Pierre-Olivier Gourinchas
Department of Economics
UC Berkeley

Final examination

Instructions:

- This is a **3 hour** exam with **6 questions** worth a total of **180 points** (1 point per minute), as indicated at the start of each question.

- In order to get full credit, you must give a clear, concise, and correct answer, including all necessary explanations.

- Calculators, books and notes are **not** permitted.

- Use this exam copy for question 1. Use bluebooks for questions 2-6

- Please don't forget to write your name on each copy of your exam.

Good luck!

Last Name: _____

First Name: _____

WRITE YOUR ANSWERS TO QUESTION 1 ON PAGES 2-5.

1. **[40 points, 5 each] True, False, Uncertain**. Explain briefly your answers, and cite the relevant theories, when applicable.

   (a) A current account deficit reflects the lack of competitiveness of domestic goods and services. It requires a depreciation of the domestic currency in order to stimulate exports and limit imports.

   FALSE. there are three equivalent interpretations of a current account deficit: S-I, X-M+NFP and Y-A. eliminating a current account deficit can be achieved via expenditure reducing policies.

   (b) In the last two years, China has been running a current account surplus while attracting large private capital inflows in the form of foreign direct investment [This is a fact; do not discuss]. In order to keep the Yuan from appreciating, the Bank of China had to accumulate large amounts of foreign reserves.

   TRUE: balance of payment accounting says that CA+KA+NRFA+OR=0. So if CA>0 and NRFA>0 (assume KA=0), then OR<0: the BoC must acquire assets.

   (c) The financing of the war in Iraq should increase the U.S. current account deficit.

   UNCERTAIN: it depends upon the duration of the war. a transitory war would lead to a larger CA deficit in the US. A permanent war would not. Answering TRUE is OK, if they point out that a war is transitory

   (d) As of last week, the annualized 3-month interest rate was 1.05 percent for the United States and 0.02 percent for Japan [This is a fact; do not discuss]. Accordingly, the yen is expected to appreciate against the dollar by 1.03 percent (annualized) over the next three months.

   TRUE: uncovered interest rate parity. The expected rate of depreciation is DE = i-i*=1.05-0.02=1.03 so the dollar is expected to depreciated by 1.03%

   (e) According to the World Bank, current GDP per capita in 2002 was close to $1,000 for China and $36,000 for the US [This is a fact; do not discuss]. This implies that the typical US person has 36 times the purchasing power of a typical Chinese person.

   FALSE. the purchasing power needs to be computed on a PPP basis. China's PPP income is much larger, relative to the US

   (f) Given Japan's current situation, the only available stabilization instrument is fiscal policy.

   TRUE/UNCERTAIN. here I want mentions of the following (a) liquidity trap, so monetary policy is ineffective; (b) fiscal policy is the classical solution in a LT; (c) some may mention that fiscal policy has been tried and failed so what is left is exchange rate policy.

   (g) Currency crises arise when governments follow domestic policies inconsistent with maintaining the fixed exchange rate regime. Therefore, currency crises are predictable.

   FALSE: currency crisis of the second generation are unpredictable once the economy is in the danger zone. Should mention coordination problems.

   (h) During the Bretton Wood era, foreign countries were not forced to import US inflation: they could control their money supply by sterilizing foreign exchange interventions.

   FALSE: sterilization can be somewhat effective when assets are imperfect substitutes. However, it did not work in the case of BW: Germany accumulated large dollar claims; US kept loosing reserves (Gold).

WRITE YOUR ANSWERS TO QUESTIONS 2-6 ON BLUEBOOKS

2. [**30 points**] Policymakers around the world often face what Obstfeld and Taylor dubbed a 'policy trilemma':

   - they want to fix the nominal exchange rate, in order to stabilize the price level;
   - they want capital mobility for efficiency and flexibility purposes;
   - they want to engage in active monetary policy for output stabilization purposes.

   (a) [**10 points**] Using the concepts you have learned in class, explain in detail why this is a 'trilemma', i.e. why only two of the three objectives can be achieved at any point in time.
   class material.

   (b) [**20 points**] How would your answer to the previous discussion depend on whether the domestic and foreign economies are hit by real versus nominal shocks? Explain in detail, using diagrams and theory [Note: you may interpret a real shock as a shock to the IS curve, and a nominal shock as a shock to the LM curve]
   I am looking for a discussion of Mundell's prescription: real domestic and foreign nominal shocks are better accomodated with floating regime; domestic nominal and foreign real shocks better accomodated with fixed ER. They should illustrate using IS diagrams. So, if the shocks are mostly domestic nominal or foreign real, having a fixed exchange rate may not be too costly.

3. [**25 points**] The European Monetary Union.

   (a) [**20 points**] The theory of Optimum Currency Areas identifies a minimum degree of economic integration between the joining country and the currency area, above which a single currency should be adopted. Discuss at least three criteria that determine the degree of economic integration. Applying these criteria to Europe, discuss whether, in your view, it constitutes an Optimal Currency Area. Be concise!!
   (a) labor mobility; (b) federal fiscal policy; (c) trade; (d) correlation of shocks, business cycle. For (a), (b) and (d) should conclude that Europe is not an OCA. For (c) should argue that while it is large, it is smaller than intrastate trade in US. So on all counts, Europe does not seem an OCA. You should not give the points on the answer, but on the reasoning: if someone argues -convincingly- that europe is an OCA on the above criteria, then you should give credit.

   (b) [**5 points**] Last year, output growth was -0.2% in Germany and 4.5% in Greece; inflation was 1.2% in Germany and 3.5% in Greece. The three-month nominal money market rate in the eurozone was 2 percent. Based on these numbers, explain how a common monetary policy can be too soft in high inflation countries, and too tight in low inflation countries.
   key point here is to compare (ex-post) real interest rates: Germany is 2-0.2=2.2%. Greece is 2-3.5=-1.5%. So monetary policy is expansionary in high inflation countries. Then, should observe that this leads to more output growth in Greece than Germany. Triggers even more inflation in Greece and deflation in Germany.... a common monetary policy does not necessarily lead to convergence.

4. [**30 points**] Over the years, a number of countries (Mexico, Brazil, Argentina....) have implemented **Exchange Rate Based Stabilization Programs** (ERBS). In an ERBS program, the government of a country with high inflation pegs the domestic currency to the U.S. dollar or to the currency of some other country with low inflation.

   (a) [**6 points**] Discuss briefly why fixing the exchange rate can be an effective way to fight inflation.

   expectations, expectations, expectations.... Credible way to signal that money supply will not increase

   (b) [**6 points**] Explain why the domestic and foreign *nominal* interest rates must be equal during the ERBS program.

   uncovered interest rate parity.

   (c) [**6 points**] Using the Fisher relation, express the domestic *real* interest rate as a function of the domestic *nominal* interest rate and the inflation rate. Infer what happens to the domestic real interest rate in the early stage of the stabilization program (hint: you may assume that the stabilization is not immediate so that domestic inflation π still exceeds U.S. inflation π^*). What happens to output in the short run?

   r = i - pi = i*-pi. so if pi>pi*, real interest rates are lower in stabilizing country. Shifts LM curve. Expansion of output.

   (d) [**6 points**] Express the rate of depreciation of the **real** exchange rate in terms of domestic and foreign inflation. Describe what happens to the real exchange rate and the current account following an ERBS. What needs to happen to domestic inflation relative to foreign inflation for the real exchange rate to depreciate?

   Since the nominal rate is fixed, Dq = pi*-pi so the domestic currency appreciates in real terms. Shits IS left and slows down output growth. Depreciation can only be achieved if pi<pi*.

   (e) [**6 points**] ERBS often end with a speculative run against the currency. In light of your answer to the previous question, can you explain why?

   pi<pi* only occurs when output below potential for sufficiently long time: recession, deflation, large current account deficit.... Foreign investors get scared and flee. Second generation crisis.

5. [**30 points**] Suppose that, faced with a slowing economy, the United States decides to increase permanently its money supply. We are interested in the impact of this policy on Europe.

   (a) [**6 points**] Using the IS-LM/IEB-RIP diagram, explain how the US real interest rate and US output change.

   shift US-LM to the right. expansion in US output and lower US real interest rates.

   (b) [**6 points**] Describe the effect on the current US real and nominal exchange rates, future US real and nominal exchange rates and US net exports.

   IEB shifts up. RIP shifts down. So nominal and real depreciation today. US net exports may increase/decrease (output up and exchange rate up).

   (c) [**6 points**] Describe how the change in (a) US output and (b) the exchange rate affect Europe's output. What can you conclude about the impact of a US monetary expansion on Europe's output?

   (a) increase in US output stimulates Europe exports. But (b) depreciation of dollar makes Europe's goods more expensive. So uncertain effect.

(d) [**6 points**] Suppose that the exchange rate channel (b) above is stronger, and that Europe also is facing a slowing economy. It too decides to increase permanently its money supply. Describe the impact of the joint US and Europe policy on US and European output, real interest rates, exchange rates and prices.

if (b) dominates, negative effect stronger so Europe suffers: IS shifts left (beggar-thy-neighbor). If decides to expand money supply, lowers Europe interest rate and stimulate output. Has countervailing effects on US. Competitive devaluations. Since both countries expand money supply, expect a resurgence of inflation. In the end, the exchange rate is unlikely to move one way

(e) [**6 points**] Why might coordination of monetary policies yield a better outcome?

Each country fails to take into account impact on other country. Excessive devaluations. Coordination avoids this problem.

6. [**25 points**] The Island of Kikouri maintains a fixed peg between its currency, the kiko, and the US dollar. Kikouri's central bank initially holds \$20m in foreign reserves. Kikouri's government faces a tough reelection campaign and instructs the central bank to purchase government debt, to the tune of \$5m per month, to finance additional government expenditures. Assume that the U.S. nominal interest rate is and remains at 3%.

(a) [**1 points**] What is the nominal interest rate in Kikouri?

3% (UIP)

(b) [**4 points**] Describe what happens to foreign reserves over time. How long can the peg possibly last? Call this time $\bar{T}$.

can last at most 4 months (20/5)

(c) [**10 points**] Suppose that, should a currency crisis occur, the central bank would thereafter be instructed to purchase government debt, with the effect that the money supply would increase at a constant rate of 5% per year. Assume further that *after the currency crisis,* **real** money demand would remain constant. Find the rate of inflation, the rate of depreciation of the kiko, and the domestic nominal interest rate in Kikouri *after* the currency crisis.

since real money demand is constant after crisis, M and P grow at same rate (i.e. 5%). So inflation is 5% and from PPP, we have that rate of depreciation should be 5% as well. So domestic nominal interest rate is 3%+5%=8% (UIP)

(d) [**10 points**] Based on your answer to the previous question, explain why the peg cannot last until $\bar{T}$. What are the main characteristics of this type of currency crisis?

Since interest increases from 3% to 8% at the time of the crisis, real money demand falls. So, there is a massive run on the reserves of the country. So it needs to happen before $\bar{T}$