

# Finance (Basic)

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# Personal Finance

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- ❑ Monetary decisions of an individual (family).
- ❑ Analyses how the individuals (family unit) obtain, budget, save and spend money.
- ❑ The personal income could be allocated towards **expenses, saving, debt repayment.**

# Sample budget

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Example of budgeted allocation

| <b>Category</b>   | <b>Monthly amount</b> | <b>Annual amount</b> | <b>Percentage</b> |
|-------------------|-----------------------|----------------------|-------------------|
| <i>Housing</i>    |                       |                      |                   |
| <i>Food</i>       |                       |                      |                   |
| <i>Automobile</i> |                       |                      |                   |
| <i>Tax</i>        |                       |                      |                   |
| <i>Insurance</i>  |                       |                      |                   |
| <i>School</i>     |                       |                      |                   |
| <i>Medical</i>    |                       |                      |                   |
| <i>Clothing</i>   |                       |                      |                   |
| <i>Saving</i>     |                       |                      |                   |

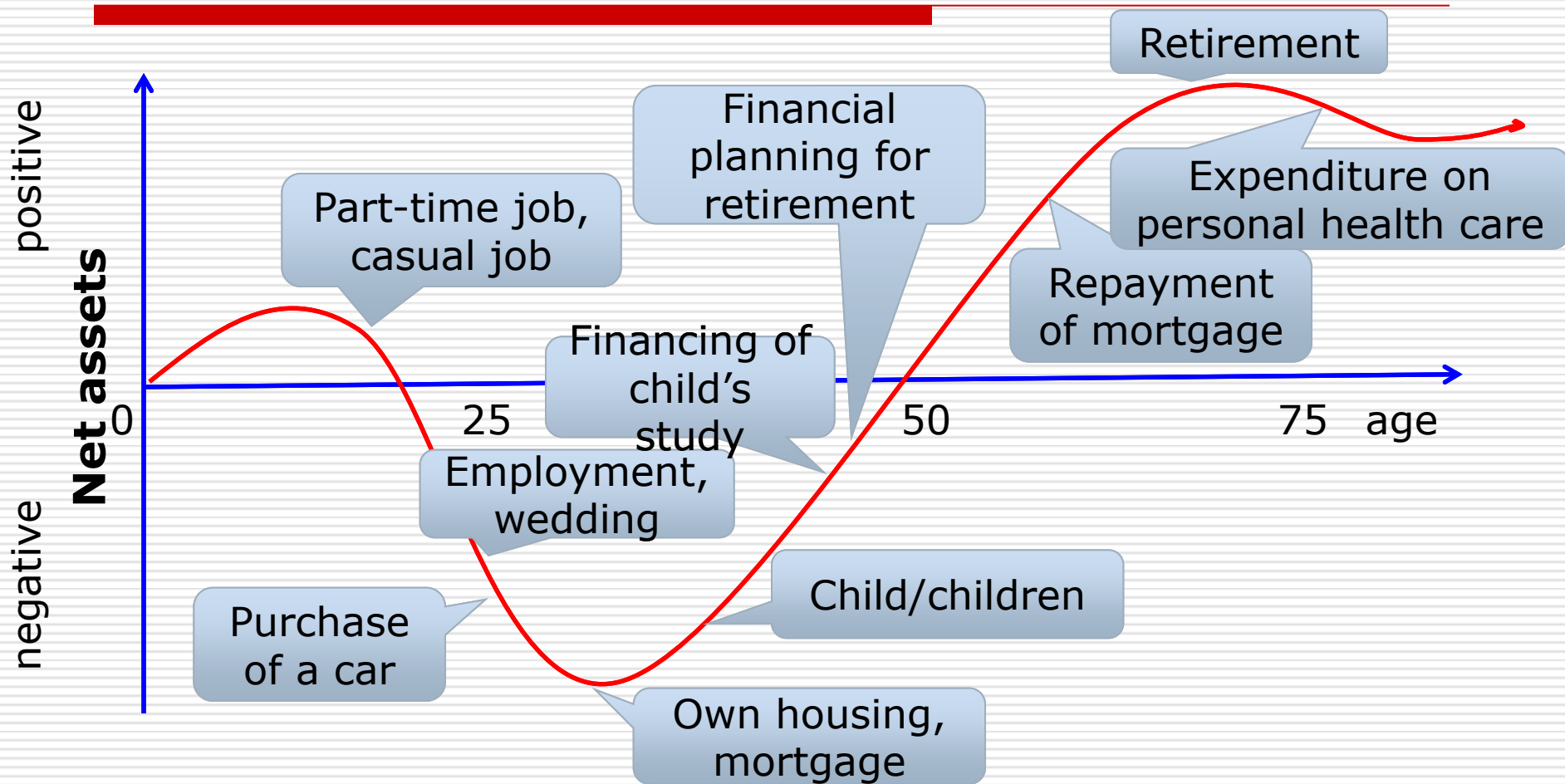
What happened if the total expanses are not equal to the total income?

# The phases of personal finance by age

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- Phase of low saving
- Phase of debt
- Phase of investment
- Phase of use accumulated wealth

# The phases of personal finance by age



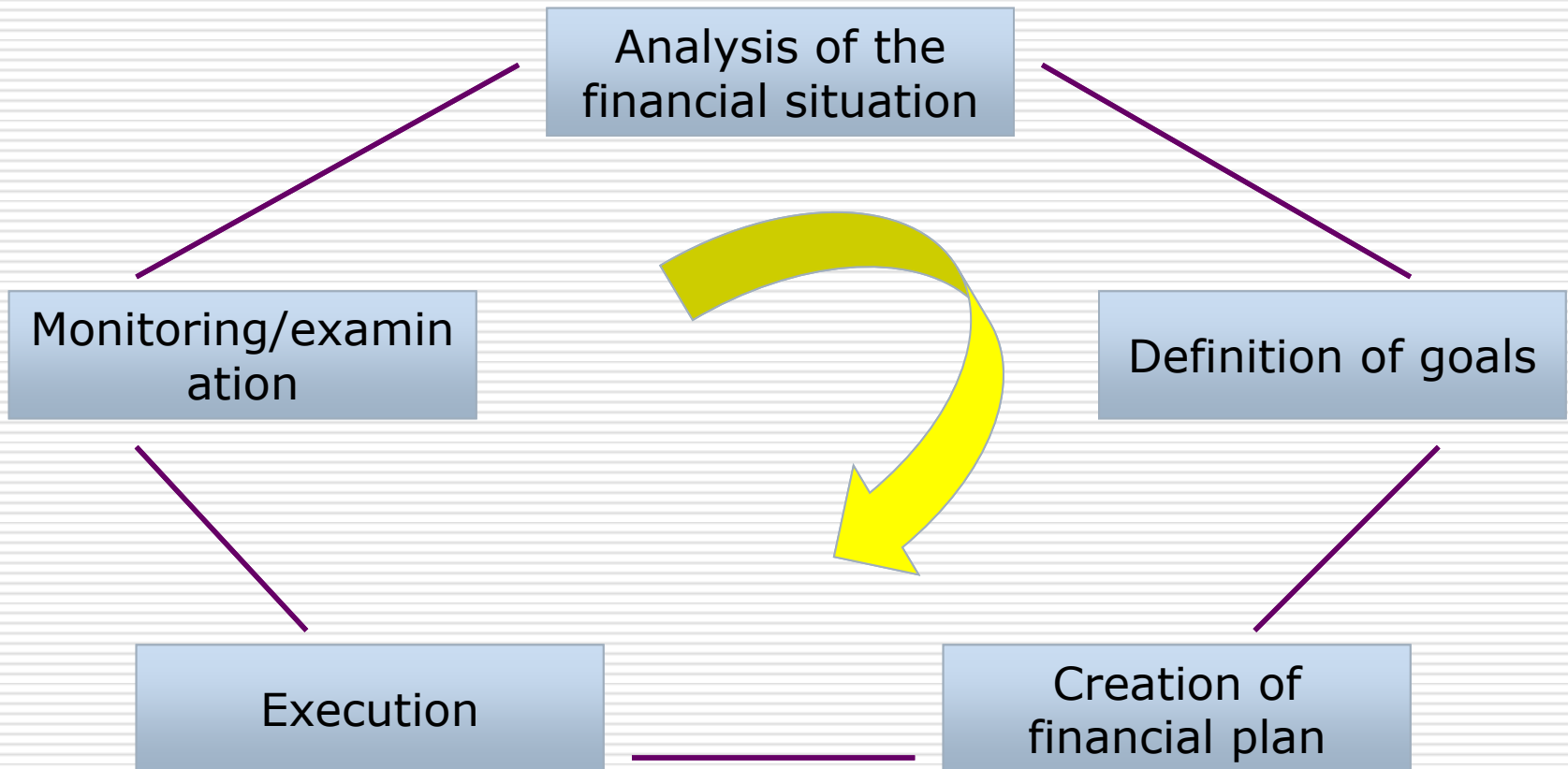
# Personal financial planning

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- ❑ Assessment
- ❑ Setting goals
- ❑ Creating a plan
- ❑ Execution
- ❑ Monitoring/Reassessment

# Personal financial planning

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# Saving

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- ❑ Regular payment over time
- ❑ The task is to identify FV

## **Categories of saving:**

- Long-term
- Short-term:
  - *Ahead a period*
  - *After a period*



# Short-term Saving, ahead a period

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$$S_x = m \cdot x \cdot \left( 1 + \frac{m+1}{2 \cdot m} \cdot i \right)$$

**S** ... total amount saved

**m** ... *number of deposits*

**x** ... *amount of money*

**i** ... *interest rate*

# Short-term Saving, after a period

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$$S'_x = m \cdot x \cdot \left( 1 + \frac{m-1}{2 \cdot m} \cdot i \right)$$

# Long-term Saving

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$$S' = a \cdot \frac{(1+i)^n - 1}{i}$$

**a** ... annuity (a regular payment of a same amount)

# Combined Saving

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Ahead a period

$$S = m \cdot x \cdot \left(1 + \frac{m+1}{2 \cdot m} \cdot i\right) \cdot \frac{(1+i)^n - 1}{i}$$

After a period ?

# Retirement plan

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**Pension** is a way to ensure a regular income for people, which are no longer earning a regular income from employment.

**Retirement plane** (individuals, employers, unions, insurance companies, government).

# The main types of income in Retirement plan

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- ❑ Immediate income:
  - *Ahead a period*
  - *After a period*
- ❑ Deferred income
- ❑ Income paid  $m$ -times a year
- ❑ Perpetual income
  
- ❑ **The task is to identify PV**

# Immediate Income

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Ahead a period

$$D = a \cdot \frac{1 - v^n}{v \cdot i}$$

**v** ...  $1/(1+i)$

**D** ... *present value of total income*

After a period

# Income paid m-times a year

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Ahead a period

$$D = m \cdot x \cdot \left( 1 + \frac{m+1}{2 \cdot m} \cdot i \right) \cdot \frac{1 - v^n}{i}$$

After a period



# Deferred Income (ahead a period)

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$$K = m \cdot x \cdot \left(1 + \frac{m+1}{2 \cdot m} \cdot i\right) \cdot \frac{1-v^n}{i} \cdot v^k$$

**$v^k$**  ... postponement of income payment

# Perpetual Income

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Immediately

$$D = m \cdot x \cdot \left(1 + \frac{m+1}{2 \cdot m} \cdot i\right) \cdot \frac{1}{i}$$

Deferred

# Repayment plan

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## Consists of:

*Debt, Annuity, Interest, Amortization*

## Amortization of debt:

- Equal annuity
- Unequal annuity

# Extra points

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## **10 points**

*How much is the total amount of your saving in 6 years if you save regularly at the beginning of each quarter 15,000.00. The interest rate is 2,5% p. a. and the bank pays the interest monthly.*

**The final grade "A"** (but you have at least 12 points (Bloomberg, 1st-test) + essay)

*How long do we have to save \$ 500.00 at the end of each month, if we want to save up \$ 50,000.00? The annual interest rate is 8%. (**WE MINIMIZE THE TOTAL AMOUNT OF PAYMENT!!!**)*

Thank you for your attention

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