

# Finance (Basic)

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**Ludek Benada**  
**Department of Finance**  
**Office 533**  
**75970@mail.muni.cz**

# 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>			

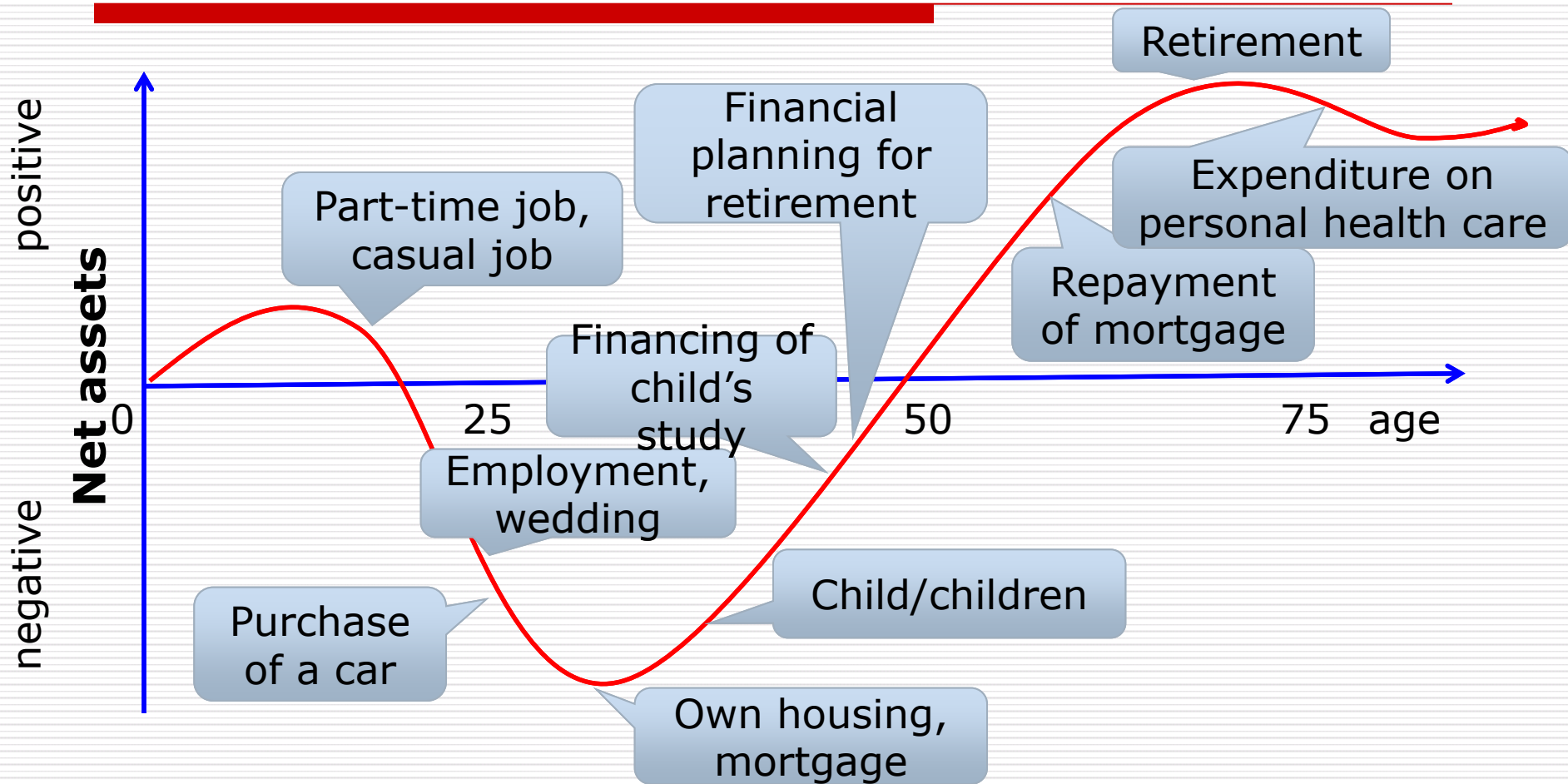
What happened if the total expenses are not equal to the total income?

# 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



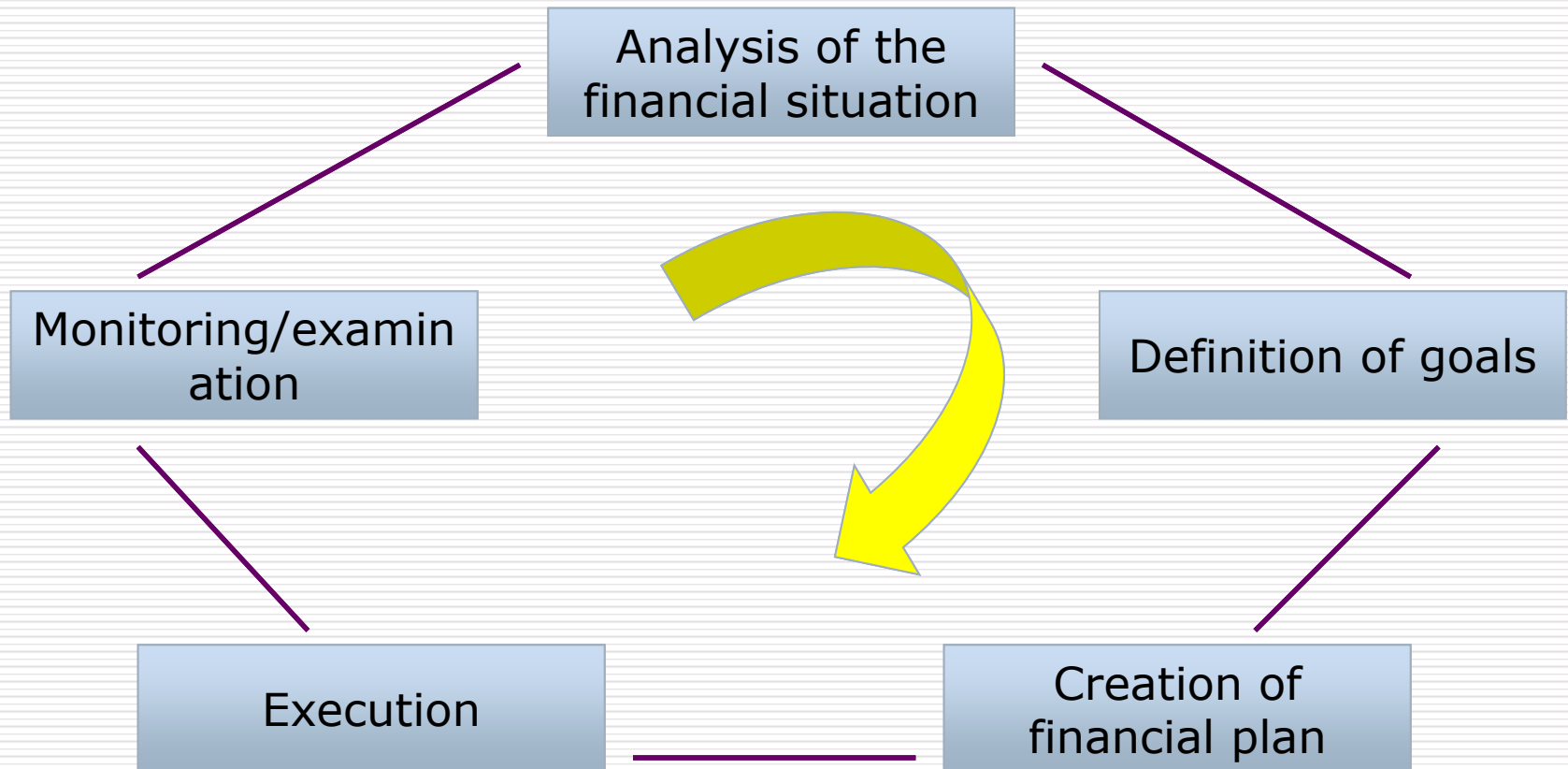
# Personal financial planning

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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

## The relation between IP and PP:

- $IP = PP$
- $IP > PP$
- $IP < PP$

## Annuity in within one interest period:

- *Ahead a period*
- *After a period*



# Linear interest in one IP

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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*

# Arithmetic serie, Geometric serie

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$$S_A = \frac{m}{2} (a_1 + a_m)$$

$$a_n = a_1 + (n - 1) * d$$

$$S_G = a_1 \frac{q^n - 1}{q - 1}$$

$$a_n = a_1 * q^{n-1}$$

# 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, or $IP > PP$

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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 in one IP

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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

Thank you for your attention

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