Firm Value Enhancement

Applied to DCF Framework

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STUDENTISCHER
BÖRSENVEREIN MAGDEBURG

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Sources:

Investm. Valuation 3rd ed. (2012) by Damadoran, NYU

Analyst Guide (2018) by Stockholm Business School

Valuation 6th ed. (2015) by McKinsey & Company

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Learning Objective

Impact of Public Information Releases on Fundamental Drivers of Firm Value

Understanding Value Impact of Public Information

1. Understand the fundamental value drivers of shareholder/firm value
2. Filter those drivers from new releases of public information
3. Translate qualitative factors related to businesses & their environment into quantitative (accounting) metrics used in valuation
4. Evaluate the economic impact of the filtered information on value drivers and shareholder/firm value

Translate Qualitative Into Quantitative Information

Strategic Changes in Qualitative Factors	Changes in Quantitative Factors
vertical integration in supply chain	cost reduction → profit margin increase
cross-selling through business acquisitions or partnerships	sales increase → earnings increase
strengthening competitive advantage by building brand name	sales price increase → profit margin increase
sustaining first mover advantage through effective R&D investments and continuous early product launches	sales increase → earnings increase
hiring successful managers with outstanding mgmt. record in: – smart capital allocation to high NPV investment projects – stock buybacks at depressed valuations – deleveraging for more fin. resilience during downturns	less (re)investment needs → FCFF increase ROIC increase → higher sustainable growth rate less shares outstanding → higher EPS lower financing risk → cost of capital reduction

Focused Reading of Public Information

- Check corporate news and the MD&A section of quarterly & annual financial statements on topics related to firms':
  - Change in product pricing policy
  - Technological improvements of production (e.g. automatization)
  - Compatibility with competitors' software
  - Investments into existing or new businesses/regions
  - Launch of large S&M campaigns & partnerships (to build brand name)
  - New product patents
  - Deleveraging
  - Economies of scale & cost cutting

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Preliminary Summary

Direction of Impact of Each Value Driver, Challenges

Direction of Impact of Each Value Driver

Connecting Narrative with Numbers

- Determine the effect of qualitative changes (slide 5) initiated by firm mgmt. on quantitative/accounting numbers
- Base your profitability and growth assumptions on aspects like:
  - Strong brand name
  - Patent protection
  - Unique (hard-to-copy) business models

		Value effect
	Sales (growth)	↑
-	Operating expenses (COGS, SG&A, D&A)	↓
=	EBIT	
-	Taxes	↓
=	NOPAT	
-	Fixed assets invest. (CapEx)	↓ ↑
-	Current assets invest. (WC)	↓ ↑
=	Free cash flows (FCFF)	
÷	Cost of capital (WACC)	↓
=	Firm value	

CapEx = capital expenditures | WC = working capital

Direction of Impact of Each Value Driver

Potential Value Drivers	Impact on Firm Value
Higher Sales Growth	
Change in pricing	Ambiguous
New or improved products or services	Positive
Higher Operating Margin	
Cost cutting	Positive
Increasing operating efficiency	Positive
Higher Earnings Growth	
ROIC increase	Positive
Higher (re)investment rate	Ambiguous

ROIC = return on invested capital

Direction of Impact of Each Value Driver

Potential Value Drivers	Impact on Firm Value
Longer High Earnings Growth	
	Positive
Higher Corporate Tax Rate	
	Negative
Higher Cost of Capital	
	Negative

Challenges in Increasing Share Price Consistently

» Why only very few managers are able to enhance firm value consistently:

Cost Cutting Reluctancy

- » Requires hard decisions on layoffs and other cost cuts
- » Must analyze new investments with more care
- » The larger the firm or bigger the cost cuts, the longer it will take to cut costs

Need For Interdepartmental Cooperation

- » Increasing sales → requires sales & marketing
- » Reducing costs → requires operating mgrs. & HR
- » Increasing return on investments → requires strategic & fin. planers

Challenges in Increasing Share Price Consistently

Firm-Specific Value Improvement

» Diagnosing the specific problems of a firm and tailoring a response to these problems

Delayed Market Price Reaction

» Taking all the right value-enhancing actions may not necessarily be rewarded immediately by financial markets through an increase in share price

» Managers who took these actions may not be around to share in the rewards and are thus more reluctant to initiate bigger changes

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Value Drivers in DCF Model

Sales, Op. Margin, Taxation, Reinvestments, Cost of Capital, High-Growth Period

Key Financial Contributors to Intrinsic Value

» The intrinsic value of a firm can be raised by:

1. Increasing free cash flows from assets in place
2. Increasing expected growth through *(re)investments* while preserving *excess returns* (ROIC > WACC)
3. Increasing length of high-growth period
4. Lowering cost of capital through operating & financing risk reduction

ROIC = return on invested capital | WACC = weighted average cost of capital

Key Financial Contributors to Intrinsic Value

FCFF = free cash flows to the firm

Key Financial Contributors to Intrinsic Value

$$\text{Present firm value} = \frac{\text{Current FCFF} * (1 + \text{SGR})}{\text{Cost of capital} - \text{SGR}}$$

Lower **Costs of Financing**

Increase **Growth Rate**

Increase **Sales Growth**

Increase **Operating Margin**

$$\text{FCFF} = \text{EBIT} * (1 - t) + \text{Noncash charges} - \text{Net capital expenditures} - \text{Change in noncash working capital}$$

Lower **Tax Rate**

Lower **(Re)investments**

$$\text{SGR} = \text{Reinvestment rate} * \text{ROIC}$$

Increase **(Re)investments**

Increase **ROIC**

t = marginal tax rate | SGR = sustainable growth rate

Higher Sales Growth

$$\text{Sales growth} = (1 + \text{Sales price growth}) * (1 + \text{Sales volume growth}) - 1$$

Strategic Changes

- Change in pricing:
  1. Price increase → sales volume ↓ → sales growth ↑↓
  2. Price decrease → sales volume ↑ → sales growth ↑↓

- Sales growth paths:
  - Best value outcome
    - Creating customer demand through new products → all competitors benefit
  - Av./moderate value outcome
    - Gaining market share in fast growing markets → competitors can still grow

Higher Sales Growth

- Sales growth paths (cont'd):
  - Below av. value outcome
    - Gaining market shares from rivals → competitors replicate products & price wars

Caution

- The increase in sales price must be larger than the decrease in volume from the price increase (the drop in volume depends on elasticity of demand for a product)
- For volume growth through sales price decrease, the firm needs a cost advantage over its competitors to prevent price wars and increase sales sufficiently to compensate for lower margins

Operating Margin Improvement

» Increasing the operating margin on existing assets

Strategic Changes

1. Cutting operating costs (COGS, SG&A)
2. Higher operating efficiency
   - » Identify bottlenecks in production
   - » Simplify processes by eliminating redundant steps
   - » Minimize waste by making more use of inputs

Caution

» Cut only resources that do not contribute sufficiently to current operating income or future earnings growth

Operating Margin Improvement

Example

Reducing packaging costs (GOGS)

size difference

year: 2020

year: 2024

Lower Corporate Tax Burden

» Lower effective tax rate produces higher NOPAT (after-tax CF)

Strategic Changes

1. Moving income to lower-tax jurisdictions (e.g. through intracompany sales)
2. Using net operating losses to shield future earnings from taxes
3. Shifting higher income during cyclical peaks to troughs (income smoothing) to avoid exposure to higher tax brackets during peaks

Higher Earnings Growth

» Increasing pre-/after-tax operating income (EBIT/NOPAT)

Strategic Changes

1. Improving return on invested capital (ROIC) on existing & new investment projects to generate excess returns (ROIC > cost of capital) → EBIT/NOPAT ↑

$$\text{ROIC} \uparrow = \frac{\text{NOPAT} \uparrow}{\text{Invested Capital}} = \frac{\text{EBIT} \uparrow * (1 - \text{t})}{\text{Equity} + \text{Debt}}$$

2. Raising (re)investment rate while preserving excess returns → EBIT/NOPAT ↑

$$\text{SGR} \uparrow = \text{Reinvestment rate} \uparrow * \text{ROIC}$$ (sl. 14)

NOPAT = net op. profit after tax | Invested capital = equity + debt | SGR = sustainable growth rate | t = tax rate

Higher Earnings Growth

Caution

» New competitors will enter the market, making it more difficult to sustain sales growth and high operating margins → EBIT/NOPAT growth ↓ → ROIC growth ↓

$$g_{\text{ROIC}} \downarrow = \frac{g_{\text{NOPAT}} \downarrow}{g_{\text{Invested capital}}}$$

» Investments in new businesses which are far more risky than firm's existing business increases its cost of capital over-proportionally

$$\text{Present firm value} = \frac{\text{Current FCFF} * (1 + \text{SGR} \uparrow)}{\text{Cost of capital} \uparrow\uparrow - \text{SGR} \uparrow}$$

(sl. 15)

Higher Earnings Growth

- Higher (re)investment rate usually results in higher expected future growth but at the expense of lower current free cash flows → net effect of trade-off determines whether firm value increases/decreases
  - Standard formula: (sl. 15)

$$\text{Present firm value} \uparrow\downarrow = \frac{\text{Current FCFF} \downarrow * (1 + \text{SGR} \uparrow)}{\text{Cost of capital} - \text{SGR} \uparrow}$$

$$\text{Current FCFF} \downarrow = \text{EBIT} * (1 - t) - \text{(Re)investments} \uparrow \quad \text{(neg. effect)}$$

$$\text{SGR} \uparrow = \text{Reinvestment rate} \uparrow * \text{ROIC} \quad \text{(pos. effect)}$$

  - Alternative formula:

$$\text{Present firm value} \uparrow\downarrow = \frac{\text{EBIT} * (1 - t) * (1 - \frac{\text{SGR} \uparrow}{\text{ROIC}})}{\text{Cost of capital} - \text{SGR} \uparrow}$$

Longer High Earnings Growth

» Lengthening high-growth period with excess returns

Strategic Changes

» Generating new competitive advantages or augmenting existing ones:
  » Brand name
  » Product innovation & differentiation
  » Patent, licenses & other legal protections
  » Cost advantage

Caution

» Assumes some barriers to entry which secure profits & excess returns that prevail
» No firm should be able to earn excess returns for an unlimited length of time in a competitive product market

Less (Re)investment Needs

» Reducing (re)investment requirements in fixed assets (l-t) and noncash current assets (s-t)

» Tradeoff: sacrificing l-t growth (SGR ↓) for higher s-t growth (current FCFF ↑)

$$\text{Present firm value} \uparrow\downarrow = \frac{\text{Current FCFF} \uparrow * (1 + \text{SGR} \downarrow)}{\text{Cost of capital} - \text{SGR} \downarrow} \qquad \text{(sl. 23)}$$

$$\text{Current FCFF} \uparrow = \text{EBIT} * (1 - \text{t}) - \text{Net CapEx} \downarrow - \Delta\text{noncash NWC} \downarrow \qquad \text{(pos. effect)}$$

$$\text{SGR} \downarrow = \text{Reinvestment rate} \downarrow * \text{ROIC} \qquad \text{(neg. effect)}$$

$$\text{Reinvestment rate} \downarrow = \frac{\text{Net CapEx} \downarrow + \Delta\text{noncash NWC} \downarrow}{\text{EBIT} * (1 - \text{t})}$$

Less (Re)investment Needs

Strategic Changes

- Cutting back noncash NWC by:
  - Reducing inventory
  - Lowering sales on credit
  - Higher trade payables
- Avoiding new or liquidate existing unprofitable investment projects with neg. NPV

Caution

- Keep sufficient inventory stock to avoid losses from not satisfying customer orders
- Grant sufficient sales receivables in order to not reduce sales by too much
- Limit trade payables demanded from suppliers to keep relationships intact
- Assets deplete at a faster rate when reducing maintenance CapEx

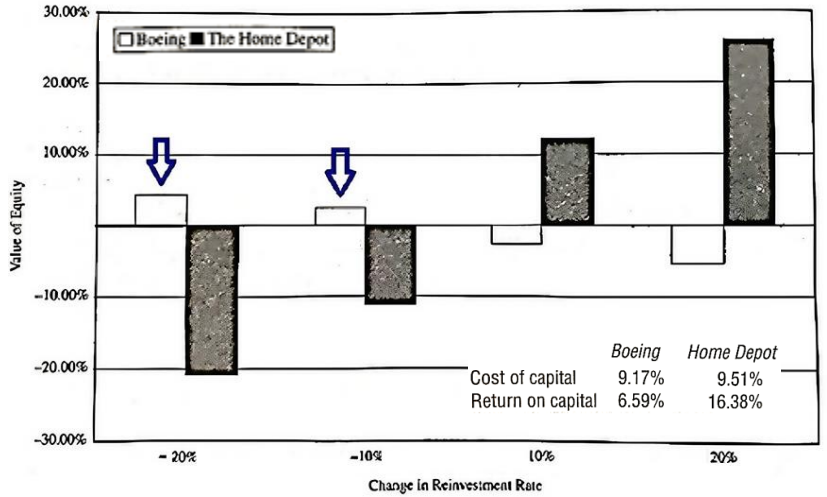
Value Destructive Path of (Re)investing

» Non-profitable investment projects with negative NPV (ROIC < WACC)

» 35% of all global companies generated composite returns on capital lower than their cost of capital (2011)

Strategic Changes

1. Full/partial liquidation of businesses with neg. earnings



2. Higher ROIC by increasing sales & operating efficiency → sales-to-capital ratio ↑ & operating margins ↑ → EBIT/NOPAT ↑

Graph: Damadoran, A. (2012) Investment Valuation 3rd ed.

Lower Cost of Capital

$$\text{WACC} = \text{Cost of equity} * \frac{\text{E}}{\text{E} + \text{D}} + \text{Cost of debt} * (1 - \text{t}) * \frac{\text{D}}{\text{E} + \text{D}}$$

$$\text{Cost of equity} = \text{Riskless return} + \text{Beta} * (\text{ERP} + \text{Country risk premium})$$

» Composite cost of debt and equity financing can be reduced by lowering the firm's operating and financing risks:

1. Operating risk (degree of cyclicity)
2. Operating leverage (proportion of fixed costs)
3. Choice of financing (equity vs. debt)

ERP = equity risk premium = equity market return – riskless return | cost of debt = pre-tax debt interest rate

Lower Cost of Capital

Strategic Changes

1. Reducing operating risks
   - » Building competitive advantages to make firm's products or service less discretionary to its customers
2. Reducing fixed operating costs
   - » Tying operating expenses to sales (customer demand) by:
     - » Outsourcing production
     - » Hiring outside contractors (freelancers)
3. Optimizing financing
   - » Finding the optimal debt ratio (D/D+E) that minimizes cost of capital
     - » *Tradeoff:* debt is generally cheaper due to tax-deductibility & seniority **but** raises cost of equity as a result of higher default risk (b/c of *fixed* debt repayment & interest schedule)
   - » Matching debt repayment & interest schedule with assets' cash flows

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Speed of Value Enhancement Execution

Short, Medium, Long Term Changes & Effects on Firm Value

Quick And Long-Term Fixes to Firm Value

	Firm Is More In Control		*Firm Is Less In Control*
	Quick Fixes/Payoff	**Odds On***	**Long Term Fix/Payoff**
Increasing Cash Flows	- eliminate op. expenses that generate no sales (growth) - take adv. of local tax law differences to lower taxes	- reducing inventory and accounts receivables - increasing accounts payables - reduce capital maintenance expenditures	- increase pricing - move to more efficient technology for operations to reduce expenses
Higher Expected Growth	- eliminate <u>new</u> investments planned that earn less than their cost of capital	- increase reinvestment rate in firm's <u>existing</u> businesses that earn more than their cost of capital - increase marginal return on capital in firm's <u>existing</u> businesses	- find & increase investments in <u>new</u> businesses that earn more than their cost of capital

* changes lean more toward a positive (than negative) tradeoff outcome for firm value in the near or medium term

Quick And Long-Term Fixes to Firm Value

	Firm Is More In Control		*Firm Is Less In Control*
	Quick Fixes/Payoff	**Odds On***	**Long Term Fix/Payoff**
Longer High-Growth Period	- protect products or services with patents	- use economies of scale or cost advantages to create or maintain high return on capital	- build up brand name - reduce costs of switching from competitors' to own products
Lower Cost of Capital	- move firm's capital structure toward its optimal debt ratio (D/A)	- make cost structure more flexible/variable to reduce operating leverage (lower fixed cost %)	- make products less discretionary to customers to reduce operating risk

* changes lean more toward a positive (than negative) tradeoff outcome for firm value in the near or medium term

Thank you for staying to the end.

If this was interesting to you, join SBM!

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Appendix

Formulas, Glossary, About the Presenter

Formulas

Free Cash Flow to the Firm (FCFF)

$$\text{Current FCFF} = \text{EBIT} * (1 - \text{t}) - (\text{Re})\text{investments}$$

$$= \text{EBIT} * (1 - \text{t}) * (1 - \text{Reinvestments rate})$$

$$\text{Reinvestment rate (RIR)} = \frac{\text{Net CapEx} + \Delta\text{noncash NWC}}{\text{EBIT} * (1 - \text{t})} = \frac{\Delta\text{Invested capital}}{\text{EBIT} * (1 - \text{t})}$$

$$= \frac{\frac{\text{Net CapEx} + \Delta\text{noncash NWC}}{\text{Invested capital}}}{\frac{\text{EBIT} * (1 - \text{t})}{\text{Invested capital}}} = \frac{\text{SGR}}{\text{ROIC}}$$

$$\text{Current FCFF} = \text{EBIT} * (1 - \text{t}) * \left(1 - \frac{\text{SGR}}{\text{ROIC}}\right)$$

Net capex = Capex – D&A

Appendix

Glossary

av.	Average
b/c	Because
CapEx	Capital expenditure
CF	Cash flow
COGS	Costs of goods sold
D	Debt
D&A	Depreciation & ammortization
DCF	Discounted cash flow
E	Equity
EBIT	Earnings before interest & taxes
ERP	Equity risk premium
Exp.	Expected
FCFF	Free cash flow to the firm
fin.	Financial
HR	Human Resources
l-t	Long-term
MD&A	Management discussion & analysis
mgmt.	Management
mgrs.	Margins
NOPAT	Net operating profit after taxes
NPV	Net present value
NWC	Net working capital
Op. margin	Operating margin
ROIC	Return on invested capital
S&M	Sales & marketing
SG&A	Sales, general & administrative expenses
SGR	Sustainable growth rate
s-t	Short-term
WC	Working capital

About the Presenter

Alexander Neumann plays an active role in managing the SBM fund. At present, he completes his master's degree in finance and enjoys meeting like-minded people who share his passion for investing.

For his master's thesis, he is conducting an empirical comparison of the statistical accuracy of dividend-, free cash flow-, and earnings-based equity valuation models for mid-to-large cap public stocks, traded on German stock exchanges.

He has also passed the CFA level 2 exam. Current GPA: 1.5/1.0