EC132.02
Principles of Macroeconomics

Boston College

Tuesday, April 16

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Announcements and Reminders

Aplia homework on the remainder of Ch 29, The Monetary System, due Friday, April 26, at 9am.

This week: Ch 29 The Monetary System

Next: Ch 30 Money Growth and Inflation (but only the first section, on the Classical Theory of Inflation)

Finally: Ch 33 Aggregate Supply and Aggregate Demand

Ch 29 The Monetary System

1. The Meaning of Money ✔
2. The Federal Reserve System ✔
3. Banks and the Money Supply ✔
4. The Fed's Tools of Monetary Control 🡸
5. The Federal Funds Rate
6. Banking and Financial Crises

} This Week

Open Market Operations

An open market operation occurs when the Fed buys or sells US government bonds from or to private investors.

When the Fed buys US Government bonds:

- Each newly-printed dollar bill that gets held as currency increases the money supply by $1.
- But each newly-printed dollar bill that gets deposited in a bank increases the money supply by even more.

And when the Fed sells US Government bonds:

- If the buyer of the bond pays with currency, each dollar in bonds sold by the Fed reduces the money supply by $1.
- But if the buyer of the bond pays by check, each dollar in bonds sold by the Fed decreases the money supply by even more.

Open Market Operations

Open market operations are easy to execute.

The “trading desk” at the NY Fed is linked directly to the US Government bond market.

The Fed can buy or sell US Government bonds anytime the market is open, in large or small quantities.

Because of these advantages, open market operations are the Fed’s most frequently-used policy tool.

Reserve Requirements

Reserve requirements are the legally-imposed minimum amount of reserves that banks must hold when they accept deposits.

We've already seen that a higher reserve ratio leads to a smaller money multiplier.

The same reasoning implies that when the Fed raises reserve requirements, the money supply will fall.

And when the Fed lowers reserve requirements the money supply will rise.

Reserve Requirements

However, a bank manager's job, trying to decide how many dollars to lend out versus hold as reserves, is complicated enough already.

As frequent changes to reserve requirements would disrupt bank business, the Fed rarely uses changes in reserve requirements to affect the money supply.

The Discount Rate

The Fed also acts as a lender of last resort for banks that cannot obtain funds from other sources.

The discount rate is the rate that the Fed charges on its loans to banks, which are said to be made at the Fed's discount window.

The Discount Rate

When the Fed makes a loan to a bank, it adds funds to the bank's account at the Fed.

The bank then has more reserves, which it can use to increase the loans it makes to households and firms.

Through the process of multiple deposit creation, the money supply will rise.

Hence when the Fed lowers the discount rate the money supply will tend to rise, and when the Fed raises the discount rate the money supply will tend to fall.

The Discount Rate

However, unlike open market operations which change the money supply almost instantaneously, changes in the discount rate impact on the money supply only gradually, as banks adjust their own borrowing behavior.

Also, the Fed does not like to use the discount window as a way of lending funds to banks, which banks can then lend out to households and firms at even higher interest rates.

In practice, therefore, the Fed rarely uses discount lending to control the money supply.

Instead, it uses its role of lender of last resort to help banks when they are in financial trouble.

The Fed's Tools of Monetary Policy

The Fed cannot perfectly control the money supply.

It cannot control how much money the nonbank public holds as currency versus depositing in banks.

And it cannot control how much banks hold in reserves versus making loans.

But analysts at the Fed constantly monitor the behavior of consumers, firms, and banks.

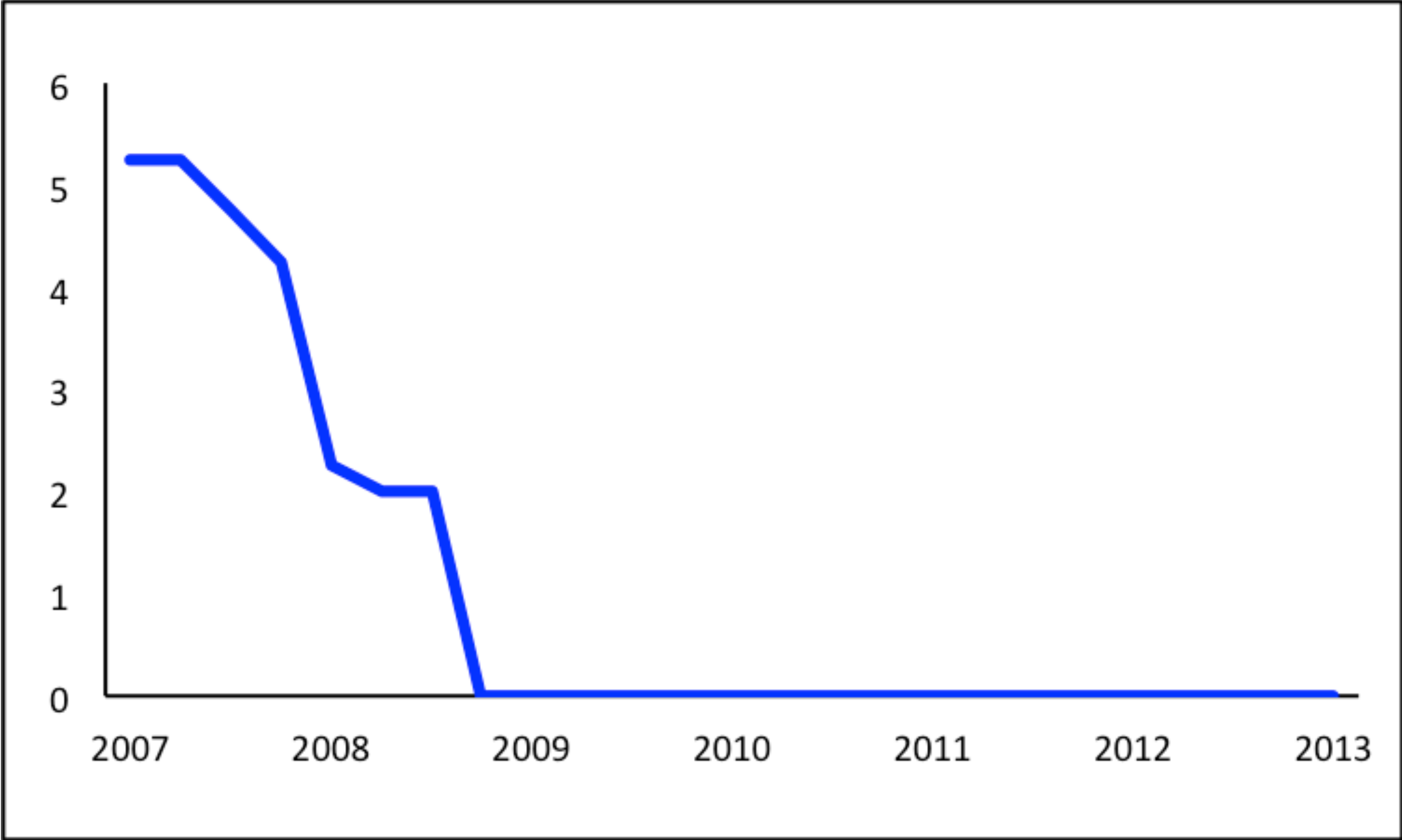
And the staff of the trading desk at the NY Fed can use open market operations to make necessary adjustments, large or small, at any time.

The Federal Funds Rate

If this is really how monetary policy works, how come you never hear about reserves and the money multiplier on CNBC or read about those things in the paper?

Why, instead, are Federal Reserve policy actions always described in terms of their effects on the federal funds rate?

The Federal Funds Rate



The Federal Funds Rate

What is the federal funds rate? And how does it relate to the "textbook" description of monetary policy?

The federal funds rate is the interest rate that banks charge each other on very short-term loans of reserves or "federal funds."

The Federal Funds Rate

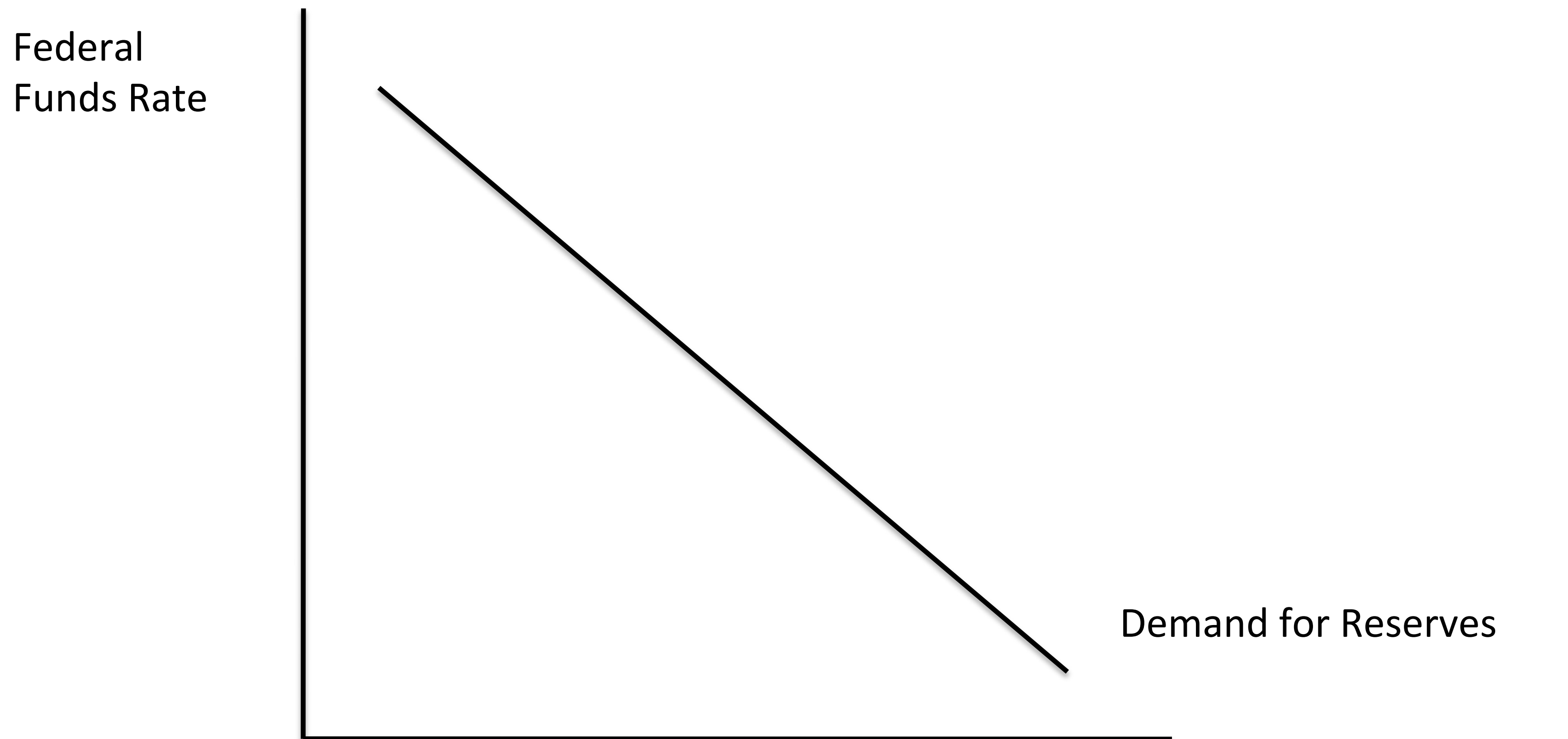
We can see the linkages between the textbook model of monetary policy and the federal funds rate with the help of microeconomic supply and demand:

- Banks demand reserves.
- The Fed supplies reserves.
- The federal funds rate is the price of reserves.

The Federal Funds Rate

Just like before, we traced out a downward-sloping demand curve for loanable funds in the economy as a whole, we can trace out a downward-sloping demand curve for federal funds in the interbank loan market.

The Federal Funds Rate



Quantity of Reserves

As the federal funds rate falls:

More banks want to borrow reserves.

Fewer banks want to lend reserves.

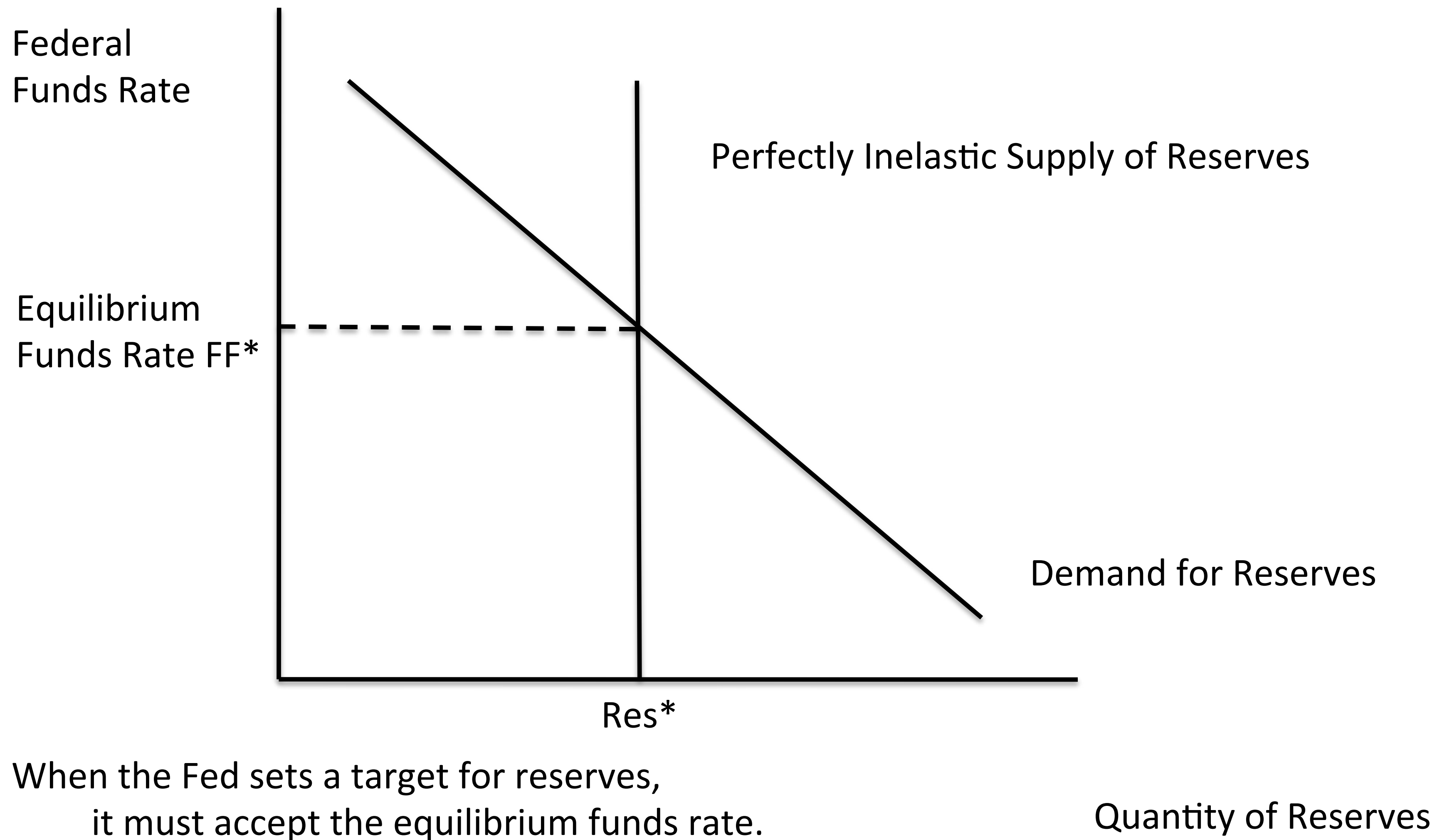
The total demand for reserves increases.

The Federal Funds Rate

The “textbook” model depicts the Fed as deciding what it wants the money supply to be and then conducting open market operations so as to supply banks with a level of reserves that brings about that money supply.

In other words, the textbook model depicts the Fed as setting a target Res* for reserves.

The Federal Funds Rate

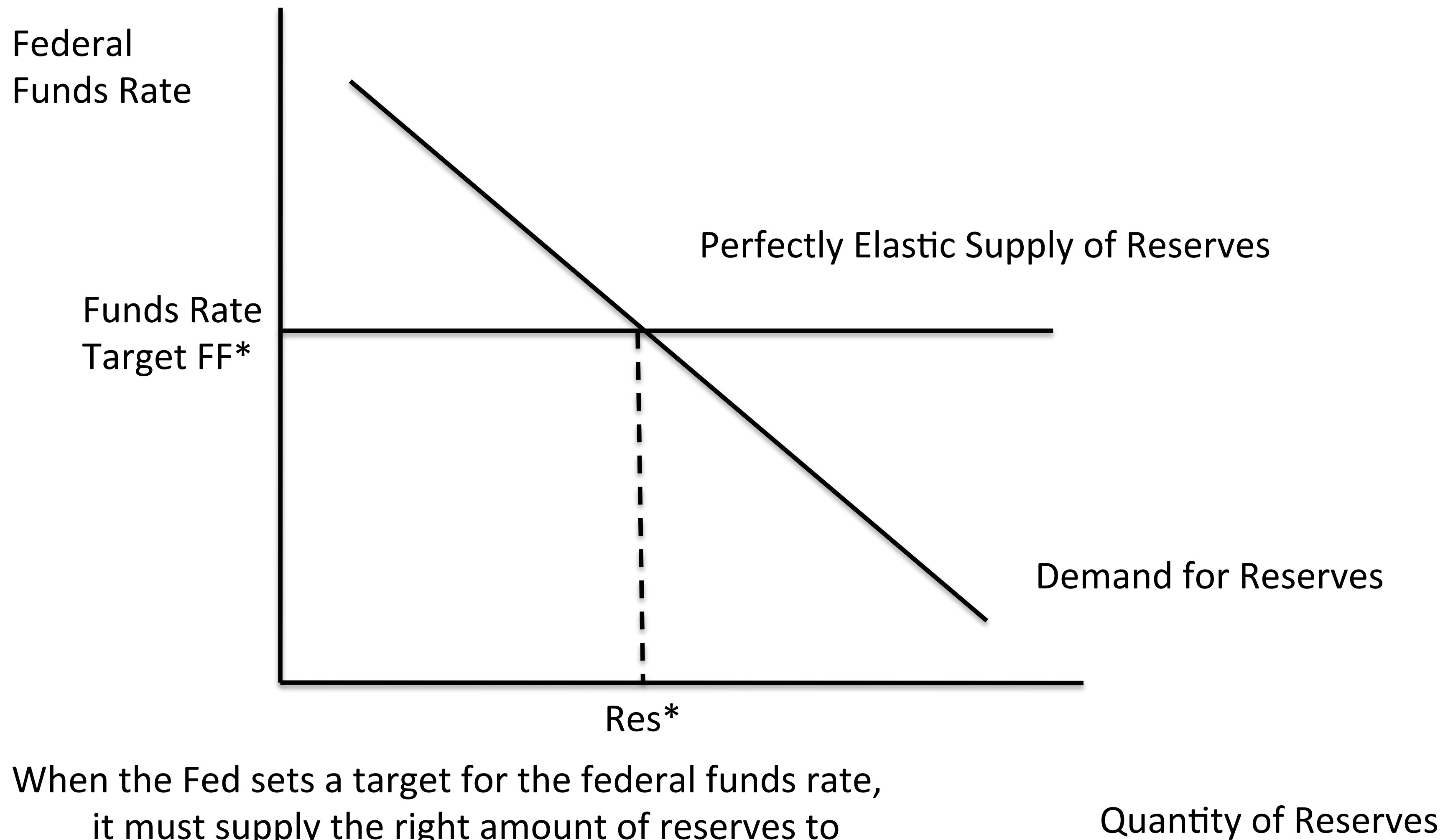


When the Fed sets a target for reserves,
it must accept the equilibrium funds rate.

The Federal Funds Rate

Alternatively, we could depict the Fed as setting a target FF* for the federal funds rate.

The Federal Funds Rate



When the Fed sets a target for the federal funds rate, it must supply the right amount of reserves to support that target.

The Federal Funds Rate

So far, there would seem to be little difference between these two monetary policy strategies:

1. Set the target Res* and accept the funds rate FF*.
2. Set the target FF* and supply Res* in reserves.

But things change when we allow the demand curve for reserves to shift.

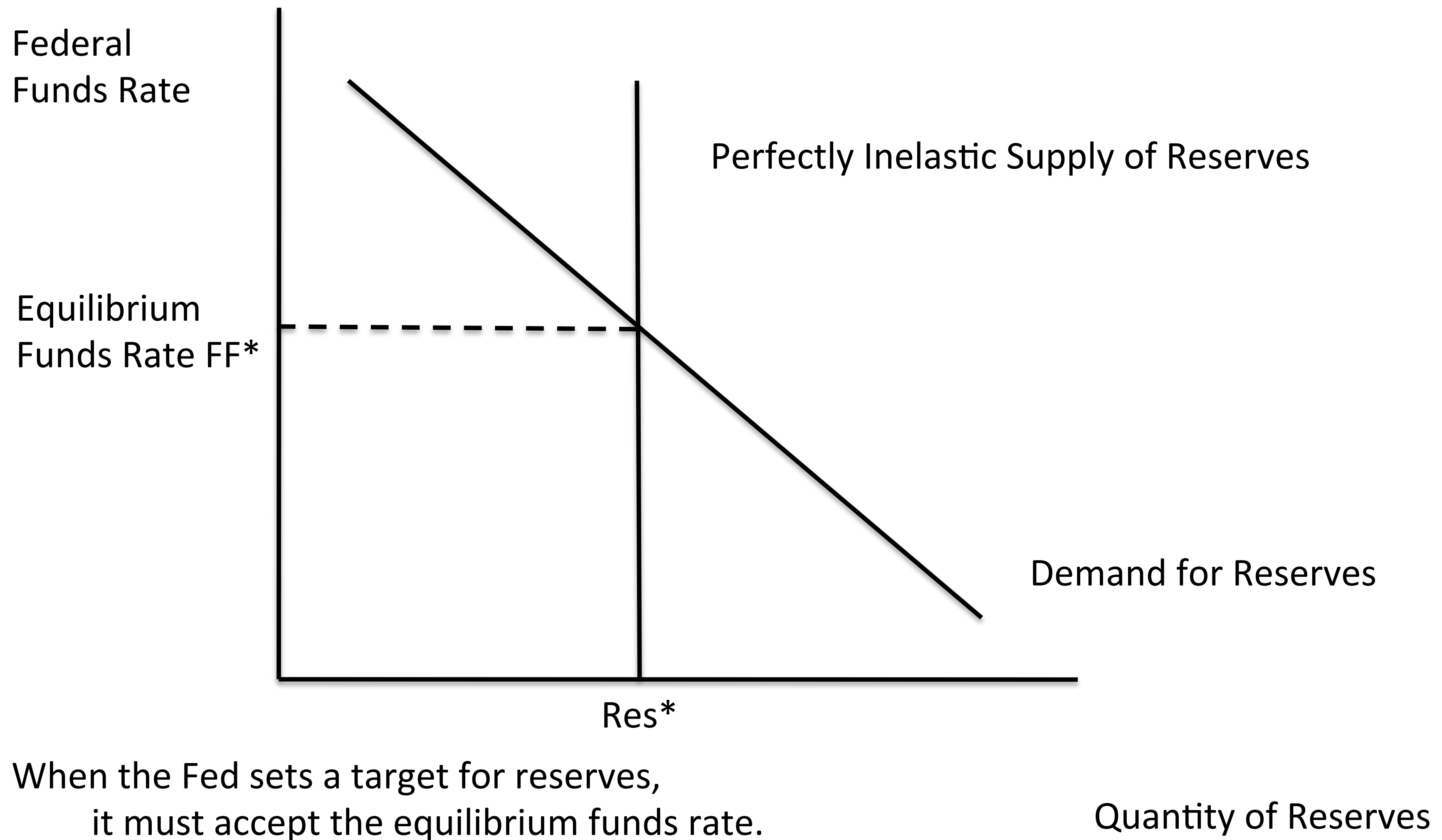
The Federal Funds Rate

Why might the demand curve for reserves shift?

Perhaps banks' lending opportunities change, so that they want to hold larger or smaller amounts of reserves at any given interest rate.

Or perhaps depositors' behavior changes, so that banks feel that they need to adjust the amounts of reserves they hold at any given interest rate.

The Federal Funds Rate



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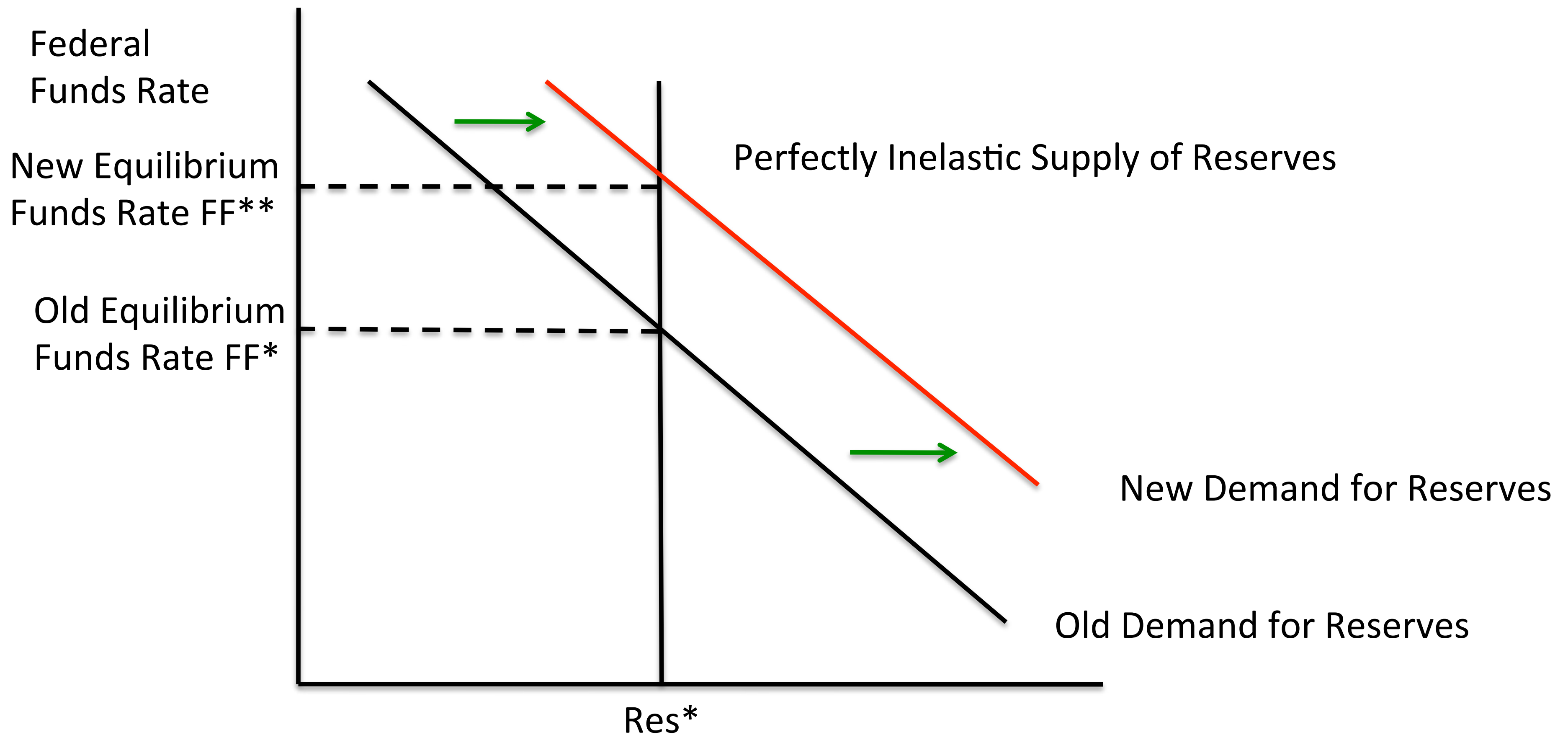
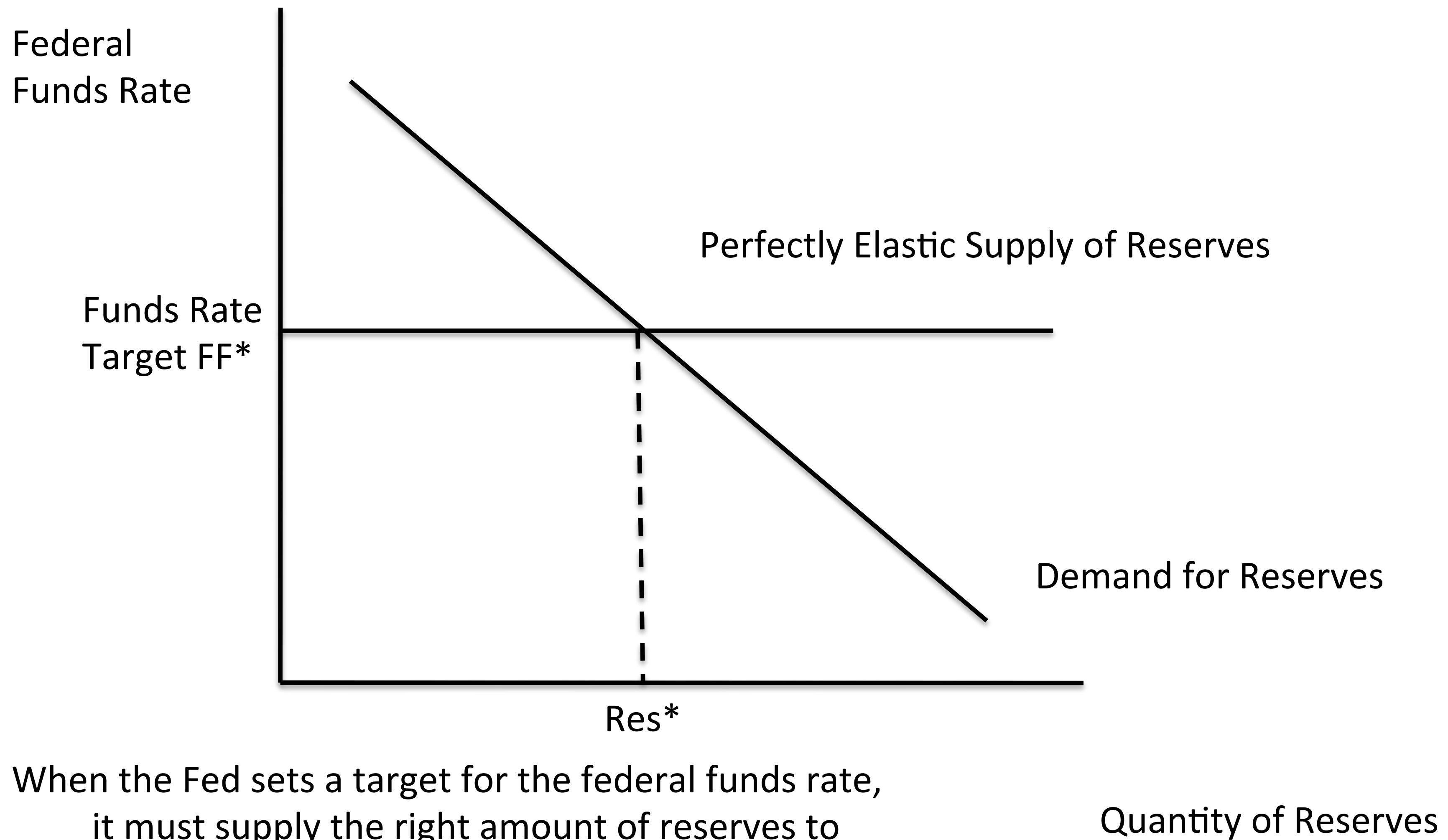
The Federal Funds Rate



Quantity of Reserves

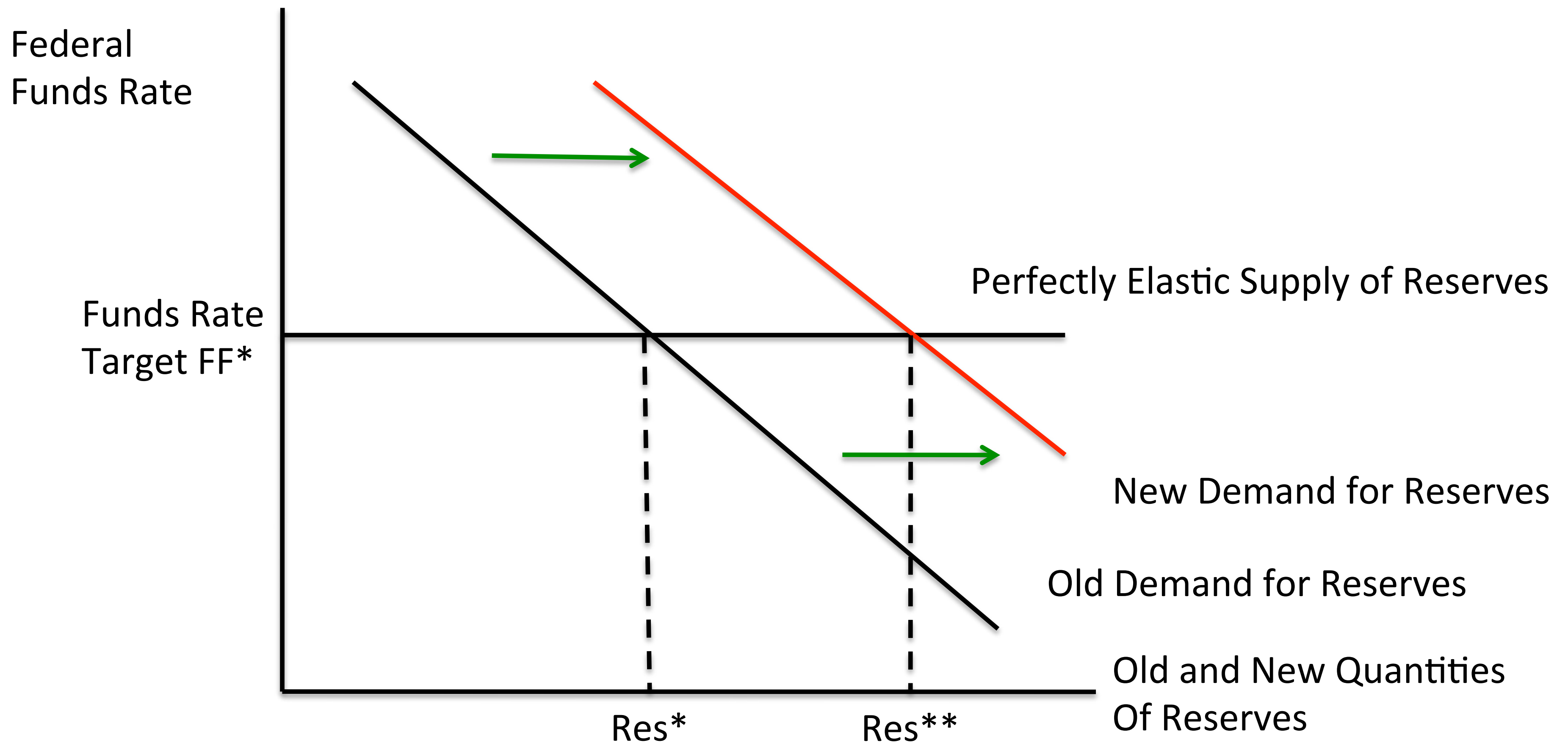
When the Fed sets a target for reserves, and the demand curve shifts, the equilibrium funds rate exhibits volatility.

The Federal Funds Rate



When the Fed sets a target for the federal funds rate, it must supply the right amount of reserves to support that target.

The Federal Funds Rate



When the Fed sets a target for the federal funds rate, it must use open market operations to defend that target in the face of shifting demand for reserves.

The Federal Funds Rate

In practice, why does the Fed prefer to set a target for the federal funds rate as opposed to a target for reserves?

1. It believes that the demand curve for reserves is unstable, so that a reserves targeting strategy would lead to excessive volatility in the federal funds rate and potential instability in the banking system.

2. It also believes that instability in the federal funds rate would spill over into other financial markets, leading to excessive interest rate volatility economy wide.

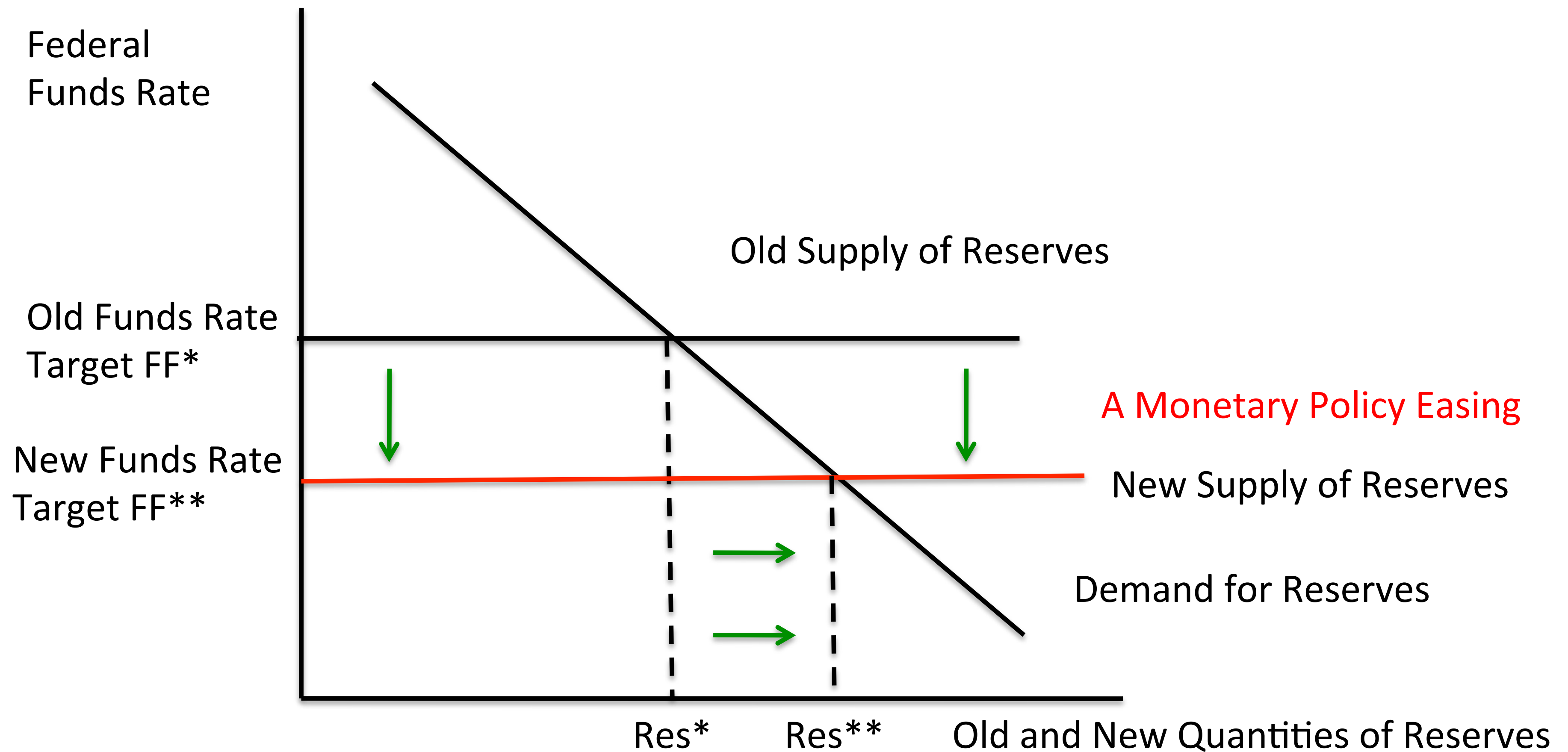
The Federal Funds Rate

But the Fed's preference for federal funds rate targeting does not mean that the textbook model is irrelevant.

In fact, open market operations become more important, since the Fed must constantly adjust the supply of reserves to defend its funds rate rate.

And open market operations still get used to make monetary policy "looser" or "tighter."

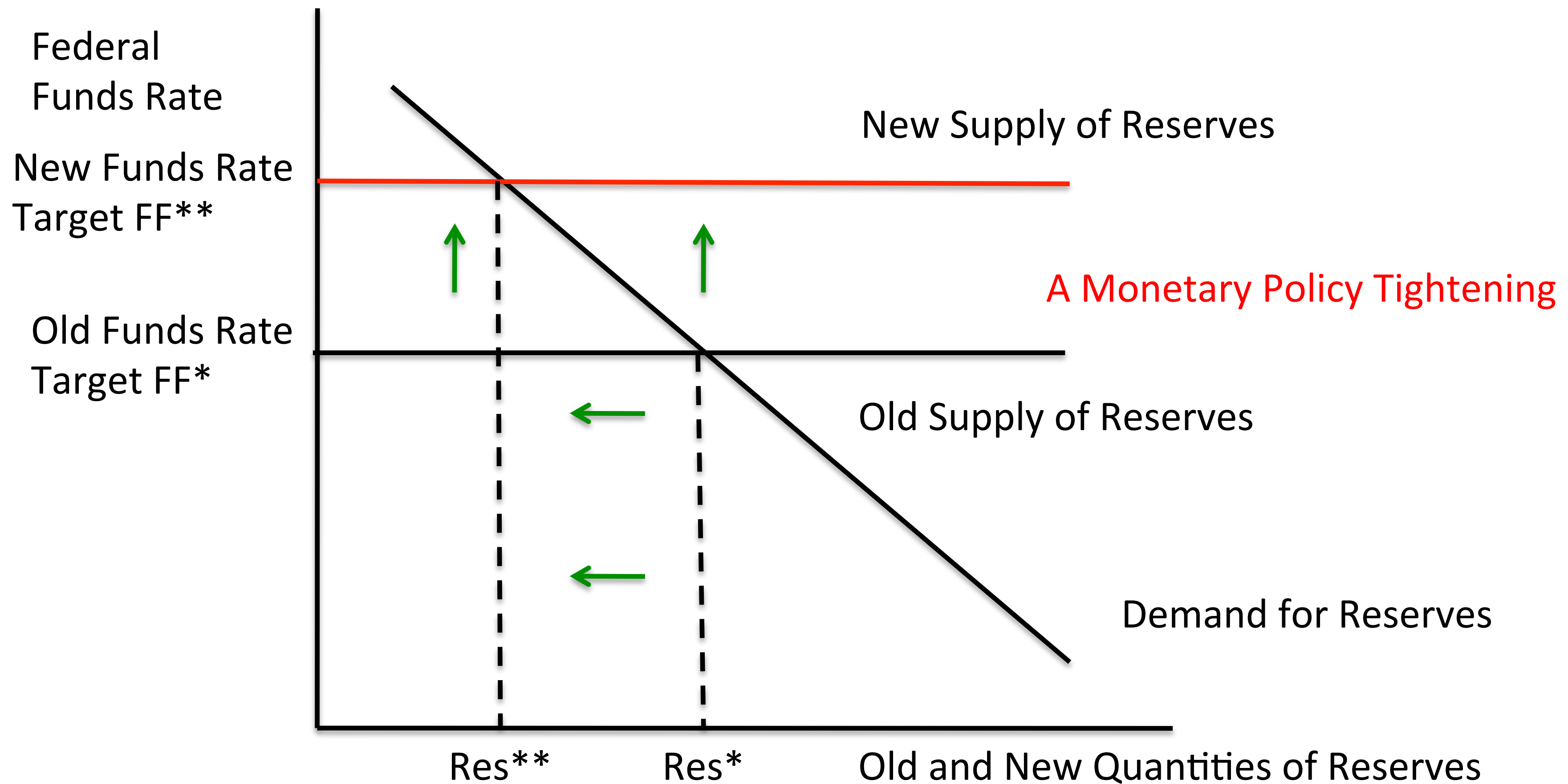
The Federal Funds Rate



When the Fed lowers its target for the federal funds rate, it must conduct open market operations to add reserves to the banking system.

Quantity of Reserves

The Federal Funds Rate



When the Fed raises its target for the federal funds rate, it must conduct open market operations to drain reserves from the banking system.

Quantity of Reserves