

EE432 Monetary Theory and Policy



Recap III

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Chapter 10



Foreign Exchange

The Law of One Price

- The **law of one price** is *based on the concept of arbitrage* -- the identical products *should sell for the same price*, regardless of *where* they are sold.
- *If they don't*, someone can make a profit.

The Law of One Price

The law of one price fails almost all of the time.

1. **Transportation costs**
2. **Tariffs**, the *taxes countries charge at their borders*, can be high.
3. **Technical specifications** can *differ*.
4. **Tastes differ across countries**, leading to *different pricing*.
5. Some things simply **cannot be traded**.

Purchasing Power Parity

- We can extend the *law from a single commodity to a basket of goods and services*.
- The result is the theory of purchasing power parity (PPP), which means that *one unit of domestic currency will buy the same basket of good and services anywhere in the world*.

Purchasing Power Parity

- According to the **theory of purchasing power parity**:

Dollar price of basket of goods in U.S. = Dollar price of basket of goods in U.K.

$$\frac{\text{Dollar price of basket of goods in U.S.}}{\text{Dollar price of basket of goods in U.K.}} = 1$$

- Thus, ***purchasing power parity implies that the real exchange rate is always equal to one.***

Purchasing Power Parity

- If we ***quote the price of a basket of goods in the U.K in pounds*** instead of dollars, then:

$$\frac{\text{Dollar price of basket of goods in U.S.}}{(\text{Pound price of basket of goods in U.K.}) \times (\text{Dollars per pound})} = 1$$

$$\frac{\text{Dollar price of basket of goods in U.S.}}{\text{Pound price of basket of goods in U.K.}} = (\text{Dollars per pound})$$

- Purchasing power parity implies that ***when prices change in one country*** but not in another, the ***exchange rate should change*** as well.

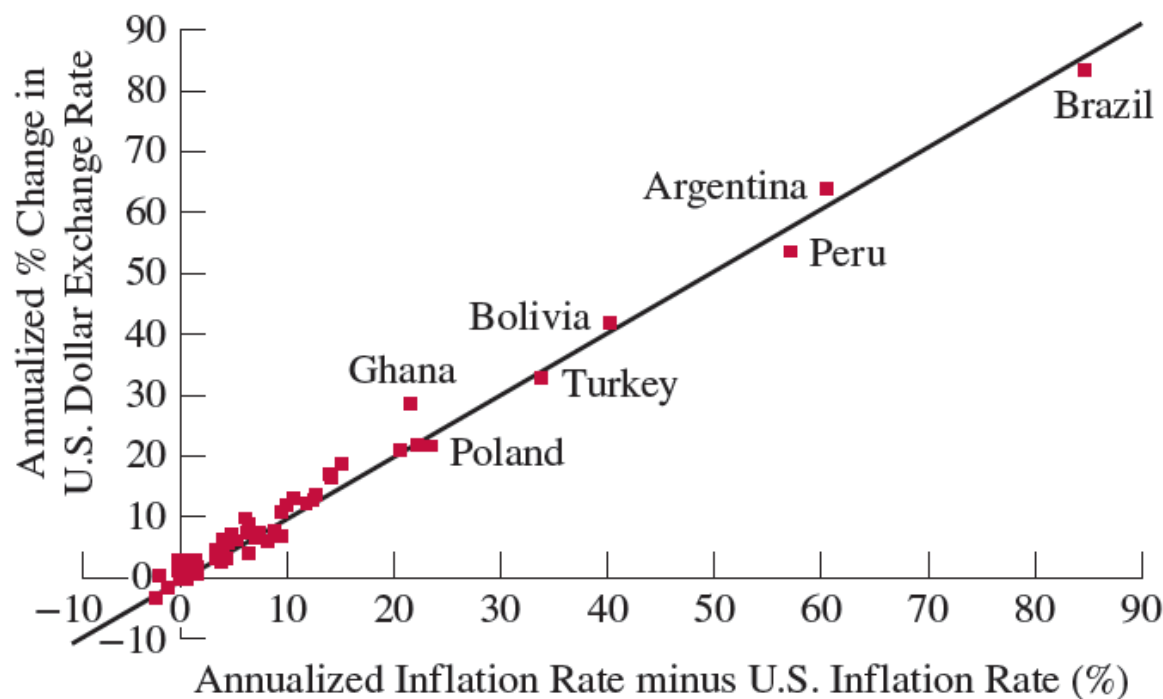
Purchasing Power Parity

- If inflation occurs in one country but not in another, the *change in prices* creates an *international inflation differential*.
- The **currency of a *country with high inflation*** will depreciate.

Purchasing Power Parity

Figure 10.4

Exchange Rate Movements and Inflation Differentials, 1980–2010



On the 45-degree line, exchange rate movements exactly equal differences in inflation.

Purchasing Power Parity

- We often hear of currencies being **undervalued** or **overvalued**.
- When people use these terms, they often have in mind a **current market rate** that ***deviates from what they consider to be purchasing power parity.***

Chapter 19



Exchange-Rate Policy and the Central Bank

Linking Exchange-Rate Policy with Domestic Monetary Policy

There are two ways to see the **connection** between *exchange rates* and *monetary policy*.

1. Think about the *market for goods* and **purchasing power parity**.
2. *Short-run movements in exchange rates* are tied to the **supply and demand** in the *currency markets*.

The Central Bank's Balance Sheet

- As the Fed works to **maintain a fixed dollar-euro exchange rate**, its *balance sheet shifts*.
- **Buying euros or selling dollars *increases* the supply of reserves** to the banking system.
- These ***interventions*** have an impact on **interest rates** and the **quantity of money** in the economy.
- **Controlling the exchange rate means giving up control of the size of reserves** so that the ***market determines the interest rate***.

The Central Bank's Balance Sheet

- In *September 2000*, the world's largest central banks **intervened** to ***bolster*** the **value of the euro**.
- The **Fed** ***purchased €1.5 billion*** in exchange for \$1.34 billion.
 - They did this **by purchasing bonds *issued by euro-area governments***.

The Central Bank's Balance Sheet

Figure 19.1

Change in the Federal Reserve's Balance Sheet Immediately following a Purchase of Euros

Assets		Liabilities	
Euro reserves (German government bonds)	+ \$1.34 billion	Commercial bank reserves	+ \$1.34 billion

- The Fed ***increased*** its **euro-denominated foreign exchange assets** by \$1.34 billion.
- On the liabilities side, **commercial bank reserves** have increase by the same amount.

The Central Bank's Balance Sheet

- This transaction is identical to a ***purchase of U.S. Treasury bonds.***
- A foreign exchange intervention has the same impact on reserves as a ***domestic open market operation.***
- The **Fed** did **supply dollars** to the market through its intervention, but *more importantly*, the **interest rate has fallen.**

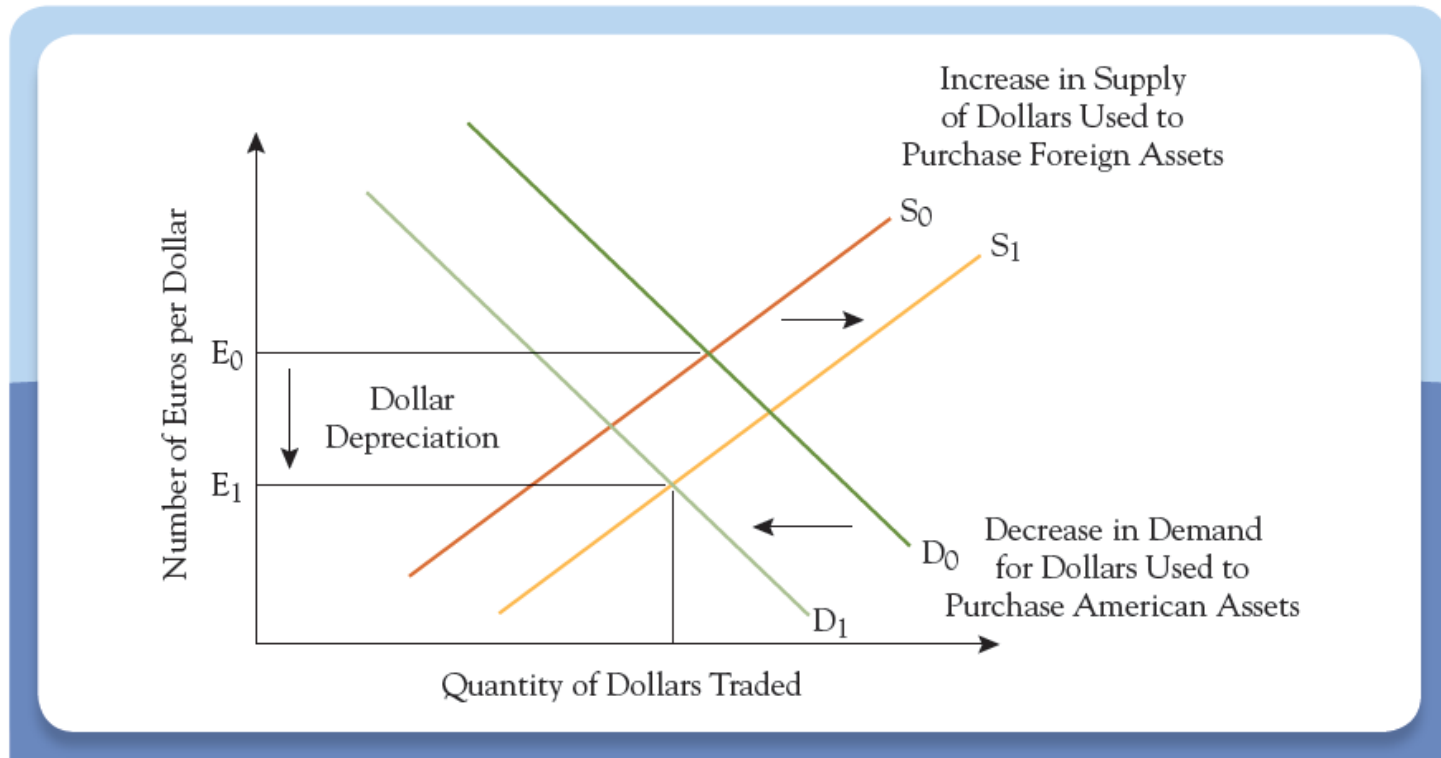
The Central Bank's Balance Sheet

- The **U.S. interest rate** will *fall*, while **European interest rates** *remain the same*.
- Foreign investors will want to **buy fewer U.S. bonds**, and they will *need fewer dollars* to do it.
 - The **demand for dollars** in the foreign exchange market *falls*.
- **U.S. investors** will **sell US bonds** to *buy more foreign bonds*.
 - The **supply of dollars** will *increase*.

The Central Bank's Balance Sheet

Figure 19.2

Effect of a Decrease in U.S. Interest Rates Relative to Interest Rates in the Euro Area



A foreign exchange intervention *affects the value of a country's currency* by **changing domestic interest rates.**

The Central Bank's Balance Sheet

- When Fed intervened to buy euros, it did not change *interest-rate targets*.
- We assumed that when the Fed bought euros, it increased *commercial bank reserves*, which would reduce the interest rate in the *absence of any other action*.
- This is an example of an unsterilized foreign exchange intervention

Capital Controls and the Policymaker's Choice

- **Impossible Trinity:** a country cannot complete 3 conditions
 - Free capital flows
 - Sovereign monetary policy
 - Fixed exchange rate
- Policymakers must ***choose two of these three*** options.
- *If* a country is willing to participate in **international capital markets**, it *can*:
 - Liberalize capital mobility
 - Conduct **independent monetary policy**
 - But, it could not keep its ***exchange rate fixed***

Capital Controls and the Policymaker's Choice

- Internationally **integrated capital markets** *ensure* that **capital** goes to its *most efficient* uses.
- **Disturbances** in one country's financial market *can be quickly transmitted* to other countries.
- For emerging-market countries, **greater openness** of capital markets *poses greater risks*.

Capital Controls and the Policymaker's Choice

- Countries with ***open capital markets*** are **vulnerable** to ***sudden changes*** in *investor sentiment*.
- Investors may **decide to sell** a ***country's bonds***.
 - The **value of the domestic currency** is ***driven down***.
 - **Bond prices** are ***driven down***.
 - **Interest rates** are ***driven up***.
- The *result* is **similar to a *bank run***.
 - *All investors leave* at once, **triggering a financial collapse**.

Sterilized Intervention

- In fact, **central banks** in large countries **do not operate that way.**
- They engage in **sterilized foreign exchange interventions:**
 - A change in foreign exchange reserves alters the *asset side* of the *central bank's balance sheet* but the domestic monetary base **remains unaffected.**

Sterilized Intervention

A sterilized intervention is a *combination* of two transactions:

1. There is the **purchase or sale of foreign currency reserves**, which *changes the central bank's liabilities*.
2. Then, an **immediate open market operation**, of *exactly the same size*, designed to **offset** the impact of the first transaction on the *monetary base*.

Sterilized Intervention

- For example, the Fed's purchase of a German government bond, is offset by the sale of a U.S. Treasury bond.
 - These two actions leave the level of reserves unchanged.
- This intervention is **sterilized** with respect to its *effect on the monetary base*, or the *size of the central bank's balance sheet*.
- An intervention is **sterilized** since it does not change the *monetary base*.

Sterilized Intervention

- The **FOMC** had not changed the **target federal funds rate**.
- The *foreign exchange desk* had **purchased bonds issued by a euro-area government, paying for them with reserves**, and the *open market desk* had **sold U.S. Treasury bonds to reverse the potential impact**.

Figure 19.3

Change in the Federal Reserve's Balance Sheet following a *Sterilized Purchase of Euro-Denominated Bonds*

Assets		Liabilities
Euro reserves (German government bonds)	+\$1.34 billion	Commercial bank reserves unchanged
Securities (U.S. Treasury bonds)	-\$1.34 billion	

The Costs, Benefits, and Risks of Fixed Exchange Rates

- **Fixed exchange rates** not only *simplify operations* for *international trade businesses*, they also *reduce the risk* that investors face when they *hold foreign stocks and bonds*.
- *In countries* that are prone to bouts of *high inflation*, a **fixed exchange rate** may be the only way to *establish* a **credible low-inflation policy**.

Assessing the Costs and Benefits

- One serious **drawback** to a **fixed exchange rate** is that it ***could not operate*** independent monetary **policy**.
 - You **must adopt** the ***other country's interest-rate policy***.
- A ***fixed exchange rate policy*** makes the most sense when the *two countries involved have similar macroeconomic fluctuations*.
 - Otherwise, the ***country with the flexible exchange rate*** that is in **control of monetary policy** might be ***raising interest rates*** at the same time **another country** in going into a recession.

Assessing the Costs and Benefits

Policymakers should consider several additional matters.

1. When a country **fixes its exchange rate**, the central bank is ***offering*** to **buy and sell its own currency** at a **fixed rate**.
 - Monetary policymakers will **need ample currency reserves**.
2. *Fixing the exchange rate* means **reducing** the domestic economy's natural **ability to respond to macroeconomic shocks**.

The Danger of Speculative Attacks

- **Fixed exchange rates** are *fragile and likely to* to a type of crisis called a **speculative attack**.
- Suppose for some reason, *financial market participants* come to ***believe*** that the ***government will need to devalue*** its currency in the near future.
 - ***Investors*** are ***likely to attack the currency now*** and ***force*** an **immediate devaluation**.

The Danger of Speculative Attacks

Causes of a speculative attack:

1. Fiscal policy:

- If investors begin to think that at current levels, ***government spending must ultimately increase inflation***, they will ***not believe*** that ***officials can maintain the exchange rate*** at its fixed level.

2. Financial instability:

- If a country's banking system is **insufficiently capitalized**, a central bank may face pressure to ***relax monetary policy*** to avoid financial crisis.
- If investors **doubt** that the central bank will keep interest rates high enough for a ***sufficient time*** to defend the currency peg, an ***attack may follow***.

Assessing the Costs and Benefits

3. Spontaneously:

- If enough currency **speculators** simply *decide* that a **central bank cannot maintain its exchange rate**, they will **attack**.
 - **Spontaneous speculative attacks** are like **bank runs**; they can be *contagious*.

Many observers suspect that in today's world, **no central bank *has the resources to withstand such an attack*** in the **absence of capital controls**

EE432 Monetary Theory and Policy



Lecture 15 New Keynesian Monetary Economics

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Additional lecture made for EE432 Monetary Theory and Policy at Thammasat University
(This is not part of Cecchetti and Schoenholtz (2017) Money, Banking, and Financial Markets. McGraw-Hill Textbook)

New Keynesian Model

- Over the past two decades, **macroeconomics** has evolved from a divided field, which in many ways ***lacked a solid foundation***, into a more comprehensive discipline built on a fairly firm **microeconomic foundation**.

New Keynesian Model

- **New Keynesian economics** reconciles the *general equilibrium approach* of the *real business cycle school* with the clear role of **rigidities** advocated by Keynes and Phelps.
- The **general equilibrium approach** derives the *equilibrium conditions* from the **optimization problem** of *forward-looking* households, firms and fiscal and monetary authorities in conditions of *uncertainty*.

New Keynesian Model

- The **New Keynesian** emphasis on **expectations** and **forward-looking behaviour** in markets has similarly had major consequences for monetary policy implementation.
- If **private agents' expectations about future inflation** are the **main determinants of inflation**, it is crucial for monetary policy-making to be ***systematic, credible and transparent*** to maximize its impact on them.

New Keynesian Model

- This **expectational channel** of monetary policy introduces a ***new instrument for monetary authorities***, i.e. the possibility to influence inflation by **influencing forward-looking expectations**.

New Keynesian Model

- This has led to an ongoing discussion on the **advantages of commitment *versus discretion***.
- The current debate centres on the ***benefits from committing to price stability*** by introducing an **official inflation target**, and *being transparent in formulation, communication and implementation of monetary policy* in order to **anchor future inflation expectations and improve the tradeoff between stabilizing inflation and output gap volatility**.

New Keynesian Model

- As a consequence of the **presence of nominal rigidities**, *prices do not adjust in proportion to changes in the money supply* (thus causing real balances to vary), or *if expected inflation does not move one-for-one with the nominal interest rate* when the latter varies, thus *leading to a change in the real interest rate*.
- The **central bank** will generally be *able to alter the level aggregate demand* and, as a result, *the equilibrium levels of output and employment*.

Key Properties of Model

- **Monopolistic competition**; prices and wages are *set by private economic agents* in order to maximize their objectives
- **Nominal rigidities**; firms are *subjected to some constraints to adjust the price of goods*, including wage

Key Properties of Model

- **Short-run non-neutrality of monetary policy; *in the presence of **nominal rigidities**, changes in short-term nominal interest rates are not matched by one-for-one changes in expected inflation, thus leading to **variations in real interest rates**.***
- **As a result, firms find it *optimal to adjust the quantity of goods supplied to the new level of demand*. However, in the **long run**, the **economy reverts back to its natural equilibrium**.**

Key Properties of Model

- **New Keynesian models** represent a convergence between
- (i) **simple (static) policy-oriented models** such as the *IS-LM model*,
- (ii) **Keynesian** emphasis on the role of **monopolistic competition**, *markups and costly price adjustments*, and
- (iii) **dynamic general equilibrium models** with their roots in the real business cycle literature.

The New Keynesian Model for a Closed Economy

- A **small-scale new Keynesian model** *for a closed economy* basically consists of three components;
- The **demand block** is represented by an ***expectational IS curve***, which is a linear approximation to the representative household's intertemporal Euler equation to **optimize household consumption** across time *based on their intertemporal budget constraints*.
- This relates the **level of real activity** *to expected (and sometimes past) real activity* and the **real interest rate**.

The New Keynesian Model for a Closed Economy

- The supply block is represented by a *price-setting equation* – the **new Keynesian Phillips curve** – which can be derived from price-setting behaviour.
- It *relates inflation to expected* (and sometimes past) *inflation* and a measure of excess demand.
- Thus, it *adds an expectation term* to the conventional **Phillips curve**.

The New Keynesian Model for a Closed Economy

- The third relationship is an interest rate rule, which *describes how the **nominal rate of interest** is determined*.
- This condition is *typically linked to **interest rate rule** to conduct of monetary policy*.
- The policy interest rate setting is thus *commonly a **reaction function** where the monetary authorities respond to the output gap and (expected) inflation*

End of lecture