LECTURE 22
MONETARY POLICY AND FINANCIAL MARKETS
April 16, 2020

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LECTURE 22
Monetary Policy and Financial Markets

April 16, 2020
Announcements

• Problem Set 5, Part 1 is due now.

• We have posted Problem Set 5, Part 2.
  • It is due at 2 p.m. on Thursday, April 23th.
I. Overview
Determination of Short-Run Output: The “Keynesian Cross”
Two More Things that Can Shift PAE

- **Monetary Policy:** Actions taken by the central bank to affect nominal and real interest rates.

- **Disruptions in Financial Markets:** Specifically, a financial crisis.
Two Key Ideas Concerning Monetary Policy in the Short Run

• By changing the money supply, the central bank can change the real interest rate.

• A change in the real interest rate shifts the PAE curve in the Keynesian cross diagram, and so changes output in the short run.
II. **THE MONEY MARKET, THE FEDERAL RESERVE, AND INTEREST RATES**
Economists’ Definition of “Money”

- Assets that can be used to make purchases.
- Concretely, you can usually think of money as meaning currency.
The Nominal Interest Rate and Money Demand

• Because you don’t earn interest on cash, the opportunity cost of holding money is what you could earn on other assets.

• That is, the opportunity cost of holding money is the nominal interest rate.

• So: Money demand is a decreasing function of the nominal interest rate.
The Demand for Money
Money Supply

- At any point in time, the amount of currency available is just a number.
- Determined by the central bank.
- That is, we take the quantity of money supplied as given.
The Supply of Money
Equilibrium in the Market for Money
How Does the Federal Reserve Change the Money Supply?

• **Open market operation:** The buying and selling of government bonds by the central bank.

• **When the Federal Reserve sells bonds,** the money supply decreases.

• **When the Federal Reserve buys bonds,** the money supply increases.
A Decrease in the Money Supply

The Fed sells bonds.
The Fed’s Ability to Influence the Real Interest Rate— the Short Run

• By changing the money supply, the Fed can change the nominal interest rate, i.

• Recall: \( r = i - \pi \) (or \( r = i - \pi^e \)), and there is nominal rigidity (inflation only changes slowly).

• So: When the Fed changes i, it changes r.
In the Short Run, Nominal and Real Interest Rates Generally Move Together

Source: FRED.
The Fed’s Ability to Influence the Real Interest Rate—the Short Run versus the Long Run

• As we have just seen, the Fed can affect the real interest rate in the short run.

• However, in the long run, \( r \) must be at the level that equilibrates \( S^* \) and \( I^* \).

• The Fed cannot keep \( r \) away from this level indefinitely.

• We will discuss next time what prevents the Fed from doing this.
III. Monetary Policy and Short-run Macroeconomic Fluctuations
The Real Interest Rate and Planned Aggregate Expenditure (PAE)

Recall: $\text{PAE} = C + I^p + G + NX$.

- $I^p$ is lower when $r$ is higher.
- Saving is higher when $r$ is higher, so $C$ is lower when $r$ is higher.
- We will see two weeks from now that $NX$ is lower when $r$ is higher.

Conclusion: An increase in $r$ reduces PAE at a given $Y$. 
An Increase in the Real Interest Rate

\[ Y = \text{PAE} \]

[Graph showing the relationship between PAE and Y, with Y2 and Y* marked on the Y-axis.]
Monetary Policy

• Actions taken by the central bank to affect nominal and real interest rates.

• Contractionary monetary policy: Federal Reserve actions to increase nominal and real interest rates.

• Expansionary monetary policy: Federal Reserve actions to decrease nominal and real interest rates.
Why Might the Central Bank Undertake Expansionary or Contractionary Monetary Policy?

• To offset some other force that is shifting the PAE line (countercyclical monetary policy).
  • We’ll discuss an example next time (monetary policy in the Great Recession).

• To pursue some other objective.
  • We’ll discuss the Fed’s main other objective next time: inflation.

• A mistake.
  • Example: Monetary policy in the Great Depression.
Industrial Production, 1927–1934

Source: Federal Reserve Bank of St. Louis, FRED.
The Money Stock, 1923–1933

Source: Federal Reserve Bank of St. Louis, FRED.
Real Interest Rate, 1923–1933

Source: Federal Reserve Bank of St. Louis, FRED.
Monetary Contraction in the Great Depression

PAE shows the effects of the fall in autonomous consumption.
Monetary Contraction in the Great Depression

$PAE_3$ shows the effect of monetary contraction and the rise in $r$. 
Industrial Production, 1927–1934

Source: Federal Reserve Bank of St. Louis, FRED.
Unconventional Monetary Policy—Overview

- Definition: Refers to actions by the central bank other than buying or selling short-term government bonds for currency.

- Motivation: The main motivation for unconventional monetary policy is that nominal interest rates cannot go (much) below zero.

- The reason is that there is an asset—currency— that offers a zero nominal rate of return for sure.
The Two Main Forms of Unconventional Monetary Policy

- **Forward guidance**: Statements or actions that influence expectations about *future* nominal interest rates.

- **Quantitative easing**: Buying bonds *other than short-term government debt* with currency.
The Effects of Unconventional Monetary Policy

- Both forward guidance and quantitative easing lower some real interest rates.
- As a result, they increase consumption and planned investment at a given level of income, and so shift the PAE line up and increase output in the short run.
- Note: In our main analysis, we will continue to talk about “the” real interest rate, r.
IV. FINANCIAL CRISES
Financial Intermediation

• The process of getting saving into productive investment.

• Financial intermediaries are the markets and institutions that do this.

• Financial intermediaries include banks, investment banks, money market mutual funds, pension funds, etc.
What Is a Financial Crisis?

• A time when:
  • A number of financial institutions are in danger of failing.
  • People lose confidence in many financial institutions.

• As a result, there is widespread disruption of financial intermediation.
How Individual Financial Institutions Can Fail

- Defaults and changes in asset values can reduce the value of an institution’s loans and securities.
- If the value of the loans and securities falls to the point where they are worth less than the institution’s obligations to its depositors and lenders, the institution is insolvent.
- A belief that the institution is in danger of becoming insolvent can cause depositors to withdraw their funds and lenders to stop lending—which can cause the insolvency to occur.
Source: Federal Reserve Bank of St. Louis, FRED.
First Mortgage Defaults
Percent of Outstanding Balances Entering Default Each Month

Source: S&P/Experian Consumer Credit Indices

Contagion of Crises across Financial Institutions

- **Confidence**: Troubles at one institution create doubts about the health of other institutions, even if there are no connections between them.

- **Linkage**: Troubles at one institution directly harm other institutions because of loans, insurance contracts, and other direct links among them.

- **Fire Sale**: Troubles at one institution cause it to sell off assets, driving down the prices of assets held by other institutions.

- **Macroeconomic**: Troubles at one institution reduce PAE and hence Y, and so harm other institutions.
Deposits in Failed or Suspended Banks, 1927-1933

Source: Federal Reserve.
Effects of a Financial Crisis on PAE

• It raises credit spreads.

• It may raise lending standards or otherwise reduce the availability of loans.

• It may harm consumer and firm confidence.

• All of these developments are likely to reduce PAE at a given level of Y.
Credit Spreads during the 2008 Financial Crisis

TED Spread and Moody’s BAA-AAA Spread Through December 2009

Percentage points

Notes: The TED spread is defined as the three-month London Interbank Offer Rate (LIBOR) less the yield on the three-month U.S. Treasury security. Moody’s BAA-AAA spread is the difference between Moody's indexes of yields on AAA and BAA rated corporate bonds.

Tightening Loan Standards during the 2008 Financial Crisis

Source: Federal Reserve, Senior Loan Officer Opinion Survey, January 2018.
Decline in the Number of Banks in the Great Depression

Michigan Survey of Consumer Sentiment

Index, 1966 = 100

Source: Federal Reserve Bank of St. Louis, FRED
The Effects of a Financial Crisis on Output

\[ Y = \text{PAE} \]

\[ \text{PAE}_1, \text{PAE}_2 \]

\[ Y_2, Y^* \]
Percentage Change in Real GDP

Source: Federal Reserve Bank of St. Louis, FRED
The Average Aftermath of a Financial Crisis

Source: Romer and Romer, “New Evidence on the Aftermath of Financial Crises.”
But, how much output falls after a crisis is highly variable

- The ability and willingness of policymakers to use fiscal and monetary policy matters a lot.
Possible Policies to Prevent Financial Crises

• Higher “capital” requirements for financial institutions.

• Deposit insurance.

• Regulation of risk-taking by financial institutions and linkages among financial institutions.

• Using monetary and fiscal policy to keep the economy stable.
Midterm 2

• The scores will be released at 4 PM today.
• We were pleased with how people did!
• Summary statistics:
  • Median: 116
  • 75th percentile: 126
  • 25th percentile: 104
• We will send emails to students who appear to be in danger of getting an NP by early next week.
• Our advice for everyone: Work hard at staying as engaged and on top of the material as you can!
Some Notes on Grading

• The University encourages everyone to take all their courses this semester P/NP.

• We reward improvement.

• Regrade requests must be submitted *in writing* to your GSI by April 23rd. We will correct clear-cut errors in grading, but we will not revisit judgment calls.