

Chapter 21

Monetary Policy and Aggregate Demand

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Plan

- How interest rates, inflation and real growth are linked?
- Need to develop a macro model of fluctuations in the business cycle in which monetary policy plays a role.
- Chapter 21: Aggregate Demand (AD)
 - Long-run equilibrium
 - Aggregate Demand
- Chapter 22: Aggregate Supply (AS)
 - Short-run AS
 - Long-run AS

21-2



Output and Inflation in the Long Run

- Potential Output
 - Potential output is what the economy is capable of producing when its resources are used at normal rates.
 - unexpected events can push current output away from potential output, creating an output gap
 - In the long run, current output equals potential output.

21-3



Output and Inflation in the Long Run

- Long-Run Inflation
 - Ignoring changes in velocity, in the long run, inflation equals money growth minus growth in potential output.

21-4



Money Growth, Inflation, and Aggregate Demand

- Aggregate demand tells us how spending (demand) by households, firms, the government, and foreigners changes as inflation goes up and down.
- Because the amount of money in the economy limits the ability to make payments, aggregate demand for real output depends on the amount of money in circulation.

21-5



Money Growth, Inflation, and Aggregate Demand

$$Y^{ad} = \frac{MV}{P}$$

- where Y^{ad} = aggregate demand,
- M = the quantity of money,
- V = the velocity of money, and
- P = the price level.

21-6

Money Growth, Inflation, and Aggregate Demand

Inflation \uparrow \longrightarrow $\frac{M}{P}$ \downarrow \longrightarrow Aggregate Demand Y^{ad} \downarrow
 Money Growth Unchanged and less than inflation
 Velocity Unchanged

21-7

Money Growth, Inflation, and Aggregate Demand

Figure 21.1 The Aggregate Demand Curve

At higher levels of inflation, real money balances fall, resulting in a lower level of aggregate demand.

21-8

The Monetary Policy Reaction Curve

- The connection between short-term interest rates and policymakers' inflation and output targets
- The Federal Reserve adjusts the level of reserves in the U.S. banking system in order to meet the federal funds target rate

21-9



The Monetary Policy Reaction Curve

- Economic decisions of households to save and of firms to invest depend on the real interest rate, not the nominal interest rate.
- To alter the course of the economy central banks must influence the real interest rate.

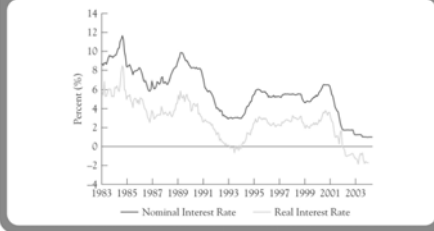
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The Monetary Policy Reaction Curve

Figure 21.2 The Nominal and Real Federal Funds Rates, 1983-2004

The real federal funds rate is computed as the monthly nominal effective federal funds rate minus expected inflation for the next year from the University of Michigan's Survey of Consumers, described in Tools of the Trade.



21-11



- The point: real and nominal move in the same direction
- the question: what is the relationship between real interest rates and aggregate demand? (impact of monetary policy on aggregate demand)

21-12

Aggregate Demand and Real Interest Rate

- Aggregate Demand and the Real Interest Rate

$$Y^d = C + I + G + NX$$

Aggregate Demand = Consumption + Investment + Gov't Purchases + Net Exports

21-13

Aggregate Demand and Real Interest Rate

Table 21.1 Impact of Rise in the Real Interest Rate on Components of Aggregate Demand

Component of Aggregate Demand	Effect of a Rise in the Real Interest Rate	Impact on Component of Aggregate Demand
Consumption (C)	Reward to saving rises	Consumption falls
Investment (I)	Cost of financing rises	Investment falls
Net Exports (NX)	Demand for domestic assets rises, causing a currency appreciation, raising the price of exports and reducing the cost of imports	Exports fall; imports Rise; net exports fall
Aggregate Demand (Y^d)	C, I, and NX all fall	Aggregate demand falls

21-14

Long-Run Interest Rate

- The Long-Run Real Interest Rate
 - The long-run real interest rate equates aggregate demand with potential output.

21-15



Aggregate Demand and Long-Run Interest Rate

- Besides government purchases, some components of consumption, investment, and net exports are not sensitive to the real interest rate. If any of those components rises, driving aggregate demand up at every level of the real interest rate, the long-run real interest rate must go up.
- When potential output goes up, the long-run real interest rate must fall.

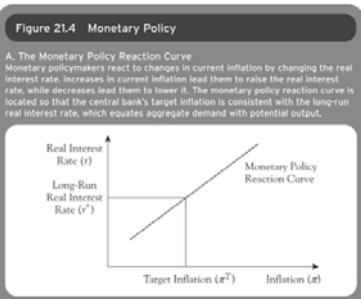


The Monetary Policy Reaction Curve

- Inflation, the Real Interest Rate, and the Monetary Policy Reaction Curve
 - when current inflation is high or current output is running above potential output, central bankers will raise nominal interest rates; when current inflation is low or current output is well below potential, they will lower interest rates.



The Monetary Policy Reaction Curve





The Monetary Policy Reaction Curve

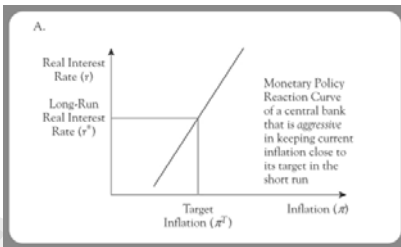
- The monetary policy reaction curve is set so that when current inflation equals target inflation, the real interest rate equals the long-run real interest rate.

- $r = r^*$ when $\pi = \pi^T$.

21-19



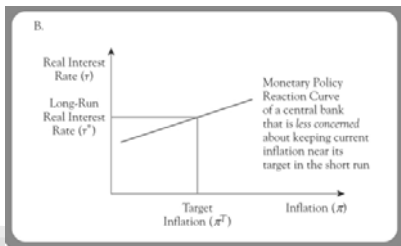
The Monetary Policy Reaction Curve



21-20



The Monetary Policy Reaction Curve



21-21



The Monetary Policy Reaction Curve

Table 21.2 The Monetary Policy Reaction Curve

What is it?	The relationship between current inflation and the real interest rate set by monetary policymakers.
What determines its location?	Drawn so that, when current inflation equals target inflation, policymakers will set the real interest rate equal to the long-run real interest rate.
What determines its slope?	Policymakers' attitude toward inflation. The more aggressive policymakers are in keeping current inflation close to target level, and the less tolerant they are of temporary changes in inflation, the steeper the slope.
When does it shift?	In response to changes in either the long-run real interest rate or the central bank's inflation target. An increase in the long-run real interest rate shifts the curve to the left. An increase in the inflation target shifts the curve to the right.



Moving on the Aggregate Demand Curve

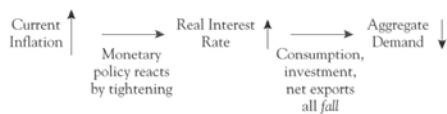
- When current inflation rises
 - Monetary policymakers raise the real interest rate, moving upward along the monetary policy reaction curve
 - The higher real interest rate reduces consumption, investment, and net exports causing aggregate demand (output) to fall.
- Changes in current inflation move the economy along a downward-sloping aggregate demand curve



Movement on the Aggregate Demand Curve

Figure 21.7 The Link between Current Inflation and Aggregate Demand

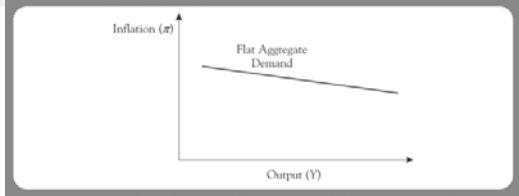
When current inflation rises, policymakers react by raising the real interest rate, which reduces consumption, investment, and net exports. The result is a reduction in aggregate demand.





The Aggregate Demand Curve

A. When the monetary policy reaction curve is steep, the central bank is aggressive in keeping current inflation near its target level, the aggregate demand curve is flat.

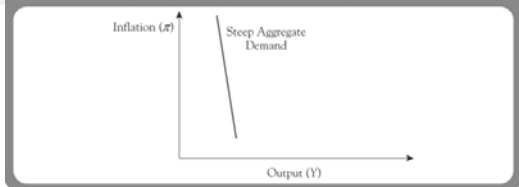


21-25



The Aggregate Demand Curve

B. When the monetary policy reaction curve is flat, the central bank is less concerned about keeping current inflation near its target level, the aggregate demand curve is steep.



21-26



The Aggregate Demand Curve

- Shifting the Aggregate Demand Curve
 - In our derivation of the aggregate demand curve, we held constant both the location of the monetary policy reaction curve and those components of aggregate demand that do not respond to the real interest rate.
 - Changes in any of those components, as well as changes in the location of the monetary policy reaction curve, will shift the aggregate demand curve.

21-27

The Aggregate Demand Curve

Figure 21.9 Shifting the Aggregate Demand Curve

Increases in aggregate demand arising from a change in monetary policy, such as a higher inflation target, will shift the aggregate demand curve to the right. (Increases in interest-rate-insensitive components of aggregate demand, such as government purchases, will also shift the aggregate demand curve to the right.)

21-28

The Aggregate Demand Curve

Factors that Shift the Aggregate Demand Curve to the Right

Changes that shift the Monetary Policy Reaction Curve to the right:

- An **increase** in the central bank's inflation target.
- A **decline** in the long-term real interest rate.

Changes that shift the Components of Aggregate Demand to the right:

- An **increase** in consumption that is unrelated to a change in the real interest rate.
- An **increase** in investment that is unrelated to a change in the real interest rate.
- An **increase** in government purchases.
- A **decrease** in taxes.
- An **increase** in net exports that is unrelated to a change in the real interest rate.

21-29

Chapter 21

End of Chapter

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