

## Problem Set 4

Due in class on Thursday, April 6.

To be handed at the beginning of lecture.

Please write your name, GSI name and section time in your problem set.

### Problem 1 : True, False, Uncertain

Explain your answers briefly and cite relevant theories.

- (a) Balance-of-payments crises are the fault of the government. Irresponsible politicians routinely neglect external constraints and engage in reckless policies that undermine the commitment to fix the currency's value.
- (b) Under the Bretton Woods system, the country at the center (the U.S.) can set its monetary policy at will. Other countries will have to adjust their monetary conditions.
- (c) Governments with economies in deficit usually face more intense pressures to restore external balance than do surplus countries. As a result, the external balance problem of a deficit country is more severe than that of a surplus country.
- (d) Under a fixed exchange rate regime, a country can generally attain internal and external balance using only fiscal policy.

### Problem 2: The Gold Standard

- (a) In spite of the flaws of the pre-1914 gold standard, exchange rates crises were rare for major European powers, the U.S., and Japan. In contrast, such changes became quite frequent in the interwar period. Can you think of reasons for this contrast?
- (b) Under a gold standard, countries may adopt excessively contractionary monetary policies as all countries compete for a larger share of the limited supply of world gold reserves. Can the same problem arise under a reserve currency standard when bonds denominated in different currencies are all perfect substitutes?

### Problem 3: Gold and the Great Depression

- (a) **Origins of the Depression.** In tracing the origins of the Great Depression, Berkeley economist Christina Romer argues that the U.S. suffered a large fall in aggregate demand following the 1929 stock market crash. For starters, explain how the crash could have induced such an effect. Knowing that the U.S. was on the gold standard at the time, explain in the IS-LM model how the Federal Reserve would be expected to respond to this shock? What is the effect of this policy on output?

- (b) When one looks at movements in the money supply and interest rates in 1930-1931, it appears that the Fed overreacted to the fall in aggregate demand (perhaps because it wanted to convince the markets of its commitment to the gold standard, perhaps because it made a mistake, perhaps for some other reason). What would happen to U.S. output and interest rates in this case? [Hint: whatever policy you had the Fed follow in part (a), now make it twice as large.] In turn, what would happen to U.S. gold reserves as a result of this policy?
- (c) **Golden Fetters.** Berkeley economist Barry Eichengreen emphasizes the central role of the gold standard in explaining why the Depression spread outward from the U.S. to the rest of the world. Given your answer to part (b), explain how foreign central banks would react to the Fed's action under the gold standard? Using the IS-LM model, illustrate the impact on output in the foreign country.
- (d) As the Depression deepened, many countries chose to abandon the gold standard. In light of your answer to part (c), explain why countries that left the gold standard early recovered more rapidly from the Depression.

#### **Problem 4: The Policy Trilemma**

Policy makers around the world often face a “policy trilemma”:

1. They want to fix the nominal exchange rate to promote international trade;
2. They want capital mobility to achieve gains from international borrowing and lending;
3. They want to engage in active monetary policy to stabilize domestic output.

Using the concepts you have learned in class, explain why this is a trilemma, i.e. why only two of the three objectives can be achieved at any point in time.

We have studied a variety of exchange rate regimes: the classical gold standard, the Bretton Woods System, and the post-Bretton Woods non-system of floating exchange rates. Explain how each of these incarnations of the international financial system fits into the policy trilemma framework outlined above. In particular, which policy objective was subordinated to make each system work? How does your answer help us think about why both the gold standard and the Bretton Woods system eventually failed?

#### **Problem 5**

In 1961, Germany faced the dilemma of an external surplus and a booming economy. As a result, speculative capital flowed into Germany and the Germans felt obliged to revalue their currency (rather than devalue it). Can you describe how such a “revaluation crisis” or “inflow attack” might operate when the government (like Germany's at the time) is highly fearful of inflation? The reasoning is different from that underlying the devaluation crisis discussed in Chapter 17, because interest rates are pushed down by speculators and there is no danger of running out of foreign reserves. (Such inflow attacks are not totally out of date: Hungary had one in January 2003.)

### Problem 6: The Gold Points.

When countries were on the gold standard, central banks paid very close attention to their gold reserves, raising interest rates when gold reserves fell below some particular level and lowering rates when gold reserves accumulated too much.

- (a) If a central bank wanted to increase domestic output and employment, how effective would an expansionary monetary policy be?

It so happens that because of shipping costs of transporting gold, small movements in exchange rates between countries could be tolerated, i.e., exchange rates were free to fluctuate between an upper and lower bound. These bounds were called the “gold points.” When a currency was within its gold points, it was not profitable to arbitrage gold in the marketplace. Once a currency started to float outside of its gold points, it became profitable to export or import gold and exchange it at the central bank for paper currency, at the fixed parity.

- (b) How do the gold points change your answer in part (a) about the effectiveness of monetary policy?

Suppose that when the U.S. and the U.K. were both on the gold standard, gold was pegged at 21 \$/oz in the U.S. and at 4.25 £/oz in Britain. Assume the total cost of shipping gold from Britain to the U.S. is  $T$  dollars per ounce. Let  $S$  be the spot exchange rate between the dollar and the pound, i.e., one pound costs  $S$  amount of dollars.

- (c) Show that it becomes profitable to import gold from the U.K. into the U.S. once the spot rate drops below  $\frac{21-T}{4.25}$ .
- (d) How will the Fed adjust interest rates if the spot rate drops below  $\frac{21-T}{4.25}$ ?
- (e) If the total cost of shipping gold from the U.S. to Britain is  $V$  pounds per ounce, show that the U.S. nominal interest rate  $R$  must not exceed  $(1 + R^*)\frac{\bar{S}}{S} - 1$  and cannot fall below  $(1 + R^*)\frac{S}{\bar{S}} - 1$ , where  $R^*$  is the U.K. nominal interest rate,  $\underline{S} = \frac{21-T}{4.25}$ , and  $\bar{S} = \frac{21}{4.25-V}$ , so that there is no incentive to ship gold to or from the United States.

The fixed rate between the dollar and the pound, as implied by the prices of gold, was \$4.86 per pound during the era of the classical gold standard. The U.S. gold points for the British pound, factoring in historical shipping costs, were a lower limit \$4.827 per pound and an upper limit of \$4.89 per pound.

- (f) In light of your previous answer, could this range allow for some domestic monetary policy autonomy?