

**Controlling tools
for measurement
of innovative
company development
enabling effective allocation
of inputs**

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Structure of presentation

- 1. Controlling and goals of the firm
- 2. Possible kind of firm's development
- 3. How to count the share of intensive and extensive factors on the firm's development
- 4. The development of Nike
- 5. The comparison of Nike and other American innovative companies
- 6. Development of selected Czech innovative companies from Zlin Region
- 7. Questions, comments ...

1.

Controlling and goals of the firm

Controlling

- Implementation of a decision method and the use of feedback so that the **goals** and specific strategic plans of the firm **are optimally obtained**.
- To do this, managers study accounting and other reports and compare them to the plans set earlier.
- These comparisons may show where operations are not proceeding as planned and who is responsible for what.
- The feedback that management receives may suggest the need to replan, to set new strategies, or to reshape the organizational structure.
- <http://www.allbusiness.com>

The main goal of the firm

- Profit
- and its
- growth



Controlling and profit

- Does a firm achieve profit?
- How is profit achieved? By increasing inputs?
By technological progress and innovation?
- Which factor is more important?
- Could for instance firm simultaneously experience technological decline and achieve profit growth?

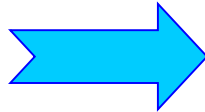
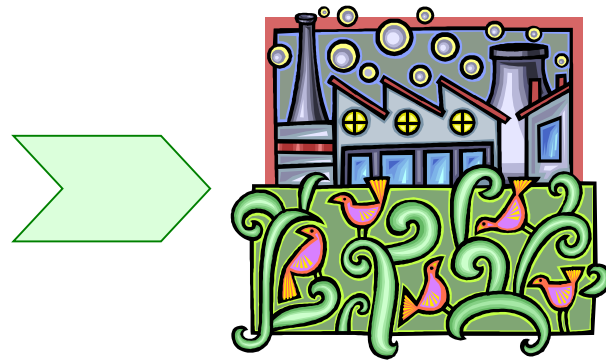
2.

Possible kind of firm's
development

Firm's development

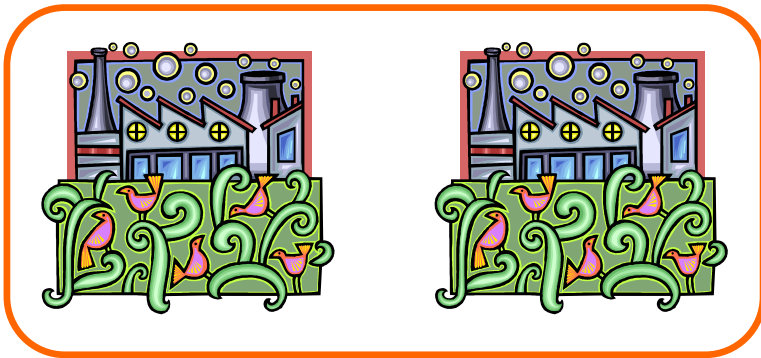
- The change of the output and inputs during time.
- Intensive development: a change of output is based on innovation and higher efficiency
- Extensive development: a change of output is based on the change (growth) of inputs

Illustrative example of possible firm development



$$E_{f_0} = TR_0 / TC_0$$

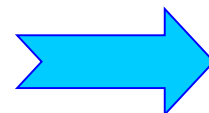
$$EP_0 = TR_0 - TC_0$$



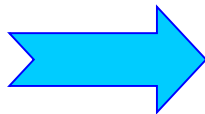
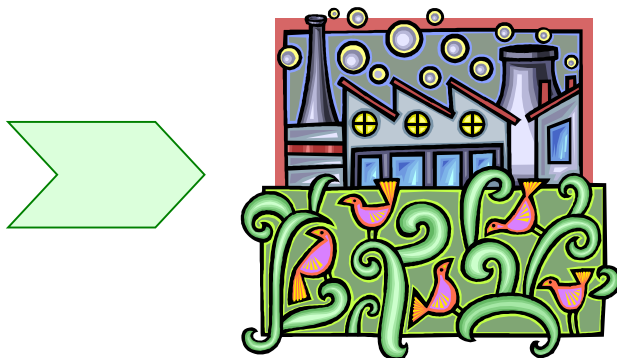
Same efficiency 



$$E_{f_e} = 2 \cdot TR_0 / 2 \cdot TC_0 = E_{f_0}$$



$$EP_e = 2 \cdot TR_0 - 2 \cdot TC_0 = 2 \cdot EP_0$$



Increase of efficiency 

$$E_{f_i} = 2 \cdot TR_0 / TC_0 = 2 \cdot E_{f_0}$$

$$EP_i = 2 \cdot TR_0 - TC_0 = 2 \cdot EP_0 + TC_0$$

$$EP_i = EP_e + TC_0$$

Typical firm's development

- Possible changes of output:
 - increase
 - decrease
 - stagnation
- All changes can occur due to both a change of intensive factor (efficiency) and due to a change of extensive factors (inputs).
- Necessary a classification.

Classification of firm's development

- Increase of output, one factor contributes to increase, second factor does not change.
- Increase of output, both factors contribute to increase (in same or different share).
- Increase of output, one factor contributes to increase, second one to decrease, the share of the first factor is higher than the share of the second one factor.

Classification of firm's development

- Decrease of output, one factors contributes to increase, second factor does not change.
- Decrease of output, both factors contribute to decrease (in same or different share).
- Decrease of output, one factor contributes to decrease, second one to increase, the share of the first factor is higher than the share of the second one factor.

Classification of firm's development

- Stagnation of output, one factor contributes to increase, second one to decrease, the share of the factors is same and they balance each other.

Possible firm's development and the share of intensive or extensive factors

- It useful to know for all possible firm's development (it means both for increase of output, decrease of output and the stagnation of the output):
 - - the share of the intensive and extensive factors
 - - how the factors contributes to the change of the firm's output: whether the factor changes in same way or opposite way as the change of the output

Positive firm's development

- Increase both intensive as extensive factors, intensive one grows in same or higher rate than extensive one.
- Increase of intensive factor and decrease of extensive factor, the intensive one increases in higher or same rate.
- Controlling should be able to identify positive firm's development.

3.

How to count the share of
intensive and extensive factors on
the firm's development

How to count the change

- Increment or decline:
 $\Delta A = A_n - A_{n-1}$
- Growth rate:
 $G(A) = (A_n - A_{n-1}) / A_{n-1}$
- Change coefficient or index:
 $I(A) = A_n / A_{n-1}$
- It is valid: $I(A) = G(A) + 1$

How to express firm's output, input and efficiency

- Output: revenue (TR)
Input: costs (TC)
- Profit: $EP = TR - TC$
- Efficiency: $Ef = \frac{TR}{TC}$
- It can be written: $TR = Ef * TC$

Share of change of efficiency and inputs on the change of output

- $TR = Ef * TC$
- $I(TR) = I(Ef) * I(TC)$
- $\ln(I(TR)) = \ln(I(Ef)) + \ln(I(TC))$

Dynamic parameter
of intensity and extensity

$$i = \frac{\ln I(\text{Ef})}{|\ln I(\text{Ef})| + |\ln I(\text{TC})|}$$

$$e = \frac{\ln I(\text{TC})}{|\ln I(\text{Ef})| + |\ln I(\text{TC})|}$$

Characteristics of dynamic parameter of intensity and extensity

- They are able to: count the share of intensive and extensive factors for all possible firm's development (growth, decline or stagnation of production)
- They use basic usually public available data (firms revenue and cost)
- Easily to count

4.

The development of Nike

NIKE

- The world most innovative company for the year 2013 by the magazine Fast Company (www.fastcompany.com)
- Produce sports dress, shoes and other sports equipment.
- Based on outsourcing: external suppliers (mostly from East Asia region) produces goods for it. NIKE sells the goods mostly in the US and Europe.

Development of NIKE

	1996/5	1997/6	1998/7	1999/8	2000/9	2001/0	2002/1	2003/2	2004/3	2005/4	2006/5	2007/6	2008/7	2009/8	2010/9	2011/0	2011/5
G(TR)	36%	42%	4%	-8%	2%	5%	4%	8%	15%	12%	9%	9%	14%	3%	-1%	9%	9,6%
G(TC)	36%	42%	9%	-9%	1%	6%	4%	11%	11%	11%	8%	9%	13%	6%	-3%	6%	9,3%
G(EF)	0%	0%	-5%	1%	1%	0%	1%	-2%	4%	1%	1%	0%	1%	-3%	3%	3%	0,3%
i	1%	0%	-35%	10%	56%	-4%	13%	-19%	26%	10%	6%	-2%	8%	-32%	43%	32%	3%
e	99%	100%	65%	-90%	44%	96%	87%	81%	74%	90%	94%	98%	92%	68%	-57%	68%	97%

Development of NIKE

- Based mostly of extensive factors ($e = 97\%$, $i = 3\%$)
- Nike relies on cheap labor.
- The development of the cost depends of the development of exchange of USD.
- If some problems happen, firm usually reduces it costs as the respond.
- Will it be sufficient in the case of some big problems?

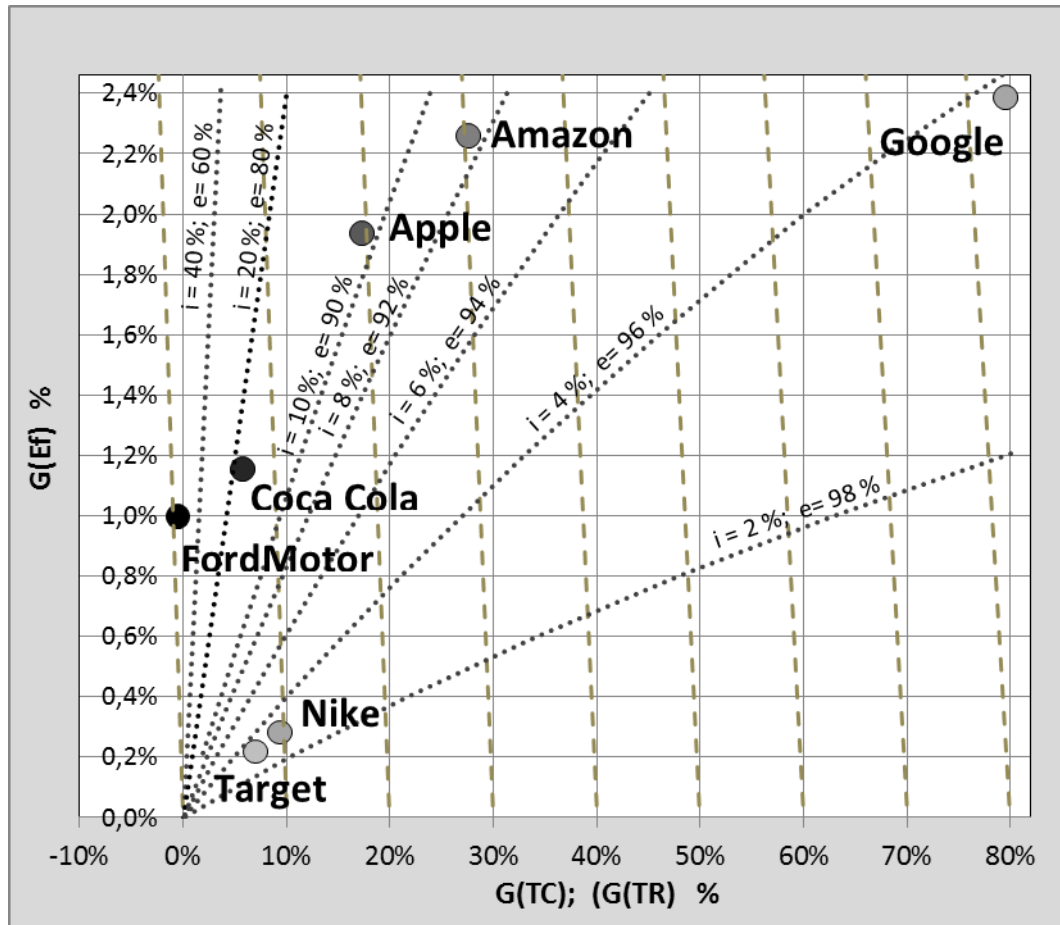
Comparison of Nike and other American innovative companies

Comparison of Nike and other most innovative firms

- Amazon
- Apple
- Coca Cola
- Ford Motor
- Google
- Target

	1995 – 2011						
Indicator	Amazon	Google	Apple	Ford Motor	Nike	Target	Coca Cola
TR (mil.\$)	13 116	13 744	21 966	154 571	12 516	47 243	24 596
EP (mil. \$)	363	5 161	3 408	2 784	1 021	1 854	4 854
TC (mil. \$)	12 752	8 583	18 558	151 786	11 495	45 389	19 742
Ef=TR/TC	1.02 8	1.60 1	1.18 4	1.018	1.08 9	1.041	1.246
G(TR)	30%	84%	20%	0,5%	10%	7%	7%
G(TC)	28%	80%	17%	-0,5%	9%	7%	6%
G(Ef)	2%	2%	2%	1%	0%	0%	1%
i	8%	4%	11%	67%	3%	3%	17%
e	92%	96%	89%	-33%	97%	97%	83%

Comparison of Nike and other most innovative firms



Development of selected Czech innovative companies from Zlin Region

Selected companies

- Česká Zbrojovka (Czech Arms Factory)
- Austin Detonator

- Both firms received innovation award from Zlin Municipality for 2012.

Česká Zbrojovka

	2009	2010	2011	2009-11
TR (tis. Kč)	1218401	1345157	1727947	
EP (tis.Kč)	101877	168293	265408	
TC (tis.Kč)	1116524	1176864	1462539	
Ef=TR/TC	1,091	1,143	1,181	
EP/TC	0,091	0,143	0,181	
G(TR)		10,4%	28,5%	41,8%
G(EP)		65,2%	57,7%	160,5%
G(TC)		5,4%	24,3%	31,0%
G(EF)		4,7%	3,4%	8,3%
G(EP/TC)		56,7%	26,9%	98,9%
i		46,8%	13,2%	22,7%
e		53,2%	86,8%	77,3%

Austin Detonator

	2008	2009	2010	2011	2008-11
TR (tis.Kč)	889577	776635	1052779	1001548	
EP (tis.Kč)	136443	136443	194255	222263	
TC (tis.Kč)	753134	640192	858524	779285	
Ef=TR/TC	1,181	1,213	1,226	1,285	
EP/TC	0,181	0,213	0,226	0,285	
G(TR)		-12,7%	35,6%	-4,9%	12,6%
G(EP)		0,0%	42,4%	14,4%	62,9%
G(TC)		-15,0%	34,1%	-9,2%	3,5%
G(EF)		2,7%	1,1%	4,8%	8,8%
G(EP/TC)		17,6%	6,2%	26,1%	57,4%
i		14,1%	3,5%	32,7%	71,2%
e		-85,9%	96,5%	-67,3%	28,8%

Evaluation of both companies

- In the given period:
 - positive growth rate both cost (inputs) and revenues (output)
 - output growth rate is higher than input growth rate
 - positive and high value of dynamic intensity parameter
- They can be described as innovative firms.

Thank you for your attention

- Questions, comments

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