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Course:

Economics II (macroeconomics)

Chapter 3

Open Economy and the Determination of Equilibrium Output

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Introduction

The aim of the course is to deepen knowledge of determination of equilibrium output in an open economy with an emphasis on explaining the influence of export and import in shaping the equilibrium of supply and demand balance of foreign trade, explaining the structure of the IS-LM-BP model and its significance as analytical tools for evaluating the effectiveness of macroeconomic policy measures. An integral part of the aim of the lecture is to analyze the fundamental problems of determining the exchange rates in the short and long run.

1 Net export and the equilibrium at the market of goods and services in an open economy

In an open economy, it is necessary to distinguish:

- export of domestic production that means demand for goods and services produced by domestic entities in the country;
- import that is a leakage of current flow of income, when the operators in domestic country portion spend a part of their income on the purchase of foreign production rather than production of domestic producers.

a) Net exports and aggregate demand

The components of aggregate demand in an open economy are: C, I, G and net exports as a new component of aggregate demand and GDP within the open economy.

Characteristics of exports as autonomous components of net exports and the impact of changes:

- foreign income to the size of foreign demand for goods and services;

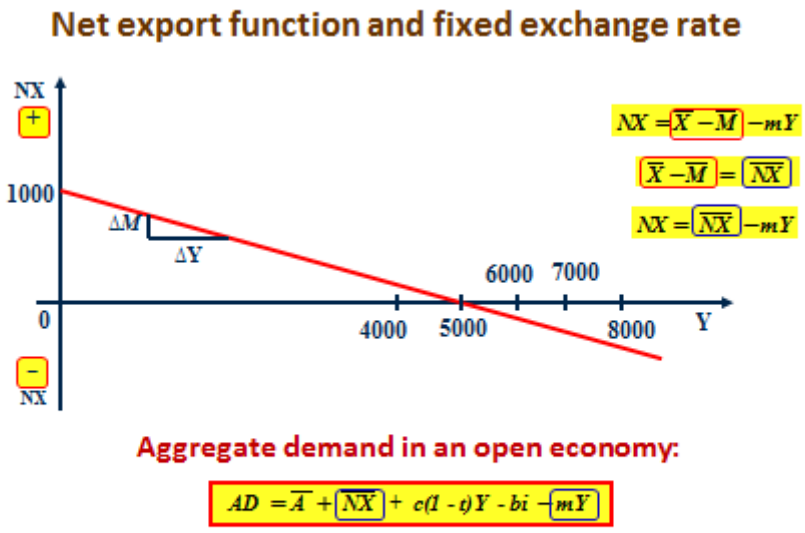
- domestic price level, relative to the foreign price level.

Depreciation (devaluation) and appreciation (revaluation) of domestic currency; the nominal exchange rate changes and their impact on exports and imports

The import consists of autonomous imports that are independent on household income and induced imports that are dependent on the level of domestic income. Sensitivity to changes in import pension changes is measured by marginal propensity to import. It expresses that a part of the increase in income is spent on goods and services produced and imported from abroad.

Net exports function is declining with income growth (see Fig. 3.1), so a function of net exports negative slope. It is necessary to distinguish between net exports in the system of fixed exchange rates and flexible exchange rates.

Fig. 3.1 Net export function and fixed exchange rates



Aggregate demand and simple spending multiplier open economy

b) determination of the equilibrium level of output in an open economy and selected identity of an open economy:

- production equilibrium exists when it leaks (leakages), i.e. savings, net taxes, and imports equal-consumables expenses (injections), which are all expenses, increasing the equilibrium level of income, unlike leaks that represent all expenses, reducing the level of equilibrium production;

- the current account deficit (negative net exports) is invoked by either negative savings of the private sector, i.e a condition in which private investment exceeds private saving, or the budget deficit, i.e. a condition where the total budgeted government spending exceeds tax revenue the government, or both.

Multiplier current account (net exports) - increase in government spending on goods and services leads to a deterioration of the current account (net exports), as domestic players spent part of the pension on imports, which were caused by the growth of income due to government spending:

$$\Delta NX = - \frac{m}{1 - c(1-t) + m} \cdot \Delta \overline{G}$$

Analysis of a simple open economy multiplier and common multiplier.

c) net exports in a system of flexible exchange rates:

The real exchange rate is determined by multiplying the nominal exchange rate and the ratio of price levels in the foreign price level home country and home country expresses competitiveness in international trade.

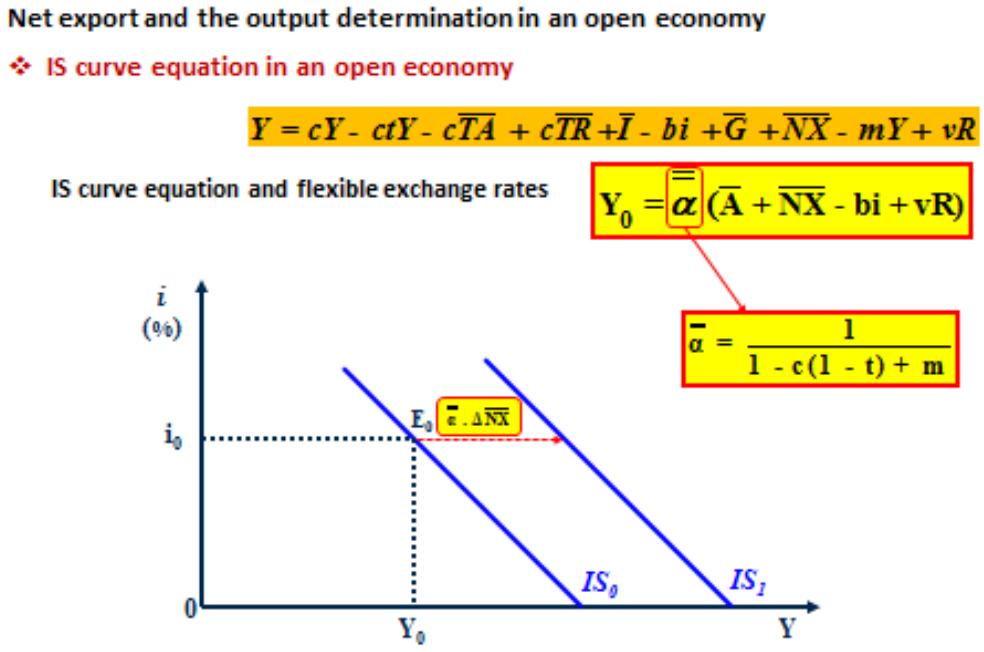
When the real exchange rate increases, there is a real devaluation, the competitiveness of the domestic country increases.

In case of decrease in the real exchange rate, i.e. if there is an appreciation of the real goods, home country becomes relatively more expensive for foreign and domestic entities and home country is losing competitiveness.

d) the derivation of the equation IS curve in an open economy (algebraic), from which it is clear that the balance in the market for goods and services in an open economy with a flexible exchange rate is subject to (determined):

- domestic autonomous expenditure;
- autonomous component of net exports;
- sensitivity of demand for autonomous expenditure on interest rate;
- coefficient of sensitivity of net exports to real exchange rate;
- real exchange rate;
- size of the spending multiplier open economy.

Fig. 3.2 Net export function and the output determination in an open economy



2 Balance of payments, BP curve and equilibrium production

a) The balance of payments = a balance of total payments going from the domestic country abroad and total payments from abroad to the domestic country.

Balance of payments (BP) consists of:

- current account (balance of goods - the trade balance, the balance of services, including balance of income and transfers in the international sphere) - CA;
- capital account, i.e. capital flows from other countries into domestic country (purchase of bonds, shares, setting up accounts in the home country of the foreign entities) minus capital flows from the domestic country to abroad (buying bonds, shares, opening of accounts by domestic residents in abroad ...) - CF.

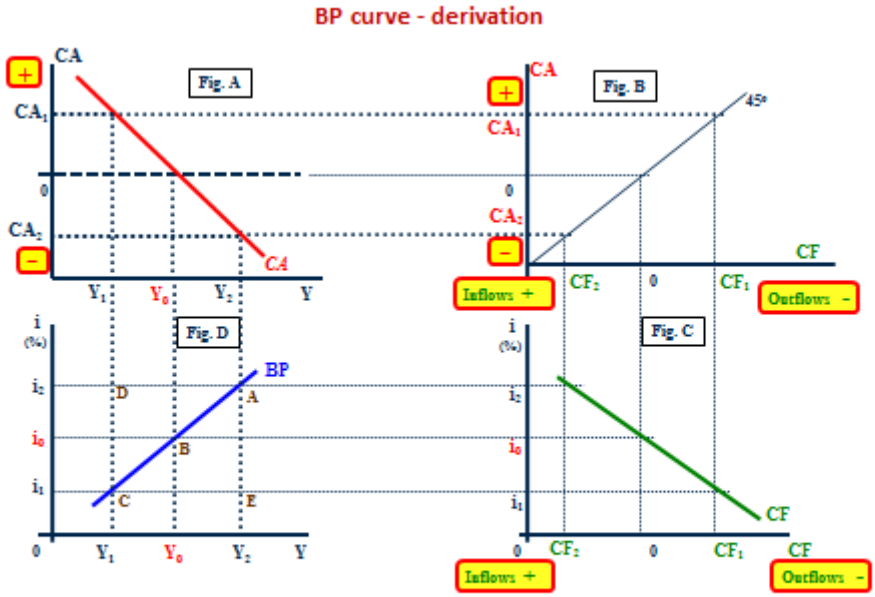
Current account (CA), respectively net exports are determined by foreign income, household income and the real exchange rate.

Capital account (CF) is determined by the interest rate differential, i.e. the difference between the level of interest rates and home country levels (average) global interest rates.

b) balance of payments equilibrium curve (BP) represents a combination of interest rates and levels of income, for which the balance of payments in equilibrium.

BP curve has a positive slope, which is determined by the degree of capital mobility on a global scale (capital mobility may be perfect and imperfect - or perfect capital immobility).

Fig. 3.3 The derivation of BP curve



Location BP curve and the shifts are determined by:

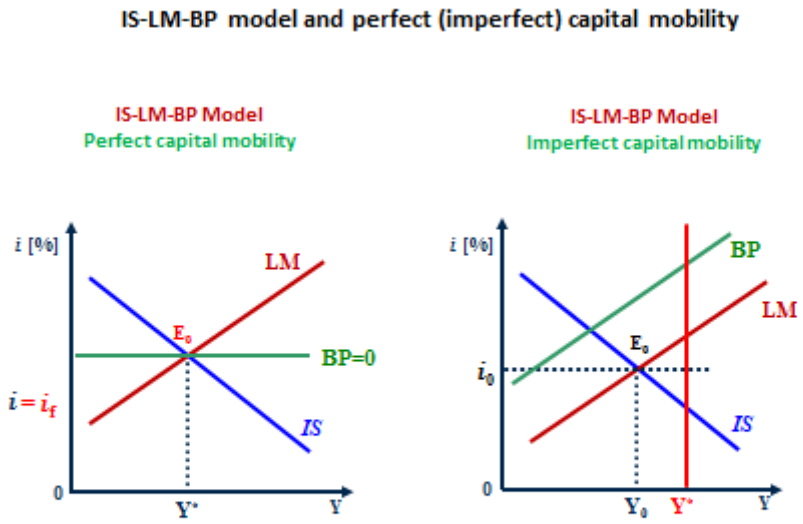
- interest rate;
- income levels;
- the ratio of foreign prices to domestic prices;
- nominal exchange rate.

Points are points outside the curve imbalance.

c) IS-LM-BP model and equilibrium output in case of perfect and imperfect capital mobility

When perfect capital mobility, BP curve is horizontal, i.e. the domestic and foreign interest rates are equal at all levels of the product (retired). In imperfect capital mobility BP curve is positively sloped.

Fig. 3.4 The IS-LM model and perfect, imperfect capital mobility



Model displays internal economic balance, i.e. the balance to aggregate all markets - market goods and services, money market (assets) and the labor market (the economy is on the level of potential output) and also the external balance i.e. the balance of the balance of payments.

When imperfect capital mobility (and fixed exchange rates), the model IS-LM-BP demonstrates the situation where the economy is below the potential output (not full employment), the intersection of IS and LM curves is located rightward from the positively sloped BP curve, i.e. there is balance of payments deficit.

Analysis of the separate effects of net fiscal expansion (restrictions) on the balance of payments of imperfect capital mobility and fixed exchange rates

Algebraic expression (modification) curves IS and LM curves assuming perfect capital mobility and identifying determinants of the equilibrium real exchange rate in the system of flexible exchange rate.

3 Fiscal and monetary policies, perfect capital mobility, fixed and flexible exchange rates

a) Fiscal expansion, perfect capital mobility and a system of fixed exchange rates

Under these conditions, fiscal expansion is very effective because it increases the equilibrium production (and employment).

b) Monetary policy, perfect capital mobility and fixed exchange rates

Mundell-Fleming model reveals important conclusion: at fixed exchange rates and perfect capital mobility the money supply is associated with the balance of payments. Balance of payments deficit caused by a reduction in interest rates due to monetary expansion causes the (small) open economy automatic monetary restriction. Money supply becomes endogenous factor and the central bank cannot under these conditions even control the money supply or interest rate, or the level of equilibrium production.

In the case of monetary restrictions balance of payments the surplus is caused by an increase in interest rates causes an automatic monetary expansion. The central bank under these assumptions cannot control the change of production, or interest rate.

Assuming perfect capital mobility and a fixed exchange rate monetary policy is ineffective in influencing production and the level of interest rates.

c) Fiscal policy, perfect capital mobility and flexible exchange rate

Unlike the fixed exchange rate, where the central bank adopted a commitment to keep the exchange rate of the domestic currency surrenders control of the money supply by providing a combination of monetary balance of payments of the country, in a system of flexible exchange rates the connection between the balance of payments and money supply, there is a central bank can control the supply of real money balances. Central banks usually allow exchange rates to appreciate and depreciate the exchange ratio at the international currency market.

Pure floating is a flexible exchange rate when the central bank does not intervene at international currency markets.

In practice it is often applied monetary system, which is a hybrid between the "pure", completely free exchange rate system and the fixed exchange rate. This hybrid is called “a managed floating” or “dirty floating”. Exchange rates are not fixed, but banks do not keep them completely freely fluctuating, also because banks hold currency reserves.

Assuming perfect capital mobility and flexible exchange rate, fiscal expansion was completely ineffective in influencing income and leads to total international crowding-out effect and appreciation of the domestic currency.

d) Monetary expansion, a system of flexible exchange rates and perfect capital mobility

Monetary expansion in perfect capital mobility and flexible exchange rates leads to increased production and steady depreciation of the domestic currency. The central bank can control the domestic money supply. Monetary policy is very effective in establishing both internal and external balance and the exchange rate passively adapts to changes in the money supply.

Growth in exports in the domestic country and limiting imports due to the depreciation of the domestic currency (due to the increase in the supply of real money balances), and on this basis, output and employment growth, however, it also means that it reduces production (and employment decreases) in other countries, thus promoting exports unemployment.

4 Basic problems of determination of the exchange rate in the long and short term

a) Purchasing power parity theory

The theory of purchasing power parity (PPP) is based on the action of the Law of One Price, which says that in a perfectly competitive market in the absence of transport costs and other barriers to international trade must be identical products sold in different countries for the same price are- If the prices of these goods are expressed in the same currency. Identical goods, according to the Law of One Price sold at the same price worldwide.

Absolute form (verse) and the relative form (verse) purchasing power parity theory.

b) Barriers operation of the law of One Price: deviations of the nominal exchange rate and purchasing power parity.

There are some obstacles debilitating effects of the mechanism of this law, which lies at the base of the theory of purchasing power parity. Generally, the higher these obstacles, such as e.g. traffic and other transaction costs, the greater is the range in which to move the exchange rate at given prices of goods in different countries.

In addition to transport costs (resp. Transaction costs) and various trade restrictions (e.g. tariffs, quotas, etc.) are other obstacles operation of the law of One Price:

- goods and services that are not traded in international trade (i.e. nontradables or non-traded goods).
- imperfect market structures in international trade and the existence of relative prices of identical products in different countries;
- governments implemented fiscal and monetary policy;
- the emergence of new types of products;
- different reference basket of goods and services;
- different speed of adjustment of the exchange rate;
- fluctuations in demand for currency in individual countries.

There are other obstacles that cause differences in the nominal exchange rate from the absolute and relative forms of purchasing power parity theory. These differences are caused by fluctuations in the real economy and also monetary fluctuations.

c) Real and nominal exchange rate and purchasing power parity theory

Real exchange rate expresses the amount of goods that can be bought for 1 currency unit in foreign country in relation to the quantity of goods that can be purchased in domestic country.

Real depreciation, i.e. the increase in the real exchange rate occurs because of declining external purchasing power of the crown when buying goods.

Real appreciation, i.e. drop in the real exchange rate is the decrease of the relative prices of products purchased.

d) supply and demand curves for a currency in the long term

Demand for the domestic currency of the country consists of exports of goods and services for home country (currency demanded the bodies of other countries to pay for exports) and capital inflows into the country. The demand curve for the currency in the long term has a negative slope.

Supply of domestic currency consists of imports of goods and services (domestic actors countries need foreign currency and offer home currency) and capital outflows. Supply curve currency in the long term has a positive slope.

e) The exchange rate in the short term

In the short term the exchange rate is affected by short-term inelasticity of foreign demand for exports home country and even the inelasticity of demand home country after importation. This occurs, for example, when depreciation of the domestic currency for short-term deterioration in the balance of goods and services. The curve has the shape of the capital letter J, and therefore we talk about J-curve phenomenon.

Price elasticity of demand for exports (imports) means the percentage change in exports (imports), which was triggered by the percentage change in price.

5 Devaluation (depreciation), current account and income levels

a) devaluation (depreciation) and current account - access elasticity theory

The problem of the effects of devaluation (depreciation) on the current account of the country and the level of steady income has been theoretically analyzed by A. Marshall in the 20s, A. Lerner in the 30s and J. Robinson and F. Machlup in the thirties and forties of the last century. This approach was developed in the literature called access elasticity theory. Its essence can be formulated as follows: under what

conditions does devaluation (depreciation) of the exchange rate lead to improve the current account (net exports) and to raise the level of equilibrium output?

Marshall-Lerner condition: devaluation (depreciation) will improve the current account only if the sum of the foreign elasticity of demand for exports (ρx) and domestic home country elasticity of demand for imports (ρm) is greater than one.

Marshall-Lerner condition says that the devaluation (depreciation) will improve the current account (CA) only if (ρx + ρm)> 1; when (ρx + ρm) < 1, devaluation will lead to getting worse of the CA; if (ρx + ρm) = 1, then CA devaluation will not improve or getting worse the CA.

Devaluation (depreciation) currently has two effects:

I. Price effect - the home country exports denominated in a currency other countries are cheaper. At the same time devaluation (depreciation) of the domestic currency imports more expensive home country. The price effect of devaluation worsens the current account balance.

II. The effect of volume growth induced devaluation (depreciation) consists in the fact that exports become cheaper, which stimulates increased foreign demand for export production home country and leads in the long term growth of production exported. Rise in price of imports due to devaluation (depreciation) leads to the fact that domestic entities reduce the volume of imported products. The volume effect leads to an improvement in the current account deficit home country.

The resulting effect of devaluation (depreciation) on current account depends on whether price or volume effect of devaluation (depreciation) prevails.

b) the depreciation (depreciation) and current account - absorption approach

Analysis of the impact of devaluation (depreciation) on current account, known as the absorption approach (developed by S. Alexander) is based on the fact that current account imbalances can be understood as the difference between domestic production and domestic spending countries (absorption).

Absorption of the economy (AB = C + I + G) can be divided into two parts:

1. Increasing the absorptive capacity of the domestic economy as a result of increased production (retired). This increase is determined by the marginal propensity to absorb (a), i.e. ΔAB/ΔY.

2. Change absorptive capacity of the domestic economy as a direct effect of devaluation (depreciation) as a result of other factors caused by the devaluation to change the absorption capacity of the country (e.g. the effect of real money balances, etc.).

c) the depreciation (depreciation) and current account equilibrium and production

Terms of action devaluation (depreciation) on increasing equilibrium production:

Employment in the domestic economy is below the full employment (a condition essential but insufficient);

2. The second condition is the effect of the country in terms of trade (terms of trade - T/T).

The overall effect of devaluation (depreciation) depends on - if the Marshall-Lerner condition is fulfilled - whether an increase in net exports due to the depreciation (depreciation) exceeds the negative effect in terms of trade on the economy.

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