**А.А. Борочкин**

# МЕЖДУНАРОДНЫЕ ФИНАНСЫ

## Учебное пособие

Для иностранных студентов,
обучающихся по программе магистров 38.04.02. Менеджмент

Нижний Новгород

2015

**Alexander Borochkin**

# INTERNATIONAL FINANCE

# Manual

For international students studying
in the master program 38.04.02. Management

Nizhni Novgorod

2015

## CONTENTS

## Introduction

Course International Finance covers foreign exchange market operations, structure of the world currency system, foreign exchange financial instruments, Financial Management of the Multinational Firm, balance of payments policy and modelling.

The purpose of the course International Finance is to give the students a general idea regarding the foreign exchange market and quantitative methods and models applied in this area.

The objectives of the course International Finance are:

1. To study such concepts as Foreign Exchange Market, Spot Exchange Rates, Exchange Rate System, the balance of payments, the current account, the capital account, Purchasing Power Parity.
2. To receive the general idea about structure of the foreign exchange market and interests of its participants (currency dealers, international companies, government bodies).
3. To determine the role of the government in exchange rate regulations.
4. To study history about international monetary agreements.
5. To make economic models of the balance of trade and to use it in different exchange rate systems.
6. To practice opened foreign exchange positions hedging using such financial instruments as currency forwards, currency swaps, currency futures and currency options
7. To study financial management of the international firm and, in particular, tax optimization technics.
8. To reach the general idea of the Offshore Banking, Libor Interest Rate Spread, International Banking Facilities.
9. To do optimal choices in international portfolio management and direct international investments.
10. To understand Purchasing Power Parity concept.
11. To use forecasting technics during foreign exchange trading.

This manual consists of the following. In Section I "THE INTERNATIONAL MONETARY ENVIRONMENT" are considered general topics concerning international financial market: foreign exchange definition, currency quotes, Russian foreign exchange market, balance of payment. Here it is discussed the history of the international finance, from gold standard to the modern era of the floating exchange rates. In Section II "INTERNATIONAL PARITY CONDITIONS" financial instruments widely used in the international financial market: forwards, swaps, futures and options are presented. There are also described Eurocurrency market, theory of interest rates and international parity conditions. In Section III "RISK AND INTERNATIONAL CAPITAL FLOWS" there is an overview of the trading on the foreign exchange and international direct and portfolio investments. In Section IV "MODELING THE EXCHANGE RATE AND BALANCE OF PAYMENTS" macroeconomics issues of the balance of trade are confronted.

## Section I. THE INTERNATIONAL MONETARY ENVIRONMENT

### Unit 1. The Foreign Exchange Market

#### 1.1. Foreign Exchange Market definition

The foreign exchange market is a place where large commercial banks trade foreign-currency-denominated deposits with each other. Actual bank notes are relatively unimportant due to little turnover and government restrictions on cash currency transportation through national borders.

The foreign exchange market is the largest financial market in the world. In April 2013, the Bank for International Settlements (BIS) conducted a survey of trading volume around the world and found that the average amount of currency traded each business day was $ 5,345 billion. In 2004 the trading volume of foreign exchange was $ 1,934 billion (see Table 1-1).

**Table 1-1**

**Global foreign exchange market turnover,
daily averages in billions of US dollars and percentages**

| Instrument | 1998 | 2001 | 2004 | 2007 | 2010 | 2013 |
|---|---|---|---|---|---|---|
| Foreign exchange instruments | 1527 | 1239 | 1934 | 3324 | 3971 | 5345 |
| Spot transactions | 37% | 31% | 33% | 30% | 37% | 38% |
| Outright forwards | 8% | 10% | 11% | 11% | 12% | 13% |
| Foreign exchange swaps | 48% | 53% | 49% | 52% | 44% | 42% |
| Currency swaps | 1% | 1% | 1% | 1% | 1% | 1% |
| Options and other products | 6% | 5% | 6% | 6% | 5% | 6% |

Source: Bank for International Settlements. Triennial Central Bank Survey. Report on Global Foreign Exchange Market Activity in 2013. Basel, December, 2013.

The U.S. dollar is by far the most important currency, and has remained so in the last decade, even with the introduction of the euro. The dollar was involved in 86.8% of all trades in 1998 and maintained its first rank of 87% of all trades in 2013. The largest volume occurs in dollar/euro trading, accounting for more than 24 percent of the total in 2013.

Among the major currencies, trading in the Japanese yen jumped the most, rising by 63% since the 2010 survey. Turnover in the USD/JPY pair rose by about 70% in this period (Table 1-2). As a result, the yen significantly expanded its share in global FX trading by 4 percentage points to 23% in 2013. Most of the rise in yen trading occurred between October 2012 and April 2013, a period characterised by expectations of a regime shift in Japanese monetary policy, which then took place in April 2013.

The international role of the euro, by contrast, has shrunk since the beginning of the euro area sovereign debt crisis in 2010. With an increase of just 15%, trading of the euro expanded by less than the overall market. The euro remains the second most important currency worldwide, but its global market share decreased by almost 6% to 33%, reaching the lowest value since the introduction of the common currency (Table 1-2).

Table 1-2

**Global foreign exchange market turnover by currency pair,**
**daily averages in billions of US dollars and percentages**

| Currency pair | 2001 | | 2007 | | 2013 | |
|---|---|---|---|---|---|---|
| | Amount | % | Amount | % | Amount | % |
| USD / EUR | 372 | 30,0 | 892 | 26,8 | 1 289 | 24,1 |
| USD / JPY | 250 | 20,2 | 438 | 13,2 | 978 | 18,3 |
| USD / GBP | 129 | 10,4 | 384 | 11,6 | 472 | 8,8 |
| USD / AUD | 51 | 4,1 | 185 | 5,6 | 364 | 6,8 |
| USD / CAD | 54 | 4,3 | 126 | 3,8 | 200 | 3,7 |
| USD / CHF | 59 | 4,8 | 151 | 4,5 | 184 | 3,4 |
| USD / OTH | 199 | 16,0 | 612 | 18,4 | 213 | 4,0 |
| EUR / JPY | 36 | 2,9 | 86 | 2,6 | 147 | 2,8 |
| EUR / GBP | 27 | 2,1 | 69 | 2,1 | 102 | 1,9 |
| EUR / CHF | 13 | 1,1 | 62 | 1,9 | 71 | 1,3 |
| EUR / OTH | 20 | 1,6 | 83 | 2,5 | 52 | 1,0 |
| All currency pairs | 1 239 | 100,0 | 3 324 | 100,0 | 5 345 | 100,0 |

**Source: Bank for International Settlements. Triennial Central Bank Survey. Report on Global Foreign Exchange Market Activity in 2013. Basel, December, 2013.**

The foreign exchange market is a 24-hour market. Currencies are quoted continuously across the world. In terms of the geographic pattern of foreign exchange trading , a small number of locations account for the majority of trading. Table 1-3 reports the average daily volume of foreign exchange trading in different countries. The United Kingdom (London) and the United States (New York) account for half of total world trading. The United Kingdom has long been the leader in foreign exchange trading.

Table 1-3

**Geographical distribution of global foreign exchange market turnover,**
**2 daily averages in billions of US dollars and percentages**

| Country | 2004 | | 2010 | | 2013 | |
|---|---|---|---|---|---|---|
| | Amount | % | Amount | % | Amount | % |
| United Kingdom | 835 | 32,0 | 1 854 | 36,8 | 2 726 | 40,9 |
| United States | 499 | 19,1 | 904 | 17,9 | 1 263 | 18,9 |
| Singapore | 134 | 5,1 | 266 | 5,3 | 383 | 5,7 |
| Japan | 207 | 8,0 | 312 | 6,2 | 374 | 5,6 |
| Hong Kong SAR | 106 | 4,1 | 238 | 4,7 | 275 | 4,1 |
| Switzerland | 85 | 3,3 | 249 | 4,9 | 216 | 3,2 |
| Total | 2 608 | 100,0 | 5 043 | 100,0 | 6 671 | 100,0 |

**Source: Bank for International Settlements. Triennial Central Bank Survey. Report on Global Foreign Exchange Market Activity in 2013. Basel, December, 2013.**

## 1.2. Understanding currency quote

When a currency is quoted, it is done in relation to another currency, so that the value of one is reflected through the value of another. For example, the exchange rate between the U.S. dollar (USD) and the Japanese yen (JPY) like this:

USD/JPY = 102.50.

This is referred to as a currency pair. The base currency is set to the left of the slash, while the currency on the right is referred to as the quote or counter currency. The base currency (in this case, the U.S. dollar) is always equal to one unit (in this case, US$1), and the quoted currency (in this case, the Japanese yen) is what that one base unit is equivalent to in the other currency. The quote means that US$1 = 119.50 Japanese yen. In other words, US$1 can buy 119.50 Japanese yen.

There are two ways to quote a currency pair, either directly or indirectly. In a direct currency quote the domestic currency is the base currency; while in an indirect quote the domestic currency is the quoted currency. The direct quote varies the foreign currency, and the quoted, or domestic currency, remains fixed at one unit. In the indirect quote, on the other hand, the domestic currency is variable and the foreign currency is fixed at one unit.

In the forex spot market, most currencies are traded against the U.S. dollar, and the U.S. dollar is frequently the base currency in the currency pair. In these cases, it is called a direct quote. This would apply to the above USD/JPY currency pair, which indicates that US$1 is equal to 119.50 Japanese yen.

However, not all currencies have the U.S. dollar as the base. The Queen's currencies - those currencies that historically have had a tie with Britain, such as the British pound, Australian Dollar and New Zealand dollar - are all quoted as the base currency against the U.S. dollar. The euro, which is relatively new, is quoted the same way as well. In these cases, the U.S. dollar is the counter currency, and the exchange rate is referred to as an indirect quote. This is why the EUR/USD quote is given as 1.25, for example, because it means that one euro is the equivalent of 1.25 U.S. dollars.

Most currency exchange rates are quoted out to five digits after the decimal place, with the exception of the Japanese yen (JPY), which is quoted out to three decimal places.

When a currency quote is given without the U.S. dollar as one of its components, this is called a cross currency. The most common cross currency pairs are the EUR/GBP, EUR/CHF and EUR/JPY.

As with most trading in the financial markets, there is a bid price (buy) and an ask price (sell). Again, these are in relation to the base currency. When buying a currency pair (going long), the ask price refers to the amount of quoted currency that has to be paid in order to buy one unit of the base currency, or how much the market will sell one unit of the base currency for in relation to the quoted currency.

The bid price is used when selling a currency pair (going short) and reflects how much of the quoted currency will be obtained when selling one unit of the base currency, or how much the market will pay for the quoted currency in relation to the base currency.

The quote before the slash is the bid price, and the two digits after the slash represent the ask price (only the last two digits of the full price are typically quoted). Note that the bid price is always smaller than the ask price.

Whichever currency is quoted first (the base currency) is always the one in which the transaction is being conducted. Operator either buys or sells the base currency.

The difference between the bid price and the ask price is called a spread. At the following quote: EUR/USD = 1.25155/035, the spread would be 0.00035 or 35 pips, also known as points. Although these movements may seem insignificant, even the smallest point change can result in thousands of dollars being made or lost due to leverage.

The pip is the smallest amount a price can move in any currency quote. In the case of the U.S. dollar, euro, British pound or Swiss franc, one pip would be 0.00001. With the Japanese yen, one pip would be 0.001, because this currency is quoted to two decimal places. So, in a forex quote of USD/CHF, the pip would be 0.00001 Swiss francs. Most currencies trade within a range of 1000 to 1500 pips a day.

## 1.3. Russian foreign exchange market

Moscow Exchange`s Forex (FX) Market is a rouble liquidity centre and the oldest regulated domestic FX trading venue, operating since 1992. Official site is http://moex.com. The Central Bank of the Russian Federation sets the official RUB exchange rate based on exchange trading results.

As of 1 January 2014, 531 credit organisations, including Russian banks, subsidiaries of foreign banks, and resident banks of Eurasian Economic Community member states, along with 38 non credit organisations, were FX Market members. Non-credit organisations - professional securities market participants meeting the relevant regulatory requirements were admitted to the FX Market in December 2012.

FX Market members post full or partial collateral to execute their trades. Trades are settled on a payment vs. payment basis, whereby delivery is made when a member fulfils all of its obligations to the the National Clearing Centre (NCC) which acts as the central counterparty and is responsible for centralised clearing.

Moscow Exchange offers trading in the following currencies:

1) U.S dollar (USD), euro (EUR), U.S. dollar-euro basket (BKT), Chinese yuan (CNY), Ukrainian hryvnia (UAH), Kazakh tenge (KZT), and Belarusian ruble (BYR), with settlement in Russian rubles (RUB);

2) Euro with settlement in U.S. dollars.

Moscow Exchange"s FX Market is one of the most dynamically developing segments of Russia's financial market, with its total trading volume increasing 34% YoY to RUB 156 tln in 2013. Spot trades totalled RUB 57 trln and swap trades amounted to RUB 99 trln. 27 December 2013 saw a record daily trading volume of RUB 1.16 trln (USD 35.6 bln).

## 1.4. Currency Arbitrage

Since currencies are homogeneous goods (a dollar is a dollar regardless of where it is traded), it is very easy to compare prices in different markets. Exchange rates tend to be equal worldwide. If this were not so, there would be profit opportunities for simultaneously buying a currency in one market while selling it in another. This activity is called arbitrage.

For instance, suppose the following quotes were available for the Swiss franc/ U.S. dollar rate:

Citibank is quoting 0.8745-55.

Deutsche Bank in Frankfurt is quoting 0.8725-35.

This presents an arbitrage opportunity. Trader could buy $ 10 million at Deutsche Bank's offer price of 0.8735 and simultaneously sell $ 10 million to Citibank at their bid price of 0.8745 francs. This would earn a profit of SF0.0010 per dollar traded, or SF10,000 would be the total arbitrage profit. If such a profit opportunity existed the arbitrage would return currency exchange rates set by banks to to internationally consistent levels.

In the wholesale banking foreign exchange market, the bid-offer spread is the only transaction cost. When the quotes of two different banks differ by no more than the spread being quoted in the market by these banks, there is no arbitrage opportunity.

Arbitrage realizes riskless profit from market disequilibrium by buying a currency in one market and selling it in another. Arbitrage ensures that exchange rates are transaction costs close in all markets.

## 1.5. Short-term and Long-term Foreign Exchange Movements

The main causes of short-term (throughout the day) FX movements are inventory control and asymmetric information effects. So exchange rates may fluctuate even in the absence of news regarding the fundamental determinants of exchange rates.

The inventory control explained as follows. If trader has agreed to buy more euros than he has agreed to sell, he has a long position in the euro and will profit from euro appreciation and lose from euro depreciation. If trader has agreed to sell more euros than he has agreed to buy, he has a short position in the euro and will profit from euro depreciation and lose from euro appreciation. His position at any point in time may be called his inventory. One reason traders adjust their quotes is in response to inventory changes. At the end of the day most traders balance their position and are said to go home "flat." This means that their orders to buy a currency are just equal to their orders to sell.

There is also an asymmetric information effect, which causes exchange rates to change due to traders' fears that they are quoting prices to someone who knows more about current market conditions than they do. Even without news regarding the fundamentals, information is being transmitted from one trader to another through the act of trading.

In the long run, economic factors (e.g., demand/ supply of foreign and domestic goods) affect the exchange rate movements.

## 1.6. Trade-weighted Exchange Rate Indexes

An exchange rate index is a weighted average of a currency's value relative to other currencies, with the weights typically based on the importance of each currency to international trade. If we want to construct an exchange rate index for the Russian Federation, we would include the currencies of the countries that are the major trading partners of the Russian Federation.

For example The Central Bank of Russian Federation uses the dual-currency busket.

The dual-currency busket consists of US dollar and euro. The rouble value of the dual-currency basket has been the operational indicator of the Bank of Russia exchange rate policy since February 2005. At present, the value of the dual-currency basket is calculated as the sum of rouble values of 0.55 US dollars and 0.45 euros. The values in the Figure 1-1 are calculated at official exchange rates.
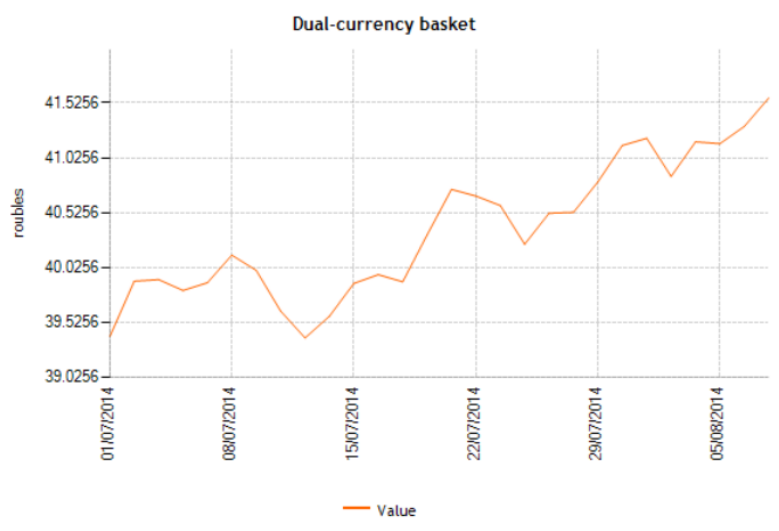


**Figure 1-1. The values of the dual currency basket calculated by The Central Bank of Russian Federation. Source: The Central Bank of Russian Federation. 2014. http://www.cbr.ru/.**

Exchange rate indexes are commonly used analytical tools in international economics. When changes in the average value of a currency are important, bilateral exchange rates (between only

two currencies) are unsatisfactory. Neither economic theory nor practice gives a clear indication of which exchange rate index is best.

## Unit 2.    International Monetary Arrangements

### 2.1.  The Gold Standard: 1880 to 1914. The Interwar Period: 1918 to 1939

The gold standard started during the period from 1880 to 1890. Under a gold standard, currencies are valued in terms of their gold equivalent (an ounce of gold was worth $ 20.67 in terms of the U.S. dollar over the gold standard period). So all currencies was linked in a system of fixed exchange rates.

Maintaining a gold standard requires a commitment from participating countries to be willing to buy and sell gold to anyone at the fixed price.

A gold standard is a commodity money standard. Gold was used as the monetary standard because it is a homogeneous commodity worldwide that is easily storable, portable, and divisible into standardized units like ounces. Since gold is costly to produce, it possesses another important attribute— governments cannot easily increase its supply. During a gold standard there may be little inflation and deflation in the short run, but in the long run the price level remained stable.

Thanks to gold function as world money during a gold standard, a balance of payments disequilibrium was remedied in easy way. A country running a balance of payments (official settlements) deficit would find itself with net outflows of gold, which would reduce its money supply and, in turn, its prices. A surplus country would find gold flowing in and expanding its money supply, so that prices rose. The fall in price in the deficit country would lead to greater net exports (exports minus imports), and the rise in price in the surplus country would reduce its net exports, so that balance of payments equilibrium would be restored.

World War I ended the gold standard.

Since wartime financing required the hostile nations to manage international reserves very carefully, private gold exports were considered unpatriotic. In the former USSR government mandated that private holders of gold sell these holdings to the government.

Because much of Europe experienced rapid inflation during the war and in the period immediately following it, it was not possible to restore the gold standard at the old exchange values. However, the United States had experienced little inflation and thus returned to a gold standard by June 1919. The war ended Britain's financial preeminence, since the United States had risen to the status of the world's dominant banker country. See changes in world gold reserves in Table 2-1.

**Table 2-1**

**Leading central bank/treasury gold reserves (in metric tons fine gold) 1845-1945**

| Year | 1845 | 1850 | 1855 | 1860 | 1865 | 1870 | 1875 | 1880 |
|------|------|------|------|------|------|------|------|------|
| UK | 82 | 104 | 74 | 78 | 93 | 161 | 154 | 170 |
| France | 2 | 3,5 | 32,8 | 105 | 194 | 217 | 337 | 242 |
| Germany | n/a | n/a | n/a | n/a | n/a | n/a | 43 | 81 |
| Italy | n/a | n/a | n/a | n/a | n/a | 30,8 | 26 | 22 |
| Russia | n/a | n/a | 81 | n/a | 57 | 160 | 230 | 195 |
| USA | n/a | n/a | n/a | n/a | n/a | 107 | 87 | 208 |
| Year | 1885 | 1890 | 1895 | 1900 | 1905 | 1910 | 1913 | 1915 |
| UK | 141 | 166 | 305 | 198 | 199 | 223 | 248 | 585 |
| France | 344 | 370 | 460 | 544 | 836 | 952 | 1,03 | 1,457 |
| Germany | 99 | 186 | 252 | 211 | 267 | 240 | 437 | 876 |
| Italy | 142 | 133 | 132 | 115 | 285 | 350 | 355 | 397 |
| Russia | 195 | 312 | 695 | 661 | 654 | 954 | 1,233 | 1,25 |
| USA | 371 | 442 | 169 | 602 | 1,149 | 1,66 | 2,293 | 2,568 |
| Year | 1920 | 1925 | 1930 | 1935 | 1940 | 1945 | | |
| UK | 864 | 1,045 | 1,08 | 1,464 | n/a | 1,773 | | |
| France | 1,622 | 1,201 | 3,16 | 3,907 | 1,773 | 1,378 | | |
| Germany | 391 | 432 | 794 | 56 | n/a | n/a | | |
| Italy | 307 | 498 | 420 | 240 | 122 | 28 | | |
| Russia | n/a | 141 | 375 | 7,456 | n/a | n/a | | |
| USA | 3,679 | 5,998 | 6,358 | 8,998 | 19,543 | 17,848 | | |

**Source: World Gold Council. Historical Data - Annual time series on
World Official Gold Reserves since 1845. 10th August 2011.**

The overvalued currency hurt country exports and provoke run on its gold reserves. So a run on U.S. gold at the end of 1931 led to a 15 percent drop in U.S. gold holdings. Although this did not lead to an immediate change in U.S. policy, by 1933 the United States abandoned the gold standard.

The early to mid-1930s may be characterized as a period of competitive devaluations. Governments also resorted to foreign exchange controls in an attempt to manipulate net exports in a manner that would increase GDP (gross domestic product).

## 2.2. The Bretton Woods Agreement: 1944 to 1973 and its breakdown

Memories of the economic warfare of the interwar years led to an international conference at Bretton Woods, New Hampshire, in 1944. At the close of World War II there was a desire to reform the international monetary system to one based on mutual cooperation and freely convertible currencies[1].

Bretton Woods agreement required each country to fix the value of its currency in terms of an anchor currency, namely the dollar (this established the "par" value of each currency and was to ensure parity across currencies). The U.S. dollar was the key currency in the system, and $ 1 was defined as being equal in value to 1/ 35 ounce of gold. Since every currency had an implicitly defined gold value, through the link to the dollar, all currencies were linked in a system of fixed exchange rates.

---

[1] Melvin, Michael; Norrbin, Stefan (2012-11-23). International Money and Finance (Kindle Locations 2311). Elsevier Science. Kindle Edition.

Nations were committed to maintaining the parity value of their currencies within 1 percent of parity. The various central banks were to achieve this goal by buying and selling their currencies (usually against the dollar) on the foreign exchange market.[2] When a country was experiencing difficulty maintaining its parity value because of balance of payments disequilibrium, it could turn to a new institution created at the Bretton Woods Conference: the International Monetary Fund (IMF).

The IMF was created to monitor the operation of the system and provide short-term loans to countries experiencing temporary balance of payments difficulties. Such loans are subject to IMF conditions regarding changes in domestic economic policy aimed at restoring balance of payments equilibrium.

In the case of a fundamental disequilibrium, when the balance of payments problems are not of a temporary nature, a country could apply for permission from the IMF to devalue or revalue its currency. Such a permanent change in the parity rate of exchange was rare.

The Bretton Woods system worked in the 1950s and also in the part of the 1960s. In 1960, there was a dollar crisis because the United States had run large balance of payments deficits in the late 1950s. Concern over large foreign holdings of dollars led to an increased demand for gold.

The failure to realign currency values in the face of fundamental economic change spelled the beginning of the end for the gold exchange standard of the Bretton Woods agreement.

By the late 1960s the foreign dollar liabilities of the United States were much larger than the U.S. gold stock. The pressures of this "dollar glut" finally culminated in August 1971, when President Nixon declared the dollar to be inconvertible and provided a close to the Bretton Woods era of fixed exchange rates and convertible currencies.

In December 1971, the dollar per gold exchange value was changed from $ 35 to $ 38.02 per ounce of gold. But the dollar was still inconvertible into gold, and thus the major significance of the dollar devaluation was with respect to the foreign exchange value of the dollar, not to official gold movements. The speculative capital flows of 1972 and early 1973 led to a further devaluation of the dollar in February 1973, when the official price of an ounce of gold rose from $ 38 to $ 42.22. Still, the speculative capital flows persisted from the weak to the strong currencies. Finally, in March 1973, the major currencies began to float.

## 2.3. Floating Exchange Rates: 1973 to the Present

After breakdown of Bretton Woods agreement a multitude of methods to partly or completely control the exchange rate has emerged. This choice of exchange rate system also dictates limitations on the ability of the central bank to conduct its monetary policy.

The types of exchange rate systems range from (1), "dollarization" where the central bank of the country has completely given up control of the money supply to adopt some other country's currency, to the other extreme of (6), purely floating, where the central bank retains domestic control over the currency in the country. In between, the central bank has some degree of control over the money supply.

The above categories can be summarized under three headings: peg, mixed, and floating.

The types of foreign exchange arrangements, starting with the exchange rate system with the most independent monetary policy to the one with the least independent monetary policy are as follows:

1. Free floating. The exchange rate is market determined, and any intervention is aimed at moderating fluctuations rather than determining the level of the exchange rate.

2. Managed floating. The monetary authority (usually the central bank) influences the exchange rate through active foreign exchange market intervention with no preannounced path for the exchange rate.

---

[2] Melvin, Michael; Norrbin, Stefan (2012-11-23). International Money and Finance (Kindle Locations 2352). Elsevier Science. Kindle Edition.

3. Horizontal bands. The exchange rate fluctuates around a fixed central target rate. Such target zones allow for a moderate amount of exchange rate fluctuation while tying the currency to the target central rate.

4. Crawling pegs. The exchange rate is adjusted periodically in small amounts at a fixed, preannounced rate or in response to certain indicators (such as inflation differentials against major trading partners).

5. Crawling bands. The exchange rate is maintained within certain fluctuation margins around a central rate that is periodically adjusted at a fixed, pre-announced rate or in response to certain indicators.

6. Fixed peg. The exchange rate is fixed against a major currency or some basket of currencies. Active intervention may be required to maintain the target pegged rate.

7. Currency board. A fixed exchange rate is established by a legislative commitment to exchange domestic currency for a specified foreign currency at a fixed exchange rate. New issues of domestic currency are typically backed in some fixed ratio (like one-to-one) by additional holdings of the key foreign currency.

8. "Dollarization" or No separate legal tender. Another country's currency circulates as the legal tender.

Developing countries with a long history of unstable exchange rates often find it difficult to convince the public that government policy will maintain stable exchange rates in the future. So this country may apply on of the restricted forms of exchange rate policy, such as currency board and "dollarization".

Economists do not all agree on the advantages and disadvantages of a floating as opposed to a pegged exchange rate system . The systematic differences between peggers and floaters are summarized in Table 2-2.

**Table 2-2**

**Characteristics Associated with Countries Choosing to Peg or Float**

| Peggers | Floaters |
|---|---|
| Small size | Large size |
| Open economy | Closed economy |
| Harmonious inflation rate | Divergent inflation rate |
| Concentrated trade | Diversified trade |

There are exceptions to these generalities because neither all peggers nor all floaters have the same characteristics.

### 2.4.  The European Monetary System and the Euro

The European Monetary System (EMS) was established in March 1979. The member countries agreed to maintain small exchange rate fluctuations among themselves, while allowing free float against outside currencies.

The countries that moved to monetary union required their macroeconomic policy to converge to that of the other EMS countries. Convergence was defined as occurring when (a) the country's inflation rate did not exceed the average of the lowest three member country rates by more than 1.5 percentage points; (b) its interest rate on long-term government bonds did not exceed those of the three lowest-inflation members by more than 2 percentage points; and (c) the country's government budget deficit did not exceed 3 percent of GDP, and outstanding government debt did not exceed 60 percent of GDP.

The theoretical base besides European Monetary System and Euro has been the optimum currency area concept. The optimum currency area is the geographical region that could gain economic efficiency by fixing exchange rates within a group and floating exchange rates with the rest of the world. One of the necessary conditions for the optimal currency area is perfect mobility of the factors of production.

The European Central Bank (ECB) was created on June 1, 1998, in Frankfurt, Germany. The European Central Bank (ECB) is responsible for monetary policy of the Eurozone. The ECB is governed by a president and a board of the heads of national central banks. The main purpose of the ECB is to keep inflation under control. Though there is no common representation, governance or fiscal policy for the currency union, some co-operation does take place through the Eurogroup, which makes political decisions regarding the Eurozone and the euro. The Eurogroup is composed of the finance ministers of Eurozone states, but in emergencies, national leaders also form the Eurogroup.

The new European currency, the euro, made its debut on January 1, 1999. The symbol is €, and the ISO code is EUR. Euro notes and coins began to circulate on January 1, 2002. In the transition years of 1999 to 2001, people used the euro as a unit of account, denominating financial asset values and transactions in euro amounts. Bank accounts were available in euros and credit transactions were denominated in euros. However, actual cash transactions were not made with euros until euro cash started circulating in 2002.

As of August 2014, the Euro was adopted by 18 member states of European Union: Austria[3] (1999), Belgium (1999), Cyprus (2008), Estonia (2011), Finland (1999), France (1999), Germany (1999), Greece (2001), Ireland (1999), Italy (1999), Latvia (2014), Luxembourg (1999), Malta (2008), the Netherlands (1999), Portugal (1999), Slovakia 2009), Slovenia (2007), and Spain (1999). A part of territories of some previously listed countries didn`t adopt Euro because of political reasons. This countries are Cyprus (Nothern Cyprus), France (New Caledonia, French Polynesia, Wallis and Futuna), Italy (Campione d`Italia), Netherlands (Aruba, Curaçao Curaçao, Sint Maarten , Caribbean Netherlands). As it became a rule, new currency begins circulation in new member state from January 1 of the year of adoption.

Other EU states (except for the United Kingdom and Denmark) are obliged to join once they meet the criteria to do so. No state has left and there are no provisions to do so or to be expelled. Monaco, San Marino, the Vatican City and Andorra have formal agreements with the EU to use the euro as their official currency and issue their own coins. Other states, like Kosovo and Montenegro, have adopted the euro unilaterally, but these countries do not formally form part of the Eurozone and do not have representation in the ECB. By now Eurozone consist of above mentioned countries.

---

[3] In parenthesis is shown a year of Euro adoption.

## Unit 3.    The Balance of Payments

### 3.1.  Definitions: the balance of payments, the current account, the capital account

Balance of payments accounts are an accounting record of all monetary transactions between a country and the rest of the world. Balance of payments data are reported quarterly for most developed countries. Table 3-1, Table 3-2, Table 3-3, Table 3-4 present the current account, the capital account, the financial account and the hole balance of payments (main components) as reported by the Russian Central Bank.

If any particular account has the value of the credit entries that exceeds the debits, the account has a surplus. On the other hand, where the debits exceed the credits, a deficit exists. A surplus or deficit can apply only to a particular account of the balance of payments, since the sum of the credits and debits on all accounts will always be equal; in other words, the balance of payments is always zero.

**Table 3-1**

**Current account of Russian Federation in millions of US dollars**
**for period from 2005 to 1Q 2014**

| Indicator | 2005 | 2008 | 2011 | 2013 | Q1 2014 |
|---|---|---|---|---|---|
| **Current account** | **84389** | **103935** | **97274** | **34141** | **27089** |
| **Goods and services** | 104560 | 157206 | 163398 | 123661 | 40022 |
| Goods | 116185 | 177625 | 196854 | 181939 | 50728 |
| Services | -11626 | -20420 | -33456 | -58277 | -10707 |
| **Primary income** | -18526 | -46483 | -60399 | -80246 | -10998 |
| Compensation of employees | -1133 | -14357 | -9522 | -13170 | -2361 |
| Investment income | -17394 | -32125 | -51031 | -67157 | -8664 |
| **Secondary income** | -1645 | -6788 | -5725 | -9274 | -1935 |

**Source: Central Bank of Russian Federation, www.cbr.ru. 2014.**

**Table 3-2**

**Capital account of Russian Federation in millions of US dollars**
**for period from 2005 to 1Q 2014**

| Indicator | 2005 | 2008 | 2011 | 2013 | Q1 2014 |
|---|---|---|---|---|---|
| **Capital account** | **-12387** | **-104** | **130** | **-395** | **-185** |
| Gross acquisitions (debit) / disposals (credit) of nonproduced nonfinancial assets | -57 | -309 | 38 | -146 | -191 |
| Capital transfers | -12331 | 205 | 92 | -249 | 6 |
| General government | -12331 | 205 | 4 | -430 | -47 |
| Financial corporations, nonfinancial corporations, households | 0 | 0 | 88 | 181 | 53 |

**Source: Central Bank of Russian Federation, www.cbr.ru. 2014.**

Table 3-3

**Financial account of Russian Federation in millions of US dollars**
**for period from 2005 to 1Q 2014**

| Indicator | 2005 | 2008 | 2011 | 2013 | Q1 2014 |
|---|---|---|---|---|---|
| **Financial account** | **66997** | **100781** | **88748** | **22906** | **21229** |
| Direct investment | 2372 | -19120 | 11767 | 16058 | 5627 |
| Portfolio investment | 11443 | 35691 | 15277 | 11011 | 17635 |
| Financial derivatives | 233 | 1370 | 1394 | 346 | 623 |
| Other investment | -8511 | 121765 | 47679 | 17567 | 24695 |
| Reserve assets | 61461 | -38925 | 12630 | -22077 | -27351 |
| **Net errors and omissions** | **-5004** | **-3051** | **-8655** | **-10840** | **-5675** |

Source: Central Bank of Russian Federation, www.cbr.ru. 2014.

Table 3-4

**Balance of payments of Russian Federation in millions of US dollars**
**for period from 2005 to 1Q 2014**

| Indicator | -2005- | -2008- | -2011- | -2013- | Q1 2014 |
|---|---|---|---|---|---|
| **Current account** | **84389** | **103935** | **97274** | **34141** | **27089** |
| **Capital account** | **-12387** | **-104** | **130** | **-395** | **-185** |
| **Financial account*** | **-66997** | **-100781** | **-88748** | **-22906** | **-21229** |
| **Net errors and omissions** | **-5004** | **-3051** | **-8655** | **-10840** | **-5675** |
| **Total**** | **1** | **-1** | **1** | **0** | **0** |

* Financial account is reported in previous tables with opposite sign. In fact it must be subtracted from the current account.
** Total sum not always equals to zero because of rounding errors.
Source: Central Bank of Russian Federation, www.cbr.ru. 2014.

The current account includes the value of trade in merchandise, services, investment income, and cash transfers. Merchandise is the obvious trade in tangible commodities. The services category refers to trade of factors of production: land, labor, and capital. In current account are also included travel expenses, investments yields, interest yearnings, transportation costs, and insurance premiums. The final component of the current account includes unilateral transfers, for example Russian foreign aid, gifts, and retirement pensions.

Figure 1-1 illustrates how the current account of Russian Federation has changed over time. Traditionally Russia has great surplus of current account. So exports from Russia are usually far greater than imports. This policy is the main cause of the Russian ruble appreciation in recent years. But if we look closer on the Figure 1-1, we can see that sometimes Russian current account suffered to lower and even negative values. For example, the current account fell to as little as 5-10 bln USD in Q4 2008-Q1 2009 due to World financial crisis of 2007-2010. This rapid deterioration of the current account coincided with ruble devaluation for about 35% in a few months. Another fell of the current account occurred in summer 2010 during the peak of European debt crisis which also coincided with some rubble devaluation. And at last we can see in Figure 1-1 the most recent fall of Russian current account to negative values in the end of 2013. This happened because of internal economic problems in Russia which are not clear at the moment, and also was the reason for subsequent rubble devaluation.
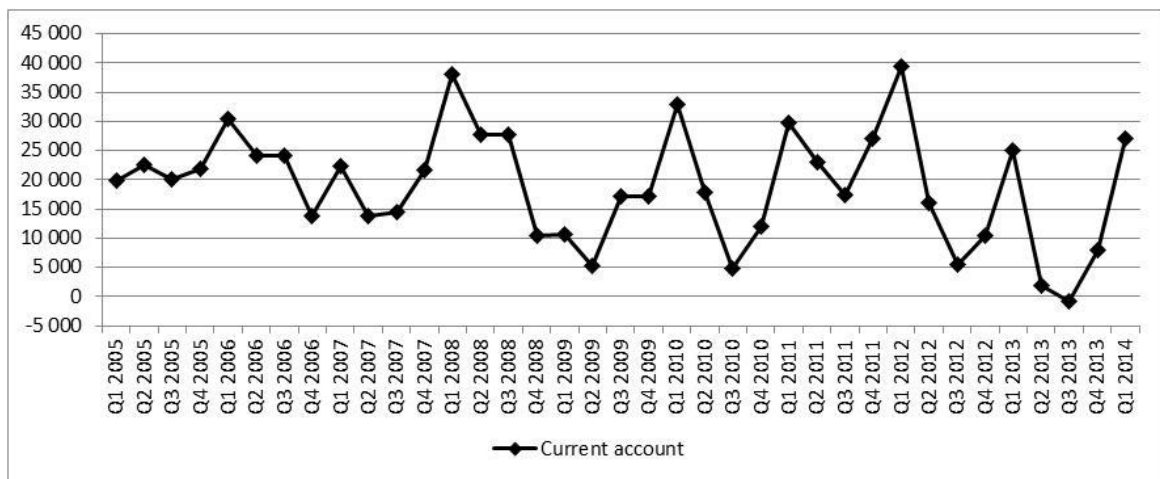
**Figure 3-1. Current account of Russian Federation in millions of US dollars.**
**Quarterly data for years 2005-1Q 2014.**
**Source: Central Bank of Russian Federation, www.cbr.ru. 2014.**

In practice, most countries, including Russia, calculate and represent balance of payments according to International Monetary Fund (IMF) methodology.

The main difference in the IMF's terminology is that it uses the term "financial account" to capture transactions that would under alternative definitions be recorded in the capital account. The IMF uses the term capital account to designate a subset of transactions that, according to other usage, form a small part of the overall capital account.

In the IMF's definition, the capital account represents a small subset of what the standard definition designates the capital account, largely comprising transfers. Transfers are one-way flows, such as gifts, as opposed to commercial exchanges (i.e., buying/selling and barter). The largest type of transfer between nations is typically foreign aid, but that is mostly recorded in the current account. An exception is debt forgiveness, which in a sense is the transfer of ownership of an asset. The capital account of Russia is represented in Table 3-2.

The financial account records in the IMF`s terminology is the net change in ownership of foreign assets. It includes loans, direct and portfolio investments between the country and the rest of world. The reserve account is also usually included in financial account. The financial account of Russia is represented in Table 3-3.

The balancing item, which may be positive or negative, is simply an amount that accounts for any statistical errors and assures that other accounts sum equals to zero.

Expressed with the IMF definition, the balance of payments identity can be written:

Current account + Capital account + Financial account + Balancing Item = 0

## 3.2. The balance of payments transactions classification

The balance of payments is composed as a balance sheet using double-entry bookkeeping – every item involves two entries, a credit and a debit. The credits record items lead to inflows of payments. Such items are associated with a greater demand for domestic currency or supply of foreign currency to the foreign exchange market. The debits record items lead to payments outflows. These are associated with a greater supply of domestic currency or demand for foreign currency in the foreign exchange market.

Consider the following six hypothetical transactions and their corresponding entries in Table 3-5, Table 3-6, Table 3-7.

1. A Russian bank makes a loan of $ 5 million to a Ukrainian wine producer. The loan is funded by creating a $ 5 million deposit for the Ukrainian firm in the Russian bank. The loan is a private capital outflow and goes to a debit to capital account (Financial corporations, nonfinancial corporations, households). The new deposit goes to a credit to capital account, which means capital inflow in foreign-owned bank deposits in Russian banks.

2. A Russian firm sells $ 5 million worth of sugar. The sugar is paid for with the bank account created in (1). The wheat export represents a goods export of $ 5 million, and thus we credit goods $ 5 million. Payment using the deposit results in the decrease of foreign-owned deposits in Russian banks; this is treated as a capital outflow, leading to a $ 5 million debit to capital account (Financial corporations, nonfinancial corporations, households).

3. A Russian resident receives $ 25 000 in interest from English bonds he owns. The $ 25 000 is deposited in an English bank. Earnings on international foreign investments represent a credit to the investment income account. The increase in Russian-owned foreign bank deposits is considered a capital outflow and is recorded by debiting capital account (Financial corporations, nonfinancial corporations, households) in the amount of $ 25 000.

4. A Russian tourist travels to Europe and spends the $ 25 000 English deposit. Tourist spending is recorded in the services account. Russian tourist spending abroad is recorded as a $ 25 000 debit to the services account. The decrease in U.S.-owned foreign deposits is considered a private capital inflow and is recorded by a $ 25 000 credit to capital account (Financial corporations, nonfinancial corporations, households).

5. The Russian government gives $ 50 000 worth of grain to Cuba. The grain export is recorded as a $ 50 000 credit to the goods account. Since the grain was a gift, the balancing entry is unilateral transfers; in this case, there is a debit of $ 50 000 to unilateral transfers.

6. The Russian Central Bank buys $ 50 million worth of U.S. dollars paid for by increasing a deposit in a Russian bank. The purchase is funded by creating a $ 50 million deposit for the seller of dollars in the Russian bank. Sold dollars represents a private capital outflow and is recorded as a debit to private capital. The reduction in foreign-currency deposits in Russian banks is treated as a capital outflow; but, since the deposit was transferred to the Central Bank, there is a $ 50 million credit to reserve assets.

**Table 3-5**

**Balance of Payments example operations: current account**

| Indicator | Credit ( + ) | | Debit (-) | | Net balance |
|---|---|---|---|---|---|
| **Current account** | **5075000** | | **25000** | | 5050000 |
| **Goods and services** | **5050000** | | **25000** | | |
| Goods | 5000000 | (2) | | | |
| | 50000 | (5) | | | |
| Services | | | 25000 | (4) | |
| **Primary income** | **25000** | | **0** | | |
| Compensation of employees | | | | | |
| Investment income | 25000 | (3) | | | |
| **Secondary income** | | | | | |

Table 3-6

### Balance of Payments example operations: capital account

| Capital account | 5025000 | | 60075000 | | -55050000 |
|---|---|---|---|---|---|
| Gross acquisitions (debit) / disposals (credit) of nonproduced nonfinancial assets | | | | | |
| Capital transfers | | | 50000 | (5) | |
| General government | | | | | |
| Financial corporations, nonfinancial corporations, households | 5000000 | (1) | 5000000 | (1) | |
| | 25000 | (4) | 5000000 | (2) | |
| | | | 25000 | (3) | |
| | | | 50000000 | (6) | |

Table 3-7

### Balance of Payments example operations: financial account

| Financial account | 50000000 | | 0 | | 50000000 |
|---|---|---|---|---|---|
| Direct investment | | | | | |
| Portfolio investment | | | | | |
| Financial derivatives | | | | | |
| Other investment | | | | | |
| Reserve assets | 50000000 | | | (6) | |
| Net errors and omissions | 0 | | 0 | | |
| Total | 60100000 | | 60100000 | | 0 |

Note that the current account balance is the sum of the goods and services, primary income and secondary income accounts. Net current account amounts 5.05 ml USD, capital account is, respectively, 55.05 ml USD, financial account 50 ml USD. Total sum of the debits and credits of the balance of payments must be zero.

## 3.3.  Balance of Payments Equilibrium and Adjustment

Balance of payments equilibrium exists when exports equal imports or credits equal debits on some particular subaccount. In fact, countries can have an equilibrium balance on the current account that is positive, negative, or zero, depending upon what circumstances are sustainable over time.

What happens if there is a disequilibrium in the balance of payments? In the case of flexible exchange rates balance of payments equilibrium is restored by the operation of the free market. With fixed exchange rates, central banks set exchange rates at a particular level. When the exchange rate is fixed the national currency can be overvalued or undervalued and the central banks must now finance the trade imbalance by international reserve flows.

Besides these methods of adjusting a balance of payments disequilibrium, countries sometimes use direct controls on international trade, such as government-mandated quotas or prices, to shift the supply and demand curves and induce balance of payments equilibrium.

## 3.4.  The Russian Foreign Debt

During transition years which began in 1991, Russia has active balance of trade which means that exports were greater than imports all the time. This caused significant rubble appreciation relative to Euro and dollar. This policy caused capital outflows from Russia, but on

the other side domestic central bank created great amount of international reserves. Financial stability allowed Russian Federal Government and private institutions to make cheap loans on international financial markets, mostly in Europe, but also in Asia and US. The structure of Russian foreign debt is shown in Table 3-8.

**Table 3-8**

### External Debt of the Russian Federation in 2012-2013
### and estimate of External Debt as at the end of June 2014,
### in *millions of US dollars*

| Indicator/Date | December 2011 | December 2012 | December 2013 | March 2014 | June 2014 (estimate) |
|---|---|---|---|---|---|
| **Total** | 538,871 | 636,412 | 728,859 | 715,819 | 720,926 |
| 1. *General Government* | 34,719 | 54,403 | 61,738 | 53,629 | 54,638 |
| 1.1. Federal Government | 33,578 | 53,462 | 60,957 | 52,857 | 53,888 |
| ***1.1.1 New Russian Debt*** | 31,068 | 51,334 | 58,944 | 50,853 | 52,000 |
| ***1.1.2 Debt of the former USSR*** | 2,51 | 2,129 | 2,012 | 2,004 | 1,889 |
| 1.2. *Local Government* | 1,141 | 941 | 781 | 771 | 750 |
| **2. Central bank** | 11,547 | 15,639 | 15,963 | 15,335 | 16,04 |
| **3. Banks** | 162,764 | 201,567 | 214,394 | 214,022 | 206,531 |
| **4. Other sectors** | 329,842 | 364,803 | 436,764 | 432,834 | 443,716 |

**Source: The Central Bank of Russian Federation, www.cbr.ru. July 10, 2014.**

As we can see from the Table 3-8, Russia has paid almost all debts of the former USSR and now has as little amount as 1,889 ml USD. Russia conducts specific fiscal policy which allows federal government to have relatively small amount of foreign debt, 52 billions of USD by now (see Table 3-8). But the debt of commercial banks and other sectors of economy is very high and maid 650 bln USD in total in 2014 (see Table 3-8). The amount of international reserves of Russian Federation held by domestic central bank shrink to 469.7 bln USD (data from the Central Bank of Russian Federation, 7 August, 2014). In theory, international reserves are used to pay foreign debt if no other financial sources available. So Russia as a hole may suffer foreign currency shortage should the balance of trade worsen.

## Section II.  INTERNATIONAL PARITY CONDITIONS

### Unit 4.     Forward-looking Market Instruments

#### 4.1.  The currency forwards

The currency forward is a contract in the foreign exchange market that locks in the exchange rate for the purchase or sale of a currency on a future date. The major benefit of a currency forward is that it can be tailored to a particular amount and delivery period, unlike standardized currency futures. Currency forward settlement can either be on a cash or a delivery basis. Currency forwards are over-the-counter (OTC) instruments, as they do not trade on a centralized exchange. Also known as an "outright forward."

Unlike other hedging mechanisms such as currency futures and options contracts – which require an upfront payment for margin requirements and premium payments, respectively – currency forwards typically do not require an upfront payment when used by large corporations and banks. However, a currency forward has little flexibility and represents a binding obligation, which means that the contract buyer or seller cannot walk away if the "locked in" rate eventually proves to be adverse. Therefore, to compensate for the risk of non-delivery or non-settlement, financial institutions that deal in currency forwards may require a deposit from retail investors or smaller firms with whom they do not have a business relationship.

The mechanism for determining a currency forward rate is straightforward, and depends on interest rate differentials for the currency pair and is defined according to an equation (4-1).

$$F = \frac{Bid + Ask}{2} * \frac{1 + i_1 * \frac{n}{365}}{1 + i_2 * \frac{n}{365}}, \tag{4-1}$$

where $F$ – forward rate;
*Bid, Ask* – spot bid and ask rate respectively;
$i_1$ – annual interest rate for quoted currency;
$i_2$ – annual interest rate for base currency;
$n$ – forward contract period in days.

For example, assume a current spot rate for the Russian ruble of US\$1 = RUR36.23 or USD/RUR=36.23, a one-year interest rate for Russian rubles of 8% (key rate held by the Central Bank of Russian Federation), and one-year interest rate for US dollars of 0.25%. Assume that USD/RUR bid and ask are 36.00 and 36.5 respectively. So, 3-months (3M) forward interest rate would be (see equation (4-2)).

$$F_{3M \, USD/RUR} = \frac{36 + 36.5}{2} * \frac{1 + 0.08 * \frac{90}{365}}{1 + 0.0025 * \frac{90}{365}} = 36.9423, \tag{4-2}$$

So, Russian ruble quoted at a forward discount to the US dollar.

The currency forward rate is merely based on interest rate differentials, and does not incorporate investors' expectations of where the actual exchange rate may be in the future.

How does a currency forward work as a hedging mechanism? Assume a Russian export company is selling US\$1 million worth of oil to a German company and expects to receive the export proceeds a year from now. The exporter is concerned that the US dollar may loose some of its value after a year, which means that it would receive fewer US dollars per Russian ruble. The Russian exporter therefore enters into a forward contract to sell \$1 million a year from now at the forward rate of US\$1 = RUR36.9423. At the end of the contract period USD/RUR rate may be anywhere, but there is no currency risk, because probable losses or profits from currency forward are completely covered by proceeds from oil real export contract.

### 4.2. The foreign exchange swap

A foreign exchange swap is an arrangement where there is a simultaneous exchange of two currencies on a specific date at a rate agreed at the time of the contract, and a reverse exchange of the same two currencies at a date further in the future at a rate agreed at the time of the contract.

A foreign exchange swap consists of two legs:

1) a spot foreign exchange transaction, and;

2) a forward foreign exchange transaction.

These two legs are executed simultaneously for the same quantity, and therefore offset each other.

It is also common to trade forward-forward, where both transactions are for differentforward dates.

The forward points or swap points are quoted as the difference between forward and spot, $F$ - $S$, and is expressed as the following:

$$F - S = S \left( \frac{1 + i_1 * \frac{n}{365}}{1 + i_2 * \frac{n}{365}} - 1 \right) = \frac{S(i_1 - i_2)T}{1 + i_2T} \approx S(i_1 - i_2)T, \qquad (4\text{-}3)$$

if $i_2T$ is small. Thus, the value of the swap points is roughly proportional to the interest rate differential.

The most common use of foreign exchange swaps is for institutions to fund their foreign exchange balances.

Once a foreign exchange transaction settles, the holder is left with a positive (or long) position in one currency, and a negative (or short) position in another. In order to collect or pay any overnight interest due on these foreign balances, at the end of every day institutions will close out any foreign balances and re-institute them for the following day. To do this they typically use tom-next swaps, buying (or selling) a foreign amount settling tomorrow, and then doing the opposite, selling (or buying) it back settling the day after.

Companies may also use them to avoid foreign exchange risk.

For example, a Russian company may be long EUR from sales in Europe but operate primarily in Russia using rubles. However, they know that they need to pay their manufacturers in Europe in 1 months time. To avoid currency risk they create a 1M Swap, where they Sell EUR and Buy rubles on SPOT and simultaneously Buy EUR and Sell rubles on a 1 Month (1M) forward.

### 4.3. The currency swaps

An alternative swap agreement is a currency swap. A currency swap is a contract in which two counterparties exchange streams of interest payments in different currencies for an agreed period of time and then exchange principal amounts in the respective currencies at an agreed exchange rate at maturity. Currency swaps allow firms to obtain long-term foreign currency financing at lower cost than they can by borrowing directly.

Suppose, US firm has free access to loans from US banks, but can not have such favorable opportunities on Germany capital market. Similarly, the German firm can have good loan conditions in the homeland, but far less favorable ones in the USA (see interest rates conditions in Table 4-1). By currency swap agreement both firms can use comparative advantages of each other to reduce the cost of loan.

Table 4-1

**Loan rates for two firms in different currencies**

| Firm | USD interest rate, % | EUR interest rate, % |
|------|---------------------|---------------------|
| Firm A | 10 | 7 |
| Firm B | 9 | 8 |

As a result of the currency swap agreement the Firm A borrows 10 ml EUR under 7% per annum in local bank. The Firm B calculates the equivalent sum in dollars, it will be 12,5 ml USD at the spot rate of 1,25 and borrows one under 9% per annum in local bank (see Figure 4-1). Then both parties exchange equivalent sums in this currencies that allows each of them to attract the foreign capital. Further the Firm A will do interest payments to the Firm B in Euro on a rate of 8% annual (under such rate the Firm A could receive financing in other sources) and to the bank in dollars on a rate of 9% per annum. On the contrary, the Firm B will do interest payments to the Firm A in dollars on a rate of 9% annual (under such rate the Firm B could receive financing in other sources) and to the bank in Euro on a rate of 7% per annum (see Figure 4-1).
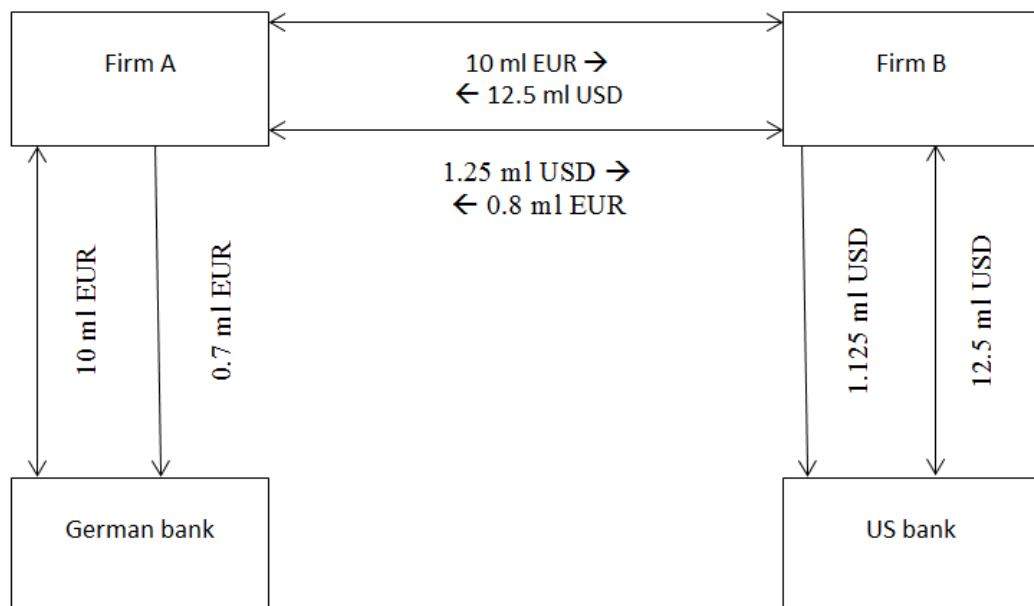


**Figure 4-1. Cash flows of the two borrowers which has concluded currency swap agreement**

Thus, both firms obtain the loans in necessary foreign currency at a lower rate, than it would be in case of the request for the credit directly in foreign bank. As a whole the Firm A saves on interest payments 0,8 ml – 0,7 ml = 0,1 ml EUR, and the Firm B saves on interest payments 1,25 ml – 1,125 ml = 0,125 ml USD (see Figure 4-1).

Currency swaps were originally done to get around exchange controls. The World Bank first introduced currency swaps in 1981 in an effort to obtain German marks and Swiss francs. This

type of swap can be done on loans with maturities as long as 10 years. They differ from interest rate swaps because they also involve principal.

### 4.4. The foreign exchange futures

Foreign currency futures are standardized contracts traded on established exchanges for delivery of currencies at a specified future date.

Futures are similar to forward contracts. Each future contract has a fixed amount and pre-determined dates. The difference of futures from forwards consists in the following:

1. Futures trading is carried out on the open exchange market, and forwards – on interbank. Therefore dates of future contracts expiration are attached to certain dates. Futures contracts are standardized on expiration periods, volumes and terms of delivery. In case of forward contracts expiration periods and volumes of the transaction are determined by the mutual arrangement of the parties.

2. Futures are traded only on most liquid currency pairs. Forward contracts are traded almost on all currency pairs.

3. The futures market is available not only to big investors, but also small. The forward market is limited by that the minimum sum for the transaction amounts 500 thousand US dollars.

4. For about 95% futures trading volume come to an end with the conclusion of the opposite transaction, thus there is no real delivery of the currency. The parties receive only a difference between the initial price of the contract and the price existing in the day of the closing transaction. On the contrary, for about 95% forwards transactions come to an end with currency delivery.

5. Futures transactions cost are cheaper because of standardization.

Foreign exchange futures on USD/RUR and EUR/RUR are traded on the Moscow Exchange (http://moex.com/en/). Most popular currency pairs EUR/USD, GBP/USD, USD/CHF, USD/JPY and others are traded on The Chicago Mercantile Exchange (CME Group), the world's leading and most diverse derivatives marketplace (http://www.cmegroup.com/).

### 4.5.  The foreign exchange options

Foreign currency options are contracts that give a buyer the right to buy (call option) or sell (put option) currencies at a specified price within a specific period of time. The strike price is the price at which the owner of the contract has the right but not the obligation to transact.

There are two main types of currency options available: calls and puts. Their comparison is represented in Table 4-2.

**Comparison of currency call and put options**

| Currency call option | Currency put option |
|---|---|
| 1. In case the currency call option is executed, expenses of the currency buyer will make: $$R_{oe} = R_o + P,$$ where $R_o$ – an exchange rate at which the currency will be acquired; $P$ – premium for the option (buyer`s expenses). | 1. In case the currency put option is executed, revenue of the currency seller will make: $$R_{oe} = R_o - P,$$ where $R_o$ – an exchange rate at which the currency will be acquired; $P$ – premium for the option (seller`s expenses anyway). |
| 2. In case the currency call option isn't executed, expenses of the currency buyer will make: $$R_{te} = R_t + P,$$ where $R_t$ – the current market currency rate of exchange. | 2. In case the currency put option isn't executed, revenue of the currency seller will make: $$R_{te} = R_t - P,$$ where $R_t$ – the current market currency rate of exchange. |
| 3. As the buyer is interested in minimization of the expenses, a condition under which execution of this option will be favorable to him, will be: $R_{oe} < R_{te}$ or $R_o < R_t$. | 3. As the seller is interested in maximization of the revenue, a condition under which execution of this option will be favorable to him, will be: $R_{oe} > R_{te}$ or $R_o > R_t$. |
| 4. The buyer of the call option will make profit, if rate of exchange will rise so that it can cover option premium, i.e. $$R_{oe} + P < R_{te}$$ If both sides of inequality are equal, the trade will be break-even. | 4. The buyer of the put option will make profit, if rate of exchange will fall so that it can cover option premium, i.e. $$R_{oe} - P > R_{te}$$ If both sides of inequality are equal, the trade will be break-even. |

For example, consider the firm in Russia that needs $1 million US dollars in 3 months. The firm decided to buy 3-months call option contract for USD/RUR. The market conditions are represented in Table 4-3.

**Market conditions on USD/RUR**

| Indicator | Bid | Ask |
|---|---|---|
| USD/RUR spot rate | 32.5 | 33.2 |
| USD/RUR 3-months forward premium | 0.6 | 0.8 |
| USD/RUR 3-month option premium | 0.2 | 0.2 |

It is required to define, whether the firm should realize an option if in three months the Bid/Ask rate of exchange for USD/RUR makes 32,80 and 33,40 respectively.

Solution.

If the firm execute the call option, its costs of dollar`s purchase will make

33,20 + 0,80 + 0,20 = 34,20.

If the firm doesn't execute the option, its expenses will make:

33,40 + 0,20 = 33,60.

Thus, option execution will be unprofitable to firm since increases its costs of dollar`s purchase per 0,60 rubles for one dollar.

## Unit 5.    The Eurocurrency Market

### 5.1.  Reasons for Offshore Banking

Offshore banking units (OBUs) make loans in the Eurocurrency market when they accept deposits from foreign banks and other OBUs. OBUs' activities are not restricted by local monetary authorities or governments, but they are prohibited from accepting domestic deposits.

Eurobanks enjoy lower reserve requirements, benefit from having no government -mandated interest rate controls, no deposit insurance, no government-mandated credit allocations, no restrictions on entry of new banks (thus encouraging greater competition and efficiency), and low taxes. As a consequence, Eurobanks can borrow money cheaply and make loans at a lower rate in comparison to domestic banks. The difference between the deposit and loan interest rate is called spread. Thus, Eurobanks have lower spreads, than domestic banks.

OBUs have proliferated across the globe since the 1970s. They are found throughout Europe, as well as in the Middle East, Asia and the Caribbean. U.S. OBUs are concentrated in the Bahamas, the Cayman Islands, Hong Kong, Panama and Singapore.

Probably, the Communist countries were the source of early dollar balances held in Europe, since these countries needed dollars from time to time but did not want to hold these dollars in U.S. banks for fear of reprisal should hostilities flare up. Thus, the dollar deposits in U.K . and French banks owned by the Communists would represent the first Eurodollar deposits.

### 5.2.  Libor Interest Rate Spreads and Risk

In the Eurodollar market, loan interest rates are usually quoted as percentage points above LIBOR (Intercontinental Exchange London Interbank Offered Rate).

LIBOR is a benchmark rate that some of the world's leading banks charge each other for short-term loans.

LIBOR  is actually a set of several benchmarks that reflect the average interest rate at which large global banks can borrow from each other. There are a total of 150 Libor rates posted each day; interest rates are compiled for loans with 15 different maturities (or due dates) for each of 10 major currencies. The most commonly quoted rate is the three-month U.S. dollar rate.

Each day a panel of global banks submits the rate at which they think they could borrow various currencies over different time periods. Individual bids are submitted dairy by 11am.

Thomson Reuters processes the bids by rejecting some of the highest and lowest and submitting the middle two quartiles to calculate an average. This process is repeated 150 times to create the day's Libor rates for all 15 borrowing periods and 10 currencies.

Once calculated, the Libor figures are published at midday.

Libor rates set the basis for a range of financial instruments such as:
1) home mortgages;
2) corporate loans;
3) credit card interest rates.

Now, NYSE Euronext has been awarded a contract to run the London interbank offered rate after the benchmark lending rate became discredited by a rate-fixing scandal that has seen banks fined and individual traders put on trial[4].

### 5.3.  Offshore Banking Practices

Eurobanks are not able to create money as banks can in a domestic setting. Eurobanks are essentially intermediaries; they accept deposits and then loan these deposits. For countries without efficient money markets, access to the very efficient and competitive Eurodollar market may reduce the demand for domestic money.

Like all intermediaries, Eurobanks tend to borrow short term and lend long term. Thus, if the deposit liabilities were reduced greatly, we would see deposit interest rates rise very rapidly in

---

[4] Financial Times. Aug 10, 2014.

the short run. The advantage of matching the term structures of deposits and loans is that deposits and loans are maturing at the same time, so that the bank is better able to respond to a change in demand for deposits or loans.

Table 5-1 reports the actual amount in percentages of credit extended to nonbank borrowers by offshore banks. The table also shows the most important by size offshore banking countries. Cayman Islands, for example, had an estimated population of just 56 thousands people, representing a mix of more than 100 nationalities but takes the third place in the world on volumes of offshore bank assets. Note that the most of the bank assets in Cayman Island and other big world offshore banking centers as Hong Kong SAR, Sweden are foreign banks setting up local offices in this countries. The banks of this countries allocated to local borrowers approximately only 23-25% of the assets.

**Table 5-1**

**External positions of banks in foreign currencies (assets in billions of US dollars)**

| Country | Dec 2011 | | | Mar 2014 | | |
|---|---|---|---|---|---|---|
| | All sectors | Nonbank sector | | All sectors | Nonbank sector | |
| | | In USD | In % | | In USD | In % |
| All 44 countries | 17773 | 6982,7 | 39% | 17915 | 7382,3 | 41% |
| United Kingdom | 5102,3 | 2165,7 | 42% | 4549,9 | 2076,9 | 46% |
| Japan | 2219,8 | 1569,4 | 71% | 2475,8 | 1723,2 | 70% |
| Cayman Islands | 1543,5 | 390,4 | 25% | 1415,9 | 332 | 23% |
| Hong Kong SAR | 857,4 | 210,6 | 25% | 1099,9 | 290,7 | 26% |
| France | 803,5 | 243,2 | 30% | 995,5 | 400,2 | 40% |
| Switzerland | 677,7 | 142,9 | 21% | 775,2 | 223,9 | 29% |
| Singapore | 665 | 272,6 | 41% | 750,1 | 284,7 | 38% |
| Germany | 707,5 | 318,8 | 45% | 703,6 | 279,6 | 40% |
| Netherlands | 458,3 | 190,3 | 42% | 545,2 | 245,2 | 45% |
| Sweden | 355,5 | 83,5 | 23% | 415,1 | 101,9 | 25% |
| Canada | 378,2 | 127,4 | 34% | 387,7 | 156 | 40% |
| United States | 345,4 | 104 | 30% | 351,1 | 101,2 | 29% |

Source: Bank for International Settlements. Detailed tables on BIS international banking statistics at end-March 2014. Basel, March, 2014.

Deposits in the Eurocurrency market are for fixed terms, ranging from days to years, although most are for less than six months. Certificates of deposit are considered to be the closest domestic counterpart to a Eurocurrency deposit. Loans in the Eurocurrency market can range up to ten or more years. The interest rate on a Eurocurrency loan is usually stated as some spread over LIBOR and is adjusted at fixed intervals, like every three months. These adjustable interest rates serve to minimize the interest rate risk to the bank. Large loans are generally made by syndicates of Eurobanks.

## Unit 6.    Exchange Rates, Interest Rates, and Interest Parity

### 6.1. Interest Parity. Interest Rates and Inflation

Interest rate parity is a no-arbitrage condition on the market under which investors will be indifferent to interest rates available on bank deposits in two different currencies. No-arbitrage condition exists when the market prices do not allow for profitable arbitrage. This condition does not always hold and this create potential opportunities for riskless profits from arbitrage deals. Two assumptions central to interest rate parity are capital mobility and perfect substitutability of domestic and foreign assets.

The interest rate parity condition implies that the expected return on domestic assets will equal the exchange rate-adjusted expected return on foreign currency assets. Investors then cannot earn arbitrage profits by borrowing in a country with a lower interest rate, exchanging for foreign currency, and investing in a foreign country with a higher interest rate.

There are two forms of interest rate parities:

1) uncovered interest rate parity (UIRP) exists when exposure to foreign exchange risk  is uninhibited (see equation (6-1));

2) covered interest rate parity (CIRP) exists when a forward contract has been used to cover exchange rate risk (see equation (6-2)).

$$1 + i_{USD} = \frac{E_t S_{t+k}}{S_t}(1 + i_{EUR}), \tag{6-1}$$

where

$E_t S_{t+k}$ is the expected future spot exchange rate at time t + k;

$k$ is the number of periods into the future from time t;

$S_t$ is the current spot exchange rate at time t;

$i_{USD}$, $i_{EUR}$  are the interest rates in the domestic and foreign currencies, for example USD and EUR respectively.

The dollar return on dollar deposits, $1 + i_{USD}$, is shown to be equal to the dollar return on euro deposits, $\frac{E_t S_{t+k}}{S_t}(1 + i_{EUR})$.

$$1 + i_{USD} = \frac{F_t}{S_t}(1 + i_{EUR}) \; or$$
$$i_{USD} - i_{EUR} = \frac{F_t - S_t}{S_t}, \tag{6-2}$$

where $F_t$ is the forward exchange rate at time t.

The dollar return on dollar deposits, $1 + i_{USD}$, is shown to be equal to the dollar return on euro deposits, $\frac{F_t}{S_t}(1 + i_{EUR})$.

Covered interest rate parity is found to hold when there is open capital mobility and limited capital controls, and this finding is confirmed for all currencies freely traded in the present day.

Covered interest arbitrage is an arbitrage trading strategy whereby an investor capitalizes on the interest rate differential between two countries by using a forward contract to cover exchange rate risk. Using forward contracts enables arbitrageurs such as individual investors or banks to make use of the forward premium (or discount) to earn a riskless profit from discrepancies between two countries' interest rates.

### 6.2. The relation between Exchange Rates, Interest Rates, and Inflation

To link exchange rates, interest rates, and inflation, its necessary to cover the role of inflation in interest rate determination. Economists distinguish between real and nominal rates of interest. The nominal interest rate is the rate actually observed in the market. The real rate is a concept that measures the return after adjusting for inflation.

The nominal rate of interest will tend to incorporate inflation expectations in order to provide lenders with a real return for the use of their money. The expected effect of inflation on the nominal interest rate is often called the Fisher effect (see equation (6-3)).

$$i_{USD} = r_{USD} + p^{USD} \tag{6-3}$$
$$i_{EUR} = r_{EUR} + p^{EUR} \tag{6-4}$$

where $i$ the nominal interest rate, $r$ the real interest rate, and $p^{USD}$ the expected rate of inflation (in this case in US dollars or EUR).

When both covered and uncovered interest rate parity hold, the two parity conditions together reveal a relationship among expected real interest rates. Changes in expected real interest rates reflect expected changes in the real exchange rate. This condition is known as real interest rate parity (RIRP) and is related to the international Fisher effect. The following equations demonstrate how to derive the RIRP equation.

$$UIRP: \Delta E_t S_{t+k} = E_t S_{t+k} - S_t = i_{USD} - i_{EUR}, \tag{6-5}$$
$$E_t S_{t+k} = \Delta E_t(p_{t+k}^{USD}) - \Delta E_t(p_{t+k}^{EUR}), \tag{6-6}$$

where

$p_{t+k}^{USD}$, $p_{t+k}^{EUR}$ represent expected rate of inflation for both currencies respectively (dollar and Euro in this example).

If the above conditions hold, then they can be combined and rearranged as the following:

$$RIRP: i_{USD} - \Delta E_t(p_{t+k}^{USD}) = i_{EUR} - \Delta E_t(p_{t+k}^{EUR}), \tag{6-7}$$

RIRP rests on several assumptions, including efficient markets, no country risk premium, and zero change in the expected real exchange rate.

If we combine the Fisher equations (6-3),(6-4) the interest parity equations (6-3), (6-5), (6-6), we can determine how interest rates, inflation, and exchange rates are all linked:

$$RIRP: i_{USD} - i_{EUR} = p_{t+k}^{USD} - p_{t+k}^{EUR} = \frac{F_t - S_t}{S_t}, \tag{6-8}$$

Note, that the interest differential is also equal to the forward premium.

The parity condition suggests that real interest rates will equalize between countries and that capital mobility will result in capital flows that eliminate opportunities for arbitrage.

### Unit 7.     Prices and Exchange Rates: Purchasing Power Parity

#### 7.1.  Absolute Purchasing Power Parity

Similar goods usually are sold for similar prices globally which means that some link between prices and exchange rates exists. In other words, exchange rates should adjust to offset differing inflation rates between countries. This relationship between the prices of goods and services and exchange rates is known as purchasing power parity (PPP).

The absolute PPP relation is calculated as in Equation (7-1):

$$E = \frac{P}{P^F},$$                                         (7-1)

where $E$ is the spot exchange rate (domestic currency units per foreign unit);

$P$ the domestic price index;

$P^F$ the foreign price index.

$P$ and $P^F$ may be thought of as consumer price indexes or producer price indexes.

Absolute PPP, as given in Equation (7-1), indicates that the exchange rate between any two currencies is equal to the ratio of their price indexes. Therefore, the exchange rate is a nominal magnitude, dependent on prices.

#### 7.2.  The Big Mac Index

The Big Mac Index is published by The Economist (http://www.economist.com) as an informal way of measuring the purchasing power parity (PPP) between two currencies and provides a test of the extent to which market exchange rates result in goods costing the same in different countries (see Figure 7-1).

One suggested method of predicting exchange rate movements is that the rate between two currencies should naturally adjust so that a sample basket of goods and services should cost the same in both currencies. In the Big Mac Index, the basket in question is a single Big Mac burger as sold by the McDonald's fast food restaurant chain.

UBS Wealth Management Research has expanded the idea of the Big Mac index to include the amount of time that an average worker in a given country must work to earn enough to buy a Big Mac. The working-time based Big Mac index might give a more realistic view of the purchasing power of the average worker, as it takes into account more factors, such as local wages.



**Figure 7-1. The Big Mac index.**
Sources: McDonald`s, The Economist.
July 23, 2014.

#### 7.3.  Relative Purchasing Power Parity

Relative PPP is said to hold when

$$\Delta E = \Delta P - \Delta P^F,$$                          (7-2)

where $\Delta E$ is equal to the percentage change in the domestic price level ($\Delta P$) minus the percentage change in the foreign price level ($\Delta P^F$).

Absolute PPP states that the exchange rate is equal to the ratio of the price indexes, relative PPP deals with percentage changes in these variables.

It should be noted that, if absolute PPP holds, then relative PPP will also hold. But if absolute PPP does not hold, relative PPP still may. This is so because the level of $E$ may not equal $\frac{P}{P^F}$, but the change in $E$ could still equal the inflation differential.

In high-inflation countries, changes in exchange rates are highly correlated with inflation differentials because the sheer magnitude of inflation overwhelms the relative price effects, whereas in low- or moderate-inflation countries the relative price effects dominate exchange rate movements and lead to discrepancies from PPP.

It is expected PPP to hold better for annual data than for monthly data, since the longer time frame allows for more inflation. Thus, random relative price effects are less important, and exchange rate changes closely related to inflation differentials.

Relative price changes can also be a reason why PPP would hold better in the long run than the short run. Such relative price changes result from real economic events, like changing tastes, bad weather, or government policy.

Deviations from PPP are also likely because international trade involves lags between order and delivery. Prices are often set by contract today for goods that are to be delivered several months later.

## 7.4. Overvalued and Undervalued Currencies

If we observe spot exchange rate ($E$), domestic price index ($P$), foreign price index ($P^F$) over time, we find that the absolute PPP relationship does not hold very well for any pair of countries. If, over time, foreign price index rises faster than domestic price index, then we would expect spot exchange rate, the domestic currency price of the foreign currency, to fall. If $E$ does not fall by the amount suggested by the lower $P/_{PF}$, then the domestic currency is undervalued or (the same thing) that the foreign currency is overvalued.

The implied PPP exchange rate measures the values the exchange rate would take if the percentage change in the exchange rate equaled the inflation differential between two countries. If the spot exchange rate is greater than the implied PPP exchange rate than the currency is supposed to be overvalued. Otherwise, the currency would be undervalued. Since we know that PPP does not hold well for any pair of countries with moderate inflation in the short run, we must always have currencies that appear overvalued or undervalued in a PPP sense.

## 7.5. Real Exchange Rates

The real interest rate is the rate of interest is expected rate to receive after adjustment for inflation. It can be described more formally by the Fisher equation, which states that the real interest rate is approximately the nominal interest rate minus the inflation rate.

The real exchange rate is the purchasing power of a currency relative to another at current exchange rates and prices. It is the ratio of the number of units of a given country's currency necessary to buy a market basket of goods in the other country, after acquiring the other country's currency in the foreign exchange market, to the number of units of the given country's currency that would be necessary to buy that market basket directly in the given country.

When uncovered interest rate parity and purchasing power parity hold together, they illuminate a relationship named real interest rate parity, which suggests that expected real interest rates represent expected adjustments in the real exchange rate. This relationship generally holds strongly over longer terms and among emerging market countries.

## Section III.   RISK AND INTERNATIONAL CAPITAL FLOWS

## Unit 8.   Foreign Exchange Risk and Forecasting

### 8.1.  Types of Foreign Exchange Risk

There are three principal concepts of exchange risk exposure:

1. Translation exposure. This is also known as accounting exposure. It is the difference between foreign currency denominated assets and foreign currency denominated liabilities.

2. Transaction exposure. This is exposure resulting from the uncertain domestic currency value of a foreign currency denominated transaction to be completed at some future date.

3. Economic exposure. This is exposure of the firm's value to changes in exchange rates. If the value of the firm is measured as the present value of future after-tax cash flows, then economic exposure is concerned with the sensitivity of the real domestic currency value of long-term cash flows to exchange rate changes.

Economic exposure is the most important to the firm. Rather than worry about how accountants will report the value of our international operations (translation exposure), it is far more important to the firm (and to rational investors) to focus on the purchasing power of long-run cash flows

Transaction exposure exists because the profitability of future transactions is susceptible to exchange rate change, and these changes can have a big effect on future cash flows— as well as on the value of the firm.

Foreign exchange risk may be hedged or eliminated by the following strategies:

1. Trading in forward, futures, or options markets.
2. Invoicing in the domestic currency.
3. Speeding (slowing) payments of currencies expected to appreciate (depreciate).
4. Speeding (slowing) collection of currencies expected to depreciate (appreciate).

### 8.2.  Foreign Exchange Risk Premium

The forward exchange rate may serve as a predictor of future spot exchange rates. We may question whether the forward rate should be equal to the expected future spot rate.

The effective return differential is equal to the percentage difference between the forward and expected future spot exchange rate as stated in Equation (8-1).

$$i_{USD} - E^*_{t+1} - i_{EUR} = \frac{F - E^*_{t+1}}{E_t}, \tag{8-1}$$

where

$i_{USD}$, $i_{EUR}$ are interest rates on US dollar and Euro respectively;

$E^*_{t+1}$ is the expected dollar price of EUR next period;

$E_t$ is the current spot exchange rate;

$F$ is the forward exchange rate.

$E^*_{t+1}$ may be interpreted as the price of future contract on the same currency pair that the forward exchange rate is considered. Future contracts on major currency pairs are traded on the main stock exchanges, for example CME Group (USA), MISEX (Russia).

The right-hand side of Equation (8-1) may be considered a measure of the risk premium in the forward exchange market. Therefore if the effective return differential is zero, then there would appear to be no risk premium. If the effective return differential is positive, then there is a positive risk premium on the domestic currency.

### 8.3.  Foreign Exchange Forecasting

Exchange rate forecasters typically use two types of models: technical or fundamental.

A fundamental model forecasts exchange rates based on variables that are believed to be important determinants of exchange rates. These variables may be the following: government

monetary and fiscal policy, international trade flows, and political uncertainty. An expected change in some fundamental variable causes change in the forecast.

A technical trading model uses the past history of exchange rates to predict future movements. Technical traders use charts or diagrams depicting the time path of an exchange rate which they believe will reverse or accelerate the trend. These traders are also known as chartists.

Surveys indicate that nearly 90 percent of foreign exchange dealers use some sort of technical analysis to form their expectations of exchange rates. However, the same surveys suggest that technical models are seen as particularly useful for short-term forecasting, while fundamentals are seen as more important for predicting long-run changes.

## Unit 9.    Financial Management of the Multinational Firm

### 9.1.  Financial Control

The multinational firms have payables and receivables denominated in different currencies, ship their goods overseas, have subsidiaries that belongs to different countries with particular political environment. The multinational firms carry currency exchange risk and some other risks in which domestic companies may never have been involved.

The financial management of a multinational firm involves exercising control over foreign operations. Typical control systems are based on setting standards with regard to sales, profits, inventory, or other specific variables and then examining financial statements and reports to evaluate the achievement of such goals.

In particular, headquarter`s managers should decide whether foreign subsidiary profits are measured and evaluated in foreign or in domestic currency; or whether multinational firm management will be decentralized. As a consequence, the performance evaluation of subsidiary managers should be carried out only on the base of their area of responsibility. It should be noted that there are some factors beyond the foreign manager's control— changing tax laws, foreign exchange controls, or inflation rates.

### 9.2.  Cash Management.

Cash management involves using the firm's cash as efficiently as possible. Cash is the most liquid asset. But since cash earns no interest, the firm has a strong incentive to minimize its holdings of cash.

The multinational treasurer faces the challenge of managing liquid assets denominated in different currencies. When a subsidiary receives a payment and the funds are not needed immediately by this subsidiary, the managers at the parent headquarters must decide how to allocate funds. Funds may be converted in domestic currency and transferred to the headquarters or invested in foreign currency in local financial instruments. There is no "wright" decision, but usually financial managers take into consideration such circumstances as legal restrictions on currency transfers in foreign country and the need of this amount of money in the near future.

Multinational cash management involves centralized management. Subsidiaries and liquid assets may be spread around the world, but they are managed from the home office. Centralization of cash management allows the parent to offset subsidiary payables and receivables in a process called netting. Netting involves buying or selling only the net amount of any currency required after aggregating the receivables and payables of all subsidiaries over all currencies. Netting could still occur by leading or lagging currency flows. Leads and lags increase the flexibility of parent financial managers, but require excellent information flows between all divisions and headquarters.

### 9.3.  Letters of Credit

Because it is difficult to enforce contracts across countries, an intermediary is often used to enforce the contract. A letter of credit (LOC) is a written instrument issued by a bank at the request of an importer that obligates the bank to pay a specific amount of money to an exporter. The time at which payment is due is specified, along with conditions regarding necessary documents to be presented by the exporter prior to payment. The LOC may stipulate that a bill of lading be presented that evidences no damaged goods. A bill of lading is a detailed list of the content that is shipped, and can be used to identify missing or damaged items.

The sales contract stipulates the method of payment, usually LOC. The importer must then apply for an LOC from a bank. The importer requests that the LOC stipulate no payment until documents on goods shipment are presented by the exporter to the bank.

If the bank considers the importer an acceptable credit risk, the letter of credit is issued and sent to the exporter. The exporter then examines the LOC to ensure that it conforms to the sales contract.

Once the exporter fulfills all obligations in delivering the goods, the documentary proof is presented to the bank for examination. If the documents conform to the LOC, payment is made, with the bank collecting from the importer and then paying the exporter.

If the importer does not pay the bank, the bank is still obligated to pay the exporter. The exporter is then satisfied, and any problems must be settled between the importer and the bank.

## 9.4. Intrafirm Transfers

The price that one subsidiary charges another subsidiary for internal goods transfers is called a transfer price. The setting of transfer prices can be a sensitive internal corporate issue because it helps to determine how total firm profits are allocated across divisions. Governments are also interested in transfer pricing since the prices at which goods are transferred will determine tariff and tax revenues.

The parent firm always has an incentive to minimize taxes by pricing transfers in order to keep profits low in high-tax countries and by shifting profits to subsidiaries in low-tax countries. This is done by having intra-firm purchases by the high-tax subsidiary made at artificially high prices, while intra-firm sales by the high-tax subsidiary are made at artificially low prices.

Intrafirm transfers is a sensitive subject, since may involve tax optimization technics using other jurisdictions. There is large volume of finance and legal literature on this subject.

Transfer pricing may also be used for "window -dressing"—that is, to improve the apparent profitability of a subsidiary. This may be done to allow the subsidiary to borrow at more favorable terms, since its credit rating will be upgraded as a result of the increased profitability.

## 9.5. Capital Budgeting

Capital budgeting refers to the evaluation of prospective investment alternatives and the commitment of funds to preferred projects. Long-term commitments of funds extending beyond one year are called capital expenditures. Capital expenditures are made to acquire capital assets, like land or factories or whole companies. Since such long-term commitments often involve large sums of money, careful planning is required to determine which capital assets to acquire. Plans for capital expenditures are usually summarized in a capital budget.

Foreign projects involve foreign exchange risk, political risk, and foreign tax regulations. Comparing projects in different countries requires a consideration of how all factors will change over countries.

To estimate the value of a project the method of discounted cash flows is usually used. Several possible financing effects should be included in project valuation such as depreciation charges arising from the capital expenditure, financial subsidies or concessionary credit terms extended to the subsidiary by a government or official agency, deferred or reduced taxes given as incentive to undertake the expenditure.

One of the key assumptions in projects considered for unstable countries is the level of political risk that must be accounted for. Cash flows should be adjusted for the threat of loss resulting from government expropriation or regulation.

## Unit 10.   International Portfolio Investment

### 10.1.  Portfolio Diversification

In finance, diversification means reducing non-systematic risk by investing in a variety of assets. If the asset values do not move up and down in perfect synchrony, a diversified portfolio will have less risk than the weighted average risk of its constituent assets, and often less risk than the least risky of its constituent. The variance that can be eliminated through diversification is called nonsystematic risk; this is the risk that is unique to a particular firm or industry. Systematic risk is common to all firms and remains even in diversified portfolios.

By extending our investment alternatives internationally, we can gain by international diversification.

Moreover, business cycles do not happen uniformly across countries, so when one country is experiencing rapid growth, another may be in a recession. By investing across countries, we eliminate part of the cyclical fluctuation in our portfolio that would arise from the domestic business cycle.

### 10.2.  Depositary receipts

A depositary receipt is a negotiable financial instrument issued by a bank to represent a foreign company's publicly traded securities. Now many companies list their shares not only on the local stock exchanges, but also on major ones in USA, UK, Hong Kong. For example, many Russian companies have listed their shares on London Stock Exchange.

When the depositary bank is in the U.S., the instruments are known as American Depositary Receipts (ADRs). European banks issue European depository receipts (EDRs), and other banks issue global depository receipts (GDRs).

Depositary receipts have become increasingly popular because they offer an easy way for international investors to diversify their portfolios and allow local firms access to raising money globally. Even though these stocks are bought and sold on the developed countries exchanges, they are still subject to foreign exchange risk because the dollar (or pound) price of the depositary receipt shares reflects the value of the foreign currency price of the stock in the foreign country of origin.

### 10.3.  The Globalization of Equity Markets

A segmented market is one in which foreign investors are not allowed to buy domestic stocks and domestic investors are not allowed to buy foreign stocks. Part of the process of the globalization of world economies is the liberalization of stock market restrictions to open markets to the world. But during 1987-1989 many emerging economies opened their borders to the flow of international trade and investment and to world-class management practices. This process is called globalization.

These markets have the following signs[5]:

1. Attempting to order its national accounts, privatize state companies, and deregulate economic activity.
2. Stabilizing its political system, moving from more autocratic regimes to liberal, democratic rules; increasing public interest in solving the most pressing social problems.
3. Rapidly dismantling the barriers to foreign trade and investment, thereby quickly increasing its share in the world economy. Being flooded by foreign capital, hard technologies, and new, advanced managerial practices, as multinational corporations (MNCs) enter its territory.

---

[5] Pereiro L.E. Valuation of companies in emerging markets. A practical approach. New York: John Wiley & Sons, Inc. 2002.

4. Experiencing a profound change in the structure of entire industries and individual companies, both large and small, based on a jump in productivity, thereby pushing firms to approach international standards of competitiveness.

5. Reporting a growing rate of activity in mergers and acquisitions (M8cAs), joint ventures, and the establishment of wholly owned subsidiaries—also called greenfield operations—and large-scale corporate reengineerings and divestments. Thus, the market becomes extremely attractive to entrepreneurs, managers, venture capitalists, strategic investors, and investment bankers with an eye toward extracting value from the productivity gaps existing between the emerging economy and other more developed markets.

6. Boasting a growing, more active and fairly sophisticated stock market, which beckons international financial investors. Expanding influence to other neighboring economies, which, in turn, start to open to the world.

Investments in emerging markets in process of globalization have much higher returns than those in developed markets but have also higher level of risk, measured as volatility of stock price.

## Unit 11.   Direct Foreign Investment and International Lending

### 11.1.   Direct Foreign Investment

Direct foreign investment is the spending by a domestic firm to establish foreign operating units. In the balance of payments, direct investment is distinguished from portfolio investment solely on the basis of percentage of ownership. Capital flows are designated as direct investment when a foreign entity owns 10 percent or more of a firm, regardless of whether the capital flows are used to purchase a new plant and equipment or to buy an ownership position in an existing firm.

Figure 11-1 illustrates how inflows of direct foreign investment to Russia have changed in recent times. There was near zero investments during first decade of economic reforms, then we can observe fast acceleration of direct foreign investments up to 2008 and subsequent falling up to now. In recent times Russia has been experiencing outflow of foreign capital that was invested in the country in the years prior to 2008. The rise of direct foreign investment in 2004-2008 was due to high crude oil and gas prices. These goods make more than a half of Russian exports.
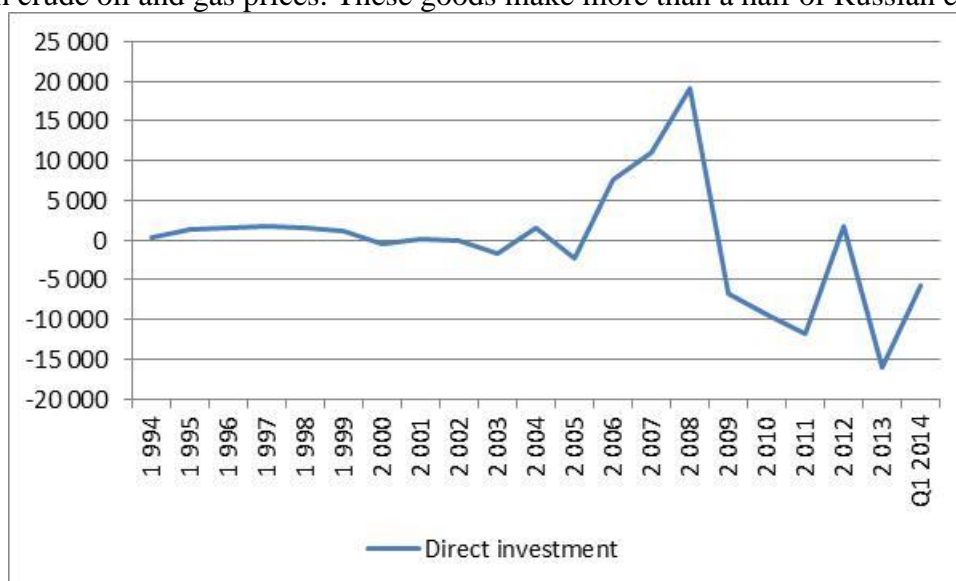


**Figure 11-1. Direct investment in Russian Federation in millions of US dollars for years 1994-1Q 2014.**
**Source: Central Bank of Russian Federation, www.cbr.ru. 2014.**

Direct foreign investment is often politically unpopular in developing countries, and increasingly so also in developed countries, because it is associated with an element of foreign control over domestic resources. Nationalist sentiment, combined with a fear of exploitation, has often resulted in laws restricting direct investment.

### 11.2.   Capital Flight

When the risk of doing business in a country rises sharply or the expected return falls, there are probable large outflows of investment funds so that the country experiences massive capital account deficits. Such net outflows of funds are referred to as capital flight. There is no accurate methods to estimate capital flight, but if we closely look at the data of Russian Central Bank in Figure 11-1, we can see that Russia has been suffering from capital outflow from 2008. This amounts of lost capital maybe considered as a part of capital flight from Russia.

The change in the risk-return relationship that gives rise to capital flight may be the result of political or financial crisis, tightening capital controls, tax increases, or fear of a domestic currency devaluation.

On the other side, a large capital inflow in a short period of time can lead to an appreciation of the recipient country's currency. This appreciation may reduce the competitiveness of the nation's export industries and cause a fall in output and rise in unemployment in these industries.

Some countries imposed capital controls to limit the inflow of capital. Such measures include taxes and quantity quotas on capital flows, increased reserve requirements on bank borrowing in foreign currency, or limits on foreign exchange transactions.

## 11.3. International Lending and Crisis

Considerable resources have been devoted to understanding the nature and causes of financial crises in hopes of avoiding future crises and forecasting those crises that do occur. Forecasting is always difficult in economics, and it is safe to say that there will always be surprises that no economic forecaster foresees. Yet there are certain variables that are so obviously related to past crises that they may serve as warning indicators of potential future crises. The list includes the following:

1. Fixed exchange rates. Countries involved in recent crises, including Mexico in 1993 to 1994, the Southeast Asian countries in 1997, and Argentina in 2002, all utilized fixed exchange rates prior to the onset of the crisis. Generally, macroeconomic policies were inconsistent with the maintenance of the fixed exchange rate. If devaluation is inevitable, than it occurs in shocking manner and holders of debt denominated in foreign currencies suffer huge losses.

2. Falling international reserves. The maintenance of fixed exchange rates may be no problem. One way to detect whether the exchange rate is no longer an equilibrium rate is to monitor the international reserve holdings of the country. In Russia, for example, Central Bank lost almost all its reserves before it devalued rubble for times in one day in summer 1998.

3. Lack of transparency. Investors need to know the financial situation of firms in order to make informed investment decisions. If the government does not disclose its international reserve position in constantly and transparent manner, devaluation may be a surprise for most interested parties. The lack of good information on government and business activities is a warning sign of potential future problems.

## 11.4. IMF Conditionality

The IMF has been an important source of loans for debtor nations experiencing repayment problems. The IMF not only "bail out" commercial bank or government creditors. The IMF requires borrowers to adjust their economic policies to reduce balance of payments. Such IMF-required adjustment programs are known as IMF conditionality. Part of the process of developing a loan package includes a visit to the borrowing country by an IMF mission which would estimate problems and recommend solutions. Through negotiation with the borrower, a program of conditions attached to the loan is agreed upon. The conditions usually involve targets for macroeconomic variables, such as money supply growth or the government deficit. The loan is disbursed at intervals, with a possible cutoff of new disbursements if the conditions have not been met.

The IMF has been criticized for imposing conditions that restrict economic growth and lower living standards in borrowing countries. The typical conditionality involves reducing government spending, raising taxes, and restricting money growth.

## 11.5. Country Risk Analysis

Country risk analysis refers to the evaluation of the overall political and financial situation in a country and the extent to which these conditions may affect the country's ability to repay its debts.

Country Risk Premium is the additional risk associated with investing in an international company rather than the domestic market. There are qualitative and quantitative factors that affect country risk premium.

The qualitative factors include the political stability of the country:

1. Splits between different language, ethnic, and religious groups that threaten to undermine stability.

2. Extreme nationalism and aversion to foreigners that may lead to preferential treatment of local interests and nationalization of foreign holdings.

3. Unfavorable social conditions, including extremes of wealth.

4. Conflicts in society evidenced by frequency of demonstrations, violence, and guerrilla war.

5. The strength and organization of radical groups.

The quantitative factors are these:

1. External debt. Specifically, this is the debt owed to foreigners as a fraction of GDP or foreign exchange earnings. If a country's debts appear to be relatively large, then the country may have future repayment problems.

2. International reserve holdings. These reserves indicate the ability of a country to meet its short-term international trade needs should its export earnings fall. The ratio of international reserves to imports is used to rank countries according to their liquidity.

3. Exports. Exports are looked at in terms of the foreign exchange earned as well as the diversity of the products exported. Countries that depend largely on one or two products to earn foreign exchange may be more susceptible to wide swings in export earnings than countries with a diversified group of export products.

4. Economic growth. Measured by the growth of real GDP or real per capita GDP, economic growth may serve as an indicator of general economic conditions within a country.

The country risk premium is higher for developing markets than for developed nations.

## Section IV.   MODELING THE EXCHANGE RATE AND BALANCE OF PAYMENTS

## Unit 12.   Determinants of the Balance of Trade

### 12.1.   Elasticities Approach to the Balance of Trade

Elasticity measures the responsiveness of quantity to changes in price.

The elasticities approach to the balance of trade provides an analysis of how devaluations will affect the balance of trade depending on the elasticities of supply and demand for foreign exchange and foreign goods.

When demand or supply is elastic, it means that quantity demanded or supplied will be relatively responsive to the change in price. An inelastic demand or supply indicates that quantity is relatively unresponsive to price changes.

For example, suppose that $\varepsilon_d$ is the coefficient of elasticity of demand, than:

$$\varepsilon_d = \%\Delta Q / \%\Delta P \qquad (12\text{-}1)$$

This implies that the coefficient of elasticity of demand is equal to the percentage change in the quantity demanded *($\%\Delta Q$)*, divided by the percentage change in price ($\%\Delta P$).

It is said that demand (supply) is elastic if coefficient of elasticity exceeds one, otherwise demand (supply) would be inelastic.

Elasticity will determine what happens to total revenue following a price change. In case of elastic demand the total revenue will move in the opposite direction to the price change.

If one country devalue local currency, would it improve its trade balance? The elasticities approach states that it all depends on the elasticities of supply and demand. When the demand for import by local consumers is inelastic, an increase in the price of imports could lead to an increase in total cost of imports. Likewise, with an inelastic demand for local exports, even though the price of import falls, few more units are demanded. In this case, the balance of trade deficit of the country that devalued domestic currency can even worsen. Such a response to devaluations is called a J-curve. The J-curve effect refers to the pattern of the balance of trade, following a devaluation as represented in Figure 12-1.
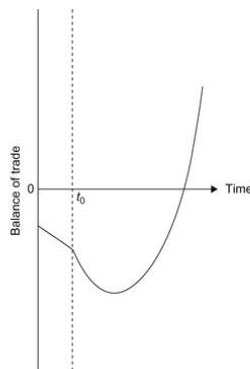


**Figure 12-1. The J curve pattern of the balance of trade.**
**Source: Melvin, Michael; Norrbin, Stefan (2012-11-23). International Money and Finance (Kindle Location 4322). Elsevier Science. Kindle Edition.**

Figure 12-1 represents that the trade balance is initially negative, falling over time. The devaluation occurs at point $t_0$. Following the devaluation, the balance of trade is even worsening before finally starting to improve. The negative consequence from devaluation results from low elasticities in the short run. Over time, elasticities increase so that the balance of trade improves.

Immediately following a devaluation, contracts negotiated prior to the exchange rate change become due. This period is called the currency contract period (see Figure 12-2).

**Figure 12-2. The currency contract period.**
**Source: Melvin, Michael; Norrbin, Stefan (2012-11-23). International Money and Finance (Kindle Locations 4336-4337). Elsevier Science. Kindle Edition.**

During this period the traders have limited changes in the quantities in response to the new set of prices (after devaluation), but over time the response becomes complete. Note that some contracts for delivery of oil and other raw materials stipulate the fixed price for entire contract period which could last for 10-20 years. This is common practice in Russia, for example.

The currency contract period refers to the period following a devaluation when contracts negotiated prior to the devaluation come due. Devaluation is normally a response to a persistent and growing balance of trade deficit[6.] Table 12-1 summarizes the possible effects following a Russian ruble devaluation during the brief pass-through period before quantities adjust.

**Table 12-1**

**Russian Trade Balance Effects During Pass-Through Period Following a Devaluation**

| Russian exports | Russian imports | |
|---|---|---|
| | Inelastic supply | Inelastic demand |
| Inelastic supply | 1. Exports increase Imports constant **Balance of trade increases** | 2. Exports increase Imports increase **Initial surplus: balance of trade increase** **Initial deficit: balance of trade decreases** |
| Inelastic demand | 3. Exports constant Imports constant **Balance of trade constant** | 4. Exports constant Imports increase **Balance of trade decreases** |

During pass-through period it is assumed that goods prices do not adjust instantaneously to the change in currency values. Eventually, of course, as new trade contracts are negotiated, goods prices will tend toward the new equilibrium. Pass-through analysis considers the ability of prices to adjust in the short run.

## 12.2.  The Marshall-Lerner Condition

In case when the demand elasticity for imports is perfectly inelastic and the demand for exports is also perfectly inelastic, the trade balance will not improve after devaluation. As we just pointed out the zero elasticity case is an extreme case. What would then be the minimum elasticities of the demand for imports and demand for exports that is needed to improve the balance of trade? Alfred Marshall and Abba Lerner derived the necessary value, and this condition has become known as the Marshall-Lerner condition. The Marshall -Lerner condition states that the absolute value of the sum of the elasticities of the demand for imports and the demand for exports has to be greater than unity.

---

[6] Melvin, Michael; Norrbin, Stefan (2012-11-23). International Money and Finance (Kindle Location 4378). Elsevier Science. Kindle Edition.

The Marshall-Lerner conditions explain the J-curve effect. If the sum of the short-run elasticities of demand for imports and the demand for exports are below unity, then the balance of trade will worsen. However, after some time passes the elasticities can increase and the balance of trade will improve. It is very likely that long-run elasticities are higher than short-run ones, because consumers will find substitutes in the long run. Thus, the combination of the short-run and long-run elasticities may cause a J-curve like shape of the balance of trade.

## 12.3. The Evidence from Devaluations

The net effect of devaluation depends upon the mix of capital and labor utilized in a nation's export industries. The evidence from a cross section of countries suggests that in countries where the ratio of capital to labor employed is low, devaluations are much more likely to result in export expansion and faster economic growth. But in countries where the capital/ labor ratio is high, devaluations will tend to have little if any expansionary influence on exports and economic growth.

## 12.4. Absorption Approach to the Balance of Trade

The absorption approach to the balance of trade is a theory that emphasizes how domestic spending on domestic goods changes relative to domestic output. In other words, the balance of trade is viewed as the difference between what the economy produces and what it takes, or absorbs, for domestic use. As commonly treated in introductory economics classes, we can write total output, Y, as being equal to total expenditures, or

$$Y = C + I + G + (X - M) \tag{12-2}$$

where $C$ is consumption ; $I$, investment; $G$, government spending; $X$, exports; and $M$, imports. We can define absorption, $A$, as being equal to $C + I + G$, and net exports as $(X - M)$. Thus we can write:

$$Y = A + X - M \tag{12-3}$$

or

$$Y - A = X - M \tag{12-4}$$

Absorption, $A$, is supposed to represent total domestic spending. Thus, if total domestic production, $Y$, exceeds absorption (the amount of the output consumed at home), then the nation will export the rest of its output and run a balance of trade surplus.

At the full employment, all resources are being used so that the only way for net exports to increase is to have absorption fall. On the other hand, with unemployment, $Y$ is not at its maximum possible value, and thus $Y$ could increase due to increases in exports, $X$, without changing the domestic absorption, $A$.

The absorption approach is generally concerned with the effects of a devaluation on the trade balance. At the full employment level, it will not be possible to produce more goods and services. So devaluation will not improve trade balance and cause only inflation.

The typical IMF conditionality involves reducing government spending, raising taxes, and restricting money growth. Note that these types of policies are exactly what the absorption approach prescribes. To increase the likelihood of paying back loans, countries need to decrease $A$. Such policies may be interpreted as austerity imposed by the IMF, but they are intended to reduce $A$, to make the country more likely to pay back international loans.

### Unit 13.   The IS-LM-BP Approach

#### 13.1.   IS-LM-BP model

The major tools of macroeconomic policy are fiscal policy (government spending and taxation) and monetary policy (central bank control of the money supply). These tools are used to achieve macroeconomic equilibrium.

Macroeconomic equilibrium requires equilibrium in three major sectors of the economy (see Figure 13-1):

**Goods market equilibrium**. The quantity of goods and services supplied is equal to the quantity demanded. This is represented by the Investment-Saving (IS) curve.

**Money market equilibrium**. The quantity of money supplied is equal to the quantity demanded. This is represented by the Liquidity preference and Money supply (LM) curve.

**Balance of payments equilibrium**. The current account deficit is equal to the capital account surplus, so that the official settlements definition of the balance of payments equals zero. This is represented by the Balance of Payment (BP) curve.
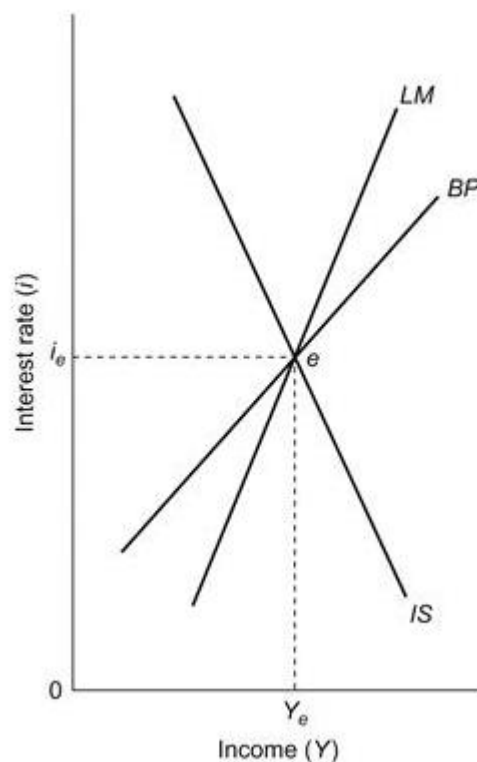


**Figure 13-1. Equilibrium in the goods market (IS), in the money market (LM), and in the balance of payments (BP).**
**Source: Melvin, Michael; Norrbin, Stefan (2012-11-23). International Money and Finance (Kindle Locations 4610-4611). Elsevier Science. Kindle Edition.**

For the investment-saving curve, the independent variable is the interest rate and the dependent variable is the level of income (see Figure 13-2).
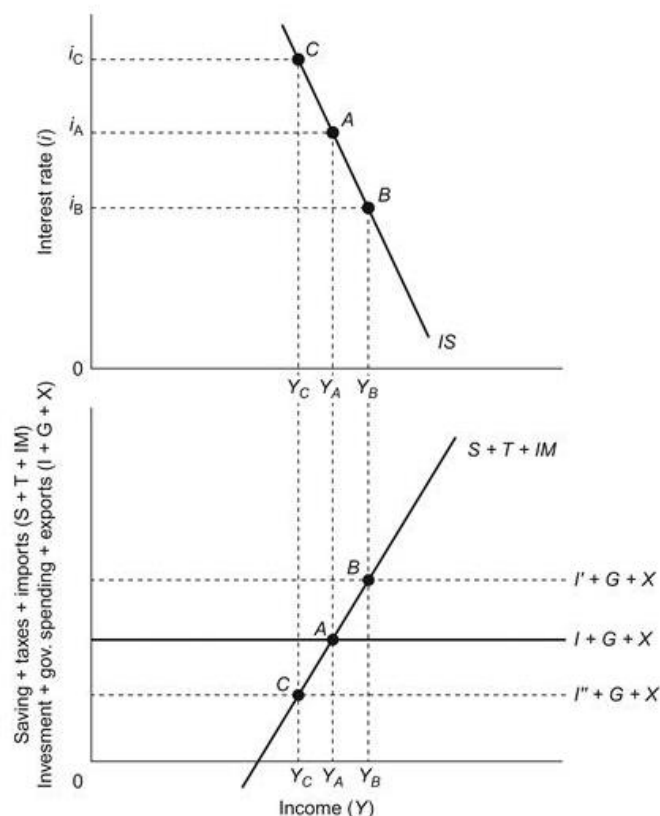
**Figure 13-2. Derivation of the IS curve.**
**Source: Melvin, Michael; Norrbin, Stefan (2012-11-23). International Money and Finance (Kindle Location 4634).**
**Elsevier Science. Kindle Edition.**

Given expectations about returns on fixed investment, every level of the real interest rate ($i$) will generate a certain level of planned fixed investment and other interest-sensitive spending; lower interest rates encourage higher fixed investment and the like. Income is at the equilibrium level for a given interest rate when the saving of this income equals investment (or, equivalently, when "leakages" from the circular flow equal "injections").

The IS curve is defined by the equation (13-1):

$$S + T + IM = I + G + X \qquad\qquad (13\text{-}1)$$

where $S$ is Savings; $I$, investment; $G$, government spending; $X$, exports; and $IM$, imports

In the IS diagram in the upper panel we see that point C is consistent with equilibrium income level YC and equilibrium interest rate $i_C$. The other points on the IS curve are consistent with alternative combinations of income and interest rate that yield equilibrium in the goods market.

The LM curve in Figure 13-1 displays the alternative combinations of $i$ and $Y$ at which the demand for money equals the supply. See also the derivation of LM curve in Figure 13-3.
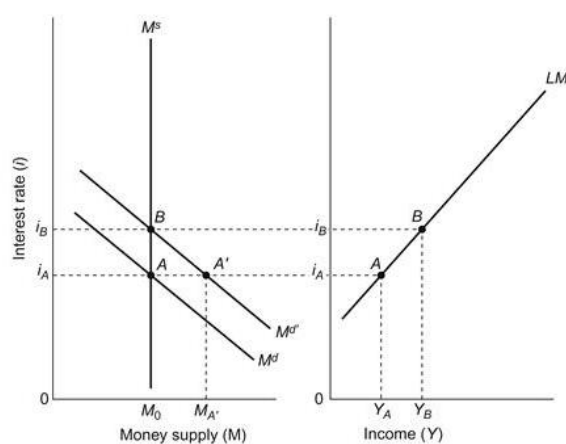
**Figure 13-3. Derivation of the LM curve.**
**Source: Melvin, Michael; Norrbin, Stefan (2012-11-23). International Money and Finance (Kindle Location 4669).**
**Elsevier Science. Kindle Edition.**

The horizontal axis measures the quantity of money and the vertical axis measures the interest rate. Note that the $M^S$ curve is vertical. This is so because the central bank can determine money supply at any level it choose, independent of the interest rate, for example, this value is $M_0$. The LM curve shows the combinations of interest rates and levels of real income for which the money market is in equilibrium. It is an upward-sloping curve because the interest rate and quantity of money demanded is a result of the role of interest as the opportunity cost of holding money.

The BP curve gives the combinations of $i$ and $Y$ that yield balance of payments equilibrium. The BP curve is drawn for a given domestic price level, a given exchange rate, and a given net foreign debt. Equilibrium occurs when the current account surplus is equal to the capital account deficit.

Figure 13-4 shows the derivation of the BP curve. The lower panel of the figure shows a CS line, representing the current account surplus, and a CD line, representing the capital account deficit.
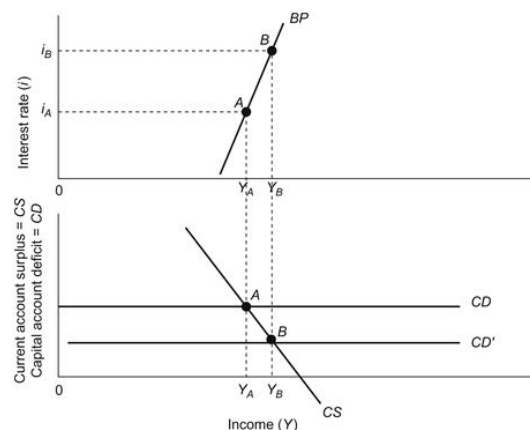


**Figure 13-4. Derivation of the BP curve.**
**Source: Melvin, Michael; Norrbin, Stefan (2012-11-23). International Money and Finance (Kindle Location 4705).**
**Elsevier Science. Kindle Edition.**

Initially, equilibrium occurs at point $A$ with income level $Y_A$ and interest rate $i_A$. If the interest rate increases, then domestic financial assets are more attractive to foreign buyers and the capital account deficit falls to CD′. At the old income level $Y_A$, the current account surplus will exceed the capital account deficit, and income must increase to $Y_B$ to provide a new equilibrium at point $B$. Points $A$ and $B$ on the BP curve in Figure 13-4 illustrate that, as $i$ increases, $Y$ must also increase to maintain equilibrium.

Higher interest rates in the domestic economy would attract foreign investors and decrease the capital account deficit. If capital is perfectly mobile for any income level, then any deviation of the domestic interest rate from the foreign rate would cause investors to attempt to hold only the high return assets. Therefore, the BP curve becomes perfectly horizontal in the case of perfectly mobile capital. If foreign capital is not perfectly available then the BP curve will be upward sloping. If there are many restrictions to capital mobility then the BP curve will become close to vertical.

### 13.2.  Monetary Policy under Fixed Exchange Rates

Fixed exchange rates make it impossible for the domestic central bank to conduct monetary policy independently from the rest of the world. If domestic and foreign assets are perfect substitutes, then they must yield the same return to investors. Any rate higher than that results in large (infinite) capital inflows, while any lower rate yields large capital outflows. In case central bank changes money supply it also must intervene and sell foreign exchange to buy domestic currency to maintain the fixed exchange rate. So equilibrium will not change. With fixed exchange rates, a country cannot conduct an independent monetary policy to change domestic income.

### 13.3.  Fiscal Policy under Fixed Exchange Rates

Suppose an expansionary fiscal policy is desired. With fixed exchange rates, perfect asset substitutability, and perfect capital the BP curve is a horizontal line. An increase in government spending would mean a higher interest rate and higher income. The financial account moves to a surplus because of a reduced capital account deficit associated with the higher domestic interest rate. To stop the domestic currency from appreciating, the central bank must increase the money supply and buy foreign exchange with domestic money. This will cause new equilibrium above BP curve, national currency will appreciate somewhat and national income will also increase. Since central bank buys foreign currency on the open market, this will cause increase in money supply and some inflation pressure. The Russian Central bank is near to such a policy in its current operations on the open currency market.

### 13.4.  Monetary Policy under Floating Exchange Rates

With floating rates the central bank is not obligated to intervene in the foreign exchange market to support a particular exchange rate.

The assumptions of perfect substitutability of assets and perfect capital mobility will result in horizontal BP curve. Expansionary monetary policy will cause both LM and IS shift left. This situation produce new equilibrium point on the BP curve on the left. So the national currency will depreciate, but there will be increase in national income. Thus, with floating exchange rates, monetary policy is effective in changing domestic income.

Usually foreign customers pay for this economic expansion, therefore in modern international policy unilateral, uncoordinated devaluations of currencies aren't encouraged and may cause political tensions.

### 13.5.  Fiscal Policy under Floating Exchange Rates

An expansionary fiscal policy caused by a tax cut or increased government spending will shift the IS curve to the right. In this case the balance of payments will run into surplus. Since the exchange rate is free to adjust to eliminate the balance of payments surplus this will cause the domestic currency to appreciate. This appreciation will reduce domestic exports and increase imports.

Note that the final equilibrium occurs at the initial level of $i$ and $Y$. With floating exchange rates, fiscal policy is ineffective in shifting the level of income. It will cause only the appreciation of domestic currency.

## Conclusion

This International finance manual are devoted to make students know the mechanism of the developed currency markets and also features of emerging currency markets. International financial system is viewed as complex mechanism of interactions between individuals, international companies, international banks and government bodies. In particular, operations of currency dealers are studied. As this course was intended mostly for international students, basic knowledge about problems of the Russian economy, ruble exchange rate tendencies and structure of the Russian financial market was represented in a friendly form for foreign students.

As a whole, after studying course International Finance, students have to create scientific views and ability to apply the acquired knowledge to the solution of specific practical objectives, being engaged in work in international banks and  international companies, stock exchanges, government bodies and other professional participants of the foreign exchange market.

## References

1. Federal Law «On currency regulation and currency control» от 10.12.2003 № 173-ФЗ ( в ред. от 12.03.2014 № 33-ФЗ) // СПС КонсультантПлюс. URL: http://www.consultant.ru.

2. Archer M.D. Getting Started in Currency Trading. Hoboken, New Jersey: Wiley, 2012. 452 pages. ISBN-13: 978-1118251652.

3. Cooper G. The Origin of Financial Crises: Central Banks, Credit Bubbles, and the Efficient Market Fallacy. New York: Vintage, 2008. 208 pages. ISBN-13: 978-0307473455.

4. Deardorff A. V. Terms of Trade : Glossary of International Economics. 2nd ed. Singapore: World Scientific Publishing Company, 2014. 616 pages. ISBN-13: 978-9814518598.

5. DeRosa D.F. Foreign Exchange Operations: Master Trading Agreements, Settlement, and Collateral. Hoboken, New Jersey: Wiley, 2013. 416 pages. ISBN-13: 978-0470932919.

6. Feinschreiber R. Transfer Pricing Handbook: Guidance for the OECD Regulations. Hoboken, New Jersey: Wiley, 2012. 451 pages. ISBN: 1118347617.

7. Financial Crises: Causes, Consequences, and Policy Responses. Claessens S., Kose M. A., Laeven L., Valencia F. Washington D.C.: Intl Monetary Fund, 2014. 635 pages. ISBN-13: 978-1475543407.

8. Laïdi A. Currency Trading and Intermarket Analysis: How to Profit from the Shifting Currents in Global Markets. Hoboken, New Jersey: Wiley, 2008. 304 pages. ISBN-13: 978-0470226230.

9. Madura J. International Financial Management. USA: Cengage Learning, 2011. 736 pages. ISBN-13: 978-0538482967.

10. Melvin M. International Money and Finance, Eighth Edition. Oxford, Academic Press, 2012. 336 pages. ISBN-13: 978-0123852472.

11. Murphy J. J. Intermarket Analysis: Profiting from Global Market Relationships. 2 ed. New York: Wiley, 2013. 288 pages. ISBN-13: 978-1118571606.

12. Shapiro A. C. Multinational Financial Management. 9 edition. Hoboken, New Jersey: Wiley, 2009. 784 pages. ISBN-13: 978-0470415016.

13. Turner G. Transfer Pricing in International Business: A Management Tool for Adding Value. Business Expert Press, 2013. 98 pages. ISBN-13: 978-1606493489.

14. Xin H. Currency Overlay: A Practical Guide, Snd ed. London: Risk Books, 2011.380 pages. ISBN-13: 978-1906348540.

15. Antonov V. International currency and credit and financial relations. Textbook. M.: Jurajt, 2014. 560 pages. ISBN 978-5-9916-3097-9.

16. Gloriozov A., Mihajlov D. Foreign trade financing and guarantee business. Practical guide. M.: Jurajt, 2014. 912 pages. ISBN 978-5-9916-1384-2.

17. Dzhohadze V. Financial aspects of ensuring stability of multinational corporations. M.: Librokom, 2013. 144 pages. ISBN 978-5-397-03541-5.

18. Djumulen I. World Trade Organization. Economy, policy, law. M.: GOUVPO VAVT Minjekonomrazvitija Rossii, 2012. 360 pages. ISBN 978-5-9547-0111-1, 978-5-9547-0118-0.

19. Zolotarev V., Kochanovskaja O., Karpova E., Cherenkov A., Usenko A. International finance. Manual. M.: Al'fa-M, Infra-M, 2014. 224 pages. ISBN 978-5-98281-369-5, 978-5-16-009249-2.

20. Ivanov Ju. Fundamentals of the international statistics. M.: Infra-M, 2010. 624 pages. ISBN 978-5-16-003641-0.

21. International currency and credit relations. Textbook and practical guide / under editorship of E. Zvonovoj. M.: Jurajt, 2014. 688 pages. ISBN 978-5-9916-3109-9.

22. Polovickij S. Logic of currency pairs movement. SPb: Piter, 2014 g. 304 pages. ISBN 978-5-496-00512-8.

23. Ponamorenko V., Chetverikov A., Karpov L. Bank integration into EU and EEP. Possibilities of legal transplantation. M.: Justicinform, 2014. 206 pages. ISBN 978-5-7205-1214-9.
24. Fedjakina L. International finance. M.: Mezhdunarodnye otnoshenija, 2012 g. 640 pages. ISBN 978-5-7133-1382-1.
25. Shimko P. International financial management. Textbook and practical guide. M: Jurajt, 2014. 496 pages. ISBN 978-5-9916-3559-2.