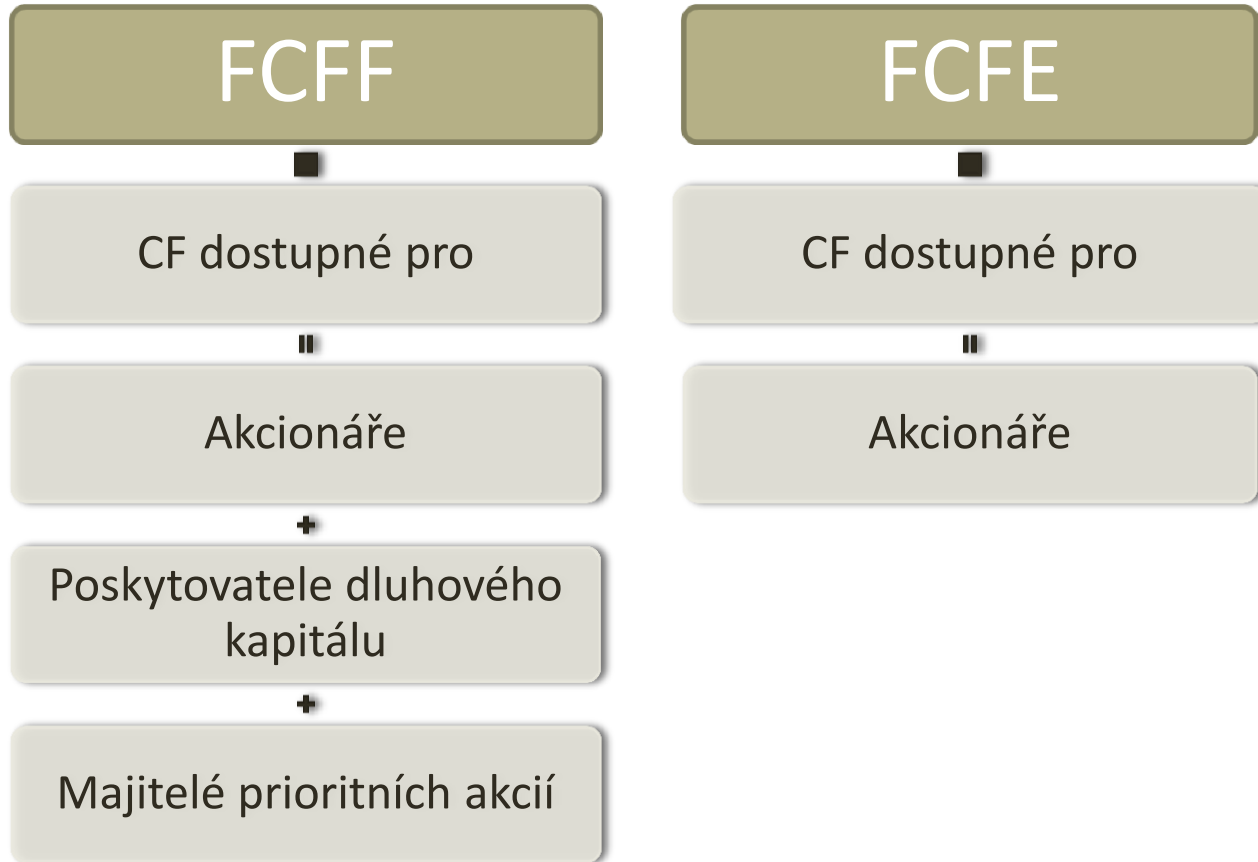


Ocenění na základě Free Cash Flow

Free Cash Flow

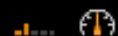


IBM US

\$ Market

P173.09 / 174.24P

2x1



Prev 173.88

Vol 5

IBM US Equity

1) Create Report

2) Output to Excel

Weighted Average Cost of Capital

International Business Machines Corp

Period MR 2016 Q4

Cost of Capital - Current Market Value

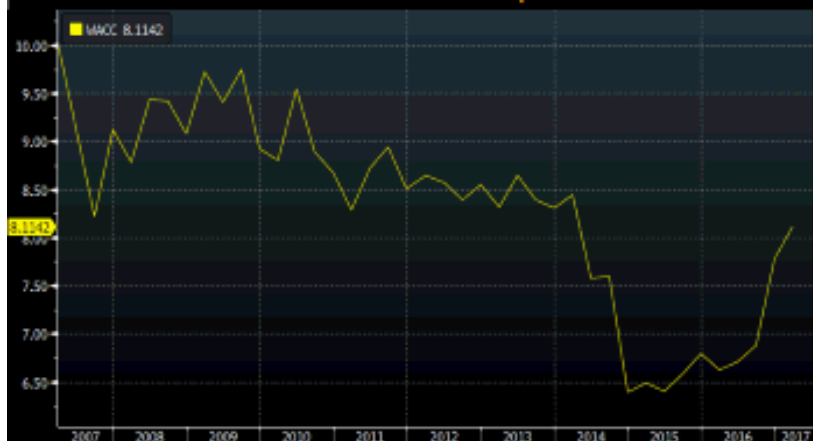
Capital Structure (Millions of USD)

	Weight	Cost	W x C
3) Equity	78.8%	9.6%	7.6%
4) Debt Cost (A-T)	21.2%	2.5%	0.5%
5) Preferred Equity	0.0%	0.0%	0.0%
WACC			8.1%



Market Cap	157,004.5	78.8%
ST Debt	7,513.0	3.8%
LT Debt	34,655.0	17.4%
Pref. Eqty	0.0	0.0%
Total	199,172.5	100.0%

6) History

 WACC
 EVA
 ROIC
 EVA Spread


Economic Value Added (Millions of USD)

1) Net Operating Profit	11775.00
8) Cash Operating Taxes	419.62
NOPAT	11355.38
9) Total Investment Capital	91318.00
Capital Charge	7409.69
Economic Value Added	3945.70
ROIC	12.43%
EVA Spread	4.32%

Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000

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 SN 163608 CET GMT+1:00 H438-1088-0 22-Mar-2017 12:14:00

CEZ CP CZK ↓ 375.80 +.80 K375.60 / 375.90K 380 x 306
 At 12:21 d Vol 119,571 0 376.00K H 378.50K L 375.30K Val 45.01M

CEZ CP Equity 1) Create Report 2) Output to Excel Weighted Average Cost of Capital
 CEZ AS Period MR 2015 Q3

Cost of Capital - Current Market Value

	Weight	Cost	W x C
3) Equity	61.5%	7.9%	4.9%
4) Debt Cost (A-T)	38.5%	0.4%	0.1%
5) Preferred Equity	0.0%	0.0%	0.0%
WACC			5.0%

Capital Structure (Millions of CZK)



Market Cap	270,401.4	61.5%
ST Debt	12,882.0	2.9%
LT Debt	156,652.0	35.6%
Pref. Eqty	0.0	0.0%
Total	439,935.4	100.0%

6) History

WACC EVA ROIC EVA Spread



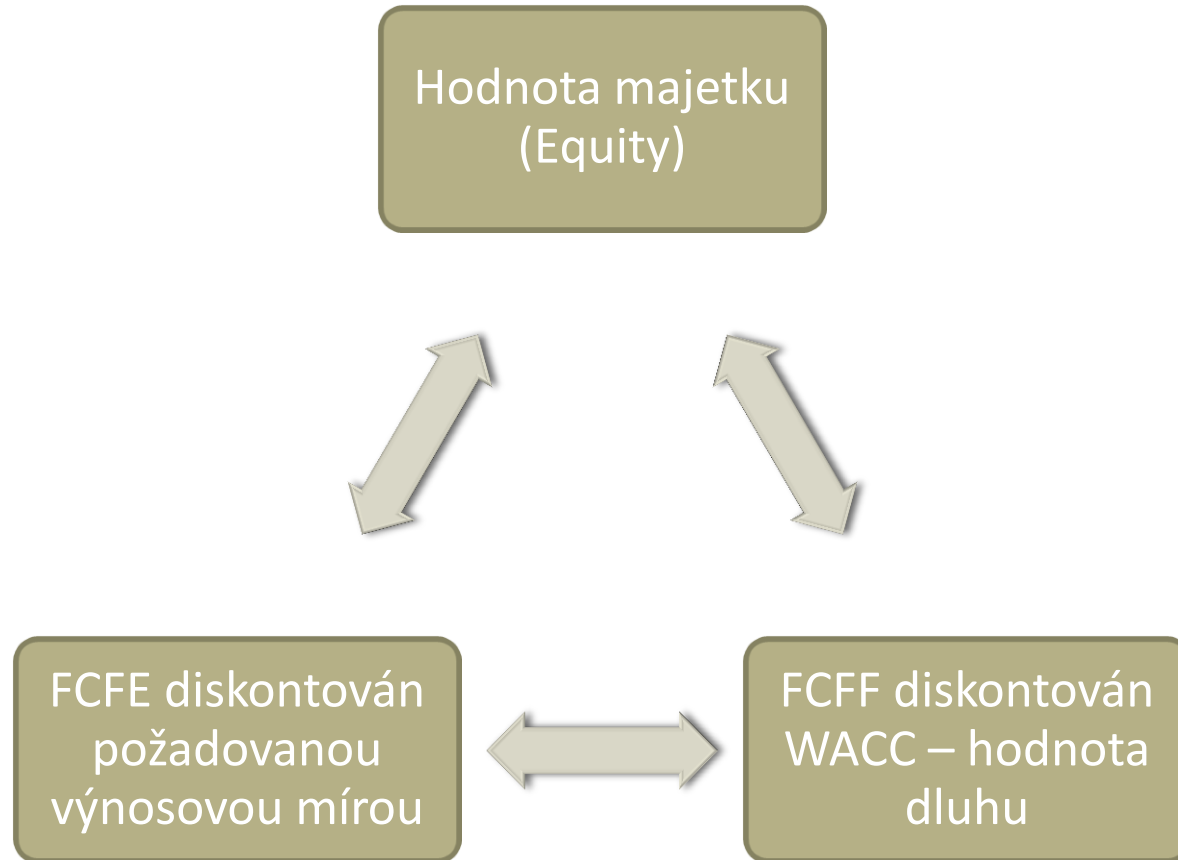
Economic Value Added (Millions of CZK)

7) Net Operating Profit	32746.00
8) Cash Operating Taxes	6937.68
NOPAT	25808.32
9) Total Investment Capital	459756.00
Capital Charge	23048.88
Economic Value Added	2759.44
ROIC	5.61%
EVA Spread	0.60%

Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000
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FCFF vs. FCFE přístup k ocenění



FCFF vs. FCFE přístup k ocenění

$$\text{Firm value} = \sum_{t=1}^{\infty} \frac{\text{FCFF}_t}{(1 + \text{WACC})^t}$$

Equity value = Firm value – Debt value

$$\text{Equity value} = \sum_{t=1}^{\infty} \frac{\text{FCFE}_t}{(1 + r)^t}$$

Jednostupňový FCF model

$$\text{Firm value} = \frac{\text{FCFF}_1}{\text{WACC} - g}$$

$$\text{Equity value} = \text{Firm value} - \text{Debt value}$$

$$\text{Equity value} = \frac{\text{FCFE}_1}{r - g}$$

Příklad: Jednostupňový FCFF Model

Běžné FCFF	\$6,000,000
Cílovaný podíl dluh ku kapitálu	0 .25
Tržní hodnota dluhu	\$30,000,000
Počet akcií v oběhu	2,900,000
Požadovaná výnosová míra	12 .0%
Náklady dluhu	7 .0%
Dlouhodobá míra růstu FCFF	5 .0%
Sazba daně z příjmu	30 %

Příklad: Jednostupňový FCFF Model

$$WACC = \left[\left(\frac{MV(\text{Debt})}{MV(\text{Equity}) + MV(\text{Debt})} \right) \times r_d \times (1 - \text{Tax rate}) \right] + \left[\left(\frac{MV(\text{Equity})}{MV(\text{Equity}) + MV(\text{Debt})} \right) \times r \right]$$

$$WACC = [0.25 \times 7\% \times (1 - 0.30)] + [0.75 \times 12\%] = 10.23\%$$

Příklad: Jednostupňový FCFF Model

$$\text{Firm value} = \frac{\text{FCFF}_1}{\text{WACC} - g}$$

$$\text{Firm value} = \frac{\$6,000,000(1.05)}{0.0123 - 0.05} = \$120.5 \text{ million}$$

$$\text{Equity value} = \$120.5 \text{ million} - \$30 \text{ million} = \$90.5 \text{ million}$$

$$\text{Equity value per share} = \$90.5 \text{ million} / 2.9 \text{ million} = \$31.21$$

Výpočet FCFF z čistého zisku (NI)

$$\text{FCFF} = \text{NI} + \text{NCC} + \text{Int}(1 - \text{Tax rate}) - \text{FCInv} - \text{WCInv}$$

NI = čistý zisk net income

NCC = čisté nepeněžní položky (nejčastěji odpisy)/ net noncash charges

Int = úrokové náklady/ interest expense

FCInv = investice do fixního kapitálu/
(kapitálové investice)/ investment in fixed capital

WCInv = investice do pracovního kapitálu
(změna v pracovním kapitálu: oběžná aktiva/ krátkodobé závazky)/ investment in working capital

EXAMPLE 2 Calculating FCFF from Net Income

Cane Distribution, Inc., incorporated on 31 December 2009 with initial capital infusions of \$224,000 of debt and \$336,000 of common stock, acts as a distributor of industrial goods. The company managers immediately invested the initial capital in fixed capital of \$500,000 and working capital of \$60,000. Working capital initially consisted solely of inventory. The fixed capital consisted of nondepreciable property of \$50,000 and depreciable property of \$450,000. The depreciable property has a 10-year useful life with no salvage value. Exhibits 1, 2, and 3 provide Cane's financial statements for the three years following incorporation. Starting with net income, calculate Cane's FCFF for each year.

EXHIBIT 1 Cane Distribution, Inc. Income Statement (in Thousands)

	Years Ending 31 December		
	2010	2011	2012
Earnings before interest, taxes, depreciation, and amortization (EBITDA)	\$200.00	\$220.00	\$242.00
Depreciation expense	45.00	49.50	54.45
Operating income	155.00	170.50	187.55
Interest expense (at 7 percent)	15.68	17.25	18.97
Income before taxes	139.32	153.25	168.58
Income taxes (at 30 percent)	41.80	45.97	50.58
Net income	\$97.52	\$107.28	\$118.00

EXHIBIT 2 Cane Distribution, Inc. Balance Sheet (in Thousands)

	Years Ending 31 December			
	2009	2010	2011	2012
Cash	\$0.00	\$108.92	\$228.74	\$360.54
Accounts receivable	0.00	100.00	110.00	121.00
Inventory	60.00	66.00	72.60	79.86
Current assets	<u>60.00</u>	<u>274.92</u>	<u>411.34</u>	<u>561.40</u>
Fixed assets	500.00	500.00	550.00	605.00
Less: Accumulated depreciation	0.00	45.00	94.50	148.95
Total assets	<u>\$560.00</u>	<u>\$729.92</u>	<u>\$866.84</u>	<u>\$1,017.45</u>
Accounts payable	\$0.00	\$50.00	\$55.00	\$60.50
Current portion of long-term debt	0.00	0.00	0.00	0.00
Current liabilities	<u>0.00</u>	<u>50.00</u>	<u>55.00</u>	<u>60.50</u>
Long-term debt	224.00	246.40	271.04	298.14
Common stock	336.00	336.00	336.00	336.00
Retained earnings	0.00	97.52	204.80	322.80
Total liabilities and equity	<u>\$560.00</u>	<u>\$729.92</u>	<u>\$866.84</u>	<u>\$1,017.45</u>

EXHIBIT 3 Cane Distribution, Inc. Working Capital (in Thousands)

	Years Ending 31 December			
	2009	2010	2011	2012
<i>Current assets excluding cash</i>				
Accounts receivable	\$0.00	\$100.00	\$110.00	\$121.00
Inventory	60.00	66.00	72.60	79.86
Total current assets excluding cash	60.00	166.00	182.60	200.86
<i>Current liabilities excluding short-term debt</i>				
Accounts payable	0.00	50.00	55.00	60.50
<i>Working capital</i>	\$60.00	\$116.00	\$127.60	\$140.36
<i>Increase in working capital</i>		\$56.00	\$11.60	\$12.76

	Years Ending 31 December		
	2010	2011	2012
Net income	\$97.52	\$107.28	\$118.00
Noncash charges - Depreciation	45.00	49.50	54.45
Interest expense \times (1 - Tax rate)	10.98	12.08	13.28
Investment in fixed capital	(0.00)	(50.00)	(55.00)
Investment in working capital	<u>(56.00)</u>	<u>(11.60)</u>	<u>(12.76)</u>
Free cash flow to the firm	\$97.50	\$107.26	\$117.97

Využití EBIT a EBITDA k určení FCFF

$$\text{FCFF} = \text{EBIT}(1 - \text{Tax rate}) + \text{Dep} - \text{FCInv} - \text{WCInv}$$

$$\text{FCFF} = \text{EBITDA}(1 - \text{Tax rate}) + \text{Dep}(\text{Tax rate}) - \text{FCInv} - \text{WCInv}$$

Využití provozního CF k stanovení FCFF

$$FCFF = CFO + \text{Int} (1 - \text{Tax rate}) - FCInv$$

Výpočet FCFE z FCFF, Čistého zisku, & CFO

$$\text{FCFE} = \text{FCFF} - \text{Int}(1 - \text{Tax rate}) + \text{Net borrowing}$$

FCFE from net income (NI) and FCFF:

$$\text{FCFF} = \text{NI} + \text{NCC} + \text{Int}(1 - \text{Tax rate}) - \text{FCInv} - \text{WCInv}$$

$$\text{FCFE} = \text{NI} + \text{NCC} - \text{FCInv} - \text{WCInv} + \text{Net borrowing}$$

FCFE from CFO and FCFF:

$$\text{FCFF} = \text{CFO} + \text{Int}(1 - \text{Tax rate}) - \text{FCInv}$$

$$\text{FCFE} = \text{CFO} - \text{FCInv} + \text{Net borrowing}$$

Příklad: Výpočet FCFF

EBITDA	\$1,000
Odpisy	\$400
Úrokové náklady	\$150
Daňová sazba	30%
Nákup fixních aktiv	\$500
Změna pracovního kapitálu	\$50
Čisté výpůjčky	\$80
Dividendy	\$200

Příklad: Výpočet FCFF z NI

$$NI = (EBITDA - Dep - Int)(1 - Tax\ rate)$$

$$NI = (\$1000 - \$400 - \$150)(1 - 0.30) = \$315$$

$$FCFF = NI + NCC + Int(1 - Tax\ rate) - FCInv - WCInv$$

$$FCFF = \$315 + \$400 + \$150(1 - 0.30) - \$500 - \$50 = \$270$$

Příklad: Výpočet FCFF z EBIT and EBITDA

$$\text{EBIT} = \text{EBITDA} - \text{Dep} = \$1000 - \$400 = \$600$$

$$\text{FCFF} = \text{EBIT}(1 - \text{Tax rate}) + \text{Dep} - \text{FCInv} - \text{WCInv}$$

$$\text{FCFF} = \$600(1 - 0.30) + \$400 - \$500 - \$50 = \$270$$

$$\text{FCFF} = \text{EBITDA}(1 - \text{Tax rate}) + \text{Dep}(\text{Tax rate}) - \text{FCInv} - \text{WCInv}$$

$$\text{FCFF} = \$1000(1 - 0.30) + \$400(0.30) - \$500 - \$50 = \$270$$

Jednoduchý 2stupňový FCF Model

$$\text{Firm value} = \sum_{t=1}^n \frac{\text{FCFF}_t}{(1 + \text{WACC})^t} + \frac{\text{FCFF}_{n+1}}{(\text{WACC} - g)} \frac{1}{(1 + \text{WACC})^n}$$

$$\text{Equity value} = \sum_{t=1}^n \frac{\text{FCFE}_t}{(1 + r)^t} + \frac{\text{FCFE}_{n+1}}{(r - g)} \frac{1}{(1 + r)^n}$$

Příklad: Jednoduchý 2stupňový FCFE Model

Current sales per share	\$10
Sales growth for first three years	20%
Sales growth for year 4 and thereafter	5%
Net income margin	10%
FCInv/Sales growth	40%
WCInv/Sales growth	25%
Debt financing of FCInv and WCInv growth	30%
Required return on equity	12%

Příklad: Jednoduchý 2stupňový FCFE Model

	<i>Year</i>				
	1	2	3	4	5
Percentage sales growth	20%	20%	20%	5%	5%
Sales per share	\$12.000	\$14.400	\$17.280	\$18.144	\$19.051
EPS	\$1.200	\$1.440	\$1.728	\$1.814	\$1.905
FCInv per share	\$0.800	\$0.960	\$1.152	\$0.346	\$0.363
WCInv per share	\$0.500	\$0.600	\$0.720	\$0.216	\$0.227
Debt financing per share	\$0.390	\$0.468	\$0.562	\$0.168	\$0.177
FCFE per share	\$0.290	\$0.348	\$0.418	\$1.421	\$1.492
Growth in FCFE		20.0%	20.0%	240.3%	5.0%

Příklad: Jednoduchý 2stupňový FCFE Model

$$\text{FCFE} = (\text{Sales} \times \text{Net income margin}) - \Delta\text{FCInv} - \Delta\text{WCInv} + \Delta\text{Debt financing}$$

$$\text{FCFE} = (\$12.00 \times 10\%) - (\$2 \times 40\%) - (\$2 \times 25\%) + (\$2 \times 65\% \times 30\%)$$

$$\text{FCFE} = (\$1.20) - (\$0.80) - (\$0.50) + (\$0.39)$$

$$\text{FCFE} = \$0.29$$

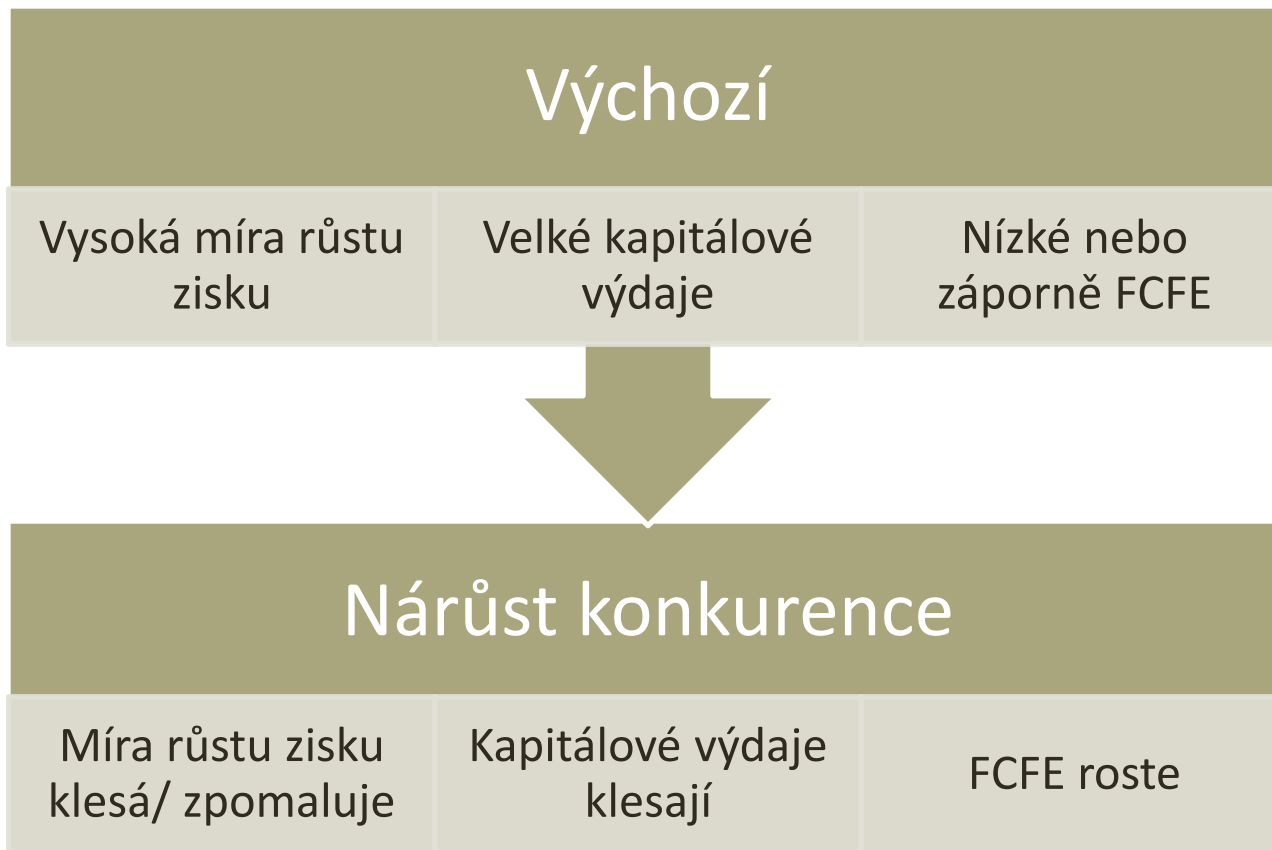
Example: Simple Příklad: Jednoduchý 2stupňový FCFE ModelFCFE Model

$$\text{Equity value} = \sum_{t=1}^n \frac{\text{FCFE}_t}{(1+r)^t} + \frac{\text{FCFE}_{n+1}}{(r-g)} \frac{1}{(1+r)^n}$$

$$\text{Equity value} = \frac{\$0.29}{(1.12)^1} + \frac{\$0.348}{(1.12)^2} + \frac{\$0.418}{(1.12)^3} + \frac{\$1.421}{(0.12 - 0.05)} \frac{1}{(1.12)^3}$$

$$\text{Equity value} = \$0.2589 + \$0.2774 + \$0.2975 + \$14.4491 = \$15.28$$

Klesající míra růstu v 2stupňovém FCF Model



Příklad: Klesající 2stupňový FCFE model

Current EPS \$1.00

WCInv/FCInv 40%

Debt financing of FCInv and WCInv 30%

Required return on equity 12%

EPS and FCInv growth viz tabulka, od Year 5 and thereafter 5%

	Year				
	1	2	3	4	5
EPS growth	30%	21%	13%	8%	5%
FCInv per share	\$1.50	\$1.25	\$1.00	\$0.75	\$0.50

Příklad: Klesající 2stupňový FCFE model

	Year				
	1	2	3	4	5
EPS	\$1.300	\$1.573	\$1.777	\$1.920	\$2.016
FCInv per share	\$1.500	\$1.250	\$1.000	\$0.750	\$0.500
WCInv per share	\$0.600	\$0.500	\$0.400	\$0.300	\$0.200
Debt financing per share	\$0.630	\$0.525	\$0.420	\$0.315	\$0.210
FCFE per share	-\$0.170	\$0.348	\$0.797	\$1.185	\$1.526

Příklad: Klesající 2stupňový FCFE model

$$\text{FCFE} = \text{EPS} - \Delta\text{FCInv} - \Delta\text{WCInv} + \Delta\text{Debt financing}$$

$$\text{FCFE} = \$1.30 - \$1.50 - (\$1.50 \times 40\%) + \left((\$1.50 + (\$1.50 \times 40\%)) \times 30\% \right)$$

$$\text{FCFE} = \$1.30 - \$1.50 - \$0.60 + \left((\$1.50 + \$0.60) \times 30\% \right)$$

$$\text{FCFE} = -\$0.17$$

Příklad: Klesající 2stupňový FCFE model

$$\text{Equity value} = \sum_{t=1}^n \frac{\text{FCFE}_t}{(1+r)^t} + \frac{\text{FCFE}_{n+1}}{(r-g)} \frac{1}{(1+r)^n}$$

$$\text{Equity value} = \frac{-\$0.17}{(1.12)^1} + \frac{\$0.348}{(1.12)^2} + \frac{\$0.797}{(1.12)^3} + \frac{\$1.185}{(1.12)^4} + \frac{\$1.526}{(0.12-0.05)} \frac{1}{(1.12)^4}$$

$$\text{Equity value} = -\$0.1518 + \$0.2774 + \$0.5673 + \$0.7531 + \frac{21.80}{(1.12)^4} = \$15.30$$

$$\text{Equity value} = -\$0.1518 + \$0.2774 + \$0.5673 + \$0.7531 + \$13.8543 = \$15.30$$

Příklad: Klesající 2stupňový FCFE model

$$\text{Trailing Year 0 P/E} = \$15.30 / \$1.00 = 15.3$$

$$\text{Trailing Year 4 P/E} = \$21.80 / \$1.92 = 11.4$$

Příklad: Klesající 2stupňový FCFE model

Běžné FCFF in millions	\$100.00
Shares outstanding in millions	300.00
Long-term debt value in millions	\$400.00
FCFF growth for Years 1 to 3	30%
FCFF growth for Year 4	24%
FCFF growth for Year 5	12%
FCFF growth for Year 6 and thereafter	5%
WACC	10%

Příklad: Klesající 2stupňový FCFE model

	Year					
	1	2	3	4	5	6
FCFF growth rate	30%	30%	30%	24%	12%	5%
FCFF	\$130.0	\$169.0	\$219.7	\$272.4	\$305.1	\$320.4
PV of FCFF	\$118.2	\$139.7	\$165.1	\$186.1	\$189.5	

Příklad: Klesající 2stupňový FCFE model

$$\text{Terminal value} = \frac{\text{FCFF}_{n+1}}{(\text{WACC} - g)} \frac{1}{(1 + \text{WACC})^n}$$

$$\text{Terminal value} = \frac{\$320.4}{(0.10 - 0.05)} \frac{1}{(1 + 0.10)^5} = \$3979$$

Example: Three-Stage FCF Models

$$\text{Firm value} = \sum_{t=1}^n \frac{\text{FCFF}_t}{(1 + \text{WACC})^t} + \frac{\text{FCFF}_{n+1}}{(\text{WACC} - g)} \frac{1}{(1 + \text{WACC})^n}$$

$$\text{Firm value} = \$118.2 + \$139.7 + \$165.1 + \$186.1 + \$189.5 + \$3,979 = \$4,777$$

$$\text{Equity value} = \text{Firm value} - \text{Debt value}$$

$$\text{Equity value} = \$4777 - \$400 = \$4377$$

$$\text{Equity value per share} = \$4377/300 = \$14.59$$

Shrnutí

FCFF vs. FCFE

- FCFF = CF pro všechny poskytovatele kapitálu
- FCFE = CF pro akcionáře
- FCFF preferována pokud FCFE je negativní, nebo je nestálá kapitálová struktura

Oceňování s využitím FCFF & FCFE

- Diskontování FCFF WACC
- Diskontování FCFE požadovanou výnosovou mírou
- Hodnota akciového kapitálu = $PV(FCFF) - \text{Dluh}$ nebo $PV(FCFE)$