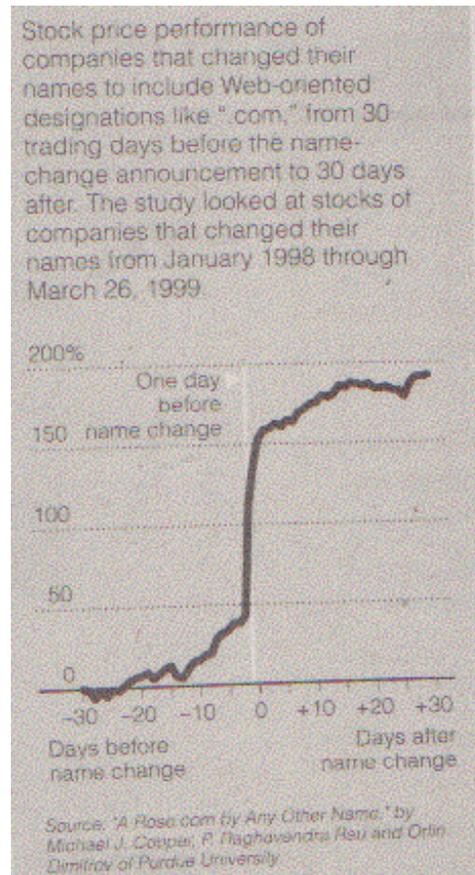
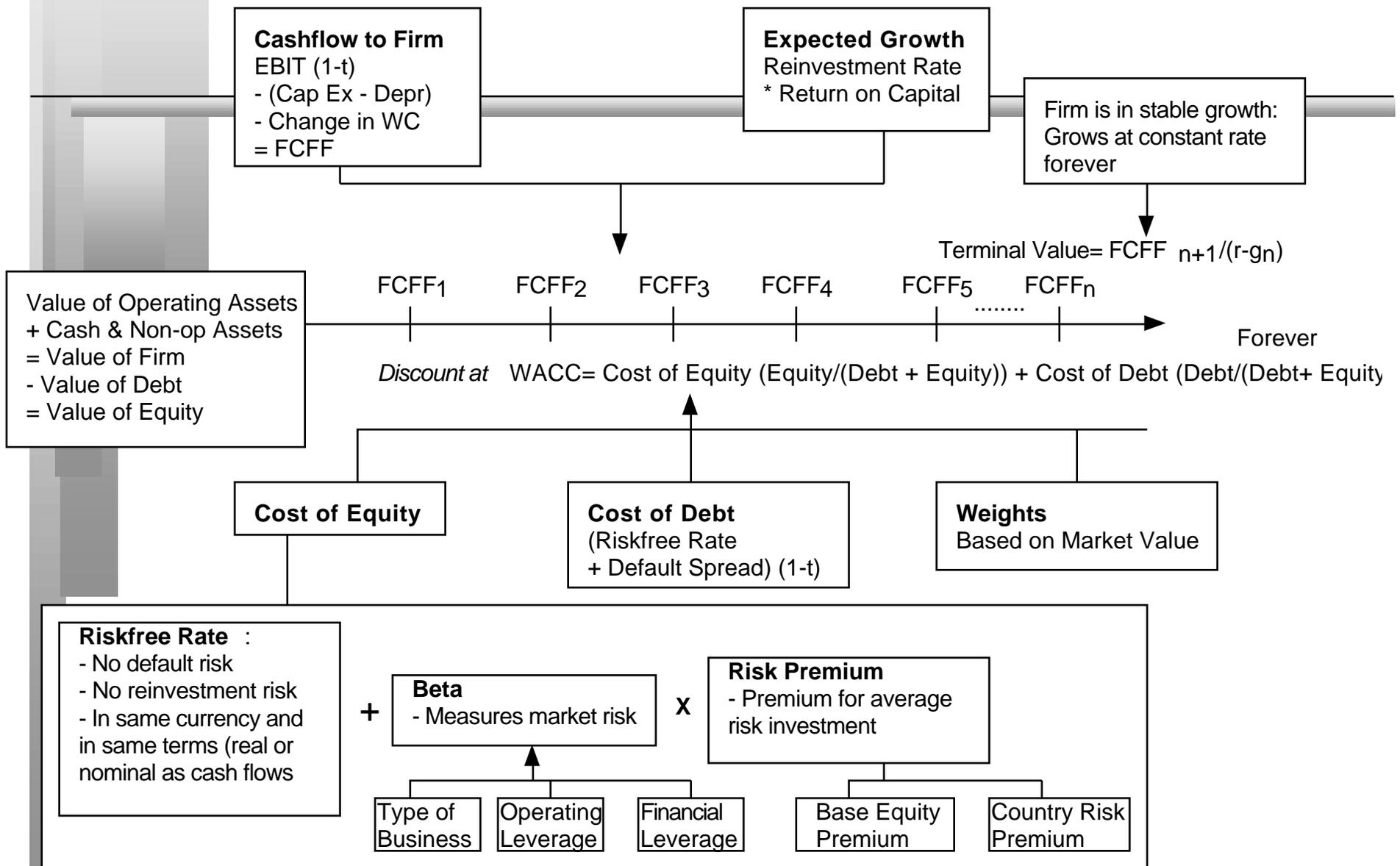


Value Enhancement: Back to Basics

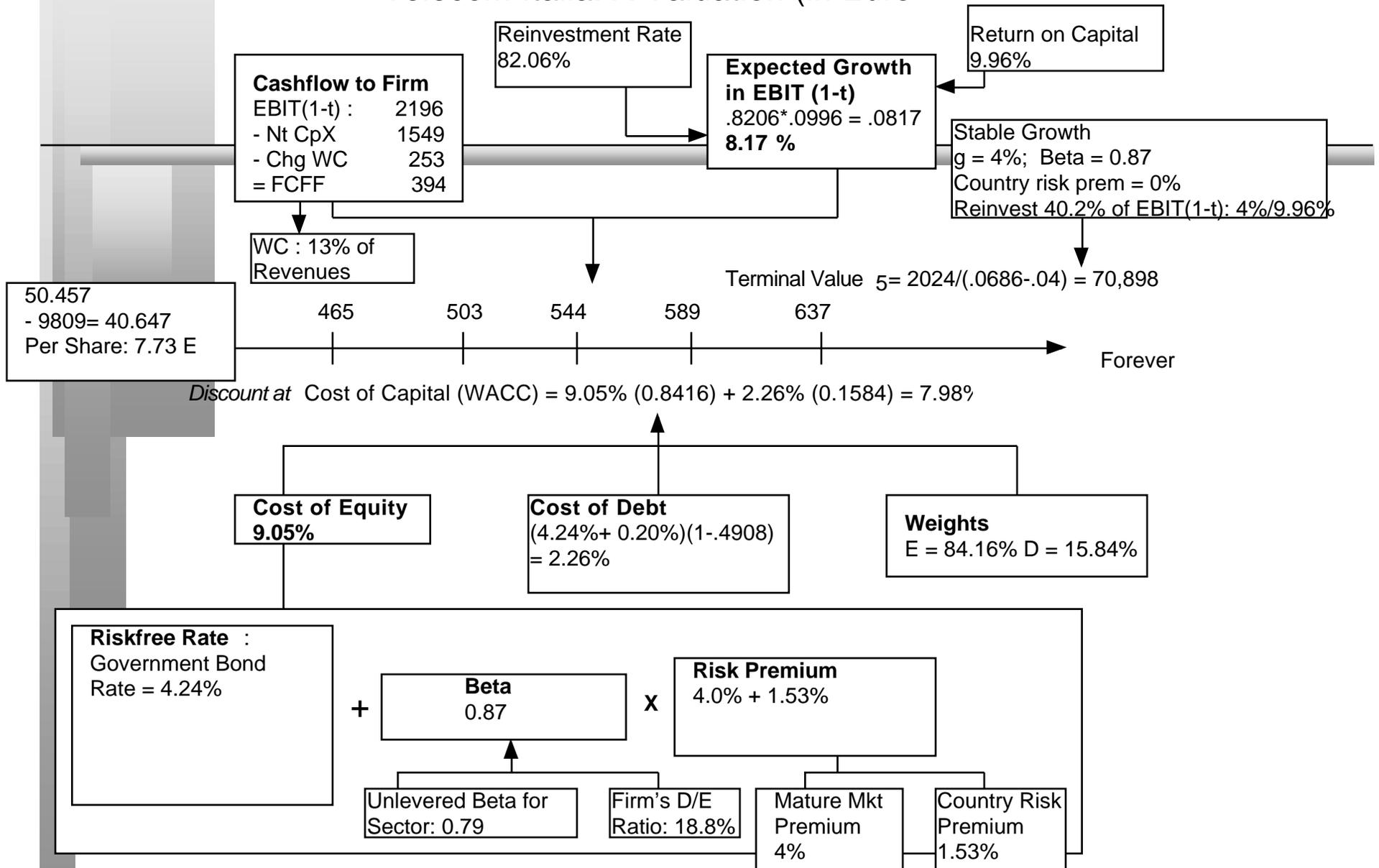
Price Enhancement versus Value Enhancement



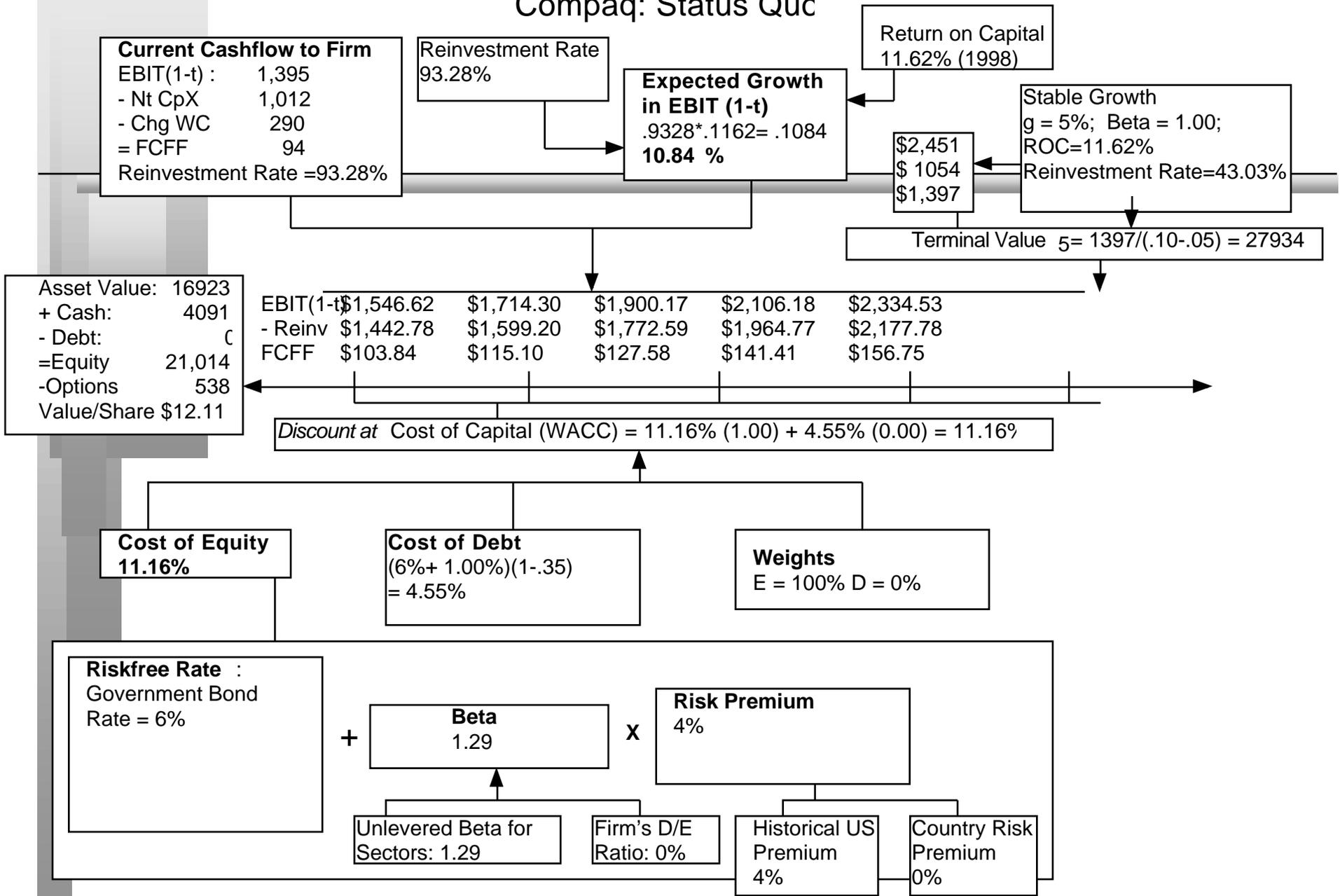
DISCOUNTED CASHFLOW VALUATION



Telecom Italia: A Valuation (in Euro)



Compaq: Status Quc



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.**

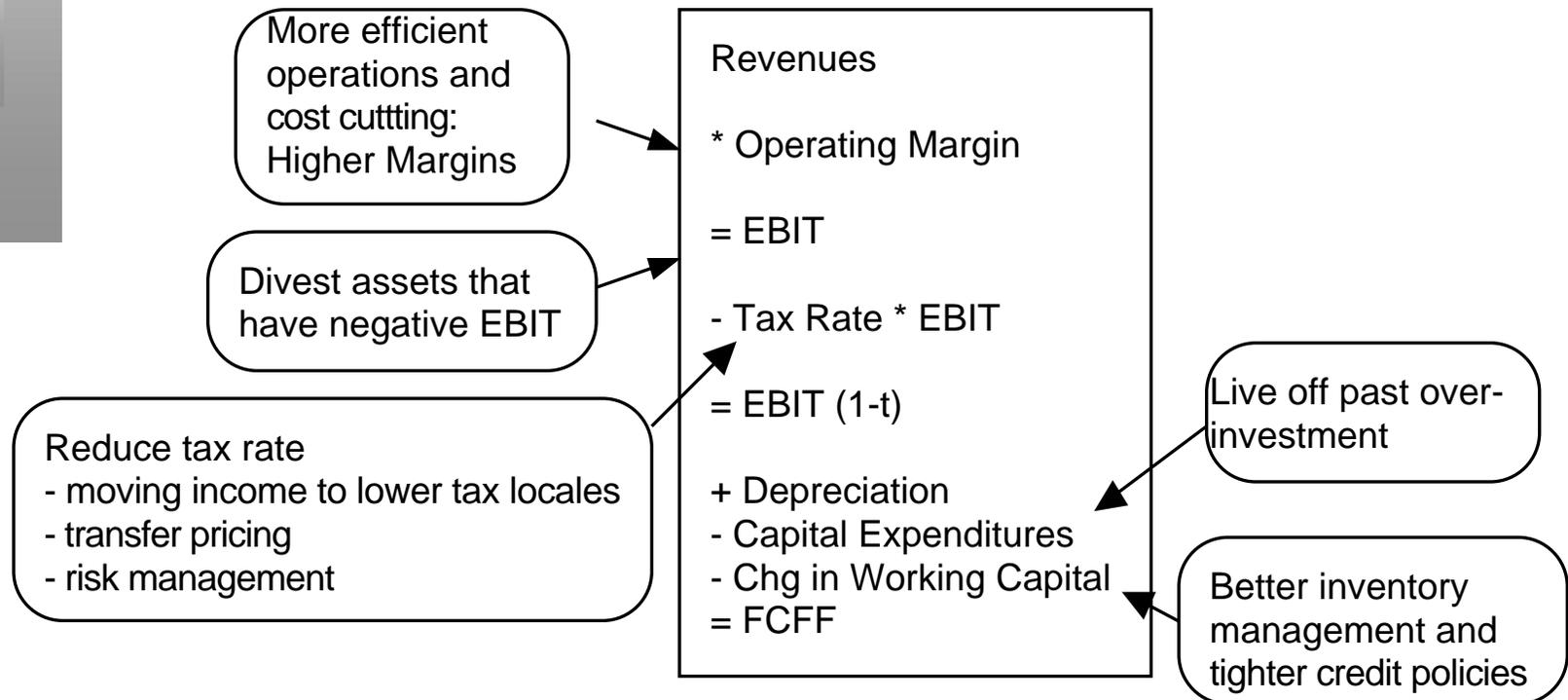
Value-Neutral Actions

- 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.

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:
$$\begin{aligned} & \text{EBIT} (1-t) \\ & - (\text{Capital Expenditures} - \text{Depreciation}) \\ & - \text{Change in Non-cash Working Capital} \\ & = \text{Free Cash Flow to Firm} \end{aligned}$$
- 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



1.1.: Poor Investments: Should you divest?

- Every firm has at least a few investments in place that are poor investments, earning less than the cost of capital or even losing money.
- At first sight, it may seem that terminating or divesting these investments would increase value. That is not necessarily true, however, because that implicitly assumes that you get at least your capital back when you terminate a project.
- In reality, there are three values that we need to consider:
 - **Continuing Value:** This is the present value of the expected cash flows from continuing the investment through the end of its life.
 - **Salvage or Liquidation Value:** This is the net cash flow that the firm will receive if it terminated the project today.
 - **Divestiture Value:** This is the price that will be paid by the highest bidder for this investment.

Issue: To liquidate or not to liquidate

- Assume that you have been called to run Compaq and that its returns on its different businesses are as follows:

Business	Capital Invested	ROC	Cost of Capital
Mainframe	\$ 3 billion	5%	10%
PCs	\$ 2 billion	11%	11%
Service	\$ 1.5 billion	14%	9.5%
Internet	\$ 1 billion	22%*	14%

* Expected returns; current returns are negative

Which of these businesses should be divested?

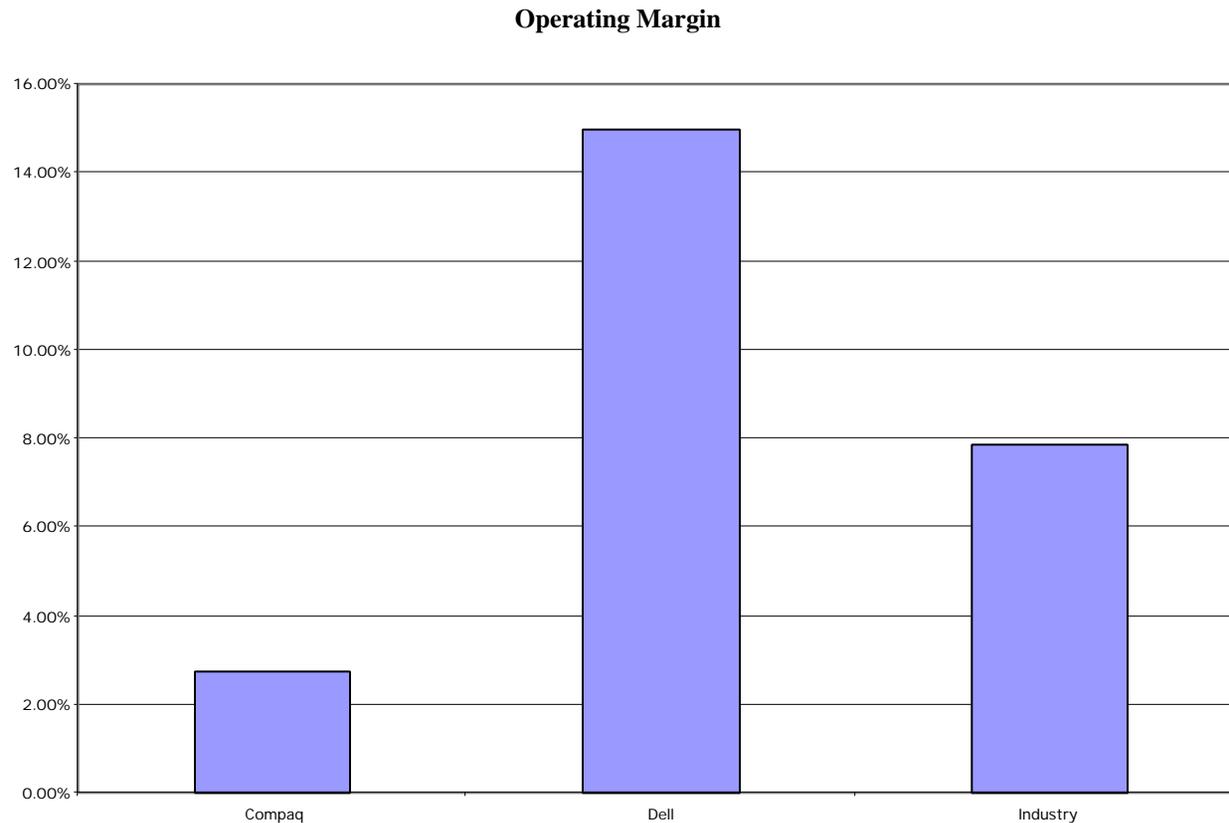
A Divestiture Decision Matrix

- Whether to continue, terminate or divest an investment will depend upon which of the three values - continuing, liquidation or divestiture - is the greatest.
- If the continuing value is the greatest, there can be no value created by terminating or liquidating this investment.
- If the liquidation or divestiture value is greater than the continuing value, the firm value will increase by the difference between the two values:
 - If liquidation is optimal: Liquidation Value - Continuing Value
 - If divestiture is optimal: Divestiture Value - Continuing Value

1.2: More Efficient Operations

- The operating income for a firm can be written as
Revenues
* Operating Margin
= EBIT
- The operating margin for a firm is a function of how efficiently it operates to produce the products and services that it sells. If a firm can reduce its costs, while generating similar revenues, it will increase its operating income and value.
- Cost cutting and layoffs comprise the first leg of value enhancement for most firms. Since they occur quickly and are tangible, the effect on earnings (and value) is immediate.
 - Not all cost cutting is value enhancing. If firms cut expenditures which are designed to create future growth (research and training expenses, for instance), they might report higher operating income but value might drop.

Operating Margin for Compaq: A Comparison to the Industry



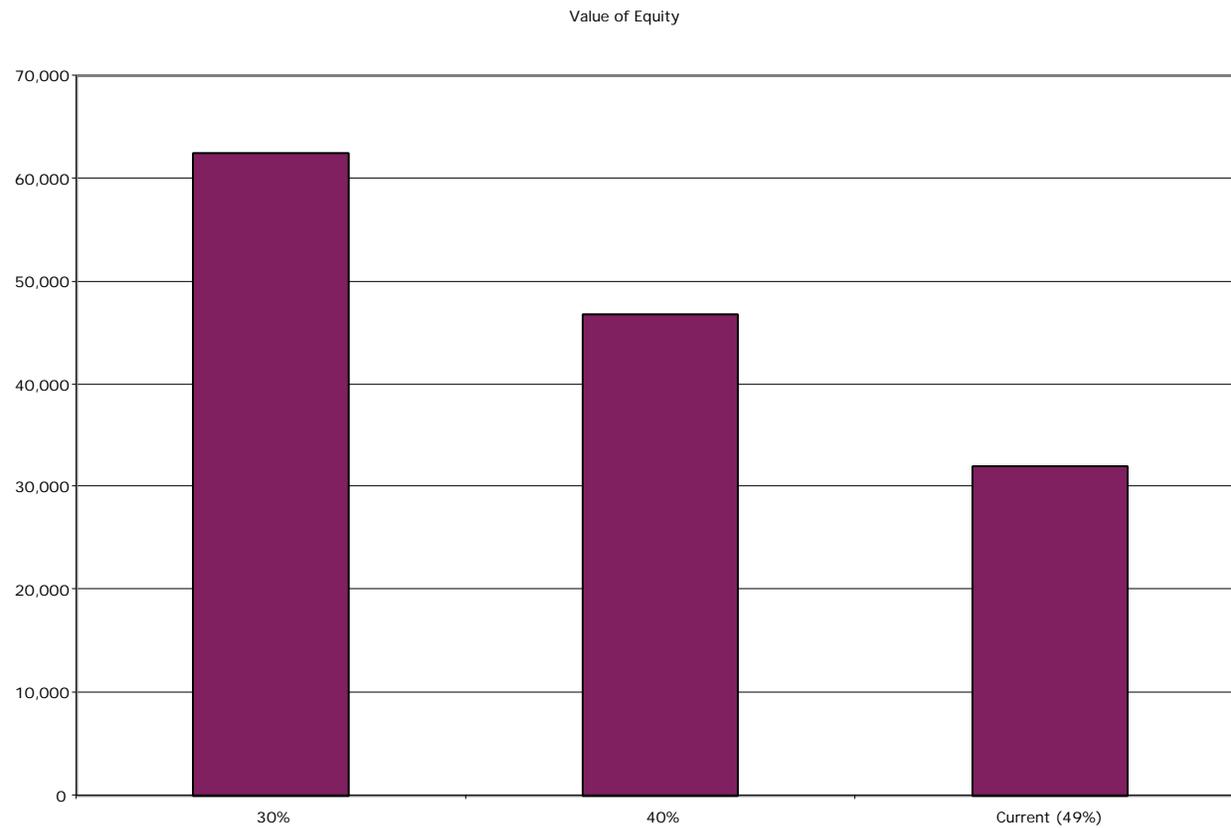
Issue : Operating Margins and R&D

- Assume that analysts focus on the traditional operating margin. Assume that Compaq improves its margin by cutting back on R&D expenses. Is this value creating?

1.3: The Tax Burden

- The value of a firm is the present value of its after-tax cash flows. Thus, any action that can reduce the tax burden on a firm over time, for a given operating income, will increase value.
- The tax rate of a firm can be reduced over time by doing any or all of the following:
 - Moving income from high-tax locales to low-tax or no-tax locales
 - Acquiring or Obtaining net operating loss carry forwards that can be used to shield future income
 - Using risk management to reduce the average tax rate paid over time on income
 - The marginal tax rate on income tends to rise, in most regimes, as income increases.
 - By using risk management to smooth income over time, firms can make their income more stable and reduce their exposure to the highest marginal tax rates.
 - By doing so, they can increase their value.

The Tax Effect: Telecom Italia



1.4: Reduce Net Capital Expenditures

- The net capital expenditures refers to the difference between capital expenditures and depreciation. The net capital expenditure is a cash outflow that reduces the free cash flow to the firm.
- Part of the net capital expenditure is designed to generate future growth, but part of it may to be maintain assets in place
- If a firm can reduce its net capital expenditures on assets in place, it will increase value.
- During short periods, the capital expenditures can even be lower than depreciation for assets in place, creating a cash inflow from net capital expenditures.

1.5: Reduce Working Capital Needs

- The non-cash working capital in a firm can be measured as follows:
Accounts Receivable
+ Inventory
- Accounts Payable
= Non-cash Working Capital
- Increases in non-cash working capital represent cash outflows, while decreases represent cash inflows.
- Reducing the non-cash working capital needs of a firm, while keeping growth and risk constant, will increase its value.

The Cash Flow Effects of Working Capital: Telecom Italia

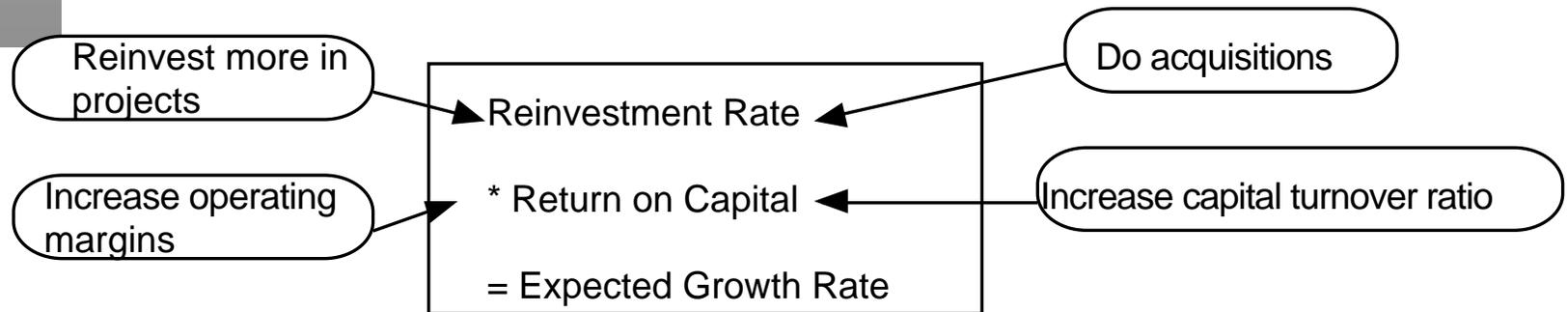
	1996	1997	Telecoms
Inventory	773	1092	
Accounts Receivable	6193	7017	
Accounts Payable	4624	5236	
Non-cash WC	2342	2873	
% of Sales	11.50%	12.99%	6.75%

- What was the effect of working capital on cash flows in 1997?
- How much would cash flows have changed if TI's working capital needs matched the industry average?

Value Creation 2: Increase Expected Growth

- The expected growth in earnings of any firm is a function of two variables:
 - The amount that the firm reinvests in assets and projects (reinvestment rate)
 - The quality of these investments (return on capital)
- Keeping all else constant, increasing the reinvestment rate will increase the expected growth rate in earnings but will not always increase firm value.

Value Enhancement through Growth



2.1: Increase the Reinvestment Rate

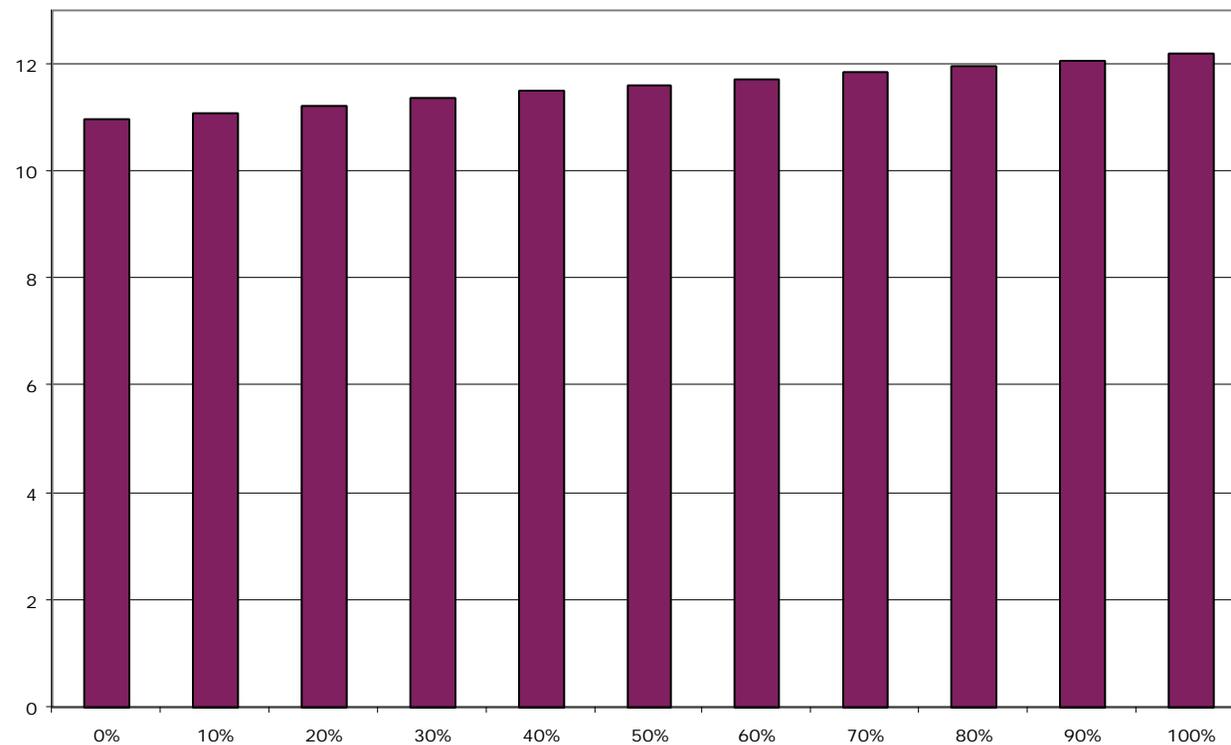
- Holding all else constant, increasing the reinvestment rate will increase the expected growth in earnings of a firm. Increasing the reinvestment rate will, however, reduce the cash flows of the firms. The net effect will determine whether value increases or decreases.
- As a general rule,
 - Increasing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

Reinvestment and Value Creation at Compaq

- Compaq, in 1998, had a return on capital of 11.62% and a cost of capital of 11.16%. It was reinvesting 93.28% of its earnings back into the firm. Was this reinvestment creating significant value?

The Return Effect: Reinvestment Rate

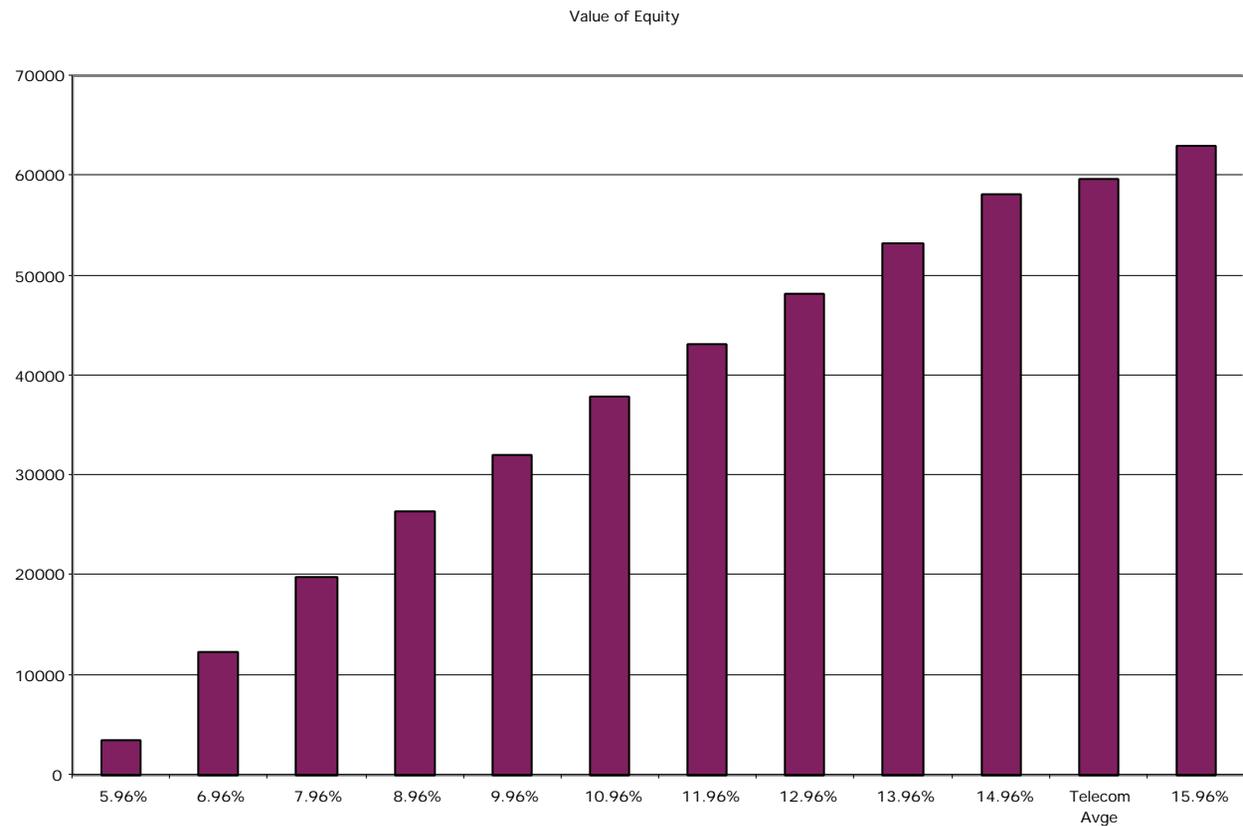
Compaq: Value/Share and Reinvestment Rate



2.2: Improve Quality of Investments

- If a firm can increase its return on capital on new projects, while holding the reinvestment rate constant, it will increase its firm value.
 - The firm's cost of capital still acts as a floor on the return on capital. If the return on capital is lower than the cost of capital, increasing the return on capital will reduce the amount of value destroyed but will not create value. The firm would be better off under those circumstances returning the cash to the owners of the business.
 - It is only when the return on capital exceeds the cost of capital, that the increase in value generated by the higher growth will more than offset the decrease in cash flows caused by reinvesting.
- This proposition might not hold, however, if the investments are in riskier projects, because the cost of capital will then increase.

Telecom Italia: Quality of Investments



2.3: Pricing Decisions, ROC and Expected Growth

- The return on capital on a project or firm can be written as:
$$\text{ROC} = \text{EBIT} (1-t) / \text{Sales} * \text{Sales} / \text{Capital}$$
$$= \text{After-tax Operating Margin} * \text{Capital Turnover Ratio}$$
- 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 environment where competitors react to the firm's pricing decisions.
 - Decide whether to change price policy in response to competitive pressure

2.4: The Role of Acquisitions and Divestitures

- An acquisition is just a large-scale project. All of the rules that apply to individual investments apply to acquisitions, as well. For an acquisition to create value, it has to
 - Generate a higher return on capital, after allowing for synergy and control factors, than the cost of capital.
 - Put another way, an acquisition will create value only if the present value of the cash flows on the acquired firm, inclusive of synergy and control benefits, exceeds the cost of the acquisitions
- A divestiture is the reverse of an acquisition, with a cash inflow now (from divesting the assets) followed by cash outflows (i.e., cash flows foregone on the divested asset) in the future. If the present value of the future cash outflows is less than the cash inflow today, the divestiture will increase value.
- A fair-price acquisition or divestiture is value neutral.

An Acquisition Choice

- Assume now that Telecom Italia has the opportunity to acquire a internet firm and that you compute the internal rate of return on this firm to 17.50%. TI has a cost of capital of 7.98%, but the cost of capital for firms in the high technology business is 20%. 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.

Gauging Barriers to Entry

- Which of the following barriers to entry are most likely to work for Telecom Italia?
 - Brand Name
 - Patents and Legal Protection
 - Switching Costs
 - Cost Advantages
- What about for Compaq?
 - Brand Name
 - Patents and Legal Protection
 - Switching Costs
 - Cost Advantages

Value Creation 4: Reduce Cost of Capital

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

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

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.

Estimating Cost of Capital: Telecom Italia

■ Equity

- Cost of Equity = 4.24% + 0.87 (5.53%) = 9.05%
- Market Value of Equity = 9.92 E/share* 5255.13 = 52,110 Mil (84.16%)

■ Debt

- Cost of debt = 4.24% + 0.2% (default spread) = 4.44%
- Market Value of Debt = 9,809 Mil (15.84%)

■ Cost of Capital

$$\begin{aligned}\text{Cost of Capital} &= 10.36 \% (.8416) + 4.44\% (1 - .4908) (.1584) \\ &= 9.05\% (.8416) + 2.26\% (.1584) = 7.98\%\end{aligned}$$

Estimating Cost of Capital: Compaq

■ Equity

- Cost of Equity = $6\% + 1.29(4\%) = 11.16\%$
- Market Value of Equity = $23.38 * 1691 = \$ 39.5$ billion

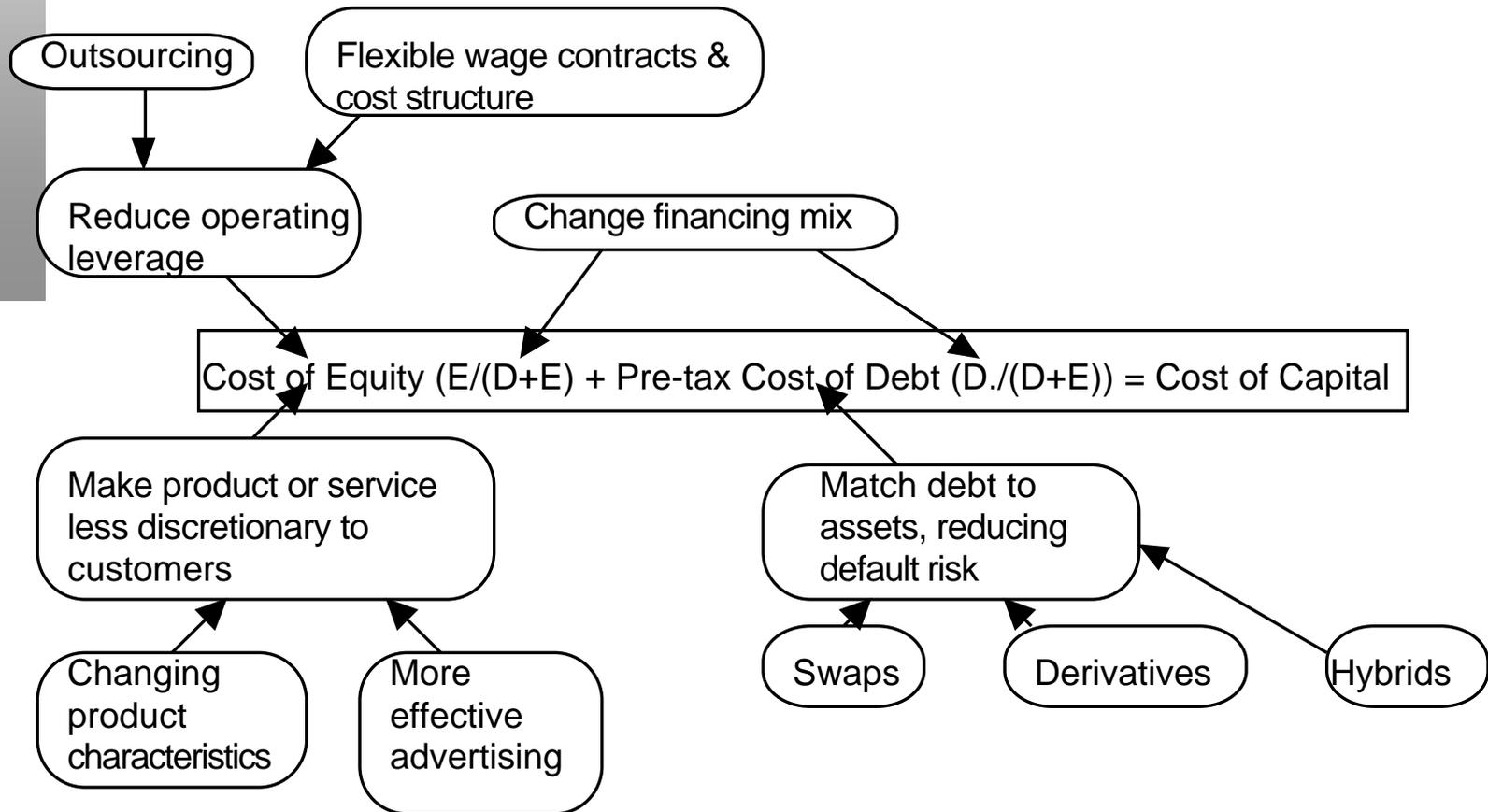
■ Debt

- Cost of debt = $6\% + 1\%$ (default spread) = 7%
- Market Value of Debt = 0

■ Cost of Capital

$$\text{Cost of Capital} = 11.16\% (1.00) + 7\% (1 - .35) (0.00) = 11.16\%$$

Reducing Cost of Capital



4.1: Reduce Operating Risk

- Both the cost of equity and cost of debt of a firm are affected by the operating risk of the business or businesses in which it operates. In the case of equity, only that portion of the operating risk that is not diversifiable will affect value.
- The operating risk of a firm is a direct function of the kinds of products or services it provides, and the degree to which these products or services are discretionary to the customer. The more discretionary they are, the greater the operating risk faced by the firm.
- Firms can reduce their operating risk by making their products and services less discretionary. Advertising clearly plays a role, but coming up with new uses for a product/service may be another.

4.2: Reduce Operating Leverage

- The operating leverage of a firm measures the proportion of its costs that are fixed. Other things remaining equal, the greater the proportion of the costs of a firm that are fixed, the higher its cost of capital will be.
- Reducing the proportion of the costs that are fixed will make firms much less risky and reduce their cost of capital. This can be accomplished in a number of different ways:
 - By using outside contractors for some services; if business does not measure up, the firm is not stuck with the costs of providing this service.
 - By tying expenses to revenues; in particular, with wage contracts tying wages paid to revenues made will reduce the proportion of the costs that are fixed.

4.3: Changing Financial Mix

- The third approach to reducing the cost of capital is to change the mix of debt and equity used to finance the firm.
- Debt is always cheaper than equity, partly because lenders bear less risk and partly because of the tax advantage associated with debt.
- Taking on debt increases the risk (and the cost) of both debt (by increasing the probability of bankruptcy) and equity (by making earnings to equity investors more volatile).
- The net effect will determine whether the cost of capital will increase or decrease if the firm takes on more debt.

Telecom Italia: 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%	0.79	8.63%	AAA	4.54%	49.08%	2.31%	8.63%	\$45,598
10%	0.84	8.88%	AAA	4.54%	49.08%	2.31%	8.22%	\$54,659
20%	0.89	9.19%	A+	5.24%	49.08%	2.67%	7.89%	\$65,095
30%	0.97	9.59%	A-	5.74%	49.08%	2.92%	7.59%	\$77,927
40%	1.06	10.12%	BB	6.74%	49.08%	3.43%	7.45%	\$86,035
50%	1.20	10.87%	B-	9.24%	49.08%	4.71%	7.79%	\$68,933
60%	1.40	11.98%	CCC	10.24%	49.08%	5.21%	7.92%	\$63,772
70%	1.87	14.60%	CC	11.74%	41.76%	6.84%	9.17%	\$37,267
80%	2.94	20.50%	C	13.24%	32.40%	8.95%	11.26%	\$20,942
90%	5.88	36.76%	C	13.24%	28.80%	9.43%	12.16%	\$17,340

Compaq: 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%	1.29	11.16%	AAA	6.30%	35.00%	4.10%	11.16%	\$38,893
10%	1.38	11.53%	AA	6.70%	35.00%	4.36%	10.81%	\$41,848
20%	1.50	12.00%	BBB	8.00%	35.00%	5.20%	10.64%	\$43,525
30%	1.65	12.60%	B-	11.00%	35.00%	7.15%	10.96%	\$40,528
40%	1.85	13.40%	CCC	12.00%	35.00%	7.80%	11.16%	\$38,912
50%	2.28	15.12%	C	15.00%	23.18%	11.52%	13.32%	\$26,715
60%	2.85	17.40%	C	15.00%	19.32%	12.10%	14.22%	\$23,535
70%	3.80	21.21%	C	15.00%	16.56%	12.52%	15.12%	\$20,984
80%	5.70	28.81%	C	15.00%	14.49%	12.83%	16.02%	\$18,890
90%	11.40	51.62%	C	15.00%	12.88%	13.07%	16.92%	\$17,141

4.4: Changing Financing Type

- The fundamental principle in designing the financing of a firm is to ensure that the cash flows on the debt should match as closely as possible the cash flows on the asset.
- By matching cash flows on debt to cash flows on the asset, a firm reduces its risk of default and increases its capacity to carry debt, which, in turn, reduces its cost of capital, and increases value.
- Firms which mismatch cash flows on debt and cash flows on assets by using
 - Short term debt to finance long term assets
 - Dollar debt to finance non-dollar assets
 - Floating rate debt to finance assets whose cash flows are negatively affected by inflation.will end up with higher default risk, higher costs of capital and lower firm value.

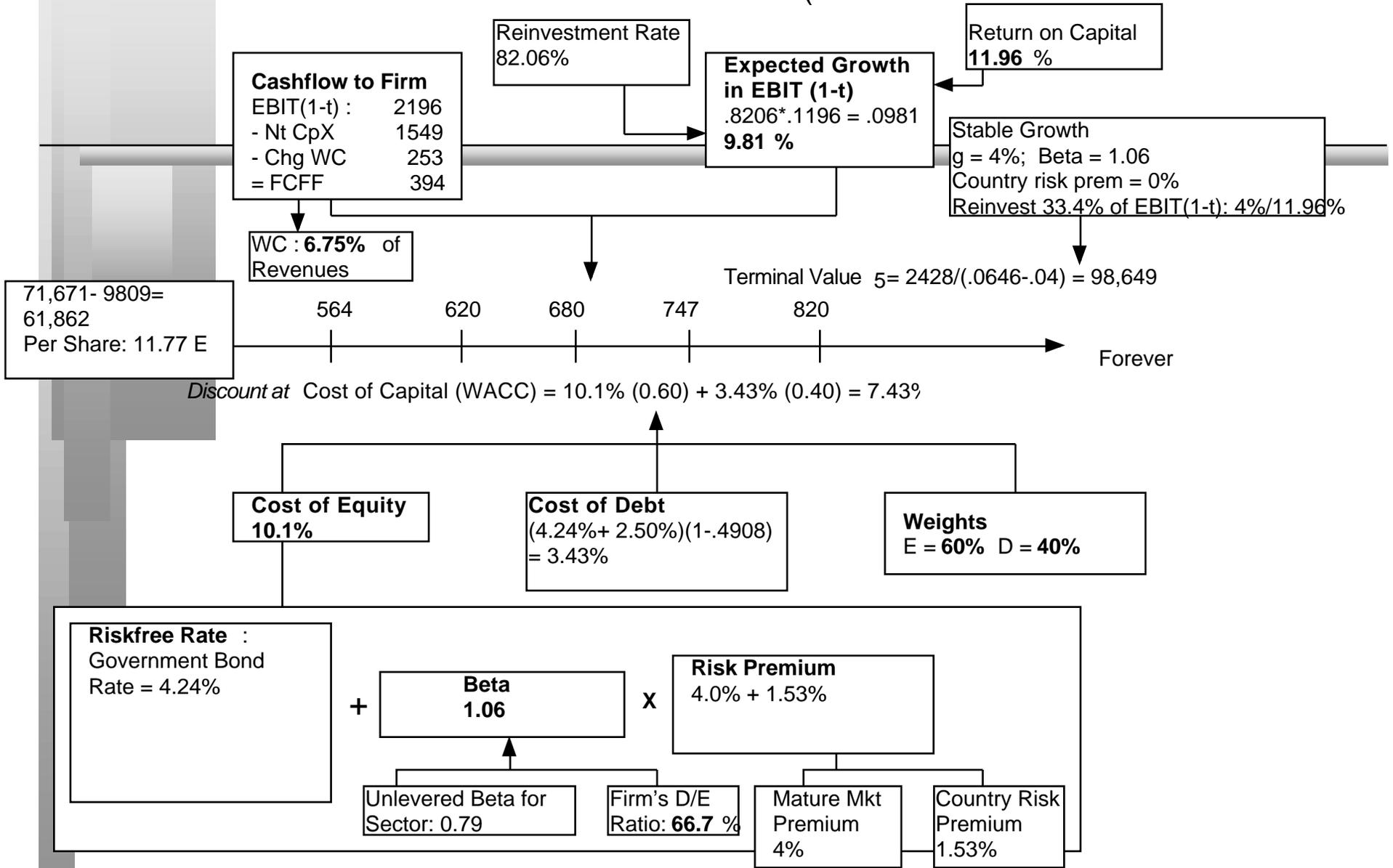
Financing Details

- What would the cash flows on a project for Telecom Italia look like in terms of
 - Project life?:
 - Cash Flow Patterns?:
 - Growth?:
 - Currency?:
- Now what kind of debt would be best to finance such a project?
- If I told you that Telecom Italia has only short to medium term Lira debt on its books, what action could you take to enhance value?

The Value Enhancement Chain

	<i>Gimme'</i>	<i>Odds on.</i>	<i>Could work if..</i>
<i>Assets in Place</i>	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Change pricing strategy to maximize the product of profit margins and turnover ratio.
<i>Expected Growth</i>	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.
<i>Length of High Growth Period</i>	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.	<ol style="list-style-type: none"> 1. Build up brand name 2. Increase the cost of switching from product and reduce cost of switching to it.
<i>Cost of Financing</i>	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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.

Telecom Italia: Restructured (in Euro)



Compaq: Restructured

