

CHAPTER: HISTORY AND CENTRAL BANKS**HISTORY AND CENTRAL BANKS**

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HISTORY AND CENTRAL BANKS

The main objective of the world's central banks is to ensure a relatively stable price level. Nevertheless, the ways in which central banks seek to achieve this goal are not always the same.

Statutory regulations of the countries provide the central banks with a number of instruments concerning interest or liquidity management to fulfil their objectives. Thereby, the central banks are in a position where they can influence interest rates and the liquidity situation in the money market in various ways according to their monetary objectives. A main requirement for the successful realisation of their credit policy measures is a well-functioning system for payment transactions. For example, the § 3 of the ESCB statute says that one of the basic tasks of the ESCB is “to promote the smooth operation of payment systems”.

In contrast to other countries, the monetary policy instruments of the European Central Bank are limited to interventions that leave the market forces and competition within the economy's financial sector widely untouched. Other central banks are able to directly limit the borrowing of non-banks (setting an asset ceiling) or they can lock in the interest rates of the financial market and the bonds' market. Besides these rather strict methods the policy of most of the central banks is to indirectly steer the banks' credit policies and the demand for money by means of influencing the banks' liquidity and by the interest mechanism in the financial markets. This is made possible by using a wide range of instruments that are regulated by law. While the provision of central bank money affects the banks' liquidity directly, open-market rate, discount rate, and Lombard rate have a signalling character. Thus indirectly, they affect the banks' credit transactions and the economy's demand for money and loans.

1. Preface

The practice of foreign exchange (FX) dealing goes back to the end of the 19th century. Then, gold as the reference currency, made it possible to carry out transactions via foreign accounts with ease. At the beginning of the 20th century, technical innovations led to great improvements in the area of completing and contracting money transactions. From telegraph and telephone up till modern telecommunications, technical innovations have contributed to the modernization and the acceleration of foreign exchange trading.

1.1 The gold standard

The gold standard was a system of fixed exchange rates. The currencies' parities were fixed to gold; one differentiated between the gold specie standard and the gold bullion standard.

To become an internationally accepted legal tender, the gold specie standard had to fulfil certain conditions:

- a) The Central bank was obliged to buy or sell gold at a fixed rate.
- b) Anybody was allowed to melt gold and use it for other purposes.
- c) Owners of gold ingots (bars) had the right to let any amount of gold be minted.
- d) The Import and export of gold was not restricted.

In this way, nominal value always equaled to the value in metal. The liquidity of the gold specie standard was determined by the production and the industrial demand of gold.

In the system of the gold bullion standard, gold's function focused on reserve management only, since the money supply mostly consisted of paper money. Though one could at all times exchange paper for gold at the central bank, it was assumed that a minimum amount of paper money would, however, be in circulation. Therefore, the central banks could allow themselves to have an incomplete cover of gold. This led to a situation where the amount of paper money in circulation always exceeded the amount of the metal currency.

1.2 The time between the World Wars (1918–1939)

Confusion and enormous costs resulting from World War I demanded an increased money creation in almost all European countries. Different rates of inflation in these countries created a situation in which the international price structure diverged markedly.

To counteract their problems concerning foreign trade that resulted from their over-valued currencies, a couple of countries carried out a massive devaluation of their currencies. The fall in the exchange rate of one currency equaled the rise in the exchange rate of another. As a result, a race towards devaluation took place which carried with it all of the important world currencies.

Besides inflation and devaluation, there were other factors that had a negative effect on the international monetary structure in the time period between the two world wars. Triggered by the world economic crisis in 1931, European countries introduced mechanisms to control foreign exchange. To prevent a situation in which the savings of foreign currencies were insufficient to make the regular foreign currency payments, the monetary controllers felt obliged to permanently control import and export of foreign currencies.

Thereby, two main characteristics of exchange control emerged:

- a. A ban or restriction on the export of capital was introduced
- b. Everyone had to transfer foreign currency, earned from export or financial transactions, to the state.

Finally, the outbreak of World War II forced even those countries to establish exchange controls, that had until this time done without ones.

1.3 The Bretton Woods system (1944–1970)

Already in 1943, the great powers of the time, USA and Great Britain, felt obliged to cooperate towards a free, multilateral, and stable monetary system. The shattering experiences of the past years of the war and the time after World War I were reasons enough to take precautions in this direction.

During the conference of Bretton Woods in July 1944, the US representatives brought up the basic idea of the gold standard again. Once this was commonly accepted, one agreed on an internationally neutral monetary controller: the International Monetary Fund (IMF), which was founded subsequently and is situated in Washington, D.C. The main objectives of this new order can be summarized as follows:

- a. Establishment of an international monetary system with stable exchange rates
- b. Relaxation of existing restrictions on foreign exchange
- c. Introduction of the convertibility of all currencies

The goal to establish a system of stable exchange rates, with bands of permitted fluctuation, was achieved by letting every member of the IMF fix a parity for its own currency relative to the gold price or the US dollar. At the same time, every member obliged itself to keep fluctuations inside a margin of $\pm 1\%$ of the parity by means of interventions of the central bank.

Arbitrary devaluation was avoided by agreeing that the originally fixed parities could only be changed with the consent of the IMF. However, the IMF could not interfere if the adjustment was less than 10%. The goal was, that countries with disequilibriae in their balances of payments do not hurt their economies by trade and payment restrictions or by devaluing their currencies. Therefore, the IMF established a credit fund for those countries: the special drawing rights (SDRs). This fund was to give money to countries that had insufficient savings, and thereby to help them adjust to deficits in their balances more easily. The amount of the grants depended on the country's quota, which was determined by economic factors such as national income, currency savings, foreign trade and its fluctuations.

In Europe, devastated by war and traditionally characterized by exchange rate controls, a liberalization of payment transaction could obviously be carried out only gradually. The main instrument for this purpose was chiefly the European Payments Union (EPU), founded in 1950. Its founding was a result of the foreign trade policy of the Organization for European Economic Co-operation (OEEC); and its main objective was to put the European payment transactions on a multilateral basis and to prepare it for the transition to the desired convertibility status. In December 1958, finally, the step towards monetary convertibility, was taken.

Though the international monetary system that was created in Bretton Woods lasted for more than two decades it underwent many serious crises. The first devaluations occurred in September 1949, although the Fifties went on quite calm and were characterized by a continuing return to the monetary convertibility.

The situation in the sixties was totally different: At the beginning of the decade, massive deficits in the US balance of payments led to a run on gold in almost all markets; due to which, the gold price shot up. In 1961, the central banks decided to found a gold pool to keep the gold price per ounce at a stable level (35 US dollars per ounce). At the same time, the situation in the international currency markets, was unstable due to differences in the economic growth of some countries. High surpluses in the balances led to the appreciation of some currencies; the monetary structure was destabilized again. After years of support for the Pound Sterling, it had to be drastically devalued in 1967; this was followed by a second run on gold in the markets. The resulting losses of the central banks led to the elimination of the gold pool in 1968.

Moreover, in some important European countries political (and soon economic) problems arose. For example, the disturbances in Paris in 1968 triggered a flight of capital that forced the Banque de France to devalue the Franc by 10%. At the same time, enormous supplies of capital caused the German Bundesbank to stop its interventions in the foreign currency market. Instead of revaluing the German mark at once, the German Bundesbank decided to let the exchange rate float for a period of time. Only in October 1969, did the Bundesbank officially revalue the German mark by almost 10%.

1.4 The collapse of the fixed exchange rate system (1971–1973)

Due to a crisis in the international monetary system the Bretton Woods system finally collapsed at the beginning of the Seventies. High deficits of the US balance of payments were the reason that confidence in the US dollar as the international key currency was lost. In 1971, a major crisis struck the US dollar; it was triggered by a level of interest rates that was artificially held low (regulation Q), by a rising trade deficit (Vietnam war), and a massive dollar withdrawal by the countries belonging to the Eastern bloc. Within a short time, enormous amounts of money were moved from the US to the European markets; there, the interest rates remained at a high level.

After vehement interventions by both the German Bundesbank and the Swiss Nationalbank, Switzerland and Austria revalued their currencies, while Germany and the Netherlands both let their currencies float for an indefinite period of time.

Since the dollar crisis persisted, the convertibility of the US Dollar into gold could no longer be maintained. On 15 August 1971, the United States canceled the gold convertibility of the dollar, and Germany, the Netherlands and most of the other countries let their currencies float. The original parities and intervention rates were, de facto, canceled. In December 1971, the United States agreed to devalue the US dollar if Japan and the most important European countries also agreed on appreciating their currencies. The agreement among all the parties smoothed the way to a return to the fixed parities combined with a new fixing of the central rates of the main currencies.

Within the Smithsonian Agreement, signed on the occasion of the monetary conference on the 17th/18th of December 1971, the United States obliged itself to raise the official gold price from USD 35 to USD 38 per ounce; this amounted to a nominal devaluation of 7.9%. At the same time, the European countries and Japan revalued their currencies by 8%, while Canada decided to stick to a floating exchange rate. Also, the margin between the intervention points (ceiling and floor values) was expanded; this meant that currencies other than the USD were able to float at a higher rate ($\pm 4\frac{1}{2}\%$) among themselves.

A major problem of the Smithsonian Agreement was the fact, that the US dollar could not be converted into gold anymore; later, this turned out to cause further trouble within the international monetary system. The expanded intervention band of the monetary system helped in stabilizing the exchange rates, but it could not prevent massive movements of capital, caused by speculation. Halfway through 1972, the Bank of England let the Pound Sterling float as a result of massive international pressure. Afterwards, other industrial countries such as Germany, the Netherlands, Switzerland, and Japan defended themselves against too strong influx of the USD

The collapse of the system of fixed exchange rates could not be averted at that time. In the beginning of 1973, the Italian Lira came under strong pressure; the USA devalued its currency again by raising the official gold price from USD 38 to more than USD 42, while Switzerland and Japan revalued their currencies by 12% and 7% respectively. In March 1973, the capital inflow not ebbing, Japan and all European countries with strong currencies renounced their obligation to intervene. Henceforth, the system of fixed exchange rates virtually ceased to exist.

1.5 The monetary system since 1973

The collapse of the fixed rate system resulted in different developments - most of the industrial countries pursued a controlled floating. This meant that the exchange rate developments were not completely left to the free markets. Through interventions of the central banks and the correct use of monetary instruments not only were daily fluctuations smoothed out but one also tried to prevent devaluations and revaluations. At a conference in January 1976, the IMF allowed the floating of currencies. Each country could choose between fixed and floating exchange rates with respect to other countries. The only condition imposed was the aim towards well-ordered economic and financial conditions.

The release of the exchange rates led to a massive downward movement of the US Dollar. This was a necessary correction against the distorted relations caused by the system of fixed exchange rates. After a time of stabilization, another short drop of the Dollar occurred in 1977. The reason for this development was the strong deficit in the balance of income and the lack of interest of the US monetary policy makers in the fate of the Dollar. In Europe, a polarization took place. Weak currencies such as the Pound and the Lira were devalued, while strong currencies (such as German Mark, Swiss Franc, and Dutch Guilder) grew even stronger. After a modification of the US policy the Dollar grew stronger in the period between 1979 and 1985. Rising interest rates, that were the result of a strict control of the monetary growth, supported this development. Due to an expansionist US monetary policy and a high deficit in the balance of payments, the Dollar soon fell again.

The end of the Eighties were again characterized by relatively stable conditions as a result of the Louvre agreement in 1987. There, the seven most important economies (G7, USA, UK, Italy, Germany, Japan, Canada, France) agreed to stabilize their exchange rates by interventions, appeals, and interest rate policies. Only in 1990, the Dollar came under pressure again due to fears of a recession and problems in the sector of the US savings banks.

A real stabilization of the exchange rates can only be achieved through international coordination of economic policies. As long as some countries see stability of prices as their main objective, while others give the highest priority to economic growth, this goal is still far away.

Flexible exchange rates have some important advantages though; one of the most important advantage is the autonomy of the central banks regarding money supply. Since central banks are not any more forced to guarantee a definite exchange rate they can adjust money supply according to their own economic policies.

The European monetary system (EMS)

The decision to move towards an economic and monetary union was made in The Hague in December 1969. However, due to major turmoils during the end of the Sixties and early Seventies, the first steps towards a tighter union among the currencies of the EEC countries could only be taken after the stabilizing Smithsonian Agreement. Since currencies were allowed to float against the Dollar with a maximum margin of 4.50%, the EEC currencies theoretically had a maximum margin of 9.0% among each other. This maximum margin was reduced to 2.25% for EEC currencies by the so-called currency snake of 1972. These efforts were, however, not very successful because memberships often changed and sometimes there were not enough member states.

On 13 March 1979, the European Monetary System (EMS) was introduced as the third attempt to establish a monetary union in Europe. The EMS is a regional system of fixed but adaptable exchange rates. Members of the EMS are all the countries of the European Union (EU). Those countries, that do not belong to the EU but maintain tight economic and financial relations with the EU have the possibility to be associated to the system of exchange rates and interventions. Within the EMS, the exchange rates are fixed, but with those countries that do not take part or third countries, the exchange rates remain flexible.

The main objective of the EMS was to create a "zone of monetary stability in Europe", i.e. stability of exchange rates and prices, by means of monetary policy co-operation. The fixing of the exchange rates should help to strengthen the economic integration and to encourage trade within the EU.

The European Currency Unit (ECU) (December 1996)

An essential element of the EMS was the ECU. The ECU was a currency basket that contained the currencies of all member states (except those of Austria, Finland, and Sweden) in form of fixed amounts. These amounts reflected the respective countries' economic importance within the EU. The ECU's value was determined daily. The actual shares of the currencies inside the basket changed if the exchange rates of the EU currencies changed. The composition of the basket was checked every five years and was changed if the member states agreed. In 1984, at the first revision, the Greek Drachma was introduced, followed in 1989 by the Peseta and the Escudo. However, the market rate of the ECU may differ from the above, theoretical rate. Besides this "private" ECU there was also an "official" ECU that was mainly used as a clearing unit and a legal tender between the central banks. There were also several bonds denoted in ECU.

The European Council assigned four major functions to the ECU:

- a) reference unit for the exchange rate mechanism
- b) basis for the divergence indicator
- c) clearing unit for financial operations
- d) legal tender and reserves instrument for the central banks of the EMS

The ECU as a reference unit for the exchange rate mechanism

The responsible national authorities of the member states fixed a key rate in ECU for their currencies with the consent of the other countries. Hereby, for a so-called reference rate, the ECU key rate was determined. This was done by converting the individual basket amounts into the reference currency at the new bilateral key rates. These bilateral key rates had to be kept inside a band by the central banks. Originally, this band was $\pm 2.25\%$ (wider fluctuations were allowed only for fixed time periods), but over the years the band was extended to $\pm 15.0\%$ (1993). Additional agreements between some countries limit possible fluctuations for pairs of currencies (e.g. DEM/NLG: $\pm 2.25\%$).

Generally, all central banks were obliged to intervene unlimited in the currencies of the union if their band limits were reached. Usually, there were not enough currency reserves available for the central banks. Therefore, the EMS agreement allowed a quantitatively unlimited recourse on the affected currency in form of a short-term credit under the regulation of the EMCOF (European Monetary Co-Operation Fund). An EMS central bank utilized this short-term financing by informing the issuing central bank about the transaction and receiving the corresponding credit note.

The ECU as basis for the divergence indicator

Due to fluctuations of the currencies, a EU currency's daily ECU rate differed from its ECU key rate within its bilateral margin. This divergence was used as a ratio for the so-called divergence indicator. This indicator was used as an early warning for possible tensions inside the monetary system.

To calculate this leading indicator, the actual divergence between a currency's daily ECU key rate was compared to the highest divergence possible. Thereby, you got the divergence of a currency in comparison to the average of the other currencies. The highest possible divergence of the ECU daily rate from the ECU key-rate was reached when the currency touched the upper (or lower) bands with respect to every currency in the basket simultaneously.

The ECU as a clearing unit for financial operations

The ECU served as the only clearing unit for all financial operations within the intervention and credit mechanisms of the EMS that were dealt under the EMCOF regulation. All transactions were converted by the daily ECU rate of the respective currency. Every day, this ECU rate was calculated anew by the single components of the currency basket and the respective rate of the Dollar.

The ECU as a legal tender and a reserves instrument for the central banks of the EMS

The ECU also served as a reserves instrument. To create a stock of "official" ECU the EMS central banks had to pass on 20% of both, their gold and Dollar reserves to the EMCOF.

This was done using revolving 3-month swaps against credit notes. Through adjustments of these transactions, which took place quarterly, it was guaranteed that every central bank gave these 20% as a deposit to the EMCOF. Between the prolongation dates, the central bank might have closed the swaps by returning ECU after an advance notice of two days.

The valuation of these reserves depended on different factors such as the current price of the Dollar and the floating 6-month average of the London gold price (only if the daily price is not below this average price).

1.6 The European Monetary Union (EMU)

On 9 and 10 December 1991, the heads of states of the EU member states approved an outline of the treaty on the European Union in Maastricht. This agreement is the basis for the future development of the economic and monetary "zone" towards an economic and monetary "union".

The main purpose of the union is formulated in Article 2 of the treaty: the establishment of the EMU aims towards a constant, non-inflationary, and ecological growth, a high level of the economies' convergence, a high level of employment, a high degree of social security, a rise of the standard of living, and the promotion of economic and social cohesion and solidarity among the member states.

In order to achieve this, the member states are supposed to co-ordinate their economic and financial policies and to pursue a unified monetary and currency policy with price stability as its main objective. Furthermore, the member countries are obliged to maintain discipline when it comes to questions of public spending, and to strive for a balanced foreign trade. The member states must follow the general principles of an open market economy that is characterized by competition. The transfer of capital with regard to third countries is to be liberalized as well.

The economic union

The member states must co-ordinate their economic policies through the European council and must regard it as being a common interest. The council works out economic principles that are passed on as recommendations to the member countries. To promote and to secure convergence, the already existing system of multilateral control is to be expanded. The council controls the economic developments among the member states and the compatibility of their policies by means of commission reports. At regular intervals a complete valuation is made. If a country's economic policies are not according to the principles, the council may give detailed recommendations to this country, and may also make them public.

The main attention of economic co-ordination and surveillance is directed towards budget policies; a country must obey limits regarding the budget deficit and government debt.

The monetary union

The irrevocable fixing of exchange rates in view of the introduction of a single monetary marks the final stage of the economic and monetary union according to the Maastricht treaty. With a monetary union a unified monetary policy of the community must be outlined. Within the final stage, the European System of Central Banks that consists of the European Central Bank and the member's central banks determine and execute the union's monetary policy. The main goal of the ESCB is price stability.

The final stage of the union is to be reached by a three stage process.

Stage 1

Came into force in July 1990; orientation of the national economic monetary policies on the requirements of monetary stability and budgetary discipline; completion of the Common Market as a basic requirement for the monetary union.

Stage 2

Came into force in January 1994; consolidation of the process of convergence (stage 1); founding of the European Monetary Institute (EMI) that at first only co-ordinates, because responsibilities for monetary policies remain at national levels.

- ▶ Final stage
 - ▶ Those member states who meet the criteria mentioned below take part in the monetary union
-
- a) The inflation rate may not be more than 1½% above the average inflation rate of the three most stable member countries.
 - b) The country's total outstanding government debt may not be more than 60% of its GDP.
 - c) The country's budget deficit may not be more than 3% of its GDP.
 - d) The normal band of the EMS should not have been violated during the past two years; especially not against the currency of a country that was chosen by the respective country itself.
 - e) Long-term interest rates may not be more than 2% above the average rate of the three most stable member countries.

Definition: The Gross Domestic Product (GDP) is the goods and services produced by the economy within the countries border. In contrast, the Gross National Product (GNP) includes all goods and services produced by the citizens of a country at home and abroad.

Status quo

In March 1998 the European commission and the EMI recommended the following 11 countries for participating in the European Monetary Union.

- ▶ Austria
- ▶ Belgium
- ▶ Finland
- ▶ France
- ▶ Germany
- ▶ Ireland
- ▶ Italy
- ▶ Luembourg
- ▶ Netherlands
- ▶ Portugal
- ▶ Spain

While Greece missed the economic criteria for entrance clearly, Great Britain, Denmark and Sweden chose voluntarily to stay out of the EMU.

In May 1998, at a special summit in Brussels, the start of the Monetary Union by 1.1. 1999 and the exchange rates between the EUR-11 currencies were fixed. Wim Duisenberg was appointed first president of the ECB.

At the 31st of december 1998, the European commission irrevocably fixed the exchange rates of the "Euro-in" currencies to the Euro for the transformation period until 2002.

Country	Rate
Austria	13.7603 ATS
Belgium	40.3399 BEF
Finland	5.94573 FIM
France	6.55957 FRF
Germany	1.95583 DEM
Ireland	0.787564 IEP
Italy	1936.27 ITL
Luxembourg	40.3399 LUF
Netherlands	2.20371 NLG
Portugal	200.482 ESP
Spain	166.386 PTE

At January 1st the European Central bank will start its duty in Frankfurt/Main.

This date also marks the introduction of the currency "Euro", at first only to be used for making payments and settlements by money transfer. Euro bills and coins will be introduced only 3 years later. As a result, customers (whether companies or private persons) will still be able to pay in their old, national coins and bills until 1 January 2002. Bills and coins remain legal tender until the Euro is fully introduced. After introducing the Euro for cash transactions, national currencies will still be valid for 2 more months besides the Euro. Then, the central banks will withdraw the national money circulation, and banks will, henceforth, do all their transactions in Euro.

From 1 January 1999 to 31 December 2001 applies the so-called “**no prohibition/no compulsion**” rule. It states that no party can be forced to pay in EUR, but neither can the wish to pay in euro be rejected.

Though all the member states were successful fighting inflation over the past years it remains to be seen if the Euro turns out to be a stable currency. The average rate of inflation within the European Union was just 2.5%. The Euro monetary authorities are not subject to any influence by the European Council, its only aim is to be monetary stability. Current discussions revolve around the question, what shall happen to those member countries that fail to meet the criteria of Maastricht after entering EMU. In order to curb fiscal laxity the EU designed the so-called stability and growth pact which was introduced in 1997 at the Amsterdam summit. This pact determines high fines for countries that violate the budget and deficit

criteria. Exceptions are made for countries in recession although these exceptions are very narrowly defined. The stability pact is often seen as a fiscal straightjacket and will certainly be an issue of discussion in the future.

Presumably, the question whether the criteria are fulfilled exactly might not be as important as the question whether the member states are willing to submit to the relatively strict regime of an independent central bank.

1.7 Table of historic development

System	Period	Characteristics	Reason for change
GOLD STANDARD	1880-1914	Gold specie standard and gold bullion standard; gold as legal tender and as reserve management	Financing of World War I
TIME BETWEEN THE WARS	1918- 1939	Inflation; devaluation; world economic crisis; foreign exchange management	Outbreak of World War II
BRETTON WOODS	1944-1970	Trial of a stable currency system; founding of the IMF; pegging of the USD to gold; system of fixed exchange rates; convertibility	Deficits in the budget of the US, different growth rates in the most important industrial countries
SMITHSONIAN AGREEMENT	1971-1973	System of fixed exchange rates; interventions of the central banks	Another devaluation of the USD and revaluation of the main currencies due to speculative transactions of capital
CONTROLLED FLOATING	Since 1973	Exchange rates float within a certain band; establishment of monetary unions	Still in force; outside Europe
EUROPEAN MONETARY SYSTEM (EMS)	Since 1979	Monetary basket (ECU); EMS-central banks; controlled floating	In Europe
EUROPEAN ECONOMIC AND MONETARY UNION; Treaty of Maastricht	Since 1991	Common economic and monetary policies; convergence criteria; European Central Bank, three stages within the schedule, from 1999 a single currency Since 1.1. 1999: EMS-II (between EUR and EU non-EUR currencies)	Since 1.1. 1999

Definition: In a Crawling peg an exchange rate is adjusted by a pre-fixed amount at regular intervals (e.g. weekly). The USD/HKD is a crawling peg.

2. Mechanisms of interventions of central banks – instruments and techniques

2.1. Monetary reserves policy

The central banks' stock of foreign currency enlarges the scope of their currency policy and their international creditworthiness. Moreover, the stock of foreign currency guarantees that payment transactions with foreign countries (capital, services, and goods) are completed properly.

Foreign currency, gold, claims based on the respective country's share in the International Monetary Fund and its special drawing rights, as well as claims on the European Central Bank (ECB) are the major components of the "international monetary reserves". A major part of the reserves is in US Dollars, due to the Dollar's leading position as an international currency for intervention and reserves. The importance of the Euro is still to be decided.

It is the duty of the central banks to prevent unwanted consequences from the excessive flows of foreign exchange. In such cases, they make use of appropriate measures concerning foreign exchange, interest, or monetary policies.

Sudden excessive flows of foreign exchange can cause major problems for a country. Heavy influx of foreign exchange may raise the amount of cash in circulation that does not suit the country's economic policies. Excessive draining away of foreign exchange may endanger the monetary reserves. An excessive demand for foreign exchange will push the central bank to a situation in which it has to pull out foreign exchange out of its reserves in order to steer against a fall of its own currency.

This automatically affects the domestic currency because any amount of bought and sold foreign exchange is settled in the domestic currency. If the central bank sells foreign exchange it receives domestic currency that is taken away from the amount of cash in circulation. If the central bank buys foreign currency the amount of cash in circulation is increased.

With the founding of the European Monetary System, member states have agreed on defending the key rates of their partners' currencies within certain spreads of fluctuation by

means of buying or selling the respective currencies if they reach the agreed levels of intervention. Particularly during the crises of the EMS in the fall of 1992 and summer of 1993, European central banks had to buy their partners' currencies extensively. Even after the floating of the US Dollar, central banks had to intervene in the market in order to prevent major fluctuations of the exchange rates.

However, the prospects for the success of a policy of pure intervention are limited. The currency disturbances under Bretton Woods as well as the EMS crises have shown that lasting tendencies of the market cannot be suppressed by the central banks' interventions in the foreign exchange market. At the most, it is possible to let correcting interventions limit speculation that would otherwise occur due to major divergences between short-term development of the exchange rates and their long-term tendencies. Stable exchange rates are only possible if one successfully averts permanent imbalances in the world economies and by coordinating the countries' economic development, or if one counteracts against threatening adverse developments. During the past years these aims were supported by the most intense efforts towards a better coordination of the economic and monetary policies among the seven leading western industrial nations (G7) and the future EU countries.

2.2. Policy of refinancing

On one hand, the term refinancing is used when central banks give loans to banks by either buying bills (discount policy) or lending bonds (Lombard policy). On the other hand, part of refinancing also is the regular availability of funds for the revolvingly settled repurchase agreements (open market transactions).

Discount policy

Discount policy refers to the central bank's right to purchase bills from other banks at a discount rate that is fixed by the central bank itself. Bills that meet certain criteria are called eligible bills.

Usually, there are no limits (ceiling or floor) for the discount rate. Therefore, the central bank may autonomously fix the discount rate and is therefore able to act according to the current monetary policy. Being the lowest rate of refinancing, the discount rate includes a certain element of subsidy whose extent is determined by its divergence from other market interest rates.

Due to this implied element of subsidy, discount policy is not used in the European System of Central Banks, while it stills plays a prominent role in US central bank policy.

Lombard policy

One speaks of Lombard policy, when central banks grant interest-bearing loans (the so-called Lombard loans) to other banks against collateral (certain securities, bonds and debts). Lombard loans are limited to short terms (usually of three months). However, a Lombard loan is only to be granted if it serves as a short-term bridging of liquidity constraint and if the loan's amount and term are appropriate and justifiable (= marginal lending facility). Therefore, Lombard loans should be used as current loans only.

Lombard loans may be granted against the transfer of bills, public bonds, government bonds, recovery claims, and bank bonds (however not against the debtor's own issue).

Consequences of a change of discount rate and Lombard rate

Fixing the discount rate and the Lombard rate lies at the heart of the central banks' interest rate policy. In a banking system where all banks are in permanent debt regarding the discount loan of the central bank, the discount rate represents the floor for 1-month and 2-months interest rates. The overnight rate, however, may be below the discount rate for a short time since the banks can only pay back their discount loans gradually. In such a case the maturities are of importance.

Standing facilities

In the European Union, discount and lombard policy were not included in the group of instruments available to the ECB. Instead, standing facilities were established which basically work in the same way as the discount and lombard policy. The idea of standing facilities is to provide overnight liquidity to banks as well as to offer banks with a liquidity surplus to place their money overnight for a (low) interest rate. The administration of the facilities lies with the National Central Banks.

▶ **Marginal lending facility**

The marginal lending facility enables commercial banks to bridge overnight liquidity shortages at a daily pre-fixed rate. The money received through the marginal lending facility must be backed by collateral. The marginal lending facility is the interest rate ceiling for the overnight rate.

▶ **Deposit facility**

The deposit facility allows commercial banks to place a liquidity surplus at the Central Bank overnight at a pre-fixed rate. Generally, the deposit facility rate poses the interest rate floor for the overnight rate.

2.3. Minimum reserve policy

Organization of the minimum reserve system

The minimum reserve policy obliges banks to maintain a certain percentage of their own deposits at the central bank (there are differences between national regulations, which are not dealt with here). These framework regulations once served as a security for the liquidity of customer deposits at the banks. The current system of minimum reserve is a flexible and effective liquidity instrument in the hands of the central bank.

The minimum reserve system of the ESCB is valid for the financial institutions in the Euro area. The amount of the obligatory minimum reserve depends upon the specific balance sheet items of the institutes:

Liabilities included in the minimum reserve with a reserve rate of 2 %

Deposits

- ▶ Daily due deposits
- ▶ Deposits with a stipulated tenor of up to two years
- ▶ Deposits with a stipulated period of notice of up to two years

Issued bonds

- ▶ Bonds with a stipulated tenor of up to two years

Money market instruments

Liabilities included in the minimum reserve base with a reserve rate of 0 %

Deposits

- ▶ Deposits with a stipulated tenor of more than two years
- ▶ Deposits with a stipulated period of notice of more than two years

Issued bonds

- ▶ Bonds with stipulated tenors of more than two years

Liabilities not included in the minimum reserve base

- ▶ Liabilities against institutes, which are subjected to the ESCB minimum reserves regulations
- ▶ Liabilities against the ECB and the national central banks

The minimum reserve rate is to be held on the accounts of the national central banks and has to be fulfilled within a one-month settlement period under consideration of the average daily reserve assets (averaging provision). The maintenance period of the ECB lasts from the 24th of the month until the 23rd of the following month. During this maintenance period banks must fulfil **on average** the reserve base which is calculated at the last day of the preceding month. Therefore, banks can actively manage their liquidity over the time. Banks are not required to hold any “working balances” at the ECB, i.e. additional assets in order to ensure the settlement of regular payments. If banks do not cover their reserve base the ECB may fine them either by charging a margin over the marginal lending facility or by paying no interest on the deposit facility.

Transactions on the accounts with the central bank must be recorded and managed every day, because an overnight liquidity shortage incurs costs at the marginal lending facility while exceeding the minimum reserve requirement means forgoing the overnight rate.

Especially towards the end of the month, the money market situation depends on the degree to which the banks have maintained their minimum reserves until then. If there is an overall shortage, the overnight rate will rise, and with an expected surplus on the reserve balances the overnight rate will probably fall. If a bank fails to meet its requirements, it has to pay a special interest rate on the difference between target and actual minimum reserve (in the ESCB this rate is marginal lending facility plus margin). A continuing non-compliance of the minimum reserve target is a violation against the central bank regulation and the bank board is informed.

Consequences of the minimum reserve

There are two aspects of the minimum reserve that concern the liquidity policy: Firstly, an additional demand of central bank money (besides the already existing cash in circulation) is created, the amount is determined by the minimum reserve rates and the current total of reserve-bearing liabilities. The fluctuating demand of central bank money is the "trigger" that enables the central bank to control the banks' money creation.

Secondly, the minimum reserve instrument enables the central bank to correct the banks' long-term demand of central bank money by changing the reserve rates. Since a change of the minimum reserve rates will immediately make the central bank balances either rise or fall, the central bank may compensate transactions that will either create or destroy central bank money (e.g. foreign exchange interventions) by means of a minimum reserve policy. However, for technical reasons, changes in the minimum reserve rates come into effect only in the following month. If the money market situation requires fast action more flexible instruments like open market transactions are employed.

The minimum reserve rates are determined by the ESCB and can be changed at any time. Changes are announced before the first minimum reserve period, for which the change is valid.

The average minimum reserve asset during the fulfilment period yields the ESCB-rate (weighted with the number of calendar days) for the main refinancing instrument according to the following formula:

$$R_t = \frac{H_t * n_t * \sum_{i=1}^n \frac{MR_i}{n_t * 100}}{360}$$

R_t = Interest, to be paid on the minimum reserve assets accumulated in the minimum reserve fulfilment period t

H_t = Minimum reserve assets in the minimum reserve fulfilment period t

n_t = Number of calendar days of the minimum reserve fulfilment period t

i = calendar day i of the minimum reserve fulfilment period t

MR_i = marginal interest rate of the current main refinancing operation the calendar day i

Any assets that exceed the minimum reserve requirement do not yield any interest.

The minimum reserve system should fulfil the following money policy functions:

- ▶ Stability of money market rates
- ▶ The credit institutes are urged to absorb the effects of liquidity fluctuations with the averaging provision in the minimum reserve system. This leads to a stabilisation of the money market rates.
- ▶ Causing or increasing a structural liquidity shortage
- ▶ Managing the money supply, particularly through increasing interest elasticity of the money demand

2.4. Open market policy

The buying and selling of bonds in the open market by the central bank on its own account is called open market policy. The question regarding which securities may be bought depends on the legal regulations of the central bank concerned.

Although one must add, that even open market operations in long-term securities are only allowed to influence the money market, i.e. the banks' liquidities. This excludes direct interventions of the central bank in the capital market that may be motivated by the wish to finance the public borrowing requirements or to support prices.

The instruction to buy and sell only in the open market is primarily a ban on central banks directly taking debts out of the hands of the issuer. Such a direct purchase would not be an open market transaction but in fact granting of a credit to a government budget, which is prohibited.

Reverse transactions are the key monetary instrument of the ECB. They are either undertaken as repo transactions or through the purchase/sale of mortgage loans ("Pfandbriefe"). It should be noted that in the US the repo terminology reverses if the FED becomes actively involved in the market. This means, a System Reverse Repo of the FED is a sale and purchase of the bond, thus a measure to drain liquidity from the market and signalling rising interest rates.

Repurchase agreements are usually offered in form of a tender to banks. On the basis of the total amount of the banks' bids the effective amount is determined which is passed on to the banks. This is the result of the central bank's objectives regarding liquidity and the banks' demand for central bank money (e.g. to compensate fluctuations of the money in circulation or to balance the banks' minimum reserves). If there are more bids than needed, a scaling down takes place.

Repurchase agreements can be either "volume-linked tenders" or "variable rate linked tenders". With a volume-linked tender the interest rate is already fixed. This means that banks have no way to influence the volume quotation by their interest quotation. With a volume-linked tender at a fixed interest rate, the central bank can send signals in the market during times of volatile interest rates and, thereby, can stabilize the interest rates.

With a variable rate tender, the banks are enabled to quote a volume and an interest rate, at which they are willing to settle repurchase agreements. Banks are allotted a share of the tender according to the competitiveness of their quote, i.e. the highest quote is satisfied first. The allotment finishes at the interest rate where the tender volume is completely placed. If, at the lowest interest rate, the quoted volume exceeds the remaining tender volume the bids are scaled down ("American tender"). In contrast to American tenders, Dutch tenders allot to each bidder the requested volume at the marginal interest rate. The marginal interest rate is the rate at which the tender volume can be placed in the market.

2.5. FX transactions

To avoid disturbances in the money market that arise by FX markets turbulences central banks developed foreign-exchange instruments during the period of fixed exchange rates which enabled them to influence international payment transactions.

These are swap deals and outright operations in the forward FX market. With a swap deal, one buys (sells) foreign currency from (to) the central bank at the spot rate and at the same time sells (buys) them as an outright. Therefore, one can speak of a combination of spot and outright operation, while the swap rate that is charged is equivalent to an interest rate.

In contrast to a spot operation, an outright operation is to be carried out only at a later date (e.g. in 3 months). These operations are occasionally done to counteract against speculative FX movements or to "silently" balance the exchange rate towards a foreign currency, commonly the US Dollar. With outright operations, one can influence the spot market indirectly, because a commercial bank will try to hedge against the FX risks out of the current outright operations by a reverse spot operation in order to avoid open FX positions.

Such transactions have the same influence on the banks' liquidity with a time delay as a corresponding spot transaction in the FX market would have had. For example, if with an outright transaction US Dollars are sold the central bank will withdraw the corresponding amount from the bank's account at the time the deal is carried out. This amount equals to the amount the bank has to provide when the transaction effectively takes place.

FX swaps are quite flexible with respect to their construction. This includes the swaps' terms as well as the volumes that these transactions are based on. Apart from this, these transactions can be carried out very quickly. For fine adjustment in the money market, central banks use this instrument as a "buffer" to counteract against unwanted fluctuations of the banks' accounts with the central bank as regards the required minimum reserve of the bank within its fulfilment period. Due to the settlement risk that must be in the range of the free marginal lending facility, only major banks are able to take part in these FX swap operations; the central bank has to address them individually to negotiate the price arrangements. As an alternative the ECB uses regularly "quick tenders" to influence the situation in the money market (quick tenders are only settled with chosen banks).

Overview: Open market operations

	Instrument	Term	Period	Method
Main refinancing operation ¹⁾	Reverse transactions	2 weeks	weekly	standard tender
Longer-term refinancing operations ²⁾	Reverse transactions	3 months	monthly	standard tender
Fine-tuning operation ³⁾	<ul style="list-style-type: none"> • Reverse transactions • FX-swaps • Collection of fixed-term deposits • Outrights 	is not standardized	irregular	<ul style="list-style-type: none"> • Quick tender • bilateral procedure
Structural operations ⁴⁾	<ul style="list-style-type: none"> • Bond issues • Reverse transactions 	<ul style="list-style-type: none"> • not standardized • standardized 	<ul style="list-style-type: none"> - irregular - regular 	<ul style="list-style-type: none"> • standard tender • bilateral procedure

¹⁾ Regular open market transactions, short-term

²⁾ Regular open market transactions

³⁾ Irregular open market transactions to encounter unexpected liquidity movements

⁴⁾ Open market transactions in order to adjust the structural liquidity position of the financial sector towards the ESCB

2.6. Bilateral procedures

The term bilateral procedures subsumes all trades of the ESCB with one or more counterparties that are not undertaken in tender form. The ECB deals either directly with the banks or through the stock exchange or brokers.

Bilateral procedures are used by National Central Banks for fine-tuning monetary policy or structural operations.

Counterparties

The admission to be a counterparty in open market transactions or to have access to the ECB's standing facilities is directly related to the minimum reserve requirement. All institutions who must hold a minimum reserve with the ECB are entitled to be a counterparty in open market transactions and to draw on the standing facilities.

For the fine-tuning transactions, the ECB may close a limited number of counterparties.

Collateral

All loans granted by the ECB have to be covered by collateral. There are two categories of collateral that meet the Central Bank's requirements:

a) Tier 1 collateral

- ECB bonds
- Other marketable debt instruments

b) Tier 2 collateral

- Marketable debt instruments
- Non-marketable debt instruments
- Shares traded on a stock exchange

The collateral must be either denominated in Euro or one of the Euros national currencies.

Issuers of Tier 1 collateral include

- ▶ ESCB
- ▶ public sector
- ▶ private sector
- ▶ international and supranational institutions

Issuers of Tier 2 collateral on the

- ▶ public sector and the
- ▶ private sector

2.7. Excursus: Regulations on money laundering

Due to the increase in organized crime, European countries have agreed on measures to fight money laundering.

The basis for the national regulations is the EC-guideline for preventing the use of the financial system for reasons of money laundering (from 10 June 1991). The EC guideline is divided into 3 legal sections:

- ▶ legal FX regulations of the national banks or the national tax laws
- ▶ due diligence on behalf of the banks
- ▶ criminal code (money laundering as a criminal offence)

The summarized contents of the guidelines are as follows:

Legal FX regulations of the national banks or the national tax laws

Legal FX regulations require that at the beginning of a business deal the FX status of the customer has to be clarified. At the opening of an account by someone whose deposit currency is a foreign currency and at foreign exchange balances by a local person, that person's identity has to be clarified.

This duty to identify oneself in most countries nowadays also applies to passbooks and is based on a certain amount of money.

Generally, identifications are necessary with the following transactions: Buying or selling foreign currency, nominal exchange, buying cash cheques or buying bonds in return for cash, cash payments into someone else's accounts or passbooks.

Due diligence on behalf of the banking organizations

The due diligence of the banks causes the bank employee to draw the customer's attention to her duty to identify herself not only when it comes to securities' accounts but also with all FX transactions that are above a certain amount of money.

If there is a justified suspicion that the customer is actively involved in illegal transactions that might involve money laundering, the customer's identity is to be established and the police has to be informed about the incident.

Criminal code

If someone receives an amount of money resulting from offenses of organized crime, such as drug dealing, blackmailing, or as reward for committing a crime, usually this person is keen to transfer this money into the regular money circulation. This person would try to transform his money into money of legal origin or by either directly changing the bills or by investing the amount. The newly purchased asset is takes the place of the original, by which the criminal offence of money laundering is committed. This new asset itself may serve as the basis for further money laundering by which the origin of the money becomes even more difficult to ascertain.

Besides, anybody who deliberately receives, keeps, invests, manages, transfers, uses, or passes on such assets to a third person, also is deemed to have committed an offence. This also applies to bank employees who, knowing that the money's origin is of illegal nature, invest or keep this money or make any banking operation with it. In Germany, even unknowingly not discovering the money's origin is considered an offence.

Concluding, one can say that the international fight against money laundering and thereby against drug dealing and blackmailing has just begun and that the banking branch tries to do its share with great effort.

3. Bank for International Settlements (BIS)

3.1. Organization and transactions

The Bank for International Settlements was founded to enhance the co-operation among central banks, to find new ways for international financial operations and to function as a trustee for international transactions between parties that had chosen the BIS as their agent. In 1930 the BIS was founded in Basle, on the basis of an agreement between Belgium, France, Germany, Great-Britain, Italy, Japan, and Switzerland. Its original objective was to manage the German reparation payments after the First World War as stated during the conference in The Hague in January 1930.

Nowadays, the BIS is a public limited company (stock corporation). Its nominal share capital is held by all European central banks (excluding the central banks of Albania and the countries of the former Soviet Union) and the central banks of Australia, Canada, Japan, South Africa, and the USA. The BIS' bodies are the general meeting and the council of which the latter elects its chairperson, and appoints the bank's president and chairperson. Today, the council consists of 13 members; on one hand, presidents of the most important European central banks and on the other five experts from the worlds of finance, industry, and trade. The bank's chairperson is held responsible for the bank's transactions by the bank's president.

Just before and during World War II, the bank's business almost came to a total standstill and its possible dissolution was discussed at the Bretton Woods conference, but shortly after that its importance began to grow again. In 1949, the bank became the agent for the inner-European payment and co-operation agreements, and by mid 1950 for the European payments union. It served just in the same way as the European Monetary Co-operation Fund (EMCOF) and the multi-lateral system of settlement within the European currency agreement from 1958 until its end in 1972.

The bank also serves as agent for the OECD's agreement on guaranteed exchange rates between central banks and member countries. Since the establishment of the EMCOF in 1973, the BIS serves as its agent, too. It also is the pledgee bonds of the European Coal and Steel Community. According to a treaty with 18 European banks, dating 1986, the BIS also serves as the clearing agent for private ECU.

The bank's policy must not counteract against the monetary policies of the central banks. If BIS operation might cause unwanted reactions in any market, the central banks have the right to intervene before this transaction is actually done. The bank's statutes include a list of allowed transactions: gold and FX transactions on its own account or on account of the central banks, gold keeping on account of the central banks, discount and Lombard transactions with the central banks, buying and selling of negotiable securities (exception: stocks) on its own or on the central banks' account. Moreover, the BIS may keep accounts at the central banks and may take assets from them as well as serve as an agent or as a correspondent for the central banks. These transactions may - assuming that no central bank intervenes - also be done with other banks, trading and industrial companies as well as with the private sector. Certain transactions are explicitly forbidden, e.g. issuing banknotes, accepting of bills of exchange, and granting credits to governments.

4. European institutions and their contributions to the monetary policy

The European System of Central Banks (ESCB) consists of the European Central Bank and the Central Banks of the member countries of the EMU. The ECB is situated in Frankfurt/Main. The Central Banks of those EU countries whose currencies do not take part in the Euro are also members of the ESCB but have no voting rights on the decisions about and implementation of the common monetary policy in the Euro-currency area.

The main goal of the ESCB is to guarantee price stability in the Euro-currency area. Additionally the ESCB supports the general economic policy of the European Union and acts in accordance with the fundamentals of an open market economy.

Main tasks of the ESCB (as defined in article 2 §3 of the statute)

- ▶ Definition and implementation of the monetary policy of the EU
- ▶ Conduct of FX operations
- ▶ Hold and manage the official foreign reserves of the Member states
- ▶ Promotion of smooth operation of payment systems

Decision-making bodies of the ESCB

There are three bodies within the ESCB:

- ▶ Executive board
- ▶ Governing council where the votes on decisions are held
- ▶ General council

The Governing council is the real decision-making body and consists of the members of the Executive board plus the presidents of the National Central Bank of those countries who take part in the European Monetary Union.

Task of the Governing council:

- ▶ Determination of the monetary policy of the European Union
- ▶ To pass guidelines and directives that ensure the realization of the tasks dedicated to the ESCB.

Furthermore, the Governing council may change at its discretion

- ▶ the monetary policy instruments employed
- ▶ the conditions of the monetary policy instruments
- ▶ the admission criteria to tenders, facilities, etc. and
- ▶ the procedures associated with its monetary policy trades

5. Market relevant characteristics of important international central banks (selected)

Legend

Federal Reserve System (FED), Bank of Japan (BoJ), European Central Bank (ECB), Bank of England (BoE), Schweizerische Nationalbank (SNB)

5.1. Organs with authority on the monetary policy

Bodies	
FED	Federal Open Market Committee (FOMC) = Central Bank's president + board of governors of the FED + president of the FED New York + 4 alternating FED-presidents
BoJ	Policy Board = governor + 6 members Executive organ = governor + 2 deputy governors + 6 executive directors
ECB	Governing council, Executive board, General council
BoE	Governor Executive directors Court of directors = governor + deputy governors + 16 directors
SNB	Generalversammlung = shareholders Direktorium = president + vice-president + 1 member Bankbehörden = banking committee + revision committee + local committee

5.2. Main purposes and objectives

FED	guarantee of supplying the economy with money and lendings in order to support economic growth while the level of prices stays relatively stable
BoJ	securing the currency and controlling the supply with lendings, the Bank of Japan is supposed to do its share for the constant growth of the Japanese economy
ECB	Guarantee price stability, definition and implementation of the EU's monetary policy; undertaking currency deals; maintenance and administration of the official currency deposits of EMU members; support of a smooth working of payment systems
BoE	no legal purpose; national economic equilibrium, particularly money value stabilization (the striven inflation is determined by the government); functioning of the banking system
SNB	controlling the cash in circulation and an monetary and lending policy that serves the country's interest

5.3. Governmental influence

FED	no influence
BoJ	far-reaching influence of the department of finance
ECB	no influence (the possibility to use the delaying veto practically is of no importance)
BoE	authority to issue directives by the Treasury
SNB	mutual co-ordination of the measurements

5.4. Fiscal and monetary objectives (February 1995)

	Monetary aggregate targets	Other targets/indicators
FED	From July 1993: M2 concept is abolished (M2 and M3 are still used)	"Estimate of multi-indicators", where the real interest rate is of growing importance
BoJ	Observation of money supply is intensified since the end of the eighties (inflation of real value): M2 + CDs + deposits (Post Office savings bank, trustee funds) + bonds	<ul style="list-style-type: none"> • support of economic growth • stability of exchange rate • balanced foreign trade
ECB	M3 = cash in circulation + demand deposits + time deposits with terms of less than 4 years + savings deposits of domestic non-banks	
BoE	Since 1992: no monetary aggregate targets (but the BoE's reports on growth of money supply are of great importance)	<ul style="list-style-type: none"> • direct inflation objective • 1995: 1-4 %; the goal until April 1997 is <2%
SNB	central bank's money supply (cash in circulation, the bank's current account balance at the central bank) in mid-term 1 % as annual average	

5.5. Minimum reserve

	Minimum reserve inquiry	Minimum reserve target (absolute/ share of accumulated balance sheets total)
FED	Yes	USD 59.4 billion / 18.3 %
BoJ	Yes	JPY 2,967 billion / 4.2 %
ECB	Yes, interest bearing	
BoE	No (but cash-deposit-ratio does not serve credit policy)	GBP 1,602 MI / 0.1 %
SNB	This instrument is not used currently (current regulations on "cash liquidity" pursue the same objectives)	SFR 5.9 billion cash reserves / 2.7 %

5.6. Instruments to control the money market (without minimum reserve)

	general tuning	fine tuning
FED	Outright open market transactions (seasonal adjustments)	<ul style="list-style-type: none"> • repos • "discount window" • reverse repos (= matched sales purchases)
BoJ	rediscounting of bills	<ul style="list-style-type: none"> • interbank operations (secured and unsecured) • repos • outright open market transactions • reverse repos
ECB	<ul style="list-style-type: none"> • Bond issues • Reverse transactions • Outright deals • Bilateral procedures • Standard tender 	<ul style="list-style-type: none"> • Reverse transactions • Quick tender • FX-swaps • Standard tender • Outright deals
BoE	interest oriented fine adjustment with initial basis-refinancing on gilt-repo and secured loan facility	<ul style="list-style-type: none"> • outright open market transactions- (bill) purchases (terms up to 33 days) • repos • borrowing facilities (quasi Lombard on a bilateral basis) • outright open market transactions-sells
BdF	repos (twice a week with terms of approx. 7 days)	<ul style="list-style-type: none"> • repos (daily with terms of usually one day) • repos (terms 5-10 days, weekly Lombard) • overdraft facility (endorsement overdraft Lombard) • outright open market transactions
IML	In co-operation with the Banque Nationale de Belgique	

OeNB	<ul style="list-style-type: none">• repos (Gomex-transactions)• rediscounting of bills• issuing of bonds	<ul style="list-style-type: none">• special open market line (similar to Somali quick tender)• FX swaps• reverse repos (regom transactions)
SNB	<ul style="list-style-type: none">• FX swaps• outright open market transactions• cash liquidity	<ul style="list-style-type: none">• Lombard lendings• shifting of governmental time deposits• swaps on reversed transactions with government money-market claims
