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Department of Economics

Econ 345 | Prof. Kasa
International Finance | Spring 2017

PROBLEM SET 1
(Solutions)

1. (25 points). Suppose the 12-month forward price of the euro in terms of dollars is 0.97 dollars per euro. Suppose the spot price of of the euro in terms of dollars is 1.0. Next, suppose that currently the annual interest rate on dollar deposits is 4%, while the interest rate on a comparable euro deposit is 5%. There are no transactions costs. Is there an arbitrage opportunity here? If so, explain exactly how you would take advantage of this situation to make riskless profits.

   Covered Interest Parity implies

   $$\frac{F}{E}(1+R^*) = 1+R$$

   The right-hand side is the dollar return on a dollar investment, while the left-hand side is the (covered) dollar return on a euro investment. Substituting in the given information, we get

   $$\frac{F}{E}(1+R^*) = \frac{0.97}{1.0}1.05 \approx 1.02 < 1+R = 1.04$$

   Hence, even though the euro interest rate is higher, the covered rate of return from investing in euros is less than the return from investing in dollars. You can make arbitrage profits by borrowing euro, then buying dollar spot, investing in dollars, and then simultaneously selling the (known) amount of future dollars forward. You will have more than enough dollars to pay back your euro loan. Your profits are only limited by how much euro you can borrow! In practice, this would be implemented with a swap contract.

2. (25 points). Until recently, China actively purchased US Treasury securities in order to limit the appreciation of its currency. (Currently it is *losing* foreign reserves). For this question you are asked to read two articles about how the USA should have responded to this strategy. Both are by Paul Krugman, and are posted on the course webpage: "China, Japan, America" and "Fear-of-China Syndrome". According to Krugman, should the USA be worried about China suddenly deciding to sell its holdings of US treasury bonds? Why or why not? Do you agree? Why or why not? According to Krugman, how do you explain the fact that since the financial crisis the US government budget deficit has exploded, yet at the same time the US Current Account deficit has actually *decreased*. What happened to the 'twin deficits' hypothesis?

   Recently, whenever someone in the US advocates 'getting tough' with China, someone else warns that China could retaliate by selling its holdings of US Treasury bills. This would raise US interest rates and depreciate the dollar. (Can you use our asset market equilibrium graph to show why? Hint: Although the sale by China would not change US money supply or US money demand (at least not directly), it would likely change the 'risk premium' on US assets. We will discuss this after the midterm).

   Of course, a weaker US dollar makes the US poorer, so this is bad for the US. However, Krugman notes that it would also make US goods more competitive, and 'improve' the trade balance. (This could be

politically advantageous, since exporters and import-competing industries tend to exert more political influence than the more diffuse interests of consumers). The sudden drop in the dollar would also impose a capital loss on China, since it holds a large quantity of $-denominated assets. It could also exert a more general contractionary effect on the entire Chinese economy unless China's central bank sterilzed the reserve sale by purchasing domestic assets. As a result, Krugman argues that the threat is not credible, and that US policymakers could not worry about China suddenly deciding to sell its US assets.

Krugman also notes that any increase in US interest rates would likely be modest given the current economic environment. This is because a process of domestic 'deleveraging' has led US households to increase their saving, so US government budget deficits no longer need to be financed by China. The post-crisis increase in private US saving explains the recent breakdown of the twin deficits hypothesis.