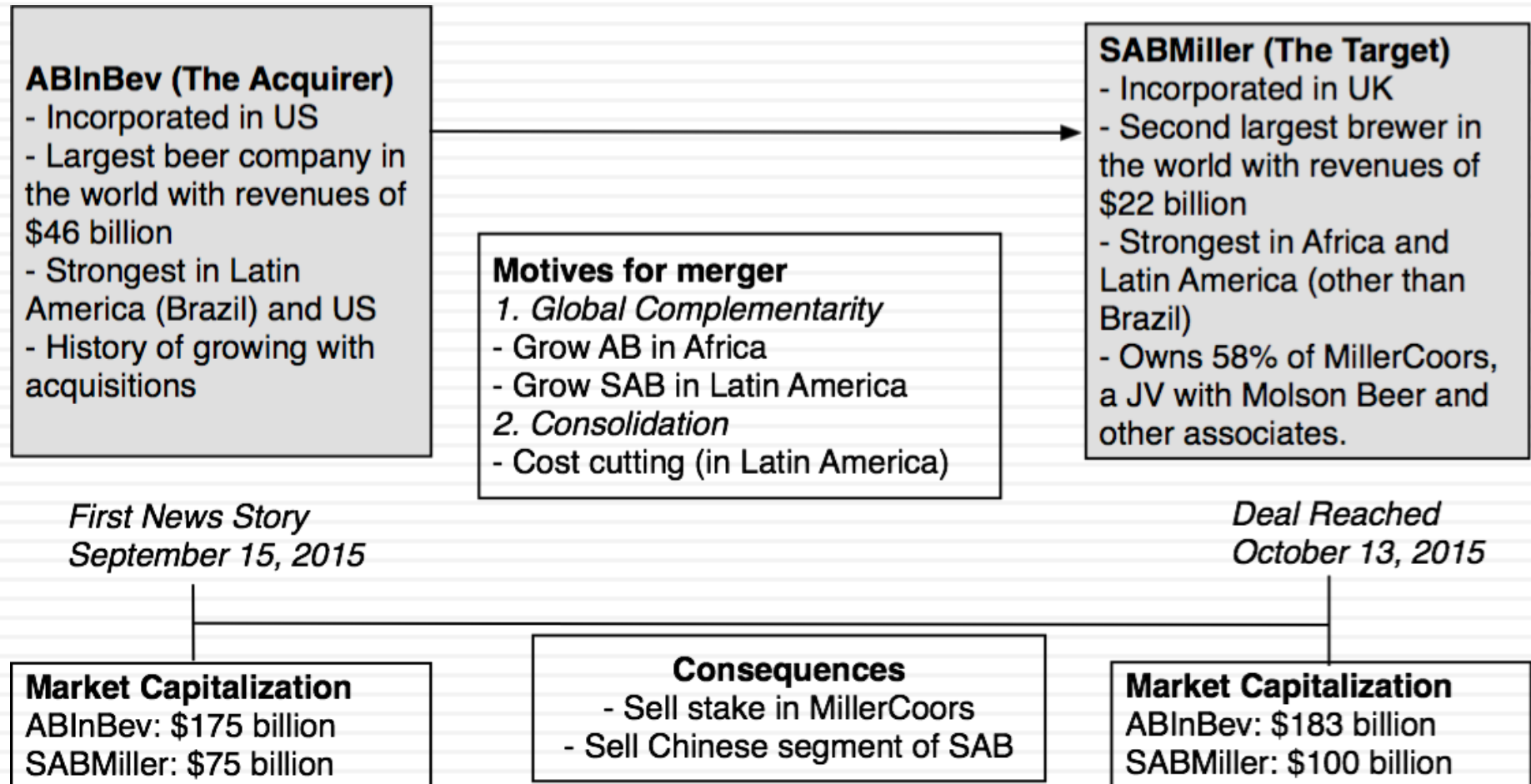


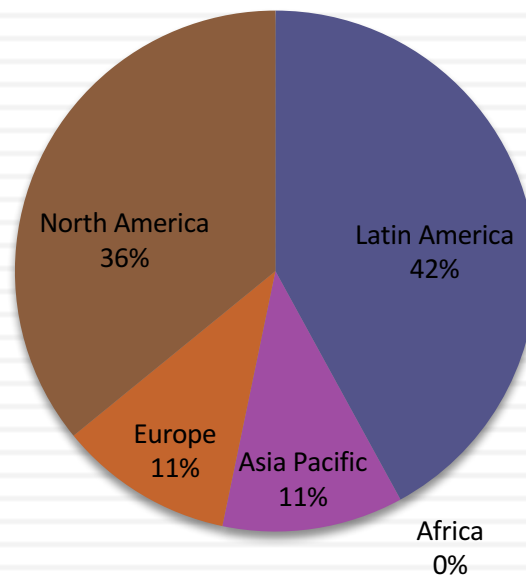
A Really Big Deal!



The Acquirer (ABInBev)

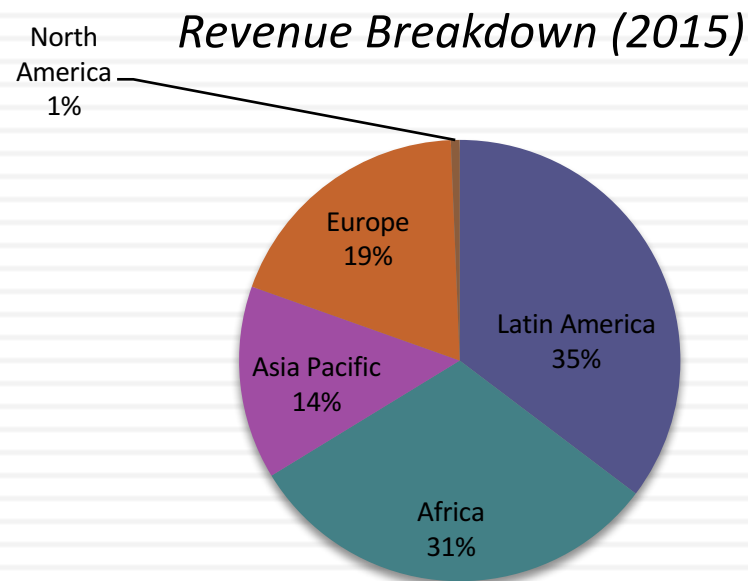
<i>Capital Mix</i>		<i>Operating Metrics</i>	
Interest-bearing Debt	\$51,504	Revenues	\$45,762.00
Lease Debt	\$1,511	Operating Income (EBIT)	\$14,772.00
Market Capitalization	\$173,760	Operating Margin	32.28%
Debt to Equity ratio	30.51%	Effective tax rate	18.00%
Debt to Capital ratio	23.38%	After-tax return on capital	12.10%
Bond Rating	A2	Reinvestment Rate =	50.99%

Revenue Breakdown (2014)



The Target (SABMiller)

<i>Capital Mix</i>		<i>Operating Metrics</i>	
Interest-bearing Debt	\$12,550	Revenues	\$22,130.00
Lease Debt	\$368	Operating Income (EBIT)	\$4,420.00
Market Capitalization	\$75,116	Operating Margin	19.97%
Debt to Equity ratio	17.20%	Effective tax rate	26.40%
Debt to Capital ratio	14.67%	After-tax return on capital	10.32%
Bond Rating	A3	Reinvestment Rate =	16.02%



Setting up the challenge

- SAB Miller's market capitalization was \$75 billion on September 15, 2015, the day ABInBev announced its intent to acquire SABMiller.
- The deal was completed (pending regulatory approval) a month later, with ABInBev agreeing to pay \$104 billion for SABMiller.
- Can ABInBev create \$29 billion in additional value from this acquisition and if so where will it find the value?
 - The market seems to think so, adding \$33 billion in market value to the combined company.

The Three (Value) Reasons for Acquisitions

- Undervaluation: You buy a target company because you believe that the market is mispricing the company and that you can buy it for less than its "fair" value.
- Control: You buy a company that you believe is badly managed, with the intent of changing the way it is run. If you are right on the first count and can make the necessary changes, the value of the firm should increase under your management
- Synergy: You buy a company that you believe, when combined with a business (or resource) that you already own, will be able to do things that you could not have done as separate entities. This synergy can be
 - Offensive synergy: Higher growth and increased pricing power
 - Defensive synergy: Cost cutting, consolidation & preempting competitors.
 - Tax synergy: Directly from tax clauses or indirectly through debt

Four numbers to watch

1. Acquisition Price: This is the price at which you can acquire the target company. If it is a private business, it will be negotiated and probably based on what others are paying for similar businesses. If it is a public company, it will be at a premium over the market price.
 2. Status Quo Value: Value of the target company, run by existing management.
 3. Restructured Value: Value of the target company, with changes to investing, financing and dividend policies.
 4. Synergy value: Value of the combined company (with the synergy benefits built in) – (Value of the acquiring company, as a stand alone entity, and the restructured value of the target company)
- The Acid Test
- Undervaluation: Price for target company < Status Quo Value
 - Control: Price for target company < Restructured Value
 - Synergy: Price for target company < Restructured Value + Value of Synergy

SAB Miller Status Quo Value

	<i>SAB Miller</i>	<i>+ Coors JV</i>	<i>+ Share of Associates</i>	<i>SAB Miller Consolidated</i>
Revenues	\$22,130.00	\$5,201.00	\$6,099.00	
Operating Margin	19.97%	15.38%	10.72%	
Operating Income (EBIT)	\$4,420.00	\$800.00	\$654.00	
Invested Capital	\$31,526.00	\$5,428.00	\$4,459.00	
Beta	0.7977	0.6872	0.6872	
ERP	8.90%	6.00%	7.90%	
Cost of Equity =	9.10%	6.12%	7.43%	
After-tax cost of debt =	2.24%	2.08%	2.24%	
Debt to Capital Ratio	14.67%	0.00%	0.00%	
Cost of capital =	8.09%	6.12%	7.43%	
After-tax return on capital =	10.33%	11.05%	11.00%	
Reinvestment Rate =	16.02%	40.00%	40.00%	
Expected growth rate=	1.65%	4.42%	4.40%	
Number of years of growth	5	5	5	
<i>Value of firm</i>				
PV of FCFE in high growth =	\$11,411.72	\$1,715.25	\$1,351.68	
Terminal value =	\$47,711.04	\$15,094.36	\$9,354.28	
Value of operating assets today				
=	\$43,747.24	\$12,929.46	\$7,889.56	\$64,566.26
+ Cash				\$1,027.00
- Debt				\$12,918.00
- Minority Interests				\$1,183.00
Value of equity				\$51,492.26

Price on September 15, 2015: \$75 billion > \$51.5 billion

SABMiller: Potential for Control

	<i>SABMiller</i>	<i>ABInBev</i>	<i>Global Alcoholic Beverage Sector</i>
Pre-tax Operating Margin	19.97%	32.28%	19.23%
Effective Tax Rate	26.36%	18.00%	22.00%
Pre-tax ROIC	14.02%	14.76%	17.16%
ROIC	10.33%	12.10%	13.38%
Reinvestment Rate	16.02%	50.99%	33.29%
Debt to Capital	14.67%	23.38%	18.82%

SABMiller: Value of Control

	Status Quo Value	Optimal value	
Cost of Equity =	9.10%	9.37%	
After-tax cost of debt =	2.24%	2.24%	
Cost of capital =	8.09%	8.03%	
After-tax return on capital =	10.33%	12.64%	
Reinvestment Rate =	16.02%	33.29%	
Expected growth rate=	1.65%	4.21%	
<i>Value of firm</i>			
PV of FCFF in high growth =	\$11,411.72	\$9,757.08	
Terminal value =	\$47,711.04	\$56,935.06	
Value of operating assets today =	\$43,747.24	\$48,449.42	
+ Cash	\$1,027.00	\$1,027.00	
+ Minority Holdings	\$20,819.02	\$20,819.02	
- Debt	\$12,918.00	\$12,918.00	
- Minority Interests	\$1,183.00	\$1,183.00	<i>Value of Control</i>
Value of equity	\$51,492.26	\$56,194.44	\$4,702.17

Price on September 15, 2015: \$75 billion > \$51.5 + \$4.7 billion

The Synergies?

	<i>Inbev</i>	<i>SABMiller</i>	<i>Combined firm (status quo)</i>	<i>Combined firm (synergy)</i>
Levered Beta	0.85	0.8289	0.84641	0.84641
Pre-tax cost of debt	3.0000%	3.2000%	3.00%	3.00%
Effective tax rate	18.00%	26.36%	19.92%	19.92%
Debt to Equity Ratio	30.51%	23.18%	29.71%	29.71%
Revenues	\$45,762.00	\$22,130.00	\$67,892.00	\$67,892.00
Operating Margin	32.28%	19.97%	28.27%	30.00%
Operating Income (EBIT)	\$14,771.97	\$4,419.36	\$19,191.33	\$20.368
After-tax return on capital	12.10%	12.64%	11.68%	12.00%
Reinvestment Rate =	50.99%	33.29%	43.58%	50.00%
Expected Growth Rate	6.17%	4.21%	5.09%	6.00%

The value of synergy

	<i>Inbev</i>	<i>SABMiller</i>	<i>Combined firm (status quo)</i>	<i>Combined firm (synergy)</i>
Cost of Equity =	8.93%	9.37%	9.12%	9.12%
After-tax cost of debt =	2.10%	2.24%	2.10%	2.10%
Cost of capital =	7.33%	8.03%	7.51%	7.51%
After-tax return on capital =	12.10%	12.64%	11.68%	12.00%
Reinvestment Rate =	50.99%	33.29%	43.58%	50.00%
Expected growth rate=	6.17%	4.21%	5.09%	6.00%
<i>Value of firm</i>				
PV of FCFF in high growth =	\$28,733	\$9,806	\$38,539	\$39,151
Terminal value =	\$260,982	\$58,736	\$319,717	\$340,175
Value of operating assets =	\$211,953	\$50,065	\$262,018	\$276,610

Value of synergy = 276,610 – 262,018 = 14,592 million

Passing Judgment

- If you add up the restructured firm value of \$56.2 billion to the synergy value of \$14.6 billion, you get a value of about \$70.8 billion.
- That is well below the \$104 billion that ABInBev is planning to pay for SABMiller.
- One of the following has to be true:
 - I have massively under estimated the potential for synergy in this merger (either in terms of higher margins or higher growth).
 - ABInBev has over paid significantly on this deal. That would go against their history as a good acquirer and against the history of 3G Capital as a good steward of capital.

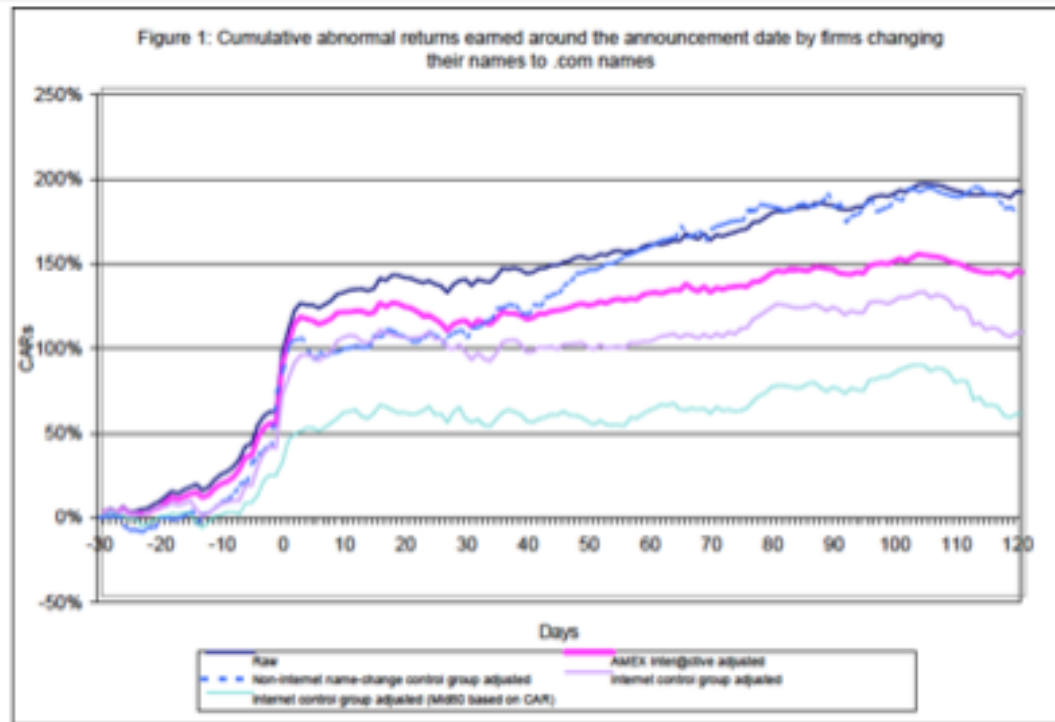


VALUE ENHANCEMENT AND THE EXPECTED VALUE OF CONTROL: BACK TO BASICS

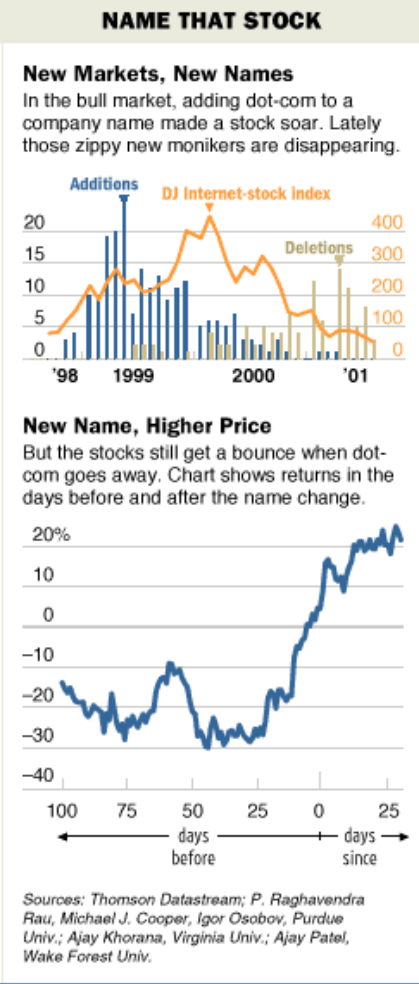
Price Enhancement versus Value Enhancement

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The market gives...



And takes away....



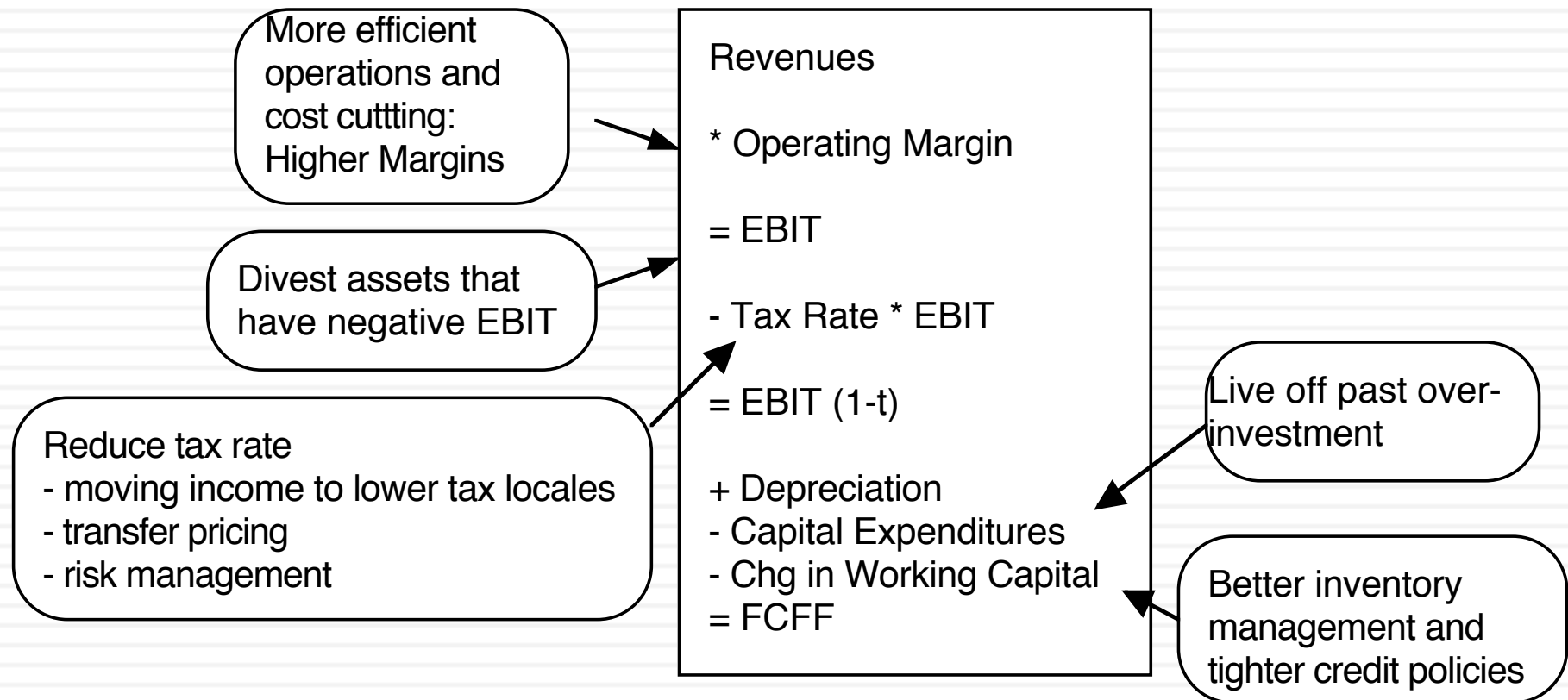
The Paths to Value Creation

133

- Using the DCF framework, there are four basic ways in which the value of a firm can be enhanced:
 - ▣ The cash flows from existing assets to the firm can be increased, by either
 - increasing after-tax earnings from assets in place or
 - reducing reinvestment needs (net capital expenditures or working capital)
 - ▣ The expected growth rate in these cash flows can be increased by either
 - Increasing the rate of reinvestment in the firm
 - Improving the return on capital on those reinvestments
 - ▣ The length of the high growth period can be extended to allow for more years of high growth.
 - ▣ The cost of capital can be reduced by
 - Reducing the operating risk in investments/assets
 - Changing the financial mix
 - Changing the financing composition

Value Creation 1: Increase Cash Flows from Assets in Place

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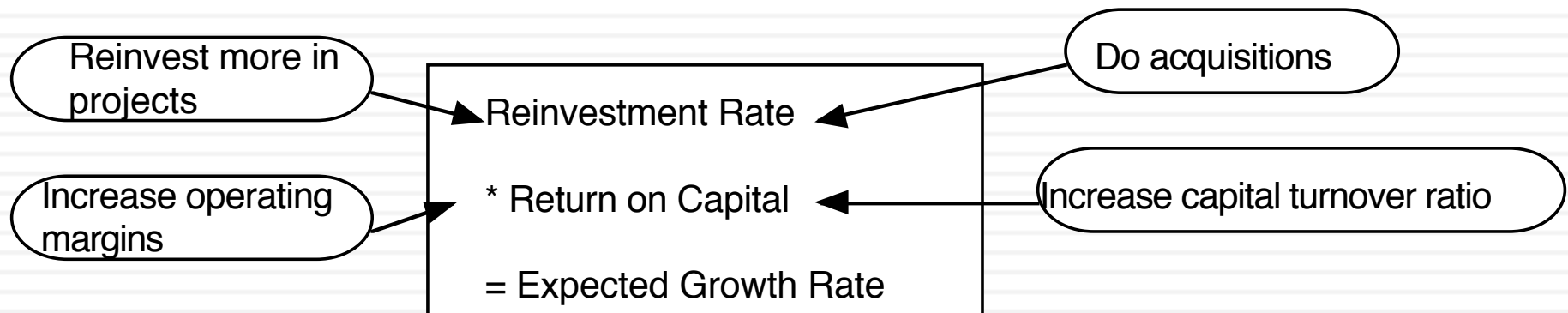
Value Creation 2: Increase Expected Growth

135

Pricing Strategies

Price Leader versus Volume Leader Strategies

*Return on Capital = Operating Margin * Capital Turnover Ratio*



Game theory

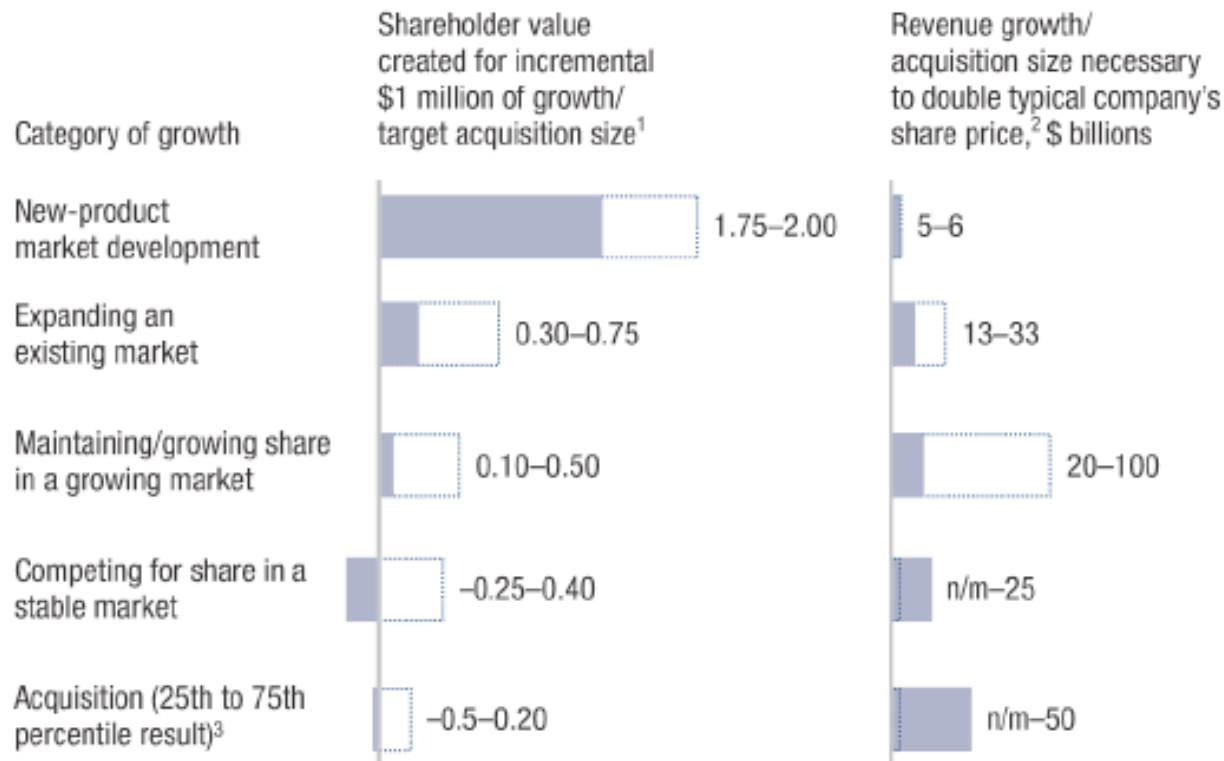
How will your competitors react to your moves?

How will you react to your competitors' moves?

Value Creating Growth... Evaluating the Alternatives..

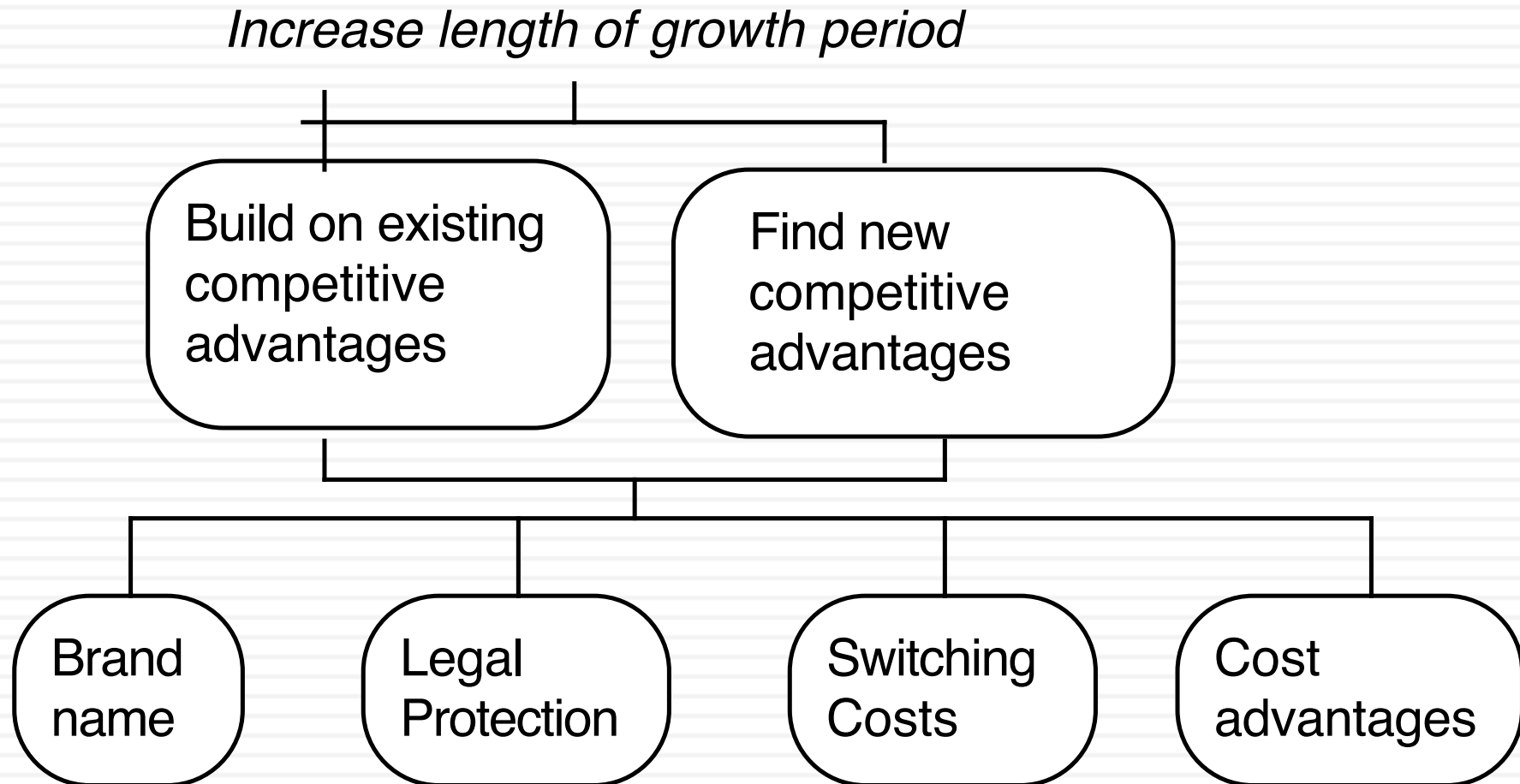
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Modes of organic growth vary in value creation intensity— consumer goods industry



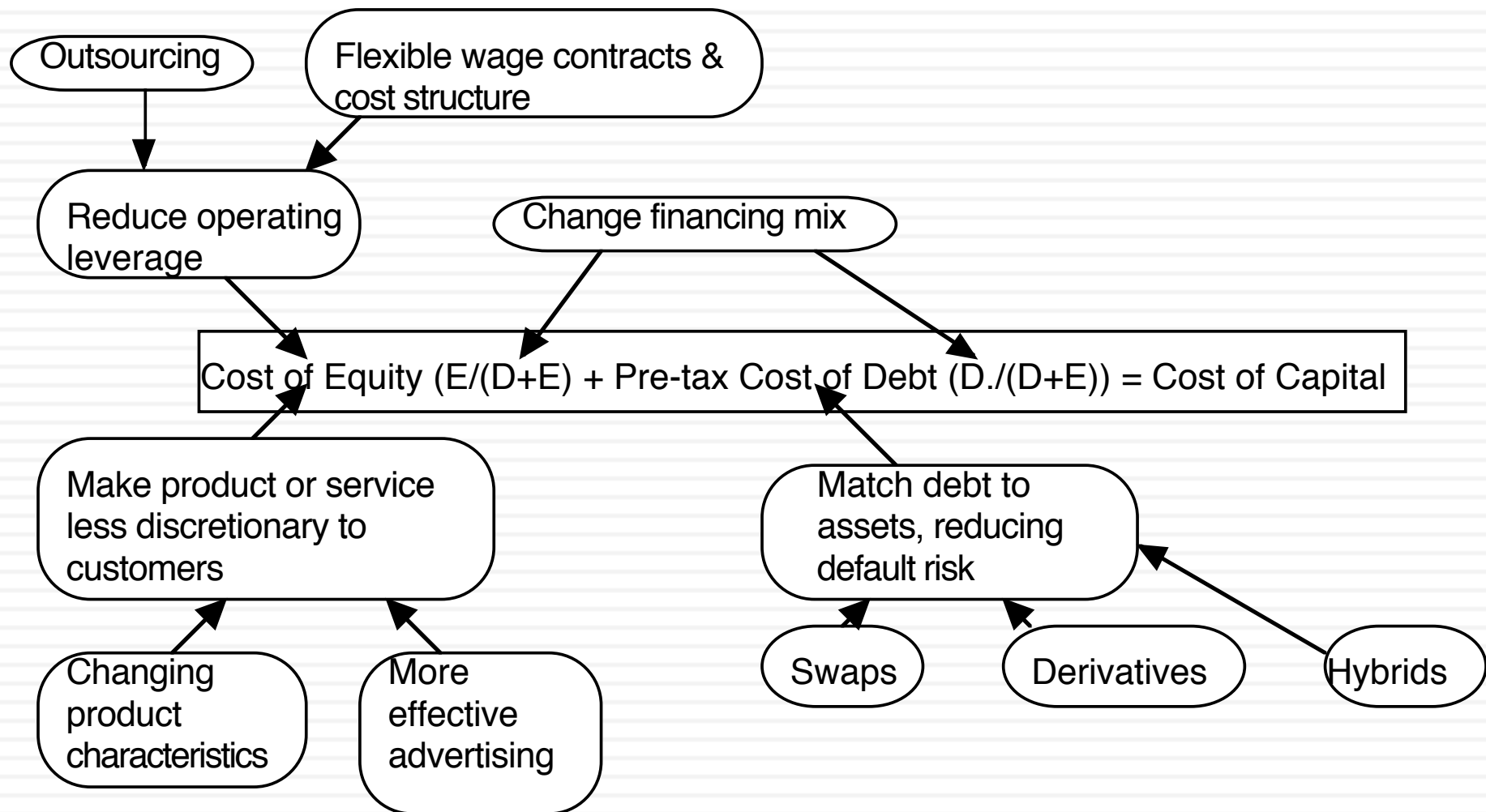
III. Building Competitive Advantages: Increase length of the growth period

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Value Creation 4: Reduce Cost of Capital

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SAP: Status Quo

Avg Reinvestment rate = 36.94%

Return on Capital
19.93%

Current Cashflow to Firm

EBIT(1-t) : 1414
- Nt CpX 831
- Chg WC - 19
= FCFF 602
Reinvestment Rate = $812/1414 = 57.42\%$

Reinvestment Rate
57.42%

Expected Growth
in EBIT (1-t)
 $.5742 \times .1993 = .1144$
11.44%

Stable Growth
 $g = 3.41\%$; Beta = 1.00;
Debt Ratio = 20%
Cost of capital = 6.62%
ROC = 6.62%; Tax rate = 35%
Reinvestment Rate = 51.54%

First 5 years

Growth decreases
gradually to 3.41%

Terminal Value₁₀ = $1717 / (.0662 - .0341) = 53546$

Op. Assets 31,615
+ Cash: 3,018
- Debt 558
- Pension Lian 305
- Minor. Int. 55
= Equity 34,656
- Options 180
Value/Share 106.12

Year	1	2	3	4	5	6	7	8	9	10
EBIT	2,483	2,767	3,083	3,436	3,829	4,206	4,552	4,854	5,097	5,271
EBIT(1-t)	1,576	1,756	1,957	2,181	2,430	2,669	2,889	3,080	3,235	3,345
- Reinvestm	905	1,008	1,124	1,252	1,395	1,501	1,591	1,660	1,705	1,724
= FCFF	671	748	833	929	1,035	1,168	1,298	1,420	1,530	1,621

Term Yr
5451
3543
1826
1717

Cost of Capital (WACC) = $8.77\% (0.986) + 2.39\% (0.014) = 8.68\%$

Debt ratio increases to 20%
Beta decreases to 1.00

Cost of Equity
8.77%

Cost of Debt
 $(3.41\% + .35\%)(1 - .3654)$
= 2.39%

Weights
E = 98.6% D = 1.4%

On May 5, 2005,
SAP was trading at
122 Euros/share

Riskfree Rate:
Euro riskfree rate = 3.41%

+

Beta
1.26

x

Risk Premium
4.25%

Unlevered Beta for
Sectors: 1.25

Mature risk
premium
4%

Country
Equity Prem
0.25%

SAP : Optimal Capital Structure

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Debt Ratio	Beta	Cost of Equity	Bond Rating	Interest rate on debt	Tax Rate	Cost of Debt (after-tax)	WACC	Firm Value (G)
0%	1.25	8.72%	AAA	3.76%	36.54%	2.39%	8.72%	\$39,088
10%	1.34	9.09%	AAA	3.76%	36.54%	2.39%	8.42%	\$41,480
20%	1.45	9.56%	A	4.26%	36.54%	2.70%	8.19%	\$43,567
30%	1.59	10.16%	A-	4.41%	36.54%	2.80%	7.95%	\$45,900
40%	1.78	10.96%	CCC	11.41%	36.54%	7.24%	9.47%	\$34,043
50%	2.22	12.85%	C	15.41%	22.08%	12.01%	12.43%	\$22,444
60%	2.78	15.21%	C	15.41%	18.40%	12.58%	13.63%	\$19,650
70%	3.70	19.15%	C	15.41%	15.77%	12.98%	14.83%	\$17,444
80%	5.55	27.01%	C	15.41%	13.80%	13.28%	16.03%	\$15,658
90%	11.11	50.62%	C	15.41%	12.26%	13.52%	17.23%	\$14,181

SAP: Restructured

Avg Reinvestment rate = 36.94%

Reinvest more in emerging markets

Return on Capital 19.93%

Current Cashflow to Firm

EBIT(1-t) : 1414
 - Nt CpX 831
 - Chg WC - 19
 = FCFF 602
 Reinvestment Rate = $812/1414 = 57.42\%$

Reinvestment Rate 70%

Expected Growth in EBIT (1-t)
 $.70 \times .1993 = .1144$
13.99%

Stable Growth
 $g = 3.41\%$; Beta = 1.00;
 Debt Ratio = 30%
 Cost of capital = 6.27%
 ROC = 6.27%; Tax rate = 35%
 Reinvestment Rate = 54.38%

First 5 years

Growth decreases gradually to 3.41%

Terminal Value₁₀ = $1898 / (.0627 - .0341) = 66367$

Op. Assets 38045
 + Cash: 3,018
 - Debt 558
 - Pension Lian 305
 - Minor. Int. 55
 = Equity 40157
 - Options 180
 Value/Share 126.51

Year	1	2	3	4	5	6	7	8	9	10
EBIT	2,543	2,898	3,304	3,766	4,293	4,802	5,271	5,673	5,987	6,191
EBIT(1-t)	1,614	1,839	2,097	2,390	2,724	3,047	3,345	3,600	3,799	3,929
- Reinvest	1,130	1,288	1,468	1,673	1,907	2,011	2,074	2,089	2,052	1,965
= FCFF	484	552	629	717	817	1,036	1,271	1,512	1,747	1,963

Term Yr
 6402
 4161
 2263
 1898

Cost of Capital (WACC) = $10.57\% (0.70) + 2.80\% (0.30) = 8.24\%$

Cost of Equity 10.57%

Cost of Debt
 $(3.41\% + 1.00\%)(1 - .3654) = 2.80\%$

Weights
 E = 70% D = 30%

On May 5, 2005, SAP was trading at 122 Euros/share

Use more debt financing.

Riskfree Rate:
 Euro riskfree rate = 3.41%

+

Beta
 1.59

x

Risk Premium
 4.50%

Unlevered Beta for Sectors: 1.25

Mature risk premium 4%

Country Equity Prem 0.5%

Blockbuster: Status Quo

Return on Capital
4.06%

Stable Growth
g = 3%; Beta = 1.00;
Cost of capital = 6.76%
ROC = 6.76%; Tax rate = 35%
Reinvestment Rate = 44.37%

Terminal Value₅ = $104 / (.0676 - .03) = 2714$

Expected Growth
in EBIT (1-t)
 $.2645 \times .0406 = .0107$
1.07%

Reinvestment Rate
26.46%

Current Cashflow to Firm
EBIT(1-t) : 163
- Nt CpX 39
- Chg WC 4
= FCFF 120
Reinvestment Rate = $43/163$
= 26.46%

	1	2	3	4	5
EBIT (1-t)	\$165	\$167	\$169	\$173	\$178
- Reinvestment	\$44	\$44	\$51	\$64	\$79
FCFF	\$121	\$123	\$118	\$109	\$99

Term Yr
184
82
102

Op. Assets 2,472
+ Cash: 330
- Debt 1847
= Equity 955
- Options 0
Value/Share \$ 5.13

Discount at Cost of Capital (WACC) = $8.50\% (.486) + 3.97\% (0.514) = 6.17\%$

Cost of Equity
8.50%

Cost of Debt
 $(4.10\% + 2\%)(1 - .35)$
= 3.97%

Weights
E = 48.6% D = 51.4%

Riskfree Rate:
Riskfree rate = 4.10%

+

Beta
1.10

x

Risk Premium
4%

Unlevered Beta for
Sectors: 0.80

Firm's D/E
Ratio: 21.35%

Mature risk
premium
4%

Country
Equity Prem
0%

Blockbuster: Restructured

Return on Capital
6.20%

Current Cashflow to Firm
 EBIT(1-t) : 249
 - Nt CpX 39
 - Chg WC 4
 = FCFF 206
 Reinvestment Rate = $43/249 = 17.32\%$

Reinvestment Rate
17.32%

**Expected Growth
in EBIT (1-t)**
 $.1732 \times .0620 = .0107$
 1.07%

Stable Growth
 $g = 3\%$; Beta = 1.00;
 Cost of capital = 6.76%
 ROC = 6.76%; Tax rate = 35%
 Reinvestment Rate = 44.37%

Terminal Value₅ = $156 / (.0676 - .03) = 4145$

Op. Assets 3,840
 + Cash: 330
 - Debt 1847
 = Equity 2323
 - Options 0
 Value/Share \$ 12.47

	1	2	3	4	5	Term Yr
EBIT (1-t)	\$252	\$255	\$258	\$264	\$272	280
- Reinvestment	\$44	\$44	\$59	\$89	\$121	124
FCFF	\$208	\$211	\$200	\$176	\$151	156

Discount at Cost of Capital (WACC) = $8.50\% (.486) + 3.97\% (0.514) = 6.17\%$

Cost of Equity
8.50%

Cost of Debt
 $(4.10\% + 2\%)(1 - .35)$
 = 3.97%

Weights
 E = 48.6% D = 51.4%

Riskfree Rate:
 Riskfree rate = 4.10%

+

Beta
1.10

x

Risk Premium
4%

Unlevered Beta for
Sectors: 0.80

Firm's D/E
Ratio: 21.35%

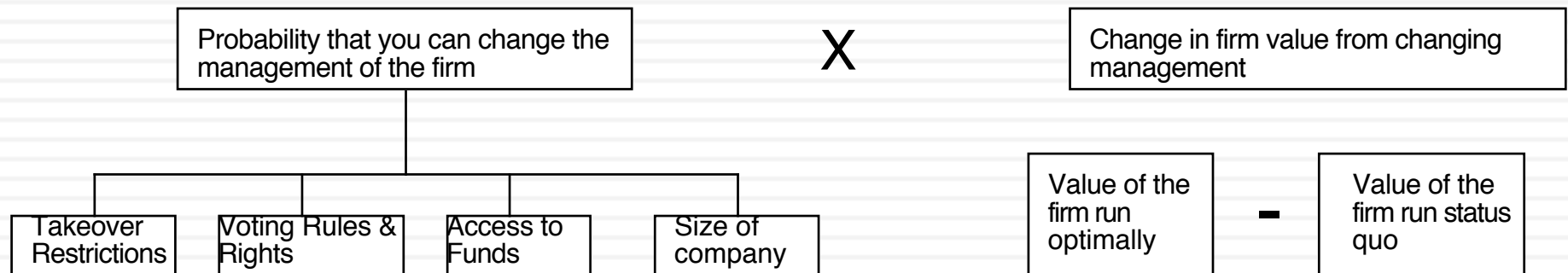
Mature risk
premium
4%

Country
Equity Prem
0%

The Expected Value of Control

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The Value of Control



Why the probability of management changing shifts over time....

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- Corporate governance rules can change over time, as new laws are passed. If the change gives stockholders more power, the likelihood of management changing will increase.
- Activist investing ebbs and flows with market movements (activist investors are more visible in down markets) and often in response to scandals.
- Events such as hostile acquisitions can make investors reassess the likelihood of change by reminding them of the power that they do possess.

Estimating the Probability of Change

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- You can estimate the probability of management changes by using historical data (on companies where change has occurred) and statistical techniques such as probits or logits.
- Empirically, the following seem to be related to the probability of management change:
 - Stock price and earnings performance, with forced turnover more likely in firms that have performed poorly relative to their peer group and to expectations.
 - Structure of the board, with forced CEO changes more likely to occur when the board is small, is composed of outsiders and when the CEO is not also the chairman of the board of directors.
 - Ownership structure, since forced CEO changes are more common in companies with high institutional and low insider holdings. They also seem to occur more frequently in firms that are more dependent upon equity markets for new capital.
 - Industry structure, with CEOs more likely to be replaced in competitive industries.

Manifestations of the Value of Control

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- Hostile acquisitions: In hostile acquisitions which are motivated by control, the control premium should reflect the change in value that will come from changing management.
- Valuing publicly traded firms: The market price for every publicly traded firm should incorporate an expected value of control, as a function of the value of control and the probability of control changing.
 - ▣ $\text{Market value} = \text{Status quo value} + (\text{Optimal value} - \text{Status quo value}) * \text{Probability of management changing}$
- Voting and non-voting shares: The premium (if any) that you would pay for a voting share should increase with the expected value of control.
- Minority Discounts in private companies: The minority discount (attached to buying less than a controlling stake) in a private business should be increase with the expected value of control.

1. Hostile Acquisition: Example

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- In a hostile acquisition, you can ensure management change after you take over the firm. Consequently, you would be willing to pay up to the optimal value.
- As an example, Blockbuster was trading at \$9.50 per share in July 2005. The optimal value per share that we estimated as \$ 12.47 per share. Assuming that this is a reasonable estimate, you would be willing to pay up to \$2.97 as a premium in acquiring the shares.
- Issues to ponder:
 - ▣ Would you automatically pay \$2.97 as a premium per share? Why or why not?
 - ▣ What would your premium per share be if change will take three years to implement?

2. Market prices of Publicly Traded Companies: An example

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- The market price per share at the time of the valuation (May 2005) was roughly \$9.50.
 - ▣ Expected value per share = Status Quo Value + Probability of control changing * (Optimal Value – Status Quo Value)
 - ▣ \$ 9.50 = \$ 5.13 + Probability of control changing (\$12.47 - \$5.13)
- The market is attaching a probability of 59.5% that management policies can be changed. This was after Icahn's successful challenge of management. Prior to his arriving, the market price per share was \$8.20, yielding a probability of only 41.8% of management changing.

	Value of Equity	Value per share
Status Quo	\$ 955 million	\$ 5.13 per share
Optimally managed	\$2,323 million	\$12.47 per share

Value of stock in a publicly traded firm

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- When a firm is badly managed, the market still assesses the probability that it will be run better in the future and attaches a value of control to the stock price today:

$$\text{Value per share} = \frac{\text{Status Quo Value} + \text{Probability of control change (Optimal - Status Quo Value)}}{\text{Number of shares outstanding}}$$

- With voting shares and non-voting shares, a disproportionate share of the value of control will go to the voting shares. In the extreme scenario where non-voting shares are completely unprotected:

$$\text{Value per non - voting share} = \frac{\text{Status Quo Value}}{\# \text{ Voting Shares} + \# \text{ Non - voting shares}}$$

$$\text{Value per voting share} = \text{Value of non - voting share} + \frac{\text{Probability of control change (Optimal - Status Quo Value)}}{\# \text{ Voting Shares}}$$

3. Voting and Non-voting Shares: An Example

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- To value voting and non-voting shares, we will consider Embraer, the Brazilian aerospace company. As is typical of most Brazilian companies, the company has common (voting) shares and preferred (non-voting shares).
 - Status Quo Value = 12.5 billion \$R for the equity;
 - Optimal Value = 14.7 billion \$R, assuming that the firm would be more aggressive both in its use of debt and in its reinvestment policy.
- There are 242.5 million voting shares and 476.7 non-voting shares in the company and the probability of management change is relatively low. Assuming a probability of 20% that management will change, we estimated the value per non-voting and voting share:
 - Value per non-voting share = Status Quo Value/ (# voting shares + # non-voting shares) = $12,500 / (242.5 + 476.7) = 17.38$ \$R/ share
 - Value per voting share = Status Quo value/sh + Probability of management change * (Optimal value – Status Quo Value) = $17.38 + 0.2 * (14,700 - 12,500) / 242.5 = 19.19$ \$R/share
- With our assumptions, the voting shares should trade at a premium of 10.4% over the non-voting shares.

4. Minority Discount: An example

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- Assume that you are valuing Kristin Kandy, a privately owned candy business for sale in a private transaction. You have estimated a value of \$ 1.6 million for the equity in this firm, assuming that the existing management of the firm continues into the future and a value of \$ 2 million for the equity with new and more creative management in place.
 - ▣ Value of 51% of the firm = 51% of optimal value = $0.51 * \$ 2 \text{ million} = \1.02 million
 - ▣ Value of 49% of the firm = 49% of status quo value = $0.49 * \$1.6 \text{ million} = \$784,000$
- Note that a 2% difference in ownership translates into a large difference in value because one stake ensures control and the other does not.

Alternative Approaches to Value Enhancement

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- Maximize a variable that is correlated with the value of the firm. There are several choices for such a variable. It could be
 - ▣ an accounting variable, such as earnings or return on investment
 - ▣ a marketing variable, such as market share
 - ▣ a cash flow variable, such as cash flow return on investment (CFROI)
 - ▣ a risk-adjusted cash flow variable, such as Economic Value Added (EVA)
- The advantages of using these variables are that they
 - ▣ Are often simpler and easier to use than DCF value.
- The disadvantage is that the
 - ▣ Simplicity comes at a cost; these variables are not perfectly correlated with DCF value.

Economic Value Added (EVA) and CFROI

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- The Economic Value Added (EVA) is a measure of surplus value created on an investment.
 - ▣ Define the return on capital (ROC) to be the “true” cash flow return on capital earned on an investment.
 - ▣ Define the cost of capital as the weighted average of the costs of the different financing instruments used to finance the investment.
 - ▣ $EVA = (\text{Return on Capital} - \text{Cost of Capital}) (\text{Capital Invested in Project})$
- The CFROI is a measure of the cash flow return made on capital
 - ▣ It is computed as an IRR, based upon a base value of capital invested and the cash flow on that capital.

The bottom line...

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- The value of a firm is not going to change just because you use a different metric for value. All approaches that are discounted cash flow approaches should yield the same value for a business, if they make consistent assumptions.
- If there are differences in value from using different approaches, they must be attributable to differences in assumptions, either explicit or implicit, behind the valuation.

A Simple Illustration

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- Assume that you have a firm with a book value value of capital of \$ 100 million, on which it expects to generate a return on capital of 15% in perpetuity with a cost of capital of 10%.
- This firm is expected to make additional investments of \$ 10 million at the beginning of each year for the next 5 years. These investments are also expected to generate 15% as return on capital in perpetuity, with a cost of capital of 10%.
- After year 5, assume that
 - The earnings will grow 5% a year in perpetuity.
 - The firm will keep reinvesting back into the business but the return on capital on these new investments will be equal to the cost of capital (10%).

Firm Value using EVA Approach

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Capital Invested in Assets in Place	=	\$ 100
EVA from Assets in Place	$= (.15 - .10) (100) / .10$	\$ 50
+ PV of EVA from New Investments in Year 1	$= [(.15 - .10)(10) / .10]$	\$ 5
+ PV of EVA from New Investments in Year 2	$= [(.15 - .10)(10) / .10] / 1.1$	\$ 4.55
+ PV of EVA from New Investments in Year 3	$= [(.15 - .10)(10) / .10] / 1.1^2$	\$ 4.13
+ PV of EVA from New Investments in Year 4	$= [(.15 - .10)(10) / .10] / 1.1^3$	\$ 3.76
+ PV of EVA from New Investments in Year 5	$= [(.15 - .10)(10) / .10] / 1.1^4$	\$ 3.42
Value of Firm	=	\$ 170.85



Firm Value using DCF Valuation: Estimating FCFF

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	<i>Base Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>Term. Year</i>
EBIT (1-t) : Assets in Place	\$ 15.00	\$ 15.00	\$ 15.00	\$ 15.00	\$ 15.00	\$ 15.00	
EBIT(1-t) :Investments- Yr 1		\$ 1.50	\$ 1.50	\$ 1.50	\$ 1.50	\$ 1.50	
EBIT(1-t) :Investments- Yr 2			\$ 1.50	\$ 1.50	\$ 1.50	\$ 1.50	
EBIT(1-t): Investments -Yr 3				\$ 1.50	\$ 1.50	\$ 1.50	
EBIT(1-t): Investments -Yr 4					\$ 1.50	\$ 1.50	
EBIT(1-t): Investments- Yr 5						\$ 1.50	
Total EBIT(1-t)		\$ 16.50	\$ 18.00	\$ 19.50	\$ 21.00	\$ 22.50	\$ 23.63
- Net Capital Expenditures	\$10.00	\$ 10.00	\$ 10.00	\$ 10.00	\$ 10.00	\$ 11.25	\$ 11.81
FCFF		\$ 6.50	\$ 8.00	\$ 9.50	\$ 11.00	\$ 11.25	\$ 11.81

After year 5, the reinvestment rate is 50% = g/ROC