

ECO 301: Money and Banking

Week 2 Homework: Federal Reserve System

Directions: Provide written answers for the following questions and prompts. You may print these sheets and put your answers in the space provided or you may use your own paper to write your answers.

When you have finished, scan or take pictures of your work, combine all images to a single PDF file, and upload your work as a single PDF file to the Canvas Assignment area. There are apps available for Apple and Android mobile devices that can create PDF documents using your device's camera, including the Apple iPhone's native *Notes* app (use the *scan document* feature) and *Adobe Scan* app available for Android and Apple mobile devices. There are also free online tools such as <https://online2pdf.com/> and <https://www.easypdfcloud.com/>.

1. Suppose that banks are required to hold a fraction of demand deposits on reserve in accounts at the Federal Reserve district banks that pay a small amount of interest to the bank. Suppose the minimum reserve requirement is 3%, so banks must hold at least 3% of total demand deposits in reserve and may lend out the rest. Suppose the interest rates on loans the bank makes is 7% and suppose the interest rate paid on reserves is 2%. Suppose a bank has \$4 million in deposits.
 - (a) What is the total amount of interest income that the bank earns if it holds exactly the minimum required amount of deposits in reserve?
 - (b) What is the total amount of interest income that the bank would earn if it was not required to keep any reserves and decided to lend out all of its deposits?

- (c) What is the opportunity cost for the bank for keeping reserves? This is sometimes called a "reserve tax." Calculate the opportunity cost both in terms of the dollar amount and as a percentage of the total demand deposits.
- (d) What would happen to the opportunity cost of holding reserves for the bank if the Fed increased the interest rate on reserves?
- (e) What would happen to the opportunity cost of holding reserves for the bank if the Fed increased the percentage of demand deposits required to keep on reserve?
- (f) What would happen to the opportunity cost of holding reserves for the bank if the interest rate for loans increases?

2. Thomas Hoenig, former president of the Federal Reserve Bank of Kansas City, remarked about the Federal Reserve System: "It was designed as a public-private partnership, accountable to, and yet independent of, the government."

(a) In two to four sentences, describe in what sense is the Federal Reserve System a public-private partnership.

(b) In two to four sentences, describe what sense is the Federal Reserve System both accountable to the government and independent of it?

(c) Describe two benefits of an independent central bank.