ECON 421: Business Fluctuations

Spring 2015
Tu 6:00PM–9:00PM
Section 102

Created by
Richard Schwinn

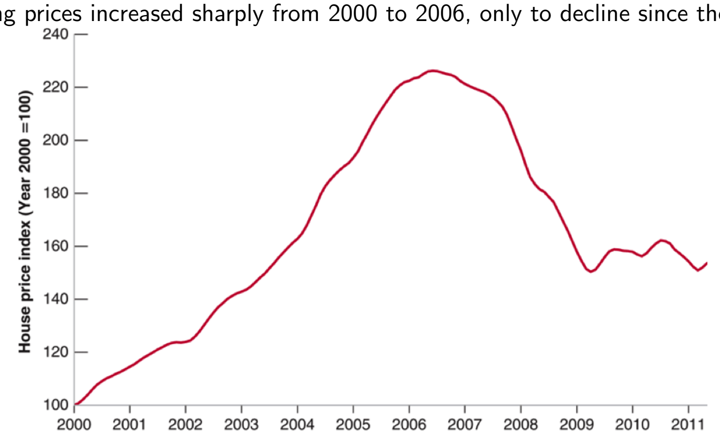
Based on
Macroeconomics, Blanchard and Johnson [2011]

After 2006, housing prices begin to decline.

- Once the decline occurred many mortgages were considered to be underwater (this is when the value of the mortgage exceeds the value of the house).
- It was realized that the mortgages offered were in fact much riskier than either the lender pretended or the borrower understood.
- This in turn caused many borrowers to default on their mortgages thus creating a large loss to many banks.

Housing Prices

Housing prices increased sharply from 2000 to 2006, only to decline since then.



Source: Case-Shiller Home Price Indices, http://www. standardandpoors.com/

A Bank's Balance Sheet

Assets		Liabilities and Capital	
Assets	100	Liabilities	80
		Capital	20

A bank's **capital ratio** is defined as the ratio of capital to assets and is thus equal to 20% here. Its **leverage ratio** is defined as the ratio of assets to capital (the inverse of the capital ratio) and is thus equal to 5.

- If the assets the bank hold go down in value and the liabilities remain the same,
- liabilities would exceed assets,
- and the bank would then be considered bankrupt.
- During the crisis, many banks opted for a higher leverage ratio thus more risk making it the more likely that they would go bankrupt.

Notes 09
Housing Problem → Financial Crisis
Housing Prices and Subprime Mortgages
The Role of Banks
The Use and Limits of Policy
The Slow Recovery
References

Opaque Assets

- Mortgage-backed securities (MBS) offered banks a mechanism by which to diversify the risk of holding an individual mortgage.
- MBS are interests in pools of mortgages.
- Ordinarily, a pool of mortgages has a more predictable repayment profile than an individual mortgage, because repayment of the latter is dependent on the individual circumstances of the mortgage borrower.
- In principle, the advent of MBS should have reduced the cost of mortgage borrowing by making mortgage financing more attractive to lenders.

Notes 09
Housing Problem → Financial Crisis
Housing Prices and Subprime Mortgages
The Role of Banks
The Use and Limits of Policy
The Slow Recovery
References

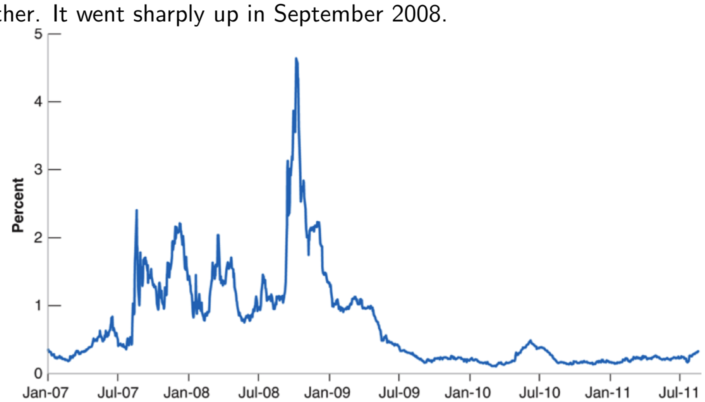
Securitization

- The development of **collateralized debt obligations** (CDOs), which became increasingly popular in the 1990s and 2000s, divided up the payments from a pool of mortgages into different streams
  - for example a senior tranche, paid first,
  - and junior tranches, paid afterwards (as long as sufficient funds were available).
  - The tranches were designed to match different appetites for risk among investors.
- The complexity of CDOs can increase substantially with further securitization. There are CDOs on CDOs and so on.
- Securitization created a risk that evidently was not well understood:
  - The assessed value of the payment streams was contingent on housing prices continuing to rise.
  - Once housing prices fell, many mortgages in a given pool were at risk, and the value of MBS and of the individual payment streams on CDOs became extremely difficult to assess.
  - From a liquidity perspective, banks also relied heavily on liabilities from other banks. This is known as **wholesale funding**. This means the money that they were gambling with uninsured money.

Notes 09
Housing Problem → Financial Crisis
The Use and Limits of Policy
Initial Policy Responses
The Limits of Fiscal Policy: High Debt
The Limits of Monetary Policy: The Liquidity Trap
The Slow Recovery
References

The Ted Spread since 2007

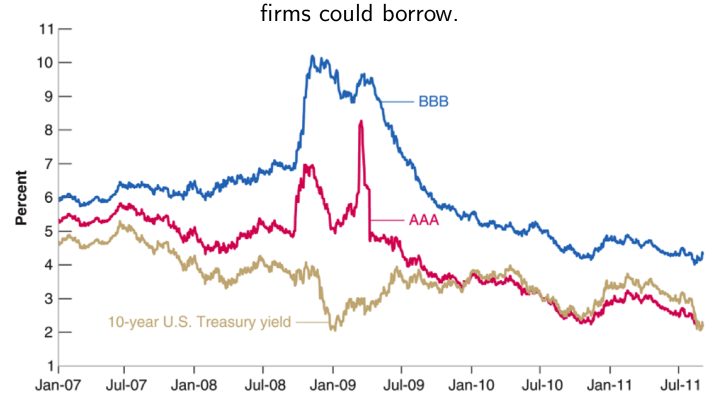
Ted spread, which is difference between the riskless rate (measured by the rate of three-month government bonds), and the rate at which banks are willing to lend to each other (known as the Libor rate) reflects the risk banks perceive in lending to each other. It went sharply up in September 2008.



Notes 09
Housing Problem → Financial Crisis
The Use and Limits of Policy
Initial Policy Responses
The Limits of Fiscal Policy: High Debt
The Limits of Monetary Policy: The Liquidity Trap
The Slow Recovery
References

Yields on 10-Year U.S. Government Treasury, AAA, and BBB Corporate Bonds, since 2007

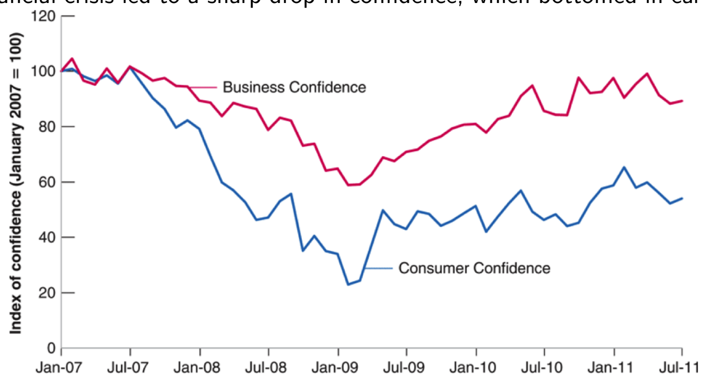
In September 2008, the financial crisis led to a sharp increase in the rates at which firms could borrow.



Source: Bloomberg L.P.

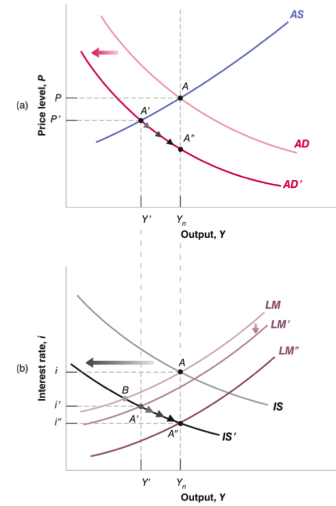
U.S. Consumer and Business Confidence, since 2007

The financial crisis led to a sharp drop in confidence, which bottomed in early 2009.



Source: Bloomberg L.P.

A Fall in AD



The high cost of borrowing,

- lower stock prices, and
- lower confidence combined to
- decrease the demand for goods and an a sharp adverse shift of the IS curve.

What automatic solution is discussed in Chapter 7?

The Initial Response

Deflation in the prices should naturally increase the real money stock in the median run, but is painful.

Instead, in order to to bolster demand, policymakers:

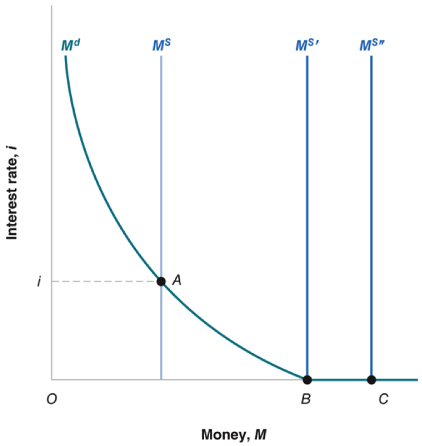
- Increased federal deposit insurance was from $100,000 to $250,000 per account.
- To prevent bankruptcy the Fed established liquidity facilities to make it easier for banks and other financial institutions to borrow.
- The government introduced a program, called the **Troubled Asset Relief Program**, or TARP, aimed at cleaning up banks.
- The goal became to increase the capital of banks. By increasing their capital ratios, and thus decreasing leverage, the program allowed banks to avoid bankruptcy and, over time, return to normal.
- Worried that some markets were slow to recover, the Fed directly intervened by purchasing mortgage-backed securities.

The Fiscal Response

When the size of the adverse shock of the financial crisis became clear:

- The U.S. government turned to fiscal policy, using a combination of reductions in taxes and increases in spending.
- the American Recovery and Reinvestment Act, was passed in February 2009.
- It aimed to increase demand and reduce the size of the recession.
- The U.S. budget deficit increased from 1.7% of GDP in 2007 to a very high 9.0% in 2010.

The Monetary Response



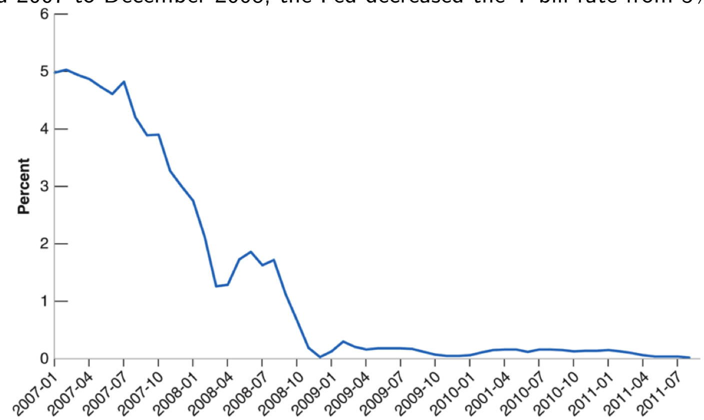
When the interest rate is equal to zero and once people have enough money for transaction purposes,

- they become indifferent between holding money and holding bonds.
- The demand for money becomes horizontal.
- This implies that, when the interest rate is equal to zero, further increases in the money supply have no effect on the interest rate.

Once the interest rate is equal to zero, expansionary monetary policy becomes powerless.

The T-Bill Rate, since 2007

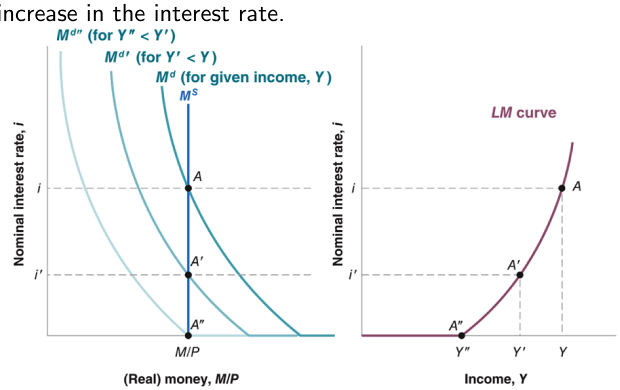
From mid-2007 to December 2008, the Fed decreased the T-bill rate from 5% to zero.



Source: Series TB3MS Federal Reserve Economic Data (FRED) http://research.stlouisfed.org/fred2/

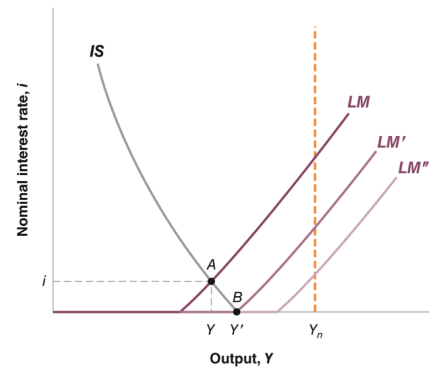
The Derivation of the LM Curve in the Presence of a Liquidity Trap

- For low levels of output, the LM curve is a flat segment, with an interest rate equal to zero.
- For higher levels of output, it is upward sloping: An increase in income leads to an increase in the interest rate.



(a) (b)

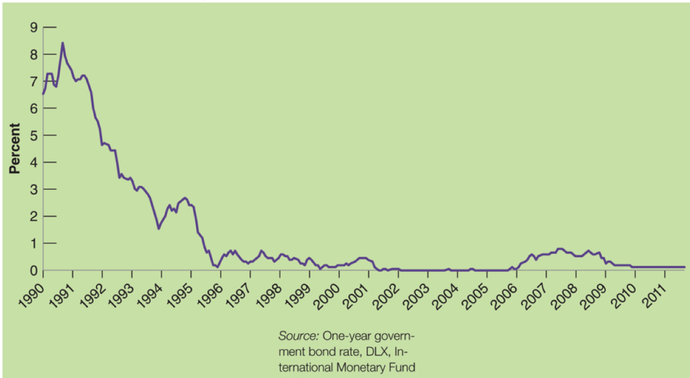
The IS-LM Model and the Liquidity Trap



In the presence of a liquidity trap, there is a limit to how much monetary policy can increase output.

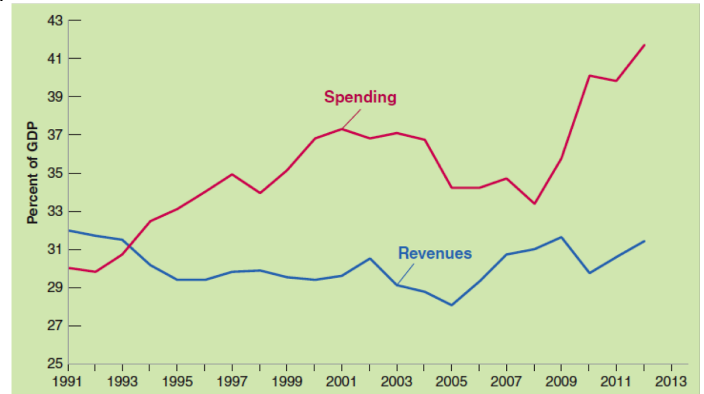
The Interest Rate in Japan since 1990.

Japan has been in a liquidity trap since the mid-1990s.



Government Spending and Revenues (% of GDP), Japan

Increasing government spending and decreasing revenues have led to steadily larger deficits.



The Limitations of Fiscal Policy

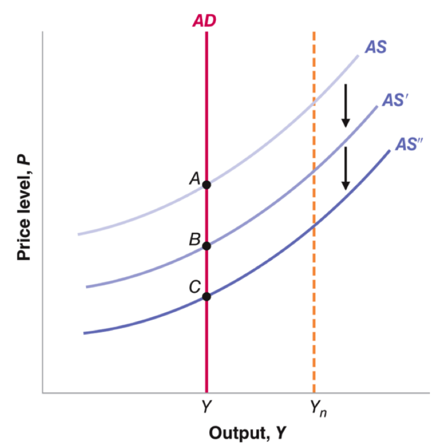
The limitation of Fiscal Policy is that,

- If the demand for goods does not recover over time by itself,
- If people or firms do not eventually become more optimistic and increase spending,

Then the government must continue to run deficits to sustain higher demand and output.

- Continuing large deficits lead, however, to steadily higher public debt.
- In advanced countries, the ratio of government debt to GDP has increased from 46% in 2006 to 70% in 2011; in the United States, the ratio has increased from 42% in 2006 to 72% in 2011.
- As we will see later, high debt implies that, sooner or later, either taxes will have to increase, or spending will have to decrease, or the government will be unable to repay the debt.

The Liquidity Trap and Adjustment Failure

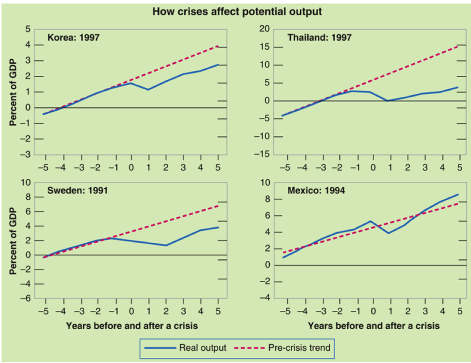


If the economy is in the liquidity trap and output is below its natural level,

- The price level may decrease over time, but
- Output does not increase.

Thus this increase in the real money supply due to the decrease in the price level due to monetary policy will not impact spending (where the AD curve is seen as being vertical) therefore the adjustment mechanism which would return output to its natural level fails.

The Evolution of Output after Four Banking Crises



Banking crises clearly lead to large decreases in output in the short run. But do they have an effect on output in the medium run? Or, put in terms of our model, do they affect the natural level of output? Research shows that:

- First, financial crises typically lead to a decrease in output relative to trend, even in the medium run.
- Second, while this conclusion holds on average, there is a lot of variation across countries.
- Some countries go back to trend, while others suffer large decreases.

Comments, questions, or concerns?

References

Olivier Jean Blanchard and David Johnson. *Macroeconomics*. Prentice Hall, 6th edition, 2011. ISBN 9780133061635.