

STUDY SESSION 5: ECONOMICS—MONETARY AND FISCAL POLICY, INTERNATIONAL TRADE, AND CURRENCY EXCHANGE RATES

FISCAL AND MONETARY POLICY

Cross-Reference to CFA Institute Assigned Reading #18

Fiscal policy is a government's use of taxation and spending to influence the economy.

Monetary policy deals with determining the quantity of money supplied by the central bank. Both policies aim to achieve economic growth with price level stability, although governments use fiscal policy for social and political reasons as well.

Money is defined as a **medium of exchange**. Functions of money include a medium of exchange, a store of value, and a unit of account.

In a **fractional reserve system**, new money created is a multiple of new excess reserves available for lending by banks. The potential multiplier is equal to *the reciprocal of the reserve requirement* and, therefore, is inversely related to the reserve requirement.

Three factors influence **money demand**:

1. Transaction demand, for buying goods and services.
2. Precautionary demand, to meet unforeseen future needs.
3. Speculative demand, to take advantage of investment opportunities.

The **money supply** is determined by central banks with the goal of managing inflation and other economic variables.

The **Fisher effect** states that a nominal interest rate is equal to the real interest rate plus the expected inflation rate.

Central bank roles include:

- Supplying currency, acting as banker to the government and to other banks.
- Regulating and supervising the payments system.
- Acting as a lender of last resort.
- Holding the nation's gold and foreign currency reserves.
- Conducting monetary policy.

Central banks have the objective of controlling inflation. Some central banks have additional goals such as maintaining currency stability, full employment, positive sustainable economic growth, or moderate interest rates.

Policy tools available to central banks:

- Changing the policy rate.
- Changing the reserve requirement.
- Open market operations.

The policy rate is called the *discount rate* in the United States, the *refinancing rate* by the European Central Bank, and the *two-week repo rate* in the United Kingdom. It can be thought of as the rate the central bank charges member banks to borrow reserves.

Decreasing the policy rate, decreasing reserve requirements, and making open market purchases of securities are all expansionary (tend to increase economic growth). Increasing the policy rate, increasing reserve requirements, and making open market sales of securities are all contractionary (reduce economic growth).

Effective central banks exhibit:

- *Independence*: The central bank is free from political interference.
- *Credibility*: The central bank follows through on its stated policy intentions.
- *Transparency*: The central bank makes it clear what economic indicators it uses and reports on the state of those indicators.

An increase in the growth rate of the money supply will decrease nominal and (in the short run) real interest rates, which will increase economic growth.

Because lower real interest rates will decrease foreign investment and demand for the domestic currency, an increase in the growth rate of the money supply will cause the domestic currency to depreciate relative to those of the country's trading partners. The depreciation of the domestic currency will increase export demand, further increasing economic growth. In the long run, the increase in the money supply will not decrease real interest rates because inflation (and inflation expectations) will increase, offsetting the decrease in nominal interest rates. A decrease in the growth rate of the money supply will have opposite effects.

The **real trend rate** is the long-term sustainable real growth rate of an economy. The **neutral interest rate** is the sum of the real trend rate and the target inflation rate. Monetary policy is said to be contractionary when the policy rate is above the neutral rate and expansionary when the policy rate is below the neutral rate.

Reasons that monetary policy may not work as intended:

- Monetary policy changes may affect inflation expectations to such an extent that long-term interest rates move opposite to short-term interest rates.

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- Individuals may be willing to hold greater cash balances without a change in short-term rates so that an expansion of the money supply does not reduce short-term rates (liquidity trap).
- Banks may be unwilling to lend greater amounts, even when they have more excess reserves as a result of an increase in the money supply.
- Short-term rates cannot be reduced below zero.
- Developing economies face unique challenges in utilizing monetary policy due to undeveloped financial markets, rapid financial innovation, and lack of credibility of the monetary authority.

Fiscal policy refers to the taxing and spending policies of the government.

Objectives of fiscal policy can include:

- Influencing the level of economic activity.
- Redistributing wealth or income.
- Allocating resources among industries.

Fiscal policy is implemented by governmental changes in taxing and spending policies.

A government has a *budget surplus* when tax revenues exceed government spending and a *budget deficit* when spending exceeds tax revenue.

Fiscal policy tools include spending tools and revenue tools. Spending tools include transfer payments, current spending (goods and services used by government), and capital spending (investment projects funded by government). Revenue tools include direct and indirect taxation.

An increase (decrease) in a government budget surplus is indicative of a contractionary (expansionary) fiscal policy. Similarly, an increase (decrease) in a government budget deficit is indicative of an expansionary (contractionary) fiscal policy.

An *advantage of fiscal policy* is that indirect taxes (sales, value-added, and excise taxes) can be used to quickly implement social policies and can also be used to quickly raise revenues at a low cost.

Disadvantages of fiscal policy include time lags for implementing changes in direct taxes and time lags for capital spending changes to have an impact. Delays (lags) in realizing the effects of fiscal policy changes limit their usefulness.

Types of lags:

- **Recognition lag:** Policymakers may not immediately recognize when fiscal policy changes are needed.
- **Action lag:** Governments take time to enact needed fiscal policy changes.
- **Impact lag:** Fiscal policy changes take time to affect economic activity.

Arguments for being concerned with the size of fiscal deficit:

- Higher future taxes lead to disincentives to work, negatively affecting long-term economic growth.
- Fiscal deficits might not be financed by the market when debt levels are high.
- A *crowding-out effect* as government borrowing increases interest rates and decreases private sector investment.

Arguments against being concerned with the size of fiscal deficit:

- Debt may be financed by domestic citizens.
- Deficits for capital spending can boost the productive capacity of the economy.
- Fiscal deficits may prompt needed tax reform.
- *Ricardian equivalence* may prevail: private savings rise in anticipation of the need to repay principal on government debt.
- When the economy is operating below full employment, deficits do not crowd out private investment.

Monetary and fiscal policy will interact, and when one is expansionary and the other is contractionary, they will offset to some degree. The following table summarizes the effects for different combinations of fiscal and monetary policy.

<i>Monetary Policy</i>	<i>Fiscal Policy</i>	<i>Interest Rates</i>	<i>Output</i>	<i>Private Sector Spending</i>	<i>Public Sector Spending</i>
Tight	Tight	higher	lower	lower	lower
Easy	Easy	lower	higher	higher	higher
Tight	Easy	higher	higher	lower	higher
Easy	Tight	lower	varies	higher	lower

INTERNATIONAL TRADE AND CAPITAL FLOWS

Cross-Reference to CFA Institute Assigned Reading #19

Gross domestic product (GDP) is the total value of goods and services produced within a country's borders over a period. Gross national product (GNP) is the total value of goods and services produced by the labor and capital of a country's citizens. Income of a country's citizens working abroad is included in its GNP but not in its GDP. Income to capital in the domestic country that is owned by foreigners is included in the domestic country's GDP but not in its GNP. GDP is more closely related to economic activity within a country's borders.

A country is said to have an **absolute advantage** in the production of a good if it can produce the good at a lower cost, in terms of resources, than another country.

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A country is said to have a **comparative advantage** in the production of a good if its opportunity cost, in terms of other goods that could be produced instead, is lower than that of another country. The opportunity cost of producing a unit of one good is the number of units of another good that could be produced instead.

Regardless of absolute advantage, if the opportunity costs of producing two goods are different between two countries, trading will allow each country to specialize in production of the good in which it has a comparative advantage, resulting in greater overall production of both goods and increased economic welfare. The costs of trade are primarily those imposed on workers and firms in industries that face competition from lower cost imported goods.

Assume the following labor inputs are required to produce cloth and wine in England and Portugal:

	<i>Cloth</i>	<i>Wine</i>
England	100	110
Portugal	90	80

The opportunity cost of one unit of wine in England is $110 / 100 = 1.1$ units of cloth. In Portugal, the opportunity cost of one unit of wine is $80 / 90 = 0.89$ units of cloth.

Portugal has an absolute advantage in producing both goods and a comparative advantage in the production of wine. England has a comparative advantage in the production of cloth (cost is 100/110 wine versus 90/80 wine for Portugal).

The **Ricardian model of trade** has only one factor of production—labor. The source of comparative advantage in Ricardo's model is *differences in labor productivity* due to differences in technology.

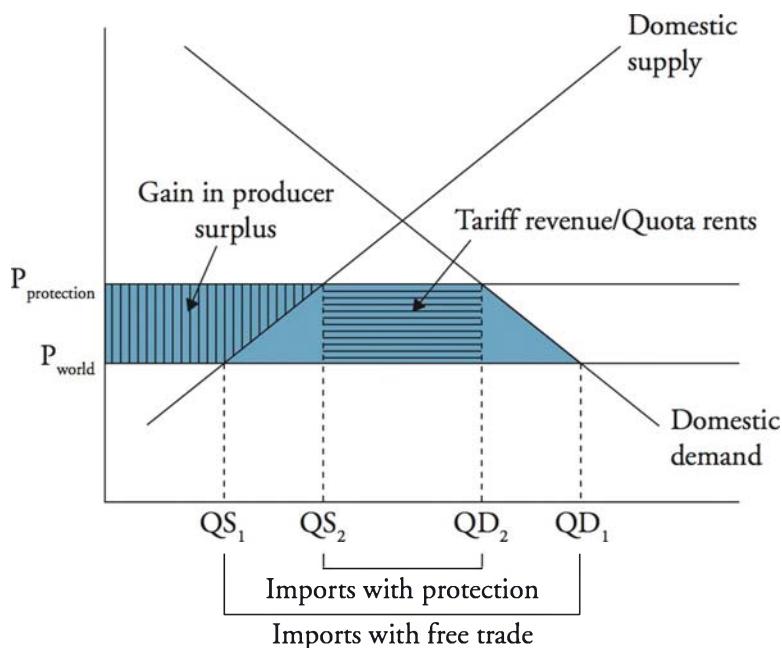
Heckscher and Ohlin presented a model in which there are two factors of production—capital and labor. The source of comparative advantage (differences in opportunity costs) in this model is *differences in the relative amounts of each factor* the countries possess. The country that has more capital will specialize in the capital intensive good and trade for the less capital intensive good with the country that has relatively more labor and less capital. In the **Heckscher-Ohlin model**, there is a redistribution of wealth within each country between labor and the owners of capital. The price of the relatively less scarce (more available) factor of production in each country will increase so that its owners will earn more compared to what they would earn without trade.

Types of Trade Restrictions

- **Tariffs:** Taxes on imported goods collected by the government.
- **Quotas:** Limits on the amount of imports allowed over some period.
- **Export subsidies:** Government payments to firms that export goods.
- **Minimum domestic content:** Requirement that some percentage of product content must be from the domestic country.
- **Voluntary export restraint:** A country voluntarily restricts the amount of a good that can be exported, often in the hope of avoiding tariffs or quotas imposed by their trading partners.

In general, all trade restrictions make foreign producers worse off, domestic producers and industry workers better off, and domestic consumers worse off. In Figure 11, note that prior to the imposition of a quota or tariff, the total quantity demanded domestically is QD_1 , and QS_1 is supplied by domestic suppliers at price P_{World} . The imposition of the tariff raises the price on imports to $P_{Protection}$, the quantity demanded decreases to QD_2 , the quantity supplied by domestic producers increases to QS_2 , and the quantity of imports decreases. The result is an increase in the domestic price of the good and a loss of consumer surplus equal to the blue-shaded area. The portion with vertical lines is an increase in domestic producers' surplus, the portion with horizontal lines is the total tariff revenue collected by the government, and the other two areas represent a deadweight loss.

Figure 11: Effects of Tariffs and Quotas



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Some countries impose **capital restrictions** on the flow of financial capital across borders. Restrictions include:

- Outright prohibition of investment in the domestic country by foreigners.
- Prohibition of or taxes on the income earned on foreign investments by domestic citizens.
- Prohibition of foreign investment in certain domestic industries.
- Restrictions on repatriation of earnings of foreign entities operating in a country.

Overall, capital restrictions are thought to decrease economic welfare, but they do protect developing countries from large swings in asset prices as foreign capital moves into and out of a particular country.

Trade agreements can be categorized by the degree of economic integration among the participants. Each type of agreement in the following list includes the provisions in the previous type of agreement, so that monetary union is the most integrated and includes all the provisions listed.

- **Free trade area:** All barriers to import and export of goods and services among member countries are removed.
- **Customs union:** In addition, all member countries adopt a common set of trade restrictions with non-members.
- **Common market:** In addition, all barriers to the movement of labor and capital goods among member countries are removed.
- **Economic union:** In addition, member countries establish common institutions and economic policy.
- **Monetary union:** In addition, member countries adopt a single currency.

Balance of Payments Accounts

According to the U.S. Federal Reserve, “The BOP [balance of payments] includes the **current account**, which mainly measures the flows of goods and services; the **capital account**, which consists of capital transfers and the acquisition and disposal of non-produced, non-financial assets; and the **financial account**, which records investment flows.”

The **current account** comprises three sub-accounts:

- Merchandise and services.
- Income receipts, including foreign income from dividends on stock holdings and interest on debt securities.
- Unilateral transfers, which are one-way transfers of assets.

The **capital account** comprises two sub-accounts:

- Capital transfers.
- Sales and purchases of non-financial assets.

The **financial account** comprises two sub-accounts:

- Government-owned assets abroad.
- Foreign-owned assets in the domestic country.

A country that has imports valued more than its exports is said to have a **current account (trade) deficit**, while countries with more exports than imports are said to have a **current account surplus**. For a country with a trade deficit, it must be balanced by a net surplus in the capital and financial accounts. As a result, investment analysts often think of all financing flows as a single “capital” account that combines items in the capital and financial accounts. Thinking in this way, any deficit in the current account must be made up by a surplus in the (combined) capital account.

In equilibrium, we have the relationship:

$$\text{exports} - \text{imports} = \text{private savings} + \text{government savings} - \text{domestic investment}$$

When total savings is less than domestic investment, imports must be greater than exports so that there is a deficit in the current account. Lower levels of private saving, larger government deficits, and high rates of domestic investment all tend to result in or increase a current account deficit. The intuition here is that low private or government savings in relation to private investment in domestic capital requires foreign investment in domestic capital.

The **International Monetary Fund (IMF)** facilitates trade by promoting international monetary cooperation and exchange rate stability, assists in setting up international payments systems, and makes resources available to member countries with balance of payments problems.

The **World Bank** provides low-interest loans, interest-free credits, and grants to developing countries for many specific purposes. It also provides resources and knowledge and helps form private/public partnerships with the overall goal of fighting poverty.

The **World Trade Organization (WTO)** has the goal of ensuring that trade flows freely and works smoothly. Their main focus is on instituting, interpreting, and enforcing a number of multilateral trade agreements, which detail global trade policies for a large majority of the world's trading nations.

CURRENCY EXCHANGE RATES

Cross-Reference to CFA Institute Assigned Reading #20

At a point in time, the **nominal exchange rate** \$1.416/euro suggests that in order to purchase one euro's worth of goods and services in Euroland, the cost in U.S. dollars will be \$1.416. We sometimes refer to the numerator currency as the **price currency** and the denominator currency as the **base currency**. In the case of an exchange rate quote of 1.416 USD/EUR, the U.S. dollar is the price currency (expresses the price of one euro) and the euro is the base currency (easy to remember because it is in the bottom or base of the quote).

As time passes, the **real exchange rate** tells us the dollar cost of purchasing that same unit of goods and services based on the new (current) dollar/euro exchange rate and the relative changes in the price levels of both countries. The formula for this calculation is:

$$\text{real exchange rate} = \text{nominal exchange rate} \times \left(\frac{\text{base currency CPI}}{\text{price currency CPI}} \right)$$

If the nominal exchange rate (quoted with the domestic country as the price currency and a foreign country as the base currency) increases over a period by the same percentage as the domestic price level increases relative to the foreign price level, the real exchange rate is unchanged. With the nominal exchange rate unchanged over a period, the real exchange rate will increase (decrease) if the foreign price level increases more (less) than the domestic price level.

A **spot exchange rate** is the currency exchange rate for immediate delivery.

A **forward exchange rate** is a currency exchange rate for an exchange to be done in the future. Forward rates are quoted for various future dates (e.g., 30 days, 60 days, 90 days, or one year). A forward is actually an agreement to exchange a specific amount of one currency for a specific amount of another on a future date specified in the forward agreement.

The market for foreign exchange is the largest financial market in terms of the value of daily transactions and has a variety of participants, including large multinational banks (the sell side) and corporations, investment fund managers, hedge fund managers, investors, governments, and central banks (the buy side).

Participants in the foreign exchange markets are referred to as *hedgers* if they enter into transactions that decrease an existing foreign exchange risk and as *speculators* if they enter into transactions that increase their foreign exchange risk.

For a change in an exchange rate, we can calculate the **percentage appreciation or depreciation** of the *base currency*. For example, a decrease in the USD/EUR exchange rate from 1.44 to 1.42 represents a depreciation of the EUR relative to the USD of 1.39% ($1.42 / 1.44 - 1 = -0.0139$) because the USD price of a euro has gone down.

To calculate the appreciation or depreciation of the USD (relative to the euro), we first convert the quotes to EUR/USD (making the USD the base currency) and then proceed as above. The initial rate becomes $1/1.44 = 0.6944$ EUR/USD, and the later rate becomes $1/1.42 = 0.7042$ EUR/USD. The change in the exchange value of the dollar (now the base currency) is $0.7042/0.6944 - 1 = +0.0141$, so the USD has appreciated 1.41% relative to the euro over the period.

Given two exchange rate quotes for three different currencies, we can calculate a **currency cross rate**. If the MXN/USD quote is 12.1 and the USD/EUR quote is 1.42, we can calculate the MXN/EUR cross rate as $12.1 \times 1.42 = 17.18$. That is, a euro is priced at 17.18 Mexican pesos.

Points in a foreign currency quotation are in units of the last digit of the quotation. For example, a forward quote of +25.3 when the USD/EUR spot exchange rate is 1.4158 means that the forward exchange rate is $1.4158 + 0.00253 = 1.41833$ USD/EUR.

For a forward exchange rate quote given as a percentage, the percentage change in the spot rate is calculated as forward / spot – 1. A forward exchange rate quote of +1.787%, when the spot USD/EUR exchange rate is 1.4158, means that the forward exchange rate is $1.4158 (1 + 0.01787) = 1.4411$ USD/EUR.

The percentage difference between the spot exchange rate and the forward exchange rate, expressed as price/base values, is approximately equal to the interest rate (*i*) for the base currency minus the interest rate for the price currency over the forward period. The exact relationship is:

$$\frac{\text{Forward}}{\text{Spot}} = \frac{1 + i_{\text{Price Currency}}}{1 + i_{\text{Base Currency}}} \text{ so that Forward} = \text{Spot} \times \frac{1 + i_{\text{Price Currency}}}{1 + i_{\text{Base Currency}}}$$

Exchange rate regimes for countries that do not have their own currency:

- With *formal dollarization*, a country uses the currency of another country.
- In a *monetary union*, several countries use a common currency.

Exchange rate regimes for countries that have their own currency:

- A *currency board arrangement* is an explicit commitment to exchange domestic currency for a specified foreign currency at a fixed exchange rate.

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- In a *conventional fixed peg arrangement*, a country pegs its currency within margins of $\pm 1\%$ versus another currency.
- In a system of *pegged exchange rates within horizontal bands* or a *target zone*, the permitted fluctuations in currency value relative to another currency or basket of currencies are wider (e.g., $\pm 2\%$).
- With a *crawling peg*, the exchange rate is adjusted periodically, typically to adjust for higher inflation versus the currency used in the peg.
- With *management of exchange rates within crawling bands*, the width of the bands that identify permissible exchange rates is increased over time.
- With a system of *managed floating exchange rates*, the monetary authority attempts to influence the exchange rate in response to specific indicators, such as the balance of payments, inflation rates, or employment without any specific target exchange rate.
- When a currency is *independently floating*, the exchange rate is market-determined.

The effect of a depreciation of the domestic currency on a country's trade balance can be analyzed using either the **elasticities approach** or the **absorption approach**.

Under the *elasticities approach*, for a depreciation of the domestic currency to reduce an existing trade deficit, the elasticities (ϵ) of export and import demand must meet the **Marshall-Lerner condition**:

$$W_{Exports} \epsilon_{Exports} + W_{Imports} (\epsilon_{Imports} - 1) > 0$$

where:

ϵ = elasticity

W = the proportion of total trade for imports or exports

For situations where a country does not have a trade deficit or surplus, this condition simplifies to $\epsilon_{Exports} + \epsilon_{Imports} > 1$.

Under the *absorption approach*, national income must increase relative to national expenditure in order to decrease a trade deficit. This can also be viewed as a requirement that national saving must increase relative to domestic investment in order to decrease a trade deficit.

The **J-curve effect** refers to the fact that a depreciation of the domestic currency may increase a trade deficit in the short run (because of existing foreign-currency-priced export contracts) even though it will eventually reduce the trade deficit.