# Open Economy. Exchange rate. Foreign trade. Balance of Payments. Stabilization policy in open economy

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ŠkodaAuto Vysoká škola

## 6.1 Open economy

Indicators of open economy:

$$\frac{EXPORT}{GDP} \tag{6.1}$$

$$\frac{IMPORT}{GDP} \tag{6.2}$$

$$\frac{(EXPORT + IMPORT)}{GDP}. \tag{6.3}$$

**Table 1 Closed contra open economies**

Closed economies

| Country | Export / GDP | Import / GDP | EX+IM / GDP |
|---|---|---|---|
| US | 12 | 17 | 29 |
| Germany | 47 | 40 | 87 |
| Japan | 18 | 16 | 34 |

Open economies

| Country | Export / GDP | Import / GDP | EX+IM / GDP |
|---|---|---|---|
| Czech Republic | 80 | 75 | 155 |
| Irland | 80 | 69 | 149 |
| Belgium | 89 | 86 | 175 |

Note: Data from 2007. Export and import including services.

Source: World Bank, Oct 2010.

**Open economy – aggregate demand in open economy**

AD in an open economy, determinations of exports and imports, trade balance and Marshall-Lerner Condition, J-Curve

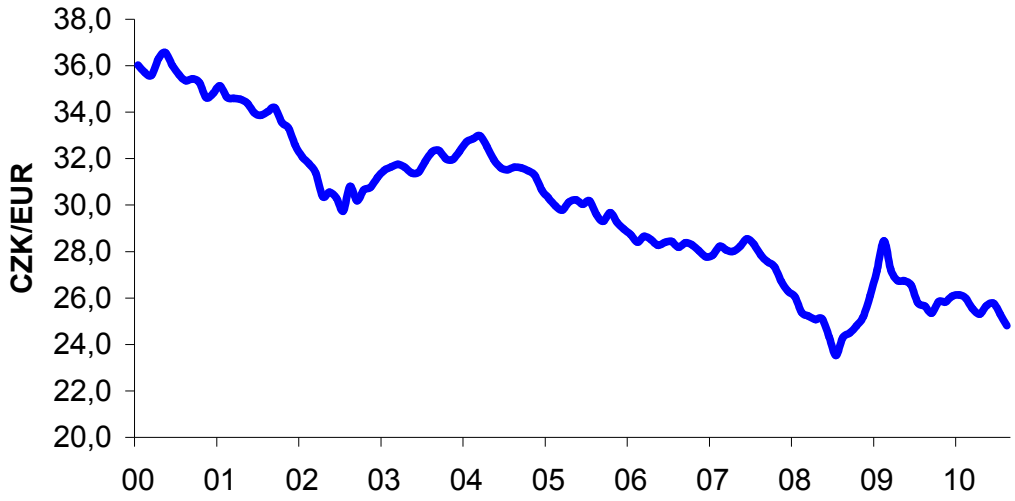
Self-study: BLANCHARD, O. (2002). *Macroeconomics.* 5th edition, Prentice-Hall 2002, Ch 19. p.395-416. ISBN 0-13-110301-6.

**Nominal exchange rate and determination of the exchange rate in the short-run**

Self-study: FRANK, R.H. – BERNANKE, B.S. (2007) *Principles of Economics*. McGraw-Hill, 3th edition. 2007. Ch 30, p.863 -901. ISBN-13: 978-0-07-312567-1.

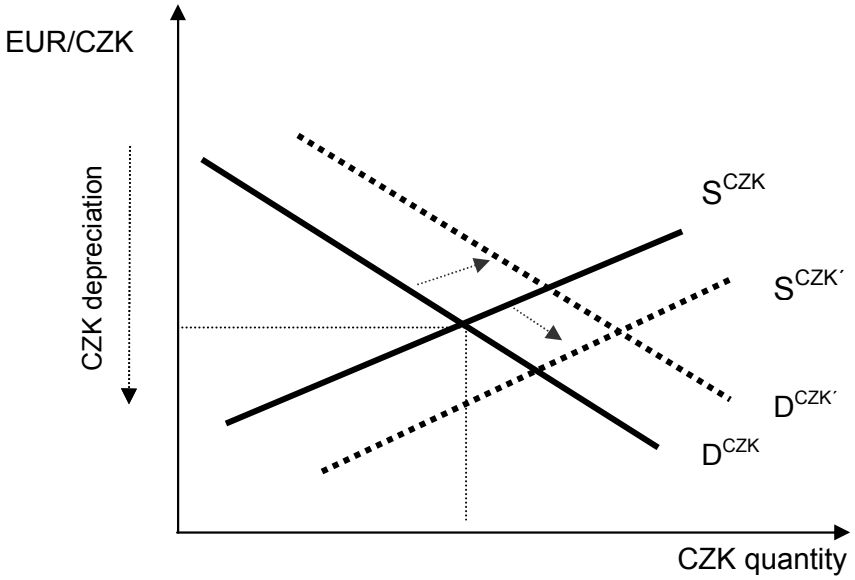
If we speak about an appreciation of the currency, we have in mind the shift of nominal exchange rate down (E↓); in opposite, the depreciation is a shift of the nominal exchange rate up (E↑).

**Graph 1 CZK against the euro**




Source: CNB, Time series database ARAD, Sep 2010.

**Graph 1 Exchange rate market: supply and demand**




**Determination of exchange rate in long-run**

Self-study: FRANK, R.H. – BERNANKE, B.S. (2007) *Principles of Economics*. McGraw-Hill, 3th edition. 2007. Ch 30, p.863 -901. ISBN-13: 978-0-07-312567-1.

**Absolute PPP**

$$E = P/P^* \quad (6.4)$$

This theory assumes that equilibrium in the exchange rate between two currencies will force their purchasing powers to be equal. This theory is likely to hold well for commodities which are easily transportable between the two countries (such as gold, assuming this is freely transferable) but is likely to be false for other goods and services which cannot easily be transported, because the transportation costs will distort the parity.

**Relative PPP**

$$\%\Delta E = \pi - \pi^* \quad (6.5)$$

The change in the exchange rate is determined by price level changes in both countries. For example, if prices in the United States rise by 3% and prices in the European Union rise by 1%, the purchasing power of the EUR should appreciate by approximately 2% compared to the purchasing power of the USD (equivalently the USD will depreciate by about 2%).

**Real exchange rate and Balassa-Samuelson Effect**

Self-study: BURDA, M. – WYPLOSZ, Ch. (2001) *Macroeconomics – A European Text*. 3th edition. Oxford University Press, 2001. Ch. 7. p 151-167. ISBN 0-19-877-650-0.

FRANK, R.H. – BERNANKE, B.S. (2007) *Principles of Economics*. McGraw-Hill, 3th edition. 2007. Ch 30, p.863 -901. ISBN-13: 978-0-07-312567-1.

**Real exchange rate**:

$$R = \frac{E \bullet P_f}{P}. \tag{6.6}$$

Real appreciation (R↓) means that the price of domestic goods in foreign currency increases (price of foreign goods in domestic currency falls). Real depreciation (R↑): the price of domestic goods in foreign currency is falling (price of foreign goods in domestic currency is rising). The change in real exchange rate can be caused either by changing the nominal exchange rate E or changes in domestic and/or foreign price levels (P and/or $P_f$). If domestic price level grows faster than abroad, there is a real appreciation of the domestic currency. If the domestic inflation rate is lower than the foreign one, it is a real depreciation.

**Table 2 Real appreciation of Central Eastern European currencies - determinants**

| 1993-2005 | CR | Hungary | Poland | Slovakia |
|---|---|---|---|---|
| Real appreciation | 4,4 | 3,4 | 2,9 | 3,5 |
| Inflation differential | 3,6 | 10,4 | 8,7 | 4,2 |
| Nominal appreciation | 0,8 | -6,9 | -5,8 | -0,7 |

Note: there are average annual changes against the EUR and EMU-countries in the period 1993-2005.

Adopted from Baldwin (2008)

**Flexible vs. Fixed exchange rate**

Self-study: FRANK, R.H. – BERNANKE, B.S. (2007) *Principles of Economics*. McGraw-Hill, 3th edition. 2007. Ch 30, p.863 -901. ISBN-13: 978-0-07-312567-1.

## 6.2 Exchange rate regimes

BLANCHARD, O. (2002). *Macroeconomics.* 5th edition, Prentice-Hall 2002, Ch.21. p.437-459. ISBN 0-13-110301-6.

Self-study: BURDA, M. – WYPLOSZ, Ch. (2001) *Macroeconomics – A European Text*. 3th edition. Oxford University Press, 2001. Ch. 20, p.521-530. ISBN 0-19-877-650-0.

Exchange Rate Regimes – IMF classification

This classification system is based on members' actual, de facto, arrangements as identified by IMF staff, which may differ from their officially announced arrangements. The scheme ranks exchange rate arrangements on the basis of their degree of flexibility and the existence of formal or informal commitments to exchange rate paths.

**Currency Board Arrangements**

A monetary regime based on an explicit legislative commitment to exchange domestic currency for a specified foreign currency at a fixed exchange rate, combined with restrictions on the issuing authority to ensure the fulfillment of its legal obligation. This implies that domestic currency will be issued only against foreign exchange and that it remains fully backed by foreign assets, eliminating traditional central bank functions, such as monetary control and lender-of-last-resort, and leaving little scope for discretionary monetary policy. Some flexibility may still be afforded, depending on how strict the banking rules of the currency board arrangement are.

**Fixed Exchange Rate or Fixed Peg Arrangements**

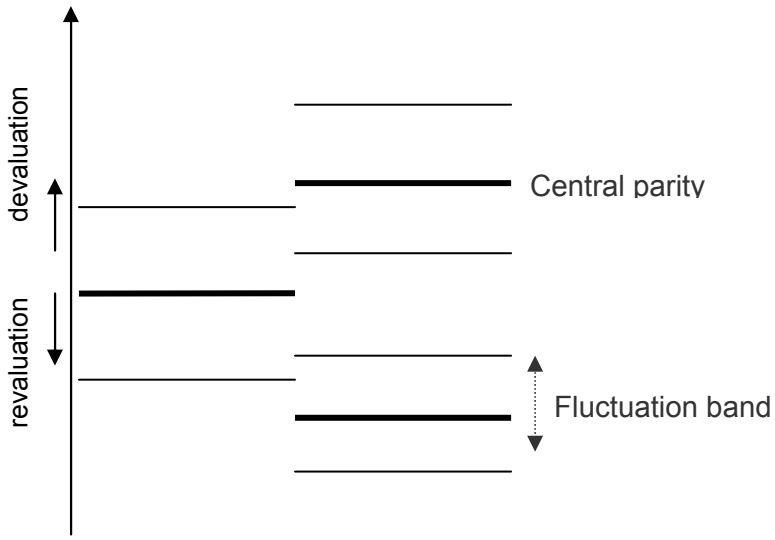
The country (formally or de facto) pegs its currency at a fixed rate to another currency or a basket of currencies, where the basket is formed from the currencies of major trading or financial partners and weights reflect the geographical distribution of trade, services, or capital flows. There is no commitment to keep the parity irrevocably. The exchange rate may fluctuate within narrow margins of less than ±1 percent around a central rate - or the maximum and minimum value of the exchange rate may remain

within a narrow margin of 2 percent for at least three months. The monetary authority stands ready to maintain the fixed parity through direct intervention (i.e., via sale/purchase of foreign exchange in the market) or indirect intervention (e.g., via aggressive use of interest rate policy, imposition of foreign exchange regulations, exercise of moral suasion that constrains foreign exchange activity, or through intervention by other public institutions). Flexibility of monetary policy, though limited, is greater than in the case of exchange arrangements with no separate legal tender and currency boards because traditional central banking functions are still possible, and the monetary authority can adjust the level of the exchange rate, although relatively infrequently.

**Fixed Exchange Rate with Fluctuation Band or Pegged Exchange Rates within Horizontal Bands**

The value of the currency is maintained within certain margins of fluctuation of at least ±1 percent around a fixed central rate or the margin between the maximum and minimum value of the exchange rate exceeds 2 percent. It also includes arrangements of countries in the exchange rate mechanism (ERM) of the European Monetary System (EMS) that was replaced with the ERM II on January 1, 1999. There is a limited degree of monetary policy discretion, depending on the band width.

**Graph 2 Pegged Exchange Rates within Horizontal Bands**



**Box 1 ERM II**

The European Exchange Rate Mechanism, ERM, was a system introduced by the European Community in March 1979, as part of the European Monetary System (EMS), to reduce exchange rate variability and achieve monetary stability in Europe, in preparation for Economic and Monetary Union and the introduction of a single currency, the euro, which took place on 1 January 1999. After the adoption of the euro, policy changed to linking currencies of countries outside the Eurozone to the euro (having the common currency as a central point). The goal was to improve stability of those currencies, as well as to gain an evaluation mechanism for potential Eurozone members. This mechanism is known as ERM2.

The ERM is based on the concept of fixed currency exchange rate margins, but with exchange rates variable within those margins. This is also known as a semi-pegged system. Before the introduction of the euro, exchange rates were based on the European Currency Unit (ECU), the European unit of account, whose value was determined as a weighted average of the participating currencies. Currency fluctuations had to be contained within a margin of 2.25% on either side.

**Crawling Pegs**

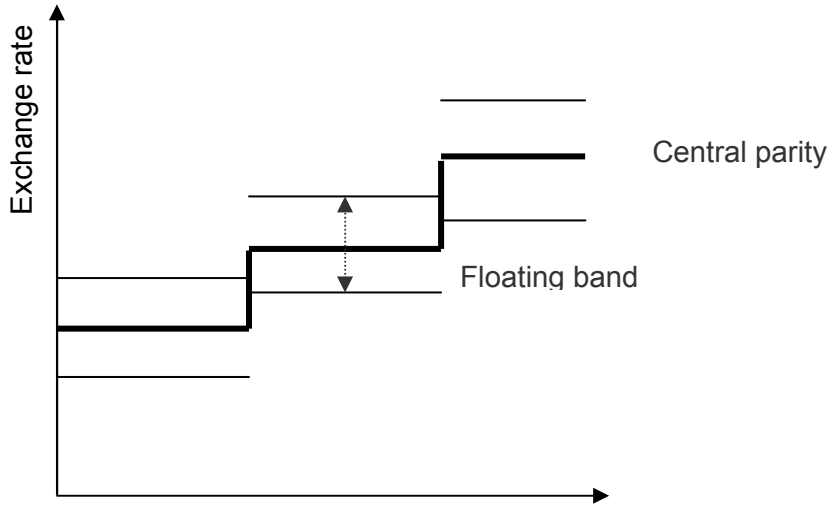
The currency is adjusted periodically in small amounts at a fixed rate or in response to changes in selective quantitative indicators, such as past inflation differentials vis-à-vis major trading partners, differentials between the inflation target and expected inflation in major trading partners, and so forth. The rate of crawl can be set to generate inflation-adjusted changes in the exchange rate (backward looking), or set at a preannounced fixed rate and/or below the projected inflation differentials (forward looking). Maintaining a crawling peg imposes constraints on monetary policy in a manner similar to a fixed peg system.

**Exchange Rates within Crawling Bands**

The currency is maintained within certain fluctuation margins of at least ±1 percent around a central rate - or the margin between the maximum and minimum value of

the exchange rate exceeds 2 percent - and the central rate or margins are adjusted periodically at a fixed rate or in response to changes in selective quantitative indicators. The degree of exchange rate flexibility is a function of the band width. Bands are either symmetric around a crawling central parity or widen gradually with an asymmetric choice of the crawl of upper and lower bands (in the latter case, there may be no preannounced central rate). The commitment to maintain the exchange rate within the band imposes constraints on monetary policy, with the degree of policy independence being a function of the band width.

**Graph 3 The theoretical path of crawling bands**




**Dollarization & monetary union**

The currency of another country circulates as the sole legal tender (formal dollarization), or the member belongs to a monetary or currency union in which the same legal tender is shared by the members of the union. Adopting such regimes implies the complete surrender of the monetary authorities' independent control over domestic monetary policy.

**Optimal currency zone**

In economics, an optimum currency area (OCA), also known as an optimal currency region (OCR), is a geographical region in which it would maximize economic efficiency to have the entire region share a single currency. It describes the optimal characteristics for the merger of currencies or the creation of a new currency. The theory is used often to argue whether or not a certain region is ready to become a monetary union, one of the final stages in economic integration. The economist Robert A. Mundell came up with two models. First, OCA with stationary expectations, where asymmetric shocks are considered to undermine the real economy, so if they are too important and cannot be controlled, a regime with floating rates is considered better, because the global monetary policy (interest rates) will not be fine tuned for the particular situation of each constituent region.

The four often cited criteria for a successful currency union are:

- Labor mobility across the region. This includes physical ability to travel (visas, workers' rights, etc.), lack of cultural barriers to free movement (such as different languages) and institutional arrangements (such as the ability to have superannuation transferred throughout the region). In the case of the Eurozone, while capital is quite mobile, labour mobility is relatively low, especially when compared to the U.S. and Japan.
- Openness with capital mobility & price and wage flexibility across the region. This is so that the market forces of supply and demand automatically distribute money and goods to where they are needed. In practice, this does not work perfectly as there is no true wage flexibility. The Eurozone members trade heavily with each other (intra-European trade is greater than international trade), and most recent empirical analyses of the 'euro effect' suggest that the single currency has increased trade by 5 to 15 percent in the euro-zone when compared to trade between non-euro countries.
- A risk sharing system such as an automatic fiscal transfer mechanism to redistribute money to areas/sectors which have been adversely affected by the first two characteristics. This usually takes the form of taxation redistribution to less developed areas of a country/region. This policy, though theoretically accepted, is politically difficult to implement as the better-off regions rarely give

up their revenue easily. Theoretically, Europe has no bail-out clause in the Stability and Growth Pact, meaning that fiscal transfers are not allowed, but it is impossible to know what will happen in practice. Of course, during the 2010 European sovereign debt crisis, the no bail-out clause was de facto abandoned in April 2010.

- Participant countries have similar business cycles. When one country experiences a boom or recession, other countries in the union are likely to follow. This allows the shared central bank to promote growth in downturns and to contain inflation in booms. Should countries in a currency union have idiosyncratic business cycles, then optimal monetary policy may diverge and union participants may be made worse off under a joint central bank.

While Europe scores well on some of the measures characterizing an OCA, it has lower labour mobility than the United States and similarly cannot rely on fiscal federalism to smooth out regional economic disturbances.

The second Mundell's OCA model with international risk sharing tries to explain how exchange rate uncertainty will interfere with the economy. Supposing that the currency is managed properly, the larger the area, the better. In contrast with the previous model, asymmetric shocks are not considered to undermine the common currency because of the existence of the common currency. This spreads the shocks in the area because all regions share claims on each other in the same currency and can use them for dumping the shock, while in a flexible exchange rate regime, the cost will be concentrated on the individual regions, since the devaluation will reduce its buying power. So, despite a less fine tuned monetary policy the real economy should do better.

**Managed Floating with No Predetermined Path for the Exchange Rate**

The monetary authority attempts to influence the exchange rate without having a specific exchange rate path or target. Indicators for managing the rate are broadly judgmental (e.g., balance of payments position, international reserves, parallel market developments), and adjustments may not be automatic. Intervention may be direct or indirect (e.g. verbal).

**Independently Floating Exchange Rate or Floating Exchange Rate**

The exchange rate is market-determined, with any official foreign exchange market intervention aimed at moderating the rate of change and preventing undue fluctuations in the exchange rate, rather than at establishing a level for it.

Source: Classification of Exchange Rate Arrangements and Monetary Policy Frameworks. Data as of June 30, 2004. http://www.imf.org/external/np/mfd/er/2004/eng/0604.htm.

## 6.3 Restoring economic balance under fixed exchange rate

Self-study: FRANK, R.H. – BERNANKE, B.S. (2007) *Principles of Economics*. McGraw-Hill, 3th edition. 2007. Ch 30, p.863 -901. ISBN-13: 978-0-07-312567-1.

The central bank that adopts a fixed exchange rate has to keep the exchange rate stable. In the event of an imbalance in the foreign exchange market (e.g. a pressure on depreciation or appreciation of the currency), the central bank has to enter the market and carry out intervention. In the case of the depreciation pressure, the central bank buys domestic currency because of the excess supply of domestic currency selling its foreign exchange reserves. Foreign exchange reserves fall, so the domestic money supply does. Conversely, when there is the appreciation pressure, the central bank must raise an insufficient supply of domestic currency purchasing foreign exchange reserves and offering domestic currency. This will increase the domestic money supply and central bank's foreign exchange reserves. We should add that we assume that intervention in the foreign exchange market is unsterilized. In the case of sterilized interventions, the central bank through the sale or purchase of securities tries to neutralize the impact of transactions with foreign exchange reserves to money supply.

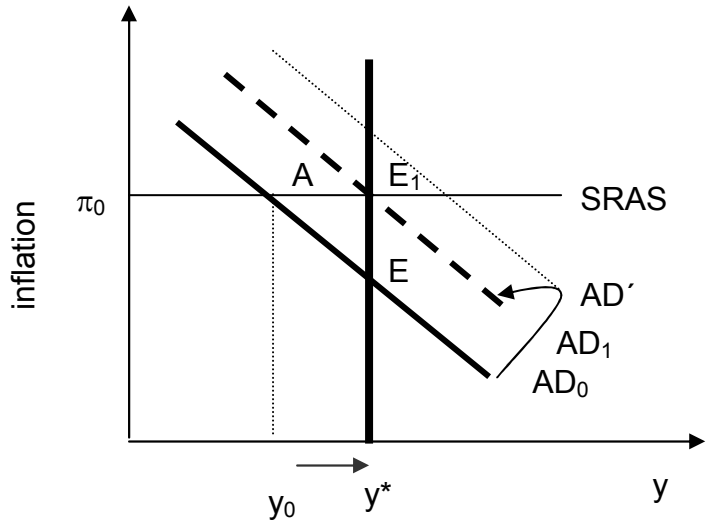
Fixed exchange rate regime limits flexibility of the monetary policy. For example, if the economy falls into a recession, the central bank can't use its traditional tools to eliminate the recessionary gap (cutting interest rates), because it would cause pressures on the fixed exchange rate. Assuming perfect capital mobility, domestic interest rates are equal to foreign ones and under the fixed exchange rate, the economic balance can be rebuild only through adjusting domestic price level (domestic inflation). The change in price level (inflation) is not launched immediately, but with some a time delay. In the short run, the exchange rate and the price level remain unchanged. Over some period of time, say in the medium term, the price level (inflation rate) is to adjust. In the time of a recession, as we know, relative prices are falling, thus inflation is slowing. Lower domestic price level means a real (not nominal) depreciation, or it reduces the price of domestic goods relative to the price of foreign goods. As a result, the demand for imports declines and demand for

exports increases in the contrast. This will improve the trade balance, increase export production and subsequently output. Recessionary gap is gradually closed. So while in the short term the economy remains in recession, in the medium term, the equilibrium is restored through the adjustment of the real exchange rate.

Monetary policy is under the fixed exchange rate regime ineffective because a change in interest rates is assumed to be a source of imbalance in the foreign exchange market. And this imbalance calls the central bank to intervene in the foreign exchange market. In this particular case, the reduction in interest rates would raise the pressure on the nominal exchange rate to depreciate. But the central bank would have to support the domestic currency buying it. The purchase of domestic currency would reduce money supply and nominal interest rates rise back to its original level.

Fiscal policy (particularly fiscal expansion) is under fixed exchange rate regime successful. Higher government spending, as a measure supporting the recession-ridden economy, increases aggregate demand, and consequently inflation. Higher inflation calls for a interest hike by the central bank. Higher interest rate causes the appreciation pressures on the domestic currency. The central bank would intervene in the foreign exchange market: selling domestic currency and buying foreign one. As a result, the money supply increases, resulting in a decline in interest rates. No crowding-out effect occurs. Fiscal measures are thus very effective. However, the aggregate demand is not going to move in full extent of additional government spending, since a part of new government spending might direct into imports reducing the gain in aggregate demand. Thus, the aggregate demand might shift to $AD_1$ instead of the AD' ignoring an induced increase in import. The impact on inflation but it is not clear-cut. It depends on the strength of two opposing factors: self-correction process working in recession, pushing down inflation, and demand-driven inflation. In our case, we assume that both factors are roughly equally strong, so their opposite price effects compensate themselves.

**Graph 4 Recesionary gap – fixed exchange rate**




## 6.4 Restoring economic balance under floating exchange rate

The central bank under floating exchange rate regime does not enter the foreign exchange market. In a situation of economic imbalance (see point A in the graph), the central bank can independently move with interest rates, so independently apply its instruments. In a recessionary gap, the central bank will seek to reduce real interest rates by reducing its key interest rates in the purpose to support aggregate demand. The decrease in real interest rates will not support only interest-sensitive spending as consumer spending on debt and debt-financed investment, but the decline in domestic interest rates is expected to cause a weakening of nominal exchange rate (due to a decrease in demand for currency). Weaker nominal exchange rate leads to a weakening of the real exchange rate (assuming constant price levels at home and abroad). The price of imported goods increases, while the price of exported goods in foreign currency falls. As a result, import is likely to fall, while export increases, and net exports will improve. The AD line moves north due to increased consumption, investment and net exports (in the graph to the line $AD_1$) to point $E_1$ – the long-term equilibrium. At the point $E_1$, the original rate of inflation and the potential output is again reached. This does not mean that the entire adaptation process does not change inflation rate. The inflation rate in a recession, of course, tends to decrease (SRAS may initially decline toward the $SRAS_1$), however, due to

weakening of the nominal exchange rate, prices of imported goods go up (SRAS would move back up), so the final effect may be about the initial rate of inflation, as shown in the graph.

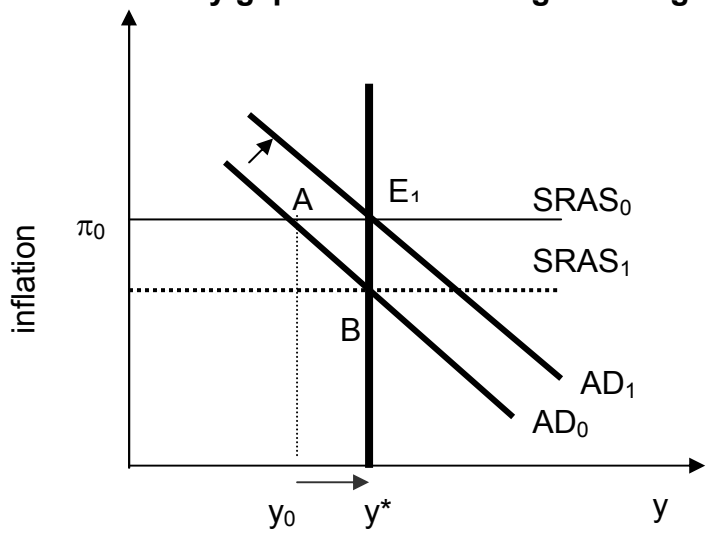
To restore the economic equilibrium may also occur through self-correction of the economy. The recessionary gap forces inflation rate (or price level) down. The SRAS line falls to $SRAS_1$. The economy reaches the short-term equilibrium at point B. The fall in domestic inflation (or price level) causes a decline in interest rates, resulting in real and nominal depreciation. Lower interest rates and a weaker exchange rate support aggregate demand, and the AD line moves northeast. Because of higher aggregate demand and rising import prices (see the effect of a nominal depreciation) inflation moves back up to its original level. The SRAS line is returning to the position $SRAS_0$. The economy finally stabilizes at the long term equilibrium point $E_1$. The length of the automatic adjustment will depend on the flexibility of the economy. Generally, it is expected that the balance won't be restored in the short term rather than medium term. If there is a risk that the self-correction process takes a long time, the central bank might opt to cut its key interest rate.

Also fiscal policy might react by increasing government spending. But what will happen? Increased government spending shifts the AD line to the northeast (to $AD_1$). Higher AD means, however, higher inflation and inflation expectations. The central bank, whose primary objective is to maintain price stability, is forced to respond: to raise its key interest rates. As a result, real interest rates go up and interest-sensitive spending goes down. Moreover in open economy, higher interest rates and higher inflation cause a real and nominal currency appreciation that has a negative impact on net exports. Thus, the result might be the return of the aggregate demand back to the original level of $AD_0$. In this case, we are speaking about full **international crowding-out affect**.

Under floating exchange rate regime, an economy imbalance may be corrected through a) the central bank action: e.g. a reduction in interest rates causing exchange rate to depreciate and/or through b) the self-correction of domestic price level (or the inflation rate) and subsequent real depreciation. **While monetary policy**

**under floating exchange rate regime and perfect capital mobility is most effective, fiscal policy is ineffective in restoring economic balance due to the so-called international crowding-out**.

**Graph 5 Recessionary gap and free floating exchange rate**



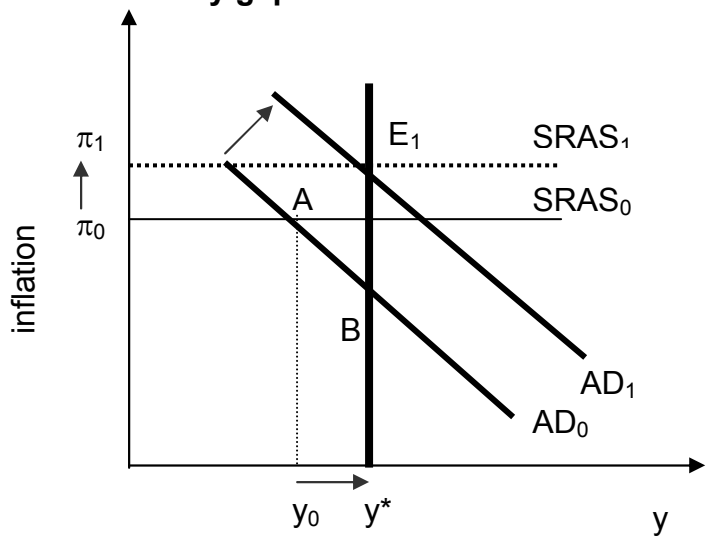
**Box 2 International Crowding-out affect**

International crowding-out affect: In the classical view, the expansionary fiscal policy also decreases net exports, which has a mitigating effect on national output and income. When government borrowing increases interest rates, it attracts foreign capital from foreign investors. This is because, all other things being equal, the bonds issued from a country executing expansionary fiscal policy now offer a higher rate of return. In other words, companies wanting to finance projects must compete with their government for capital so they offer higher rates of return. To purchase bonds originating from a certain country, foreign investors must obtain that country's currency. Therefore, when foreign capital flows into the country undergoing fiscal expansion, demand for that country's currency increases. The increased demand causes that country's currency to appreciate. Once the currency appreciates, goods originating from that country now cost more to foreigners than they did before and foreign goods now cost less than they did before. Consequently, exports decrease and imports increase.

### 6.4.2 Devaluation of fixed exchange rate

The adoption of a fixed exchange rate regime is not an irrevocable commitment. In the event of a deep and protracted economic imbalance and huge social costs associated with an self-correction of an economic imbalance, the fixed exchange rate might be finally removed and replaced with a free exchange rate; or the current regime might be maintained but the value of the fixed exchange rate has to be adjusted (to be devaluated or revaluated). So, the central bank decides to intervene and devaluate the domestic currency. The devaluation of nominal exchange rate increases the cost of imports and reduces the foreign price of exports. This will improve the trade balance and increase aggregate demand. Devaluation affects the domestic price level, hence inflation. Higher import prices and pressure of employees to raise their nominal wages mirror in the domestic prices, and inflation will rise gradually. The short-term supply curve (SRAS) will shift to the north. If the devaluation rate is ‘properly’ managed, the AD line shifts to the point where the ’new‘ SRAS line intersects the potential output. The final outcome is the rebuild of the long-term equilibrium at higher inflation rate indeed.

**Graph 6 Recessionary gap and devaluation**




## 6.5 Balance of payments

Self-study: BURDA, M. – WYPLOSZ, Ch. (2001) *Macroeconomics – A European Text*. 3th edition. Oxford University Press, 2001. Ch. 2, p.32-37. ISBN 0-19-877-650-0.

A balance of payments (BOP) sheet is an accounting record of all monetary transactions between a country and the rest of the world. These transactions include payments for the country's exports and imports of goods, services, and financial capital, as well as financial transfers. The BOP summarizes international transactions for a specific period, usually a year (or a quarter and month), and is prepared in a single currency, typically the domestic currency for the country concerned. Sources of funds for a nation, such as exports or the receipts of loans and investments, are recorded as positive or surplus items. Uses of funds, such as for imports or to invest in foreign countries, are recorded as negative or deficit items.

When all components of the BOP sheet are included, it must sum to zero with no overall surplus or deficit. For example, if a country is importing more than it exports, its trade balance will be in deficit, but the shortfall will have to be counter balanced in other ways – such as by funds earned from its foreign investments, by running down

reserves or by receiving loans from other countries. While the overall BOP sheet will always balance when all types of payments are included, imbalances are possible on individual elements of the BOP, such as the current account. This can result in surplus countries accumulating hoards of wealth, while deficit nations become increasingly indebted. Historically there have been different approaches to the question of how to correct imbalances and debate on whether there is something governments should be concerned about. With record imbalances held up as one of the contributing factors to the financial crisis of 2007–2010, plans to address global imbalances have been high on the agenda of policy makers since 2009.

Composition of the balance of payments sheet (the IMF definition)
The BOP has 2 key parts: the current account and the financial account.

The current account shows the net amount a country is earning if it is in surplus, or spending if it is in deficit. It is the sum of the balance of trade (net earnings on exports minus payments for imports), factor income (or income balance: earnings on foreign investments minus payments made to foreign investors; dividends, bond yields, shares on profits) and cash transfers and capital account (includes of capital transfers and the acquisition and disposal of non-produced, non-financial assets).
It is called the current account as it covers transactions in the "here and now" - those that don't give rise to future claims.

The financial account records the net change in ownership of foreign assets. It includes the reserve account (the international operations of a nation's central bank), along with loans and investments between the country and the rest of world (but not the future regular repayments/dividends that the loans and investments yield; those are earnings and will be recorded in the current account). The financial account is divided into foreign direct investment, portfolio investment including debt and equity securities, other investment such as loans etc., and central banks' foreign reserves.

**Foreign direct investment** (FDI) or foreign investment refers to the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is

the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. It usually involves participation in management, joint-venture, transfer of technology and expertise. There are two types of FDI: inward foreign direct investment and outward foreign direct investment, resulting in a net FDI inflow (positive or negative) and 'stock of foreign direct investment', which is the cumulative number for a given period. Direct investment excludes investment through purchase of shares that does not exceed 10% of voting stock.

From an analytical point of view, the so-called **reinvestment of earnings** is also very important. It is the profit which a foreign investor re-invests in the local business so leaves the profit in the country and doesn't draw the funds out of the country. The reinvestment of earnings is recorded in the income balance of CA on the one side and on the other side in the foreign direct investment in FA. For analytical purposes, reinvestment of earnings is deducted from foreign direct investment account to quantify 'new' acquired foreign investments, which is a source of additional demand for currency and thus has power to affect exchange rate.

**Table 3 Current Account of the Czech Republic**

| millions of USD | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| **A. Current Account** | **-3 557,9** | **-5 746,9** | **-1 255,1** | **-6 201,4** | **-7 187,9** |
| Trade balance | 2 843,2 | 5 909,4 | 6 332,6 | 4 232,2 | 2 812,5 |
| Exports | 95 147,4 | 122 697,1 | 146 232,4 | 107 535,7 | 126 353,8 |
| Imports | 92 304,2 | 116 787,7 | 139 899,8 | 103 303,5 | 123 541,3 |
| Balance of services | 1 999,6 | 2 439,0 | 3 913,2 | 3 447,7 | 3 442,6 |
| Credit | 13 940,8 | 16 916,9 | 21 811,5 | 20 382,0 | 21 645,8 |
| Transportation | 3 799,9 | 5 036,3 | 6 267,0 | 4 678,2 | 5 094,3 |
| Travel | 5 540,9 | 6 382,9 | 7 207,3 | 6 478,1 | 6 670,6 |
| Other services | 4 600,0 | 5 497,7 | 8 337,2 | 9 225,7 | 9 880,9 |
| Debit | 11 941,2 | 14 477,9 | 17 898,3 | 16 934,3 | 18 203,2 |
| Transportation | 2 754,4 | 3 621,5 | 4 459,0 | 3 317,5 | 4 122,8 |
| Travel | 2 765,5 | 3 645,4 | 4 587,1 | 4 078,0 | 4 062,2 |
| Other services | 6 421,3 | 7 211,0 | 8 852,2 | 9 538,8 | 10 018,2 |
| Income balance | -7 485,6 | -12 735,3 | -10 515,8 | -13 297,3 | -13 352,6 |
| Credit | 5 674,0 | 7 487,2 | 10 130,5 | 4 918,2 | 4 540,8 |
| Debit | 13 159,6 | 20 222,5 | 20 646,3 | 18 215,5 | 17 893,4 |
| Current transfers | -915,1 | -1 360,0 | -985,1 | -584,0 | -90,4 |
| Credit | 2 214,7 | 3 150,5 | 3 974,0 | 3 338,4 | 3 919,1 |
| Debit | 3 129,8 | 4 510,5 | 4 959,1 | 3 922,4 | 4 009,5 |
| **B. Capital Account** | **379,5** | **1 020,5** | **1 779,5** | **2 195,9** | **1 767,3** |
| Credit | 636,2 | 1 107,3 | 2 575,3 | 4 038,2 | 2 075,2 |
| Debit | 256,7 | 86,8 | 795,8 | 1 842,3 | 307,9 |

## Table 4 Financial Account of the Czech Republic

| millions of USD | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| **C. Financial Account** | **4 204,1** | **6 381,8** | **3 594,8** | **8 504,2** | **9 432,9** |
| Direct investment | 4 043,0 | 8 955,4 | 2 262,1 | 1 952,6 | 4 963,8 |
| Abroad | -1 479,3 | -1 640,8 | -4 317,7 | -917,5 | -1 757,1 |
| Equity capital and reinvested earnings | -1 513,9 | -1 297,8 | -4 432,3 | -806,6 | -1 048,6 |
| Other capital | 34,6 | -343,0 | 114,6 | -110,9 | -708,5 |
| In the Czech Republic | 5 522,3 | 10 596,2 | 6 579,8 | 2 870,1 | 6 720,9 |
| Equity capital and reinvested earnings | 5 803,6 | 9 463,4 | 3 508,4 | 4 587,1 | 5 758,7 |
| Other capital | -281,3 | 1 132,8 | 3 071,4 | -1 717,0 | 962,2 |
| Portfolio investment | -1 131,5 | -2 687,5 | -41,8 | 8 588,4 | 8 075,3 |
| Assets | -3 005,9 | -4 845,4 | -497,4 | 3 419,4 | 705,1 |
| Equity securities | -1 938,4 | -3 211,6 | -793,0 | 1 090,7 | -28,1 |
| Debt securities | -1 067,5 | -1 633,8 | 295,6 | 2 328,7 | 733,2 |
| Liabilities | 1 874,4 | 2 157,9 | 455,6 | 5 169,0 | 7 370,2 |
| Equity securities | 267,6 | -268,6 | -1 124,9 | -310,5 | 287,3 |
| Debt securities | 1 606,8 | 2 426,5 | 1 580,5 | 5 479,5 | 7 082,9 |
| Financial derivatives | -282,0 | 27,9 | -803,5 | -381,1 | -219,4 |
| Assets | -502,6 | -868,3 | 2 122,3 | 2 578,8 | 3 441,6 |
| Liabilities | 220,6 | 896,2 | -2 925,8 | -2 959,9 | -3 661,0 |
| Other investment | 1 574,6 | 86,0 | 2 178,0 | -1 655,7 | -3 386,8 |
| Assets | -1 477,7 | -7 098,6 | -5 346,2 | 777,8 | -4 505,5 |
| Long-term | -263,8 | -2 270,9 | -4 053,3 | 1 497,3 | -2 534,2 |
| CNB | | 0,1 | | -0,3 | |
| Commercial banks | -463,6 | -2 234,6 | -4 066,0 | 1 491,6 | -2 551,0 |
| Government | 217,0 | -32,5 | 7,7 | 4,7 | 8,5 |
| Other sectors | -17,2 | -3,9 | 5,0 | 1,3 | 8,3 |
| Short-term | -1 213,9 | -4 827,7 | -1 292,9 | -719,5 | -1 971,3 |
| Commercial banks | 991,0 | -4 431,2 | 545,1 | 716,0 | -15,8 |
| Government | | | | | |
| Other sectors | -2 204,9 | -396,5 | -1 838,0 | -1 435,5 | -1 955,5 |
| Liabilities | 3 052,3 | 7 184,6 | 7 524,2 | -2 433,5 | 1 118,7 |
| Long-term | 3 062,1 | 1 466,1 | 2 550,4 | 130,9 | 13,0 |
| CNB | -0,8 | -0,8 | -0,5 | | |
| Commercial banks | 581,1 | 1 407,5 | 1 129,6 | -761,0 | 276,2 |
| Government | 442,1 | 145,0 | 480,0 | 690,2 | 815,9 |
| Other sectors | 2 039,7 | -85,6 | 941,3 | 201,7 | -1 079,1 |
| Short-term | -9,8 | 5 718,5 | 4 973,8 | -2 564,4 | 1 105,7 |
| CNB | -170,6 | -27,3 | 26,6 | 99,0 | -19,6 |
| Commercial banks | 212,3 | 4 414,0 | 3 415,7 | -2 867,1 | 1 642,1 |
| Government | | | | | |
| Other sectors | -51,5 | 1 331,8 | 1 531,5 | 203,7 | -516,8 |
| **D. Net errors and omissions, valuation changes** | **-933,7** | **-787,3** | **-1 699,8** | **-1 432,4** | **-1 934,7** |
| **E. Change in reserves (-increase)** | **-92,0** | **-868,1** | **-2 419,4** | **-3 066,3** | **-2 077,6** |

The BOP identity:

$$BOP = CA – FA + reserves, \quad (6.7)$$

where CA is current account deficit, FA is financial account. The BOP identity says that if current account deficit is deeper than financial account surplus, central banks' foreign reserves decline (in the BOF identity with positive sign); while if current account deficit is smaller than surplus on financial account, the foreign reserves increase (in the BOF identity with negative sign). We say that foreign reserves is **balancing item** together with any statistical errors and assures.

At high level, by the principles of double entry accounting, an entry in the current account gives rise to an entry in the financial account, and in aggregate the two accounts should balance. A common source of confusion is to exclude the reserve account entry, which records the activity of the nation's central bank. When the reserve account is excluded, the BOP can be in surplus (which implies the central bank is building up foreign exchange reserves) or in deficit (which implies the central bank is running down its reserves or borrowing from abroad).

While the BOP has to balance overall, surpluses or deficits on its individual elements can lead to imbalances between countries. In general, there is concern over deficits in the current account. Countries with deficits in their current accounts will build up increasing debt and/or see increased foreign ownership of their assets. The types of deficits that typically raise concern are:

- A visible trade deficit where a nation is importing more physical goods than it exports (even if this is balanced by the other components of the current account).
- An overall current account deficit.
- A basic deficit which is the current account plus foreign direct investment (but excluding other elements of the financial account like short terms loans and the reserve account.)

The Washington Consensus period saw a swing of opinion towards the view that there is no need to worry about imbalances. Opinion swung back in the opposite direction in the wake of financial crisis of 2007–2009. Mainstream opinion expressed

by the leading financial press and economists, international bodies like the IMF - as well as leaders of surplus and deficit countries - has returned to the view that large current account imbalances do matter.

**Causes of BOP imbalances**

There are conflicting views as to the primary cause of BOP imbalances, with much attention on the US which currently has by far the biggest deficit. The conventional view is that current account factors are the primary cause - these include the exchange rate, the government's fiscal deficit, business competitiveness, and private behaviour such as the willingness of consumers to go into debt to finance extra consumption. An alternative view, argued at length in a 2005 paper by Ben Bernanke, is that the primary driver is the financial account, where a global savings glut caused by savers in surplus countries, runs ahead of the available investment opportunities, and is pushed into the US resulting in excess consumption and asset price inflation. Generally speaking, BOP imbalances tend to manifest as hoards of the reserve asset being amassed by surplus countries, with deficit countries building debts denominated in the reserve asset or at least depleting their supply.

The CA deficit can be covered by so called non-debt and debt capital inflow. **Non-debt financing** (non-debt capital inflow) represents foreign direct investment and purchases of equity securities and participations. Other items in the financial account such as bonds, loans, deposits represent **debt financing**.

**Factors of international capital flow**

1. (Real) interest rates: higher interest rates increase the attractiveness of domestic assets for domestic and foreign capital supporting a net capital inflow. If real interest rates are too low compared with other countries with the same degree of risk and availability of the investment, the economy will face a net capital outflow.
2. Expected change in the exchange rate: if a foreign investor is thinking about an investment into a foreign asset, he is expected to consider not only the interest rate level, but he must take into account the exchange rate developemnt as well. To buy foreign assets, he must first convert his domestic

currency into foreign one by the exchange rate $E_t$ receiving $1/E_t$ units of foreign currency. Holding foreign assets one year, the investor earns $(1/E_t)(1 + i_t^*)$. If he considers to convert the investment income back into local currency, than the return from holding a foreign asset is equal to $(1/E_t)(1 + i_t^*)E^e_{t+1}$, where $E^e_{t+1}$ is the exchange rate expected in the coming year. This means that if the domestic currency depreciates during the period, the return on foreign investment will increase.

3. The degree of risk: high risk of the country, for the given level of real interest rates, reduces the attractiveness of domestic assets for foreign investors. The most commonly used measure of risk assessment that evaluates the ability of a country, society, etc. to meet their obligations towards foreign lenders are so-called sovereign debt ratings. The best known rating agencies that issue credit ratings are Standard&Poor's, Moody's or Fitch-IBCA.
4. The availability of investment: less developed financial markets with a limited range of instruments and low liquidity (the so-called shallow markets) have a lower capacity to attract foreign capital than more developed countries with the mature and high-liquid financial market.

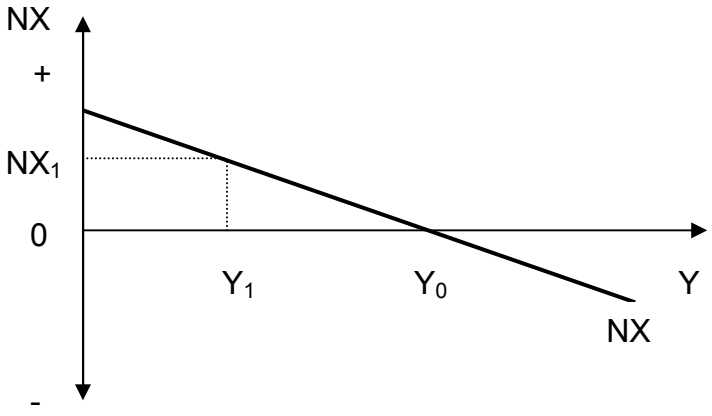
With the knowledge of above said, we can rewrite the BOP identity:

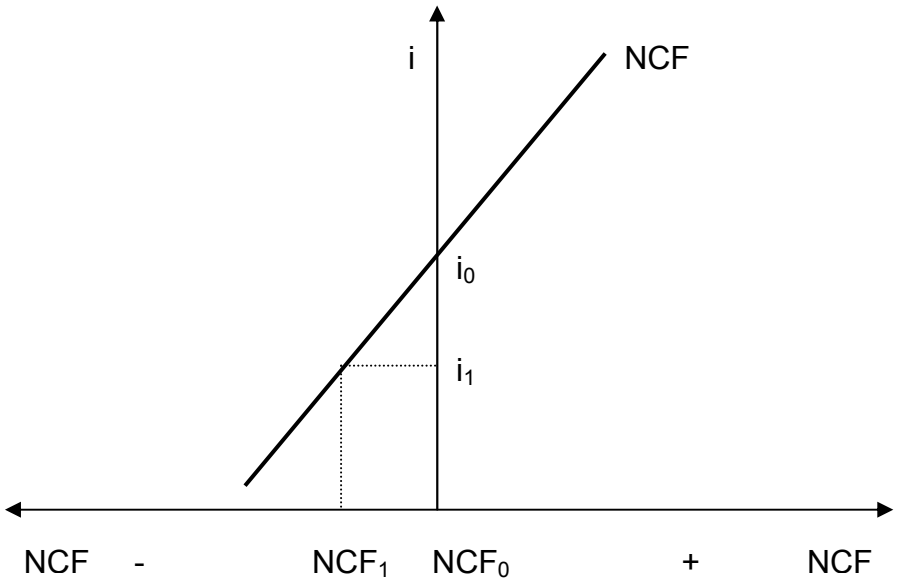
$$\underbrace{X_a - IM_a - mY + \nu R}_{\text{NX (CA)}} + \underbrace{\text{NCF}_a + \rho(i - i^*)}_{\text{NCF (FA)}} = 0, \qquad (6.8)$$

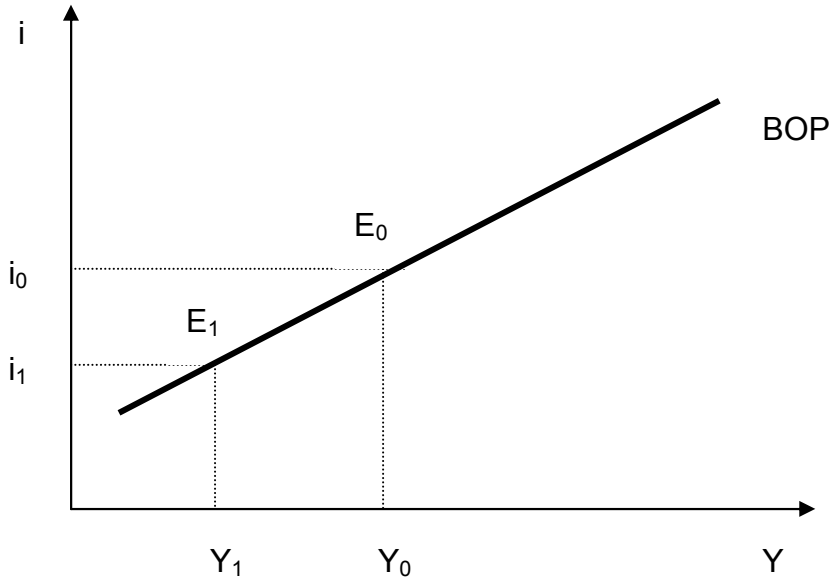
where $X_a$ is autonomous export, $IM_a$ autonomous import, $m$ is the marginal propensity to import, $Y$ is output, $R$ real exchange rate, $NCF_a$ autonomous capital inflow on interest rate differential $(i - i^*)$; $\nu$ is the sensitivity rate of net exports to real exchange rate change, $\rho$ is the sensitivity rate of net capital flows to the interest rate differential (higher interest rate differential means increasing capital inflows into the economy; in the case of the perfect capital immobility, $\rho$ is equal to zero; in the case of perfect capital mobility, $\rho$ corresponds to infinity).

If the BOP identity should be achieve, the deficit in net exports has to be offset by equally high net capital inflows, and vice versa. In other words, the total balance of net exports and net capital inflow must be equal to zero.

**Graph 7 Construction of BOP**



International capital flows are closely linked to domestic savings and investment. To recap, one of the macroeconomic identities says that the difference between national savings and investment is equal to current account balance:

$$S - I = CA. \tag{6.9}$$

If the national investment exceeds national savings, the economy is assumed to record a current account deficit. This implies that the economies with high investment and/or low levels of savings suffer by current account deficits. On the other side, a country with a high saving rate must have either a high investment rate or trade surplus.

Furthermore, if we assume that the current account is fully covered by the financial account (CA = - FA), then we can write that:

$$FA = I - S \tag{6.10}$$

National savings and net capital inflows (recorded as a surplus in the financial account) must equal to the domestic investment in new capital. If national savings is low while investment high, the country must import the capital from abroad (must record surplus in the financial account). Generally, low national savings creates an upward pressure on real interest rates, which in turn attracts foreign capital.

All in all, the low level of national savings (private and public) leads to a current account deficit and promote the inflow of foreign capital. An example is the current U.S. external imbalance. Financing of investment from foreign sources – by capital inflow - has its pitfalls. If investment does not generate sufficient flow of future income, the economy might get into trouble to pay-out debt and the debt crisis threatens the economy.

### 6.5.2 Uncovered interest rate parity

Uncovered interest rate parity assumes that financial investors hold only the bonds with the highest rate of return. The decision whether to invest abroad or at home depends on interest rate differential between domestic and foreign rates (i - i*), and on the expected future course of the exchange rate. The uncovered interest rate parity ignores, however, transaction costs and risk (reflecting uncertain exchange rate course).

International arbitrage implies that the domestic interest rate must be (approximately) equal to the foreign interest rate plus the expected depreciation rate of the domestic currency. This can be derived from following equations:

$$1 + i_t = \left(\frac{1}{E_t}\right)(1 + i_t^*)E_{t+1}^e,$$

Reorganizing that equation:

$$1 + i_t = \left(\frac{E_{t+1}^e}{E_t}\right)(1 + i_t^*). \tag{6.11}$$

The term $(E^e_{t+1})/ E_t$ expresses the expected change in nominal exchange rate and can be rewritten by $(1 + (E^e_{t+1} - E_t)/ E_t)$ and substitute into the equation:

$$1 + i_t = (1 + i_t^*)\left(1 + \frac{E_{t+1}^e - E_t}{E_t}\right).$$

As long as interest rates or expected rate of depreciation are not too large – say, below 20% a year – a good approximation to this equation is given by:

$$i_t \approx i_t^* + \frac{E_{t+1}^e - E_t}{E_t}. \tag{6.12}$$

In other words, the uncovered interest rate parity condition tell us that if financial investors are expecting on average a depreciation of the currency, the domestic interest rate must be higher than the foreign ones, otherwise investment into foreign asset would be more profitable.

### 6.5.3 Balancing mechanisms

One of the three fundamental functions of an international monetary system is to provide mechanisms to correct imbalances.

Broadly speaking, there are three possible methods to correct BOP imbalances, though in practice a mixture including some degree of at least the first two methods tends to be used. These methods are adjustments of exchange rates; adjustment of nations' internal prices along with its levels of demand; and rules based adjustment. Of course, improving productivity and hence competitiveness can also help, as can increasing the desirability of exports through other means, though it is generally assumed a nation is always trying to develop and sell its products to the best of its abilities. But this is not the topic for further paragraphs.

**Rebalancing by changing the exchange rate (monetary mechanism)**

An appreciation of nation's currency relative to others will make a nation's exports less competitive and at the same time make imports cheaper and so will tend to correct a current account surplus. It also tends to make investment flows into the capital account less attractive so will help with a surplus there too. Conversely a nation's currency depreciation makes it more expensive for its citizens to buy imports and increases the competitiveness of their exports, thus helping to correct a deficit (though the solution often doesn't have a positive impact immediately due to the Marshall–Lerner condition).

Exchange rates can be adjusted by government in a rules based or managed currency regime, and when left to float freely in the market they also tend to change in the direction that will restore balance. When a country is selling (exporting) more than it imports, the demand for its currency will tend to increase as other countries ultimately need the selling country's currency to make payments for the exports. The extra demand tends to cause a rise of the currency's price relative to others. When a country is importing more than it exports, the supply of its own currency on the international market tends to increase as it tries to exchange it for foreign currency to pay for its imports, and this extra supply tends to cause the exchange rate to

depreciate. BOP effects are not the only market influence on exchange rates, they are also influenced by differences in national interest rates and by speculation.

**Rebalancing by adjusting internal prices (price mechanism)**

When exchange rates are fixed by a rigid gold standard, or when imbalances exist between members of a currency union such as the Eurozone, the standard approach to correct imbalances is by making changes to the domestic economy. To a large degree, the change is optional for the surplus country, but compulsory for the deficit country. In the case of a gold standard, the mechanism is largely automatic. When a country has a favourable trade balance, as a consequence of selling more than it buys it will experience a net inflow of gold. The natural effect of this will be to increase the money supply, which leads to inflation and an increase in prices, which then tends to make its goods less competitive and so will decrease its trade surplus. However, the nation has the option of taking the gold out of economy (sterilizing the inflationary effect) thus building up a hoard of gold and retaining its favourable balance of payments. On the other hand, if a country has an adverse BOP its will experience a net loss of gold, which will automatically have a deflationary effect, unless it chooses to leave the gold standard. Prices will be reduced, making its exports more competitive, and thus correcting the imbalance. While the gold standard is generally considered to have been successful up until 1914, correction by deflation to the degree required by the large imbalances that arose after WWI proved painful, with deflationary policies contributing to prolonged unemployment but not re-establishing balance. Apart from the US, most former members had left the gold standard by the mid 1930s.

**Rebalancing by adjusting demand (so-called Keynesian income mechanism)**

A possible method for surplus countries such as Germany to contribute to re-balancing efforts when exchange rate adjustment is not suitable is to increase its level of internal demand (i.e. its spending on goods). While a current account surplus is commonly understood as the excess of earnings over spending, an alternative expression is that the current account surplus is the excess of savings over investment (see the above identity CA = S – I). If a nation is earning more than it spends, the net effect will be to build up savings, except to the extent that those

savings are being used for investment. If consumers can be encouraged to spend more instead of saving; or if the government runs a fiscal deficit to offset private savings; or if the corporate sector divert more of their profits to investment, then any current account surplus will tend to be reduced. However, in 2009 Germany amended its constitution to prohibit running a deficit greater than 0.35% of its GDP and calls to reduce its surplus by increasing demand have not been welcome by officials, adding to fears that the 2010s will not be an easy decade for the Euro zone. Contrary, if the country runs a CA deficit (since national investment exceeds national savings), it should decrease its demand (particularly domestic absorption: A = C + I + G) by increasing public or private savings. Lower domestic expenditures reduce demand on import and the CA deficit falls.

**Rules based rebalancing mechanism**

Nations can agree to fix their exchange rates against each other, and then correct any imbalances that arise by rules based and negotiated exchange rate changes and other methods. The Bretton Woods system of fixed but adjustable exchange rates was an example of a rules based system, though it still relied primarily on the two traditional mechanisms. Keynes, one of the architects of the Bretton Woods system, had wanted additional rules to encourage surplus countries to share the burden of rebalancing, as he argued that they were in a stronger position to do so and as he regarded their surpluses as negative externalities imposed on the global economy. Keynes suggested that traditional balancing mechanisms should be supplemented by the threat of confiscation of a portion of excess revenue if the surplus country did not choose to spend it on additional imports. However, his ideas were not accepted by the Americans at the time. In 2008 and 2009, American economist Paul Davidson had been promoting his revamped form of Keynes's plan as a possible solution to global imbalances which in his opinion would expand growth all round with out the downside risk of other rebalancing methods.

## 6.6 Stabilization policy in open economy

The objectives of the stabilization macroeconomic policy in an open economy can be divided into internal and external.

**Internal objective** of the stabilization macroeconomic policy is to achieve potential output, natural rate of unemployment, relatively low and stable inflation.

**External objective** of the stabilization policy is the external balance in the sense of BOP identity (-CA = FA). This means that there is no change in foreign exchange reserves of the central bank.

In an open economy, policymakers need to achieve two goals of macroeconomic stability: internal and external balances. **Internal balance** is a state in which the economy operates at its potential level of output, i.e., it maintains the full employment of a country's resources and relatively stable and low inflation.
**External balance** is attained when a country is running neither excessive current account deficit nor surplus; in the perfect world, zero net sum of current and financial account or constant volume of foreign exchange reserves of the central bank is achieved; in the narrower sense, the external balance is identified with a balanced balance of net exports (NX = 0) or current account (CA = 0);

Balance of payments $\longrightarrow$ Balance of Central Bank

$$BOP = CA + FA = + DR$$

Attaining internal and external balances requires two independent policy tools (see Swan diagram). One is expenditure changing policy and the other is expenditure switching policy:

a) **Expenditure changing policy** - it determines the absolute level of total expenditure in the economy (consumer spending, government consumption,

investment, expenditure on exports or imports; the tools are the key interest rates, money supply, changes in government spending, taxes, etc;

b) **Expenditure switching policy** - it affects the composition of a country's expenditure on foreign and domestic goods. More specifically, it is a policy to balance a country's current account by altering the composition of expenditures on foreign and domestic goods. Not only does it affect current account balances, but it can influence total demand, and thereby the equilibrium output level; the policy tools: devaluation or revaluation of the exchange rate, customs duties and quotas, etc.

### 6.6.1 Swan diagram

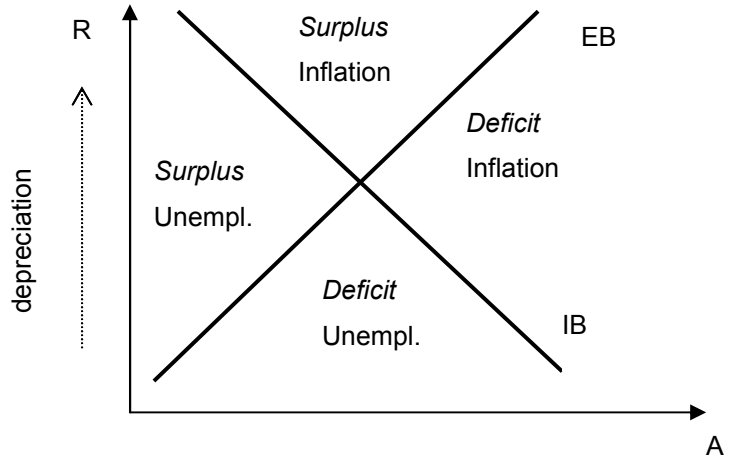
A Swan diagram, also known as the Australian model, represents the situation of a country with a currency peg and zero capital mobility. It also assumes that the Marshall-Lerner condition is met. Under these conditions, the external balance is simplified to the current account balance. The concept was developed by Trevor Swan in 1955.

Two lines IB and EB represent a country's respective internal (employment vs. unemployment) and external (current account deficit vs. current account surplus) balance with the axes representing real exchange rate *R* and domestic absorption *A* (C + I + G). The diagram is used to evaluate the changes to the economy that result from policies that either affect domestic expenditure or the relative demand for foreign and domestic goods.

The IB line - internal balance line - showing all combinations of absorption of the economy and the real exchange rate, under which the internal balance is achieved (actual output is equal to the potential output). IB is a decreasing line with absorption *A*, because higher absorption supporting actual output, ceteris paribus, must be offset by the real appreciation, which makes exports more expensive and thus reducing net exports surplus. The EB line – the external balance line - is again a combination of absorption and the real exchange rate, at which the external balance (zero increase in foreign exchange reserves) is achieved. The EB line is increasing with absorption, since higher domestic expenditures increases demand on imports

and to maintain external balance the real exchange rate depreciation is needed to support exports. The points off these lines are the points of economic imbalance. The point above IB line shows the situation when the domestic absorption is too high for any level of real exchange rate and, as a result, inflation accelerates.
Below the IB line, domestic absorption is too small, and consequently unemployment increases while inflation declines. Above the EB line, the domestic absorption is too low for a given level of real exchange rate and the result is a current account surplus. Below the EB line, the real exchange rate is too strong causing a CA deficit.

**Graph 8 Swan diagram**

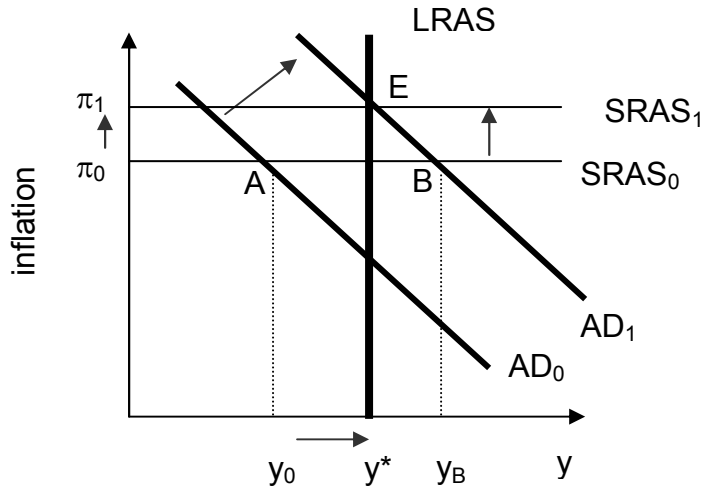



Now we analyze the four basic types of economic imbalances:

**1. Trade surplus and unemployment (recessionary gap)** - economic policy makers might consider increasing spending or lowering taxes (fiscal policy), or cutting interest rates (monetary policy). These measures will support aggregate demand and short-term output, and reduce unemployment. Higher domestic demand will increase demand for goods and services from abroad, enhancing imports and eliminate the trade surplus. This is a non-conflict situation - the internal and external balance is achievable through the expenditure changing policies. Within context of our AS - AD model, an increase in aggregate demand (a part of domestic demand gain might induce additional increase in imports, so the final increase in AD is lower) shifts the economy to short-term equilibrium at point B, above potential. Firms raise relative prices, inflation goes up and the SRAS line moves to the north. As a result, the output

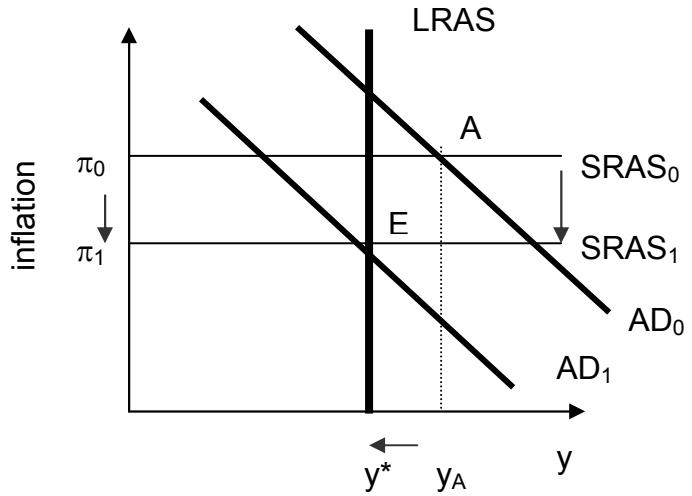
runs at its potential and inflation rate accelerates, since in our case the policy measures overestimated the recession depth and underestimated the impact of the expansionary measures on inflation. Higher inflation rate will likely cause a real exchange rate appreciation that reduces in further step the trade surplus.

**Graph 9 Recessionary gap**



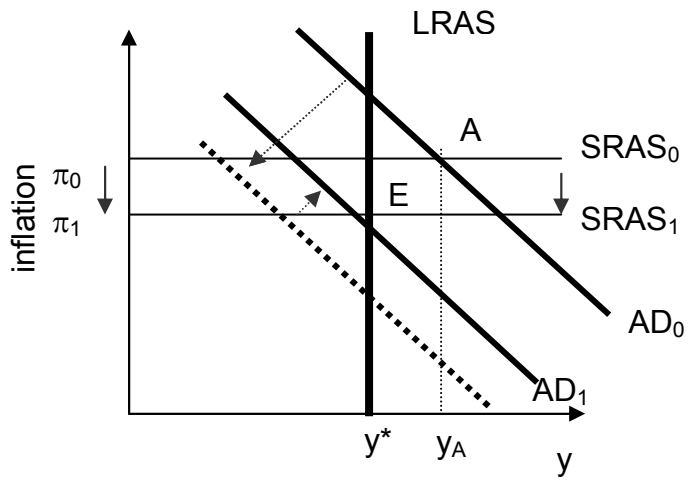

**2. Trade surplus and inflation** - this situation represent the conflict between two policy objective; higher expenditures would reduce trade surplus but at the same time accelerate inflation. By contrast, reduction in expenditure would eliminate the inflation gap, but, unfortunately, would reduce imports and increase the trade surplus. Therefore, it is necessary to use a combination of policy changing expenditure (decreasing them) and expenditure switching policy (from the domestic sector towards foreign one). Policy-makers can revaluate the (fixed) currency and at the same time raise taxes or interest rates. But the policy of reducing expenses must have a greater impact on the economy than the expenditure switching policy! In our AD-AS model, the AD line shifts to the southwest (because of declining domestic demand and net exports). Decline in AD causes a decrease in inflationary expectations and in relative prices. The SRAS line moves south until it reaches the long-term equilibrium at point E.

**Graph 10 Trade surplus and inflation**



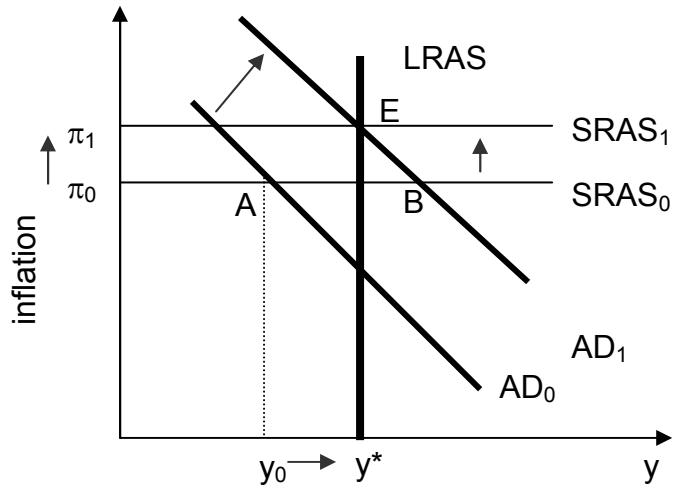

**3. Trade deficit and the inflation gap (see CR 96/97)** - it is a non-conflict situation - using the tightening policy measures (tax increases or interest rates hikes or reducing government spending), domestic demand and imports fall down. The trade deficit will be reduced. At the same time, inflation decelerates since demand pressures will ease off. In our AS-AD model, aggregate demand will shift south but the drop in AD will be partially compensated by lower imports (or by improving net export). As a result, the drop in aggregate demand will be finally less visible (from $AD_0$ to $AD_1$). The SRAS line declines south because of declining relative prices and inflation expectations.

**Graph 11 Trade deficit and inflation**



**4. Trade deficit and unemployment** - it is a conflict situation – the expenditure changing policy might solve only one of the problem but at the same time to increase the extent of the second one (for example, higher government expenditures would reduce unemployment but simultaneously deepen the current trade deficit). Thus, the policy makers have to use both type of policies: expenditure changing (rising spending) and expenditure switching policy (from foreign goods to domestic goods). For example, the policy makers devaluate the currency. Weaker currency would cut the foreign price of domestic products and enhance the domestic prices of imports. As a result, trade balance improves (we assume the validity of the Marshall-Lerner condition). And the expansionary expenditure policy (higher government spending, or lower tax rate, or lower interest rates) would close the recessionary gap. The final affect of expenditure enhancing policy mustn't overrun the impact of the devaluation. In our AS-AD model, the AD shifts north; higher relative prices and the price effect of the currency's devaluation cause the inflation to raise. Inflation expectations move up and the SRAS line follows.

**Graph 12 Trade deficit and unemployment**



## 6.7 The Principle of effective market classification

Economic theory recommends some basic rules of using the instruments of economic policy in relation to its objectives. The so-called Tinbergen's rule states that for each and every policy target there must be at least one policy tool. Or if there are fewer tools than targets, then some policy goals will not be achieved. According the so-called Mundell's principle any policymaker should choose for each objective such instrument that has the greatest influence on the target, or choosing the most effective instrument. This principle is sometimes called the **principle of effective market classification**.

The rule that had been finally implied in the practice is known as **Meade's principle of responsibility**, which requires that for each macroeconomic objective one policy institution has to be responsible. This institution should dispose with an exclusive influence on the policy target. Mr. James Meade is also the author of the rule which says that achieving internal and external balance, the country needs to use two independent instrument of economic policy, with different effects on output and balance of payments.

In practice, policymakers tend to follow multiple target at the same time and thus they have to choose a set of effective instrument. Unfortunately, the decisions are made under uncertainty, with insufficient information.

**The principle of effective market classification**

The principle of effective market classification states that policies should be paired with the objectives on which they have the most influence. If this principle is not followed, there will develop a tendency either for a cyclical approach to equilibrium or for instability.

In the graph, we depict the principle of effective market classification through two line of internal (*IB*) and external balance (*EB*) that are achieved by different combination of fiscal and monetary policy stance. The IB line is the locus of pairs of fiscal and monetary policy stance that permits continuing full employment equilibrium in the market for goods and services. Along this schedule, potential output (or full-

employment output) is equal to aggregate demand for output, or, what amounts to the same condition, demand for domestic goods is equal to full-employment output less exports. The internal-balance line must have a negative slope, because increases in the interest rate (tighter monetary conditions) called for expansive fiscal policy (a deeper budget deficit), in order to maintain potential output. If this condition is not fulfilled, there will be inflationary pressure above the IB line since for the given monetary policy stance is the fiscal policy too expansive leading to excessive aggregate demand. On the left side of the IB line, there is reccesionary gap (higher unemployment) – for the given monetary policy stance, the fiscal policy is too tight restricting the aggregate demand and causing the negative output gap.

External balance implies the balance of foreign trade (in the case of capital immobility) or the balance of foreign trade with the financial account (in the case of capital mobility). The foreign-balance schedule (EB), traces the locus of pairs of monetary policy (e.g. interest rates) and fiscal policy (e.g. budget surpluses) along which the foreign reserves stay stable (e.g. external balance is reached). This schedule has a negative slope because restrictive monetary policy (or an increase in the interest rate) attracts foreign capital and lowers domestic expenditure and hence imports, and finally improves the external balance; whereas a fiscal tightening (decrease in the budget surplus) raises domestic expenditure and hence imports, worsens the external balance. Thus, from any point on the schedule an increase in the rate of interest would cause an external surplus, which would have to be compensated by a reduction in the budget surplus (or deepening of budget gap) to restore equilibrium. Points above and to the right of the foreign-balance schedule refer to external surpluses, while points below and to the left of the schedule represent external deficits.

In below figure, the two schedules separate four quadrants, distinguished from one another by the conditions of internal imbalance and external disequilibrium. Only at the point where the schedules intersect, the policy variables are in equilibrium.

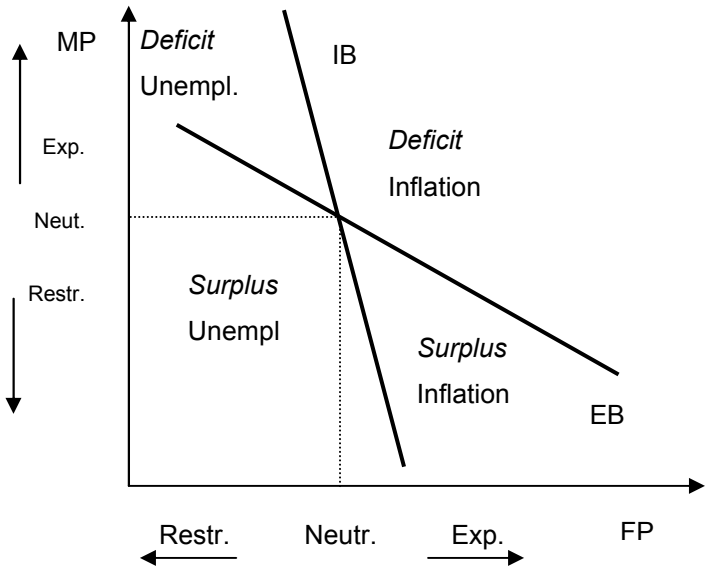
Both the internal-balance and the foreign-balance schedules thus have negative slopes. But it is necessary also to compare the steepness of the slopes. Which of the

schedules is steeper? It depends on the capital mobility and adopted exchange rate regime. As we can see below, in the case of fixed exchange rate, the IB line is steeper against the x-asix since the fiscal policy is assumed to be more effective in solving internal disequilibrium than the monetary policy.

a) **the system of fixed exchange rates:** monetary policy ought to be aimed at external objectives and fiscal policy at internal objectives (we assume limited capital mobility). Within the system of fixed exchange rates, the central bank has to intervene on the foreign exchange market, once the stability of the fixed exchange rate is endangered. If the central bank aims removing the internal imbalances (e.g. a recession) by cutting interest rate, a decrease in interest rates at home (while the foreign rates stay stable) would lead to a decline in demand for domestic currency and depreciation pressures. The central bank would have to buy the domestic currency and sell foreign exchange reserves to maintain the exchange rate fixed. The demand for domestic currency increases back, and domestic interest rate as well. Internal economic imbalances would be not solved. Also in conditions of the perfect capital mobility, it is true that the fiscal policy is more effective to solve internal imbalance under the fixed exchange rate, since the subsequent growth of money supply (because of higher government spending) prevents domestic interest rates to increase and to cause a crowding-out of private expenditure.

The practical implication of the theory, when stabilization measures are limited to monetary policy and fiscal policy, is that a surplus country experiencing inflationary pressure should ease monetary conditions and raise taxes (or reduce government spending), and that a deficit country suffering from unemployment should tighten interest rates and lower taxes (or increase government spending).

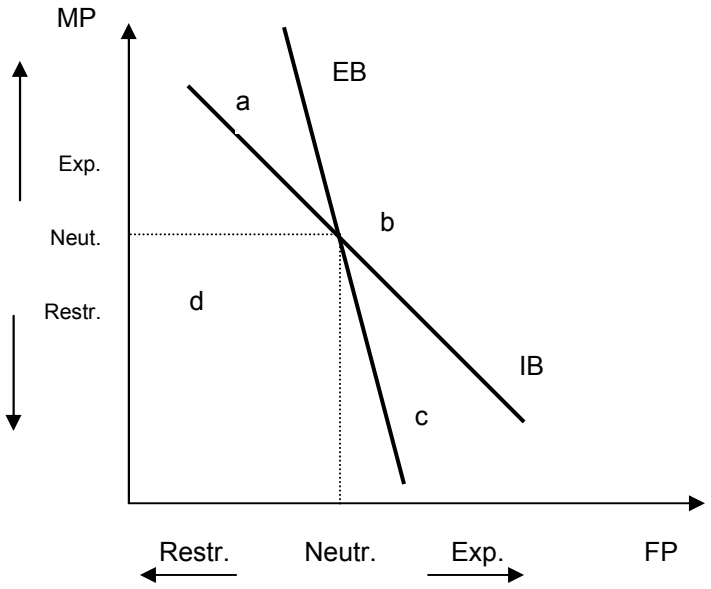
**Graph 13 The principle of effective market classification - fixed exchange rate**




| Economic disequilibrium | Fiscal Policy | Monetary Policy |
|---|---|---|
| Unemployment and surplus | expansionary | expansionary |
| Inflation and surplus | restrictionary | expansionary |
| Inflation and deficit | restrictionary | restrictionary |
| Unemployment and deficit | expansionary | restrictionary |

B) under the system of flexible exchange rates and imperfect capital mobility, the slope of the IB line to the y-axis (monetary policy) is greater because the monetary policy is more effective in following the internal balance. The central bank is no longer tied to the obligation to maintain a fixed exchange rate. For example, in the case of high unemployment rate and trade deficit, the central bank should reduce interest rates in the purpose to increase the domestic demand and output. At the same time, lower domestic interest rates will reduce demand for domestic currency, that consequently weaken. A weaker exchange rate will encourage exports and discourage imports. As a result, domestic demand strengthens, the unemployment rate decreases and the weaker currency improves the external balance.

**Graph 14 The principle of effective market classification - flexible exchange rate**




Notes:
a … surplus and inflation
b … deficit and inflation
c … deficit and unemployment
d … surplus and unemployment

| Economic disequilibrium | Monetary Policy | Fiscal Policy |
|---|---|---|
| Unemployment and surplus | expansionary | expansionary |
| Inflation and surplus | restrictionary | expansionary |
| Inflation and deficit | restrictionary | restrictionary |
| Unemployment and deficit | expansionary | restrictionary |

c) under free floating (or flexible) exchange rates and high capital mobility, the both curves are identical; therefore it does make no sense to distinguish between the fiscal and monetary policy; We can conclude that the adjustment in exchange-rate restores the external balance, while the fiscal and/or monetary policy measures help restoring internal balance.

## 6.8 External Debt and the Arithmetic of the CA deficit

External debt (or foreign debt) is that part of the total debt in a country that is owed to creditors outside the country (nonresidents). The debtors can be the government, corporations or private households. The debt includes money owed to private commercial banks, other governments, or international financial institutions such as the IMF and World Bank.

External debt rises from the accumulation of the past current account deficits financed by debt owed to foreign creditors. The current account deficit may be, as we already know, financed by the non-debt or debt sources.

Formally, gross external debt, at any given time, is the outstanding amount of those actual current, and not contingent, liabilities that require payment(s) of principal and/or interest by the debtor at some point(s) in the future and that are owed to nonresidents by residents of an economy.

Generally external debt is classified into four heads: (1) public and publicly guaranteed debt; (2) private non-guaranteed credits; (3) central bank deposits; and (4) loans due to the IMF.

**Table 5 External debt in the Czech Republic**

| | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|
| **External debt - total (bn CZK)** | **1 142,2** | **1 193,7** | **1 374,7** | **1 607,4** | **1 589,7** |
| ***External debt - total (in % GDP)*** | 38,3% | 37,0% | 38,9% | 43,6% | 43,8% |
| out of it (i) long-term (in % of total) | 69% | 73% | 70% | 69% | 74% |
| (ii) short-term (in % of total) | 31% | 27% | 30% | 31% | 26% |
| External debt - debtors | | | | | |
| - Central bank and commercial banks | 24% | 23% | 28% | 30% | 26% |
| - government | 36% | 31% | 20% | 11% | 18% |
| - other sectors | 40% | 46% | 52% | 59% | 56% |

Source: CNB, ARAD – Time Series Database, Sept 2010.

### 6.8.2 External debt sustainability

Sustainable debt is the level of debt which allows a debtor country to meet its current and future debt service obligations in full, without recourse to further debt relief or rescheduling, avoiding accumulation of arrears, while allowing an acceptable level of economic growth.

World Bank and IMF hold that 'a country can be said to achieve external debt sustainability if it can meet its current and future external debt service obligations in full, without recourse to debt rescheduling or the accumulation of arrears and without compromising growth'. According to these two institutions, external debt sustainability can be obtained by a country 'by bringing the net present value (NPV) of external public debt down to about 150 percent of a country's exports or 250 percent of a country's revenues'. High external debt is believed to have harmful effects on an economy.

**Indicators of external debt sustainability**

There are various indicators for determining a sustainable level of external debt. While each has its own advantage and peculiarity to deal with particular situations, there is no unanimous opinion amongst economists as to one sole indicator. These indicators are primarily in the nature of ratios i.e. comparison between two heads and the relation thereon and thus facilitate the policy makers in their external debt management exercise. These indicators can be thought of as measures of the country's 'solvency' in that they consider the stock of debt at certain time in relation to the country's ability to generate resources to repay the outstanding balance.

Examples of debt burden indicators include the (a) **debt to GDP ratio**, (b) **foreign debt to exports ratio**. This set of indicators also covers the structure of the outstanding debt including the (d) share of foreign debt, (e) **short-term debt**, and (f) **concessional debt in the total debt stock**. A second set of indicators focuses on the short-term liquidity requirements of the country with respect to its debt service obligations. These indicators are not only useful early-warning signs of debt service problems, but also highlight the impact of the inter-temporal trade-offs arising from past borrowing decisions. Examples of liquidity monitoring indicators include the (a)

**debt service to GDP ratio**, (b) **foreign debt service to exports ratio**. The final indicators are more forward looking as they point out how the debt burden will evolve over time, given the current stock of data and average interest rate. The dynamic ratios show how the debt burden ratios would change in the absence of repayments or new disbursements, indicating the stability of the debt burden. An example of a dynamic ratio is the ratio of the average interest rate on outstanding debt to the growth rate of nominal GDP – for more detail see the arithmetic of the current account deficit.

**So-called safe value of external debt indicators**

Net foreign debt (gross debt minus foreign exchange reserves and other assets like gold and loans) is better indicator of a country's foreign debt, as it takes into account the very liquid assets that are immediately available to pay out the (part of) debt. However, this indicator does not take into account the size and the economic strength of the particular country. Hence, in international comparisons, we apply following ratios.

- Gross external debt to GDP ratio takes into account the size of the economy, if the ratio is higher than 40%, the country's debt is considered to be high as it brings already high cost of debt service.
- Net foreign debt to exports ratio indicates how much (annual) export is needed to pay existing debt, for example 50% means that the existing foreign debt payment requires six months export; The safe limit of this ratio is cited 20% (less than three months' exports).
- Foreign reserves to short-term debt ratio reflects the degree of short-term debt coverage (including debt service payable from long-term debt) and as such it is an indicator of liquidity of the external debt, since foreign exchange reserves are immediately available source of debt payment.
- Debt service to GDP ratio reflects the economic burden of the country; rapid growth of the debt and/or significant increase in interest rate on debt (during an economic slowdown) could threaten the economic stability.
- Foreign debt service to exports ratio also inform about the economic burden, but in relation to export performance; it expresses how large proportion of the

exports must be devoted to debt payments next year; the safe limit is considered to be roughly 20%.

- ❖ foreign reserves to imports ratio - the so-called current ratio indicates the country's ability to easily pay for imports; this ratio shows how much of the annual import is covered by foreign exchange reserves, 50% is deemed sufficient.

These safe values of key indicators of external debt are only indicative, reflecting a sort of general trend or an long-term average. However, the safe limit of external debt varies from country to country. According to the study done by Carmen Reinhart[1] is a safe limit of the gross external debt to GDP ratio in emerging economies only about 35% of GDP and is, thus, lower than in developed economies. And for countries with poor credit history and period of high inflation, the threshold is even lower. The historical data also show that most debt defaults and debt restructuring (namely 40%) occurred in countries whose foreign debt amount 41-60% of GDP. Looking to history, the countries were unable to reduce its external debt to output burden by growing out of its debts (with the exception of Switzerland in 1985). Most of highly indebted countries managed to significantly reduced its foreign debt applied one of the following two means: i) default or restructuring, or ii) significant debt repayment.

**Growth in external debt - the problem of sustainability of current account deficit**

Arithmetic, which we applied for the government debt, can be used for the external debt as well.

The current account deficit financed by debt are marked $CA^d$ and foreign debt $B$. An increase in external debt can be expressed as:

$$B_t - B_{t-1} = CA^d_{(t)}. \qquad (6.13)$$

[1] Reinhart (2004).

Now, we exclude from the current account deficit the interest payments ($iB_{t-1}$) and get the so-called **primary current account deficit**:

$$CA^d_t = \text{primary } CA^d_t + iB_{t-1}. \quad (6.14)$$

Using the above two equations, we get:

$$B_t - B_{t-1} = \text{primary } CA^d_t + iB_{t-1}.$$

Reorganizing:

$$B_t = (1 + i)B_{t-1} + \text{primary } CA^d_t \quad (6.15)$$

What's the conclusion from above?

- if the economy avoids the primary current account deficit (primary $CA^d_t = 0$), external debt grows at a rate equal to the interest rate (1 + i):

$$B_t = (1 + i)B_{t-1} + 0$$

So, external debt keeps growing despite the balance of primary CA.

- If we would like stabilize external debt at the level of $B_{t-1}$, the economy has to achieve a primary surplus equal to interest repayments on existing debt:

$$0 = B_t - B_{t-1} = iB_t + \text{primary } CA^d_t.$$

- If external debt should be fully repaid during year *t*, the primary current account has to turn into a surplus equal to an increase of the debt in previous year :

$$B_t = (1 + i)B_{t-1} + \text{primary } CA^d_t.$$

If $B_t = 0$, then:

$$0 = (1 + i)B_{t-1} + \text{primary } CA^d_t.$$

And if we assume that $B_{t-1} = (1 + i)_{t-2}$ then:

$$(1 + i)_{t-1} = \text{primary } CA_t \text{ surplus.}$$

In practice, this means that the longer the foreign debt increases, the higher the primary current account surplus will have to be reached. In order to stabilize foreign debt, it must be removed the current account deficit. To be removed by the current account deficit, a primary surplus of current account that covers the interest cost of existing foreign debt would have to be reach. The full repayment of the external debt

would require a primary surplus of the CA equal to an increase of the debt in previous year.

In cross-country comparison, external debt similarly to the public debt is monitored through the external debt ratio: foreign debt to nominal GDP ($B_t/Y_t$).

The equation of external debt (6.15) can be rewritten as follows:

$$\frac{B_t}{Y_t} = (1+i)\frac{B_t - 1}{Y_t} + \frac{primary\ CA_t^d}{Y_t}. \qquad (6.16)$$

Multiplying the ratio of foreign debt, $B_{t-1}/ Y_t$ by output at time t-1 ($Y_{t-1}$):

$$\frac{B_t}{Y_t} = (1+i)\frac{Y_{t-1}}{Y_t}\frac{B_{t-1}}{Y_{t-1}} + \frac{primary\ CA_t^d}{Y_t},$$

The ratio of $Y_t$ and $Y_{t-1}$ is the reverse ratio of $Y_t / Y_{t-1}$. Furthermore, we know that the annual growth of output is calculated as $(Y_t - Y_{t-1})/Y_{t-1}$, and if we denote the annual growth of output by the letter *g*, then
$Y_t/ Y_{t-1} = 1+g$ . Using these to assumptions, rewrite the proceeding equation as

$$\frac{B_t}{Y_t} = (1+i)\frac{1}{1+g}\frac{B_{t-1}}{Y_{t-1}} + \frac{primary CA_t^d}{Y_t}.$$

For number below 20% we can replace the formula $(1 + i)/(1 + g)$ by $(i-g)$:

$$\frac{B_t}{Y_t} - \frac{B_{t-1}}{Y_{t-1}} = (i-g)\frac{B_{t-1}}{Y_{t-1}} + \frac{primary\ CA_t^d}{Y_t}. \qquad (6.17)$$

The final relation says that the change in external debt to GDP ratio is equal to sum of (a) the difference between nominal interest rates and nominal GDP growth rate times the initial external debt ration and (b) the primary current account deficit to GDP. If primary balance of current account is equal to zero, then the external debt ratio to GDP grows by $(i-g)$. The formula implies that the ratio of external debt to GDP will be higher:

- the higher nominal interest rates
- the lower the growth rate of output
- the higher initial external debt ratio
- the higher ratio of the primary current account deficit to GDP.

The ratio of external debt to GDP would remain constant if the primary surplus of current account balance will increase at a rate equal to (*i-g*).

The caution rule regarding external debt says that if (nominal) interest rates in an economy exceeds the (nominal) growth rate of output, the primary balance of current account should gradually turn into a surplus, to avoid the instability of the economy somewhere in the future. Otherwise, it may threaten the economy by a loss of foreign investors' confidence, causing finally a **debt crisis**.

**Table 6 Debt service (in % of export) – regional comparison**

| | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|
| **Czech Republic** | 7,9 | 9,3 | 9,3 | 9,3 | 10,5 |
| **Hungary** | 22,1 | 34,8 | 34,0 | 28,3 | 25,2 |
| **Poland** | 20,4 | 27,5 | 22,3 | 25,1 | 34,6 |
| **Slovakia** | 19,4 | .. | 19,4 | 13,8 | |

Source: World Bank, March 2007.

### Balance of payments crisis - Currency crisis

A BOP crisis, also called a currency crisis, occurs when a nation is unable to pay for essential imports and/or service its debt repayments. Typically, this is accompanied by a rapid decline in the value of the affected nation's currency. Crises are generally preceded by large capital inflows, which are associated at first with rapid economic growth. However a point is reached where overseas investors become concerned about the level of debt their inbound capital is generating, and decide to pull out their funds. The resulting outbound capital flows are associated with a rapid drop in the value of the affected nation's currency. This causes issues for firms of the affected nation who have received the inbound investments and loans, as the revenue of those firms is typically mostly derived domestically but their debts are often denominated in a reserve currency. Once the nation's government has exhausted its foreign reserves trying to support the value of the domestic currency, its policy options are very limited. It can raise its interest rates to try to prevent further declines in the value of its currency, but while this can help those with debts in denominated in foreign currencies, it generally further depresses the local economy.

## Assigned reading

- FRANK R.H. – BERNANKE, B.S. (2009) *Principles of Economics*. Chapter 27. Fourth Edition. USA: McGraw-Hill, 2009. 836 s. ISBN 978-0-07-128542-1.
- BLANCHARD, O. (2002). *Macroeconomics.* 5th edition, Prentice-Hall 2002, Ch.18-21. p.371-459. ISBN 0-13-110301-6.
- REINHART, C. (2004). *Debt intolerance*. http://mpra.ub.uni-muenchen.de/13398/1/MPRA_paper_13398.pdf.
- BURDA, M. – WYPLOSZ, Ch. (2001). *Macroeconomics – A European Text*. 3th edition. Oxford University Press, 2001. Ch. 2 p. 32-37, Ch. 7 p. 151-167, Ch. 20 p. 513-530. ISBN 0-19-877-650-0.

## Self-study

- BALDWIN R.- WYPLOSZ, Ch. *The Economics of European Integration.* McGraw-Hill, 4th edition. 2012. ISBN: 9780077131722.

## Sources

- HORSKA H., www.horska.com
- FRANK, R.H. – BERNANKE, B.S. (2007). *Principles of Economics*. McGraw-Hill, 3th edition. 2007. ISBN-13: 978-0-07-312567-1.
- BLANCHARD, O. (2002). *Macroeconomics.* 5th edition, Prentice-Hall 2002, Ch.26. ISBN 0-13-110301-6.
- BURDA, M. – WYPLOSZ, Ch. (2001). *Macroeconomics – A European Text*. 3th edition. Oxford University Press, 2001. Ch. 15. ISBN 0-19-877-650-0.
- CINCIBUCH, M. – PODPIERA, J. (2004). *Beyond Balassa-Samuelson: Real Appreciation in Tradables in Transition Countries*. Working Paper Series. 9/2004. Czech National Bank, Prague, December 2004.
- Czech National Bank. *Inflation Report*. Different issue.

- IMF (2004). Classification of Exchange Rate Arrangements and Monetary Policy Frameworks. Data as of June 30, 2004. http://www.imf.org/external/np/mfd/er/2004/eng/0604.htm.
- REINHART, C. (2004). *Debt intolerance*. http://mpra.ub.uni-muenchen.de/13398/1/MPRA_paper_13398.pdf.


## 6.9 Exercises

1. Suppose that the nominal exchange rate YEN/USD is equal to 110. If the price level in Japan is 80 and U.S. 100, what is the real exchange rate between Japanese yen and U.S. dollar? If the price level in Japan increase relative to the U.S., will the real exchange rate of the yen appreciate or depreciate?

2. Calculate the exchange rate of the Hungarian forint (HUF) and the U.S. dollar (USD) applying the PPP method, if the Hungarian consumer price level of a selected basket is 3600 HUF and identical market basket in U.S. costs $20. And second, in the case, that the nominal exchange rate of HUF/USD is equal to 218,is the market exchange rate of the HUF undervalued or overvalued currencies? What's the value of ERDI?

3. Compare the effectiveness of fiscal austerity measure in the form of reduced social transfers under (i) fixed exchange rate system and (ii) free floating. In the case of free floating assume the perfect capital mobility.

4. Using the AS-AD model analyze the effectiveness of the monetary policy in expansionary gap under (i) fixed exchange rate regime and (ii) floating exchange rate and perfect capital mobility.

5. Describe the economic situation of a country where the national central bank was forced to revalue the domestic currency. What will be the impact of the currency's revaluation on the economy? Use the AS-AD model to describe it.

6. In country, interest rates reach 10% in average. Average interest rates in the world are equal to 6%. According to the uncovered interest parity, does the market generally expect appreciation or depreciation of the domestic exchange rate?

7. Analyze the economic situation in the Czech Republic:
i) in 1995-96 with high inflation rate, excessive domestic demand, deepening trade deficit, the wage growth exceeding the labour productivity growth and very low unemployment under fixed exchange rate regime.
b) in 2005, accelerating economic growth but still below potential, stable and low inflation, rapidly declining trade deficit and current account deficit, slower growth in household consumption and floating exchange rate regime.
Propose the optimal mix of stabilization policies according to the principle of effective market classification.

8. For several years, the country B runs current-account deficits that were largely financed by debt. Its external debt reached 60% of GDP. The growth rate of nominal GDP reached steadily 5% and annual interest rate held about 7% p.a.. Under these conditions, the government aims to stabilize the external debt. How big the primary surplus of current account balance must be to reach the target?