

Final Exam. Econ520. Spring 2017

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Instructions:

- Answer all questions.
- Clearly number your answers. Write legibly.
- Do *not* write your answers on the question sheets.
- *Explain* your answers – do not just state them.
- *Show* your derivations – do not just state the final result.
- Do not refer to any notes or books. You may use a calculator.
- The total time is **90** minutes.
- The total number of points is 100.

1 International Trade

1. [10 points] China has been accused of manipulating its exchange rate. This has been blamed for the U.S. trade deficit. Explain the link between China's exchange rate and the U.S. trade balance (with China and in total).
2. [10 points] Explain the two main reasons why international trade is beneficial.

Be sure to explain your answers.

2 Money and Inflation

1. [10 points] Why did the (original) Phillips curve relationship break down in the 1970s?
2. [10 points] Why is NAIRU (Non-accelerating inflation rate of unemployment) an important indicator that the Fed keeps a close watch on?
3. [10 points] How would a *permanent* increase in the money growth rate affect the interest rate and output? Consider the medium run and the short run. For the short run, your answer may be less firm. You could work out the details in the model we studied in class, but I'm not asking for this.
4. [10 points] How does *forward guidance* affect current aggregate demand? Explain the channels. Forward guidance means that the Fed "promises" to keep interest rates at a certain level (e.g., low) for some time in the future.
5. [10 points] Explain the economic mechanism that generates an upward sloping aggregate supply curve $Y^s(P)$. And why does the supply curve shift when price expectations change? In class, we actually talked about two mechanisms. You can pick either one.

Be sure to explain your answers.

3 Open Economy AS/AD Model

Recall the equations for the open economy AS/AD model with fixed exchange rates:

- IS: $Y = C(Y - T) + I(Y, i) + G + NX(Y, Y^*, \bar{E}P/P^*)$
- LM: $M/P = YL(i)$.
- AS: $Y = F(\frac{P}{P^e} \frac{1}{1+m}, z)$ with $P^e = P$ in the medium run.
- UIP: $i = i^*$

Consider an economy starts in the medium-run equilibrium where $P = P^e$. How does a higher foreign interest rate ($i^* \uparrow$) affect the home country?

1. [10 points] Describe the changes in the medium run and graph it.
2. [10 points] Describe the changes in the short run and graph it (same graph).
3. [10 points] Describe the transition and graph it (same graph).

Explain the changes that occur to Y, P, I, NX, M and how they come about.

End of exam.

4 Answers

4.1 International Trade

1. You need to distinguish between the trade balance with China and the trade balance overall. For the former, the AS/AD model gives the answer. The trade balance depends on the real exchange rate. Everything else equal, a stronger Dollar implies a trade deficit.

However, and this is the key point for this answer: The overall U.S. trade balance has very little to do with China's exchange rate manipulation. Recall $I = S^P + S^G - NX$. I would argue that the Chinese exchange rate has no effect on private and public saving. It may have an effect on I , but I find it hard to sign it.

2. Trade across time: Countries save in good times and borrow in bad times. This helps with consumption smoothing. Related: When a country is a good investment location, capital inflows can finance investment without reducing domestic consumption.

Comparative advantage: Countries can specialize in products that can be produced efficiently.

4.2 Money and Inflation

1. The (original) Phillips curve relates inflation to unemployment. Before the 1970s, there was a clear negative relationship between those two variables. This relationship disappeared in the 1970s.

Theoretically, we expect that unanticipated inflation leads to lower unemployment. See the AS/AD model for intuition. We expect to see a Phillips curve when inflation is largely unanticipated. This was the case before the 1970s when inflation was highly volatile and not persistent over time. This changed in the 1970s.

2. NAIRU is the unemployment rate at which the modified Phillips curve crosses zero. When unemployment is at NAIRU, this is consistent with constant inflation. When unemployment is above NAIRU, we expect inflation to accelerate. For the Fed, NAIRU provides a "full employment" target. While unemployment is above NAIRU, the Fed can safely loosen monetary policy without risking inflation. But if unemployment is below NAIRU, the Fed must tighten its stance.
3. The medium run answer is easy: Money is neutral. Faster money growth simply yields higher inflation. The real interest rate is not affected (which is why money is neutral), so the nominal rate must rise.

In the short run, the answer is more complicated. If the rise in inflation were fully anticipated, money would be neutral again. If not, we get surprise inflation, which we know to be expansionary (AS/AD model). The nominal interest rate would initially fall, and so would the real rate (until inflation expectations adjust). All of this is the upshot of the section on Inflation Expectations.

4. There are two main channels (see our discussions on expectations and policy):
 - (a) Income effects: Low future interest rates indicate that output will be high in the future (there is a subtlety here that has to do with anticipated inflation being neutral, but let's set that aside). Since consumption depends on "permanent income" (current and future incomes), this raises demand today (consumption smoothing).
 - (b) Interest rate effects: Investment depends on the cost of capital. If investors expect that interest rates will be low in the future, capital is cheaper and investment increases.
5. Upward sloping supply curve: In both stories, what matters is the discrepancy between actual and expected prices. It is really $Y^s(P/P^e)$.
 - (a) My preferred story: Wages are set based on P^e such that W/P^e results in full employment (whatever that means). After wages have been set, shocks hit (e.g. Fed actions) that determine that actual P . Labor demand depends on the real wage W/P . If $P > P^e$, wages are set "too high" and employment is below full employment (lower than expected).
 - (b) The story in the AS/AD model (less logical, but easier to write down mathematically): Labor supply is increasing in the real wage, but workers do not see the actual price level. Instead, they look at W/P^e . Inflation drives up W somehow (not W/P , but the nominal wage). Workers see a high nominal wage and think it reflects a high real wage.

In both cases, it is apparent that only P/P^e matters, not P by itself. This is why P^e shifts the AS curve. Key implication: anticipated inflation is neutral.

4.3 Open Economy AS/AD Model

1. Medium run: $Y = Y_n$ unchanged from MR-AS. The higher interest rate shifts AD left, so $P \downarrow$. $I \downarrow$. This must be made up by $NX \uparrow$, facilitated by lower P . M/P must be lower (to support higher i).
2. Short run: $Y, P \downarrow$ (shift in AD). $I \downarrow$. $NX \uparrow$ because Y and P are lower.
3. Intuition: Capital outflows force monetary contraction until i rises to i^* . This reduces AD through investment. Y falls. P must fall to reduce supply ($P < P^e$).

Transition: P^e adjusts downwards towards P . AS increases, causing $Y \uparrow$ and $P \downarrow$. In the background, the Fed adjusts M to keep $i = i^*$. Changes in Y and P have opposing effects on NX .

End of answers.