Chp 6. EQUITY VALUATION
TERMINAL PERIOD

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THE TERMINAL PERIOD

Ways of Estimating the Terminal Period

Liquidation Value

Multiple Approach

Stable Growth Model

THE TERMINAL PERIOD

Real Growth vs Nominal Growth

Nominal growth: includes both inflation and real growth

Nominal cash flows and nominal discount rates imply a nominal growth rate

The g typically ranges between historical inflation rate (1.5% - 2.5%) and the average GDP growth rate (3.5% - 4.5%).

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Stable Growth Model

Principle #1: Terminal growth rate (g)

$$g = \text{Reinvestment Rate} \times \text{ROE}$$

The g should be linked to CAPEX (should be stable!).

It is unlikely for a company to grow without investment for expansion.

If so, Reinvestment Rate = 0 – amount of earnings reinvested back into the business

Factors, other than CAPEX, may result in positive growth.

Net Capital Expenditures

$$\text{Reinvestment Rate} = \frac{\text{CAPEX} - \text{D\&A} + \Delta\text{NWC}}{\text{EBIT}(1-t)}$$

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Stable Growth Model

Principle #1: Terminal growth rate (g)

Calculate the Reinvestment Rate for **L'Oréal**.

	2017-2013	2017	2016	2015	2014	2013
CAPEX	5,757,500,000	1,263,500,000	1,334,900,000	1,132,100,000	1,008,200,000	1,018,800,000
D&A	5,133,000,000	1,218,500,000	1,382,300,000	908,200,000	856,200,000	767,800,000
NWC, change	36,500,000	261,100,000	4,400,000	-217,400,000	55,900,000	-67,500,000
EBIT	21,145,100,000	4,671,500,000	4,515,400,000	4,343,600,000	3,870,300,000	3,744,300,000
Tax rate	25.8%	19.1%	28.2%	27.5%	28.6%	26.6%
Reinvestment Rate	**2.5%**	**5.5%**	**-0.7%**	**0.1%**	**4.2%**	**3.9%**
ROE	**15.4%**	**14.4%**	**12.7%**	**14.0%**	**24.3%**	**13.1%**
g	**0.4%**	**0.8%**	**-0.1%**	**0.0%**	**1.0%**	**0.5%**

THE TERMINAL PERIOD

Stable Growth Model

Principle #1: Terminal growth rate (g)

Calculate the Reinvestment Rate for **TOTAL**.

	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F	Terminal Period	Unit
GDP Growth											
World	3.4%	3.4%	3.8%	3.6%	3.3%	3.6%	3.6%	3.6%	3.6%	3.6%	%
Stable Growth Model: Reinvestment Rate × ROE											
CAPEX	18,423	15,997	10,297	13,193	13,136	13,559	14,407	14,407	15,254	128,673	€M
D&A	9,775	10,329	14,283	11,858	12,435	13,030	13,662	14,295	14,965	114,631	€M
ΔNWC	-505	-868	-1,771	-2,735	1,193	187	196	784	695	-2,825	€M
EBIT	4,258	5,181	9,342	14,053	13,541	14,744	15,616	18,148	21,244	116,126	€M
Corporate tax rate	26%	14%	27%	36%	36%	36%	36%	36%	36%	36%	%
Reinvestment Rate	257%	107%	-84%	-16%	22%	8%	9%	8%	7%	15%	%
ROE	5%	6%	8%	9.4%	9%	9%	10%	11%	12%	12%	%
g										1.9%	%
Dividend sustainable growth rate: PRAT Model (g = b × ROE)											
Net Income (NI)	4,586	5,601	7,656	9,700	9,238	9,988	10,523	12,121	14,087	83,499	€M
Dividends (D)	5,954	5,954	6,272	6,760	6,971	7,182	7,441	7,709	7,986	62,230	€M
Sales (S)	129,296	115,639	132,252	156,024	147,611	152,009	156,797	176,942	194,722	1,361,292	€M
Total Assets (A)	206,593	218,999	201,822	224,207	224,939	228,362	232,069	239,078	246,628	2,022,698	€M
Shareholder's Equity (E)	87,805	96,306	94,857	103,138	104,222	105,420	107,320	110,548	115,042	924,658	€M
(NI-D)/NI	-30%	-6%	18%	30%	25%	28%	29%	36%	43%	25%	%
ROE	5%	6%	8%	9%	9%	9%	10%	11%	12%	9%	%
NI / S	4%	5%	6%	6%	6%	7%	7%	7%	7%	6%	%
S / A	63%	53%	66%	70%	66%	67%	68%	74%	79%	67%	%
A / E	235%	227%	213%	217%	216%	217%	216%	216%	214%	219%	%
g										2.3%	%

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Stable Growth Model

Principle #1: Terminal growth rate (g)

When ROE is <u>expected to change</u>

$$g = \text{b} \times \text{ROE}_{t+1} + \left(\frac{\text{ROE}_{t+1} - \text{ROE}_t}{\text{ROE}_t} \right)$$

1. The g should be always lower than the ROE in the long term.

2. Small changes in ROE can influence significantly the g.

3. It is not likely to sustain growth in EPS from improvements in the g.

THE TERMINAL PERIOD

Stable Growth Model

Principle #1: Terminal growth rate (g)

ROE when <u>leverage increases</u>

$$ROE = ROA + \frac{D}{E}[ROA - r_d(1 - t)]$$

In which $ROA = \frac{EBIT(1-t)}{Assets}$

Benefits from Debt can be compensated by increases in financial risk

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Stable Growth Model

Principle #1: Terminal growth rate (g)

What do we know from extant literature?

Economic Growth and Equity Investing

Bradford Cornell

The performance of equity investments is inextricably linked to economic growth. Nonetheless, few studies on investing have explicitly taken research on economic growth into account. This study bridges that gap by examining the implications for equity investing of both theoretical models and empirical results from growth theory. The study concludes that over the long run, investors should anticipate real returns on common stock to average no more than about 4 percent.

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Stable Growth Model

Principle #2: Normalize the terminal FCF

CAPEX < D&A

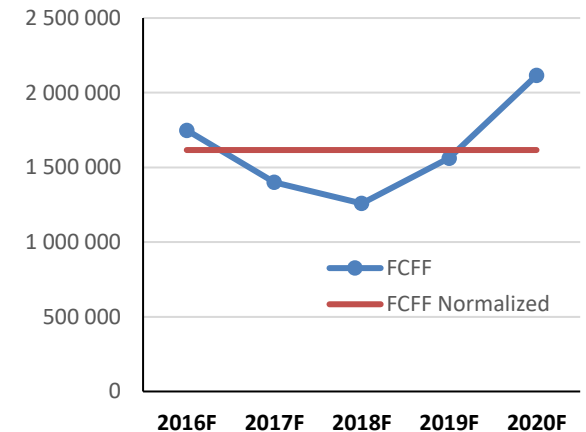| (EUR '000)	2019F	2020F	Residual
EBIT(1-marginal tax rate)	33,542	35,447	35,447
D&A	3,786	4,187	4,187
Net increase in NWC	626	580	580
CAPEX	3,836	3,893	4,187
FCFF	**32,867**	**35,160**	**34,867**

Implications in the long-term?

THE TERMINAL PERIOD

Stable Growth Model

Principle #2: Normalize the terminal FCF

Cyclical companies (cycle of 4-5 years)

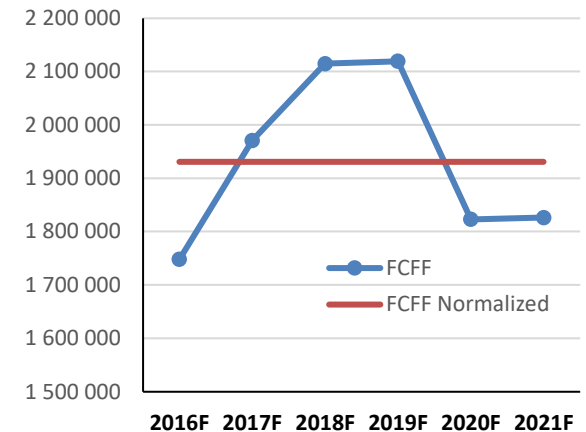| (EUR '000)	2016F	2017F	2018F	2019F	2020F	CAGR	Residual	
EBIT(1-marginal tax rate)	1,823,691	1,486,545	1,356,175	1,659,158	2,213,699	5.0%	1,707,853	
YoY		-18.5%	-8.8%	22.3%	33.4%		-22.9%	
D&A	236,122	241,664	247,089	252,415	257,659	2.2%	257,659	
YoY		2.3%	2.2%	2.2%	2.1%		0.0%	
Net increase in NWC	38,861	40,906	41,520	42,143	44,250	3.3%	44,250	
YoY		5.3%	1.5%	1.5%	5.0%		0.0%	
CAPEX	272,860	287,221	302,338	306,873	311,476	3.4%	311,476	
YoY		5.3%	5.3%	1.5%	1.5%		0.0%	
FCFF	1,748,092	1,400,082	1,259,406	1,562,558	2,115,632		1,609,787	Option **A)**
FCFF							1,617,154	Option **B)**

THE TERMINAL PERIOD

Stable Growth Model

Principle #2: Normalize the terminal FCF

Cyclical companies (cycle of 5-6 years)

(EUR '000)	2016F	2017F	2018F	2019F	2020F	2021F	CAGR	Residual	
EBIT(1-marginal tax rate)	1,823,691	2,064,418	2,196,541	2,167,986	1,803,764	1,897,560	0.8%	1,992,326	
YoY		13.2%	6.4%	-1.3%	-16.8%	5.2%		10.5%	
D&A	236,122	241,664	247,089	252,415	257,659	263,328	2.2%	263,328	
YoY		2.3%	2.2%	2.2%	2.1%	2.2%		2.2%	
Net increase in NWC	38,861	48,145	26,425	-5,711	-72,844	18,759	-13.6%	8,939	
YoY		23.9%	-45.1%	-121.6%	1175.5%	-125.8%		-112.3%	
CAPEX	272,860	287,221	302,338	306,873	311,476	315,836	3.0%	315,836	
YoY		5.3%	5.3%	1.5%	1.5%	1.4%		1.4%	
FCFF	**1,748,092**	**1,970,716**	**2,114,867**	**2,119,239**	**1,822,792**	**1,826,292**		**1,930,879**	Option **A)**
FCFF								**1,933,666**	Option **B)**

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Stable Growth Model

Principle #2: Normalize the terminal FCF
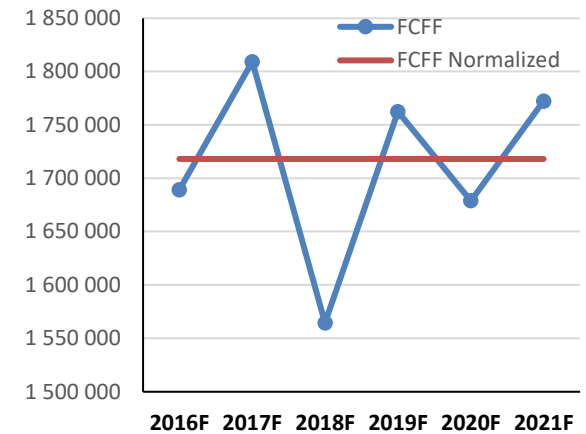
Cyclical companies (cycle of 5-6 years)

(EUR '000)	2016F	2017F	2018F	2019F	2020F	2021F	CAGR	Residual	
EBIT(1-marginal tax rate)	1,823,691	1,940,407	1,542,624	1,954,504	1,708,237	1,920,058	1.0%	1,814,920	
YoY		6.4%	-20.5%	26.7%	-12.6%	12.4%		6.2%	
D&A	236,122	241,361	219,881	242,122	228,824	240,262	0.3%	240,262	
YoY		2.2%	-8.9%	10.1%	-5.5%	5.0%		5.0%	
Net increase in NWC	38,861	23,343	-79,557	82,376	-49,254	42,364	1.7%	9,689	
YoY		-39.9%	-440.8%	-203.5%	-159.8%	-186.0%		-119.7%	
CAPEX	331,810	349,273	277,672	351,811	307,483	345,610	0.8%	327,276	
YoY		5.3%	-20.5%	26.7%	-12.6%	12.4%		6.4%	
FCFF	**1,689,142**	**1,809,152**	**1,564,389**	**1,762,439**	**1,678,831**	**1,772,345**		**1,718,217**	Option **A)**
FCFF								**1,712,716**	Option **B)**

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Stable Growth Model

Principle #3: Adjust the terminal discount rate

	2019F	2020F	2021F	Terminal Value
COST OF EQUITY				
RFR (risk free rate)	0.83%	0.83%	0.83%	0.83%
CRP (country risk premium)	0.00%	0.00%	0.00%	0.00%
MRP (market risk premium)	6.25%	6.25%	6.25%	6.25%
Beta levered	1.2	1.2	1.2	1.2
Cost of equity [Rf + β(Rm-Rf) + CRP]	**8.33%**	**8.33%**	**8.33%**	**8.33%**
COST OF DEBT				
Cost of debt	4.38%	4.38%	4.38%	4.38%
Marginal tax rate	25%	25%	25%	25%
After-tax cost of debt	**3.29%**	**3.29%**	**3.29%**	**3.29%**
WACC				
Weight of equity	27.8%	28.9%	29.9%	29.9%
Weight of debt	72.2%	71.1%	70.1%	70.1%
WACC	**4.7%**	**4.7%**	**4.8%**	**8.5%**

What is the economic rational?

Are there other options?

THE TERMINAL PERIOD

Stable Growth Model

Principle #3: Adjust the terminal discount rate

WACC	Europe E&C	Europe E&S	Africa	LATAM
COST OF EQUITY				
Risk Free Rate (RFR)	4.05%	4.12%	10.00%	7.50%
Beta (β)	1.46	1.35	2.12	1.85
Market Risk Premium (MRP)	7.42%	7.43%	6.31%	5.84%
Cost of Equity	**14.87%**	**14.13%**	**23.40%**	**18.29%**
COST OF DEBT				
Cost of Debt	6.82%	6.82%	6.82%	6.82%
Marginal Tax Rate	30.00%	30.00%	30.00%	30.00%
After-tax Cost of Debt	**4.77%**	**4.77%**	**4.77%**	**4.77%**

The same r_d?

Europe - Engineering and Construction

	2017F	2018F	2019F	2020F	2021F	Terminal
Weight of Equity	44.24%	46.94%	49.96%	56.08%	60.59%	60.00%
Weight of Debt	55.76%	53.06%	50.04%	43.92%	39.41%	40.00%
WACC	**9.2%**	**9.5%**	**9.8%**	**10.4%**	**10.9%**	**10.8%**

WACC per segment?

Terminal period – capital structure?

Increase in the WACC when the business is growing?