Management 495 — Spring 2015

Topics in Finance: International Macroeconomics

Policy Discussion Assignment 1

April 7, 2015

Due: **Tue, April 28, *before* 9:00am**
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1 Finance and Trade Perspectives on the Current Account

Current account imbalances can be interpreted with a perspective on commodity trade or on financial transactions. For our purposes, $CA = EX - IM$. Using the result that $S = S^P + S^G = I + CA$, show that $CA = S^P - I + (T - G)$ is also true.

- For several years in the early 2000s, Singapore is running both a fiscal surplus and a current account surplus. Use suitable interpretations of the current account to explain how one could give rise to the other. Converting Singapore's fiscal surplus into USD, infer the difference between private savings and investment in Singapore for 2003, 2004 and 2005.
- Ireland exhibits considerably smaller GNI than GDP. Infer the difference in Euros for the years 1999 through 2004. Which of the two series grows faster? What explains this difference? Can you infer whether foreigners or domestic residents raised their incomes faster?
- During the 1990s, private household debt in the United States has been growing at a faster rate than US economic output, while the ratio of household debt to equity rose from 84% to 105% between 1990 and 2000. At the same time, government deficits prevailed except for a short period in the late 1990s. Do you think raising tariffs would have reduced the value of U.S. net imports? Would tariffs have reduced the volume of net imports?

Data. Visit *http://elibrary-data.imf.org/* and obtain the current account and fiscal surplus for Singapore in 2003, 2004 and 2005. From the box 'Query within a Dataset', select *International Financial Statistics (IFS)*. The Query Builder then offers four items to limit your search: under Country (Countries and Entities) check the box next to 'Singapore'; under Concept (Economic Sector—Balance of Payments—...) check the box for 'Current Account (Excludes Exceptional Financing), Net' to obtain the current account and under Concept (Economic Sector—Government and Public Sector Finance—...) check the box for 'Cash surplus/deficit, Cash' to obtain the fiscal surplus; under Time select the period 2000-2005. Click the button 'View data →' to display the data on the screen, then download the data into a spreadsheet file by hitting the according icon in the top right corner of the screen. Repeat similar steps for Irish data.

2 Spread of the Great Depression

About one-third of U.S. banks failed during the onset of the Great Depression between 1929 and 1933, wiping out around a quarter of U.S. money in circulation (M1). Most major economies were back on a gold standard by that time. Take the perspective of a consultant who needs to give consistent advice to both a country's government and its monetary authority.

If the central banks in those countries adhered to the "rules of the game," how would the monetary contraction in one country spread to other countries? If central banks did not adhere to the rules of the game, what would be the current account response under the price-specie-flow mechanism?

Faced with the alternatives, would you recommend exit from the gold standard? Would you recommend international monetary coordination, retaining international parities between currencies but resetting the domestic parity of currency with respect to gold?

3 The Transfer Problem

Think of a world with two countries D and R under a fixed exchange rate regime. (You may consider an international gold standard, for instance.) Country D (donor) surprisingly transfers income Y (not gold) to country R (recipient). Examples of such transfers are sharp increases in oil prices and subsequent income transfers to oil exporters, foreign aid, or war reparations.

What is the likely current account response after the transfer? There are two cases that caused much controversy: (i) As Keynes stressed, R may try to use the transfer to consume mostly domestic goods. (ii) As Ohlin countered, R may try to use the transfer to demand mostly imports from D. Does the distinction matter for the value of the current account response? Does the distinction matter for the trade volume response? Take the perspective of a consultant who needs to give consistent advice to both a country's government and its monetary authority. Would you recommend that R accept the transfer?

Hint. To determine the current account value, consider what the income transfer means for savings and investment. You may disregard the price-specie-flow mechanism.

4 Theory and Empirics of Interest Parity

State the uncovered and the covered interest parity conditions.

- Why is uncovered interest parity called uncovered? Does it have to hold? What assumptions are needed? How does it compare to covered interest parity?
- The USD 3-month deposit (interest) rate and the GBP 3-month deposit rate are both 5.0%. What is the relationship between the current equilibrium USD/GBP exchange rate and its expected future level? Assume the expected USD/GBP exchange rate three months into the future remains constant at USD 1.50 per GBP. But the GBP 3-month deposit rate doubles to 10.0%. What is the new spot USD/GBP exchange rate in equilibrium?

- Plot the difference between the USA 3-Month Certificate Of Deposit Rate and the UK 3-month Sterling Time Deposit Rate from January 1, 2001 to March 31, 2010. What do you observe? Now plot the expected exchange rate change $(E^e - E)/E$ at the three month horizon for the USD/GBP exchange rate, assuming that investors have perfect foresight so that the expected exchange rate equals the future realized spot rate. Does Uncovered Interest Parity seem to be satisfied in the data? Describe the steps you would have to take to check for covered interest parity in the data.

  You may choose not to print the graphs. In that case, draw the stylized figures for your answer.

  Data. Visit *https://www.globalfinancialdata.com/* and display graphs on your screen (using monthly frequency for 2001-2010) with the UK 3-month Sterling Time Deposit Rate (symbol: ICGBR3D), the USA 3-Month Certificate Of Deposit Rate (symbol: ICUSAT3D), the USD/GBP exchange rate (symbol: GBPUSD). (You do not need the USD/GBP 3-month Forward Rate (symbol: GBPUSD3D) but may find it instructive to display.) To view a series, enter the according symbol in the "GFD AutoSearch" field in the upper left-hand corner. You may want to download the series into three separate spreadsheets, then copy and paste the US and UK deposit rates into one spreadsheet, and copy and paste the US/GBP 3-month Forward Rate into another spreadsheet. To plot the difference between the US and UK deposit rates in Excel, you can subtract the UK series from the US series directly and then plot the resulting series by highlighting it and clicking the "Chart Wizard" button on the Excel toolbar. Select a line chart and then click the "Next" button. In the following window, select the "Series" tab and use the series of dates in the left column as the "Category (X) axis labels". To plot the expected exchange rate change at the three month horizon, create a new series according to the given formula (e.g. if the first exchange rate observation is in cell B2 in Excel, you could use the formula "=(B3-B2)/B2" for the current cell on line 3).

5 Shifting Nominal Interest Rate Expectations

The Wall Street Journal's March survey of more than 60 economists showed a decline in the average forecast for the short-term interest rate in December 2015 to 0.75%, down from the 0.89% interest rate that surveyed economists projected two months early in January's survey. For the medium term, the surveyed economists now see short-term interest rates 2.19% in December 2016 versus a previous estimate of 2.31% in January's survey.

First, analyze the consequences of the change in expectations for financial markets. The Federal Reserve since late 2008 has held short-term interest rates in a range of zero to 0.25%, and the rate has recently been around 0.10%. Does the change in expected interest rates signal an expected reduction or expansion in money supply in 2015? What does the expected U.S. interest rate in 2015 imply for the nominal exchange rate in 2015? Use a diagram that shows the nominal spot exchange rate between the U.S. dollar and any foreign currency, and expected currency returns, today (in April 2015). Document how the change in expectations between May and August this year must influence the nominal

spot exchange rate today.

Next, take the perspective of a consultant who needs to give consistent advice to both the government and monetary authorities. The WSJ March poll found 29 surveyed economists expected the Fed to make its first interest rate move upward in June 2015, 23 in September 2015 and four in December 2015. Asset prices in the short-term bond market, however, imply yields of around 0.515% for December 2015 and 1.365% for December 2016. Are the surveyed economists forming expectations similar to participants in the short-term bond markets? Should the apparent disagreement be a concern for the Fed and its communication? Why does the formation of expectations matter for financial markets and the overall economy?

6 Sales Tax Hike in Japan

As part of its reform package, the Japanese government raised the consumption tax from 5 to 8 percent in April 2014. Soon thereafter, Japanese quarterly GDP figures suggested that output was shrinking. Japan suffered a 7.3 percent contraction in the second quarter of 2014, and another contraction of 1.6 percent in the third quarter of 2014. Take the perspective of a consultant who needs to give consistent advice to both Japan's government and its monetary authority.

First, analyze the consequences of the tax hike for financial markets. Treat the economic shock as a temporary drop in Japanese output. Consider Japan the home economy so that the nominal exchange rate E is denominated in Japanese Yen per U.S. dollar. Use a joint diagram that shows the nominal spot exchange rate E, expected currency returns, and real money holdings to derive how a temporary output contraction affects the nominal Japanese interest rate R and the nominal exchange rate(i) in the *short run* and (ii) in the *long run*.

Next, suppose the government's objective is twofold: (1) to raise government revenue so as to reduce the net issuance of additional government debt and (ii) to stimulate the economy through monetary policy. What policy intervention do you recommend? Is your policy recommendation operable when nominal interest rates R are near zero?

7 Austerity and Internal Devaluation

Take Greece as the home economy and the rest of Europe as the foreign economy. Both regions share a common currency so that the nominal exchange rate is fixed at $E = \bar{E}$. After years of real wage reductions in the rest of Europe, relative to Greece, Greece is running a current account deficit with the rest of Europe.

Imagine the old days under a gold standard and think of the price-specie-flow mechanism is at work. How would the current account balance between Greece and the rest of Europe adjust under the price-specie-flow mechanism? Instead of gold flows, the European Central Bank system tracks virtual gold flows these days under so-called "target balances".

Now suppose Relative PPP holds so that $q = EP^*/P = const.$. Real wage reductions in the rest of Europe result in a reduction of P^*. What needs to happen to the Greek price level for Relative PPP to be maintained (and current account balance to be restored)? This is called an internal devaluation. If the

exchange rate were flexible (the Greek Drachma back) but the Greek price level sticky, what would have to happen to the exchange rate E for Relative PPP to be maintained?

Take the perspective of a consultant who needs to give consistent advice to Greece's government (and its possible future monetary authority). Would you recommend an external devaluation with an exit from the Euro? Would you recommend internal devaluation and, if so, with what measures?

8 Bitcoin

Consider the U.S. dollar, or any other major reserver currency, your home currency and think of the electronic currency bitcoin as a foreign one. Then the dollar price of one bitcoin can be denoted with the nominal exchange rate E in a direct quote. At this time, there are no relevant bitcoin denominated assets, so the interest rate on bitcoin holdings is $R^* = 0$, whereas the nominal interest rate on dollar deposits is small but strictly positive $R > 0$.

Suppose Uncovered Interest Parity holds between the U.S. dollar and bitcoin. Do bitcoins have to appreciate or depreciate against the U.S. dollar over time?

The condition for money market clearing can be re-expressed as $P = M/L(\cdot)$, where M is U.S dollar supply in circulation, $L(\cdot)$ is demand for U.S. dollars and P is the consumer price level in U.S. dollars. Write down an equivalent condition for bitcoins, where P^B is the consumer price level expressed in units of bitcoins, M^B is the supply of bitcoins and $L^B(\cdot)$ is demand for bitcoins. Use the two money-market clearing conditions to state the inflation rate π of the U.S. dollar and the inflation rate π^B of bitcoins.

Suppose Relative PPP holds between U.S. dollar and bitcoin denominated consumer baskets. How does the expected change in the price of bitcoins E relate to π and π^B? If bitcoins had to appreciate relative to the U.S. dollar over time, would π^B have to be larger or smaller than π?

Take the perspective of a consultant who needs to give consistent advice to both a country's government and its monetary authority. What additional considerations matter for a currency issuing government? Given your answers above, would you recommend that transactions in bitcoin be promoted, treated neutrally, or scaled back?