Value Enhancement: Back to Basics

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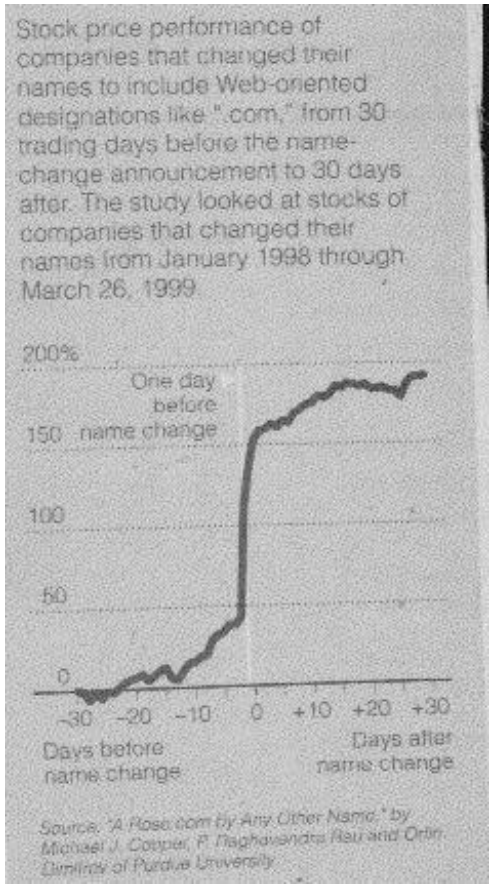
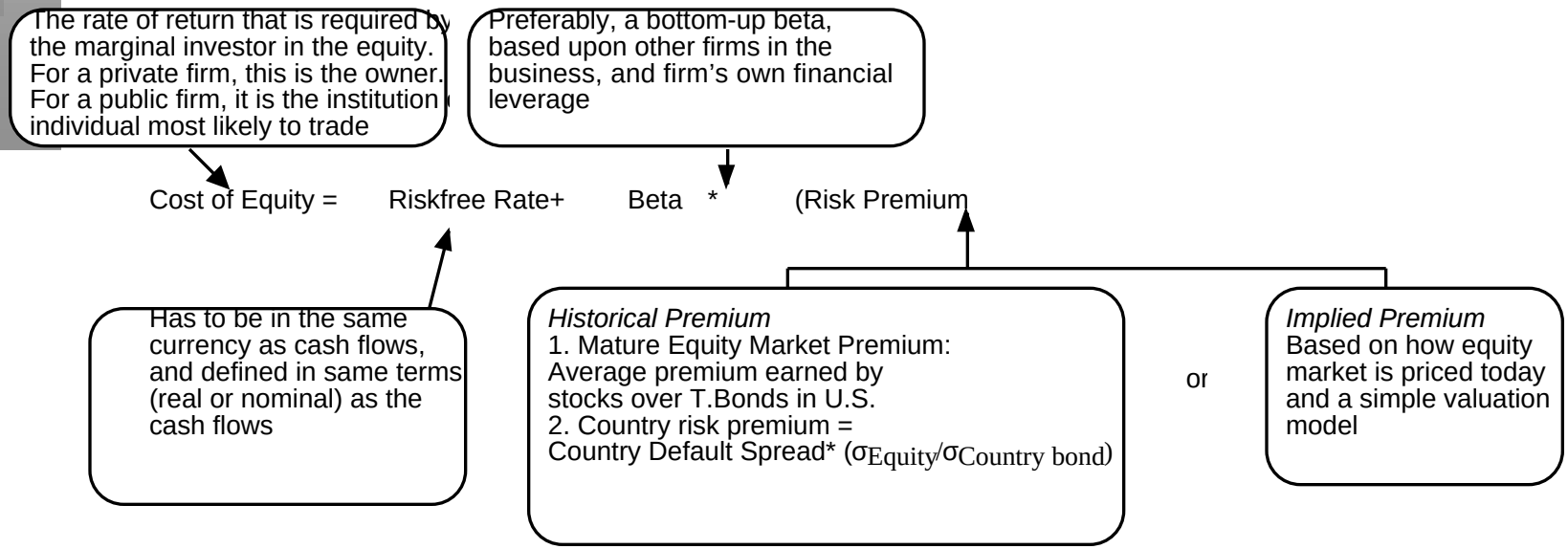
Price Enhancement versus Value Enhancement



Discounted Cash Flow Valuation: The Four Key Inputs

- Estimate the **discount rate** or rates to use in the valuation
  - Discount rate can be either a cost of equity (if doing equity valuation) or a cost of capital (if valuing the firm)
  - Discount rate can be in nominal terms or real terms, depending upon whether the cash flows are nominal or real
  - Discount rate can vary across time.
- Estimate the **current earnings** and **cash flows** on the asset, to either equity investors (CF to Equity) or to all claimholders (CF to Firm)
- Estimate the **future earnings and cash flows** on the asset being valued, generally by estimating an expected growth rate in earnings.
- Estimate **when** the firm will reach **"stable growth"** and what characteristics (risk & cash flow) it will have when it does.

The Cost of Equity



Estimating Betas

	E.I.D. Parry	*Tube Inv.*	*Carborandum*	*Coromandel*
Comparable firms	Food + Chemicals	Auto Parts	Manufacturers	Fertilizers
Unlevered Beta	0.71 (Weighted Average)	0.75	0.88	0.82
D/E Ratio (Mkt)	282%	79%	82%	129%
Levered beta	2.11	1.17	1.38	1.56

Levered Beta = Unlevered Beta (1 + (1- tax rate) (Debt/Equity Ratio))

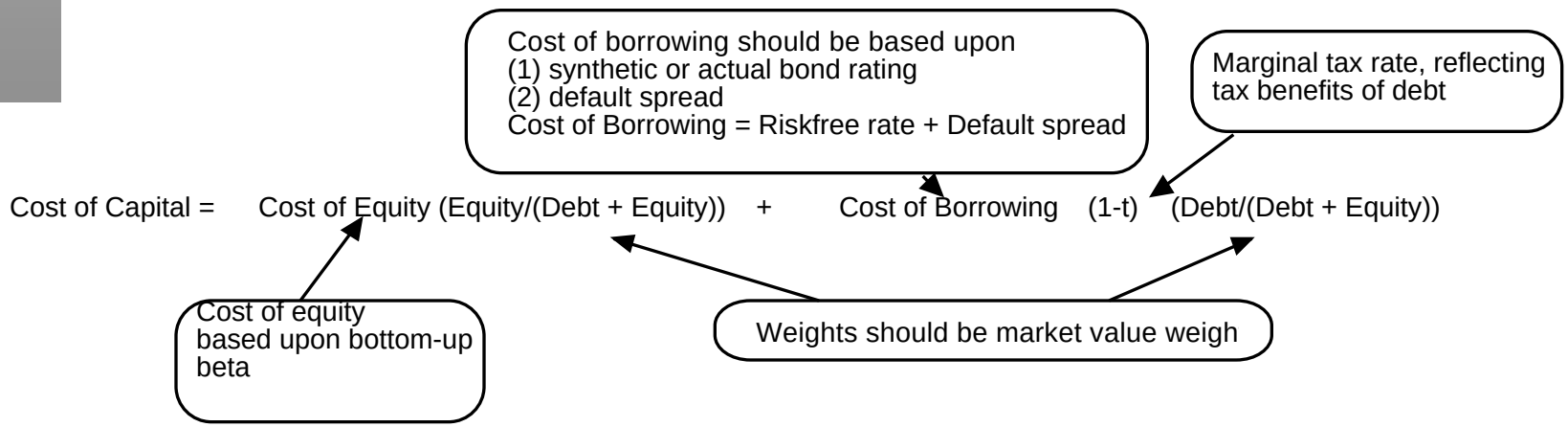
Risk Premium for a Mature Market (U.S)

- Historical Premium (Stocks - Government Bond) = 6.60%
- Implied Premium (at current stock prices) = 2.50%
- Risk Premium used = 4%

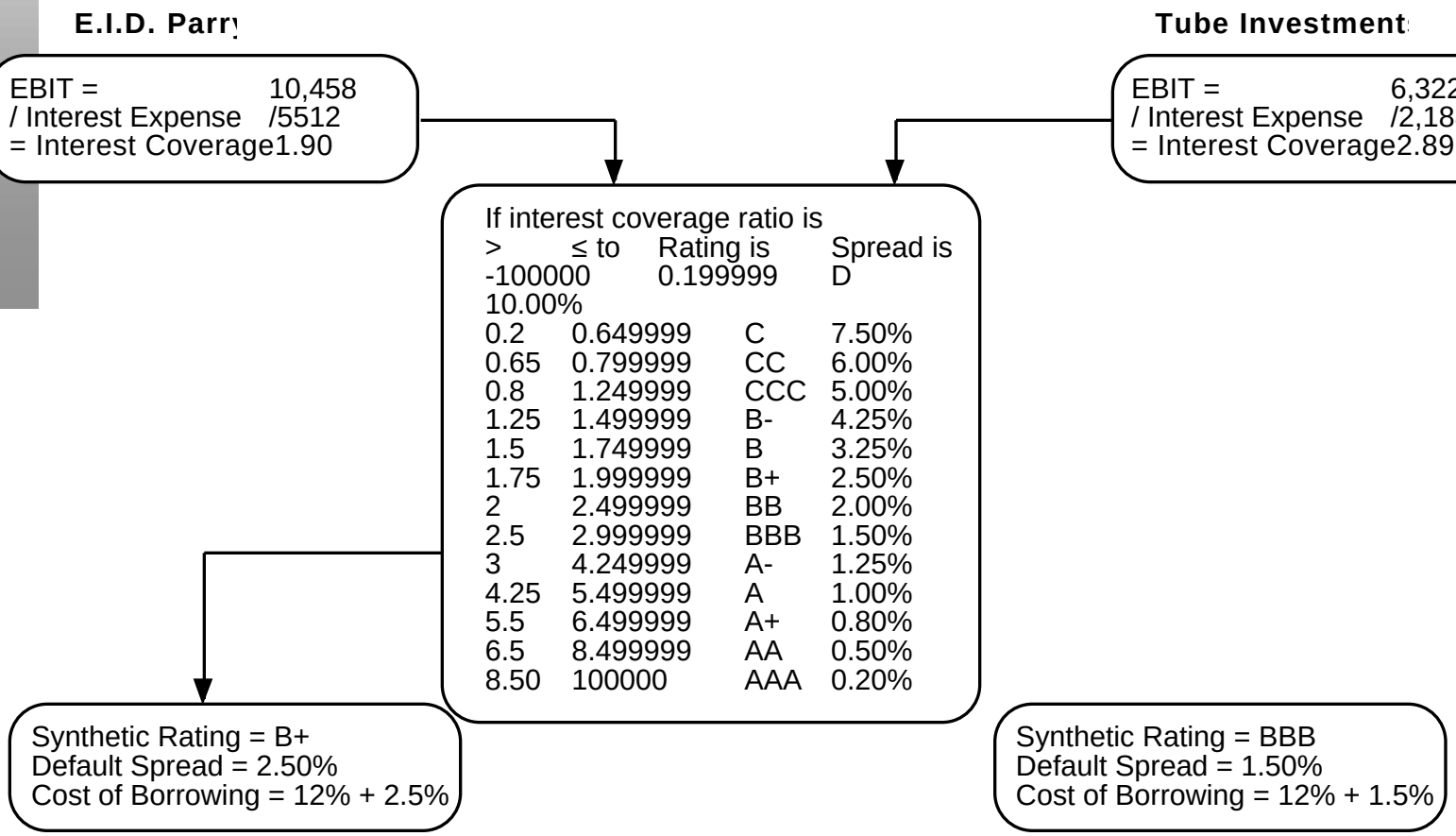
Country Risk Premium for India

- Country rating for India = Ba2
- Default spread based on rating = 3%
- Country ratings measure default risk. While default risk premiums and equity risk premiums are highly correlated, one would expect equity spreads to be higher than debt spreads.
  - One way to adjust the country spread upwards is to use information from the US market. In the US, the equity risk premium has been roughly twice the default spread on junk bonds.
  - Another is to multiply the bond spread by the relative volatility of stock and bond prices in that market. For example,
    - Standard Deviation in BSE = 47.6%
    - Standard Deviation in Indian Govt Bond = 27.3%
    - Adjusted Equity Spread = 3.00% (47.6/27.3) = 5.23%

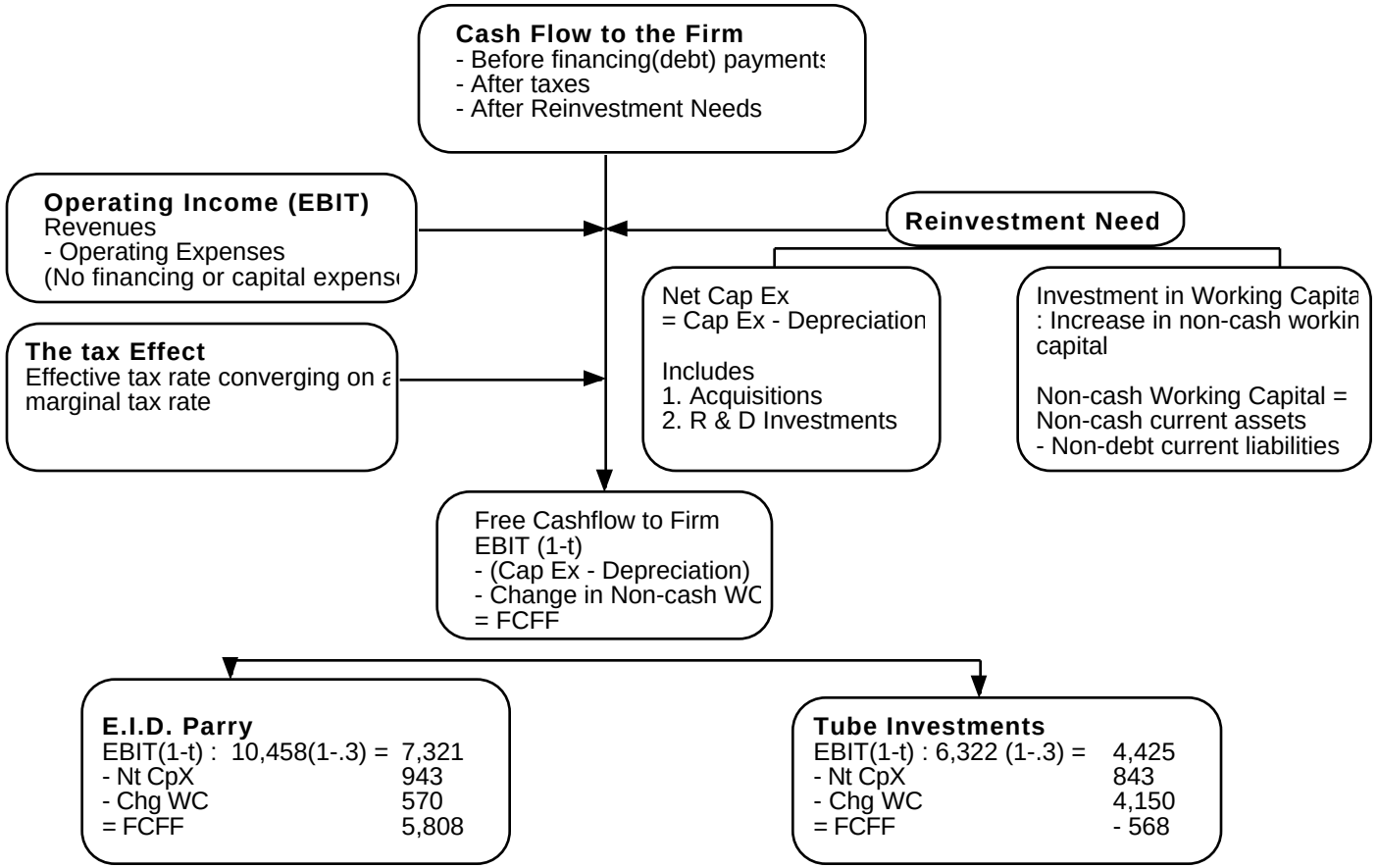
From Cost of Equity to Cost of Capital



Estimating the Cost of Debt



Estimating Cash Flows



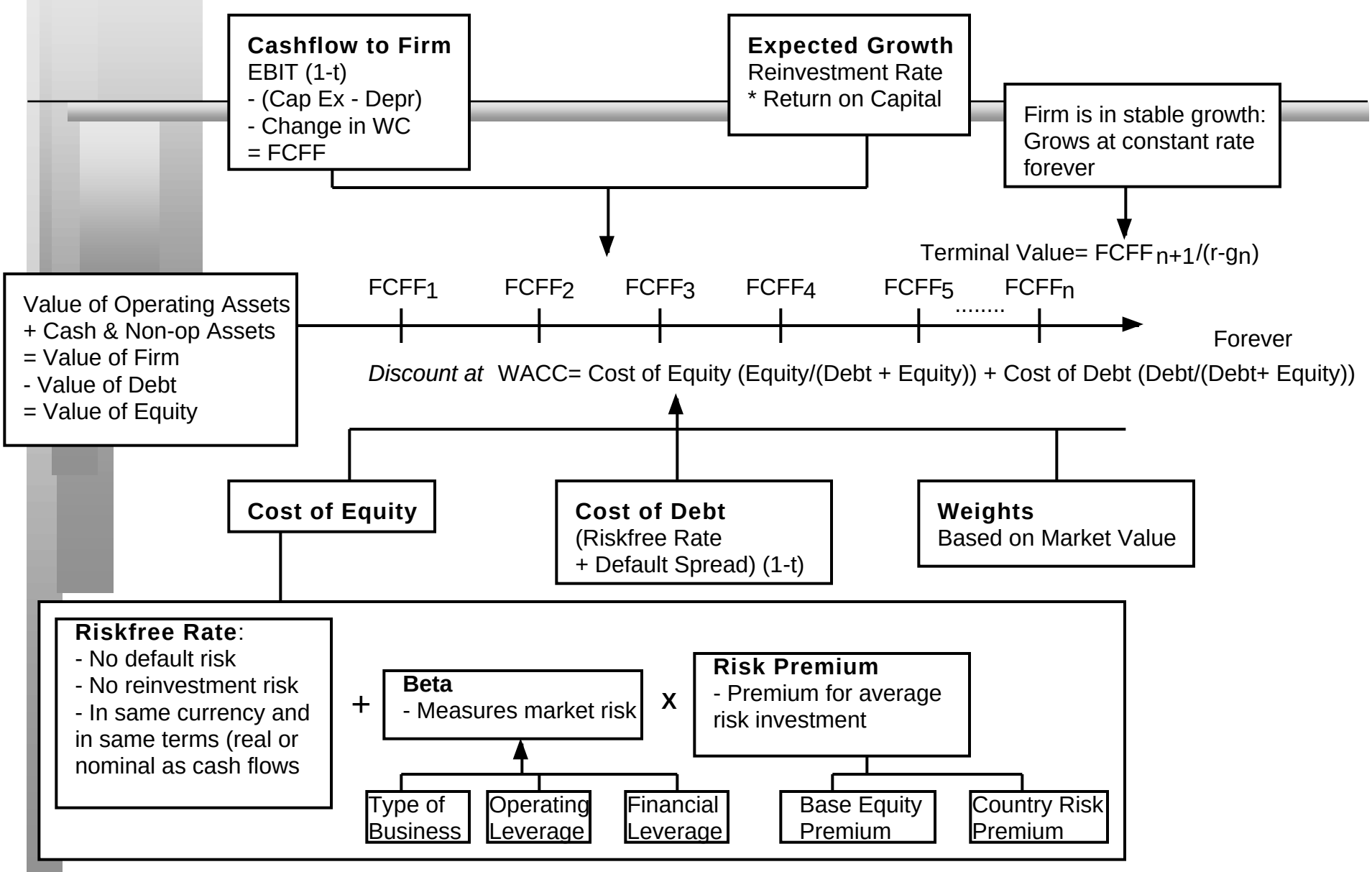
Estimating Growth

Expected Growth		How much do you reinves		How well do you reinves
Growth in Operating Income	=	Reinvestment Rate = (Net Cap Ex + Chg WC)/EBIT(1-t)	X	Return on Capital = EBIT (1-t)/ Capital Invested
Growth in Operating Income **E.I.D. Parry : 1.90%**	=	Reinvestment Rate = (943+570)/ 7321 = 20.67% Assumed 20.67% for next 5 years	X	Return on Capital = 7321/ 79786 = 9.18%
Growth in Operating Income" **Tube Investments : 5.52%**	=	Reinvestment Rate = (4150+843)/4424 = 1128.82% Assumed 60% for next 5 years	X	Return on Capital = 4425/48094 = 9.20%

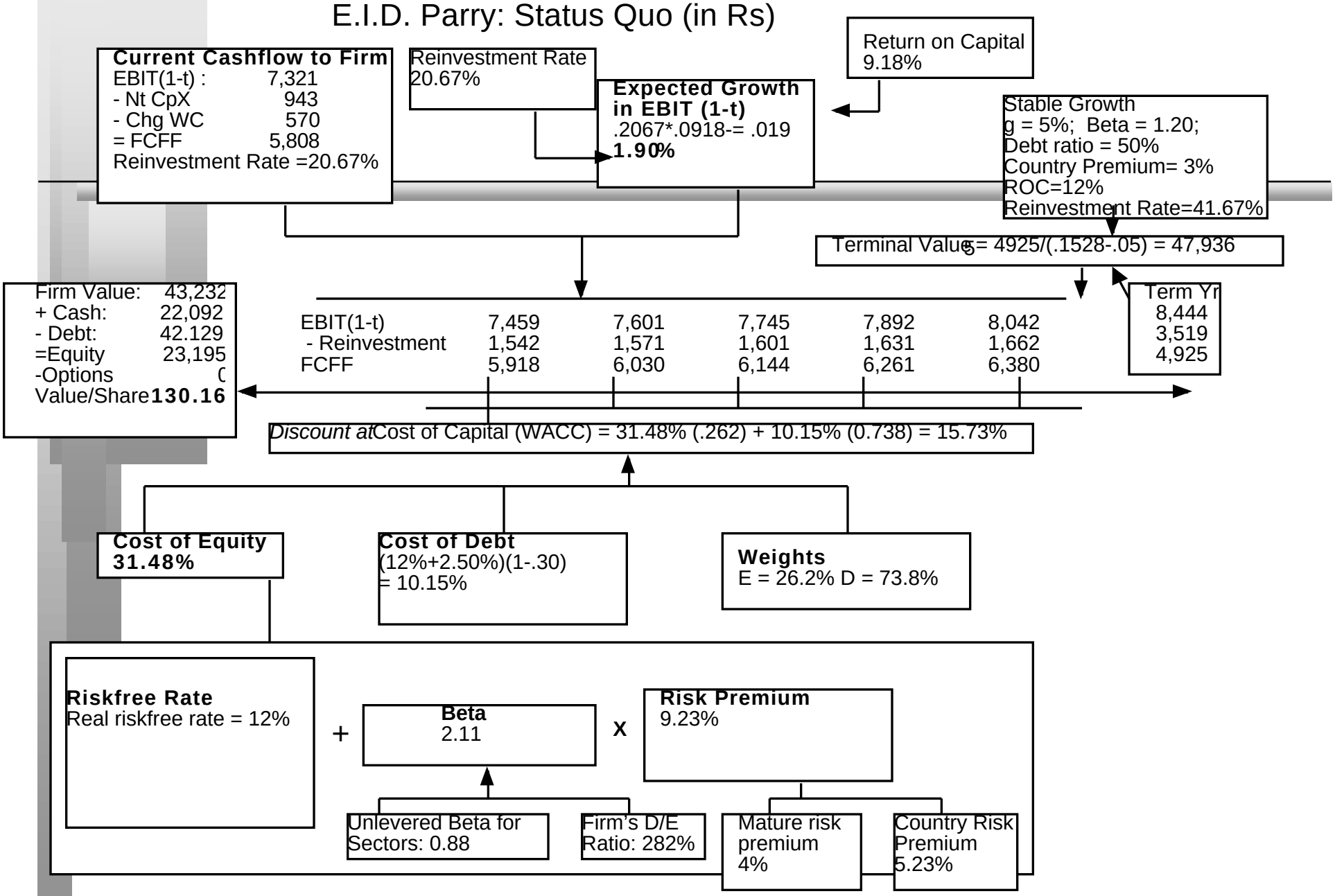
Stable Growth

- A firm is in stable growth when
  - It is growing at a rate less than or equal to the growth rate of the economy in which it operates
  - Its risk characteristics and leverage resemble those of a stable growth firm in that market.
  - Its returns on capital converge towards the industry average (or the cost of capital)
- All firms will become stable growth firms at some point
  - Because no firm can grow at a rate higher than that of the economy forever
  - Size becomes an enemy
- To estimate when a firm will hit stable growth, you have to look at
  - The size of the firm, relative to the market that it serves
  - The current growth rate of the firm
  - The competitive advantages and barriers to entry that give the firm its capacity for high growth and high returns.

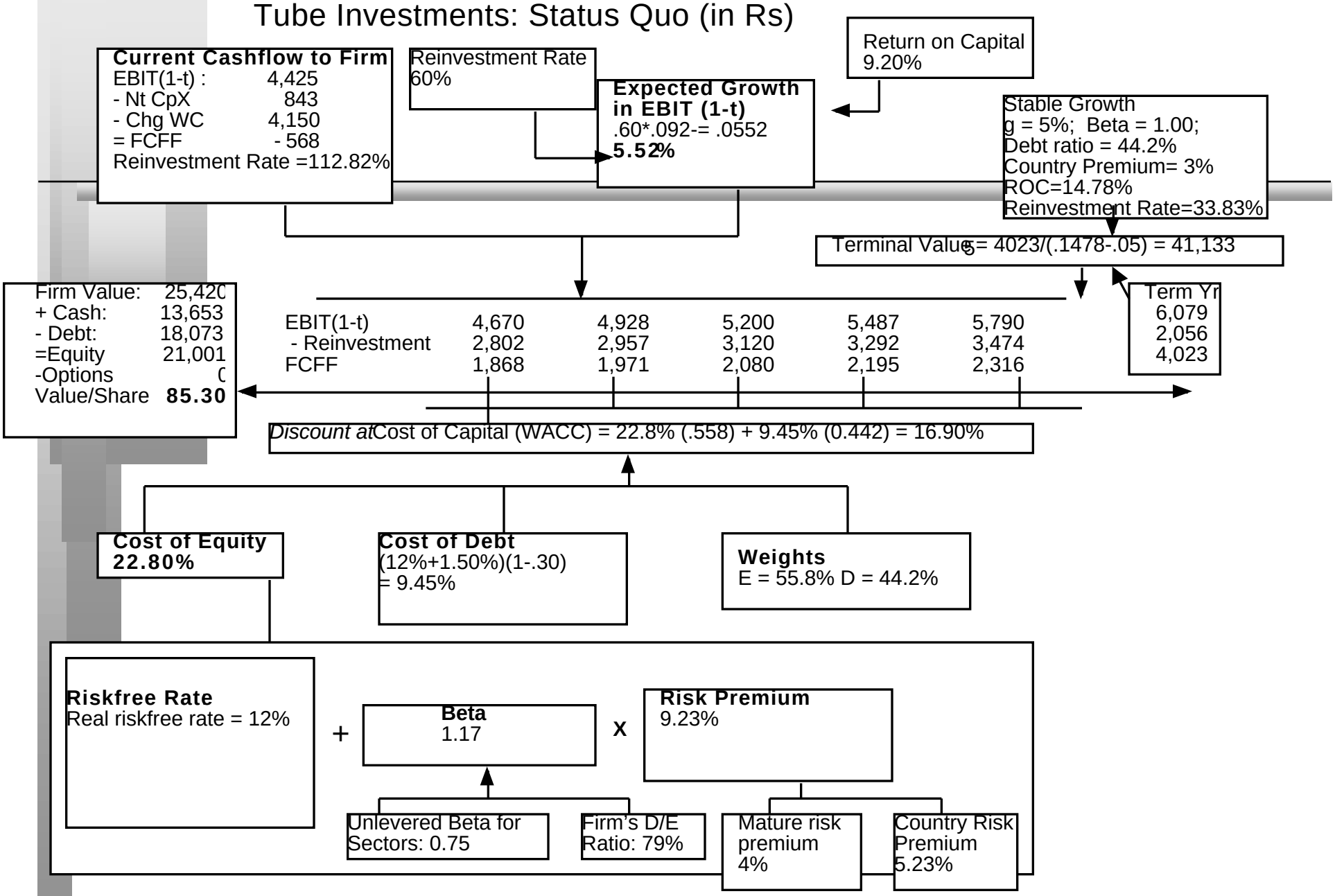
DISCOUNTED CASHFLOW VALUATIOI



E.I.D. Parry: Status Quo (in Rs)



Tube Investments: Status Quo (in Rs)



The Paths to Value Creation

- 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

A Basic Proposition

- For an action to affect the value of the firm, it has to
  - Affect current cash flows (or)
  - Affect future growth (or)
  - Affect the length of the high growth period (or)
  - Affect the discount rate (cost of capital)
- **Proposition 1: Actions that do not affect current cash flows, future growth, the length of the high growth period or the discount rate cannot affect value.**

Value-Neutral Actions

- Stock splits and stock dividends change the number of units of equity in a firm, but cannot affect firm value since they do not affect cash flows, growth or risk.
- Accounting decisions that affect reported earnings but not cash flows should have no effect on value.
  - Changing inventory valuation methods from FIFO to LIFO or vice versa in financial reports but not for tax purposes
  - Changing the depreciation method used in financial reports (but not the tax books) from accelerated to straight line depreciation
  - Major non-cash restructuring charges that reduce reported earnings but are not tax deductible
  - Using pooling instead of purchase in acquisitions cannot change the value of a target firm.
- Decisions that create new securities on the existing assets of the firm (without altering the financial mix) such as tracking stock cannot create value, though they might affect perceptions and hence the price.

Value Creation 1: Increase Cash Flows from Assets in Place

- The assets in place for a firm reflect investments that have been made historically by the firm. To the extent that these investments were poorly made and/or poorly managed, it is possible that value can be increased by increasing the after-tax cash flows generated by these assets.
- The cash flows discounted in valuation are after taxes and reinvestment needs have been met:

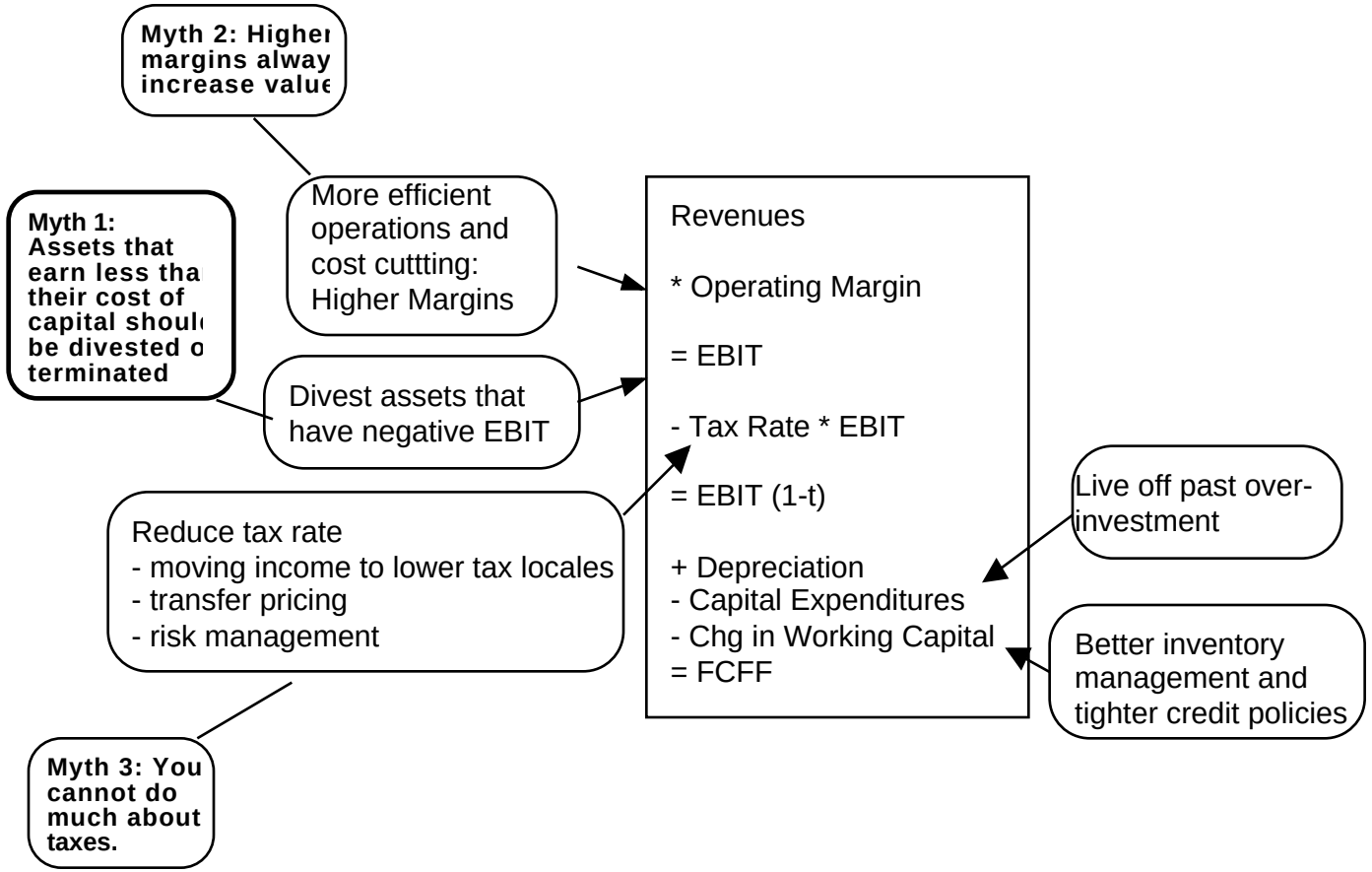
  EBIT (1-t)

  - (Capital Expenditures - Depreciation)

  - Change in Non-cash Working Capital

  = Free Cash Flow to Firm
- Proposition 2: A firm that can increase its current cash flows, without significantly impacting future growth or risk, will increase its value.

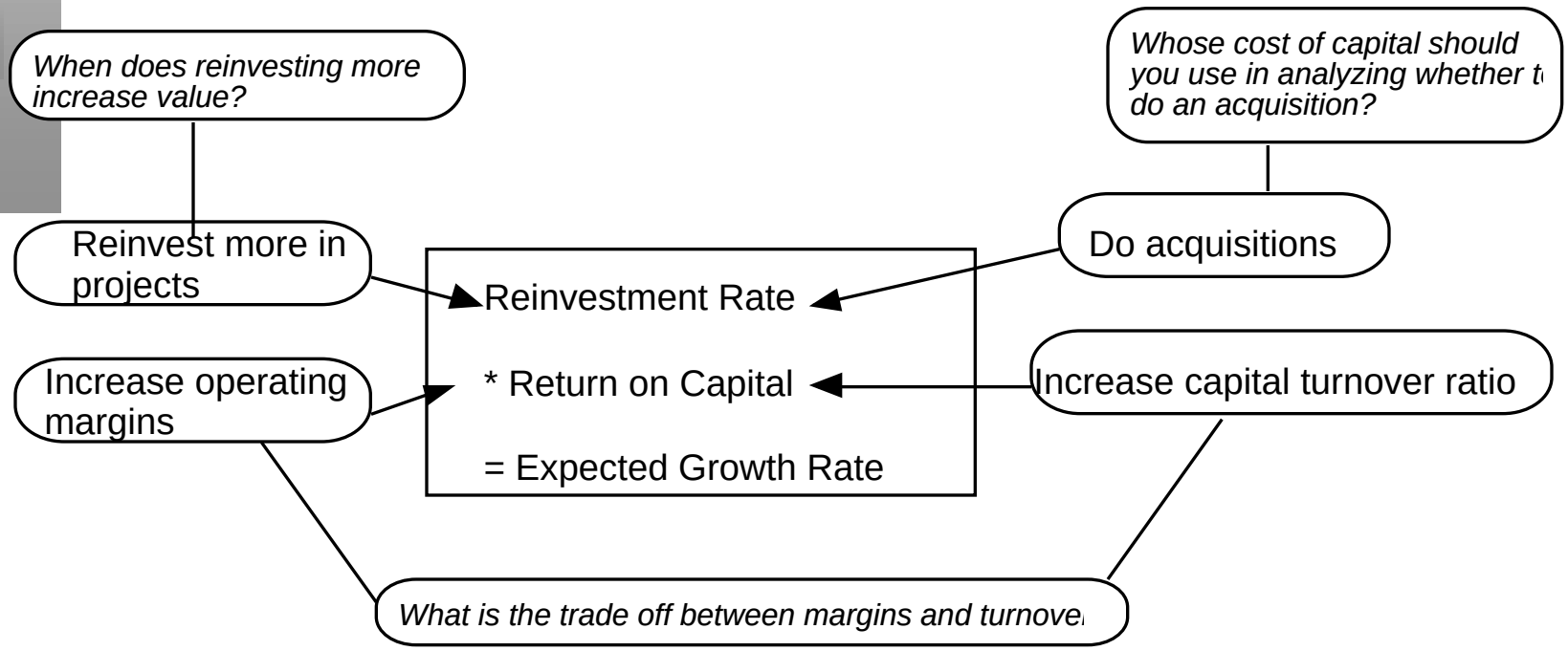
Ways of Increasing Cash Flows from Assets in Place



Value Creation 2: Increase Expected Growth

- Keeping all else constant, increasing the expected growth in earnings will increase the value of a firm.
- The expected growth in earnings of any firm is a function of two variables:
  - The amount that the firm reinvests in assets and projects
  - The quality of these investments

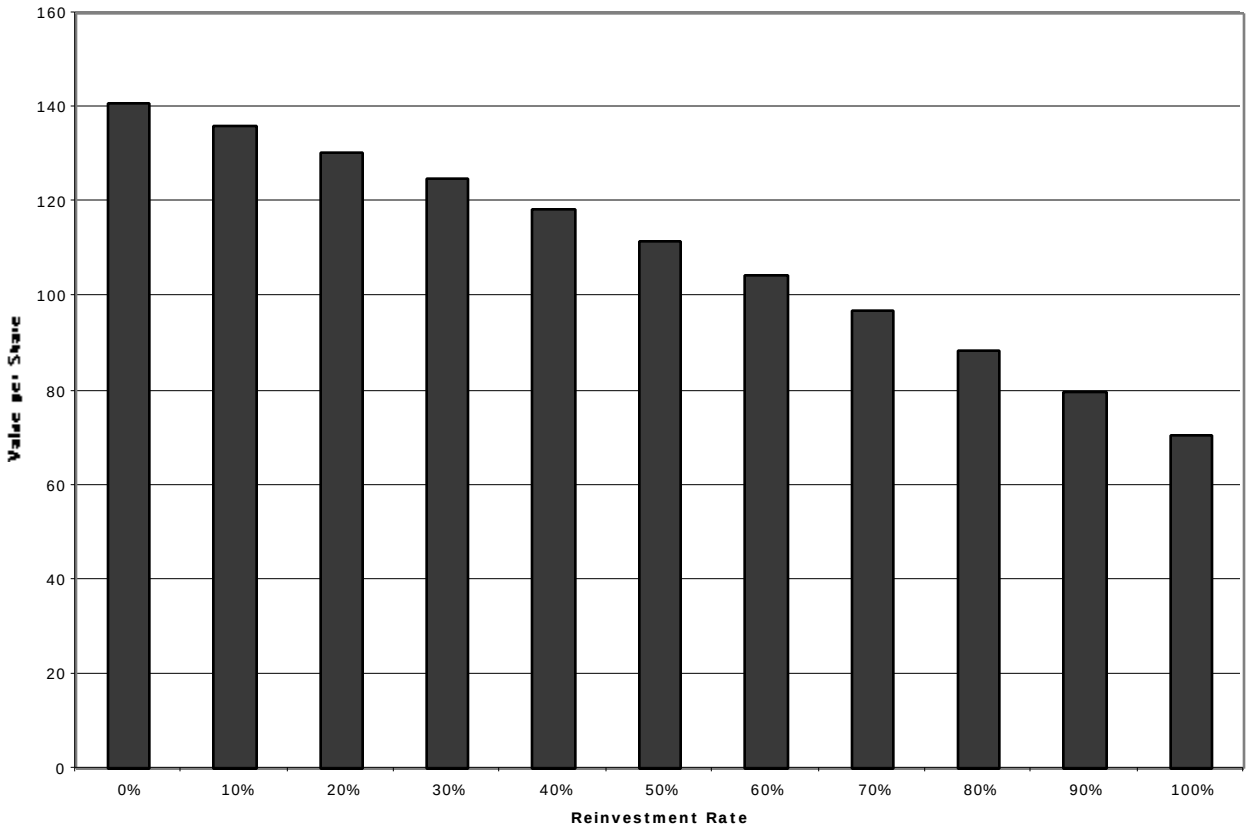
Value Enhancement through Growth



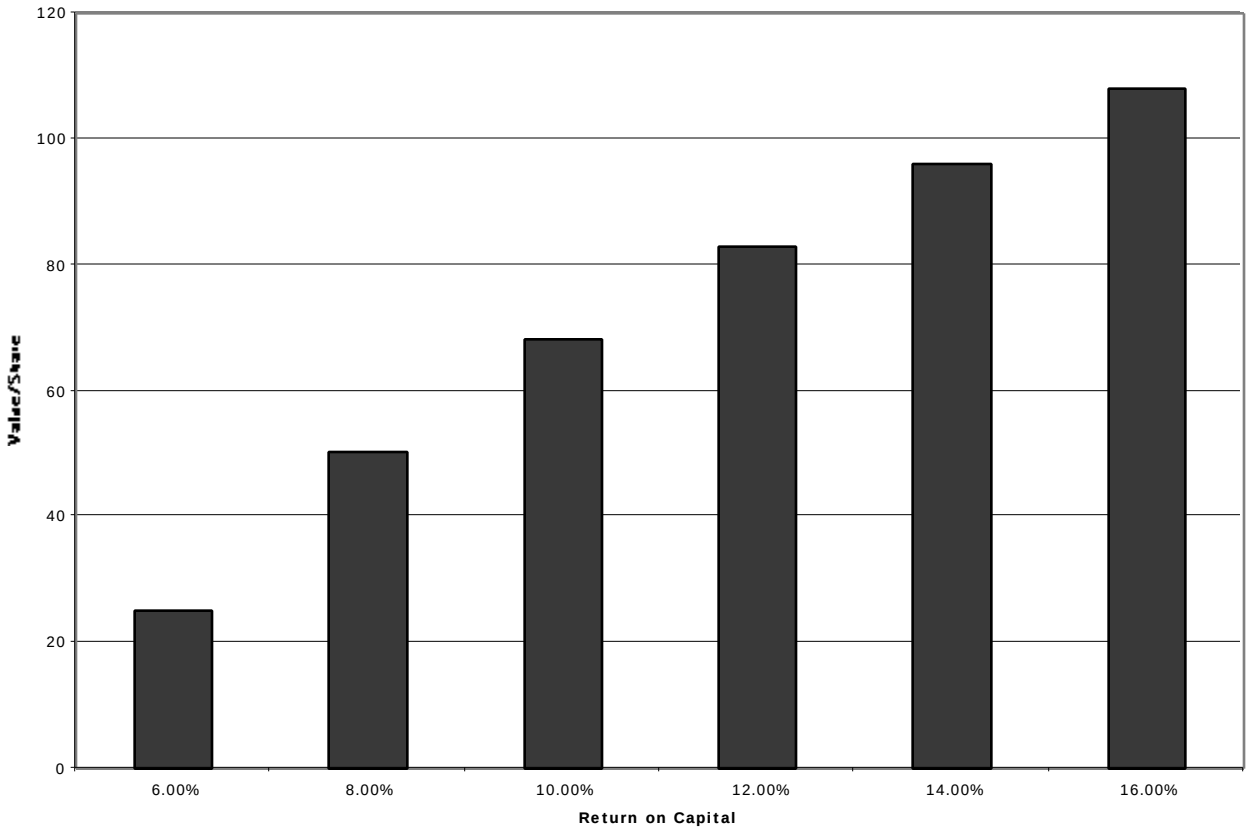
2.1: Increase the Reinvestment Rate

- Holding all else constant, increasing the reinvestment rate will increase the expected growth in earnings of a firm. Increasing the reinvestment rate will, however, reduce the cash flows of the firms. The net effect will determine whether value increases or decreases.
- As a general rule,
  - Increasing the reinvestment rate when the ROC is less than the cost of capital will reduce the value of the firm
  - Increasing the reinvestment rate when the ROC is greater than the cost of capital will increase the value of the firm

2.1. The Return Effect: Increasing the Reinvestment Rate at Parry?



2.2. Tube Investments: Quality of Investments



2.3: Pricing Decisions, ROC and Expected Growth

- The return on capital on a project or firm can be written as:

  ROC = EBIT (1-t)/ Sales * Sales/ Capital

  = After-tax Operating Margin * Capital Turnover Ratio

- When firms increase prices for their products, they improve operating margins but reduce sales (and turnover ratios). The effects of the price/quantity decision can be captured in the return on capital. It provides a simple way of allowing firms to:
  - Choose between price leader and volume leader strategies
    - The strategy that maximizes value should be the better strategy
    - In analyzing these strategies, we should allow for a dynamic competitive envioronment where competitors react to the firm's pricing decisions.
  - Decide whether to change price policy in response to competitive pressure

2.4: An Acquisition Choice

- Assume now that Tube Investments has the opportunity to acquire a internet firm and that you compute the internal rate of return on this firm to 20%. TI has a cost of capital of 16.90%, but the cost of capital for firms in the high technology business is 24%. Is this a value enhancing acquisition?

- If it does not pass your financial test, can you make the argument that strategic considerations would lead you to override the financials and acquire the firm?

Value Creation 3: Increase Length of High Growth Period

- Every firm, at some point in the future, will become a stable growth firm, growing at a rate equal to or less than the economy in which it operates.
- The high growth period refers to the period over which a firm is able to sustain a growth rate greater than this “stable” growth rate.
- If a firm is able to increase the length of its high growth period, other things remaining equal, it will increase value.

High Growth and Barriers to Entry

- For firms to maintain high growth over a period, they have to earn excess returns. In a competitive market place, these excess returns should attract competitors who will erase these excess returns over time.
- Thus, for a firm to maintain high growth and excess returns over time, it has to create barriers to entry that allow it to maintain these excess returns.

3.1: The Brand Name Advantage

- Some firms are able to sustain above-normal returns and growth because they have well-recognized brand names that allow them to charge higher prices than their competitors and/or sell more than their competitors.
- Firms that are able to improve their brand name value over time can increase both their growth rate and the period over which they can expect to grow at rates above the stable growth rate, thus increasing value.

3.2: Patents and Legal Protection

- The most complete protection that a firm can have from competitive pressure is to own a patent, copyright or some other kind of legal protection allowing it to be the sole producer for an extended period.
- Note that patents only provide partial protection, since they cannot protect a firm against a competitive product that meets the same need but is not covered by the patent protection.
- Licenses and government-sanctioned monopolies also provide protection against competition. They may, however, come with restrictions on excess returns; utilities in the United States, for instance, are monopolies but are regulated when it comes to price increases and returns.

3.3: Switching Costs

- Another potential barrier to entry is the cost associated with switching from one firm's products to another.
- The greater the switching costs, the more difficult it is for competitors to come in and compete away excess returns.
- Firms that devise ways to increase the cost of switching from their products to competitors' products, while reducing the costs of switching from competitor products to their own will be able to increase their expected length of growth.

3.4: Cost Advantages

- There are a number of ways in which firms can establish a cost advantage over their competitors, and use this cost advantage as a barrier to entry:
  - In businesses, where scale can be used to reduce costs, economies of scale can give bigger firms advantages over smaller firms
  - Owning or having exclusive rights to a distribution system can provide firms with a cost advantage over its competitors.
  - Owning or having the rights to extract a natural resource which is in restricted supply (The undeveloped reserves of an oil or mining company, for instance)
- These cost advantages will show up in valuation in one of two ways:
  - The firm may charge the same price as its competitors, but have a much higher operating margin.
  - The firm may charge lower prices than its competitors and have a much higher capital turnover ratio.

Value Creation 4: Reduce Cost of Capital

- The cost of capital for a firm can be written as:

$$\text{Cost of Capital} = k_e \left(E/(D+E)\right) + k_d \left(D/(D+E)\right)$$

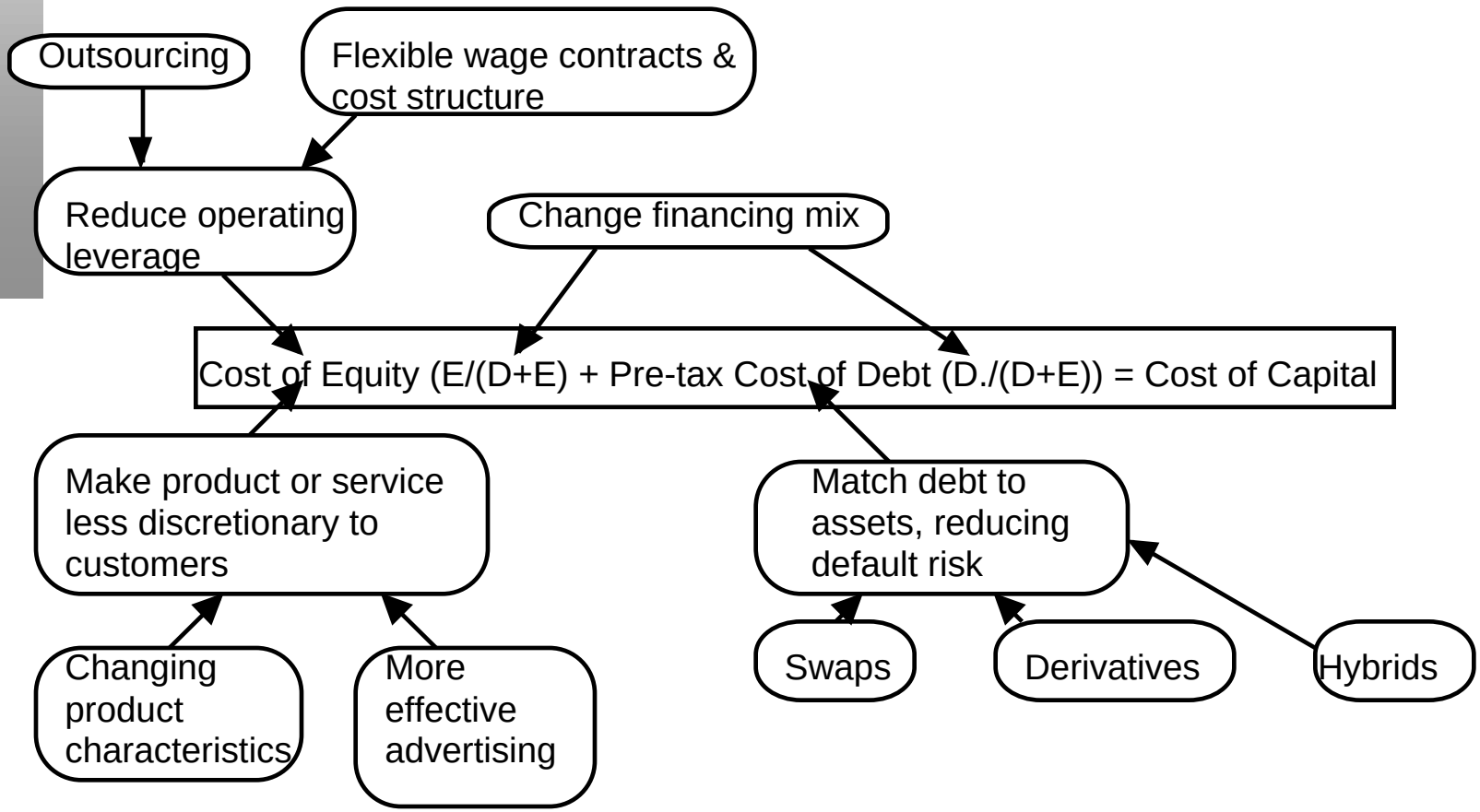
Where,

k_e = Cost of Equity for the firm

k_d = Borrowing rate (1 - tax rate)

- The cost of equity reflects the rate of return that equity investors in the firm would demand to compensate for risk, while the borrowing rate reflects the current long-term rate at which the firm can borrow, given current interest rates and its own default risk.
- The cash flows generated over time are discounted back to the present at the cost of capital. Holding the cash flows constant, reducing the cost of capital will increase the value of the firm.

Reducing Cost of Capital



E.I.D. Parry: Optimal Debt Ratio

Debt Ratio	Beta	Cost of Equity	Bond Rating	Interest rate on debt	Tax Rate	Cost of Debt (after-tax)	WACC	Firm Value (G)
0%	0.73	18.76%	AAA	12.20%	30.00%	8.54%	18.76%	$44,166
10%	0.79	19.29%	AAA	12.20%	30.00%	8.54%	18.21%	$45,942
20%	0.86	19.95%	AA	12.50%	30.00%	8.75%	17.71%	$47,706
30%	0.95	20.79%	A	13.00%	30.00%	9.10%	17.28%	$49,281
40%	1.07	21.92%	A-	13.25%	30.00%	9.28%	16.86%	$50,959
50%	1.25	23.50%	BBB	13.50%	30.00%	9.45%	16.47%	$52,596
60%	1.50	25.86%	BB	14.00%	30.00%	9.80%	16.23%	$53,697
70%	1.93	29.81%	B+	14.50%	30.00%	10.15%	16.05%	$54,515
80%	2.78	37.70%	B	15.25%	30.00%	10.68%	16.08%	$54,365
90%	5.35	61.37%	B-	16.25%	30.00%	11.38%	16.37%	$53,031

Tube Investments: Optimal Capital Structure

Debt Ratio	Beta	Cost of Equity	Bond Rating	Interest rate on debt	Tax Rate	Cost of Debt (after-tax)	WACC	Firm Value (G)
0%	0.77	19.07%	AAA	12.20%	30.00%	8.54%	19.07%	$33,506
10%	0.83	19.62%	AAA	12.20%	30.00%	8.54%	18.51%	$35,107
20%	0.90	20.31%	A+	12.80%	30.00%	8.96%	18.04%	$36,584
30%	1.00	21.19%	A-	13.25%	30.00%	9.28%	17.62%	$37,999
40%	1.12	22.37%	BBB	13.50%	30.00%	9.45%	17.20%	$39,495
50%	1.30	24.02%	BB	14.00%	30.00%	9.80%	16.91%	$40,617
60%	1.57	26.49%	B	15.25%	30.00%	10.68%	17.00%	$40,253
70%	2.02	30.62%	B-	16.25%	30.00%	11.38%	17.15%	$39,697
80%	2.91	38.87%	CCC	17.00%	30.00%	11.90%	17.29%	$39,155
90%	5.59	63.61%	CCC	17.00%	30.00%	11.90%	17.07%	$39,989

The Value Enhancement Chain

	Gimme'	*Odds on.*	*Could work if..*
Assets in Place	1. Divest assets/projects with Divestiture Value > Continuing Value 2. Terminate projects with Liquidation Value > Continuing Value 3. Eliminate operating expenses that generate no current revenues and no growth.	1. Reduce net working capital requirements, by reducing inventory and accounts receivable, or by increasing accounts payable. 2. Reduce capital maintenance expenditures on assets in place.	1. Change pricing strategy to maximize the product of profit margins and turnover ratio.
Expected Growth	Eliminate new capital expenditures that are expected to earn less than the cost of capital	Increase reinvestment rate or marginal return on capital or both in firm's existing businesses.	Increase reinvestment rate or marginal return on capital or both in new businesses.
Length of High Growth Period	If any of the firm's products or services can be patented and protected, do so	Use economies of scale or cost advantages to create higher return on capital.	1. Build up brand name 2. Increase the cost of switching from product and reduce cost of switching to it.
Cost of Financing	1. Use swaps and derivatives to match debt more closely to firm's assets 2. Recapitalize to move the firm towards its optimal debt ratio.	1. Change financing type and use innovative securities to reflect the types of assets being financed 2. Use the optimal financing mix to finance new investments. 3. Make cost structure more flexible to reduce operating leverage.	Reduce the operating risk of the firm, by making products less discretionary to customers.

Alternative Approaches to Value Enhancement

- *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.

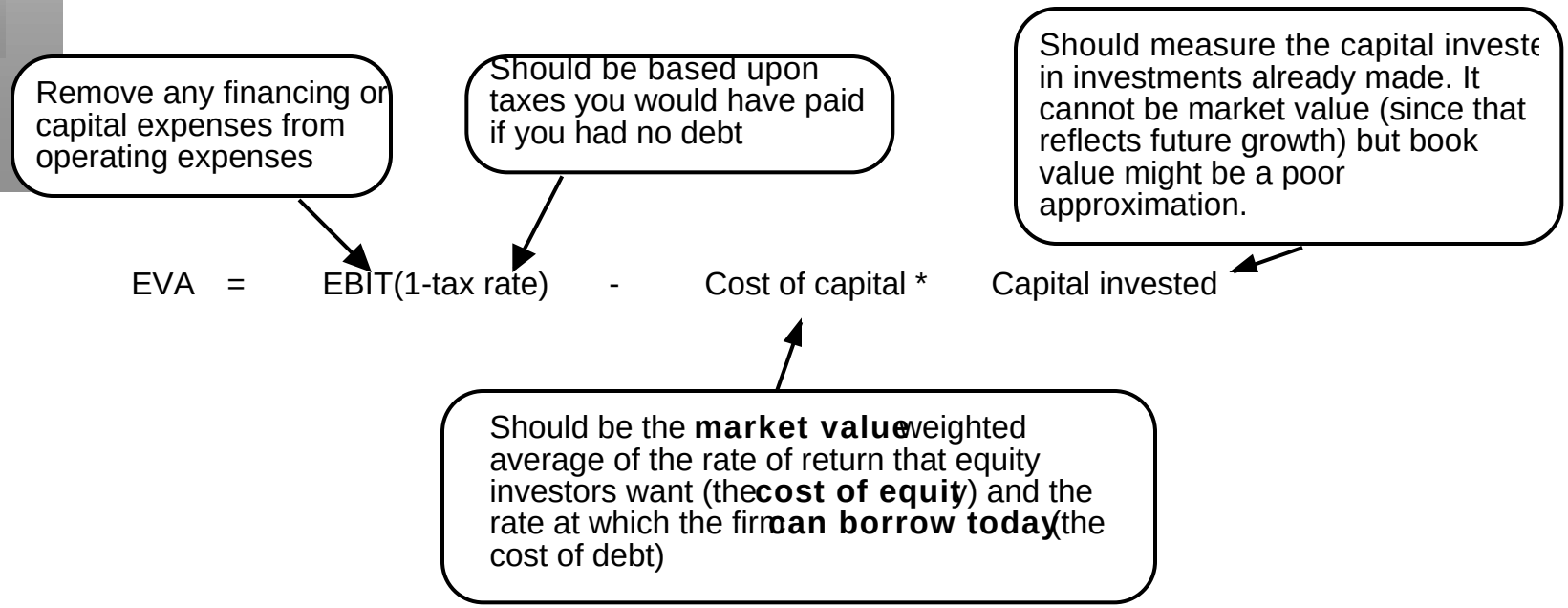
Economic Value Added (EVA) and CFROI

- 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 = (Return on Capital - Cost of Capital) (Capital Invested in Project)
- The CFROI is a measure of the cash flow return made on capital

  CFROI = (Adjusted EBIT (1-t) + Depreciation & Other Non-cash Charges) / Capital Invested

EVA in Practice: Some Measurement Issues



Estimating EVA

	EBIT(1-t)	Cost of Capital	Capital Invested	EVA
E.I.D. Parry	9.18%	15.73%	79786	-5226
Tube Investments	9.20%	16.90%	48094	-3703
Carborandum	14.76%	17.79%	24120	-731
Coromandel	20.28%	15.92%	32272	1407

What does a negative EVA tell us?

When a firm or a division has a negative EVA, it means that

- The firm or division has made poor investments in the past
- The capital invested in the division was mismeasured (over estimated)
- The operating income was under estimated
- The firm or division is at an early stage in the life cycle and has not hit its peak earning stages yet
- All of the above
- Any of the above

Assuming that a division has a negative EVA because of poor investments in the past, the right action to take is

- Shut it down or liquidate it
- Sell it
- Continue in operations
- Cannot answer without more information

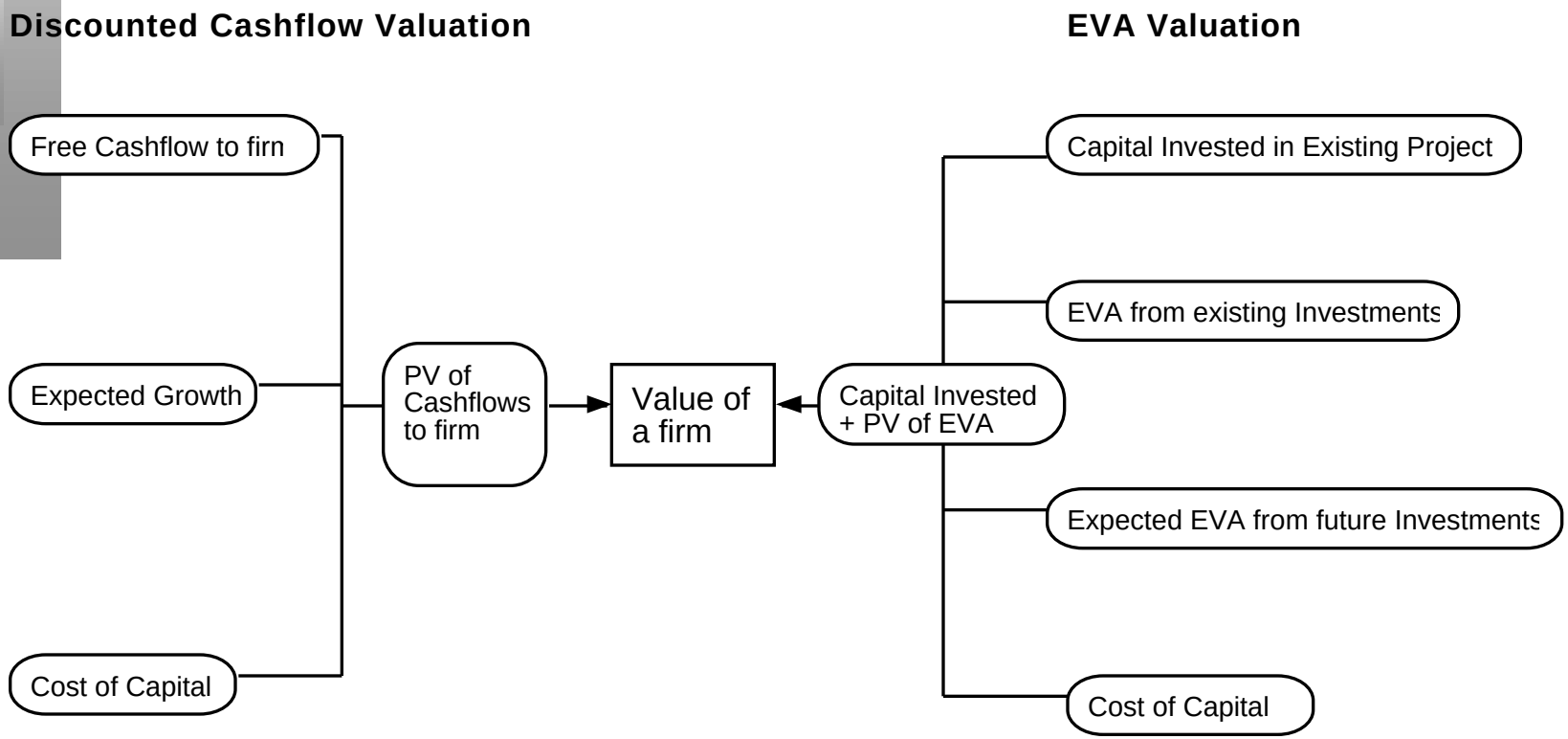
Divisional EVA

- When EVA is computed at the division level, the computation requires that
  - book value be estimated at the divisional level. Since firms do not maintain balance sheets at divisional levels, this will involve allocation mechanisms
  - income be estimated at the divisional level. Again, allocation of fixed headquarters expenses becomes an issue
  - cost of equity and capital be estimated at the divisional level
- The initial estimates of EVA are likely to reflect the allocation mechanisms used and the mistakes made in those allocations
- Changes in EVA over time are more useful measures than the initial EVA estimates themselves

Things to Note about EVA

- EVA is a measure of dollar surplus value, not the percentage difference in returns.
- It is closest in both theory and construct to the net present value of a project in capital budgeting, as opposed to the IRR.
- The value of a firm, in DCF terms, can be written in terms of the EVA of projects in place and the present value of the EVA of future projects.

DCF and EVA Valuation



A Simple Illustration

- Assume that you have a firm with
  - $I_A = 100$
  - $ROC_A = 15\%$
  - $WACC_A = 10\%$
  - $WACC_{New\ Projects} = 10\%$

  In each year 1-5, assume that
  $\Delta I = 10$ (Investments are at beginning of each year)
  $ROC_{New\ Projects} = 15\%$
- Assume that all of these projects will have infinite lives.
- After year 5, assume that
  - Investments will grow at 5% a year forever
  - ROC on projects will be equal to the cost of capital (10%)

Firm Value using EVA Approach

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	=$ 3.41
Value of Firm	**=$ 170.85**

Firm Value: Present Value of FCFF

Year	0	1	2	3	4	5	Term Year
FCFF		$ 6.50	$ 8.00	$ 9.50	$ 11.00	$ 11.25	$ 11.81
PV of FCFF	($10)	$ 5.91	$ 6.61	$ 7.14	$ 7.51	$ 6.99	
Terminal Value						$ 236.25	
PV of Terminal Value						$ 146.69	
Value of Firm	$170.85						

Implications

- Growth, by itself, does not create value. It is growth, with investment in excess return projects, that creates value.
  - The growth of 5% a year after year 5 creates no additional value.
- The “market value added” , which is defined to be the excess of market value over capital invested is a function of tthe excess value created.
  - In the example above, the market value of $ 170.85 million exceeds the book value of $ 100 million, because the return on capital is 5% higher than the cost of capital
- A policy of maximizing the present value of EVA over time is usually consistent with the classic objective of maximizing firm value.

Year-by-year EVA Changes

- Firms are often evaluated based upon year-to-year changes in EVA rather than the present value of EVA over time.
- The advantage of this comparison is that it is simple and does not require the making of forecasts about future earnings potential.
- Another advantage is that it can be broken down by any unit - person, division etc., as long as one is willing to assign capital and allocate earnings across these same units.
- While it is simpler than DCF valuation, using year-by-year EVA changes comes at a cost. In particular, it is entirely possible that a firm which focuses on increasing EVA on a year-to-year basis may end up being less valuable.

Firm Value Maximization and EVA: When increasing EVA can lead to lower firm value

- The EVA was increased by sacrificing future growth and EVA.

Value = Capital Invested + PV of EVA: existing assets + PV of EVA: future investments

Decrease *Increase* *Decrease*

- The EVA was increased by increasing the riskiness of the underlying investments

Value = Capital Invested + PV of EVA: existing assets + PV of EVA: future investments

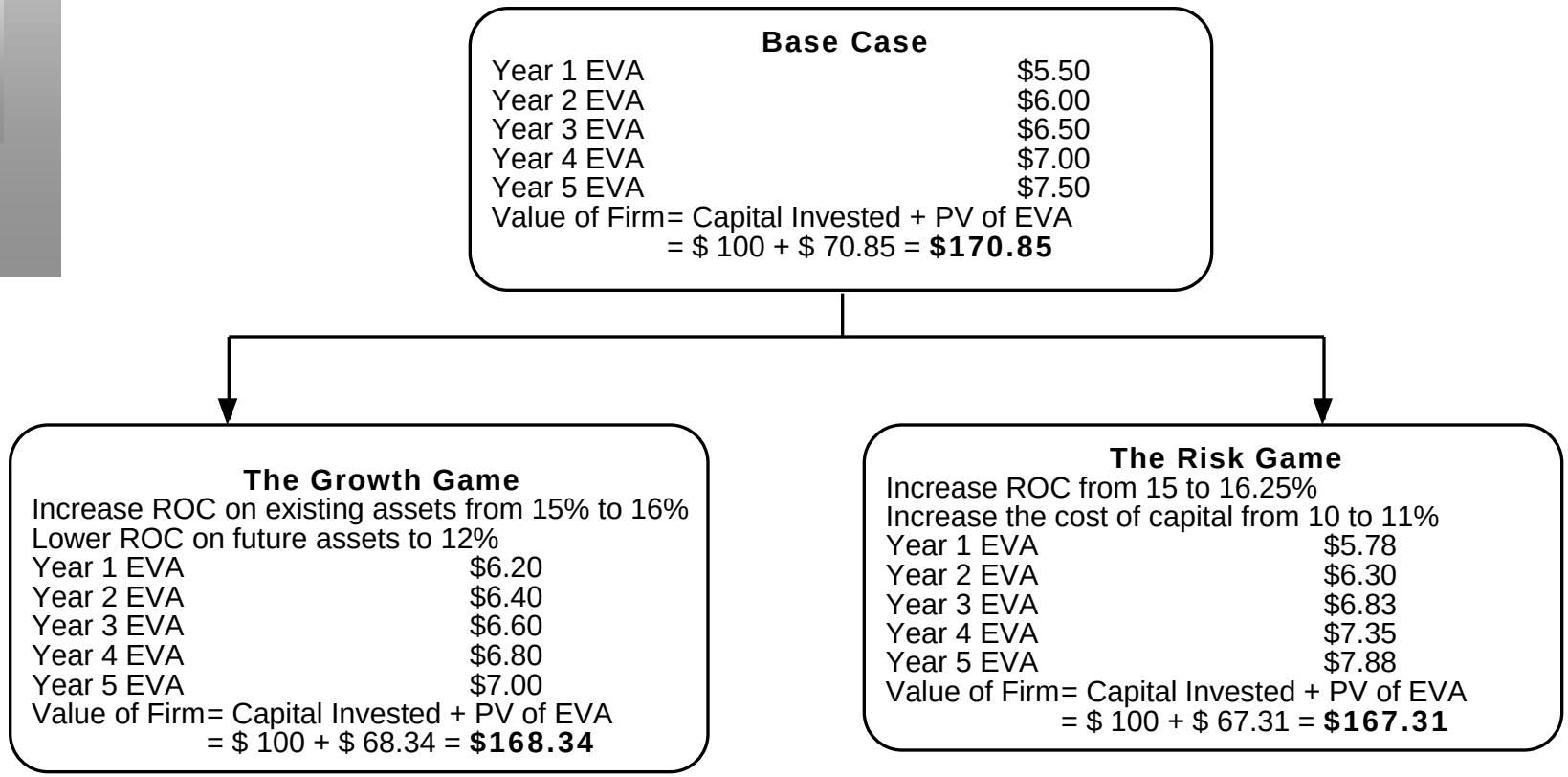
Increase in EVA can be offset by increase in the cost of capital, which reduces present value

- The EVA was increased by artificially reducing the capital invested (using accounting gimmicks)

Value = Capital Invested + PV of EVA: existing assets + PV of EVA: future investments

Decrease *Decrease* *Increase* *Not affected*

Illustrating the Trade Offs



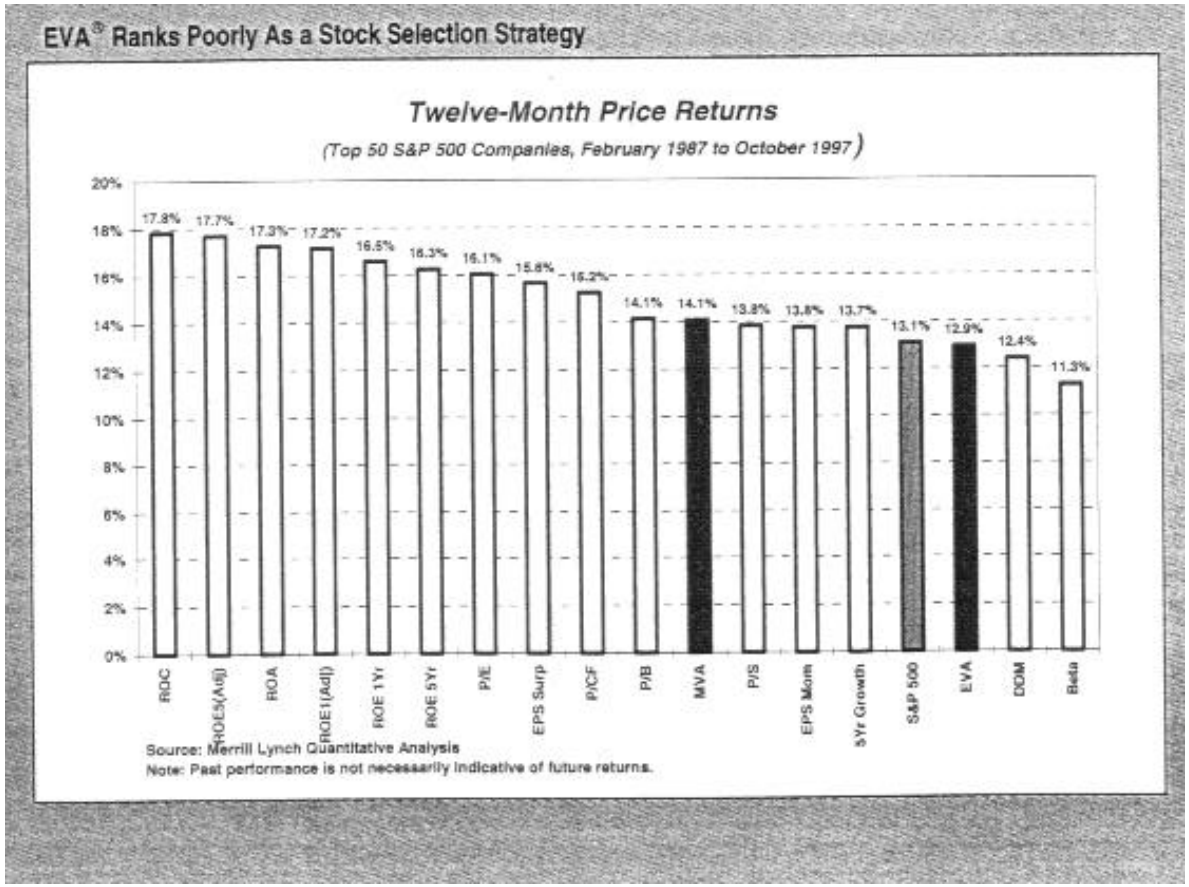
Advantages of EVA

1. EVA is closely related to NPV. It is closest in spirit to corporate finance theory that argues that the value of the firm will increase if you take positive NPV projects.
2. It avoids the problems associates with approaches that focus on percentage spreads - between ROE and Cost of Equity and ROC and Cost of Capital. These approaches may lead firms with high ROE to turn away good projects to avoid lowering their percentage spreads.
3. It makes top managers responsible for a measure that they have more control over - the return on capital and the cost of capital are affected by their decisions - rather than one that they feel they cannot control as well - the market price per share.
4. It is influenced by all of the decisions that managers have to make within a firm - the investment decisions and dividend decisions affect the return on capital and the financing decision affects the WACC.

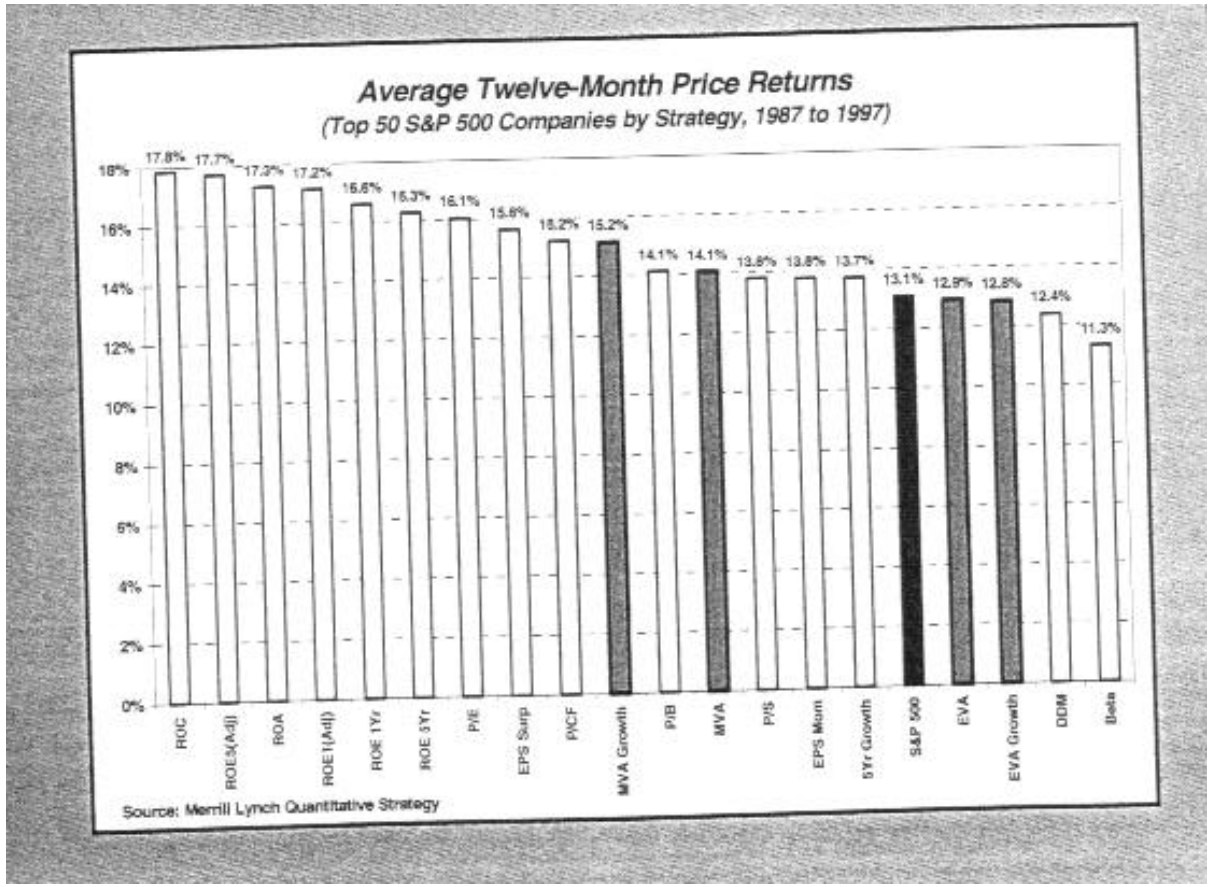
EVA and Changes in Market Value

- The relationship between EVA and Market Value Changes is more complicated than the one between EVA and Firm Value.
- The market value of a firm reflects not only the Expected EVA of Assets in Place but also the Expected EVA from Future Projects
- To the extent that the actual economic value added is smaller than the expected EVA the market value can decrease even though the EVA is higher.
  - Thus, a firm that reports an increase in EVA, where the increase is less than expected, will see its market value drop
  - A firm that reports a decrease in EVA, where the decrease is less than expected, will see its market value increase

High EVA companies do not earn excess returns



Increases in EVA do not create excess returns



Implications of Findings

- This does not imply that increasing EVA is bad from a corporate finance standpoint. In fact, given a choice between delivering a “below-expectation” EVA and no EVA at all, the firm should deliver the “below-expectation” EVA.
- It does suggest that the correlation between increasing year-to-year EVA and market value will be weaker for firms with high anticipated growth (and excess returns) than for firms with low or no anticipated growth.
- It does suggest also that “investment strategies”based upon EVA have to be carefully constructed, especially for firms where there is an expectation built into prices of “high” surplus returns.

When focusing on year-to-year EVA changes has least side effects

1. Most or all of the assets of the firm are already in place; i.e, very little or none of the value of the firm is expected to come from future growth.
   - [This minimizes the risk that increases in current EVA come at the expense of future EVA]
2. The leverage is stable and the cost of capital cannot be altered easily by the investment decisions made by the firm.
   - [This minimizes the risk that the higher EVA is accompanied by an increase in the cost of capital]
3. The firm is in a sector where investors anticipate little or not surplus returns; i.e., firms in this sector are expected to earn their cost of capital.
   - [This minimizes the risk that the increase in EVA is less than what the market expected it to be, leading to a drop in the market price.]

When focusing on year-to-year EVA changes can be dangerous

1. High growth firms, where the bulk of the value can be attributed to future growth.
2. Firms where neither the leverage not the risk profile of the firm is stable, and can be changed by actions taken by the firm.
3. Firms where the current market value has imputed in it expectations of significant surplus value or excess return projects in the future.

Note that all of these problems can be avoided if we restate the objective as maximizing the present value of EVA over time. If we do so, however, some of the perceived advantages of EVA - its simplicity and observability - disappear.