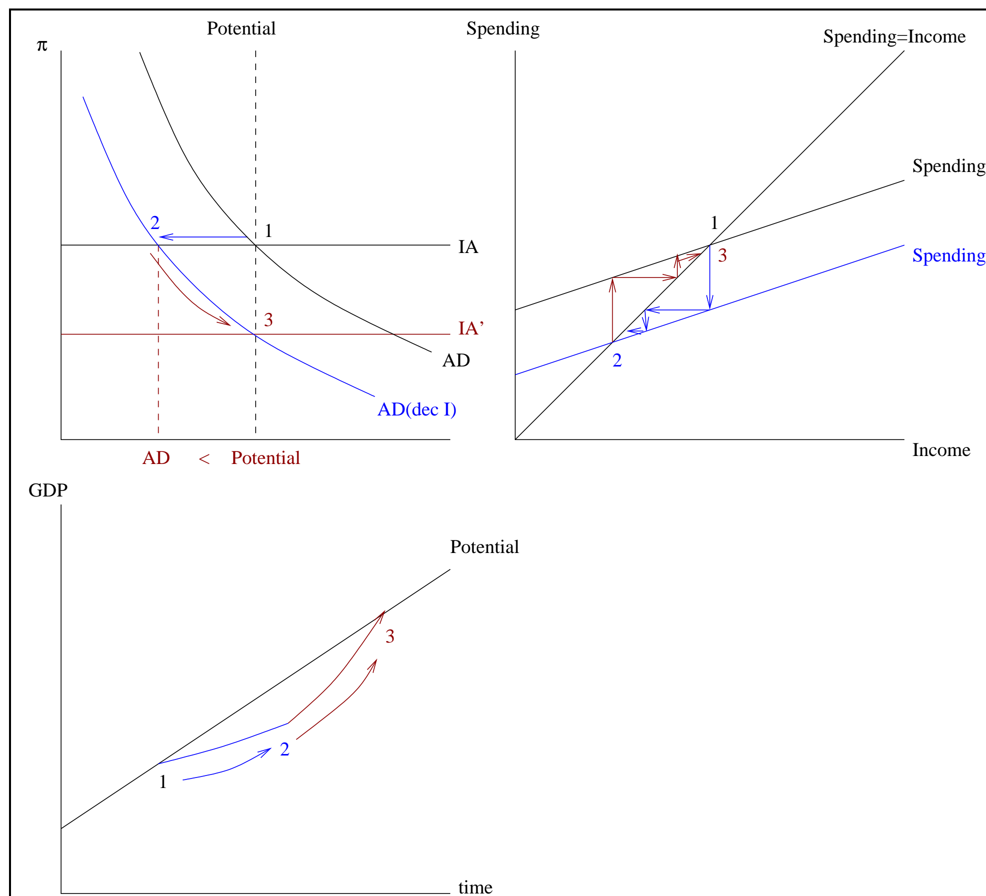
The decrease in interest rates means consumption is more attractive than savings, so consumption rises. The decrease in rates means it is cheaper to get a loan for a new house or

business, thus investment spending rises. As in problem 1, a decrease in interest rates means US assets are less attractive than foreign assets, since US assets pay less interest. Thus, there is less demand for US assets by foreigners, and therefore less demand for US dollars by foreigners to purchase US assets. The fall in demand for dollars causes a decrease in the price (value) of the dollar, which is the nominal exchange rate. A fall in the nominal exchange rate means the less valuable US dollar buys less foreign goods, making imports more expensive. Similarly, foreigners can buy more dollars and therefore more US goods. Thus exports rise, imports fall, and net exports rise.

The increase in consumption spending, investment spending, and net export spending means overall spending rises, increasing the income of store owners and workers, construction firms and workers, exporters, etc. The increase in income cause consumption to rise further, as construction firms and workers spend their increase in income.

Question 4.

A decrease in expectations means businesses slow investment in new plants and factories, since they anticipate low demand. Households become more uncertain about their future income, and thus buy smaller houses or less new housing. Investment spending falls and therefore total spending falls. We have:



As seen in the graph, the decrease in spending implies a dollar for dollar decrease in income, which causes consumption to decrease, and so on (point 2). Hence consumption, investment spending, spending, and income all fall and net export spending does not change in the short run.

In the long run, $AD <$ potential, the low demand means firms lower prices. The FED responds to the decrease in inflation by decreasing interest rates, thus increasing consumption, investment spending, and net export spending. Total spending therefore rises, causing a increase in income, and thus consumption, and so on.

Overall,

	Y	C	I	G	$X-M$	r	π	cap	u
SR	$\downarrow$	$\downarrow$	$\downarrow$	-	-	-	-	$\downarrow$	$\uparrow$
LR	-	$\uparrow$	$\downarrow$	-	$\uparrow$	$\downarrow$	$\downarrow$	-	-

Table 1: Fall in expectations.

Notice that C went down in the short run do to the decrease in income and up in the long run due to the increase in income. Since income returns to normal, these effects cancel. But C also went up because r decreased in the long run. So overall C rises in the long run.

Notice I went down in the short run due to the decrease in expectations. It went up in the long run due to the decrease in r. These effects have different causes, and so will not necessarily cancel. Using the tie-breaker of:

$$Y \text{ unchanged } = (\uparrow C) + (?I) + G + (\uparrow X - M) \tag{1}$$

So for Y to be constant, we must have a decrease in I overall.

Notice that expectations that the economy will do poorly do in fact come true in the short run. Because households believe the economy will do poorly, households decrease housing spending which causes the economy to in fact do poorly. Expectations are thus self-fufilling in the short run, but not in the long run.