

# Valuation tricks & traps

From valuation “fool” to valuation “tool”



**SOCIETE GENERALE**  
Corporate & Investment Banking

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*Finalized on November 30th, 2007*



# Background

- >7 years in Equity Research
  - ▶ **Media industry**
  
- 18 months in Mergers & Acquisitions
  - ▶ **Internet start-up fund raising**
  - ▶ **Mergers & Acquisitions**
  
- Member of “Société Française de l’Evaluation” (SFEV)



# Today's agenda

- Preliminary remarks (3-11)
- Multiples (12-29)
- DCF (30-54)
- Valuation in M&A context (55-78)
- Other specific situations (79-104)
- Closing remarks (105-109)
- Q&A



# Teaching context

- Not a basic financial course: know you basic... or act as if !
- Not offering THE unique method
- Based on valuation experiences
- Raising some questions on usual valuation methodologies

Scoring	Used	Easy = close to books 1	Quick 1	Fiability odds = absence of tricks 2	Fiability if gross =Low Margin error 2	Score	Knowledge required
<b>Weighting</b>							Accurate
DCF	✓	6	6	6	7	38.0	✓
EVA	?	5	7	6	7	38.0	✓
VAN/IRR/ROCE	-	6	6	6	7	38.0	✓
Productivity	Quick ! -	6	7	6	6	37.0	
Black & Sholes	-	4	5	7	7	37.0	
Stock market multiples	✓	8	8	4	6	36.0	✓
Transaction multiples	✓	8	8	4	6	36.0	✓
Dividend discount model	?	5	6	6	6	35.0	✓
Reevaluated net asset	-	5	5	5	5	30.0	✓
Adjusted Present value	-	4	5	6	4	29.0	
<b>Average</b>		<b>5.9</b>	<b>6.4</b>	<b>5.6</b>	<b>6.3</b>	<b>36.1</b>	

Disclaimer:

All material and views are personal and do not reflect any third party opinion. Also see additional disclaimer page 109



# What's wrong ?

		<b>Debt</b>		<b>15%</b>							
		<b>Int. Rate</b>		<b>5.0%</b>							
		<b>EBIT/F. ch</b>		<b>12.5</b>							
Risk free rate	5%										
Risk premium	5%										
Beta	100%										
<b>WACC</b>	<b>8.57%</b>										
		<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
EBIT		100.0	105.0	110.3	115.8	101.6	87.6	104.0	115.7	137.7	156.1
<i>Division A</i>		<i>100.0</i>	<i>105.0</i>	<i>110.3</i>	<i>115.8</i>	<i>121.6</i>	<i>127.6</i>	<i>134.0</i>	<i>140.7</i>	<i>147.7</i>	<i>155.1</i>
<i>Division B (project starts 2011)</i>						<i>-20.0</i>	<i>-40.0</i>	<i>-30.0</i>	<i>-25.0</i>	<i>-10.0</i>	<i>1.0</i>
+ D&A		10	11	11	12	12	13	13	14	15	16
- Taxes (20% until 2025, 34% after)		-20.0	-21.0	-22.1	-23.2	-20.3	-17.5	-20.8	-23.1	-27.5	-31.2
- Capex		-10	-11	-11	-12	-12	-13	-13	-14	-15	-10
+/- WCR		10	10	10	10	10	10	10	10	15	20
FCF		90	94	98	103	91	80	93	103	125	150
Discount factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49
Discounted		90	87	84	81	66	54	58	59	66	74
Total flows		718									
Terminal value		1360									
Discount factor		0.49									
Discounted terminal value		666									
Debt		160									
<b>Total valuation (excl. Debt/cash)</b>		<b>1224</b>									



# “Best in class” valuation ... only partly learnt at school !

- Understand the valuation context (IPO, M&A, seller vs acquirer, LBO vs industry, ...)
- Self-learning !
- What books are missing ? What room for manoeuvre vs books ?
- Case study often basic situations: ie no loss making companies

	<b>DCF</b>	<b>Multiples Comment</b>
Sampling error		v
Mistakes on EV	v	v Earn-out, minority/associates
Loss making businesses	v	v Minimizing valuation
Estimates	v	Terminal year
Taxation		
		- Differences
		- Tax assets
Financial structure	v	v Accounting Double counting tax assets
		- Targeted structure
	v	
		- Cash/debt valuation
	v	v
		- Cash-double counting
Amortization rules		
		- Difference
		- Charges vs D&A
Stock-options	v	v v Minimizing EBIT
Misleading comparison		v
Discount mistakes	v	v Illiquidity, minority, ...



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Stock-options  
Misleading comparison  
Discount mistakes





## Preliminary remarks

- Need strong financial background
- Good at Finance/Strategy : not sure to be a valuation expert. Opposite is untrue !
- Valuing a company is not having the precise answer (hard to be sure)... but raising the good questions: Go beyond traditional cliché !
- Not a single methodology: taking some views

### Change in valuation methodology used by independant experts in public offers (Cabinet Constantin 06/2007)

	2005-2006	1996
DCF	79%	58%
Stock market multiples	70%	9%
Share price	69%	
Reevaluated Net asset	35%	63%

*NB: Multiple methods ie > 100%*

- No home-made cooking... but recipes !
- Assumptions, assumptions, assumptions !



# What is value ?

- Traducing in financial terms investor thought: risk, estimates, ...
- Price an acquirer is ready to pay for an asset
- Depends on acquirer nature, potential synergies, market shares, nationality, ...  
Fair value from acquirer and seller may differ because of different information level  
(R&D, growth prospects, ...)

## Target price would be "cheap" if :

- Firesale
- Loss making asset
- Cheap historic acquisition price
- Other acquisition opprtunity
- Bad debt market conditions
- Shareholder return constraint (VC IRR, listed acquirer, ...)
- Acquirer scarcity
- Need for asset resale from acquirer (regulation)
- High acquisition execution risk
- Low financial performances / perspectives
- Poor quality of information pre acquisition
- No target/acquirer synergies
- Currency making the acquisiion expensive
- No fiscal integration
- Limited stake for sale
- Portfolio diversifications/alternative solutions

## Target price would be "expensive" if :

- Not an asset for sale
- Highly profitable asset
- High historic acquisition price
- No alternative to such acquisition for the bidder
- Easy access to debt markets (Leverage easy)
- No shareholder return constraint (unlisted ?)
- Target scarcity
- No need for further M&A related to this deal
- Low acquisition execution risk (well-known industry, no restructuring, ...)
- High financial performances / perspectives
- Potential (new projects) clearly identified/explained
- Financial / Operating synergies ?
- Favourable acquisition currency
- Tax asset used/related to acquisition
- Controlling stake (>33% ? >50%)
- Perfect fit with acquirer strategy/geographic reach



# Valuation vs share price ?

- Mitigate stock market valuation importance: what means +/-30% over 1 year ?
- Share price impacted by many additional drivers: sure about market efficiency (what level of information ?) ?

Nature	From company point of view	From share price point of view
Estimates	In-house business plan	Consensus expectations
Degree of information	Deep information knowledge	Only public information available
Information circulation and quality	Instant true information	Newsflow & Momentum Analyst, press, rumours
Valuation	Absolute terms	Relative to other instruments / sectors / stocks
Main valuation drivers	Earnings	Earnings & perceived risk (multiples expansion ?)
Premium	Control premium	No control premium for individual listed shares



## “True valuation” in brokers report ?

- More time than anyone else spent on company/sector & financial knowledge but...
- ...they are still human being and therefore prefer being wrong with everyone rather than right alone !
- Need for rating & valuation consistency can boost/lower valuation
- Valuation based on external public information : Unlike in M&A where buyer makes a due diligence
- Timeframe can impact valuation: 12 months target price ? Immediate target price ?
- Is it target price (includes stock market parameter) or fair value (fundamentals) ?



## Analyst valuation methodologies

- Ernst & Young Advisory survey on 142 brokers notes of 88 companies (January 1st to December 6th, 2005) from more than 15 investment banks
- Up to 5 methods for target price calculation but only one used in 80% of cases
- 70% of analysts use an “overall” method (no distinction between business segments), 21% use a sum of the parts method, 9% both methods
- In the DCF method, the most frequent sensitivity analysis are: beta (appears in 33% of reports), WACC (appears in 67% of notes) and growth rate (Average perpetual growth rate of 2.4% (from 0% to 4%))
- In the multiple method, the average number of companies in the sample is 5, with a scale from 1 to 16 and 80% of analysts use a EV multiple (55% EV / EBITDA) and 89% use PER
- 10% of analysts use other methods (brokers’ own method or linear regression)



# Valuation : very complex !

	Market growth perspectives	GDP Change in technology Substitute product
Revenues	New businesses	Winning R&D ! Side business Start-up / acquisition
	Market shares / Competition	New licences ? End of entry barrier Bankruptcy/additional financial means for competitors
	Change in regulation ?	European harmonisation Safety norms ?
EBIT margin	Cost structure	Change in raw material price Change in staffing cost ? Change in depreciation policy
Capex	Capital intensity	New project launches Change in technology
Tax rate	Long term geographical reach ? Loss carry forward ?	
Risk free rate	Interest rates Geographical breakdown	■ Never stable in the long/middle run !
Risk premium	Market levels Geographical breakdown	
Beta	Gearing Business mix Geographical breakdown	
Cost of debt	Interest rates Gearing	
WACC	Gearing	

# Multiples

*“The multiple-choice valuation”*



# ■ ■ “Multiplying” bubbles !

- Relative valuation only !!!
- Remember 2000 bubble was mainly due to analyst/investor using multiples of dotcoms !...
- ...Would be the same in depressed stock market
- Methodology assuming markets are correctly priced and should be used as a reference
- Should only be used to check valuation consistency



# Sample... not simple !

- Sample is the most important parameter

- What should be the reference criteria ?

Business

Internet more profitable

Geographic reach

Fast growing markets like China, India ?

Development stage

Seed capital, startup: more perspectives

Profitability

Reflects development stage ? Better management ?

- Spot price or average share prices (for lower volatility) ? Global comparables or business per business comparisons ?

- Reference market: USA 2000 Internet different from Spain; China vs. Europe, ...

- Remember 2000: Sample is  $> 2$  ...

- Average must be close to median !!! Exclude lowest / highest ?



## EV: E does not stand for “Easy”

- EV used on aggregates before financial charges/income (revenues, EBIT, EBITDA, FCF adjusted from financials)
- Reminder: EV is not only market cap + debt... but also...+minority interests and - Associates
- Associates and minority interests valued “at best ” i.e. never take book value (under estimate) but market PER (not company targeted multiples)
- Forward looking EV: FY+1 debt, not current one



# Denominator: Do not be lazy !

- Revenues excludes profitability !
- PER (EBITDA, EBIT...) valuing negatively a start-up activity / loss making business  
=> Make a separate valuation when needed !!!

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Net income business A	-15	-10	-5	2	4
Net income business B	34	35	36	37	38
Group net income	19	25	31	39	42
<b>Valuation at 20x PER</b>	<b>380</b>				
<b>Valuation business B at 20x PER</b>	<b>680</b>				
<b>Implicit business A valuation</b>	<b>-300</b>				

← Negative valuation on the business ?

- PER puts implicit valuation on Associates and Minorities ...
- PER mainly impacted by amortization rules, taxation rate and financial structure



## EBITDA : a lot of pros ...

- Introduces profitability but avoids different amortization accounting policies and taxation differences impacts
- Close to Free Cash Flow multiple when CAPEX equals D&A and low WCR
- Very relevant when assessing impact of an acquisition as FCF (more or less EBITDA) repays the debt (not earnings)



Company A      Company B

Revenues	100	100
EBITDA	10	10
DA	-1	-5
Financial result	0	0
Taxes	-3.06	-1.7
Net income	5.94	3.3

EV	100	100
EV/EBITDA	10	10

Same EBITDA multiple despite higher capital intensity

CF		
EBITDA	10	10
Taxes	-3.06	-1.7
Capex	5	3
Working capital change	0	0
FCF	1.94	5.3

**FCF yield**  
**PER**  
if debt 0

1.9%	5.3%
16.8	30.3

Cheapest !!!

Asset	0	100
10 year depreciation	0	10
Revenues	100	100
Charges (excl R&D)	30	30
R&D charges	10	0
EBITDA	60	70
D&A (standard)	5	5
DA (R&D)	0	10
EBIT	55	55

A looks much more expensive

EV	600	600
EV/EBITDA	10.0	8.6
EV/EBIT	10.9	10.9

## ... and some cons !

- Capital intensive business (high D&A and Capex) valued on same levels than low capital intensive business
- Watch out for charges vs. depreciation on some immaterial (licences, R&D)
- Stock options charges included at EBITDA level
- Go beyond a simple EBITDA analysis !!!



# Cash position: PER takes position !

- PER not relevant either in 1/severe debt/cash position; 2/ or if cash financial cost < P&L cost (IFRS & convertible bonds)
- If  $1/PER > \text{post tax cost of debt} / \text{cash income} \Rightarrow$  undervaluation of debt/cash  
If  $1/PER < \text{post tax cost of debt} / \text{cash income} \Rightarrow$  over valuation of debt/cash
- At a 3.5% post tax cost of debt, needs a 28.6x PER for neutrality ...
- To avoid distortion (specifically for companies under LBO): “economic PER” i.e. EBIT (group share) post tax.

Revenues	100			
EBIT	25			
Financial charge	4			
PTP	21			
Taxes	-6.9			
Tax rate	33%			
Net income	14.1			
		Debt under/over valued	Cash under/over valued	
+Cash/-Debt		-100	-100	100
Interest rate		7.50%	7.50%	4.50%
Interest rate post tax		5.0%	5.0%	3.0%
Financial result post tax		-5	-5	3
PER		15	35	15
Cash (debt) valuation		-75	-176	45
<b>Gap</b>		<b>-25%</b>	<b>76%</b>	<b>-55%</b>
				<b>6%</b>

Cash / (debt)	100	Cash / (debt)	-100
Rate (pre-tax)	3%	Rate (pre-tax)	5%
EBIT	100	EBIT	100
Financial income	3	Financial cost	-5
PTP	103	PTP	95
Taxes	-35	Taxes	-32
Net profit	68	Net profit	63
PER	20	PER	20
Implied market cap	1360	Implied market cap	1254
Cash granted	0	Cash granted	200
<b>Total valuation</b>	<b>1360</b>	<b>Total valuation</b>	<b>1454</b>
		Clear incentive for dividend !	<b>7%</b>



## PER & SOP : Good friends !

- Valuing minority interests: Same multiples that company implicit valuation multiple or even below to take into account potential call/put options
- If taking market PER & market PER above company's => reduces the company specific valuation
- When valuing by SOP without central costs, reduce valuation from EBIT multiples applied to central costs => Take EBIT multiple derived by LT cost inflation & WACC, adjusted for taxes.

Company WACC	Costs LT growth			
	4%	3%	2%	1%
12%	8.3	7.3	6.6	6.0
11%	9.4	8.3	7.3	6.6
10%	11.0	9.4	8.3	7.3
9%	13.2	11.0	9.4	8.3
8%	16.5	13.2	11.0	9.4
7%	22.0	16.5	13.2	11.0



# Multiple multiples !

- What about subscribers (pay TV) multiples, unique viewers (Internet) ? No economic rationale & lots of difference (interactivity, ...) => only to check valuation consistency !!!
- Start-up costs: >1x => equals an IRR !

<i>Excluding tax impact</i>	Year 1	Year 2	Year 3	Year 4
EBIT	-5	-10	-3	1
Valuation at 1x start up losses	18			
Capitalized at 10%	18.0	19.8	21.8	24.0
Flows	-5	-10	-3	25.0
<b>Implicit IRR</b>				<b>16%</b>

In this example: 1x start-up losses equals 16% IRR ←

- Invested capital => Can be used on low visibility businesses (Internet): works mathematically, not financially. (seen merger on this parity = implicit assumption of same Return On Investment)



## Lost on loss making earnings ?

- Apply current market multiple on a mature timeframe (Y+5 ?) at present value => takes growth potential and apply current PER.
- Underlying assumptions are 1/Mature market in Y5; 2/company PER in line with market; 3/Market PER Y5 equals today's.
- Like in DCF (negative FCF), always adjust for start up costs (needs to establish the asset, will reduce cash position). Would not adjust if using current PER and current year !

	Year 1	Year 2	Year 3	Year 4	Year 5
EBIT	-5	-10	-3	1	8
Capitalized (10%) losses	-5.0	-9.1	-2.5		
Post tax losses	-3.3	-6.0	-1.6		
Valuation at 12x EBIT					96
Discounted valuation					66
Cumulated start up losses					-10.9
<b>Net valuation</b>					<b>55</b>

Start-up cost needed to establish current valuation



# From old PER to trendy PEG ?

- No rationale behind it: comparing market cap and earnings in €m to growth in % ? => only consistency check !
- Justifying PEG by a relationship high growth/high PER partly wrong: High PER also comes from high cash conversion !
- PEG to take into account several years of growth. PEG on current year = PER (current growth in the Earnings !!!)

	Year 1	Year 2
Share price	25	25
EPS	1	1.15
EPS growth (year2/year1) %		15.00
PER	25	21.7
PEG		1.45

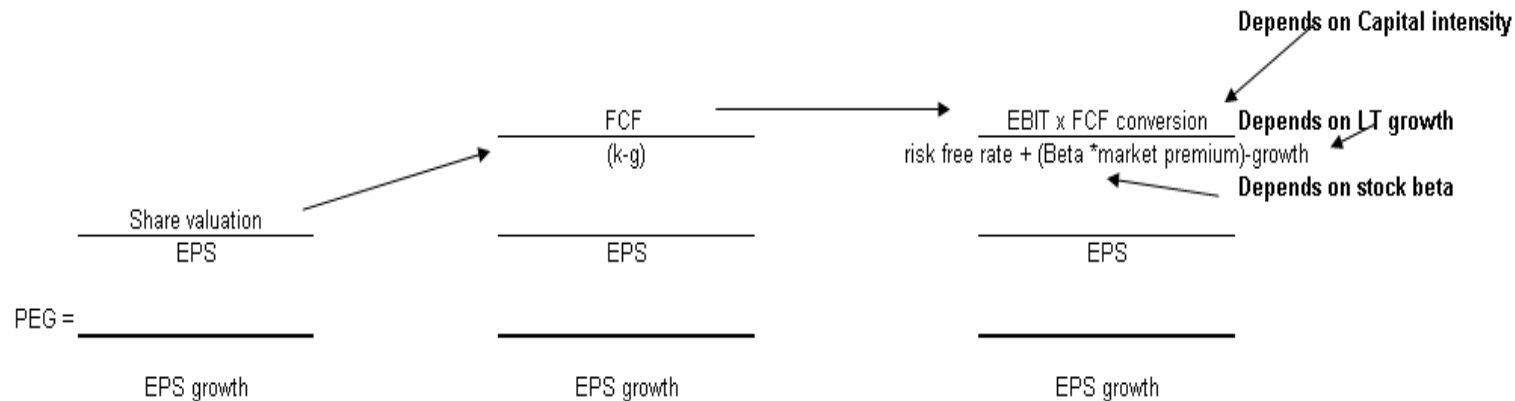
Double counting Y2 EPS !

	Company A	Company B
PER	10	20
Expected growth	2.5%	5%
<b>PEG</b>	<b>4.0</b>	<b>4.0</b>
<b>P&amp;L</b>		
Revenues	100	100
D&A (10 years am.)	4.5	0.5
EBIT	96	100
Taxes	29	30
Net income	67	70
<b>Market Cap</b>	668.5	1393
	Same PEG but one more expensive (with lower PER!) !	
<b>CF</b>		
EBITDA post tax	70	70
Capex	45	5
FCF	25	65
<b>FCF yield</b>	<b>3.7%</b>	<b>4.7%</b>
<b>FCF multiple</b>	<b>26.7</b>	<b>21.4</b>

- PEG stories always coming as further upside... weird !



# Understanding PEG



EBIT (a)	100	100	100	100
FCF conversion (b)	100%	100%	50%	100%
<b>FCF (c=a*b)</b>	<b>100</b>	<b>100</b>	<b>50</b>	<b>100</b>
Risk free rate (d)	4%	4%	4%	4%
Beta (e)	1	1.5	1	1
Market premium (f)	5%	5%	5%	5%
<b>Cost of equity (g= d+e*f)</b>	<b>9.0%</b>	<b>11.5%</b>	<b>9.0%</b>	<b>9.0%</b>
LT growth (h)	5%	5%	5%	5%
<b>Valuation (i= c/(g-h))</b>	<b>2500</b>	<b>1538</b>	<b>1250</b>	<b>2500</b>
EPS	50	50	50	50
<b>PER</b>	<b>50.0</b>	<b>30.8</b>	<b>25.0</b>	<b>50.0</b>
EPS Growth years 07/10	5%	5%	5%	6%
<b>PEG</b>	<b>10</b>	<b>6.2</b>	<b>5.0</b>	<b>8.3</b>

Assuming 0 debt  
Comment

Lower PEG = Cheaper !  
More risky

Lower PEG = Cheaper !  
Higher capital intensity Short term growth stronger



# FCF yield: close to PEG ?

- $EV = FCF / (WACC - LT\ Growth)$  i.e.  $LT\ Growth = EV/FCF - WACC$  or  $LT\ growth = FCF\ yield - WACC$

Market capitalization	1000
Debt	1000
<b>EV</b>	<b>2000</b>
FCF	100
<b>FCF yield</b>	<b>5.0%</b>
WACC	9%
<b>Implicit growth</b>	<b>4.0%</b>

g	WACC	8.0%	8.5%	9.0%	9.5%	10.0%	10.5%	11.0%	11.5%	12.0%
<b>yield</b>										
<b>+4.0%</b>		4.0%	4.5%	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%
<b>+4.3%</b>		3.8%	4.3%	4.8%	5.3%	5.8%	6.3%	6.8%	7.3%	7.8%
<b>+4.5%</b>		3.5%	4.0%	4.5%	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%
<b>+4.8%</b>		3.3%	3.8%	4.3%	4.8%	5.3%	5.8%	6.3%	6.8%	7.3%
<b>+5.00%</b>		3.0%	3.5%	4.0%	4.5%	5.0%	5.5%	6.0%	6.5%	7.0%
<b>+5.25%</b>		2.8%	3.3%	3.8%	4.3%	4.8%	5.3%	5.8%	6.3%	6.8%



# FCF yield : the EV issue

- Need to adjust for post tax financial charge/income: EV already takes into account the debt level, no double counting !
- IFRS theoretical cost of equity-linked debt, significantly higher than cash cost => high PER but neutralized with FCF yield
- FCF yield on EV because of Minority (included in FCF) and Associates (excluded in FCF)

Market Capitalization	1000
Debt	1000
<b>EV</b>	<b>2000</b>

Debt interest rate	5%
Tax rate	34%
Financial cost pre tax	-50
Financial cost post tax	-33

FCF	70
<b>FCF yield gross</b>	<b>3.5%</b>
WACC	9%
<b>Implicit LT growth</b>	<b>5.5%</b>

FCF adjusted from financials	103
<b>Adjusted FCF yield</b>	<b>5.2%</b>
WACC	9%
<b>Implicit LT growth</b>	<b>3.9%</b>

Expensive... becomes cheap !



# FCF yield: useless in comparables if not retreated

- Acquisition (penalized by financial cost but no investment) vs internal growth revenue (no financial cost but Capex) has an impact on FCF yield

	Year 1	Year 2	Year 1	Year 2
Market Capitalization	1000	1000	1000	1000
Debt	0	300	0	300
<b>EV</b>	<b>1000</b>	<b>1300</b>	<b>1000</b>	<b>1300</b>
External growth		-300		0
Revenues acquired		120		0
EBITDA acquired		30		0
Revenues	500	620	500	620
EBITDA	125	155	125	155
Taxes	-42.5	-52.7	-42.5	-52.7
Post tax financial cost	0	-9.9	0	0
WCR	0	0	0	0
Capex	0	0	0	-12
<b>FCF</b>	<b>82.5</b>	<b>92.4</b>	<b>82.5</b>	<b>90.3</b>
<b>FCF adjusted from financials</b>	<b>82.5</b>	<b>102.3</b>	<b>82.5</b>	<b>90.3</b>
FCF/EV		7.1%		6.9%
Adjusted FCF/EV		7.9%		6.9%

Difference depends on capital intensity vs debt cost!



## Compare with... comparables !

- Look after cash comparable transaction rather than share payment (acquirer might be paying with « fake money » if stock overvalued).
- If stock for stock deal: take share valuation at time of the announcement (not closing, nor today)
- If no cash out, valuation reflects what seller/buyer want them to be: (“A bought in shares for 1bn€ while combined entity will be valued 6.5bn€ i.e. B valuation of 5.5bn€”). Same price with a cash out ???
- If deal mainly includes services (A doing some IT services for B and dedicating its sales force to B for 10€m) => no valuation to be deduced.
- Importance of deal nature: Control premium ?, loss making target (can lead to 0 valuation)
- Not comparable from one period to another (for instance higher PER when depressed risk free rate, trendy sectors lifting prices up)



## Price not always on labels ?

- Interesting options mechanisms : Call /Put option likely to be at different prices (enables not to argue on business plan assumptions as price will be adjusted, to leave price unknown or change public reference price...)
- Announced deal may also result from an old option with a fixed price at a time when market, perspectives, interest rates, ... were very different...

	%	m€	
Acquisition	80%	80	
<b>Implicit valuation at 100%</b>	<b>100</b>		
Option	20%	5	
<b>Implicit valuation at 100%</b>	<b>25</b>		
<b>Deal valuation</b>	<b>85</b>		15% lower than apparent price !

- Adjust for all hybrids instruments (even if long maturity); Earn-outs and commercial agreements (might reduce price). Buyout not to be included
- Take forecast (consensus or budget) denominator rather than Y-1 or finally achieved (estimates at time of the deal)

# DCF

*“Dis moi Combien il te Faut”*



# Remind me...

$$\begin{aligned}
 &\left. \begin{array}{l} \text{Revenues} \\ \text{EBIT margin} \end{array} \right\} \text{EBIT} \\
 &\quad \quad \quad + \text{D\&A} \\
 &\quad \quad \quad - \text{Taxes} \\
 &\quad \quad \quad - \text{Change in working capital} \\
 &\quad \quad \quad - \text{CAPEX} \\
 &= \text{Free cash flows}
 \end{aligned}$$

Long term growth

Terminal FCF



Discounted at present value

Weighting equity/(debt + equity)

Weighting debt/(debt + equity)

WACC

Cost of equity

Cost of debt

Risk free rate

Beta

Market Risk premium

Cost of debt

(1-tax rate)



# Where risk is !

Revenues  
EBIT margin }  
EBIT  
+ D&A  
- Taxes  
- Change in working capital  
- CAPEX  
= Free cash flows

Long term growth

Terminal FCF



Discounted at present value

Weighting equity/(debt + equity)

Weighting debt/(debt + equity)

WACC

Cost of equity

Cost of debt

Risk free rate

Beta

Market Risk premium

Cost of debt

(1-tax rate)



# Cot of equity: Beta rules

- Leverage & deleverage your betas to limit debt impact !

	Beta					
Company A		115%				
Company B		120%				
Company C		125%				
<b>Average</b>		<b>120%</b>				Huge difference

	Tax rate	% debt	Debt beta	Unlev beta	Relev beta
Company A	34%	30%	0.16	118%	137.8%
Company B	28%	20%	0.22	123%	137.3%
Company C	34%	45%	0.16	129%	162.1%
<b>Company to value</b>	<b>35%</b>	<b>20%</b>	<b>0.15</b>		<b>145.7%</b>

$$\frac{(\text{Cost of debt} \times (1-T) - \text{Risk free rate})}{\text{Risk premium}}$$

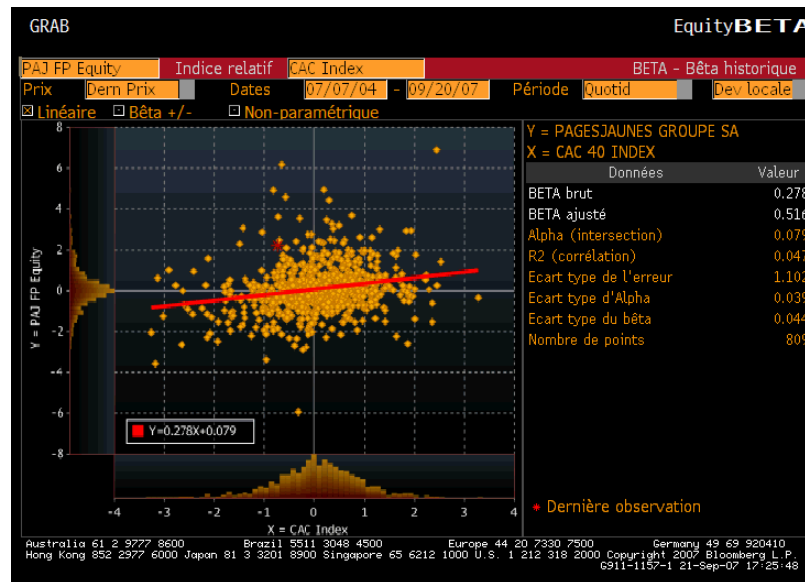
Formulas including debt beta

- Set you own beta..... by division / business !!!
- No double counting: assessing company risk, not macro risk (emerging market exposure in risk free rate)
- Do not believe in scrupulous choice of beta from the market data (Bloomberg...)
- No market data to value a company on stock markets (“circular reference”) !



# Beta example

- 52 weeks, 6 months, 1 month...
- Bloomberg beta not so useful: 1/Weak correlation = no market risk ! ?; 2/Bloomberg adjustment formula is an arbitrary adjustment to get closer to 1





# Risk on risk premium !

- Be careful also on market risk premium (where does it come from ?)
- No historic risk premium (yearly return seen between LT bond rates and shares): based on past return ie not rationale
- “Future risk premium” : Share prices vs expected cash flows
- Several numbers at same time as depends on many assumptions

Risk premium calculation					
Index level :	5700				
Current dividend yield :	3.75% <i>Several estimates</i>				
Expected market growth rate in earnings (next 5 years) :	6.00% <i>Several estimates</i>				
Current long term bond rate :	4.50%				
Expected long term growth rate :	4.00% <i>Several estimates</i>				
Implied Risk Premium	3.76%				
	1	2	3	4	5
Expected Dividends	226.58	240.17	254.58	269.85	286.05
Expected Terminal Value					6983.82
Present Value	209.29	204.92	200.64	196.45	4888.69
<b>Intrinsic Value of Index</b>	<b>5700</b>				

Justifies several premiums

- If stable markets and raise in interest rates => decrease in risk premium.. until where ?  
If 8% rates, 1% risk premium ?
- Set your own risk premium (accepted risk): Private equity at 25% for years !



## Inflation: Be consistent !

- WACC calculation includes inflation : Risk free rate & market risk premium include today's inflation expectations
- LT growth must include inflation (as immediate FCF do) with close rate to the one in WACC (market forecast, not historic). Big impact on terminal value & valuation.
- A 2% approx LT growth as often seen for terminal value implies either a sharp decrease in inflation rate (0% vs >1.5% long term historic) or no real growth on long term => both unrealistic !!!
- Do not mix spot & historic risk free rate/inflation.

Hist risk free rate

5.85% *French 10 year bond / Bloomberg 1990-2007*

Historic inflation

1.70% *French Inflation all households, incl tabacco / Insee 1990-2007*

**Difference**

**4.15%**

Today's risk free rate

4.17% *French 10 year bond / Bloomberg spot* Take spot/forecast, not historic !

Today's inflation

1.80% *Insee forecast as of today*

**Difference**

**2.37%**

- Reminder:  $\text{Real WACC} = (1 + \text{Nominal WACC}) / (1 + \text{expected inflation}) - 1$



# Inflation: Deflating the valuation !

- If discounting to perpetuity a sustainable net income (before taxes and excluding extraordinary items) => do not take inflation !

Revenues	100	
EBIT	40	
Financial cost	0	
<b>PTP</b>	<b>40</b>	
Risk free rate	4%	
CPI (inflation)	1%	← To be neutralized
Risk premium	5%	
Specific beta	90%	
Non adjusted rate	8.9%	
<b>Valuation</b>	<b>449</b>	
Deflated rate	7.900%	
<b>Valuation</b>	<b>506</b>	
<b>Difference</b>	<b>12.7%</b>	

- Methodology recognised by AMF



# WACC: Where Accuracy Counts and Counts !

- Beta and LT growth to reflect geographical & division breakdown
- Uncertainties reflected in beta, not in depressed flows (double counting) ! Alternative approach: take depressed flows with close to risk free rate
- Debt / Equity not different from the one resulting from valuation, several WACC depending on years, terminal value on terminal year WACC

■ Debt : Market value  
ie lower than  
book value  
if fixed debt  
and rates went up

	Company A: raise in cost of debt		Company B: decr. in cost of debt	
	@ Book value	@ Market value	@ Book value	@ Market value
Debt book value	100	100	100	100
Initial cost of debt	Euribor +1%	Euribor +1%	Euribor +1%	Euribor +1%
Initial Euribor	4.0%	4.0%	4.0%	4.0%
Initial cost of debt	5.0%	5.0%	5.0%	5.0%
Current Euribor	5.0%	5.0%	3.00%	3.00%
Current cost of debt	6.0%	6.0%	4.0%	4.0%
Yearly coupon	5	6	5	4
Debt value	100	83.3	100	125.0
Equity value	150	150	150	150
Cost of equity	10%	10%	10%	10%
Debt at market value	<b>100</b>	<b>83.3</b>	<b>100</b>	<b>125</b>
Cost of debt	6.0%	6.0%	4.0%	4.0%
WACC (tax rate of 30%)	7.68%	7.93%	7.12%	6.73%
% change				<b>-5.5%</b>

Decreased



## What cost of debt is ?

- Should not be cost of existing debt but cost at which company would raise cash... Same mechanism than equity cost that takes current risk free rate and risk premium
- Cost of debt is therefore not the interest rate at which the company obtained the debt that it has on its books.
- Based on risk-free rate and spread
- Net of tax to reflect tax shield



## Cash positive situation (s !)

- Recently raised cash from Private Equity => IRR 15% / 20% used as WACC
- Cash from past operating/divestment/...: cost of opportunity used in WACC calculation
- Debt is post tax... so is cash !



# Cost of capital : fake change ?

- School: “lower cost of capital leads to higher valuation” / Business: no automatism !... Literature start to fight against such idea !
- Implies: 1/market efficiency; 2/Dividend would create value !!!; 3/Overpay acquisition = positive on valuation (lower WACC)

	Stand alone	Not overpaying (acq 100)	Overpaying by25% (acq 125, value 100)
Debt	0	100	125
Equity	100	100	100
Cost of debt post tax	3.5%	3.5%	3.5%
Cost of equity	10%	11%	12%
WACC	10.0%	7.3%	7.3%
Flows			
Discounted flows	36.4	42.5	43.4
Terminal value			
Discounted terminal value	63.5	81.8	84.6
Old assets valuation	100	124.3	128
Additional asset value	0	100	100
Debt	0	100	125
Value	100	124.3	103
<b>Upside vs standard</b>		<b>24.3%</b>	<b>3.0%</b>
<b>Value destruction % EV</b>		<b>0%</b>	<b>-24%</b>

Value destruction positive on DCF because of lower WACC

- PagesJaunes striking example: 1/ from cash to 3x Ebitda debt; 2/ earnings and dividend resilience; 3/ defensive stock:=> theory +15% on DCF post dividend but stable valuation and ... no broker valuation changes !!!



# Cost of capital sensitivity: no half sensitivity !

- Subtract additional debt from EV !

Risk free rate	5%	<b>Debt</b>		<b>13%</b>								
Risk premium	5%	Int. Rate		5.0%								
Beta	100%	EBIT/F. ch		12.5								
<b>WACC</b>	<b>8.7%</b>											
		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	
EBIT		10.0	10.5	11.0	11.6	12.2	12.8	13.4	14.1	14.8	15.5	
+ D&A		1	1	1	1	1	1	1	1	1	2	
- Taxes		-3.4	-3.6	-3.7	-3.9	-4.1	-4.3	-4.6	-4.8	-5.0	-5.3	
- Capex		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
+/- WCR		0	0	0	0	0	0	0	0	0	0	
FCF		6.6	6.9	7.3	7.6	8.0	8.4	8.8	9.3	9.8	10.8	
Discount factor		0.92	0.85	0.78	0.72	0.66	0.61	0.56	0.51	0.47	0.43	
Discounted		6	6	6	5	5	5	5	5	5	5	
Total flows		52										
Terminal value		85										
Debt		16	13%									
<b>Total valuation (excl. Debt/cash)</b>		<b>121</b>										

- Re-leveraged beta for equity component & higher debt spread

*For simplification: No debt beta taken into account*

- Increase in value mainly coming from smart (internal/external) investments

Risk free rate	5%	<b>Debt</b>		<b>42%</b>								
Risk premium	5%	Int. Rate		5.5%								
Delev. Beta	0.92	EBIT/F. ch		4.55								
<b>Relev. Beta</b>	<b>118%</b>											
<b>WACC</b>	<b>7.5%</b>											
		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	
EBIT		10.0	10.5	11.0	11.6	12.2	12.8	13.4	14.1	14.8	15.5	
+ D&A		1	1	1	1	1	1	1	1	1	2	
- Financial cost (no repayment)		-2	-2	-2	-2	-2.2	-2	-2	-2	-2	-2	
- Taxes		-3.4	-3.6	-3.7	-3.9	-4	-4.3	-4.6	-4.8	-5.0	-5.3	
- Capex		-1	-1	-1	-1	-1.2155	-1	-1	-1	-1	-1	
+/- WCR		0	0	0	0	0	0	0	0	0	0	
FCF		4.4	4.7	5.1	5.4	5.8	6.2	6.6	7.1	7.6	8.6	
Discount factor		0.93	0.86	0.80	0.75	1	0.65	0.60	0.56	0.52	0.48	
Discounted		4	4	4	4	4	4	4	4	4	4	
Total flows		40										
Terminal value		94										
Debt		40	42%									
<b>Total valuation (excl. Debt/cash)</b>		<b>94</b>										

Lower valuation ?



# Specific projects: Minimizing/Maximizing valuation ?

■ For specific projects, a higher WACC to reflect risky project that turn negative will reduce the negative impact on valuation ...

■ ... same on the upside if project becomes less risky / turn positive

### Valuation before project launch

WACC	9%	1	2	3	4	5	6
FCF		-50	-40	-10	-30	10	20
Discount factor		0.92	0.84	0.77	0.71	0.65	0.60
Discounted		-46	-34	-8	-21	6	12
Total flows		-90					
Terminal vaue		248					
<b>Total valuation (excl debt/cash)</b>		<b>158</b>					

### Valuation during project (revised estimates but unchanged discount rate)

WACC	9%	1	2	3	4	5	6
FCF		-50	-40	-15	-10	-5	-5
Discount factor		0.92	0.84	0.77	0.71	0.65	0.60
Discounted		-50	-40	-12	-7	-3	-3
Total flows		-115					
Terminal vaue		-62					
<b>Total valuation (excl debt/cash)</b>		<b>-177</b>					

### Valuation during project (downgraded estimates and higher discount rate)

WACC	15%	1	2	3	4	5	6
FCF		-50	-40	-15	-10	-5	-5
Discount factor		0.92	0.84	0.77	0.71	0.65	0.60
Discounted		-46	-34	-12	-7	-3	-3
Total flows		-104					
Terminal vaue		-28					
<b>Total valuation (excl debt/cash)</b>		<b>-133</b>					

Reducing negative impacts



# Is 10 years too much ?

- Agree on low visibility but ...
- ... terminal term is the main risk in valuation: highly dependant on LT growth.  
Represents 50% of a 10 years FCF

	g = 2.5%													
	k = 10.00%													
Year	1	2	3	4	5	6	7	8	9	10				
Flows	100.0	102.5	105.1	107.7	110.4	113.1	116.0	118.9	121.8	124.9				
Discounted flows	90.9	84.7	78.9	73.6	68.5	63.9	59.5	55.5	51.7	48.1	675.3	50.6%	50.6%	49.4%

- Need 30 years to have terminal value < 15% ! (see next slide)
- Why not taking current year normalised FCF (mid cycle) and discounted to perpetuity (SG Media methodology) ?



# What optimal timeframe ?

- Margin error on terminal flow vs terminal value weight

## Terminal value in DCF

g = 3%  
k = 10.00%

Years	1	2	3	4	5	6	7	8	9	10
Flow	100.0	102.5	105.1	107.7	110.4	113.1	116.0	118.9	121.8	124.9
Disc. Flow	90.9	84.7	78.9	73.6	68.5	63.9	59.5	55.5	51.7	48.1
<b>Année</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>
Flux	128.0	131.2	134.5	137.9	141.3	144.8	148.5	152.2	156.0	159.9
Flux actua	44.9	41.8	39.0	36.3	33.8	31.5	29.4	27.4	25.5	23.8
<b>Année</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>	<b>26</b>	<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>
Flux	163.9	168.0	172.2	176.5	180.9	185.4	190.0	190.0	190.0	190.0
Flux actua	22.1	20.6	19.2	17.9	16.7	15.6	14.5	13.2	12.0	10.9
<b>Année</b>	<b>31</b>	<b>32</b>	<b>33</b>	<b>34</b>	<b>35</b>	<b>36</b>	<b>37</b>	<b>38</b>	<b>39</b>	<b>40</b>
Flux	190.0	190.0	190.0	190.0	190.0	190.0	190.0	190.0	190.0	190.0
Flux actua	9.9	9.0	8.2	7.4	6.8	6.1	5.6	5.1	4.6	4.2
<b>Année</b>	<b>41</b>	<b>42</b>	<b>43</b>	<b>44</b>	<b>45</b>	<b>46</b>	<b>47</b>	<b>48</b>	<b>49</b>	<b>50</b>
Flux	190.0	190.0	190.0	190.0	190.0	190.0	190.0	190.0	190.0	190.0
Flux actua	3.8	3.5	3.2	2.9	2.6	2.4	2.2	2.0	1.8	1.6
<b>Année</b>	<b>51</b>	<b>52</b>	<b>53</b>	<b>54</b>	<b>55</b>	<b>56</b>	<b>57</b>	<b>58</b>	<b>59</b>	<b>60</b>
Flux	190.0	190.0	190.0	190.0	190.0	190.0	190.0	190.0	190.0	190.0
Flux actua	1.5	1.3	1.2	1.1	1.0	0.9	0.8	0.8	0.7	0.6
<b>Année</b>	<b>61</b>	<b>62</b>	<b>63</b>	<b>64</b>	<b>65</b>	<b>66</b>	<b>67</b>	<b>68</b>	<b>69</b>	<b>70</b>
Flux	190.0	190.0	190.0	190.0	190.0	190.0	190.0	190.0	190.0	190.0
Flux actua	0.6	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.2

675.3	1-10	Cumulated	TV
	50.6%	50.6%	49.4%
333.3	11-20	Cumulated	TV
	25.0%	75.6%	24.4%
162.7	21-30	Cumulated	TV
	12.2%	87.8%	12.2%
66.9	31-40	Cumulated	TV
	5.0%	92.9%	7.1%
25.8	41-50	Cumulated	TV
	1.9%	94.8%	5.2%
9.9	51-60	Cumulated	TV
	0.7%	95.5%	4.5%
3.8	61-70	Cumulated	TV
	0.3%	95.8%	4.2%
1333.3			

Need 30 years to reduce terminal value importance



# SG Media valuation methodology (1/2)

- EBIT 2007 x “Normalisation” factor x FCF conversion rate = normalised EBIT
- Discounting “normalised” 2007 FCF to perpetuity

DCF Valuation						US	43.0%	4.5%				
Trend GDP growth	2.50%					Europe	45.0%	4.4%				
LT inflation	2.50%					Rest of World	12.0%	4.8%				
Long bond	4.50%							4.5%				
Risk premium	5.00%											
		How much of EBIT converted to FCF?				FCF 07 conv. Trend vs act. FCF07 norm.	Risk adj Risk prem. ECC	Trend RCAGR vs GDP	Tax rate	%		
<b>Division 1</b>	<b>2005</b>	<b>2006</b>	<b>2007e</b>	<b>2008e</b>	100%	125%	+2.10%	34%	100%	<b>528</b>		
Revenues	150	165	182	200	100%	6.3%	-16%					
EBIT	30	39	49	61	32	10.8%						
Operating margin	20.0%	23.6%	27.1%	30.4%								
x Revenues	3.5x	3.2x	2.9x	2.6x								
x EBIT	17.6x	13.5x	10.7x	8.7x								
PER	26.7x	20.5x	16.3x	13.2x								
<b>Division 2</b>	<b>2005</b>	<b>2006</b>	<b>2007e</b>	<b>2008e</b>	100%	135%	+2.00%	34%	100%	<b>434</b>		
Revenues	250	263	276	289	105%	6.8%	-20%					
EBIT	30	36	42	49	29	11.3%						
Operating margin	12.0%	13.7%	15.3%	16.9%								
x Revenues	1.7x	1.7x	1.6x	1.5x								
x EBIT	14.5x	12.1x	10.3x	8.8x								
PER	21.9x	18.3x	15.6x	13.4x								
<b>Total</b>	<b>2005</b>	<b>2006</b>	<b>2007e</b>	<b>2008e</b>	100%	130%	+2.05%	34%	100%	<b>962</b>		
Revenues	400	428	457	489	102%	6.5%	-18%					
EBIT	60	75	91	110	62	11.0%						
Operating margin	15.0%	17.5%	20.0%	22.4%								
x Revenues	2.4x	2.2x	2.1x	2.0x								
x EBIT	16.0x	12.8x	10.5x	8.8x								
PER	24.3x	19.5x	15.9x	13.3x								
<b>Dette</b>										<b>-200</b>		
<b>TOTAL Valuation</b>										<b>762</b>		

Growth on top of inflation  
 Equity cost of capital as unknown debt split  
 Sustainable EBIT margin  
 What is “normalised” level vs 2007  
 Debt subtracted at the bottom = no benefits from leverage



## SG Media valuation methodology (2/2)

### Pros

- Based on immediate FCF for terminal value (lower risk on terminal term, usually 50% of valuation in DCF)
- Mid-cycle FCF = no distortion due to strong/depressed business cycle trends
- Setting individual betas and growth rates for each division. Enabling to differentiate by geographic reach.
- Using multiple to check valuation consistency

### Cons

- Not valuing properly immediate fast growth (only a LT growth and no individual growth rate)
- Same growth, inflation, risk free rate, beta potential mistakes
- Very weak valuation volatility (normalised) except change in year. Fair value rather than target prices
- Not taking into account the potential benefits from leverage (debt subtracted at the bottom)



## Is there a terminal value ?

- All DCF have a terminal value ... at least at school !
- What if company has no tangible assets and only “short life assets” movies, licences, games, ... ?
- For LT contract, take a mid length contract cash flow, discount to perpetuity and apply odds of getting the contract (how many players on the market ?)
- If no terminal value: just discount the identified future cash-flows



# Terminal value: small differences ... big impacts !

- Pay specific attention to last FCF: Capex must equal D&A ! WCR ? (0 if no clue !)

## DCF with depreciation = Capex in terminal FCF

	10%	1	2	3	4	5	6	7	8	9	10
WACC											
EBIT		20	25	30	35	40	45	50	55	60	65
+ D&A		5.0	5.5	6.1	6.7	7.3	8.1	8.9	9.7	10.7	11.8
- Taxes		-6.8	-8.5	-10.2	-11.9	-13.6	-15.3	-17	-18.7	-20.4	-22.1
- Investissements		-5.0	-5.5	-6.1	-6.7	-7.3	-8.1	-8.9	-9.7	-10.7	-11.8
- WCR		1	1	1	1	1	1	1	1	1	1
FCF		14	18	21	24	27	31	34	37	41	44
Discount factor		0.92	0.84	0.77	0.71	0.65	0.60	0.55	0.50	0.46	0.42
Discounted		13	15	16	17	18	18	19	19	19	19
Total flows		172									
Terminal value		646									
Discount factor		0.42									
Discounted terminal value		273									
<b>Valuation excl (debt/cash)</b>		<b>444</b>									

## DCF with depreciation 33% above Capex in terminal FCF

	10%	1	2	3	4	5	6	7	8	9	10
WACC											
EBIT		20	25	30	35	40	45	50	55	60	65
+ D&A		5	6	6	7	7.3	8	9	10	11	12
- Taxes		-6.8	-8.5	-10.2	-11.9	-13.6	-15.3	-17	-18.7	-20.4	-22.1
- Investissements		-5	-6	-6	-7	-7.3	-8	-9	-10	-11	-8
- WCR		1	1	1	1	1	1	1	1	1	1
FCF		14	18	21	24	27	31	34	37	41	48
Discount factor		0.92	0.84	0.77	0.71	0.65	0.60	0.55	0.50	0.46	0.42
Discounted		13	15	16	17	18	18	19	19	19	20
Total flows		173									
Terminal value		705									
Discount factor		0.42									
Discounted terminal value		298									
<b>Valuation excl (debt/cash)</b>		<b>471</b>									

Inconsistency

Gap:  
9.1%  
6.0%



# Growth: Gross consistency check is a must !

- Keep in mind GDP growth: what about a much higher growth than GDP ?
- For Internet valuation, make a 50 years model and get your CAGR
- Have in mind the implicit PER => not above current market valuation !

## Implicit PER calculation

	Growth						
	2.0%	2.5%	3.0%	3.5%	4.0%	4.5%	5.0%
15%	7.7	8.0	8.3	8.7	9.1	9.5	10.0
14.5%	8.0	8.3	8.7	9.1	9.5	10.0	10.5
14.0%	8.3	8.7	9.1	9.5	10.0	10.5	11.1
13.5%	8.7	9.1	9.5	10.0	10.5	11.1	11.8
13.0%	9.1	9.5	10.0	10.5	11.1	11.8	12.5
12.5%	9.5	10.0	10.5	11.1	11.8	12.5	13.3
12.0%	10.0	10.5	11.1	11.8	12.5	13.3	14.3
11.5%	10.5	11.1	11.8	12.5	13.3	14.3	15.4
11.0%	11.1	11.8	12.5	13.3	14.3	15.4	16.7
10.5%	11.8	12.5	13.3	14.3	15.4	16.7	18.2
10.0%	12.5	13.3	14.3	15.4	16.7	18.2	20.0
9.5%	13.3	14.3	15.4	16.7	18.2	20.0	22.2
9.0%	14.3	15.4	16.7	18.2	20.0	22.2	25.0
8.5%	15.4	16.7	18.2	20.0	22.2	25.0	28.6
8.0%	16.7	18.2	20.0	22.2	25.0	28.6	33.3

CMPC = k



# Terminal value... or terminal multiple ?

- Terminal value can be assessed through a PER or EBITDA multiple

$$VE = PER \times RN = \frac{FCF}{k - g}$$

alors

$$\frac{1}{k - g} \times FCF = PER \times RN$$

donc

$$\frac{1}{PER} = k - g$$

## Implicit long term growth

	PER						
	10	15	20	25	30	35	40
15%	5.0%	8.3%	10.0%	11.0%	11.7%	12.1%	12.5%
14.5%	4.5%	7.8%	9.5%	10.5%	11.2%	11.6%	12.0%
14.0%	4.0%	7.3%	9.0%	10.0%	10.7%	11.1%	11.5%
13.5%	3.5%	6.8%	8.5%	9.5%	10.2%	10.6%	11.0%
13.0%	3.0%	6.3%	8.0%	9.0%	9.7%	10.1%	10.5%
12.5%	2.5%	5.8%	7.5%	8.5%	9.2%	9.6%	10.0%
12.0%	2.0%	5.3%	7.0%	8.0%	8.7%	9.1%	9.5%
11.5%	1.5%	4.8%	6.5%	7.5%	8.2%	8.6%	9.0%
11.0%	1.0%	4.3%	6.0%	7.0%	7.7%	8.1%	8.5%
10.5%	0.5%	3.8%	5.5%	6.5%	7.2%	7.6%	8.0%
10.0%	0.0%	3.3%	5.0%	6.0%	6.7%	7.1%	7.5%
9.5%	-0.5%	2.8%	4.5%	5.5%	6.2%	6.6%	7.0%
9.0%	-1.0%	2.3%	4.0%	5.0%	5.7%	6.1%	6.5%
8.5%	-1.5%	1.8%	3.5%	4.5%	5.2%	5.6%	6.0%
8.0%	-2.0%	1.3%	3.0%	4.0%	4.7%	5.1%	5.5%

CMPC = k

Assuming 100% FCF conversion rate



# Debt leverage: leverage the impact !

- The higher debt component there is, the highest sensibility you get !

		Year	Year +1	
Company A	Entreprise value	100	130	+30%
	- Debt	60	60	
	= Equity value	40	70	<b>+75%</b>
	<i>Debt/Equity</i>	67%		
Company B	Entreprise value	100	130	+30%
	- Debt	40	40	
	= Equity value	60	90	<b>+50%</b>
	<i>Debt/Equity</i>	150%		

Gearing impacting valuation leverage



# Debt or debts ?

- Debt / Balance sheet hardly looked at in 2000... before coming back in 2001... just before off-balance sheet focus (incl. earn-outs (IFRS ?) and pensions commitments)
- Include in debt all earn-outs (commitment given/asset in valuation) but not buyouts (would need to adjust valuation from new assets).
- Buyouts = hint of minorities valuation, of financial flexibility ? Should lead to option valuation !
- Treasury shares: Adjust cash position if needed (depending on number of shares) to avoid double counting. Watch out: do not over/undervalue treasury shares in restatement

Treasury shares ...	...included in cash also in total number of shares	...excluded from cash and excluded from total number of shares	...excluded from cash and excluded from total number of shares
Asset valuation	1000	1000	1000
Cash	300	100	50
of which treasury shares	200	0	0
Company valuation	1300	1100	1050
Outstanding shares	130	110	110
of which treasury shares	20	0	0
per share valuation	10	10	9.5 -4.5%

Annotations in the table:

- An arrow points from "Treasury shares overvalued..." to the value 0 in the third column.
- An arrow points from "Same valuation / share" to the values 10 and 10 in the bottom row.
- An arrow points from "... lowers per share valuation" to the values 9.5 and -4.5% in the bottom row.



## Few common DCF “mistakes”

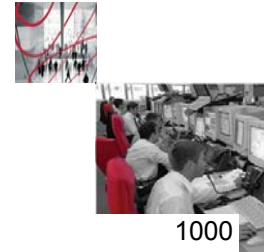
### Wrong:

- Set a historic risk premium
- Take a beta on markets
- Historic cost of debt
- Capex not equalling D&A at terminal yr
- WCR change at terminal value
- LT rate not including inflation
- Discounted tax rate on terminal flow
- Depressed FCF to include risk

### Right:

- Take prospective / stable risk premium
- Set your own beta
- Cost at which cpany would raise funds
- LT Capex matches D&A
- WCR should not have big swings
- Include it as in risk prem. & risk free rate
- Value tax asset separately
- Risk already in beta

# Valuations in M&A



# Shareholder value: What value ?

- Very trendy... very different !
- ROCE vs WACC : very mathematic !
- More realistic: price paid vs. valuation

Acquisition price	1000
EBIT	100
Post tax EBIT	66
Capital employed	1000
ROCE	6.6%
WACC	8%
ROCE-WACC	-1.4%
EVA	-14

Value creation if 8.3x EBIT

WACC	8.0%
ROCE = Post tax EBIT / Capital Employed	8.0%
Implied EV / EBIT post tax multiple	12.5
Implied EV/EBIT multiple	8.3

Acquirer market cap	3000
Target fair valuation	1000

Premium	Valuation	Value destruction	Combined valuation	% value destruction
5%	1050	-50	3950	-1.3%
10%	1100	-100	3900	-2.5%
15%	1150	-150	3850	-3.8%
20%	1200	-200	3800	-5.0%
25%	1250	-250	3750	-6.3%
30%	1300	-300	3700	-7.5%
35%	1350	-350	3650	-8.8%

	Scenario A	Scenario B
EBIT	130	130
Post tax EBIT	86	86
Capital employed	1000	1200
ROCE	8.6%	7.2%
WACC	7.0%	7.0%
ROCE-WACC	1.6%	0.1%
(ROCE-WACC)*CE	16	2

- or acquisition multiple vs. acquirer multiple (if no status change)

	Target	Acquirer	Combined	Market valuation
EBIT	10	15		25
Multiple	10	8		8
Valuation	100	120	220	200
				-9%

Inconsistent !



# EPS enhancement is not value creation !

- Impact on earnings different from impact on valuation
- A 5% interest rate does not lead to 20x EBIT maximum price (1/5%) ! Indeed accretive on earnings (debt financing) but think about value creation !
- Important: Is the acquired asset valuation vs. additional debt (or equity)
- Otherwise no M&A (disposal dilutive in cheap rates, acq. dilutive in high interest rate context !)

	Acquirer	Target	Post acq fair price 100% cash	Post acq fair price 100% shares	Post acq 30% premium 100% cash	Post acq 30% premium 100% shares
Revenues	400	100	500	500	500	500
EBIT	100	20	120	120	120	120
Financial cost	0	0	-11.9	0	-15.4	0
Taxes	-34	-6.8	-36.8	-40.8	-35.5	-40.8
Net income	66	13.2	71.4	79.2	69.0	79.2
Number of shares	100	100	100	120	100	126
EPS	0.66	0.132	0.71	0.66	0.69	0.63
Change			<b>8.1%</b>	<b>0.0%</b>	<b>4.6%</b>	<b>-4.8%</b>
Valuation acquirer	1188		1188	1426	1117	1426
per share valuation	11.88		11.88	11.88	11.17	11.31
per share valuation change			<b>0.0%</b>	<b>0.0%</b>	<b>-6.0%</b>	<b>-4.8%</b>
Valuation target		238				
if 30% premium		309				
Value destruction		71				

Accretion but value destruction



# Cash is King, not King and Queen !

- Deduce cash needed to establish an asset. Close to fund raising: Pre-money / post money excl. cash raised if BP depends on it

	Reserved capital increase			
	Pre		Post	
Asset of which cash	5200		7880	
Company A	5200	100%	5200	66%
Company B including capital increase	0	0%	2680	34%
	0		2680	
<b>Total</b>	<b>5200</b>		<b>7880</b>	
Company B investment			2680	
-34% share in valuation			911	
Net cash out			1769	

- Deduce from EV the non proprietary cash used to get the company market value (cash coming from operating)!
- Deduce cash from company valued separately (listed assets at market value)
- Reminder: If treasury shares included in cash, include them in total number of shares



## What about voting right ?

- Share: Income (dividend) + Assets (if liquidation) + Pre-emption (Cap increase) + Voting right
- If no voting right, make sure: 1/there is no compensation (boosted dividend ? If so make the calculations !); 2/It does not apply to all shares (ie no more than 5% voting right for any shareholder); 3/It does not already imply an illiquidity discount (if several kind of shares)
- 5.44% premium for voting shares vs non voting (with same dividend) on the most serious research (Lease, McConnell, and Mikkelson, 1983). Last research : 80% of 445 European investors (4.9bn€ managed) for a 10%/30% discount if restriction on voting right. (June 2007)
- Depends on takeover premium, odds of takeover and post takeover price



# Mechanism of the voting right premium

- Only voters decide about the merger

## Value of the voting right

Value of company if stand alone	1000
Value of company if bought	1300
Odds of an acquisition	20%

Number of non voting shares	50
Number of voting shares	50

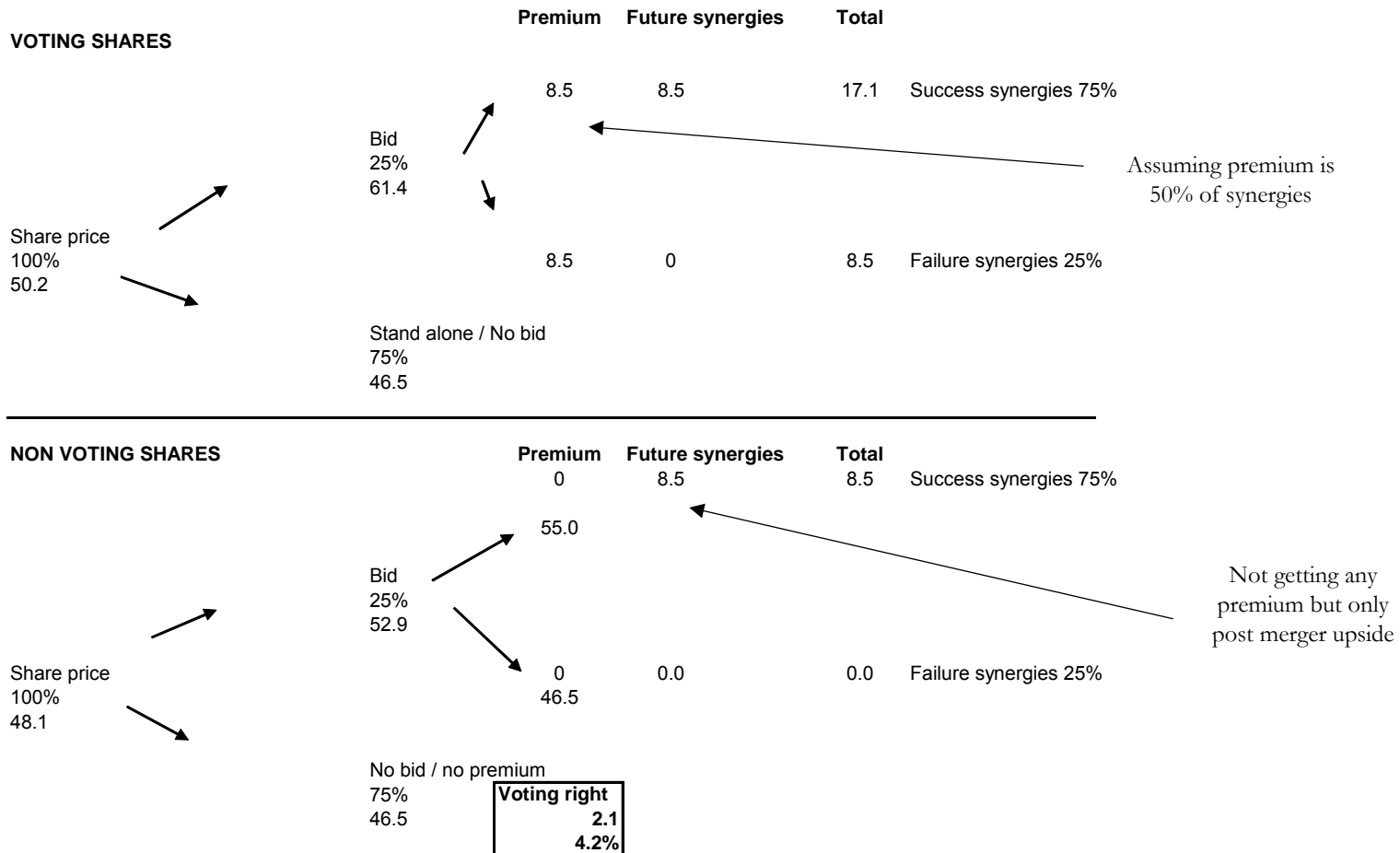
Non voting share valuation	10
Voting share valuation	11.2
<b>Premium</b>	<b>12%</b>

*Company stand alone valuation / total number of shares (voting or not)*  
*Company stand alone valuation +20% x valuation gain if offer*

- But:
- Minority shareholders will benefit from merger synergies;
- In most M&A (LBO included), company targeting fiscal integration ie need to offer premium to non voting shares



# Voting right: hard to rationalize





# Synergies: Not only operating ones

Type of synergies	Nature	Examples	Calculation	Sharing
<b>Operating synergies</b>	Revenue synergies	Pricing power, cross selling	Longer growth period, higher long term growth in	Depending of each contribution (expertise, new markets)
	Cost synergies	Economy of scale	Higher short and long term margins	Equal sharing / Are synergies specific to target ?
<b>Financial synergies</b>	Usage of target cash	Value of project vs cash valuation	Loss in present values in waiting to take investments	Target
	Debt capacity	Adding some resilient FCF	Potential for additional debt & lower WACC	Mostly target
	Tax benefits	Profit to offset tax asset, tax savings if investing (LBO)	PV of tax savings	Target
	Risk diversification	Geographic, product, client	Lower beta	Target

- Analysts / Investors forget about financial synergies... except when obvious (LBO tax asset)
- Remember: Mc Kinsey : out of 160 deals 70% missed their revenue target / 41% missed their cost target



# Takeover premium: Giving away synergies

- Only If a target (no strong regulation, legal status (voting rights limits, possible share increase during offer, ...). No hostile bid for Commandite. Put an odds !
- Difference between a DCF excl. synergies & with synergies (include implementation cost). What sharing ?

	Acq + 3 years	Target + 3 years	Synergies	Combined + 3 years
Revenues	100	50	3 2% of combined revenues	153
Variable costs	20	10	0 No synergies	30
Fixed costs	65	33	1 1% of combined fixed costs	97
EBIT	15	7	<b>4.0</b>	26
Margin	15.0%	14.0%		17.0%
Net income	10	5	<b>2.6</b>	17
Valuation at 20x PE	198	92		343
Synergies valuation			53	
Discounted 3 years at 12%			37	

**Maximum premium** 40.5% 0% for acq / unlikely  
**If give away 50%** 20.2%  
**If give away 30%** 12.1%

← Usual sharing 30% to 50% for seller

- Seller tends to include synergies / acquirer excludes them !
- Priv. equity will only value the fiscal integration except for “build up”



# EBIT post tax multiple => Quick but not so dirty !

- Scepticism on top line synergies (cross-selling ?) / cost synergies (% of combined cost base ?)
- Risk: independent from WACC (same risk whatever financial structure is). Between 8%/9% (assuming 4% risk free rate, 5% market premium and 0.8/1 beta). Risk should increase if unrealistic. Implementation costs !!!
- LT growth: cost would have grown if no cost cutting => inflation rate ? (depends on fixed / variable costs that are cut)
- Do not forget taxes (revenues-cost = EBIT ie to be taxed !!!)

Risk on synergies	LT growth			
	4%	3%	2%	1%
10%	11.0	9.4	8.3	7.3
9%	13.2	11.0	9.4	8.3
8%	16.5	13.2	11.0	9.4
7%	22.0	16.5	13.2	11.0
6%	33.0	22.0	16.5	13.2
5%	66.0	33.0	22.0	16.5

← Post taxes

Reminder: Risk free rate 4%, Risk premium 5%, Beta <1 ? => 8%-9% risk



# Takeover price: Maximum offer level

- Total Shareholder Return (TSR) to match WACC

2011 Targeted earnings	150
Targeted PER	16
Number of shares	50

**Per share targeted valuation 48.0**

	Dividends	Factor Capitalized	
2007	1.25	1.30	1.62
2008	1.35	1.19	1.60
2009	1.5	1.09	1.64
2010	1.58	1	1.58
<b>Cumulative value at PV</b>			<b>6.44</b>

## Offer level

25	21.5%
26	20.3%
27	19.2%
28	18.1%
29	17.1%
30	16.1%
31	15.1%
32	14.2%
33	13.3%
34	12.5%
35	11.7%
36	10.9%
37	10.1%
38	9.4%
39	8.7%



Leaving a 10%/11% upside for acquirer



# LBO: What impact on valuations ?

- FCF yield : a nice proxy !

Market Cap	1000	1000
Debt	0	0
<b>EV</b>	<b>1000</b>	<b>1000</b>
FCF yield	3%	6%
FCF	30	60
Acquisition debt	750	750
Equity	250	250
Debt rate post tax <i>(assuming fiscal integration)</i>	4.3%	4.3%
FCF post acquisition debt	-2.2	27.8

↑  
>0 on FCF as cost of debt < FCF yield

- Premium on potential targets...but start to see stretched valuation !

## LBO impact on valuation

	<u>Positive</u>	<u>Negative</u>
<b>Debt</b>	Relevareging the balance sheet (post merger holding / target) Dividend yield secured (to repay debt)	Most of IRR made on leverage (not same return for minority) Lower debt flexibility for acquisition ?
<b>Entry price</b>	Offer extended to minority with small premium Investors playing an offer raised (premium on the last % bef 95%) ?	Most of the IRR done at entry price (= no big premium)
<b>Reorganisation</b>	Portfolio rationalisation Special dividend also for minority	Need to refinance acquisition debt leading to firesale ?
<b>Exit value</b>	Part of the IRR to be made at exit value	Maximizing EBIT and FCF = lack of investment
<b>Management</b>	Better cost management	Usual management fees ?



## Leverage: bulk of company value accretion, not of VC's gains

- Ernst & Young September 2007 report on 2006 biggest LBO disposals (worldwide)
- Yearly valuation increase: 33% in USA, 23% in Europe
- EBITDA growth: limited to 15% in USA (half of valuation increase), approx 8% in Europe (one third of valuation increase)
- EBITDA growth: 22% from acquisitions, 44% from organic growth, 31% restructuring, 3% other
- BUT: out of 100\$ managed, 5.41\$ gained through “Carried interest” (capital gain); 10.35\$ on “management fees” (on asset under management) and 4\$ through “Fees granted by company under management”-Based on 144 LBO funds, 1992-2006 (Wharton School)



# LBO: Interesting for minority shareholder ?

- Minority of VC owned group: 10 points lower IRR !!!

- Only (!) Protection on dividend and exit price

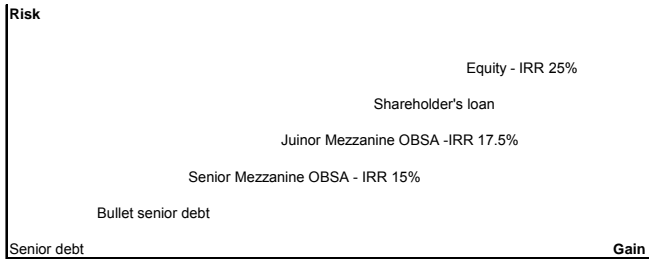
<b>Holding</b>						
Equity	20					
Dette	80	Rate 6%				
<b>EV</b>	<b>100</b>	Assuming debt "bullet"				
<b>Target</b>						
x EBITDA	10					
<b>Holding</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Debt beg year	80.0	78.1	74.2	69.8	64.8	
Repayment (100% div)	6.6	6.9	7.3	7.6	8.0	Dividend of Y-1
Debt end of year	80	78	74	70	65	59 Post financial cost & div
Average debt	79	76	72	67	62	
Financial cost	4.7	3.0	2.9	2.7	2.5	Fiscal integration Year 2
<b>Target Company</b>						
EBITDA	10.0	10.5	11.0	11.6	12.2	12.8 +5% / year
Net income	6.6	6.9	7.3	7.6	8.0	8.4 34% tax rate
Dividend	6.6	6.9	7.3	7.6	8.0	8.4 payout 100%
<b>IRR Calculation</b>						
Acquisition price	-100					
Debt	-80					
Equity	-20					
EV exit		128				
Less Acquisition debt		59				
Equity value		68				
Total flows	-20	0	0	0	0	68 <b>28%</b>
Without leverage	-100	7	7	8	8	136 <b>12%</b>

Leverage making bulk of IRR



# LBO: Sure about financial synergies ?

- Indeed leverage enables to pay 14% more ...
- ... but offset by demanding IRR !



Holding						
Equity	20					
Dette	80	Rate	6%			
EV	100	Assuming debt "bullet"				
Target						
x EBITDA		10				
Holding		1	2	3	4	5
Debt beg year		80.0	78.1	74.4	70.3	65.9
Repayment (100% div)		6.6	6.8	6.9	7.1	7.3 Dividend of Y-1
Debt end of year	80	78	74	70	66	61 Post financial cost & div
Average debt		79	76	72	68	64
Financial cost		4.7	3.0	2.9	2.7	2.5 Fiscal integration Year 2
Target Company						
EBITDA	10.0	10.3	10.5	10.8	11.0	11.3
Net income	6.6	6.8	6.9	7.1	7.3	7.5
Dividend	6.6	6.8	6.9	7.1	7.3	7.5
<b>To get 9% without leverage</b>						
Exit price at 10x EBITDA		113				
Less acquisition debt		0				
Net equity		113				
Discounted		74				
Dividends for equity		6.6	6.8	6.9	7.1	7.3
Discounted at present value		6.1	5.7	5.4	5.0	4.7
Total discounted flows		6.1	5.7	5.4	5.0	78.3
<b>Equity to be invested</b>	<b>-100</b>					
<b>Total price to be paid</b>		<b>100</b>				
Debt		0				
Equity		100				
<b>To get 9% IRR with leverage</b>						
Exit price at 10x EBITDA		113				
Less acquisition debt		61				
Net equity		52				
Discounted		34				
Dividends for equity		0.0	0.0	0.0	0.0	0.0 Used for debt repayment
Discounted at present value		0.0	0.0	0.0	0.0	0.0
Total discounted flows		0.0	0.0	0.0	0.0	34
<b>Equity to be invested</b>	<b>-34</b>					
<b>Total price to be paid</b>		<b>114</b>				
Debt		80				
Equity		34				
<b>To get 21% IRR with leverage</b>						
Exit price at 10x EBITDA		113				
Less acquisition debt		61				
Net equity		52				
Discounted		20				
Dividends for equity		0.0	0.0	0.0	0.0	0.0 Used for debt repayment
Discounted at present value		0.0	0.0	0.0	0.0	0.0
Total discounted flows		0.0	0.0	0.0	0.0	20
<b>Equity to be invested</b>	<b>-20</b>					
<b>Total price to be paid</b>		<b>100</b>				
Debt		80				
Equity		20				

← Can offer 14% more !

← Cannot pay any premium !



# Adjusted present value: LBO suitable but uneasy

- Unleveraged firm value + tax benefit from debt – Bankruptcy cost. Shows what is the LBO valuation impact (tax savings vs industrial synergies)!
- Think about bankruptcy cost => otherwise debt becomes an “unmixed blessing”
- Difference with DCF: 1/APV is tax benefit on given debt (possibly repaid) vs unchanged gearing in DCF; 2/cost of bankruptcy possibly differ from the releveraged beta impact

Adjusted present value approach (based on perpetual flows assumptions for simplification)		DCF approach	
Risk free rate	4%	Risk free rate	4%
Risk premium	5%	Risk premium	5%
Beta	1.2	Beta	1.2
Tax rate	34%	Cost of equity	10.0%
		Tax rate	34%
Unlevered beta	1.00	Post tax cost of debt	3.3%
Cost of equity unleverred	9.0%	WACC	7.5%
FCF	100	FCF	100
LT growth	3%	LT growth	3%
Cost of equity unleverred	9.0%	Cost of equity unlevered	7.5%
FCF valuation	1664	FCF valuation	2229
Debt	1000		
Perpetual tax shield	340		
			Debt repayment would lower tax shield
Cost of bankruptcy	25%		
Odds of bankruptcy	10%		
Total cost	41.6		Risky assumptions !!!
<b>Total Adjusted net present value</b>	<b>1963</b>	<b>DCF valuation</b>	<b>2229</b>



# Bankruptcy / Distressed cost

- Calculation: Odds (depends on debt level, industry, ...) x cost
- Direct cost => Litigation fees for 3% to 5% of firm value at time of distress (Warner (1977) and Weiss (1990));
- Indirect costs => loss of market share, and inefficient asset sales are much harder to quantify: 10% to 23% of pre-distress firm value for a sample of highly leveraged firms.

Average cumulative 1981-2005 payment default (Standard & Poors)

Year	AAA High Quality	AA	A	BBB Investment grade limit	BB	B High leverage	CCC Strong difficulties
1	0.00%	0.01%	0.04%	0.27%	1.12%	5.38%	27.02%
2	0.00%	0.04%	0.12%	0.76%	3.33%	11.80%	35.63%
3	0.03%	0.09%	0.23%	1.32%	5.96%	17.14%	40.93%
4	0.06%	0.19%	0.38%	2.06%	8.45%	21.24%	44.39%
5	0.10%	0.29%	0.59%	2.83%	10.65%	24.16%	47.56%
6	0.17%	0.40%	0.81%	3.56%	12.77%	26.45%	48.78%
7	0.24%	0.52%	1.06%	4.15%	14.45%	28.37%	49.98%

LBO: B-,B,B+  
 Cost @ 10%  
 Cost @16.5%  
 Cost at 23%

2.42% 5 years  
 3.99% 5 years  
 5.56% 5 years



## LBO: control premium

- Classic control premium can be used for LBO only when « build up »
- Tax asset on top of it: If 95% (tax consolidation) => deduce acquisition holding financial charge from target
- Need 95% to share premium with minority (not 50%)
- Calculation: On total debt repayment (not LBO length only) and on difference between two scenarios (different repayment schedule given lower charge) not just facial savings
- Main issue: Private equity will share part of the tax assets calculated with constant IRR (20%/30 – unfair as close to no risk on this tax asset) while institutional shareholder will discount at 10% approx (best approach as seller should not include acquire financing conditions).



# LBO: tax asset valuation

Years	1	2	3	4	5	6	7	8	9	10	11	12
Financial charge with tax consolidation	174	170	165	159	152	143	132	118	102	84	62	0
Financial charge if no tax consolidation	264	263	260	256	250	241	230	215	195	172	145	113
Difference	90	93	95	97	98	98	98	96	93	89	83	113
Present value (discounted at 8%)	83	79	75	71	66	62	57	51	46	40	35	44
<b>Total</b>	<b>709</b>											

Differences between Minority and Private equity approach

If IRR 2010	With tax consolidation			Without tax consolidation			Fiscal Intergation
	Eqty val	Dette	Bid level	Eqty val	Dette	Bid level	
22%	1245.0	5150.0	6395.0	1029.8	5150.0	6179.8	215.2
23%	1195.2	5150.0	6345.2	988.6	5150.0	6138.6	206.6
24%	1147.8	5150.0	6297.8	949.4	5150.0	6099.4	198.4
25%	1102.6	5150.0	6252.6	912.0	5150.0	6062.0	190.6
26%	1059.6	5150.0	6209.6	876.4	5150.0	6026.4	183.2
27%	1018.5	5150.0	6168.5	842.4	5150.0	5992.4	176.1
<b>28%</b>	<b>979.3</b>	<b>5150.0</b>	<b>6129.3</b>	<b>810.0</b>	<b>5150.0</b>	<b>5960.0</b>	<b>169.3</b>
29%	942.0	5150.0	6092.0	779.1	5150.0	5929.1	162.8
30%	906.3	5150.0	6056.3	749.6	5150.0	5899.6	156.7



# Stock for stock deals impact valuation

- Over valued acquirer share can enable to lift prices ! Cash payment obviously enables no financing gain

	All cash	All shares undervalued	All shares Over valued
Target Market capitalization	1000	1000	1000
Acquirer market capitalization	3000	3000	3000
Number of shares	300	300	300
Share price	10	10	10
FV acquirer share price	6	12	8
Cash payment	1000	0	0
Share payment	0	1000	1000
New shares to be issued	0	83	125
New Equity value	3000	4000	4000
New number of shares	300	383	425
New "fair price"	10	10.4	9.4
Change	<b>0.0%</b>	<b>4.3%</b>	<b>-5.9%</b>
	No change Debt = asset	Smart use of shares	Destroying value
To be neutral on valuation should have paid	1000	1200	800
Premium		<b>20%</b>	<b>-20%</b>



# Impact of a stock for stock deal : simple rule

- If target PER > 1/post tax financial cost acquirer => shares
- Explains past M&A payments (from 58% in 2000 to 75% cash deal in 07, source BCG 2007) !

	PER Target > Acq.	PER Target = Acq.	PER Target < A
<b>Acquirer before</b>			
Net income	150	150	150
Number of share	300	300	300
EPS	0.50	0.50	0.50
Share price	10	15	20
PER	20	30	40
Net interest rate post	3.3%	3.3%	3.3%
	30.3	30.3	30.3
<b>Target</b>			
Net income	20	20	20
Number of share	100	100	100
EPS	0.2	0.2	0.2
Share price	5.0	6.0	7.0
PER	25	30	35
Valuation	500	600	700
1/cost of debt for ac	30.3	30.3	30.3
<b>Acquirer after (100% shares)</b>			
Net income	170	170	170
Number of share	350	340	335
EPS	0.49	0.50	0.51
EPS change	-2.9%	0.0%	1.5%
<b>Acquirer after (100% cash)</b>			
Combined net incor	170	170	170
- financial cost @ 3.	-16.5	-19.8	-23.1
Net income post imj	154	150	147
Number of share	300	300	300
EPS	0.51	0.50	0.49
EPS change	2.3%	0.1%	-2.1%

Years	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
PER (Media stocks)	22.8	28.5	55.3	26.6	29.6	20.5	12.9	18.1	15.6	13.5
Pay cash if cost of debt post tax below	4.4%	3.5%	1.8%	3.8%	3.4%	4.9%	7.8%	5.5%	6.4%	7.4%
Maximum pre tax cost of debt	6.6%	5.3%	2.7%	5.7%	5.1%	7.4%	11.7%	8.4%	9.7%	11.2%
Possible ?	Sure	Possible	Impossible	Possible	Possible	Sure	Sure	Sure	Sure	Sure
Payment	Cash	??	Shares	??	??	Cash	Cash	Cash	Cash	Cash



# Stock for stock deals can protect from value destruction

- Most of 2000's deal in stock...well done !
- Goodwill amortization is a non cash charge !
- Years 2000 stock for stock deal not destroying value !!!

	Before	Stock for stock acq (5 x initial valuation)	Krach B over valued	Krach B at fair value	Krach B under valued
A+B	<b>300</b>	<b>1500</b>			
A	200	1000	150	200	50
B	100	500	50	100	150
B Shareholders' equity	20				
Goodwill		480	30	80	130
<b>Write off needed</b>			<b>-450</b>	<b>-400</b>	<b>-350</b>
A Shareholders' equity	<b>40</b>	<b>540</b>	<b>90</b>	<b>140</b>	<b>190</b>

Goodwill amortization despite  
"smart" use of stock



# Acquisition risk calculation ?

- Taking the timeframe (discount !)
- Premium hardly above 30% (management is not silly !)
- Could also integrate change of financial structure => Impact on stock status ?

Market Capitalization	1000
Debt	0
<b>EV</b>	<b>1000</b>
EBITDA	100
x EBITDA	10
Debt capacity (x EBITDA)	3
Debt capacity	300

Risk value destruction

Premium % Current market capitalization	Immediate	1 year	2 years
0%	0%	0.0%	0.0%
10%	-3%	-2.7%	-2.5%
20%	-6%	-5.5%	-5.0%
30%	-9%	-8.2%	-7.5%
40%	-12%	-10.9%	-10.0%

Worst case: immediate @ 100% odds !



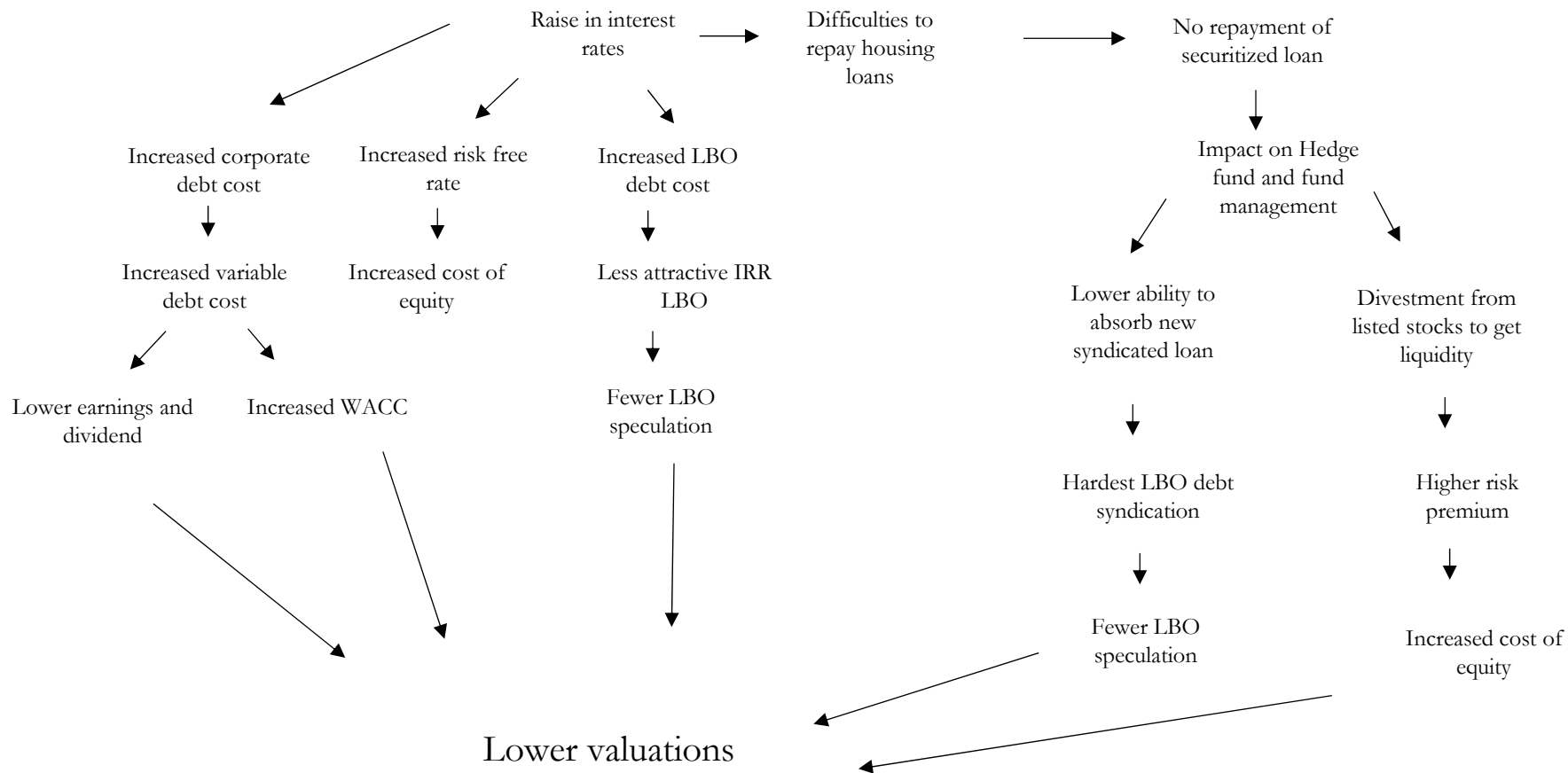
## Is spin-off creating value ?

- Only value is the value of information (improved transparency for the subsidiary) !
- Only creating value on markets because of inefficient information
- Worst case scenario: Holding discount if all subsidiaries are disposed !!!

# Other specific situations



# Subprime: one crisis, many impacts !





# What impact on valuation ?

Nature	Valuation imp	Comment
Tax assets	++	Check for no double counting ?
Loss making business	++	Possible under valuation
Real estate	+	Sale of real estate implies renting charges !
Financial leverage	+	Risk profile ?
Securitization	0	Asset becoming cash
Business split	0	No change of asset portfolio
Brand	0	Included in Market Cap & EV calculations
Sub-contract	0	Implies additional charges
Share buyback / dividend	0	Likely accretion on EPS with low interest but no impact on valuation

No change on valuation :

- Change on Accounting method (DA policy, restructuring charge)
- Non cash charges
- Split, tracking stock

■ Always look for side effects : renting charge, sub-contracting charge, risk profile change (debt interest rate, equity beta); ...

## Event nature

- Change in financial guidances
- Outperforming / Under delivering financial targets
- Achieving / Missing new projects (R&D, ...)
- Change in financial structure
- Break of debt covenants / commitments
- Discovering off-balance sheet commitments
- Legal action against company
- Existence of fraud in the company
- Change in management / strategic directions
- Change in business conditions (regulatory, competition, ...)
- Change in currency / interest rates

## Implication

- Change in estimates
- Change in risk profile
- Change in growth profile
- Change in risk profile
- Change in risk profile
- Change in financial liabilities
- Change in financial liabilities
- Change in risk profile / status
- Change in risk profile / status
- Change in estimates
- Change in estimates



## Real options: back to reality ! (1/2)

- DCF/Multiples may put negative valuation on projects
- Financial Investments, R&D, Tangibles CAPEX are « call » on future earnings
- Put into question traditional valuation methodology (dilutive acquisition can be seen as option on future)
- Big differences DCF/Real Options if large development cost / low project valuation

PV investment	PV future CF	DCF valuation	Option valuation	Difference
-90	200	110	170	60
-130	200	70	116	46
-130	150	20	70	50

%
35%
40%
71%



# Real options: back to reality ! (2/2)

## Option theory

### Assumptions:

Present value of future cash flow	200
Standard deviation in present va	20%
Cost of developping the project	45
Life of the project	10
Riskless rate	4.0%

### Comment

Excluding start-up losses  
 Change in capital budgeting ? Operating surprises ?  
 At present value / no cost after viability  
 Number of years / Reasonable timeframe  
 During project (not only at start)

### Calculation:

Stock price	200
Strike price	45
Maturity	10
Riskless rate	4%
Variance	4%

= project valuation  
 = needed investment  
 = project lifetime  
 = (Standard deviation ^2)

d1 3.307  
 N(d1) 1.000

d2 2.675  
 N(d2) 0.996

**Project valuation 170**

## DCF calculation

Risk free rate	4.00%
Risk premium	4.90%
Beta	100%
Cost of equity	8.9%

Current gearing 25%  
 Cost of debt post tax 3.6%  
**WACC 7.6%**

<b>Years</b>	
EBIT	
Discount factor	
Discounted	

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
EBIT	-50	-30	-22	5	12	30	50	70	90	110
Discount factor	0.93	0.86	0.80	0.75	0.69	0.64	0.60	0.56	0.52	0.48
Discounted	-46	-26	-18	4	8	19	30	39	47	53

PV of cum. Start-up losses -90 (year 1 to 3)  
 Project value excluding start up losses 200 (year 4 to 10)  
**Project valuation 110**

**Difference with Options theory : -35%**

Large difference !



# Stock options are not an option in PER ...

- Stock options are taken into account in PER calculation but ...
- ... need to adjust for the yearly charge (volatility) and adjust from financial income (post taxes) resulting from stock options exercise (capital increase)

Revenues	1000		
EBIT	300		
Stock option charge	-10		
PTP	290	Industry PER	15
Taxes	-98.6	<b>Non adjusted valuation</b>	<b>28.7</b>
<b>Net income</b>	<b>191.4</b>		
Shares outstanding	100		
Non diluted EPS	1.91		
EBIT	300		
PTP (excluding stock option charge)	300		
Taxes	-102		
<b>Net income</b>	<b>198</b>		
Stock options impact			
Number of stock options	20		
Strike price	20		
Capital increase resulting from stock options	400	<b>Valuation</b>	<b>26.4</b>
Debt interest rate	5%	(adjusted from stock options & cash)	
Financial costs savings post taxes	13.2		
<b>et income adjusted from cash inflow</b>	<b>211</b>	<b>If not adjusted from cash</b>	<b>23.9</b>
Number of shares fully diluted	120		
<b>Fully diluted EPS</b>	<b>1.76</b>		

Correct one !



26.4



## ... nor in DCF !

- Non cash charge i.e. not taken into FCF calculation => adjust number of shares...
- ... And take into account the implied capital increase (cash and financial income) !

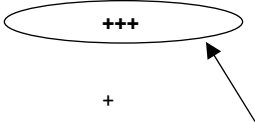
DCF		
Discounted flows	619	
Discounted terminal value	2475	80%
Total	<b>3094</b>	
If not diluted	<b>30.9</b>	
If diluted without cash adjustment	<b>25.8</b>	
If diluted with cash adjustment	<b>29.1</b>	← Correct one !

- As a reminder, free shares do not grant any capital increase but are dilutive



# Dilutive instruments impacts

Instrument	Characteristics	Impact	Likely dilution on valuation ?
ORA	Bond redeemable in new shares	Need to issue new shares / cheaper financial cost	++
ORANE / OCEANE	Bond redeemable in new shares or existing shares	If existing share not owned: cash out Otherwise if in cash =cash out; If subtracted from nber of shares = dilution Cheaper financial cost	+
Stock-options	Limited strike price	Dilutive on valuation (cheaper price)	++
Free shares	Shares granted for free	No cash raised Highly dilutive	+++
OBSAAR	Warrants sold by banks (cheaper financial cost) Repayment: new shares or own shares	= cash in limited to strike at exercise	+



Nightmare !

- Include even very long term instruments !
- All have an impact for shareholders ... not company (IFRS charging stock option in P&L is a non sense !)



# Repayment mode: no big deal !

	Company owning shares Accounted in cash	Company owning shares Deduced from number of shares	Company not owning shares Need to buy on the market
<b>Before</b>			
<b>Assets</b>	<b>10000</b>	<b>10000</b>	<b>10000</b>
<b>Net debt</b>	<b>1000</b>	<b>1900</b>	<b>1900</b>
of which bank debt	1000	1000	1000
of which ORANE	900	900	900
of which Cash	900	0	0
<b>Equity value</b>	<b>9000</b>	<b>8100</b>	<b>8100</b>
Total number of shares	1000	1000	1000
of which owned	100	100	0
Used for target calculation	1000	900	1000
<b>per share valuation</b>	<b>9.0</b>	<b>9.0</b>	<b>8.1</b>
<b>Repayment ORANE/OCEANE</b>			
Bring the 100 shares owned	-900		
New cash position	0		
New debt position	1000		
New per share valuation	<b>9.0</b>		
Change	<b>0.0%</b>		
Cash out		0	
New debt position		1000	
New market capitalization		9000	
New number of shares		1000	
News per share valuation		9	
Change		<b>0.0%</b>	
Buying the 100 shares			-900
New debt position			1900
New market cap			8100
New number of shares			1000
New per share valuation			8.1
Change			<b>0%</b>



# Where cross checking is misleading !

- If stake in listed diversified company, do not calculate PER adjusted from this stake
- Discount only beard on non listed assets (listed part valued at market price) what increases the discount on non listed assets

	Fair value	Current valuation	% discount	
<b>Total valuation</b>	<b>100</b>	<b>70</b>	<b>-30%</b>	
Business A (not listed)	70	40	-43%	
Business B (listed)	30	30	0%	
<b>Total earnings</b>	<b>6.7</b>	<b>6.7</b>		
Business A (not listed)	4.7	4.7		
Business B (listed)	2.0	2.0		
<b>Implied PER</b>	<b>15</b>	<b>10.5</b>		
Business A (not listed)	15	8.6	-43%	← Increased discount on non listed asset !
Business B (listed)	15	15		

- EPS on non listed part bears all the financial cost that might result from acquiring the listed part ! PER lowered/under estimated debt
- If debt was to be raised PER would be lowered reflecting difficulties to repay the debt



## What scenarios for scenarios ?

- Sometimes company valuation might differ accordingly to scenarios (regulation change, acquisitions, new business launches, ...)
- Put an odds on those scenarios accordingly to realistic probability (not targeted valuation ...)
- Close to the options theory then !
- Valuation is precisely taking stances !
- But...do not make your own recipe : No weighting of several methodologies !



## Discount an premiums: Discounts the fundamental work

- Key rule: At first look discount and premiums in a suspicious way
- Always compare the discount/premium to absolute terms: Remember the Messier discount on a 60bn€ group ...
- Why taking accurate assumptions in DCF and destroy part of the work through massive discount / premiums ?
- Liquidity discount only for non listed assets (20%/30%) ! Not necessarily if shareholder pact (could serve shareholder if tax benefits, poison pill,...)
- No systematic takeover premium (put an odds !!!)



## Holding discount: Not a diversification discount !

- Consensus on a -20%/-30% (today close to -20% according to Chevreux, HSBC)
- Differentiate “active” and “sleeping partners”
- Relevance: No cash-flow control; tax liabilities if group breaks up
- No discount because of diversification !
- Holding of holdings: do not de-multiply discount: the one in the middle is transparent !



## What about “control discount” ?

- When very high prices
- IRR constraint from private equity...
- ... and market constraint for listed companies
- But lower constraint from minority shareholder ie premium control not always existing !



## Minority discount: not the majority of the situation !

- Discount if no FCF control & no synergies benefits
- No FCF but dividends (payout ratio ?) ! If no dividend, cash will be monetized later (at resale), in share price or if invested in  $>$  WACC projects
- Minority interest profits from M&A synergies. Often bought back to simplify structure.
- No discount if minorities interest well-protected if listed asset or if shareholder agreement (then only “risk” is fraud)
- Discount only if: Not listed asset or no shareholder agreement, emerging markets with low minority protection (fraud risk)



## Shareholding structure premium ?

- New concept ? Now in Standard's & Poors rating
- Family owned company => <32%: large outperformance of share price; >32% lower outperformance (Anderson & Reeb, S&P 500 sample).
- Reference shareholder => 1989-2002 French company study shows: 40%/50% leads to optimal profitability / 60%/70% lower profitability

### Large shareholder impact:

+

- Management control
- Management well protected from shareholders
- LT stock outperformance
- Specific advantages for key shareholders

-

- Lower management initiatives
- Wish to keep control vs optimizing valuation
- Lower share liquidity
- Diverging interests between large & small shareholders

- Impacts partially offsetting high valuation risk=> Avoid discount/premium on this basis but “play” with beta



# Discounts / Premiums straight to the point

	% Min	% Max	Comments
Holding	-20%	-30%	<ul style="list-style-type: none"> <li>- Reflects lack of control (cash-flow); taxation liabilities if break up and assets illiquidity</li> <li>- Only 20% if recently created (no taxable capital gain)</li> <li>- Not to be cumulated with Illiquidity</li> <li>- Cannot add several holding discounts (max. 40% ?)</li> </ul>
Minority	-10%	-20%	<ul style="list-style-type: none"> <li>- Not so obvious: only if non listed asset, no shareholder agreement. Dividend vs FCF</li> <li>- Veto for minority at 33.34% SA ... but 25.01% SARL and even lower for Commandite !</li> <li>- 5% stake in a LBO (public to private company) can be a pain</li> </ul>
Illiquidity	-20%	-30%	<ul style="list-style-type: none"> <li>- Minimum discount when majority stake as they have a control premium</li> <li>- No discount if illiquidity protects owner (shareholder pact, tax benefits, poison pill, ...)</li> <li>- Legal status challenging liquidity: discount for minority not majority (can change status)</li> <li>- For Private Equity, 1/discount in the low range if PE can impact/decide IPO/resale;</li> <li>2/discount reduces gradually from -30% to -10% as we get closer to IPO/resale</li> <li>- Depends on lock-up (up to -20%) length and stake vs volume (up to -25%)</li> </ul>
Speculative / Control	+10%	+20%	<ul style="list-style-type: none"> <li>-Depends on interest to get control</li> <li>- Average 19%/28% 2000-2004</li> <li>- Tax consolidation asset depends on 5%... and on IRR !</li> <li>- Value (see Maurel &amp; Praum) of a Commandite status of 15% (protecting against takeover)</li> </ul>

## Daily trade multiple

Under 20x	0%
20x-49x	10%
49x-100x	20%
Above 100x	25%

← Illiquidity discount due to stake size



## Tax assets : Easy double counting

- Use standard tax rate in DCF flows (year 1 to 10): otherwise double counting. Same for terminal value (no tax asset for ever)
- Assess tax asset valuation : Discount difference between regular tax rate and tax to be paid effectively
- If using PER/FCF: Ratio at standard tax rate and add tax asset (otherwise double counting). Unlike x revenues, x EBITDA, x EBIT that undervalue company (need to add back tax asset valuation)



## Valuing a tax asset

- In many M&A deals (Suez/GDF for instance)
- Heavily regulated issue: Need acquisition and then merger (100% ownership)
- Risk of monetizing the asset: Risk due to exiting a fiscal group (losing some of the past benefits from tax consolidation for the new acquired company) & Need to deliver profits to monetize the asset: risk of earnings
- What discount rate should be used ? => Discount rate of the acquired company ? => Done in a DCF indeed but... what if monetization certain except if unlikely large drop in earnings ?
- Need to assess premium to be paid vs benefits from tax asset



# Tax asset valuation example

<b>Tax asset of the target</b>	<b>210</b>				
Phasing tax asset consumption	1	2	3	4	5
PTP combined entity	100	110	121	133	146
Tax at standard tax rate	34	37.4	41.14	45.254	49.7794
PV at WACC target (10%)	30.9	30.9	30.9	30.9	30.9
<b>Valuation of tax asset</b>	<b>154.5</b>				

Market Cap target 1000  
*Implied PER* 15.2

Premium to get 100%		Value destruction	Tax asset valuation	Net value created	Premium > tax asset PV valuation
5%		-50	154.5	104.5	
15%		-150	154.5	4.5	
25%		-250	154.5	-95.5	←

- Interesting if target clearly undervalued (ie minimal value destruction)
- Tax asset enables to overpay the initial acquisition and depreciate the asset (goodwill depreciation will be deductible for 34%)



# Real estate sale likely to be value accretive on DCF

- Real estate unfavourably discounted in DCF
- Sale enables to crystallize value

Impact on DCF valuation	Before	After											
	Real estate Sale	Real estate Sale											
EBIT	30	14											
DA	10	10											
- Taxes (34%)	-10.2	-4.76											
- Capex	-10	-10											
+/- WCR	0	0											
FCF	19.8	9.24											
			<b>Assumptions</b>										
			Real estate disposal	400									
			Real estate yield	4.0%									
			Yearly rent fee	16									
			Cash remuneration	3.50%									
			Yearly interests	14.0									
			<b>DCF</b>										
<b>Before real estate resale</b>	1	2	3	4	5	6	7	8	9	10			
Flows (5% growth)	20	21	22	23	24	25	27	28	29	31			
Discounted at 10%	18	17	16	16	15	14	14	13	12	12			
Sum of flows	147												
Terminal value (3% growth)	174												
Debt & others	0												
<b>Equity value</b>	<b>322</b>												
			<b>After real estate resale</b>										
Flows (5% growth)	9	10	10	11	11	12	12	13	14	14			
Discounted at 10%	8.4	8	8	7	7	7	6	6	6	6			
Sum of flows	69												
Terminal value (3% growth)	81												
Debt (-cash) & others	-400												
<b>Equity value</b>	<b>550</b>												
<b>Difference</b>	<b>229</b>												
			<b>DCF valuation of real estate</b>										
Renting post tax flow	10.6	11.1	11.6	12.2	12.8	13.5	14.2	14.9	15.6	16.4			
Discounted	9.6	9.2	8.7	8.3	8.0	7.6	7.3	6.9	6.6	6.3			
Sum of flows	79												
Terminal value (3% growth)	93												
<b>Total valuation</b>	<b>171</b>												
Selling price	400												
<b>Gain</b>	<b>229</b>												

Here discounted at 10% WACC, 3% LT growth



# but likely to reduce EPS

- Downside on EPS if lower interest rate than real estate yield

Real estate disposal	400
Real estate yield	4.0%
Yearly rent fee	16
Cash remuneration	3.50%
Yearly interests	14.0

### Impact on PER valuation

	Bef real estate sale
Sales	100
Costs	70
EBIT	30
<i>EBIT margin</i>	30.0%
Financial	0
PTP	30
Tax rate	34%
Taxes	10.2
Net result	19.8
Impact on EPS & PER valuation	

### Aft. real estate sale

Sales	100
Costs	86
EBIT	14
<i>EBIT margin</i>	14.0%
Financial	14.0
PTP	28
Tax rate	34%
Taxes	9.52
Net result	18.48
Impact on EPS & PER valuation	-6.7%

Increased financial income partly offset by higher renting fees



## Are share buybacks value creative ?

- Should be neutral: pay the right price (listed price) for an asset ! Marginally positive if above target price.
- Signal that management believes share is under-valued (vs “fair value”) !
- Today’s all acquisition are EPS enhancing !...so not a valuable reason
- Reduces acquisition risk and limits the unused cash... but reduces middle term investment opportunities
- Can be smartly used for dilutive instruments (rather than issuing shares or buying at higher price)
- BCG October 2007 report on TSR (2002-2006) on S&P 500 and S&P MidCap 400 showed: Change in EPS valuation multiple +28% if dividend payout raised by 25% vs -5% for a 25% boost in share buyback program.



## Specific IPO valuations

- Discount: 1/For attractive price; 2/Because of lower information availability for investors; 3/Because sale is sending a negative signal !
- What amount ? Not academic but depends on market conditions/investor demand
- Post-money valuation more aggressive => includes 1/execution of the capital increase; 2/Business plan based on cash injection
- For IPO valuation: take a post capital increase capital structure (WACC): careful if past LBO (high leverage) towards standard gearing !



## ■ Creative accounting.com

Revenues	Recognizing all revenues at day 1 Impact: Boost immediate revenues, lower future earnings
	Inflating revenues by charging all products vs commission rate Impact: Inflates revenues (& cost of goods sold)
	Recording some revenues for cross advertising Impact: Inflates revenues (& cost of goods sold)
	Acquiring a stake in a company in exchange of adv on the site Impact: Inflates revenues but lower cash at balance sheet
Cost of goods sold	10\$ coupon off next sale Impact: Record higher sale but neutralized at EBIT
	Capitalizing subscriber acquisition cost Impact: Inflates D&A but lowers COGS
Stock options	Paying widely with stock option plans Impact: Inflates earnings buy lowers per share valuation

■ Loss making business => take longer term and discount to present value

■ 25%/30% IRR for private equity = same discount rate for early stage



## Multiples.com

- Using a number of viewers/visitors for valuations seems rationale as:  
audience / traffic → revenues → EBITDA → FCF
- But question about: 1/ Conversion traffic/viewers to clients; 2/ Average spending (basket size); 3/ EBITDA margins (in 2000 companies precisely made huge advertising investment to boost revenues)
- Are you valuing a shop with number of visitors ?
- Even if aware of some theoretical valuation model of customer base (based on “Lifetime Value of a Customer”)

# Closing remarks



## SOP: Strong Official Preference

- Do not be lazy using PER !... Or even simplistic DCF approach !
- Enable to value listed assets at market price (at bid price rather than offer price)
- Give preference (if possible i.e. financial information, estimates, ...) to SOP
- Enables to value loss making businesses
- Will be always more accurate (watch out for double counting for instance Print & Newspapers, Distribution & magazines, ...!)
- Debt subtracted at the end : no rerating because of leveraging !



## Ten golden valuation rules

- **Be modest !** *Not a single value, put into question your valuation*
- **No home-made cooking...** *No weighted methodology nor unjustified discount, premiums, ...*
- **Be an explorer !** *Put odds on scenarios when necessary*
- **Do not be a market data cruncher !** *Set your own beta, adjust debt, ...*
- **Do not be lazy !** *SOP, loss making businesses valuation apart, ...*
- **Do not be blind !** *Off balance sheet, treasury shares, cash double counting, D&A vs charges ...*
- **Assumptions, assumptions and assumptions !** *Remember terminal value weight !*
- **Do not be trendy !** *Avoid PEG, simple multiples, shareholder value, ...*
- **Understand the context !** *Valuation context, acquirer nature, business trends, risks, ...*
- **Check consistency !** *Implied growth, PER, absolute valuations, discount absolute amounts...*





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