Part- 3 Chapter- 14

Aplia Homework: The Financial Crisis and the Great Recession

**1. Roots of the crisis and levered banking**

Consider the following dialogue between Crystal, a student studying the financial crisis and the recession of 2007–2009, and Edison, a teaching assistant in her class.

CRYSTAL: Hi, Edison. I would like to ask you about leverage. The Professor was talking about the advantages and disadvantage of banks using leverage. From what I understand, high bank leverage was one of the key ingredients in the housing bubble and the financial crisis that followed. What I do not understand is that, if leverage is so risky, why wouldn't the government just forbid banks from using leverage at all and thus eliminate the possibility of such a crisis in the future?

EDISON: Crystal, this is not an easy question. Regulators and bankers are still searching for strategies that would benefit both investors and bank customers. I'll try to help you understand the trade-off of using leverage versus abandoning it completely. But first, let's make sure you understand what leverage is.

CRYSTAL: In banking, leverage means that banks can use \_\_\_\_\_\_\_\_\_\_ to purchase assets that offer higher returns and thus increase the potential return on \_\_\_\_\_\_\_\_\_\_\_.

EDISON: Consider a bank that has $8,000,000 in deposits and $2,000,000 in reserves. Suppose it lends out $7,200,000. What are the bank's total assets and stockholders' equity?

CRYSTAL: This bank has \_\_\_\_\_\_\_\_\_ in assets, and stockholders' equity is \_\_\_\_\_\_\_\_\_\_.

EDISON: Now, suppose the bank's deposits carry an average annual interest rate of 2%, whereas its loans yield 4%. This means that the bank earns $7,200,000×0.04=$288,000 on loans and must pay only $8,000,000×0.02=$160,000 in interest on deposits. To sum up, the bank “borrowed” dollar deposits from its customers to return $288,000−$160,000=$128,000 per year in profit for its stockholders.

CRYSTAL: I see. This implies that the bank offers a return of \_\_\_\_\_\_\_\_ on its equity of $1,200,000. Quite impressive!

CRYSTAL: I see. This implies that the bank offers a return of **10.67%** on its equity of $1,200,000. Quite impressive!

EDISON: Yes, the investors should be excited to get such a return! However, what if there is an increase in defaults, so that the bank's assets (loans) fall in value by, say, 10%, or $7,200,000×0.1=$720,000 ? The value of loans outstanding would decline to $7,200,000−$720,000=$6,480,000 , and total assets would be $2,000,000+$6,480,000=$8,480,000 . Consequently, the stockholders' equity will decline to $8,480,000−$8,000,000=$480,000 .

CRYSTAL: But this means that the bank's shareholders lost \_\_\_\_\_ of the original equity of $1,200,000!

EDISON: Now, let's see whether it would really help if the bank used no leverage, that is, if it operated without borrowing from customer deposits. All it would be able to loan out is its equity of $1,200,000, which would earn just $1,200,000×0.04=$48,000 . Given a 2% interest rate on deposits, the bank's profit would be $48,000−$160,000=−$112,000 . With such low expected returns, the bank would not exist in the first place, as investors would undoubtedly go somewhere else. Thus leverage is essential to a bank's profitability, but it also carries significant risk.

**2. Leverage and returns**

The following tables show the balance sheets of two banks: Wide Bank and Narrow Bank.



**\_\_\_\_\_\_\_\_** is a levered bank, while **\_\_\_\_\_\_\_\_** is an unlevered bank.

Assume that both banks offer an annual rate of 2% on checking deposits and charge an annual rate of 4% on loans.

For Narrow Bank, the annual interest cost on deposits is \_\_\_\_\_\_\_\_, and the annual return on loans is \_\_\_\_\_\_\_\_. Hence, Narrow Bank earns a net profit of \_\_\_\_\_\_\_, which represents a rate of return of \_\_\_\_\_ (Hint: Round to 1 decimal place.) on stockholders' equity.

For Wide Bank, the annual interest cost on deposits is **\_\_\_\_\_\_\_,** and the annual return on loans is **\_\_\_\_\_\_**. Hence, Wide Bank earns a net profit of **\_\_\_\_\_\_\_**, which represents a rate of return of \_\_\_\_(Hint: Round to 1 decimal place.) on stockholders' equity.

Suppose that the value of loans in both banks declines by 10%. The amount of loans outstanding for Wide Bank decreases from $450,000 to \_\_\_\_\_\_\_\_\_, which represents a loss of \_\_\_\_\_\_\_ (Hint: Round to 1 decimal place.) of stockholders' equity. The amount of loans outstanding for Narrow Bank decreases from $200,000 to \_\_\_\_\_\_\_, which represents a loss of \_\_\_\_\_\_ (Hint: Round to 1 decimal place.) of stockholders' equity.

Therefore, \_\_\_\_\_\_\_\_\_\_\_ provides a higher rate of return to its investors, and \_\_\_\_\_\_\_\_\_\_\_\_ exposes its investors to greater risk in the event of a decline in the value of loans.

**3. Asset prices and bubbles**

When is a price increase of an asset not a bubble?

 When the price of an asset is being bidded up through speculation or gambling

 When the value of services the asset provides over its life or the discounted value of the sum of future revenues from the asset remains unchanged

 When the price increase is based on a correct estimate of the future value of the asset

**4. The subprime mortgage market**

The financial crisis started with defaults—borrowers not repaying their loans—on subprime mortgages in the United States.

Subprime mortgages have which of the following characteristics? Check all that apply.

 They have a higher likelihood of default.

 They are made to people with relatively few assets.

 They are made on homes in areas outside of prime areas.

Subprime mortgages expanded to about 35% of all mortgages issued in the United States in 2004. Which of the following could have decreased the growth of these mortgages? Check all that apply.

 Decreased regulation of the financial sector

 The expectation that housing prices would keep rising

 A shift to lower-risk investments by investors

 The Federal Reserve setting low interest rates in the early part of the 2000s

On the graph, show the primary effect of a contraction of the mortgage market on the housing market. Shift the demand curve or the supply curve for housing.

Note: Select and drag one or both of the curves to the desired position. Curves will snap into position, so if you try to move a curve and it snaps back to its original position, just drag it a little farther.

A contraction in the mortgage market would have resulted in \_\_\_\_\_\_\_\_ in the price for housing.

**5. The role of mortgages in the financial crisis**

Which of the following is a factor that contributed to the financial crisis?

 The housing bubble in the United States was national in scale.

 Mortgage-backed securities were easy to understand, so when the underlying mortgages failed, the price of the security was obvious.

 Mortgage-backed securities are fundamentally a bad idea.

**6. from the financial crisis to the Great Recession**

The following graph shows the aggregate demand and aggregate supply curves for the economy. Suppose the economy has recently recovered from a credit market disruption.

Shift one or both curves to indicate the effect of this change on the economy.

Note: Select and drag one or both of the curves to the desired position. Curves will snap into position, so if you try to move a curve and it snaps back to its original position, just drag it a little farther.

Therefore, a resolution of the credit disruption can lead to \_\_\_\_\_\_\_\_\_\_.

How would a breakdown in the credit system alter the effectiveness of monetary policy in a recession?

 It has no impact on the effectiveness of monetary policy.

 It undermines the impact of expansionary monetary policy.

 It intensifies the impact of contractionary monetary policy.

The following table presents the balance sheet of a bank on the edge of becoming insolvent.



The government purchases $250,000 worth of stock from this bank.

Fill in the blanks in the following table to show the effect of government's purchase of stock on the balance sheet of this bank.

| **Assets** | **Liabilities and Net Worth** |
| --- | --- |
| Reserves | \_\_\_\_\_\_\_\_ | Checking deposits | \_\_\_\_\_\_\_\_ |
| Loans outstanding | \_\_\_\_\_\_\_\_ | Stockholders' equity | \_\_\_\_\_\_\_\_ |
| Total | \_\_\_\_\_\_\_\_ | Total | \_\_\_\_\_\_\_\_ |

This process of government purchasing stocks of a bank is known as \_\_\_\_\_\_\_\_\_\_.