EE432 Monetary Theory and Policy

Lecture 9 Monetary Policy: Stabilizing the Domestic Economy

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Semester 1/2022

Outline

- The Federal Reserve's Conventional Policy Toolbox
- Linking Tools to Objectives: Making Choices
  - Inflation targeting
  - Taylor rule
- Unconventional Policy Tools

Chapter 18

Monetary Policy: Stabilizing the Domestic Economy

The Federal Reserve's Conventional Policy Toolbox

Introduction

- Between September 2007 and December 2008, the **FOMC lowered its target for the federal funds rate** *10 times*.
- This was the first time since the 1930s that the **nominal federal funds rate hit zero**.

  - **Zero lower bound**: the idea that a *nominal interest rate cannot fall below zero*

  - **Effective lower bound**: the *nominal interest rate level below* which intermediaries and their customers ***will switch from bank deposits*** *to holding cash*.

Introduction

- To steady the financial system and the economy *after the crisis*, the **Fed** *utilized* its three of its **conventional policy tools:**
  - The ***target range*** for the **federal funds rate**
  - The **interest rate on excess reserves** (**IOER** rate)
  - The ***rate*** for **discount** window **lending**
- Policymakers then proceeded to develop and use a variety of **unconventional policy tools** including:
  - **Massive purchases of risky assets** in fragile markets
  - **Communicating its intent to keep interest rates low *over an extended period***

The Federal Reserve's Conventional Policy Toolbox

The Fed has **four** leading ***conventional monetary policy tools***, also known as *policy instruments*:

1. The **target federal funds rate range**
2. The **interest rate on excess reserves (IOER rate)**
3. The **discount rate**
4. The **reserve requirement**

The Target Federal Fund Rate

- Prior to the financial crisis, the **target federal fund rate** *was* the ***FOMC's primary policy instrument***.
- The **federal funds rate** is the ***rate*** *at which* **banks** ***lend reserves*** *to* **each other *overnight***.
  - It is ***determined in the market*** and *not controlled by the Fed*.
- The ***target*** **federal funds rate** are **set by the FOMC,** and the **market federal funds rate**, ***at which* transactions between banks *take place***.

The Interest on Excess Reserves

- *Discrepancies* between ***actual*** and ***desired*** **reserves** gave *rise to* ***a market for reserves***.
  - Some banks can ***lend out excess reserves***.
  - Some banks will ***borrow to cover a shortfall***.
- *Without this* market, *banks would need to* ***hold substantial*** quantities of ***excess reserves*** as insurance *against shortfalls*.

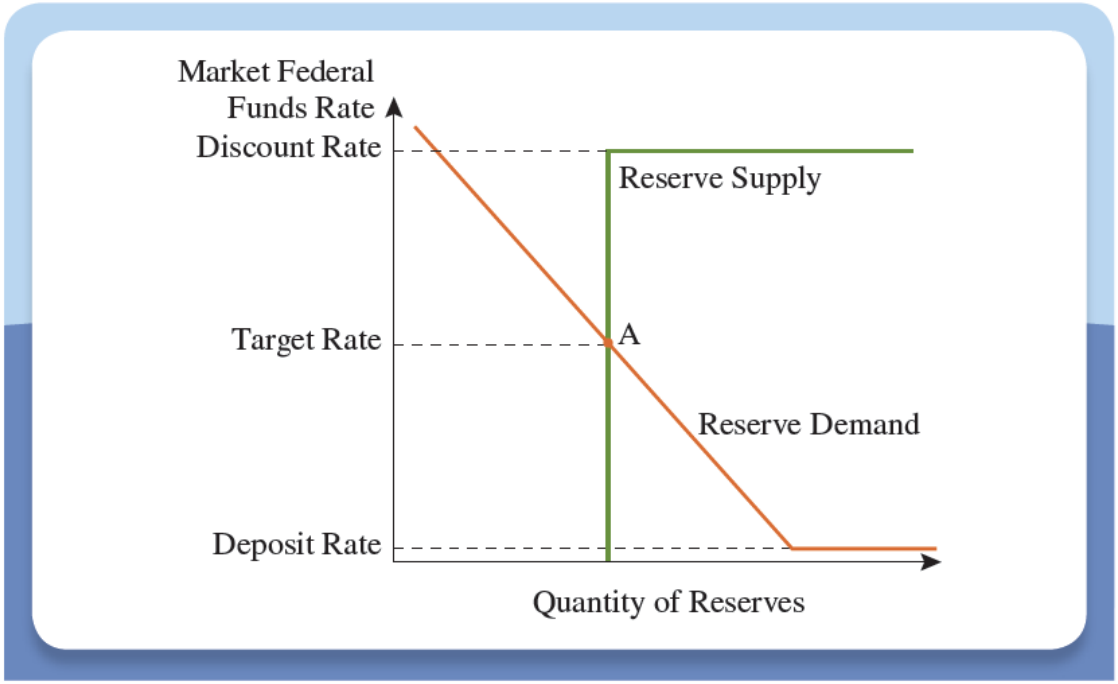
The Target Federal Fund Rate and the Interest on Excess Reserves

- As the ***market federal funds rate rises***, **banks demand *fewer reserves***, implying the **reserve demand curve** is *downward sloping*.

- The **Fed** continues to be the *monopoly* ***supplier of aggregate bank reserves.*** The **reserve supply curve** thus represented by a *vertical line*.

The Target Federal Fund Rate and the Interest on Excess Reserves

Figure 18.2 The Market for Bank Reserves prior to September 2008



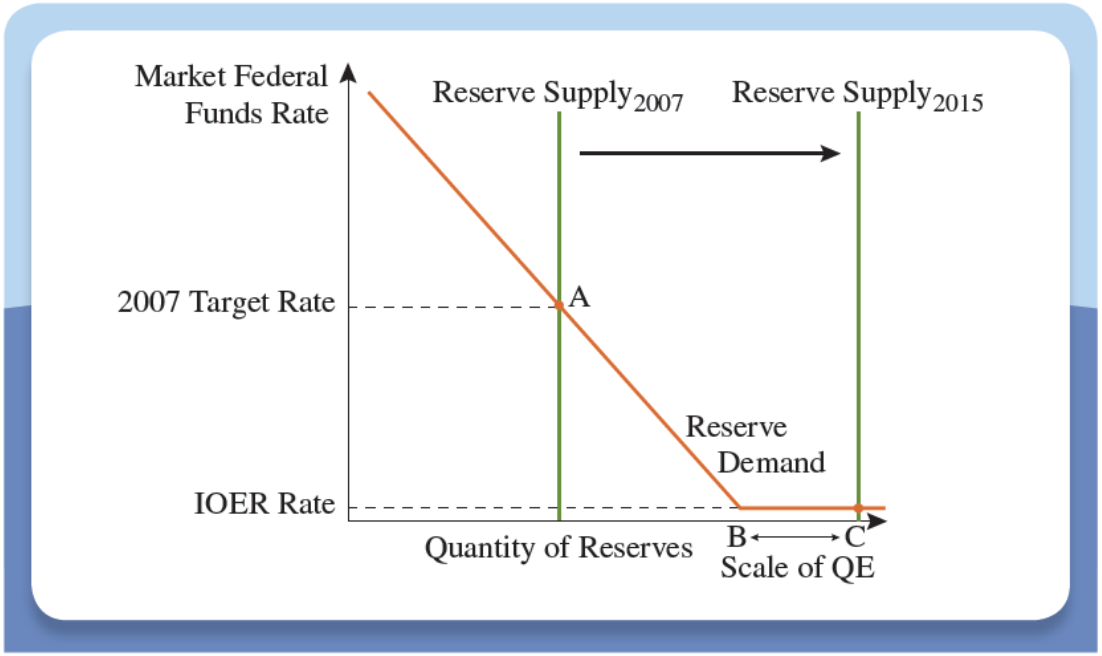
- By **buying or selling securities** in the market through an ***open market operation (OMO)***,
- the **Fed** could ***increase or decrease the supply of reserves*** in order to ***lower or raise the market federal funds rate***.

The Target Federal Fund Rate and the Interest on Excess Reserves

- *During the financial crisis*, the **Fed** *lowered its policy target close to zero*, and engaged in **quantitative easing** making ***large-scale asset purchases*** to *increase the* ***supply of reserves far beyond the level needed*** to ***keep the federal funds rate near zero***.

The Target Federal Fund Rate and the Interest on Excess Reserves

Figure 18.3 The Market for Reserves with Quantitative Easing (QE) after September 2008



Interest on Excess Reserves (IOER) is the ***interest paid*** *on those* ***balances that are above the level of reserve requirement***.

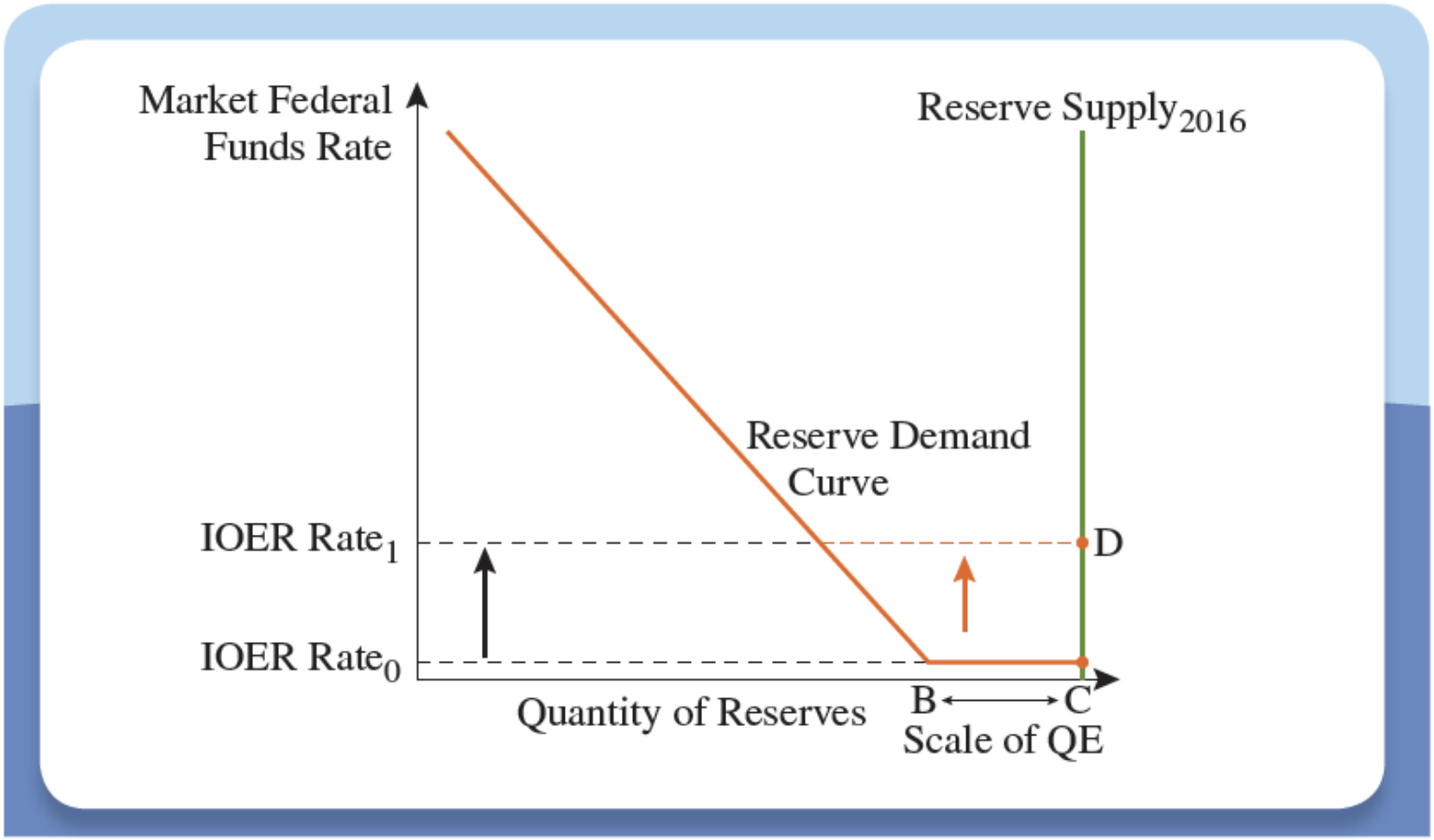
- By conducting quantitative easing, the **Fed increased the supply of reserve**, ***shifting supply curve rightward***.
- At **IOER rate**, *banks would* ***prefer to keep reserve*** *and* ***get interest payment from Fed***, reflected by a ***horizontal part of demand curve***.

The Target Federal Fund Rate and the Interest on Excess Reserves

- **Tightening monetary policy** through the ***IOER rate***
  - If there is an **increase** in the *target range for the federal funds rate*, the Fed will **raise the IOER rate**; ***raising*** *the* ***minimum rate*** at which *banks are* ***willing to lend*** *(deposit rate for excess reserve)*
  - *Allows the FOMC* to ***raise interest rates***, **tightening financial conditions**, ***without*** *altering the* **supply of reserves**

The Target Federal Fund Rate and the Interest on Excess Reserves

Figure 18.4 Tightening Monetary Policy by Increasing the IOER Rate



Discount Lending, the Lender of Last Resort, and Crisis Management

- By ***controlling*** the **quantity of loans** it makes, a *central bank can control*:
  - The **size of reserves**
  - The **size of the monetary base**
  - **Interest rates**
- *Today*, **lending** by the Federal Reserve Banks **to commercial banks**, called **discount lending**, is *usually small* aside from crisis periods.

Discount Lending, the Lender of Last Resort, and Crisis Management

- **Discount lending** is the Fed's primary tool for:
  - Ensuring **short-term financial stability**
  - **Eliminating bank panics**
  - **Preventing the sudden collapse** of institutions that are experiencing financial difficulties
- The central bank is the **lender of last resort:**
  - *Making loans to banks* when *no one else* will or can.

Discount Lending, the Lender of Last Resort, and Crisis Management

The **Fed** makes *three types of loans*:

1. **Primary credit**
2. **Secondary credit**
3. **Seasonal credit**

- The **Fed** *controls the* **interest rate** on these loans, ***not*** *the quantity of credit extended.*
- The ***banks decide how much*** *to borrow*.

Primary Credit

- **Primary credit** is ***extended* on a very short-term basis**, usually ***overnight.***
- The term **discount rate** *usually refers to* this ***primary discount rate***
- *Banks* **seeking to borrow much** post *acceptable collateral*.
- The **interest rate** on primary credit is **set at a spread *above* the IOER rate** called the **primary discount rate.**

Primary Credit

- ***Primary credit*** **adds** to the ***Fed's supply of reserves*** to the banks
- When *reserves were scarce*, providing a facility through which **banks *could borrow*** at a ***penalty rate above the target*** *kept the market federal funds rate* from *rising above* the ***discount rate***.

Secondary Credit

- **Secondary credit** is available to institutions that are **not sufficiently** *sound to* ***qualify for primary credit***.
- The **secondary discount rate** is set *above the primary discount rate*.
- There are **two reason** a bank might seek **secondary credit**:
  - A ***temporary shortfall*** *of reserves.*
  - They *cannot borrow from anyone else*.

Secondary Credit

- By *borrowing* in the **secondary credit market**, a bank **signals** that **it is in trouble**.
- **Secondary credit** is for banks that are ***experiencing longer-term problems*** that they need some time to work out.
- ***Before the Fed makes the loan***, it *has to believe* that *there is a good chance the* ***bank will be able to survive***.

Seasonal Credit

- **Seasonal credit** is used primarily by ***small agricultural banks*** in the Midwest *to help in managing the* ***cyclical nature*** *of farmers'* ***loans and deposits***.
- Historically, these banks had *poor access to national money markets*.
- They **now** have ***easy access to longer-term loans***.

Reserve Requirements

- The Federal Reserve Board has had the authority to set the ***reserve requirements***.
  - These are the **minimum level of reserves *banks must hold*** either as *vault cash* or on *deposit at the Fed.*
- *Changes in the reserve requirement* affect the ***money multiplier*** and the ***quantity of money and credit circulating*** in the economy.
- In the U.S., the *reserve requirement turns out not to be very useful.*

The Federal Reserve's Conventional Policy Toolbox

Table 18.1 The Conventional Tools of the Federal Reserve

	What Is It?	How Is It Controlled?	What Is Its Impact?
Target Federal Funds Rate Range	Range for the interest rate charged by financial intermediaries on overnight, uncollateralized loans to banks	Announced by the FOMC as the target range for the market federal funds rate	Influences interest rates throughout the economy
Interest Rate on Excess Reserves (IOER Rate)	Interest rate paid by the Federal Reserve on excess reserves held by banks	Announced by the FOMC as a rate to be paid on all excess reserves	Changes interest rates at which banks will lend and borrow
Discount Rate	Interest rate charged by the Federal Reserve on its loans to banks	Set by Reserve Banks, subject to approval by the Federal Reserve Board, at a premium over the interest rate on excess reserves (IOER rate)	Provides liquidity to banks in times of crisis; not used to alter monetary policy
Reserve Requirement	Fraction of deposits that banks must keep either on deposit at the Federal Reserve or as cash in their vaults	Set by the Federal Reserve Board within a legally imposed range	Influences the demand for reserves; not used to alter monetary policy

Linking Tools to Objectives: Making Choices

Linking Tools to Objectives: Making Choices

- **Monetary policymakers' goals** are:
  - ***Low and stable inflation***
  - ***High and stable growth***
  - ***A stable financial system***
  - ***Stable interest and exchange rates***

Linking Tools to Objectives: Making Choices

A consensus has developed among monetary policy experts that:

1. The **reserve requirement** is ***not useful*** *as an operational instrument*,
2. **Central bank lending** is ***necessary*** to ensure **financial stability**, and
3. **Short-term interest rates** are the ***conventional tool*** to use to *stabilize short-term fluctuations* in *prices and output*.

Desirable Features of a Policy Instrument

A **good monetary policy instrument** has ***three features:***

1. It is **easily *observable*** by everyone.
   - *Ensures* ***transparency*** in policymaking, which enhances ***accountability***.
2. It is ***controllable*** **and quickly changed**.
   - An instrument that can be ***adjusted quickly*** in the face of a ***sudden change*** in economic conditions is clearly more useful
3. It is **tightly *linked* to the policymakers' objectives**.
   - The ***more predictable*** the impact of an instrument, the ***easier*** it will be for policymakers ***to meet their objectives***

Inflation Targeting

- **Inflation targeting** focuses on the objective of ***low and stable inflation***
- It is a monetary policy strategy that involves ***public announcement*** of a **numerical inflation target** and underscores the central bank's *commitment* to *price stability*.
- When the ***target is credible***, ***inflation will be low***

Inflation Targeting

- **Long-term expectations** of *low* ***inflation*** act to ***anchor*** *low long-term* ***interest rates*** and *promote* ***economic growth****.*
- ***Hierarchical mandate*** in which **price stability comes first** and everything else comes second
  - The ECB, Australia, Chile, South Africa, United Kingdom, and dozens of other countries
- ***Dual mandate*** in which the **goal of price stability and maximum employment** are **equal**
  - The Fed

Inflation Targeting

- *Increases policymaker's* ***accountability*** and helps *establish their* ***credibility***
- The result is *not just lower and* ***more stable inflation***, but usually *higher and* ***more stable economic growth***

A Guide to Central Bank Interest Rates: The Taylor Rule

- The FOMC sets a **target range for the federal funds rate** and **the day on which to make the changes.**
- The **Taylor Rule** *tracks the actual behavior of the target federal funds rate* and relates it to the *real interest rate, inflation, and output*.

Target fed funds rate =

Natural rate of interest + Current inflation + ½ (Inflation gap) + ½ (Output gap)

A Guide to Central Bank Interest Rates: The Taylor Rule

- The **natural rate of interest** is the ***real long-term interest rate*** that *prevails* when the *economy is using resources normally*.
- Taylor **originally used 2 percent**, which is *close to the* ***average real short-term rate***

A Guide to Central Bank Interest Rates: The Taylor Rule

- The **inflation gap** is *current inflation* minus an *inflation target* (both measured as percentages)
  - When *inflation exceeds the target level*, the **inflation gap** is *positive*
- The **output gap** is the percentage *deviation of current output (real GDP)* from *potential output*
  - When *current output is above potential output*, the **output gap** is *positive*

A Guide to Central Bank Interest Rates: The Taylor Rule

- When **inflation rises above its target level**,
  - The response is to ***raise interest rates***.
- When **output falls below the target level**,
  - The response is to ***lower interest rates***.
- If *inflation is currently on target* and there is *no output gap*,
  - The ***target federal funds rate*** should be set at the **natural rate of interest** plus **target inflation**.

A Guide to Central Bank Interest Rates: The Taylor Rule

- The Taylor rule has some interesting properties.
  - The **increase in current inflation** feeds *one for one into the* ***target federal funds rate***; however,
  - The **increase in the inflation gap** is *halved*.
- *A* ***1 percentage point increase in the inflation rate*** *raises the* ***target federal funds rate 1½ percentage points.***

A Guide to Central Bank Interest Rates: The Taylor Rule

- The *implementation* of the **Taylor rule** requires four inputs:
  - The **natural rate of interest**
  - A measure of **inflation**
  - A measure of the **inflation gap**
  - A measure of the **output gap**

Unconventional Policy Tools

Unconventional Policy Tools

- There are two circumstances when **unconventional policy** tools can *play a useful stabilization role:*
  1. When **lowering the target interest-rate to zero** is **not sufficient** to ***stimulate the economy***
  2. When an **impaired financial system** *prevents conventional interest-rate policy* from supporting economic growth

Unconventional Policy Tools

There are *three categories of* ***unconventional policy*** approaches:

1. **Forward guidance**
   - This is when the *central bank* ***communicates intentions*** regarding the *future path of monetary policy.*
2. **Quantitative easing (QE)**
   - When the *central bank* ***supplies aggregate reserves*** *beyond the quantity needed to lower the policy rate to its* ***target***, usually ***zero or lower***.

Unconventional Policy Tools

3. Targeted asset purchases (TAP)

- When the central bank **alters** the ***mix of assets it holds*** *on its* ***balance sheet*** in order *to* *change their relative prices* in a way that ***stimulates economic activity.***

Forward Guidance

- The *simplest unconventional approach* is for the *central bank to provide* ***forward guidance - guidance today*** about ***policy target rates in the future***
- They might express the ***intent to keep the policy target low*** *for an extended period of time.*
  - This could have a *specific termination date*, or *duration* could be dependent on some future change in economic conditions.

Forward Guidance

- To **stimulate economic activity**, *forward guidance* aims at **lowering the long-term interest rates** that affect private spending.
- **To be effective**, **forward guidance** *needs to be* ***credible*** *and* ***time consistent***

Forward Guidance

- *Although forward guidance can be effective*, it is **difficult to anticipate** and difficult to ***reach consensus on the desirable policy path*** and to *communicate these policy intentions simply*
- The potential for disturbing side effects, including **asset price bubbles**

Quantitative Easing

- **QE** occurs when the **central bank *expands the supply of aggregate reserves beyond*** the ***level*** that would be *needed to maintain its policy rate target*, usually ***zero***.
  - The central bank **buys assets**, thereby **expanding its overall balance sheet.**
- At a **market federal funds rate** equal to the ***interest on excess reserves***, an **addition to aggregate reserves** no longer reduces the funds rate
  - The Fed can **add unlimited reserves** without affecting the market federal funds rate.

Quantitative Easing

- It is **difficult to predict the effects of QE**.
- Fed policymakers argue their *balance sheet expansion* ***helped to lower long-term interest rates***, but there is *disagreement on the impacts*.
- An *increase in the supply of reserves (QE)* may simply lead banks to **hold more** of them *rather than provide additional loans*.

Quantitative Easing

- One mechanism is that *QE can add credibility to a policymaker's promise to keep interest rates low.*
- ***Announcements** of an **expansion** of aggregate reserves (QE)* could ***lower bond yields*** by *extending the time horizon* over which **bondholders expect a zero policy rate**.
- **QE** may ***reinforce*** *the impact of* ***forward guidance***

Quantitative Easing

- A problem with QE is that *central banks* **do not know *how much is needed to be effective***.
- **QE** can be ***powerful tool*** *for central bankers to* ***prevent a sustained deflation***, especially *when conventional policy tools have been exhausted.*

Targeted Asset Purchases

- ***Targeted asset purchases (TAP)*** *shift the* ***composition*** *of the balance sheet* **toward *selected assets*** in order to **boost their *relative price* and stimulate economic activity**.
- In the *absence of private demand for the risky asset*, the **central bank's purchase makes credit available** where none existed.

Making an Effective Exit

- What happens **when QE and TAP have vastly expanded the amount of reserves and assets** on the central bank's balance sheet?
  - The central bank ***may need to sell a large volume of assets*** to *reduce reserve supply* sufficiently ***to raise the policy rate target.***
- ***But****, QE and TAP assets are typically* ***more difficult to sell***.
- A central bank *may be unable to sell assets and withdraw reserves from the banking system rapidly* enough *to hike the policy interest rate* when it desires.

End of lecture