Solution Key
Problem set 3
266: Fi. Markets and Institutions
Spring 2016
Jon Faust

Directions. You are to do this problem set alone.

Due Date/time. Your work is due by beginning of class (10:30am) April 28. You can hand the work in to me at the beginning of class. If you put the work under my office door or in my mailbox, it must be in before I leave for lecture at about 10:20 am.

Questions. If you have questions, email me or one of the TAs, raise them in class, or come to office hours.

Grading. Each question is worth 5 points, for a total of 75 points.

Note: Be sure to note the proper units (e.g., millions, billions, etc.) in the following answers.

1 Hedge funds.

1.1 The typical hedge fund charges investors a certain percentage of all assets managed (management fee) and then charges a certain percentage of any gains in value (performance fee). What have these two percentages been traditionally? (Some of these fees have fallen in recent years)

Answer/comment

In the traditional 2/20 fee model, hedge fund managers charge a flat 2% fee of assets managed plus 20% of any increases in value.

Note: Some hedge funds are now offering alternative fee structures, due to increased competition in asset management, particularly from low-cost index funds. Recent fee structures may include features such as lower management fees but higher performance fees, performance fees that apply only when the hedge fund beats the market, and lower fees for investors willing to invest long-term.

1.2 Suppose that the hedge fund charges the fees noted in the previous part and then in a particular year simply matches the broad stock market outcome, with capital gains and interest bringing the total return to 5 percent. What is the return (after fees) earned by an investor who invests at the beginning of the year?

(Note: presume that the management fee is paid at the beginning of the year and is not part of any gains.)

Answer/comment

Let's say the investor starts out with \$ A worth of capital. The investor first pays the management fee: $.02A$.

The hedge fund then takes the remaining funds, $.98A$, and earns a 5 percent return. The assets in the fund are now valued at $1.05 \times .98 \times A$.

However, the hedge fund keeps 20 percent of the gains, or $(0.20)(0.05)\times .98A$. So, after paying the management and performance fee, the investor takes home

$$(1.05)(0.98A) - (0.20)(0.05)(0.98A) = (1.04)(0.98A)$$

The return after fees is future value over initial value:

$$\frac{(1.04)(0.98A)}{A} - 1 = 0.0192$$

So the investors' return is .0192, or 1.92 percent.

1.3 Suppose that the broad market has a total return of 5% in a given year. What return will the hedge fund have to make in order for the customers to break even after fees?

<u>**Answer/comment**</u>

To earn a 5 percent return, the investor should take home $1.05 \times A$ after paying fees.

Suppose we solve for the yield, r, the hedge fund need to earn on its assets. Without the performance fee, the hedge fund value will be $(1 + r) \times 0.98A$ after a year. The performance fee is $(0.20)(r) \times 0.98A$. So the hedge fund return r needs to make the following equation true:

$$(1 + r)(.98A) - (.20)(r)(.98A) = 1.05A$$

Solving for r, the hedge fund return r must equal 0.0893, or 8.93 percent.

1.4 You are advising a qualified investor who is considering investing in a hedge fund. Agreeing with the SEC's advice you say: 'Ask questions. You are entrusting your money to someone else.' The investor says, 'Tell me three very important questions to ask' (Assume that you both already know the fee structure.) Your three questions:

<u>**Answer/comment**</u>

Questions may include:

- What is the basic investment strategy? (high frequency vs long-short, for example)

- How levered is the fund?

- Are there any potential conflicts of interest?

- What are limitations to fund withdrawal?

- What are the fund managers' track records?

- What sort of internal controls does the fund have?

1.5 Based on the answers the investor receives from the hedge fund, the investor chooses to put money in the hedge fund for at least 1 year. At the end of the 1 year, the investor returns to you with the investment results and asks whether he or she should keep the money in the hedge fund. How does your advice differ from your initial advice?

Answer that same question if the investor comes back with 3 years of investment results.

Answer/comment

One or three years more evidence don't really change the picture much. You still need to know the same things and your confidence that the fund is doing a good job shouldn't be changed much by any short track record.

Follow the link here for a good resource by the SEC on hedge funds.

2 Facts, myths, and yet to be determined.

2.1 The Fed is audited. True/false and explain.

Answer/comment

Yes, government institutions such as the Government Accountability Office and the Office of Inspector General audit and review the Fed. Go here for more information on regulation of the Fed.

To add one detail: essentially the only part of the Fed's activities that is not audited is the monetary policy choices. These are not audited in order to preserve the independence in monetary policy decisionmaking.

2.2 The large-scale asset purchases have led to an unprecedented level of reserves in the banking system of the U.S. Some economists fear that this must inevitably lead to inflation. Historically, this would likely have been the case. Why does the traditional logic no longer necessarily apply?

Answer/comment

In the past, excess reserves were essentially zero, which meant that banks used additional reserves to allow for additional deposits, which would expand the money supply and lead to higher nominal output.

Now, the Fed pays interest on excess reserves. By providing a this return, the Fed can limit the desire of the banking system to convert excess reserves into required reserves, i.e, the banking system's desire to attract deposits and issue loans.

2.3 The Fed's policies could nonetheless lead to inflation. Why is this so?

Answer/comment

If the Fed succeeds in stimulating the economy, we will expect to see higher inflation.

This inflation will only be excessive (much more than desired) if the Fed fails to tighten financial conditions appropriately as the inflation emerges.

2.4 The purpose of quantitative easing was to flood the economy with liquidity in hopes that more money in the economy leads to more spending. True/false and explain.

Answer/comment

No, the purpose of QE was to lower longer-term interest rates, see next question.

2.5 According to the Fed, the main purpose of quantitative easing was for the Fed to push out the demand curve for longer-term securities, driving up their price and lowering their yield. True/false and explain.

Answer/comment

Yes, the purpose of QE is to lower yields on long-term government securities. The basic intuition is this: by increasing the demand for longer-term bonds you push up the price—that is, lower the yield.

2.6 Many mainstream economists believe that the Fed's QE purchases should have little or no effect on yields. True/false and explain.

Answer/comment

True. When banks sell government securities to the Fed, they receive in exchange another safe, government asset – reserves at the Fed. Some economists have doubts that substituting one safe asset for another in the balance sheets of lenders will lead to looser financial conditions in the economy.

Those who believe that LSAPs have important effects, however, believe that reserves and long-term bonds aren't perfect substitutes.

2.7 When the Fed purchases longer-term government securities, so long as the yield on the securities exceeds the Fed pays on reserves, this saves money for the taxpayers. True/false and explain.

Answer/comment

True. When the yield on the securities exceeds what the Fed pays on reserves, the Fed will have positive net income. The Fed sends that income to Treasury, which lowers the government's debt burden.

2.8 From 2012 through 2015 the Fed's ownership of securities saved or cost the taxpayers about how much per year? (Hint: google federal reserve remittances.)

Answer/comment

About 90 billion dollars per year.

2.9 Federal debt in the hands of the public as a share of GDP is over 70 percent. Historical precedent worldwide clearly shows that debt much higher than this is almost inevitably associated with sharply rising sovereign borrowing costs. True/False explain.

Answer/comment

False. Some countries, such as Japan, have debt to GDP ratios of about 200 percent, and are able to borrow at rates much lower than those in the U.S. Indeed, despite the high level of debt, the public is paying the Japanese government for the privilege of lending—that is, nominal yields are negative.

2.10 When a government borrows at negative interest rates, this inevitably puts an increased tax burden on future generations. True/false explain.

Answer/comment

False. When governments borrow at negative rates, they are getting paid to borrow. This actually earns money for the government and lowers the future burden of debt.