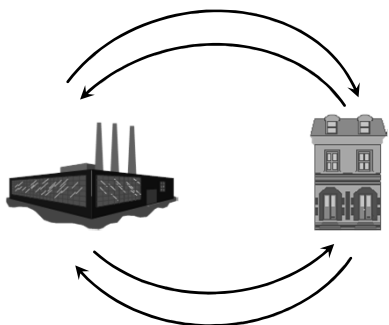


## International Economics

### 2. Economic Growth in Open Economies



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## International Economics

### 2. Economic Growth in Open Economies

- 2.1. The Balance of Payments
- 2.2. The Solow-Swan Model
- 2.3. Economic Policy Conclusions
- 2.4. Questions for Review

Additional Literature:

- ♦ Kapitel 15, Siebert, Horst; Einführung in die Volkswirtschaftslehre; Kohlhammer.
- ♦ Kapitel 27, Abschnitt 9, Baßler, Ulrich, et al.; Grundlagen und Probleme der Volkswirtschaft, Schäfer-Pöschel.

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## International Economics

### 2. Economic Growth in Open Economies

#### 2.1. The Balance of Payments

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### 2. Economic Growth in Open Economies

#### 2.1. The Balance of Payments

➤ The balance of payments records the relationship between a country's merchandise trade and the capital movements of a country with foreign countries.

- The relationship between merchandise trade and capital movements follows from the double-entry bookkeeping system of national accounting.
- It is an accounting identity, which means, it always valid - if all transactions with foreign countries are properly recorded by this bookkeeping system.
- According to neoclassical growth theory (= Solow-Swan model), this relationship represents the direct influence of foreign countries on domestic GDP growth.

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### 2. Economic Growth in Open Economies

#### 2.1. The Balance of Payments

➤ It is easy to derive the balance of payments of a country from the expenditure account of GDP (cf. Macroeconomics AU 1.3.2) and the government budget constraint.

➤ Expenditure account of GDP :

$$\begin{aligned} \text{GDP (=Y)} = & \text{Consumption of Housholds (= C)} \\ & + \text{Net investment (= I)} \\ & + \text{Capital depreciation (= } \lambda * K) \\ & + \text{Government consumption (= G)} \\ & + \text{Exports (= X) } \text{./. Imports (= M)} \end{aligned}$$

➤ Government budget constraint :

$$\begin{aligned} \text{Government consumption (=G)} = & \text{Tax payments (=T)} \\ & + \text{New indebtedness (=D}_G) \end{aligned}$$

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### 2. Economic Growth in Open Economies

#### 2.1. The Balance of Payments

➤ Expenditure account of GDP :

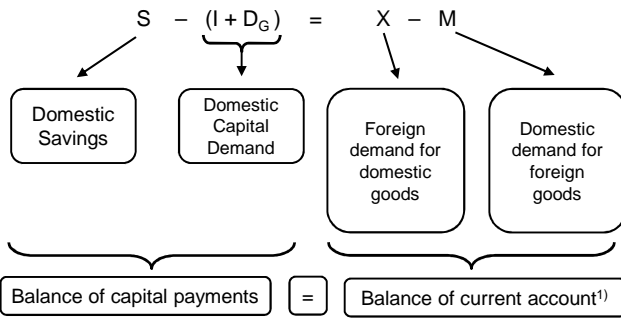
$$\begin{aligned} \text{BIP} &= C + I + \lambda * K + G + X - M \\ \Leftrightarrow \text{BIP} - C - I - \lambda * K - G &= X - M & | \text{G} = \text{T} + \text{D}_G \\ \Leftrightarrow \text{BIP} - C - I - \lambda * K - (\text{T} + \text{D}_G) &= X - M \\ \Leftrightarrow \text{BIP} - \lambda * K - \underbrace{\text{T} - C - (\text{I} + \text{D}_G)}_{\text{S}} &= X - M \\ \Leftrightarrow \text{S} - (\text{I} + \text{D}_G) &= X - M \end{aligned}$$

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## 2. Economic Growth in Open Economies

### 2.1. The Balance of Payments



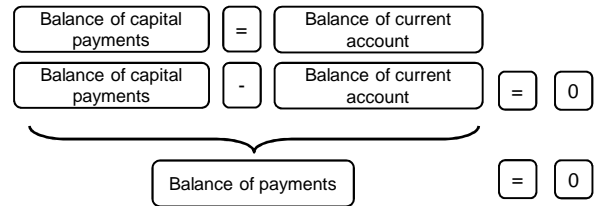
<sup>1)</sup> Strictly speaking is EX-IM only equal to the so called „Net exports“ (Domestic concept). In order to achieve the complete balance of capital and current account (national concept), the balance of income with foreign countries as well as the balance of the transfers between nationals and foreigners must be added. The exact current account balance is obtained if the above calculation steps are carried out not with the GDP but with the Gross National Product (GNP). For the sake of simplicity, these subtleties are neglected.

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## 2. Economic Growth in Open Economies

### 2.1. The Balance of Payments



The settlement of the balance of payments (i.e. balance of payments balance = 0) is a mathematical necessity (tautology), which follows (as seen above) from the expenditure account of GDP.

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| Dt. Kapitalbilanz in Mrd. €   |                       | Dt. Leistungsbilanz in Mrd. €       |                          |
|---|-----------------------|-------------------------------------|--------------------------|
| Dt. Anlagen i. Ausl.  | Ausl. Anlagen i. Dtl. | Export                              | Import                   |
| Direktinvestitionen   |                       | Handelsbilanz                       |                          |
| 28,7  | 35,6                  | Warenausfuhr (fob) 650,5            | Warenimporte (fob) 516,6 |
|   | Saldo -6,9            |                                     | Saldo 133,9              |
| Wertpapieranlagen   |                       | Dienstleistungsbilanz <sup>1)</sup> |                          |
| 69,5  | 105,9                 | Einnahmen 241,1                     | Ausgaben 315,1           |
|   | Saldo -36,4           |                                     | Saldo -74,0              |
| Summe der übrigen Posten <sup>2)</sup>  |                       | Saldo der Leistungsbilanz 59,9      |                          |
| 158,1   | 30,7                  |                                     |                          |
|   | Saldo 127,4           |                                     |                          |
| Saldo der statistisch nicht aufgliederbaren Transaktionen <sup>3)</sup> -24,5 |                       |                                     |                          |
| Saldo der Kapitalbilanz 59,9  |                       |                                     |                          |

<sup>1)</sup> Dienstleistungsbilanz inklusive Bilanz der Erwerbs- u. Vermögenseinkommen und Bilanz der laufenden Übertragungen. <sup>2)</sup> Übrige Posten inklusive Bilanz des Kreditverkehrs und Bilanz der übrigen Anlagen und Veränderung der Währungsreserven der Bundesbank. <sup>3)</sup> Saldo der nicht erfassten Posten und der statistischen Ermittlungsfehler im Leistungs- und Kapitalverkehr

Source: Deutsche Bundesbank

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## 2. Economic Growth in Open Economies

### 2.1. The Balance of Payments

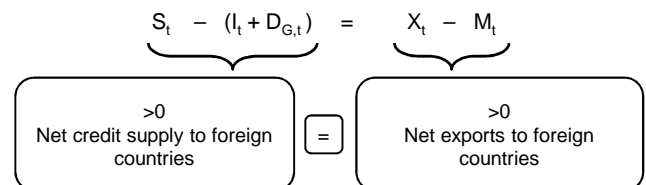
- Sub balance sheets of the capital account balance
- Balance of direct investments
  - ◆ records acquisitions of property, plants, and participation in companies abroad and the corresponding purchases of foreigners in Germany.
- Balance of portfolio investment
  - ◆ records purchases of assets (shares, fixed-rate securities) abroad and the corresponding purchases of foreigners in Germany.
- Balance of remaining assets
  - ◆ records mainly domestic bank lending to foreigners minus foreign bank lending to domestic residents.

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## 2. Economic Growth in Open Economies

### 2.1. The Balance of Payments

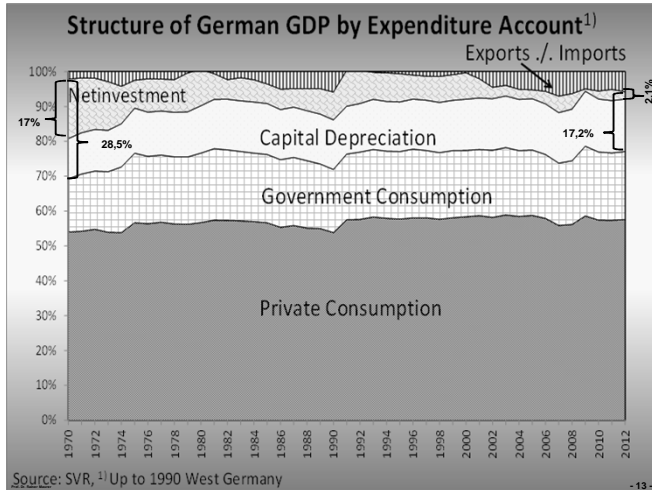


If exports are larger than imports (=positive balance of current account = current account surplus), credit supply to foreign countries must also be larger than credit supply from foreign countries (=positive balance of capital payments).

=> Foreign countries will run into debt, if the current account balance is positive!

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## 2. Economic Growth in Open Economies

### 2.1. The Balance of Payments

$$S_t - (I_t + D_{G,t}) = X_t - M_t$$

$<0$   
 Net credit supply to foreign countries

=

$<0$   
 Net exports to foreign countries

If imports are larger than exports (=negative balance of current account = current account deficit), credit supply to foreign countries must be smaller than credit supply from foreign countries (=negative balance of capital payments).

=> The home country will run into debt, if the current account balance is positive!

## 2. Economic Growth in Open Economies

### 2.1. The Balance of Payments

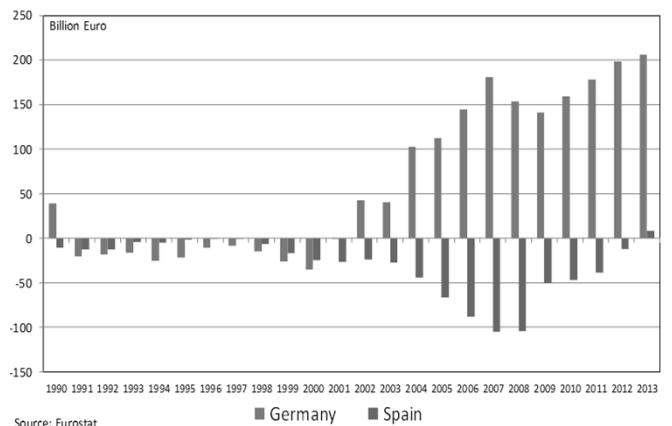
=> Net foreign asset position  
= accumulated capital- resp. current account balances:

|                                   |  |  |
|-----------------------------------|--|--|
| <b>Net foreign asset position</b> |  |  |
|-----------------------------------|--|--|

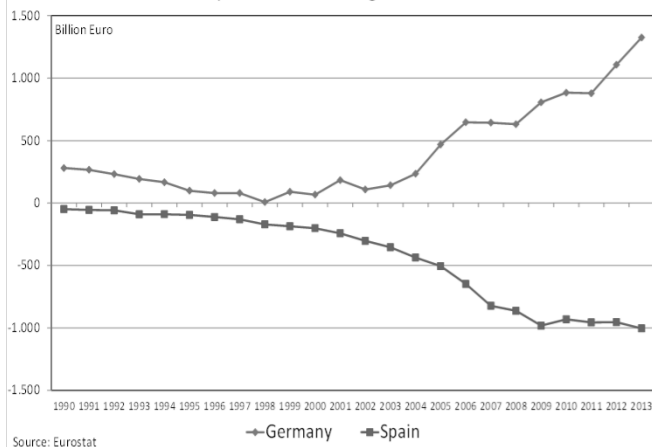
- Important: Due to changes of the Euro denominated market values of assets, deviations from this formula are possible.
- Countries, which typically have positive current account balances, have a growing positive net foreign asset position, i.e. they are accumulating net wealth.
- Countries, which typically have negative current account balances, have a growing negative net foreign asset position, i.e. they run into debt.

Footnote: ...

Development of Current Account Balances



Development of Net Foreign Asset Position



### Digression: The Economic Relationship between Current and Capital Account (1)

The relationship between capital and current account is astonishing: How is it possible to explain economically that the difference between domestic savings (S) and domestic capital demand ( $I + D_G$ ) is always equal to the difference between foreign demand for domestic goods and domestic demand for foreign goods? Two examples:

1<sup>st</sup> example:  $S > (I + D_G) \Leftrightarrow X > M$

= If domestic savings are greater than domestic capital demand ( $S > (I + D_G) \Leftrightarrow$  capital balance  $> 0$ ), the foreign demand for domestic goods must also be greater than the domestic demand for foreign goods  $X > M \Leftrightarrow$  Current balance  $> 0$ ).

The economic explanation is: If the residents save more money than they invest, there is domestic excess supply of savings. In a closed economy this supply surplus would lead to a reduction in the domestic interest rate below the foreign interest rate. In an open economy, however, the savers can place their savings abroad. For this, however, they must demand foreign currency. As a result, the domestic currency depreciates so that domestic goods are becoming cheaper for foreigners and the foreign goods become more expensive for residents. So the foreigners begin to demand more domestic goods ( $X \uparrow$ ) and residents demand less foreign goods ( $M \downarrow$ ). Thus a positive difference of  $X \uparrow - M \downarrow$  results. Via this adjustment process  $S > (I + D_G)$  finally causes  $X > M$ . The domestic currency depreciates until both balances are equal.

2<sup>nd</sup> example:  $S < (I + DG) \Leftrightarrow X < M$

= If domestic savings are smaller than domestic capital demand ( $S < (I + D_G) \Leftrightarrow$  capital balance  $< 0$ ), the foreign demand for domestic goods must also be smaller than the domestic demand for foreign goods  $X < M \Leftrightarrow$  Current balance  $< 0$ .

The economic explanation is: If the residents save less money than they invest, there is domestic excess demand for savings. In a closed economy this supply surplus would lead to an increase in the domestic interest rate above the foreign interest rate. In an open economy, however, the foreign savers can place their savings on the domestic capital market. For this, however, they must demand domestic currency. As a result, the domestic currency appreciates so that domestic goods are becoming more expensive for foreigners and the foreign goods become less expensive for residents. So the foreigners begin to demand less domestic goods ( $X \downarrow$ ) and residents demand more foreign goods ( $M \uparrow$ ). Thus a negative difference of  $X \downarrow - M \uparrow$  results. Via this adjustment process  $S < (I + D_G)$  finally causes  $X < M$ . The domestic currency appreciates until both balances are equal.

This relative complex adjustment process works "backstage" and equilibrates the balance of payment. The following economic variables play thereby an important role:

- The relationship between domestic and foreign capital market interest rate
- The relationship between domestic and foreign goods prices
- The exchange rate between domestic and foreign currency

In the following, we will analyze these relationships in more detail.

## 2. Economic Growth in Open Economies

### 2.1. The Balance of Payments

- The historical development of the current account deficit of the US shows that even long-term current account deficits (over 70 years!) can be sustainable if the debts granted from abroad are not used for consumption but are used for investments.
- From 1820 to 1890, the United States built up infrastructure (railways, bridges, canals, port facilities) and industrial production facilities with the help of foreign capital flowing from Europe to the US via the London financial market.
- When these investments yielded a return, the US were able to repay their debts. By the year 1910, the net asset position of the US became positive.
- If the US had used the foreign loans for consumption, a repayment would not have been possible.

|      | Trade balance | Service balance | Current account balance | Net asset position |
|------|---------------|-----------------|-------------------------|--------------------|
| 1800 | -19,3         | 27,8            | 8,5                     | -82                |
| 1810 | -22,8         | 25,3            | 2,5                     | -82,7              |
| 1820 | -3,7          | 3,1             | -0,6                    | -84,6              |
| 1830 | -25,0         | -0,1            | -25,1                   | -165,1             |
| 1840 | 0,7           | -0,4            | 0,3                     | -217,2             |
| 1850 | -9,2          | -22,1           | -31,3                   | -315,0             |
| 1860 | -18,6         | -59,9           | -78,5                   | -688,6             |
| 1870 | 92,7          | -117,4          | -24,7                   | -1681,4            |
| 1880 | 103,3         | -152,3          | -49,0                   | -1952,5            |
| 1890 | 262,5         | -199,4          | 63,1                    | -3110,7            |
| 1900 | 557,7         | -249,0          | 308,7                   | -3200,5            |
| 1910 | 1951,7        | -285,9          | 1665,8                  | 2100,0             |
| 1920 | 1117,1        | 317,5           | 1434,6                  | 11250,0            |

Source: Sachs/Larrain (1993)

|      | Trade balance | Service balance | Current account balance | Net asset position |
|------|---------------|-----------------|-------------------------|--------------------|
| 1900 | 557,7         | -249,0          | 308,7                   | -3200,5            |
| 1910 | 1951,7        | -285,9          | 1665,8                  | 2100,0             |
| 1920 | 1117,1        | 317,5           | 1434,6                  | 11250,0            |
| 1930 | 448,8         | 634,7           | 1083,5                  | 15533,3            |
| 1940 | 6657,9        | -933,9          | 5724                    | 29433,3            |
| 1950 | 2934,4        | -2332,9         | 601,5                   | 39970,0            |
| 1960 | 4081,9        | -749,4          | 3332,5                  | 57540,0            |
| 1970 | -10383,1      | 9943,0          | -440,1                  | 69916,7            |
| 1980 | -91491,7      | 46063,3         | -45428,4                | -90455,6           |

Source: Sachs/Larrain (1993)

Phase 4: Net creditor

Phase 5: Start of the 70s: Financing of trade balance deficits with interest surpluses

Phase 6: End of 70s: Current account deficits

Phase 7: Net debtor because of government debt and high-tech investment boom

## 2. Economic Growth in Open Economies

### 2.1. The Balance of Payments

- As seen above, the balance of payments must always be equilibrated by mathematical necessity.
- The current account balance, on the other hand, does not need to be equilibrated - although there are economic reasons that limit the space for disequilibria:
- The simplest way to understand this is the case of a purely "static world", that is, a world without GDP growth:
  - If the current account of such static country were always in deficit, this country would continually accumulate debt against foreign countries.
  - Since at least, when the accumulated debt is that high that the country's total economic performance ( $\approx$  GDP) had to be spent for interest payments to foreign countries, a further borrowing is no longer possible.

## 2. Economic Growth in Open Economies

### 2.1. The Balance of Payments

- Conversely:
  - If the current account of such static country displayed always a surplus, this country would continually accumulate debt of foreign countries.
  - Since at least, when the accumulated assets are that high that the other countries' total economic performance had to be spent for interest payments, a further borrowing to other countries is no longer possible.
- If we now transfer this consideration to the normal case of a country with a steadily growing GDP, this means that a current account deficit / current account surplus is only sustainable, if the resulting debt / asset position does not grow faster in the long run than the GDP of this country.
- Short-run deviations from this rule are of course possible....

## International Economics

- 2. Economic Growth in Open Economies
  - 2.1. The Balance of Payments
  - 2.2. The Solow-Swan Model

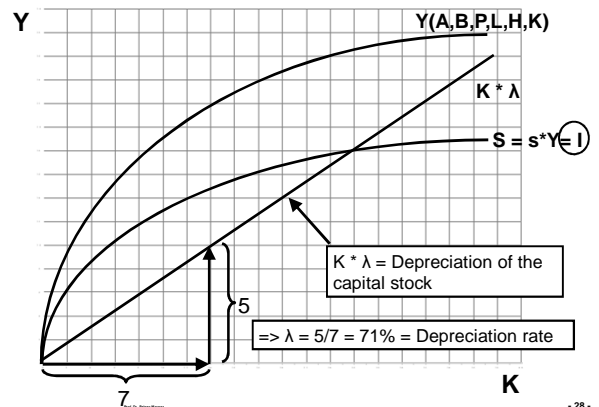
## 2. Economic Growth in Open Economies

### 2.2. The Solow-Swan Model

- In the lecture "Macroeconomics" the neo-classical growth theory was discussed for the case of a closed economy (= Autarky), to simplify the analysis.
  - This implies that a country has no economic relations with foreign countries.
  - In this case, savers can only invest their savings in the domestic economy.
  - The domestic capital market interest rate thus adjusts always in such a way that domestic investment equals domestic savings:  $S(Y) = I(i) \Rightarrow i$
  - The interest rate thus ensures that the spark savings curve  $S(Y)$  always equals the investment curve  $I(i)$ .
- We will repeat this in the following (Macroeconomics chapter 2, slides 25 -35) before we go on with the case of an open economy.

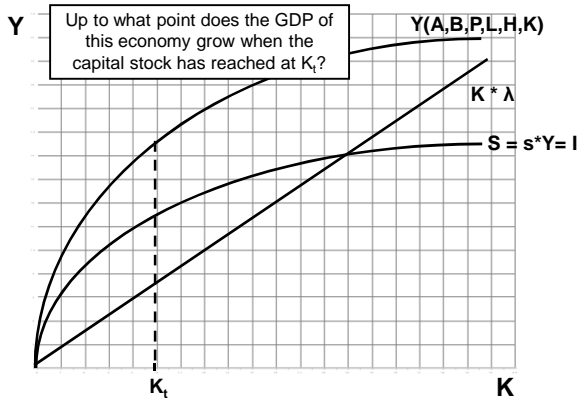
## 2. Economic Growth in Open Economies

### 2.2. The Solow-Swan Model



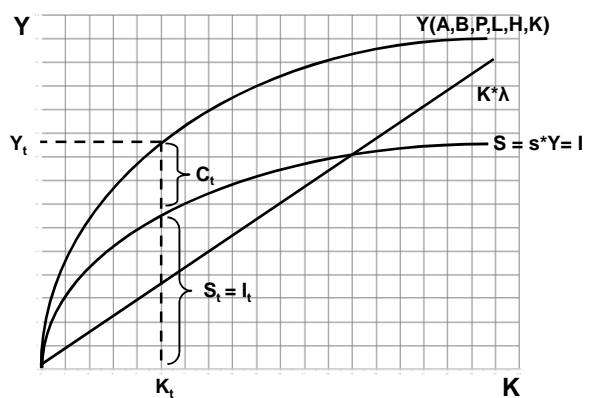
## 2. Economic Growth in Open Economies

### 2.2. The Solow-Swan Model

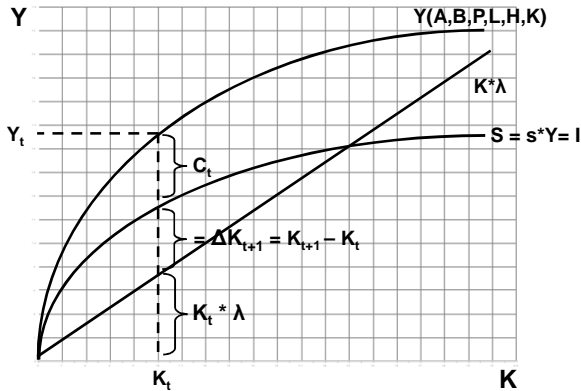


## 2. Economic Growth in Open Economies

### 2.2. The Solow-Swan Model

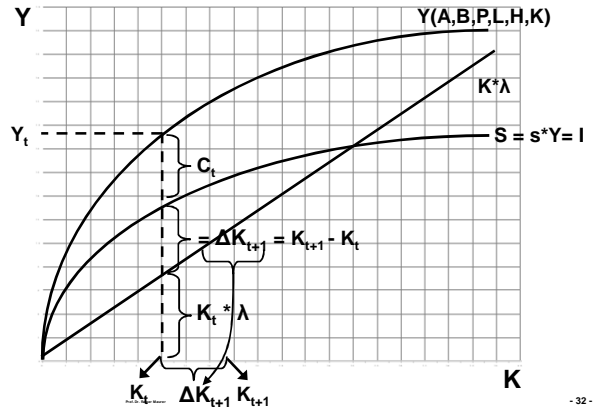


2. Economic Growth in Open Economies  
2.2. The Solow-Swan Model



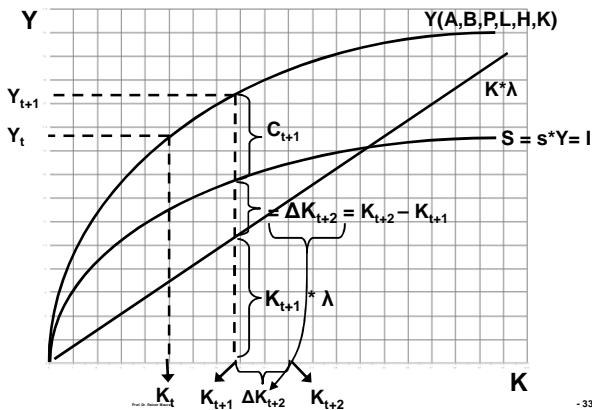
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2. Economic Growth in Open Economies  
2.2. The Solow-Swan Model



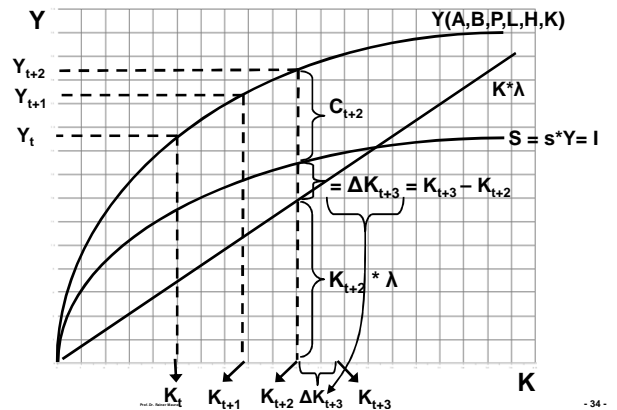
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2. Economic Growth in Open Economies  
2.2. The Solow-Swan Model



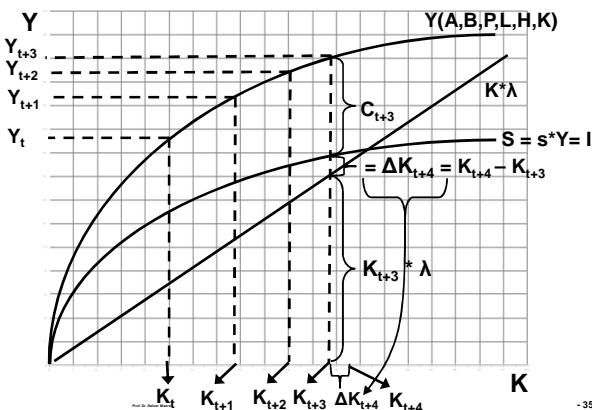
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2. Economic Growth in Open Economies  
2.2. The Solow-Swan Model



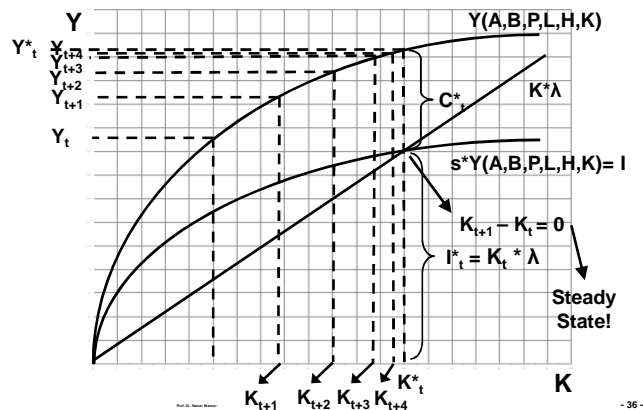
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4. Die langfristige Entwicklung von Volkswirtschaften  
4.1. Das Solow-Swan Modell einer geschlossenen Volkswirtschaft



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2. Economic Growth in Open Economies  
2.2. The Solow-Swan Model

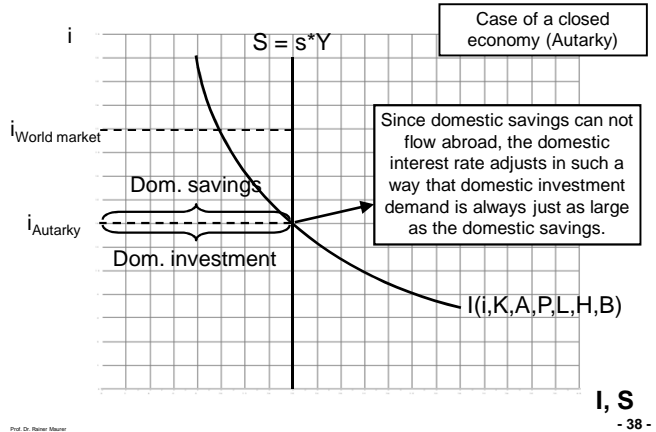


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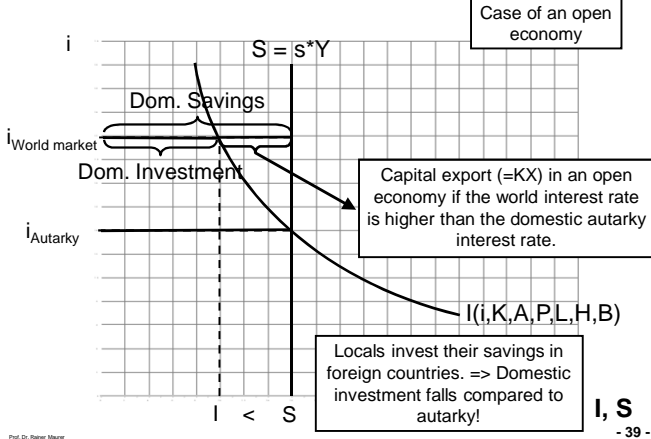
**2. Economic Growth in Open Economies**  
**2.2. The Solow-Swan Model**

- In an open economy, this adjustment process changes:
  - Domestic savers have then the possibility to invest their money in the country with the highest interest rate.
  - Domestic investment has no longer necessarily to equal domestic savings.
- As seen in section 2.1., the following is now possible:

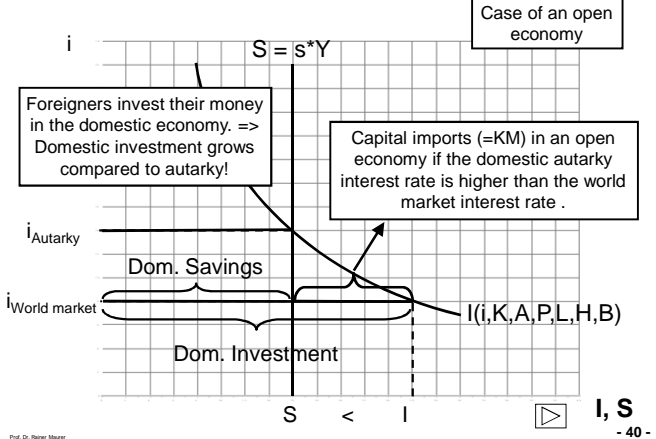
**Capital Market in a Small Open Economy**



**Capital Market in a Small Open Economy**



**Capital Market in a Small Open Economy**

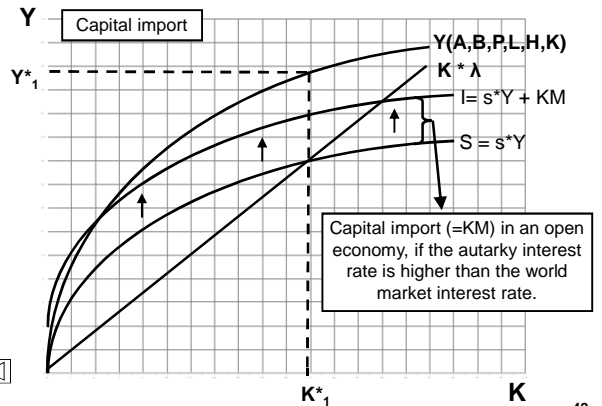


**2. Economic Growth in Open Economies**  
**2.2. The Solow-Swan Model**

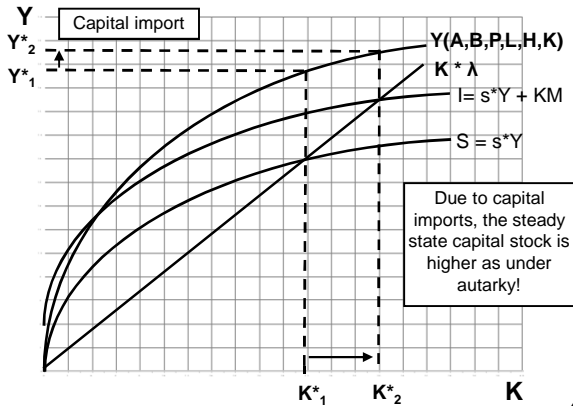
- This means:
  - If the world market interest rate is lower than the domestic market interest rate in case of autarky,
    - ◆ the Inland borrows from foreign countries and
    - ◆ purchases with these credits goods in foreign countries,
    - ◆ which are then invested in the domestic capital stock.
- ⇒ The domestic capital stock does then grow faster as in the case of autarky and its steady state level is higher.

Capital import (=KM) comes along with a current account deficit

**2. Economic Growth in Open Economies**  
**2.2. The Solow-Swan Model**



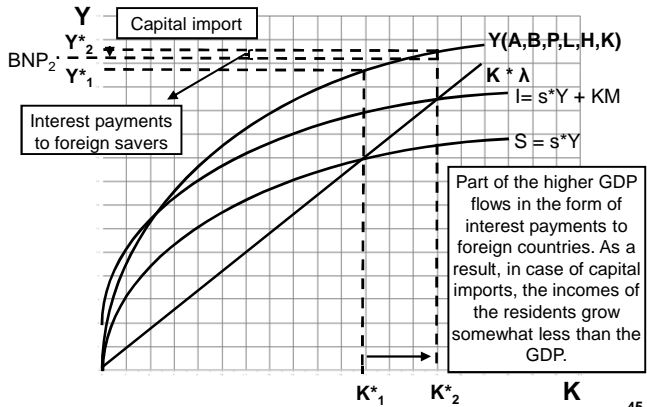
**2. Economic Growth in Open Economies**  
**2.2. The Solow-Swan Model**



**2. Economic Growth in Open Economies**  
**2.2. The Solow-Swan Model**

- Thus steady state GDP is higher because of capital imports.
- However, interest to foreigners has to be paid for the credits received from foreigner:
  - As a result, a part of the income generated domestically flows as interest payments abroad every year.
  - Gross National Product (GNP = the part of income, which flows to residents) in case of capital import is smaller than GDP.
- A mathematical calculation of the impact of capital imports on domestic incomes shows that the net effect is typically positive:
  - Not only interest payments are sent abroad, but the immobile domestic production factors (especially the labor) also receive higher remuneration because the higher steady state capital stock increases their productivity.

**2. Economic Growth in Open Economies**  
**2.2. The Solow-Swan Model**

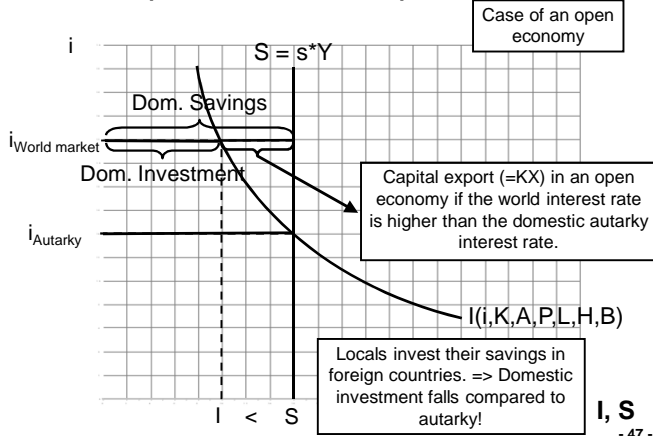


**2. Economic Growth in Open Economies**  
**2.2. The Solow-Swan Model**

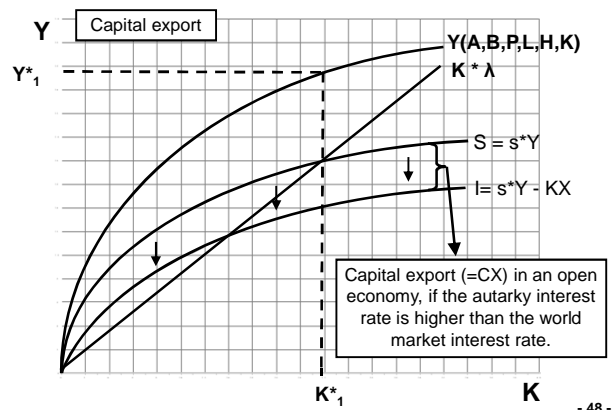
- In the obverse case:
  - If the world market interest rate is higher than the domestic market interest rate in case of autarky,
    - ◆ the foreign countries borrow from the inland and
    - ◆ purchase with these credits goods from the inland,
    - ◆ which are then invested in foreign capital stocks.
- ⇒ The domestic capital stock does then grow slower as in the case of autarky and its steady state level is lower.

Capital export (=KX) comes along with a current account surplus!

**Capital Market in a Small Open Economy**

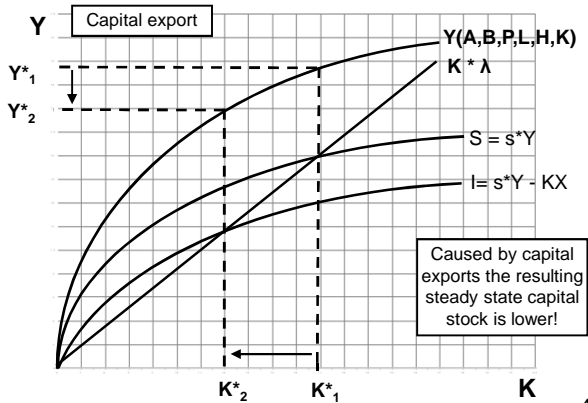


**2. Economic Growth in Open Economies**  
**2.2. The Solow-Swan Model**





**2. Economic Growth in Open Economies**  
**2.2. The Solow-Swan Model**



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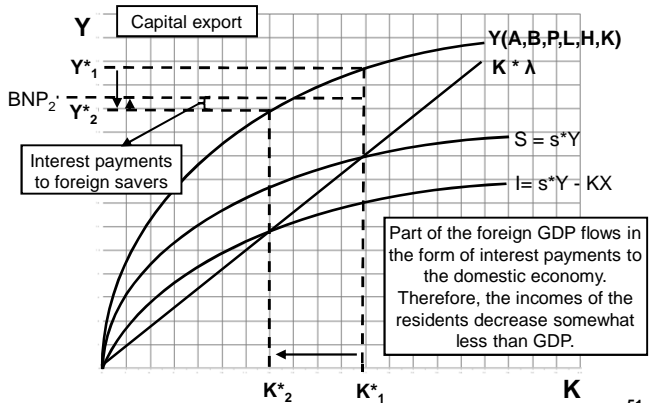
**2. Economic Growth in Open Economies**  
**2.2. The Solow-Swan Model**

- Thus steady state GDP is lower because of capital exports.
- However, interest to domestic savers has to be paid for the credits received from them:
  - As a result, a part of the income generated abroad flows as interest payments to domestic savers every year.
  - Gross National Product (GNP = the part of income, which flows to residents) in case of capital import is higher than GDP.
- A mathematical calculation of the impact of capital imports on domestic incomes shows that the net effect is, however, typically negative:
  - Despite of the interest payments from abroad, the immobile domestic production factors (especially the labor) also receive a lower remuneration because the smaller steady state capital stock decreases their productivity.

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**2. Economic Growth in Open Economies**  
**2.2. The Solow-Swan Model**



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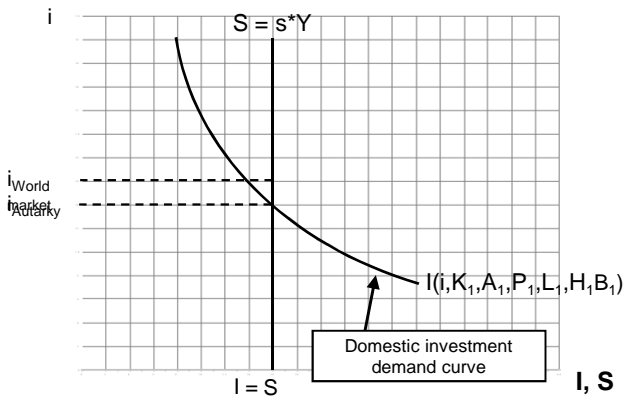
**2. Economic Growth in Open Economies**  
**2.2. The Solow-Swan Model**

- Conclusions:
  - In order to keep a "high" domestic capital stock (and thus a high GDP) in the case of free international capital movements, savers must be able to receive a high interest rate for their money in the domestic economy.
  - Thus, there must be sufficient investment opportunities with a high yield in the domestic economy.
  - Only in this case, the domestic demand for credits is high enough. This is displayed by the domestic investment demand curve in next chart.
  - The domestic investment demand curve must therefore lie on a "high" level.

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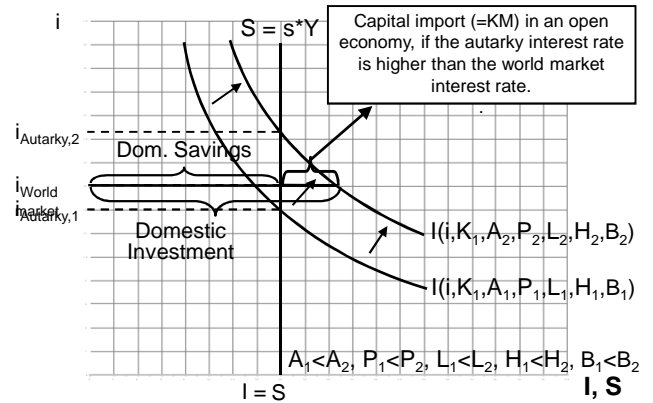
**Capital Market in a Small Open Economy**



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**Capital Market in a Small Open Economy**



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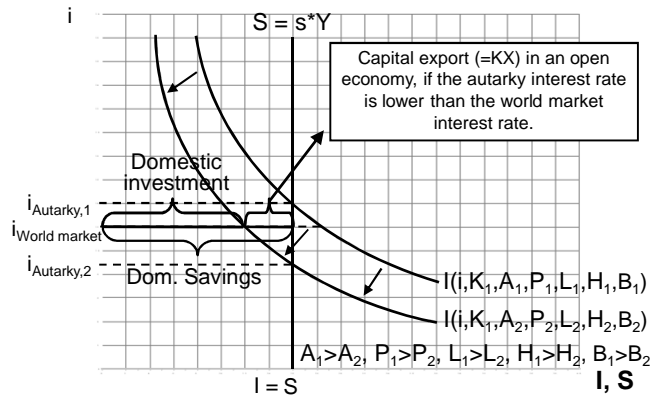
## 2. Economic Growth in Open Economies

### 2.2. The Solow-Swan Model

#### ➤ Schlussfolgerung:

- When less investment opportunities with high returns are available in the domestic economy, savers place their money abroad, where they receive higher returns.
- In this case, the domestic investment demand curve shifts downward.
- The result is then capital export, as the next chart shows.

### Capital Market in a Small Open Economy



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## International Economics

### 2. Economic Growth in Open Economies

- 2.1. The Balance of Payments
- 2.2. The Solow-Swan Model
- 2.3. Economic Policy Conclusions

### 2. Economic Growth in Open Economies

#### 2.3. Economic Policy Conclusions

- This leads to the question, how a country can provide investment opportunities with a high return, i.e. how to keep the domestic investment demand curve on a "high" level?
- The answer of standard production theory is:
  - A country must try to accumulate as many production factors as possible, which are complementary to capital.
  - Production factors, which are complementary to capital, increase the productivity of the capital stock and thus lead to a higher return on capital investments.
  - As a result, the domestic investment demand grows and the investment demand curve lies at a higher level.

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## 2. Economic Growth in Open Economies

### 2.3. Economic Policy Conclusions

- What kind of production factors are complementary to capital?
- „Complementary“ are production factors, which "supplement" capital and increase thereby the productivity of capital:
  - A = technological knowledge
  - H = human capital
  - L = physical labor
  - B = land, natural resources
  - P = legal security, public infrastructure, domestic & external security

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## 2. Economic Growth in Open Economies

### 2.3. Economic Policy Conclusions

- A rich supply of these complementary production factors ensures low prices and thus leads to a higher usage of these production factors as production inputs.
- This increases the return of capital, so that foreign capital flows into the domestic economy and increases the capital stock.
- As investment in physical capital is "internationally mobile", i.e. it can take place in any country with an open economy, investors can choose those countries with the highest return on capital.
- This is called the "competition of countries for international mobile production factors".
- Such a competition, is not a competition for capital alone, but for all production factors that are internationally mobile, like technical knowledge or raw materials.
- All internationally mobile production factors can "choose" those locations, where their return is highest.

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## 2. Economic Growth in Open Economies

### 2.3. Economic Policy Conclusions

► Therefore, the distinction between mobile and immobile production factors is important for the theory of locational competition between open countries:

- Very mobile:
  - Physical capital
  - Technological knowledge
  - Raw materials
- Relatively immobile:
  - Human capital
  - Physical labor
- Completely immobile:
  - Building plots
  - Agricultural land
  - Government institutions for the production of public goods

⇒ Competition of the immobile production factors of countries for the mobile production factors

These production factors compete with the immobile production factors of other countries for internationally mobile production factors.

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## 2. Economic Growth in Open Economies

### 2.3. Economic Policy Conclusions



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## 2. Economic Growth in Open Economies

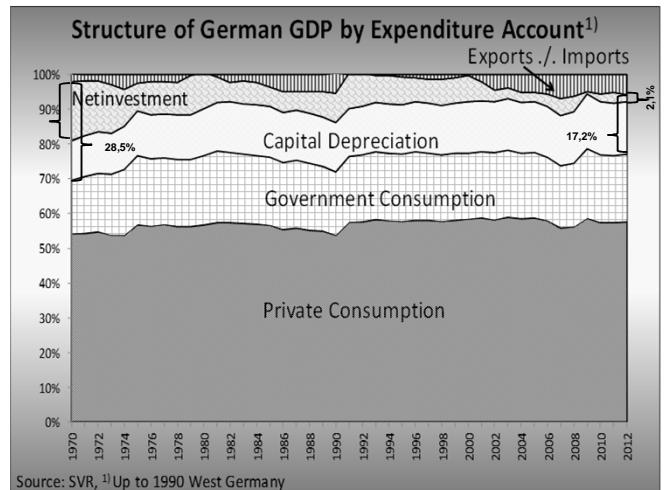
### 2.3. Economic Policy Conclusions

► How can the attractiveness for internationally mobile production factors be measured ?

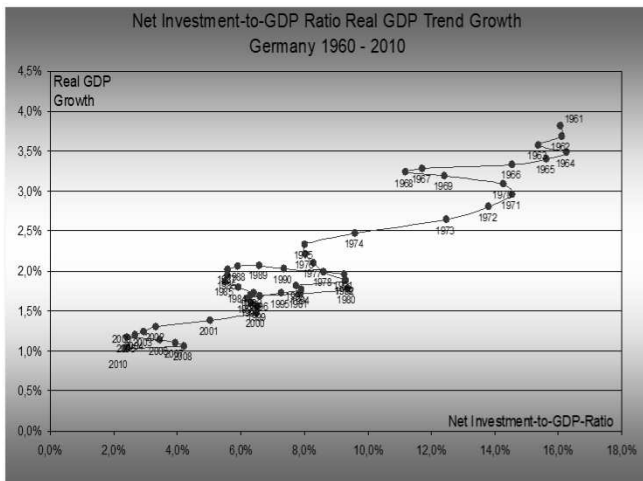
- As the Solow / Swan model shows, the gross investment carried out in a country is an important indicator of a country's ability to attract mobile production factors:
  - ◆ An investor invests in a country only if the return on investment is at least as high as the highest return in other countries.
  - ◆ If a country's gross investment (as a percentage share of GDP) declines, this means that an increasing share of investors can achieve higher investment returns in other countries.
  - ◆ A permanently decreasing investment share in GDP therefore indicates a declining attractiveness of a country for internationally mobile investment capital.

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Source: SVR, <sup>1)</sup> Up to 1990 West Germany



## 2. Economic Growth in Open Economies

### 2.3. Economic Policy Conclusions

► Back to the balance of payments:

- Is
- Ist ein current account deficit „good“ or „bad“ for an economy?
- As always in economics: IT DEPENDS !
- Reasons for a long-run (=structural) current account deficit:
  - High return on capital investment in the domestic economy, caused by high capital productivity due to high supply of complementary production factors:  $(X-M) \downarrow = (S - I \uparrow - D_G) \downarrow$   
= „Good current account deficit“
  - Low preference for savings of the residential population = high propensity for consumption causes a net demand for foreign credits to finance domestic consumption:  $(X-M) \downarrow = (S \downarrow - I - D_G) \downarrow$   
= „Bad current account deficit“
  - High government indebtedness:  $(X-M) \downarrow = (S - I - D_G \uparrow) \downarrow$   
= „??? current account deficit“

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### 1.4. Questions for Review

► You should be able to answer the following questions at the end of this chapter. All of the questions can be answered with the help of the lecture notes. If you have difficulties in answering a question, discuss this question with me at the end of the lecture, attend my colloquium or send me an E-Mail.

### 2.4. Questions for Review

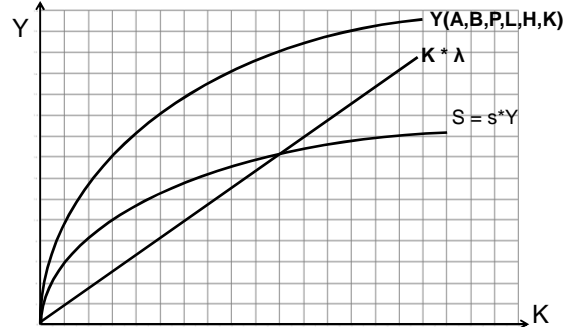
1. Derive the link between the current account balance and capital account balance starting with the expenditure account of GDP.
2. Which transactions are recorded in the capital account, which transactions are recorded in the current account?
3. What is the balance of payments?
4. Why is the balance of payments always equilibrated?
5. Has the current account balance to be equilibrated?
6. What factors determine the limits for the indebtedness of a country?
7. What reasons can cause long-run current account deficits?
8. Has does a deficit in the government budget affect the current account balance?

### 2.4. Questions for Review

9. Classify the production factors of the Solow-Swan model according to their degree of international productivity.
10. Under what conditions does international mobility of capital cause an increase (decrease) of the GDP of country?
11. What economic policy measures are necessary under a regime of international mobility of capital, in order to increase the production of a higher per-capita GDP?

### 2.4. Questions for Review

12. Plot the steady state of an closed economy in the following diagram. How does the steady state change in transition to an open economy in case of capital imports ( $KM > 0$ )?



### 2.4. Questions for Review

12. Plot the steady state of an closed economy in the following diagram. How does the steady state change in transition to an open economy in case of capital exports ( $KX > 0$ )?

