# Applied Corporate Finance: A big picture view

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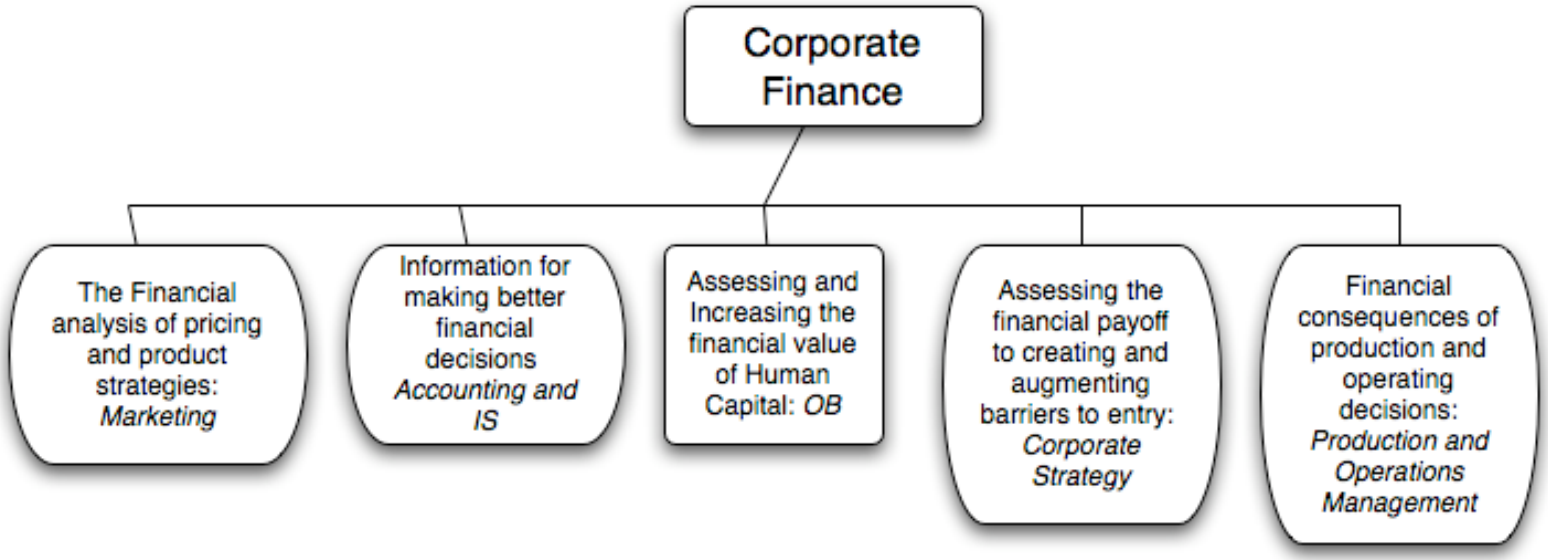
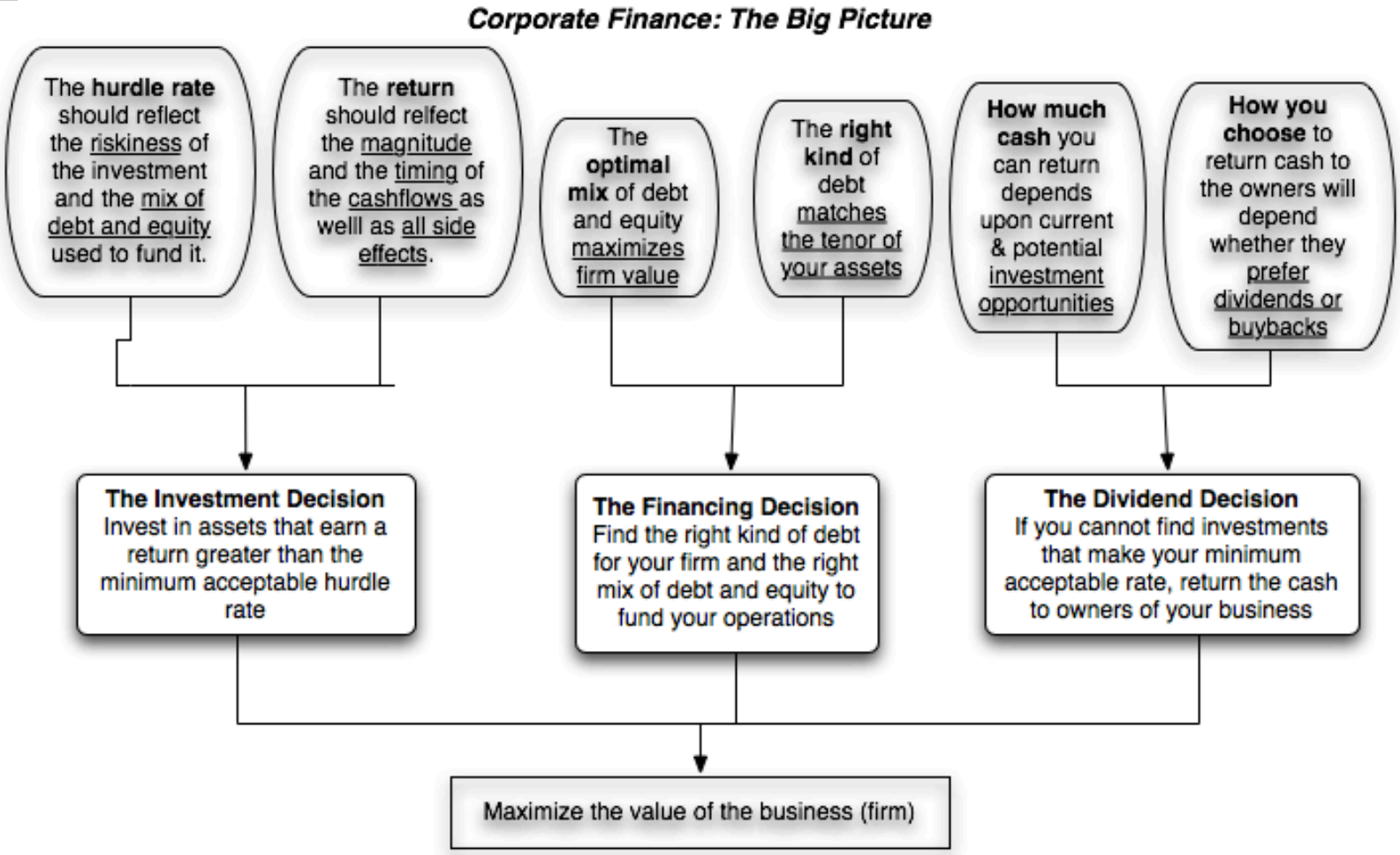
# What is corporate finance?

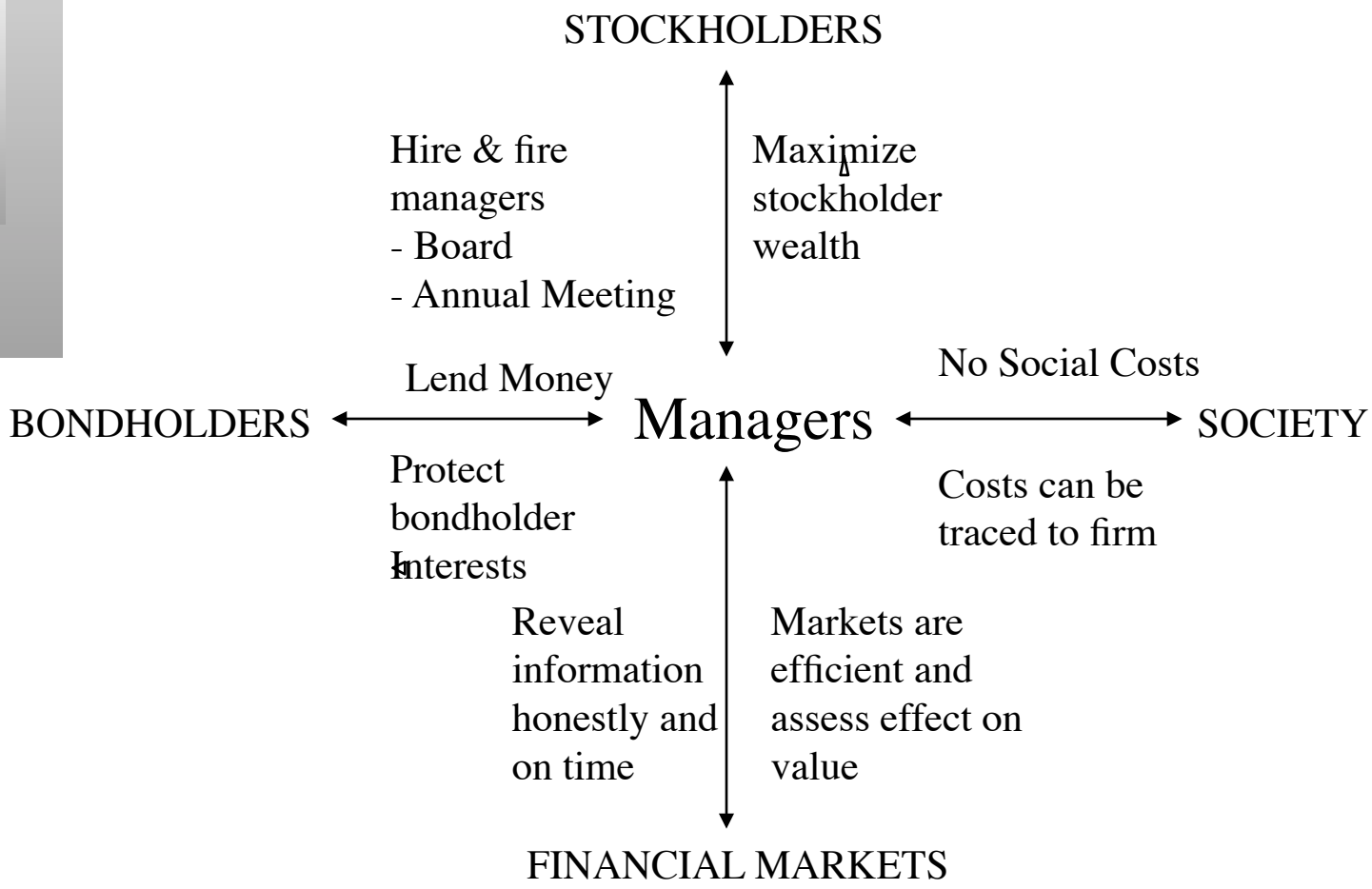
- Every decision that a business makes has financial implications, and any decision which affects the finances of a business is a corporate finance decision.
- Defined broadly, everything that a business does fits under the rubric of corporate finance.



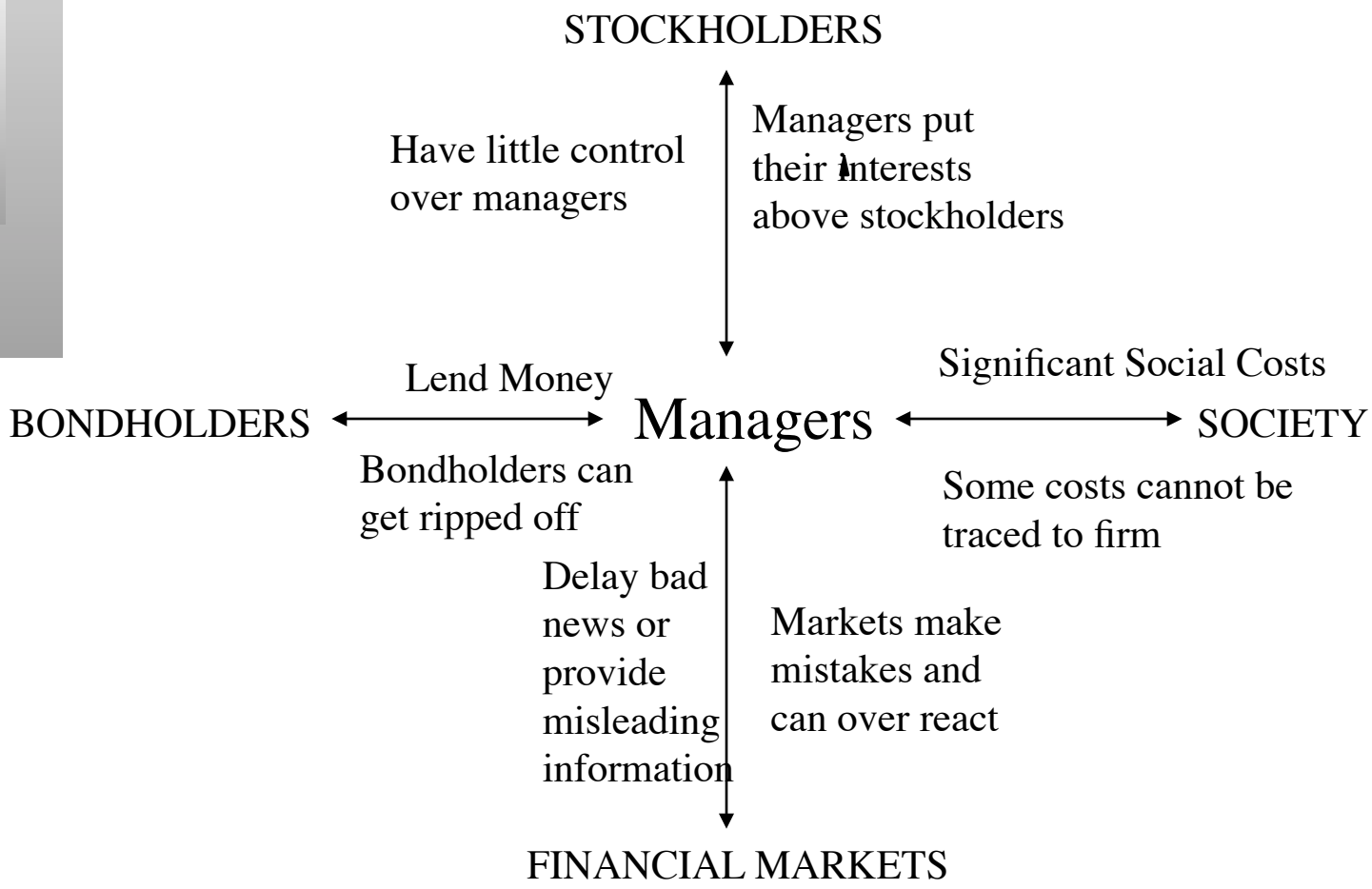
# First Principles



# The Classical Objective Function



# What can go wrong?



# Who's on Board? The Disney Experience - 1997

**Reveta F. Bowers** 1,5
Head of School
Center for Early Education

**Roy E . Disney** 3
Vice Chairman
The Walt Disney Company

**Michael D. Eisner** 3
Chairman and Chief Executive Officer
The Walt Disney Company

**Stanley P. Gold** 4,5
President and Chief Executive Officer
Shamrock Holdings, Inc.

**Sanford M. Litvack**
Senior Executive Vice President
and Chief of Corporate Operations
The Walt Disney Company

**Ignacio E. Lozano, Jr.** 1,2,4
Editor-in-Chief, LA OPINION

**George J. Mitchell** 5
Special Counsel
Verner, Liipfert, Bernard, McPherson
and Hand

**Thomas S. Murphy**
Former Chairman
Capital Cities/ABC, Inc.

**Richard A. Nunis**
Chairman
Walt Disney Attractions

**Leo J. O'Donovan, S.J.**
President
Georgetown University

**Michael S. Ovitz** 3
President
The Walt Disney Company

**Sidney Poitier** 2,4
Chief Executive Officer
Verdon-Cedric Productions

**Irwin E. Russell** 2,4
Attorney at Law

**Robert A.M. Stern**
Senior Partner Productions

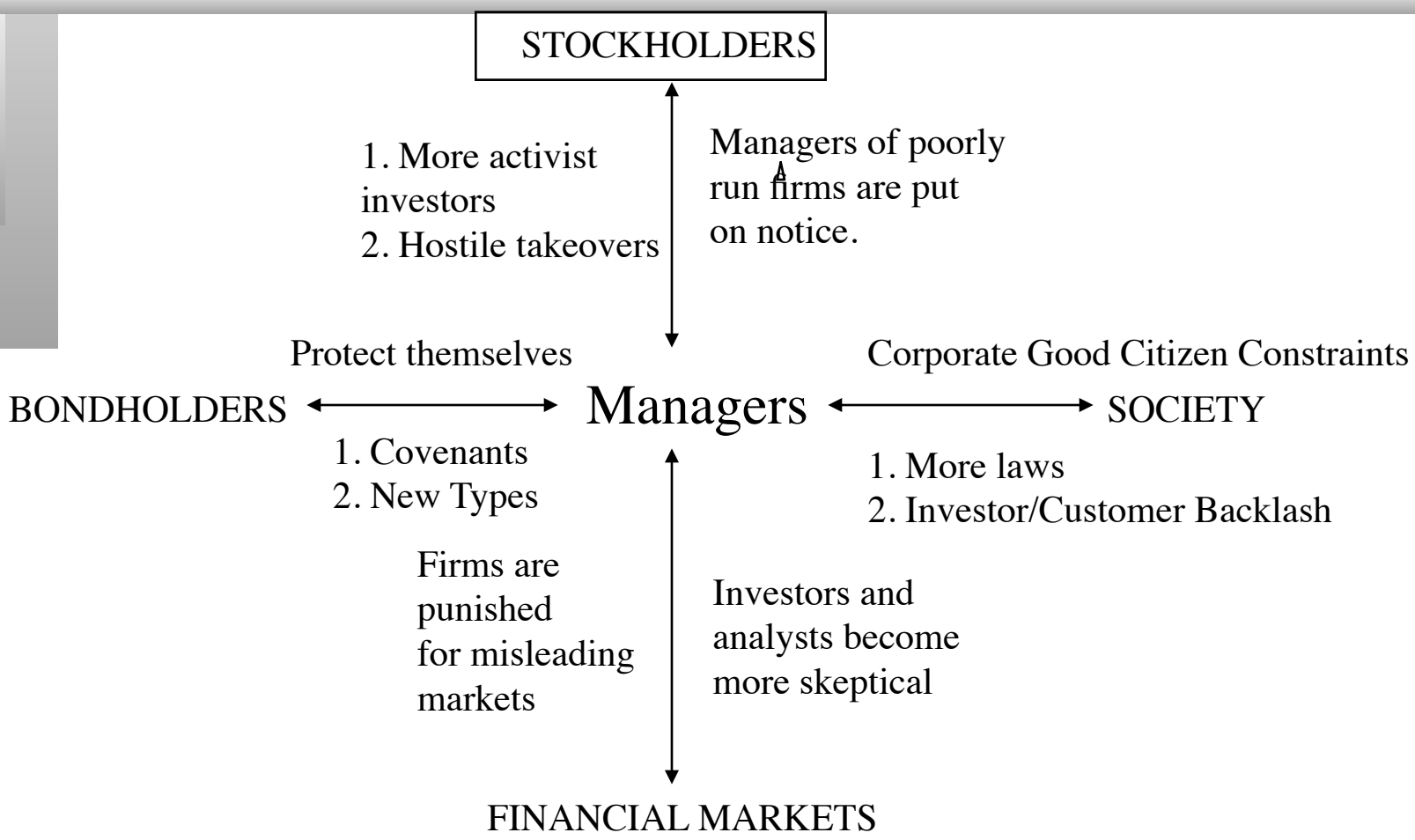
**E. Cardon Walker** 1
Former Chairman and Chief Executive Officer
The Walt Disney Company

**Raymond L. Watson** 1,2,3
Vice Chairman
The Irvine Company

**Gary L. Wilson** 5
Co-Chairman
Northwest Airlines Corporation

1 Member of Audit Review Committee
2 Member of Compensation Committee
3 Member of Executive Committee
4 Member of Executive Performance Plan Committee
5 Member of Nominating Committee

# A Market Based Solution

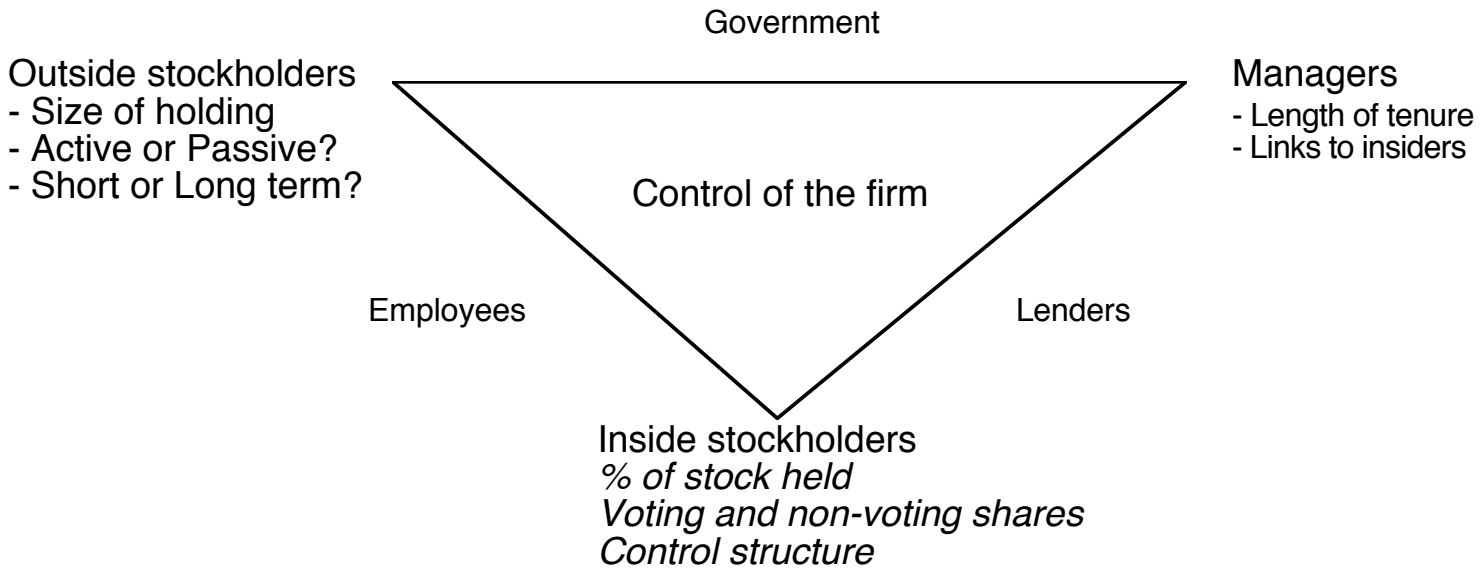


# ⌛Application Test: Who owns/runs your firm?

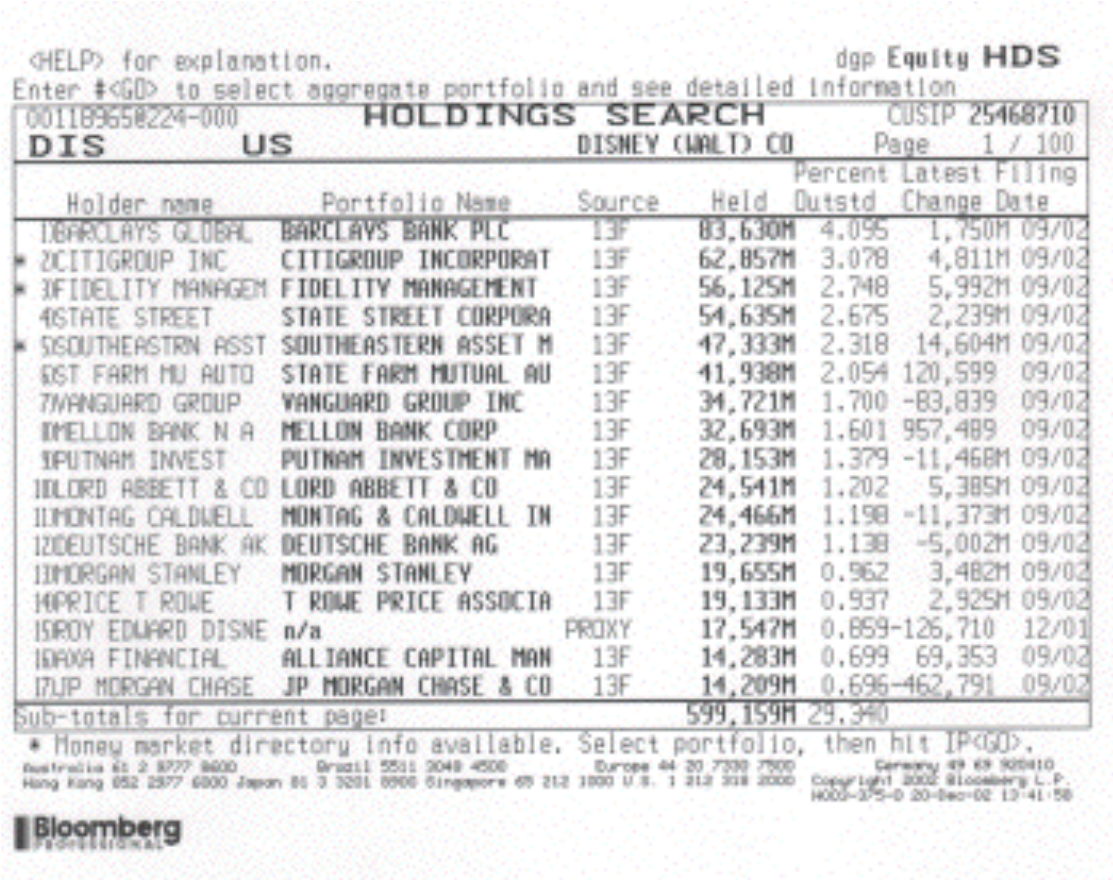
B HDS Page
PB Page 3-12

Look at: Bloomberg printout **HDS** for your firm

- Who are the top stockholders in your firm?
- What are the potential conflicts of interests that you see emerging from this stockholding structure?



# Splintering of Stockholders
# Disney's top stockholders in 2003



<HELP> for explanation. dgp Equity HDS
Enter #<GO> to select aggregate portfolio and see detailed information

00118965@224-000 HOLDINGS SEARCH CUSIP 25468710
DIS US DISNEY (WALT) CO Page 1 / 100

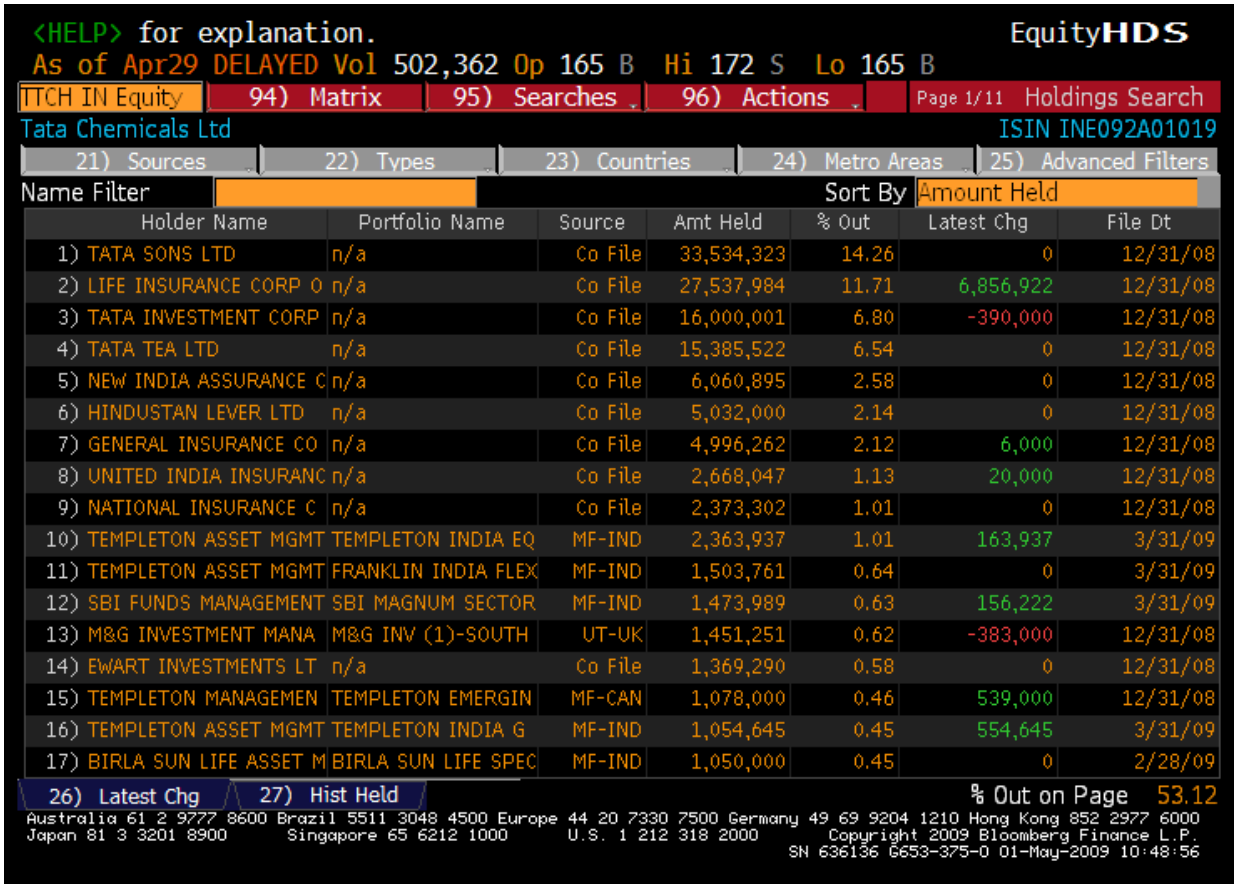
| | Holder name | Portfolio Name | Source | Held | Percent Outstd | Latest Change | Filing Date |
|---|---|---|---|---|---|---|---|
| 1) | BARCLAYS GLOBAL | BARCLAYS BANK PLC | 13F | 83,630M | 4.095 | 1,750M | 09/02 |
| * 2) | CITIGROUP INC | CITIGROUP INCORPORAT | 13F | 62,857M | 3.078 | 4,811M | 09/02 |
| * 3) | FIDELITY MANAGEM | FIDELITY MANAGEMENT | 13F | 56,125M | 2.748 | 5,992M | 09/02 |
| 4) | STATE STREET | STATE STREET CORPORA | 13F | 54,635M | 2.675 | 2,239M | 09/02 |
| * 5) | SOUTHEASTRN ASST | SOUTHEASTERN ASSET M | 13F | 47,333M | 2.318 | 14,604M | 09/02 |
| 6) | ST FARM MU AUTO | STATE FARM MUTUAL AU | 13F | 41,938M | 2.054 | 120,599 | 09/02 |
| 7) | VANGUARD GROUP | VANGUARD GROUP INC | 13F | 34,721M | 1.700 | -83,839 | 09/02 |
| 8) | MELLON BANK N A | MELLON BANK CORP | 13F | 32,693M | 1.601 | 957,489 | 09/02 |
| 9) | PUTNAM INVEST | PUTNAM INVESTMENT MA | 13F | 28,153M | 1.379 | -11,468M | 09/02 |
| 10) | LORD ABBETT & CO | LORD ABBETT & CO | 13F | 24,541M | 1.202 | 5,385M | 09/02 |
| 11) | MONTAG CALDWELL | MONTAG & CALDWELL IN | 13F | 24,466M | 1.198 | -11,373M | 09/02 |
| 12) | DEUTSCHE BANK AK | DEUTSCHE BANK AG | 13F | 23,239M | 1.138 | -5,002M | 09/02 |
| 13) | MORGAN STANLEY | MORGAN STANLEY | 13F | 19,655M | 0.962 | 3,482M | 09/02 |
| 14) | PRICE T ROWE | T ROWE PRICE ASSOCIA | 13F | 19,133M | 0.937 | 2,925M | 09/02 |
| 15) | ROY EDWARD DISNE | n/a | PROXY | 17,547M | 0.859 | -126,710 | 12/01 |
| 16) | AXA FINANCIAL | ALLIANCE CAPITAL MAN | 13F | 14,283M | 0.699 | 69,353 | 09/02 |
| 17) | JP MORGAN CHASE | JP MORGAN CHASE & CO | 13F | 14,209M | 0.696 | -462,791 | 09/02 |
| Sub-totals for current page: | | | | 599,159M | 29.340 | | |

* Money market directory info available. Select portfolio, then hit IP<GO>.



Bloomberg PROFESSIONAL

# Tata Chemical's top stockholders in 2008



<HELP> for explanation. EquityHDS

As of Apr29 DELAYED Vol 502,362 Op 165 B Hi 172 S Lo 165 B

TTCH IN Equity | 94) Matrix | 95) Searches | 96) Actions | Page 1/11 Holdings Search

Tata Chemicals Ltd ISIN INE092A01019

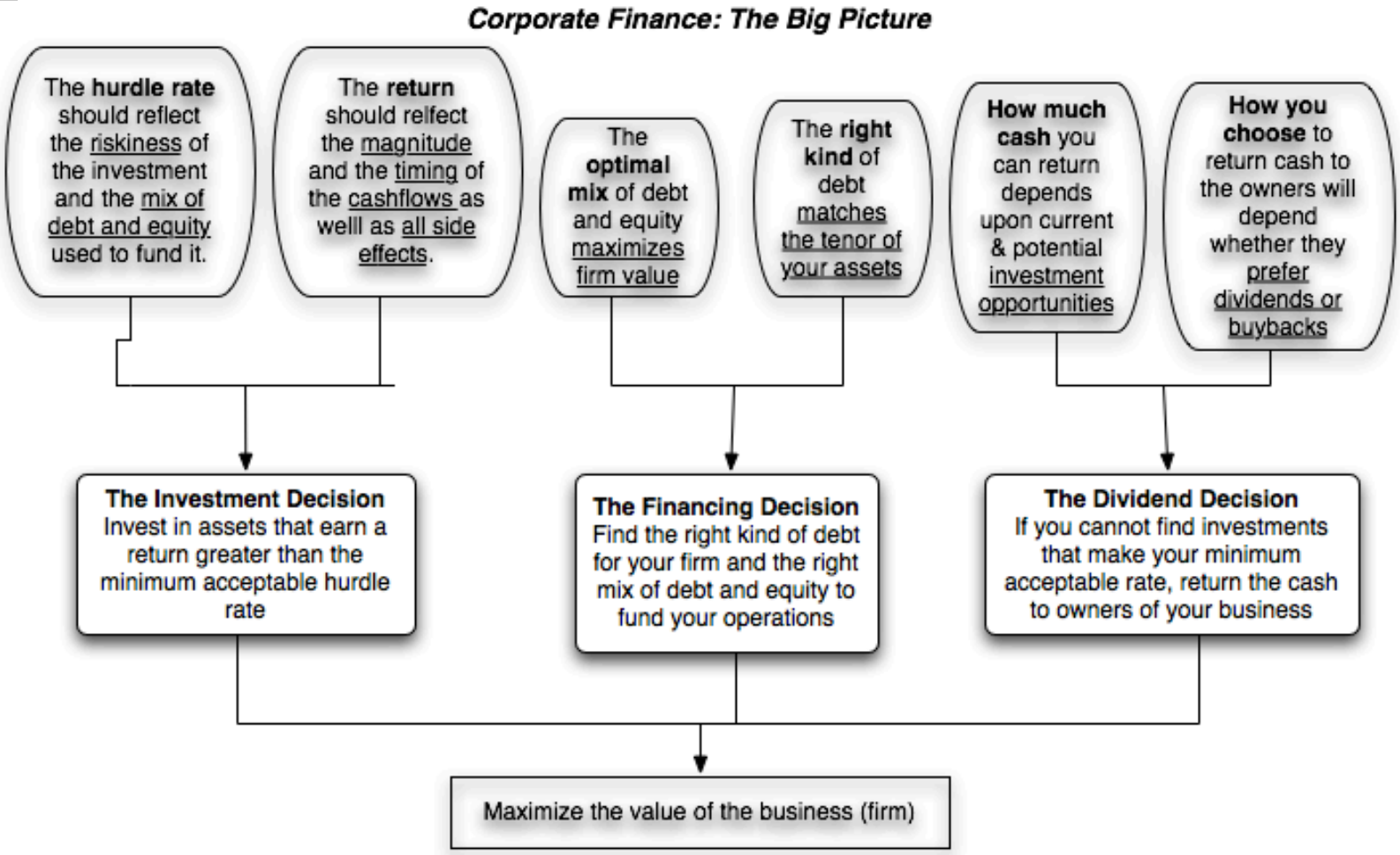
21) Sources | 22) Types | 23) Countries | 24) Metro Areas | 25) Advanced Filters

Name Filter | Sort By Amount Held

| | Holder Name | Portfolio Name | Source | Amt Held | % Out | Latest Chg | File Dt |
|---|---|---|---|---|---|---|---|
| 1) | TATA SONS LTD | n/a | Co File | 33,534,323 | 14.26 | 0 | 12/31/08 |
| 2) | LIFE INSURANCE CORP O | n/a | Co File | 27,537,984 | 11.71 | 6,856,922 | 12/31/08 |
| 3) | TATA INVESTMENT CORP | n/a | Co File | 16,000,001 | 6.80 | -390,000 | 12/31/08 |
| 4) | TATA TEA LTD | n/a | Co File | 15,385,522 | 6.54 | 0 | 12/31/08 |
| 5) | NEW INDIA ASSURANCE C | n/a | Co File | 6,060,895 | 2.58 | 0 | 12/31/08 |
| 6) | HINDUSTAN LEVER LTD | n/a | Co File | 5,032,000 | 2.14 | 0 | 12/31/08 |
| 7) | GENERAL INSURANCE CO | n/a | Co File | 4,996,262 | 2.12 | 6,000 | 12/31/08 |
| 8) | UNITED INDIA INSURANC | n/a | Co File | 2,668,047 | 1.13 | 20,000 | 12/31/08 |
| 9) | NATIONAL INSURANCE C | n/a | Co File | 2,373,302 | 1.01 | 0 | 12/31/08 |
| 10) | TEMPLETON ASSET MGMT | TEMPLETON INDIA EQ | MF-IND | 2,363,937 | 1.01 | 163,937 | 3/31/09 |
| 11) | TEMPLETON ASSET MGMT | FRANKLIN INDIA FLEX | MF-IND | 1,503,761 | 0.64 | 0 | 3/31/09 |
| 12) | SBI FUNDS MANAGEMENT | SBI MAGNUM SECTOR | MF-IND | 1,473,989 | 0.63 | 156,222 | 3/31/09 |
| 13) | M&G INVESTMENT MANA | M&G INV (1)-SOUTH | UT-UK | 1,451,251 | 0.62 | -383,000 | 12/31/08 |
| 14) | EWART INVESTMENTS LT | n/a | Co File | 1,369,290 | 0.58 | 0 | 12/31/08 |
| 15) | TEMPLETON MANAGEMEN | TEMPLETON EMERGIN | MF-CAN | 1,078,000 | 0.46 | 539,000 | 12/31/08 |
| 16) | TEMPLETON ASSET MGMT | TEMPLETON INDIA G | MF-IND | 1,054,645 | 0.45 | 554,645 | 3/31/09 |
| 17) | BIRLA SUN LIFE ASSET M | BIRLA SUN LIFE SPEC | MF-IND | 1,050,000 | 0.45 | 0 | 2/28/09 |

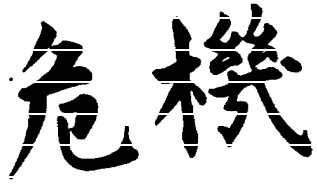
26) Latest Chg | 27) Hist Held % Out on Page 53.12

# First Principles



# What is Risk?

- Risk, in traditional terms, is viewed as a 'negative'. Webster's dictionary, for instance, defines risk as "exposing to danger or hazard". The Chinese symbols for risk, reproduced below, give a much better description of risk

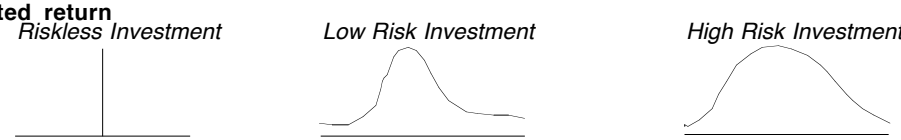


- The first symbol is the symbol for "danger", while the second is the symbol for "opportunity", making risk a mix of danger and opportunity. You cannot have one, without the other.

# Alternatives to the CAPM

**Step 1: Defining Risk**

**The risk in an investment can be measured by the variance in actual returns around an expected return**




**Step 2: Differentiating between Rewarded and Unrewarded Risk**

*Risk that is specific to investment (Firm Specific)*
Can be diversified away in a diversified portfolio
1. each investment is a small proportion of portfolio
2. risk averages out across investments in portfolio

*Risk that affects all investments (Market Risk)*
Cannot be diversified away since most assets are affected by it.

**The marginal investor is assumed to hold a "diversified" portfolio. Thus, only market risk will be rewarded and priced.**

**Step 3: Measuring Market Risk**

| **The CAPM** | **The APM** | **Multi-Factor Models** | **Proxy Models** |
|---|---|---|---|
| If there is<br>1. no private information<br>2. no transactions cost<br>the optimal diversified portfolio includes every traded asset. Everyone will hold this<u>market portfolio</u><br>**Market Risk = Risk added by any investment to the market portfolio:** | If there are no arbitrage opportunities then the market risk of any asset must be captured by betas relative to factors that affect all investments.<br>**Market Risk = Risk exposures of any asset to market factors** | Since market risk affects most or all investments, it must come from macro economic factors.<br>**Market Risk = Risk exposures of any asset to macro economic factors.** | In an efficient market, differences in returns across long periods must be due to market risk differences. Looking for variables correlated with returns should then give us proxies for this risk.<br>**Market Risk = Captured by the Proxy Variable(s)** |
| Beta of asset relative to Market portfolio (from a regression) | Betas of asset relative to unspecified market factors (from a factor analysis) | Betas of assets relative to specified macro economic factors (from a regression) | Equation relating returns to proxy variables (from a regression) |

# Inputs required to use the CAPM -

- The capital asset pricing model yields the following expected return:

  Expected Return = Riskfree Rate+ Beta * (Expected Return on the Market Portfolio - Riskfree Rate)

- To use the model we need three inputs:

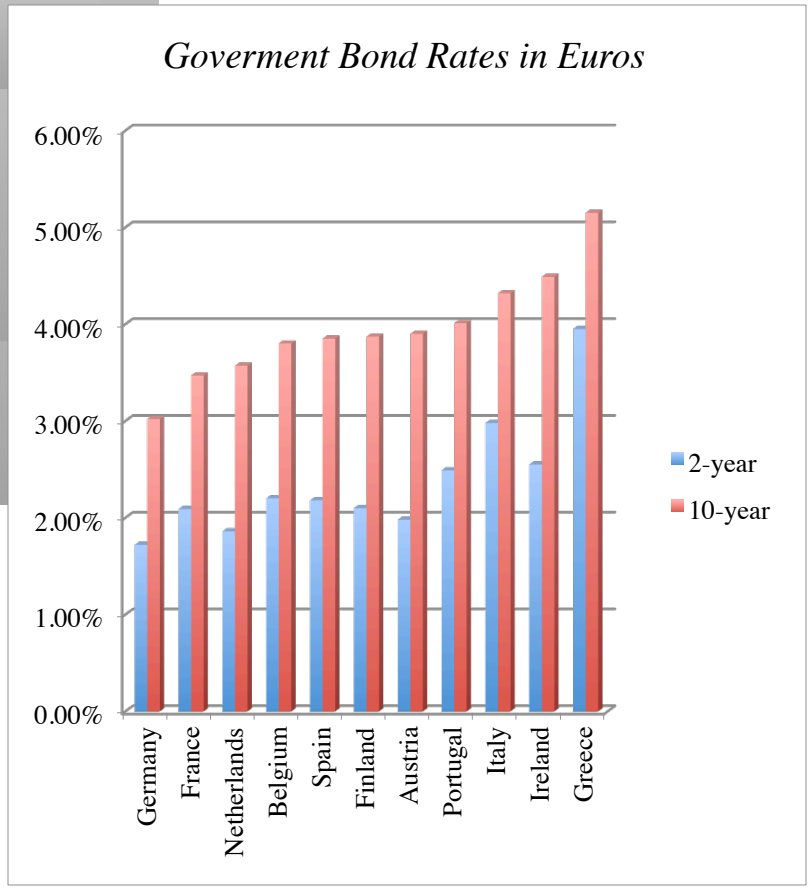
  (a) The current risk-free rate

  (b) The expected market risk premium (the premium expected for investing in risky assets (market portfolio) over the riskless asset)

  (c) The beta of the asset being analyzed.

# What is the riskfree rate?

For Disney in May 2009, we used the US treasury bond rate of 3.50% as the riskfree rate. Is that reasonable? What are we assuming about default risk in the US treasury?




- The Indian government had 10-year bonds outstanding, with a yield to maturity of about 7% on May 2009. At the time, the Indian government had a local currency sovereign rating of Ba2. The typical default spread for Ba2 rated country bonds in May 2009 was 3%.
- The riskfree rate in Indian Rupees is

a) The yield to maturity on the 10-year bond (7%)

b) The yield to maturity on the 10-year bond + Default spread (10%)

c) The yield to maturity on the 10-year bond – Default spread (4%)

# What is the equity risk premium?

| | Arithmetic Average | | Geometric Average | |
|---|---|---|---|---|
| | Stocks - T. Bills | Stocks - T. Bonds | Stocks - T. Bills | Stocks - T. Bonds |
| 1928-2011 | 7.55% | 5.79% | 5.62% | 4.10% |
| | 2.22% | 2.36% | | |
| 1962-2011 | 5.38% | 3.36% | 4.02% | 2.35% |
| | 2.39% | 2.68% | | |
| 2002-2011 | 3.12% | -1.92% | 1.08% | -3.61% |
| | 6.46% | 8.94% | | |

← *Historical premium*

*In the trailing 12 months, the cash returned to stockholders was 74.17. Using the average cash yield of 4.71% for 2002-2011 the cash returned would have been 59.29.*

Analysts expect earnings to grow 9.6% in 2012, 11.9% in 2013, 8.2% in 2014, 4.5% in 2015 and 2% therafter, resulting in a compounded annual growth rate of 7.18% over the next 5 years. We will assume that dividends & buybacks will grow 7.18% a year for the next 5 years.

After year 5, we will assume that earnings on the index will grow at 1.87%, the same rate as the entire economy (= riskfree rate).

63.54 | 68.11 | 73.00 | 78.24 | 83.86

$$1257.60 = \frac{63.54}{(1+r)} + \frac{68.11}{(1+r)^2} + \frac{73.00}{(1+r)^3} + \frac{78.24}{(1+r)^4} + \frac{83.86}{(1+r)^5} + \frac{83.86(1.0187)}{(r-.0187)(1+r)^5}$$

January 1, 2012
S&P 500 is at 1257.60
Adjusted Dividends & Buybacks for 2011 = 59.29

Expected Return on Stocks (1/1/12) = 7.91%
T.Bond rate on 1/1/12 = 1.87%
Equity Risk Premium = 7.91% - 1.87% = 6.04%

**Data Sources:**
*Dividends and Buybacks last year*: S&P
*Expected growth rate*: News stories, Yahoo! Finance, Bloomberg

# Country Risk: Look at a country's bond rating and default spreads as a start

- Ratings agencies assign ratings to countries that reflect their assessment of the default risk of these countries. These ratings reflect the political and economic stability of these countries and thus provide a useful measure of country risk. In May 2009, the local currency rating, from Moody's, for India was Ba2. There are three ways in which this can be converted into a default spread:
  - If the country has US $ or Euro denominated bonds, you can compare the interest rate on the bond to the US treasury bond rate (if US $) or the German Bund rate (if it is Euro).
  - If the country a CDS spread, you can use the spread as a measure of sovereign risk.
  - You can use the typical spread for the rating, based upon other rated countries, to estimate a spread for the country. In May 2009, this would have yielded 3%.
- Many analysts add this default spread to the US risk premium to come up with a risk premium for a country. This would yield a risk premium of 9% for India, if we use 6% as the US risk premium and the default spread based on the rating.

# Beyond the default spread

- While default risk spreads and equity risk premiums are highly correlated, one would expect equity spreads to be higher than debt spreads. In fact, if we can estimate how risky the equity market is, relative to the government bond, we can scale up the spread.
- Country Risk Premium for India in May 2009
  - Standard Deviation in Sensex = 30%
  - Standard Deviation in Indian government Bond = 20%
  - Default spread on Bond = 3%
  - Country Risk Premium (CRP) for India = 3% (21%/14%) = 4.50%
  - Total Risk Premium for South Africa= US risk premium (in '12) + CRP
    = 6% + 4.50% = 10.50%

# Country Risk Premiums
# January 2012

| | |
|---|---|
| Canada | 6.00% |
| United States of America | 6.00% |

| | |
|---|---|
| Argentina | 15.00% |
| Belize | 15.00% |
| Bolivia | 12.00% |
| Brazil | 8.63% |
| Chile | 7.05% |
| Colombia | 9.00% |
| Costa Rica | 9.00% |
| Ecuador | 18.75% |
| El Salvador | 10.13% |
| Guatemala | 9.60% |
| Honduras | 13.50% |
| Mexico | 8.25% |
| Nicaragua | 15.00% |
| Panama | 9.00% |
| Paraguay | 12.00% |
| Peru | 9.00% |
| Uruguay | 9.60% |
| Venezuela | 12.00% |

| | |
|---|---|
| Austria [1] | 6.00% |
| Belgium [1] | 7.05% |
| Cyprus [1] | 9.00% |
| Denmark | 6.00% |
| Finland [1] | 6.00% |
| France [1] | 6.00% |
| Germany [1] | 6.00% |
| Greece [1] | 16.50% |
| Iceland | 9.00% |
| Ireland [1] | 9.60% |
| Italy [1] | 7.50% |
| Malta [1] | 7.50% |
| Netherlands [1] | 6.00% |
| Norway | 6.00% |
| Portugal [1] | 10.13% |
| Spain [1] | 7.28% |
| Sweden | 6.00% |
| Switzerland | 6.00% |
| United Kingdom | 6.00% |

| | |
|---|---|
| Angola | 10.88% |
| Botswana | 7.50% |
| Egypt | 13.50% |
| Mauritius | 8.63% |
| Morocco | 9.60% |
| Namibia | 9.00% |
| South Africa | 7.73% |
| Tunisia | 9.00% |

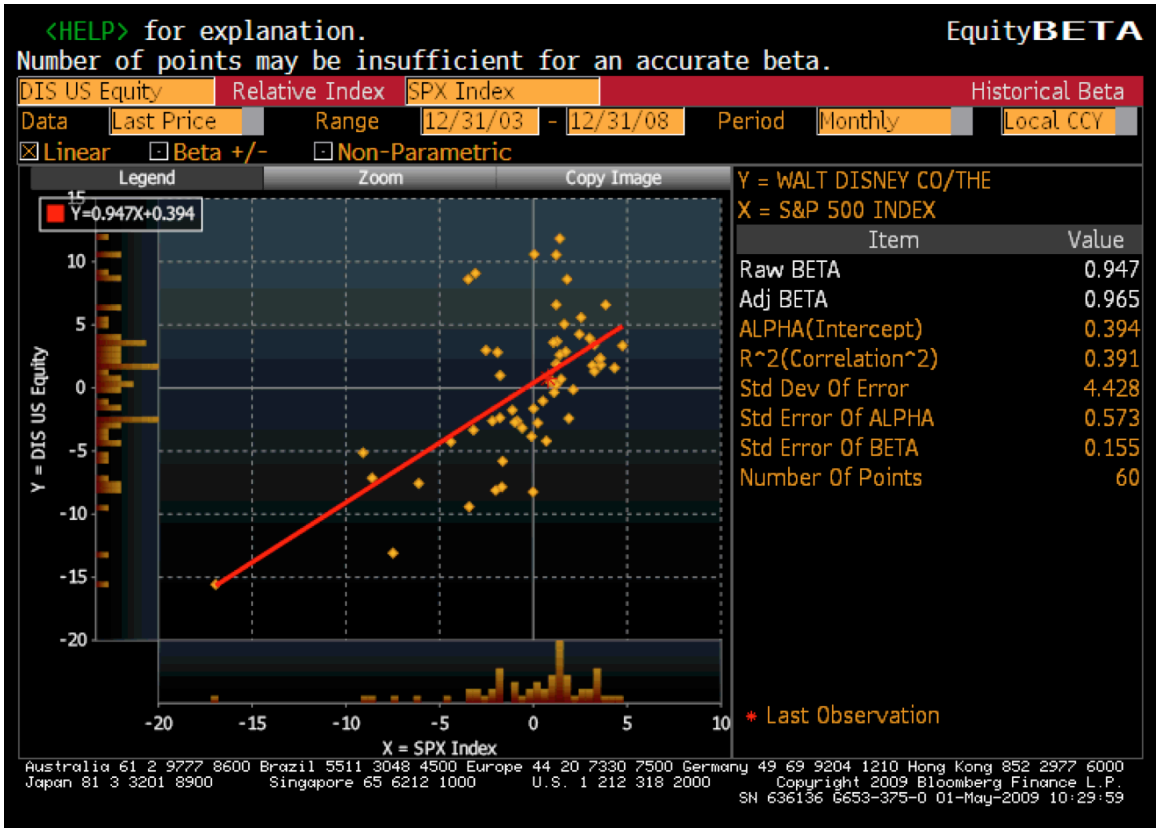
| | |
|---|---|
| Albania | 12.00% |
| Armenia | 10.13% |
| Azerbaijan | 9.60% |
| Belarus | 15.00% |
| Bosnia and Herzegovina | 13.50% |
| Bulgaria | 8.63% |
| Croatia | 9.00% |
| Czech Republic | 7.28% |
| Estonia | 7.28% |
| Georgia | 10.88% |
| Hungary | 9.60% |
| Kazakhstan | 8.63% |
| Latvia | 9.00% |
| Lithuania | 8.25% |
| Moldova | 15.00% |
| Montenegro | 10.88% |
| Poland | 7.50% |
| Romania | 9.00% |
| Russia | 8.25% |
| Slovakia | 7.28% |
| Slovenia [1] | 7.28% |
| Ukraine | 13.50% |

| | |
|---|---|
| Bahrain | 8.25% |
| Israel | 7.28% |
| Jordan | 10.13% |
| Kuwait | 6.75% |
| Lebanon | 12.00% |
| Oman | 7.28% |
| Qatar | 6.75% |
| Saudi Arabia | 7.05% |
| Senegal | 12.00% |
| United Arab Emirates | 6.75% |

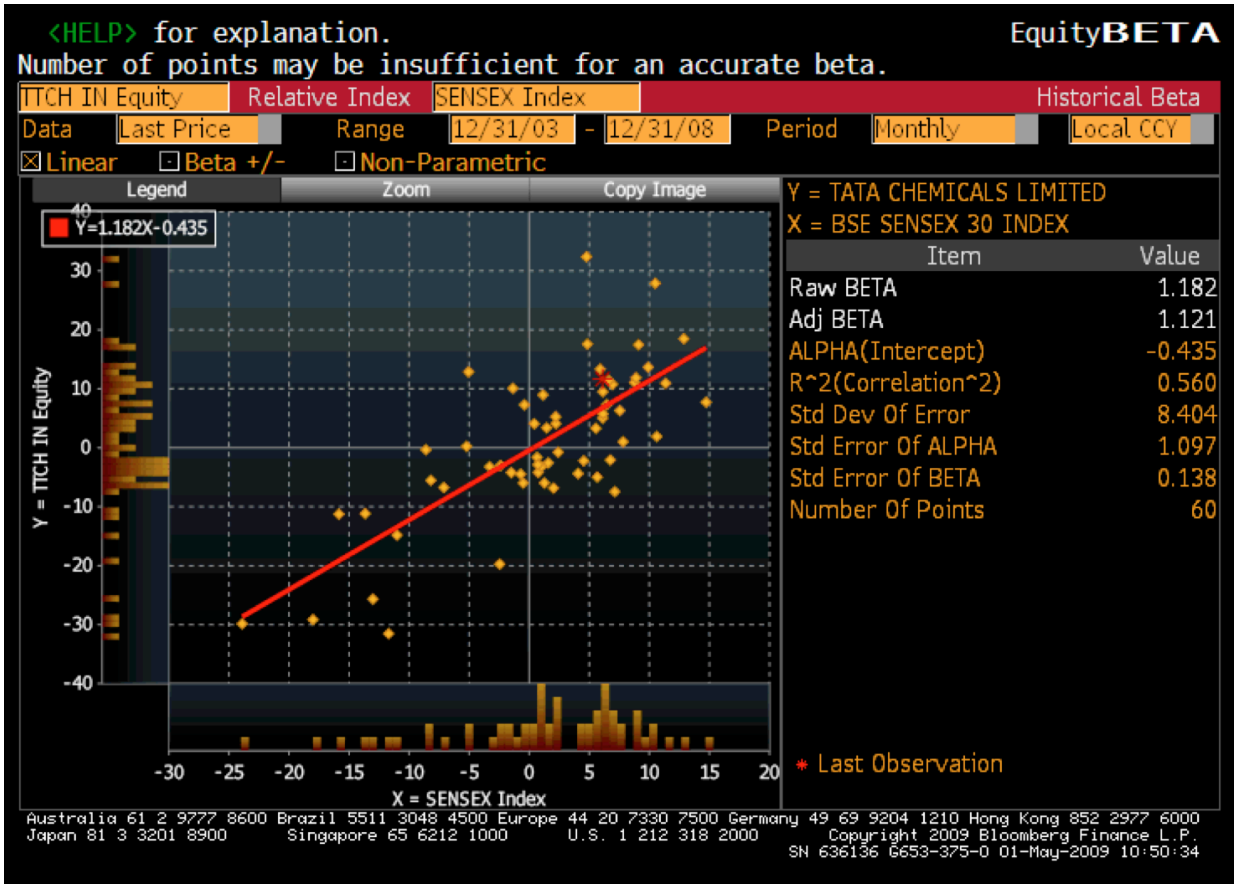
| | |
|---|---|
| Bangladesh | 10.88% |
| Cambodia | 13.50% |
| China | 7.05% |
| Fiji Islands | 12.00% |
| Hong Kong | 6.38% |
| India | 9.00% |
| Indonesia | 9.60% |
| Japan | 7.05% |
| Korea | 7.28% |
| Macao | 7.05% |
| Malaysia | 7.73% |
| Mongolia | 12.00% |
| Pakistan | 15.00% |
| Papua New Guinea | 12.00% |
| Philippines | 10.13% |
| Singapore | 6.00% |
| Sri Lanka | 12.00% |
| Taiwan | 7.05% |
| Thailand | 8.25% |
| Turkey | 10.13% |
| Vietnam | 12.00% |

| | |
|---|---|
| Australia | 6.00% |
| New Zealand | 6.00% |

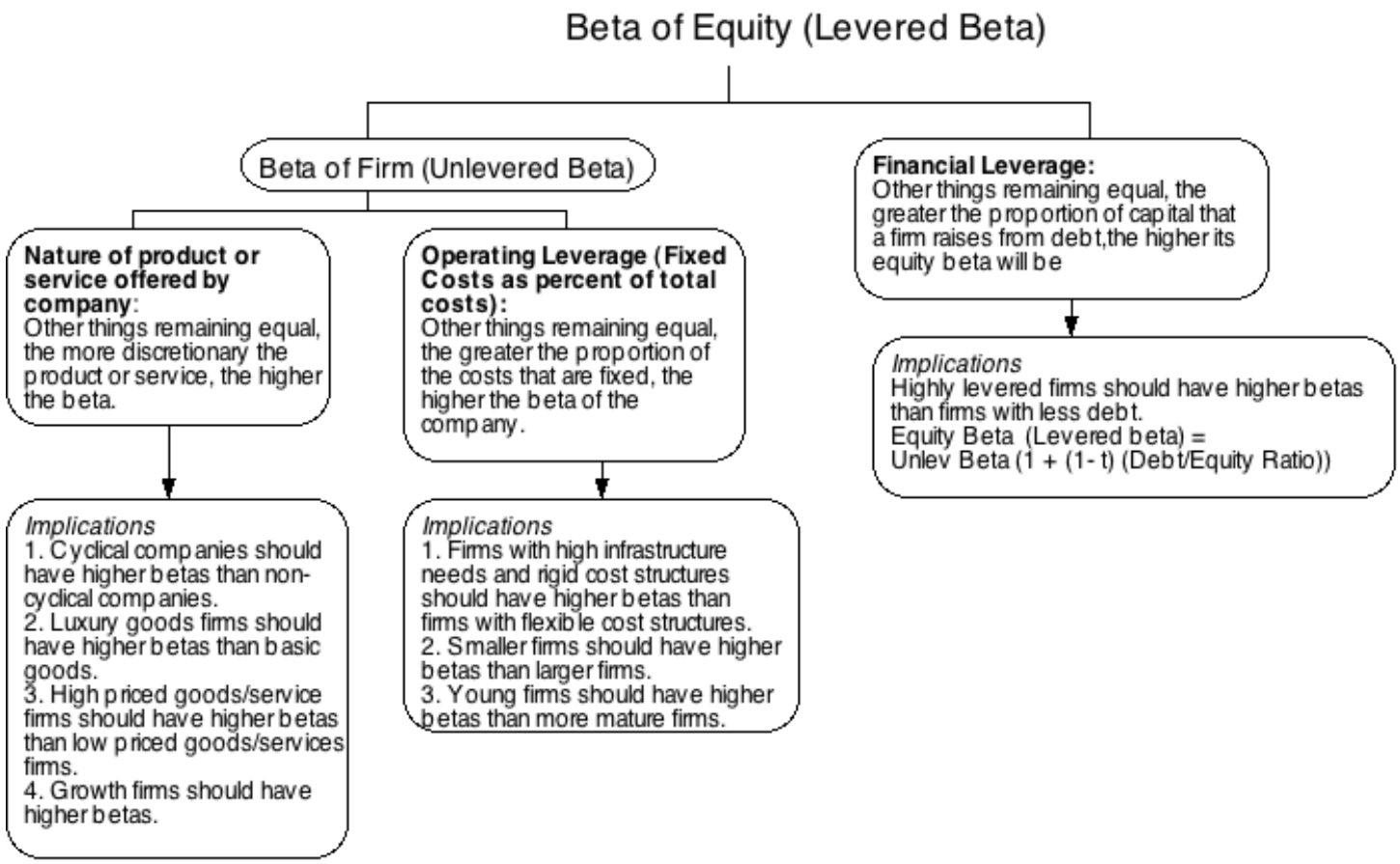
# Estimating Beta: The Regression Approach



# And another regression…



# Determinants of Betas



# Bottom up betas for Disney and SASOL

- Disney is in four businesses, and we estimate the beta of each business

| Business | Revenues in 2008 | EV/Sales | Estimated Value | Firm Value Proportion | Unlevered beta |
|---|---|---|---|---|---|
| Media Networks | $16,116 | 2.13 | $34,327.78 | 58.92% | 0.7056 |
| Parks and Resorts | $11,504 | 1.51 | $17,408.14 | 29.88% | 0.5849 |
| Studio Entertainment | $7,348 | 0.78 | $5,754.86 | 9.88% | 1.3027 |
| Consumer Products | $2,875 | 0.27 | $768.20 | 1.32% | 1.0690 |
| Disney | $37,843 | | $58,258.99 | 100.00% | 0.7333 |

Step 2: Estimate the value as a multiple of revenues by looking at what the market value of publicly traded firms in each business is, relative to revenues.

$$\text{EV/Sales} = \frac{\text{Mkt Equity} + \text{Debt} - \text{Cash}}{\text{Revenues}}$$

Step 3: Multiply the revenues in step 1 by the industry average multiple in step 2.

# Disney's Cost of Equity

- Step 1: Allocate debt across businesses

| | Start with this(1) | From comparable firms(2) | | As % (3) | Adjust to Disney's debt (3)*16,682 | EV - Allocated Debt | Allocated Debt/ Estimated Equity |
|---|---|---|---|---|---|---|---|
| Business | Estumated Value | D/E Ratio of comps | Estimated debt | Proportions | Allocated Debt | Estimated Equity | D/E Ratio |
| Media Networks | $34,328 | 38.71% | $9,581 | 51.44% | $8,582 | $25,746 | 33.33% |
| Parks and Resorts | $17,408 | 65.10% | $6,864 | 36.86% | $6,148 | $11,260 | 54.61% |
| Studio Entertainment | $5,755 | 53.89% | $2,015 | 10.82% | $1,805 | $3,950 | 45.70% |
| Consumer Products | $768 | 27.21% | $164 | 0.88% | $147 | $621 | 23.70% |
| For example. | | | $18,624 | 100.00% | $16,682 | | |
| *Media Networks* | *$34,328* | *38.71%* | *34,328*(.3871/1.3871)* | *9581/18624* | *.5144*16,682* | *34328-8582* | *8582/25746* |

- Step 2: Compute levered betas and costs of equity for Disney's operating businesses.

| Business | Unlevered Beta | D/E Ratio | Levered Beta | Cost of Equity |
|---|---|---|---|---|
| Media Networks | 0.7056 | 33.33% | 0.8514 | 8.61% |
| Parks and Resorts | 0.5849 | 54.61% | 0.7829 | 8.20% |
| Studio Entertainment | 1.3027 | 45.70% | 1.6718 | 13.53% |
| Consumer Products | 1.0690 | 23.70% | 1.2261 | 10.86% |
| Disney | 0.7333 | 36.91% | 0.9011 | 8.91% |

- Step 2a: Com

$$\text{Equity Beta}_{\text{Disney as company}} = 0.6885 \ \ (1 + (1 - 0.38)(0.3691)) = 0.8460$$

Riskfree Rate = 3.5%
Risk Premium = 6%

# Discussion Issue

- Assume now that you are the CFO of Disney. The head of the movie business has come to you with a new big budget movie that he would like you to fund. He claims that his analysis of the movie indicates that it will generate a return on equity of 12%. Would you fund it?
  a) Yes. It is higher than the cost of equity for Disney as a company
  b) No. It is lower than the cost of equity for the movie business.

  What are the broader implications of your choice?

# The bottom up beta for Tata Chemicals

*Unlevered betas for Tata Chemical's Businesses*

| Business(# of comparables) | Revenues (millions) | EV/Sales (from comparable firms) | Estimated Value (millions) | Weights | Unlevered Beta | D/E Ratio | Levered Beta |
|---|---|---|---|---|---|---|---|
| Fertilizers (105) | INR 2,506 | 1.28 | INR 3,208 | 62.18% | 0.72 | 51.56% | 0.965 |
| Chemicals (31) | INR 1,586 | 1.23 | INR 1,951 | 37.82% | 0.68 | 51.56% | 0.911 |
| Tata Chemicals | | | INR 5,158 | | 0.70 | | 0.945 |

*Cost of Equity*

*Rupee Riskfree rate =4%; Indian ERP = 6% + 4.51%*

| Business | Beta | Cost of equity |
|---|---|---|
| Fertilizers | 0.965 | 4%+ 0.965 (10.51%) = 14.14% |
| Chemicals | 0.911 | 4%+ 0.911(10.51%) = 13.58% |
| Tata Chemicals | 0.945 | 4%+ 0.945 (10.51%) = 13.93% |

# Estimating the Cost of Debt

- If the firm has bonds outstanding, and the bonds are traded, the yield to maturity on a long-term, straight (no special features) bond can be used as the interest rate.
- If the firm is rated, use the rating and a typical default spread on bonds with that rating to estimate the cost of debt.
- If the firm is not rated,
  - and it has recently borrowed long term from a bank, use the interest rate on the borrowing or
  - estimate a synthetic rating for the company, and use the synthetic rating to arrive at a default spread and a cost of debt
- The cost of debt has to be estimated in the same currency as the cost of equity and the cash flows in the valuation.

# Estimating Synthetic Ratings

- The rating for a firm can be estimated using the financial characteristics of the firm. In its simplest form, we can use just the interest coverage ratio:

  Interest Coverage Ratio = EBIT / Interest Expenses

- For Disney and Tata Chemicals, we obtain the following:
  - Disney = Operating Income/ Interest Expense = 6819/ 821 = 8.3
  - Tata Chemicals = Operating Income/ Interest expense = 6,263/1215 = 5.15

# Interest Coverage Ratios, Ratings and Default Spreads- Early 2009

| *Interest Coverage Ratio: Small market cap(<$5 billion)* | *Interest Coverage Ratio: Large market cap (>US $ 5 billion)* | *Rating* | *Typical Default* |
|---|---|---|---|
| > 12.5 | >8.5 | AAA | 1.25% |
| 9.50–12.50 | 6.5-8.5 | AA | 1.75% |
| 7.50–9.50 | 5.5-6.5 | A+ | 2.25% |
| 6.00–7.50 | 4.25- 5.5 | A | 2.50% |
| 4.50–6.00 | 3- 4.25 | A– | 3.00% |
| 4.00-4.50 | 2.5-3.0 | BBB | 3.50% |
| 3.50–4.00 | 2.25-2.5 | BB+ | 4.25% |
| 3.00–3.50 | 2.0-2.25 | BB | 5.00% |
| 2.50–3.00 | 1.75-2.0 | B+ | 6.00% |
| 2.00–2.50 | 1.5-1.75 | B | 7.25% |
| 1.50–2.00 | 1.25-1.5 | B– | 8.50% |
| 1.25–1.50 | 0.8-1.25 | CCC | 10.00% |
| 0.80–1.25 | 0.65-0.8 | CC | 12.00% |
| 0.50–0.80 | 0.2-0.65 | C | 15.00% |
| < 0.65 | <0.2 | D | 20.00% |

Disney's actual rating is A and the default spread is 2.5%.

Disney, Market Cap > $ 5 billion: 8.31 → AA

Tata: Market Cap< $ 5 billion: 5.15 → A-

# Current Cost of Capital: Disney

- Equity
  - Cost of Equity = Riskfree rate + Beta * Risk Premium
    = 3.5% + 0.9011 (6%) = 8.91%
  - Market Value of Equity = $45.193 Billion
  - Equity/(Debt+Equity ) = 73.04%
- Debt
  - After-tax Cost of debt =(Riskfree rate + Default Spread) (1-t)
    = (3.5%+2.5%) (1-.38) = 3.72%
  - Market Value of Debt = $ 16.682 Billion
  - Debt/(Debt +Equity) = 26.96%
- Cost of Capital = 8.91%(.7304)+3.72%(.2696) = 7.51%

45.193/ (45.193+16.682)

# Divisional Costs of Capital: Disney and Tata Chemicals

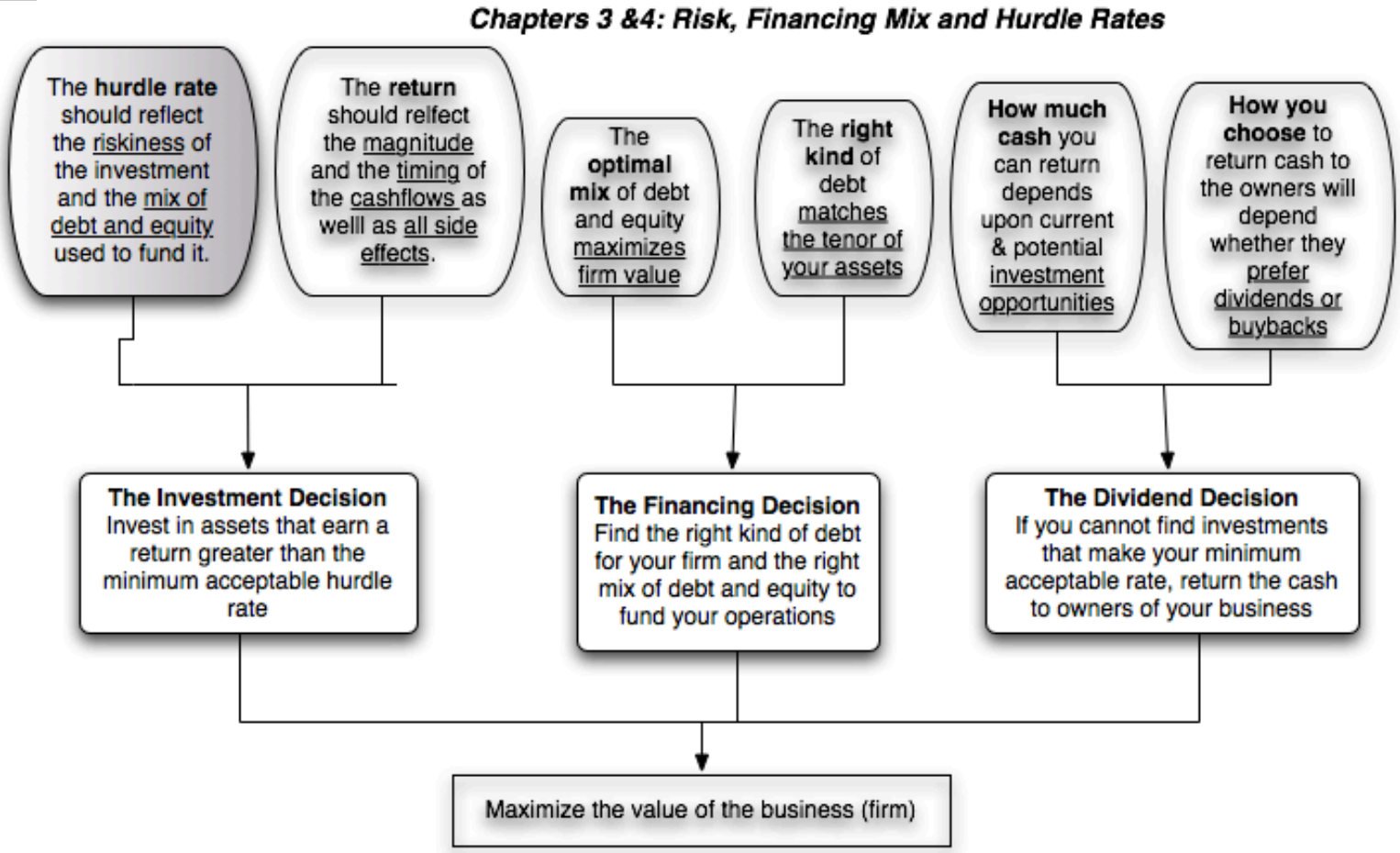
## Disney

| Business | Cost of Equity | After-tax cost of debt | E/(D+E) | D/(D+E) | Cost of capital |
|---|---|---|---|---|---|
| Media Networks | 8.61% | 3.72% | 75.00% | 25.00% | 7.39% |
| Parks and Resorts | 8.20% | 3.72% | 64.68% | 35.32% | 6.62% |
| Studio Entertainment | 13.53% | 3.72% | 68.64% | 31.36% | 10.45% |
| Consumer Products | 10.86% | 3.72% | 80.84% | 19.16% | 9.49% |
| Disney | 8.91% | 3.72% | 73.04% | 26.96% | 7.51% |

## Tata Chemicals

| Business | Cost of equity | Pre-tax cost of debt | After-tax cost of debt | D/(D+E) | Cost of capital |
|---|---|---|---|---|---|
| Fertilizers | 14.14% | 10.0% | 6.60% | 34.02% | 11.58% |
| Chemicals | 13.58% | 10.0% | 6.60% | 34.02% | 11.21% |
| Tata Chemicals | 13.93% | 10.0% | 6.60% | 34.02% | 11.44% |

# Back to First Principles



# Measuring Returns Right: The Basic Principles

- Use cash flows rather than earnings. You cannot spend earnings.
- Use "incremental" cash flows relating to the investment decision, i.e., cashflows that occur as a consequence of the decision, rather than total cash flows.
- Use "time weighted" returns, i.e., value cash flows that occur earlier more than cash flows that occur later.

The Return Mantra: "Time-weighted, Incremental Cash Flow Return"

# Earnings versus Cash Flows: A Disney Theme Park

- The theme parks to be built near Rio, modeled on Euro Disney in Paris and Disney World in Orlando.
- The complex will include a "Magic Kingdom" to be constructed, beginning immediately, and becoming operational at the beginning of the second year, and a second theme park modeled on Epcot Center at Orlando to be constructed in the second and third year and becoming operational at the beginning of the fourth year.
- The earnings and cash flows are estimated in nominal U.S. Dollars.

# Step 1: Estimate Accounting Earnings on Project

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Magic Kingdom - Revenues | | $0 | $1,000 | $1,400 | $1,700 | $2,000 | $2,200 | $2,420 | $2,662 | $2,928 | $2,987 |
| Epcot Rio - Revenues | | $0 | $0 | $0 | $300 | $500 | $550 | $605 | $666 | $732 | $747 |
| Resort & Properties - Revenues | | $0 | $250 | $350 | $500 | $625 | $688 | $756 | $832 | $915 | $933 |
| **Total Revenues** | | | **$1,250** | **$1,750** | **$2,500** | **$3,125** | **$3,438** | **$3,781** | **$4,159** | **$4,575** | **$4,667** |
| Magic Kingdom – Direct Expenses | | $0 | $600 | $840 | $1,020 | $1,200 | $1,320 | $1,452 | $1,597 | $1,757 | $1,792 |
| Epcot Rio – Direct Expenses | | $0 | $0 | $0 | $180 | $300 | $330 | $363 | $399 | $439 | $448 |
| Resort & Property – Direct Expenses | | $0 | $188 | $263 | $375 | $469 | $516 | $567 | $624 | $686 | $700 |
| **Total Direct Expenses** | | | **$788** | **$1,103** | **$1,575** | **$1,969** | **$2,166** | **$2,382** | **$2,620** | **$2,882** | **$2,940** |
| Depreciation & Amortization | | $50 | $425 | $469 | $444 | $372 | $367 | $364 | $364 | $366 | $368 |
| Allocated G&A Costs | | $0 | $188 | $263 | $375 | $469 | $516 | $567 | $624 | $686 | $700 |
| **Operating Income** | | **($50)** | **($150)** | **($84)** | **$106** | **$315** | **$389** | **$467** | **$551** | **$641** | **$658** |
| Taxes | | ($19) | ($57) | ($32) | $40 | $120 | $148 | $178 | $209 | $244 | $250 |
| **Operating Income after Taxes** | | **($31)** | **($93)** | **($52)** | **$66** | **$196** | **$241** | **$290** | **$341** | **$397** | **$408** |

Direct expenses: 60% of revenues for theme parks, 75% of revenues for resort properties
Allocated G&A: Company G&A allocated to project, based on projected revenues. Two thirds of expense is fixed, rest is variable.
Taxes: Based on marginal tax rate of 38%

# And the Accounting View of Return

| | | Book value of | | | | Average | | |
|---|---|---|---|---|---|---|---|---|
| Year | After-tax Operating Income | Pre-project investment | Fixed assets | Working capital | Total Capital | BV of Capital | ROC (a) | ROC (b) |
| 0 | | $500 | $2,000 | $0 | $2,500 | | NA | NA |
| 1 | -$31 | $450 | $3,000 | $0 | $3,450 | $2,975 | -1.04% | -1.24% |
| 2 | -$93 | $400 | $3,813 | $63 | $4,275 | $3,863 | -2.41% | -2.70% |
| 3 | -$52 | $350 | $4,145 | $88 | $4,582 | $4,429 | -1.18% | -1.22% |
| 4 | $66 | $300 | $4,027 | $125 | $4,452 | $4,517 | 1.46% | 1.44% |
| 5 | $196 | $250 | $3,962 | $156 | $4,368 | $4,410 | 4.43% | 4.39% |
| 6 | $241 | $200 | $3,931 | $172 | $4,302 | $4,335 | 5.57% | 5.52% |
| 7 | $290 | $150 | $3,931 | $189 | $4,270 | $4,286 | 6.76% | 6.74% |
| 8 | $341 | $100 | $3,946 | $208 | $4,254 | $4,262 | 8.01% | 8.00% |
| 9 | $397 | $50 | $3,978 | $229 | $4,257 | $4,255 | 9.34% | 9.34% |
| 10 | $408 | $0 | $4,010 | $233 | $4,243 | $4,250 | 9.61% | 9.59% |
| Average | | | | | | | 4.05% | 3.99% |

(a) Based upon book capital at the start of each year
(b) Based upon average book capital over the year

# Estimating a hurdle rate for Rio Disney

- We did estimate a cost of capital of 6.62% for the Disney theme park business, using a bottom-up levered beta of 0.7829 for the business.
- This cost of equity may not adequately reflect the additional risk associated with the theme park being in an emerging market.
- The only concern we would have with using this cost of equity for this project is that it may not adequately reflect the additional risk associated with the theme park being in an emerging market (Brazil).

  Country risk premium for Brazil = 2.50% (34/21.5) = 3.95%

  Cost of Equity in US$= 3.5% + 0.7829 (6%+3.95%) = 11.29%

  We multiplied the default spread for Brazil (2.50%) by the relative volatility of Brazil's equity index to the Brazilian government bond. (34%/21.5%)
- Using this estimate of the cost of equity, Disney's theme park debt ratio of 35.32% and its after-tax cost of debt of 3.72% (see chapter 4), we can estimate the cost of capital for the project:

  Cost of Capital in US$ = 11.29% (0.6468) + 3.72% (0.3532) = 8.62%

# The cash flow view of this project..

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Operating Income | | -$50 | -$150 | -$84 | $106 | $315 | $389 | $467 | $551 | $641 | $658 |
| Taxes | | -$19 | -$57 | -$32 | $40 | $120 | $148 | $178 | $209 | $244 | $250 |
| Operating Income after Taxes | | -$31 | -$93 | -$52 | $66 | $196 | $241 | $290 | $341 | $397 | $408 |
| + Depreciation & Amortization | | $50 | $425 | $469 | $444 | $372 | $367 | $364 | $364 | $366 | $368 |
| - Capital Expenditures | $2,500 | $1,000 | $1,188 | $752 | $276 | $258 | $285 | $314 | $330 | $347 | $350 |
| - Change in Working Capital | $0 | $0 | $63 | $25 | $38 | $31 | $16 | $17 | $19 | $21 | $5 |
| Cash flow to Firm | -$2,500 | -$981 | -$918 | -$360 | $196 | $279 | $307 | $323 | $357 | $395 | $422 |

To get from income to cash flow, we

- added back all non-cash charges such as depreciation. Tax benefits:

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Depreciation | $50 | $425 | $469 | $444 | $372 | $367 | $364 | $364 | $366 | $368 |
| Depreciaton * t | $19 | $162 | $178 | $169 | $141 | $139 | $138 | $138 | $139 | $140 |

- subtracted out the capital expenditures
- subtracted out the change in non-cash working capital

# The incremental cash flows on the project

$ 500 million has already been spent & $ 50 million in depreciation will exist anyway

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Operating Income | | -$50 | -$150 | -$84 | $106 | $315 | $389 | $467 | $551 | $641 | $658 |
| Taxes | | -$19 | -$57 | -$32 | $40 | $120 | $148 | $178 | $209 | $244 | $250 |
| Operating Income after Taxes | | -$31 | -$93 | -$52 | $66 | $196 | $241 | $290 | $341 | $397 | $408 |
| + Depreciation & Amortization | | $50 | $425 | $469 | $444 | $372 | $367 | $364 | $364 | $366 | $368 |
| - Capital Expenditures | $2,500 | $1,000 | $1,188 | $752 | $276 | $258 | $285 | $314 | $330 | $347 | $350 |
| - Change in Working Capital | $0 | $0 | $63 | $25 | $38 | $31 | $16 | $17 | $19 | $21 | $5 |
| Cash flow to Firm | -$2,500 | -$981 | -$918 | -$360 | $196 | $279 | $307 | $323 | $357 | $395 | $422 |
| + Pre-Project Investment | 500 | | | | | | | | | | |
| - Pre-project Deprecn * t | | $19 | $19 | $19 | $19 | $19 | $19 | $19 | $19 | $19 | $19 |
| + Fixed G&A (1-t) | | $0 | $78 | $109 | $155 | $194 | $213 | $234 | $258 | $284 | $289 |
| Incremental Cash flow to Firm | -$2,000 | -$1,000 | -$859 | -$270 | $332 | $454 | $501 | $538 | $596 | $660 | $692 |

2/3rd of allocated G&A is fixed.
Add back this amount (1-t)
Tax rate = 38%

# Closure on Cash Flows

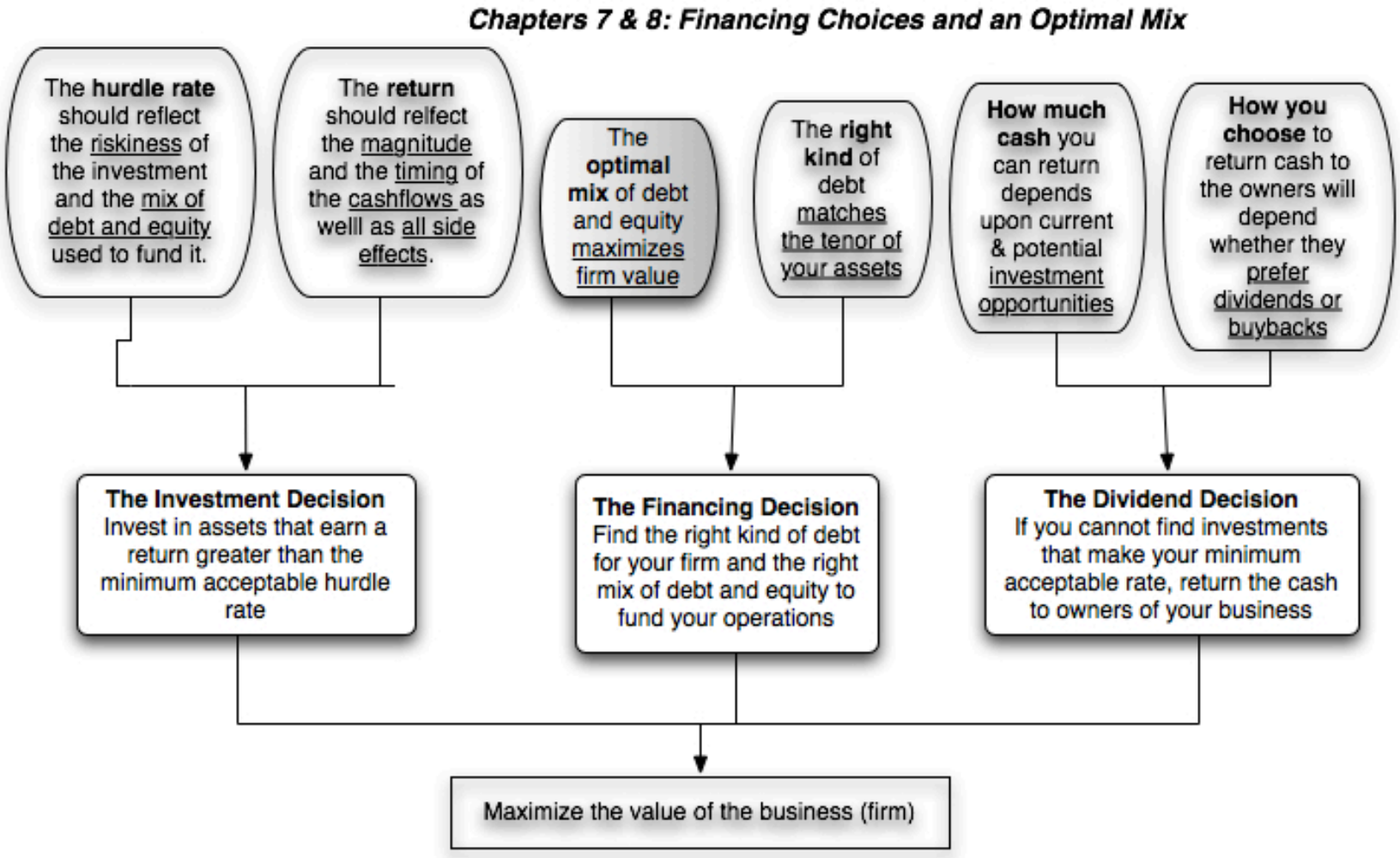
- In a project with a finite and short life, you would need to compute a **salvage value**, which is the expected proceeds from selling all of the investment in the project at the end of the project life. It is usually set equal to book value of fixed assets and working capital
- In a project with an infinite or very long life, we compute cash flows for a reasonable period, and then compute a **terminal value** for this project, which is the present value of all cash flows that occur after the estimation period ends..
- Assuming the project lasts forever, and that cash flows after year 10 grow 2% (the inflation rate) forever, the present value at the end of year 10 of cash flows after that can be written as:
  - Terminal Value in year 10= CF in year 11/(Cost of Capital - Growth Rate)
    =692 (1.02) /(.0862-.02) = $ 10,669 million

# Which yields a NPV of..

Discounted at Rio Disney cost of capital of 8.62%

| Year | Annual Cashflow | Terminal Value | Present Value |
|---|---|---|---|
| 0 | -$2,000 | | -$2,000 |
| 1 | -$1,000 | | -$921 |
| 2 | -$860 | | -$729 |
| 3 | -$270 | | -$211 |
| 4 | $332 | | $239 |
| 5 | $453 | | $300 |
| 6 | $502 | | $305 |
| 7 | $538 | | $302 |
| 8 | $596 | | $307 |
| 9 | $660 | | $313 |
| 10 | $692 | $10,669 | $4,970 |
| Net Present Value = | | | $2,877 |

# First Principles



# Debt: Summarizing the trade off

| *Advantages of Debt* | *Disadvantages of debt* |
|---|---|
| **1. Tax Benefit**: Interest expenses on debt are tax deductible but cash flows to equity are generally not.<br>*Implication: The higher the marginal tax rate, the greater the benefits of debt.* | **1. Expected Bankruptcy Cost**: The expected cost of going bankrupt is a product of the probability of going bankrupt and the cost of going bankrupt. The latter includes both direct and indirect costs. The probability of going bankrupt will be higher in businesses with more volatile earnings and the cost of bankruptcy will also vary across businesses.<br>*Implication:*<br>*1. Firms with more stable earnings should borrow more, for any given level of earnings.*<br>*2. Firms with lower bankruptcy costs should borrow more, for any given level of earnings.* |
| **2. Added Discipline**: Borrowing money may force managers to think about the consequences of the investment decisions a little more carefully and reduce bad investments.<br>*Implication: As the separation between managers and stockholders increases, the benefits to using debt will go up.* | **2. Agency Costs**: Actions that benefit equity investors may hurt lenders. The greater the potential for this conflict of interest, the greater the cost borne by the borrower (as higher interest rates or more covenants).<br>*Implication: Firms where lenders can monitor/ control how their money is being used should be able to borrow more than firms where this is difficult to do.* |
| | **3. Loss of flexibility**: Using up available debt capacity today will mean that you cannot draw on it in the future. This loss of flexibility can be disastrous if funds are needed and access to capital is shut off.<br>*Implication:*<br>1. *Firms that can forecast future funding needs better should be able to borrow more.*<br>2. *Firms with better access to capital markets should be more willing to borrow more today.* |

# Mechanics of Cost of Capital Estimation

1. Estimate the Cost of Equity at different levels of debt:
   - Equity will become riskier -> Beta will increase -> Cost of Equity will increase.
   - Estimation will use levered beta calculation
2. Estimate the Cost of Debt at different levels of debt:
   - Default risk will go up and bond ratings will go down as debt goes up -> Cost of Debt will increase.
   - To estimating bond ratings, we will use the interest coverage ratio (EBIT/ Interest expense)
3. Estimate the Cost of Capital at different levels of debt
4. Calculate the effect on Firm Value and Stock Price.

# Finding an optimal mix: Disney's cost of capital schedule…

| Debt Ratio | Beta | Cost of Equity | Cost of Debt (after-tax) | Cost of capital |
|---|---|---|---|---|
| 0% | 0.73 | 7.90% | 2.95% | 7.90% |
| 10% | 0.78 | 8.20% | 2.95% | 7.68% |
| 20% | 0.85 | 8.58% | 2.95% | 7.45% |
| 30% | 0.93 | 9.07% | 3.26% | 7.32% |
| 40% | 1.04 | 9.72% | 3.72% | 7.32% |
| 50% | 1.19 | 10.63% | 4.03% | 7.33% |
| 60% | 1.42 | 11.99% | 4.34% | 7.40% |
| 70% | 1.79 | 14.26% | 7.44% | 9.49% |
| 80% | 2.55 | 18.81% | 8.37% | 10.46% |
| 90% | 5.05 | 33.83% | 8.84% | 11.34% |

# Extension to a family group company: Tata Chemical's Optimal Capital Structure

## Actual

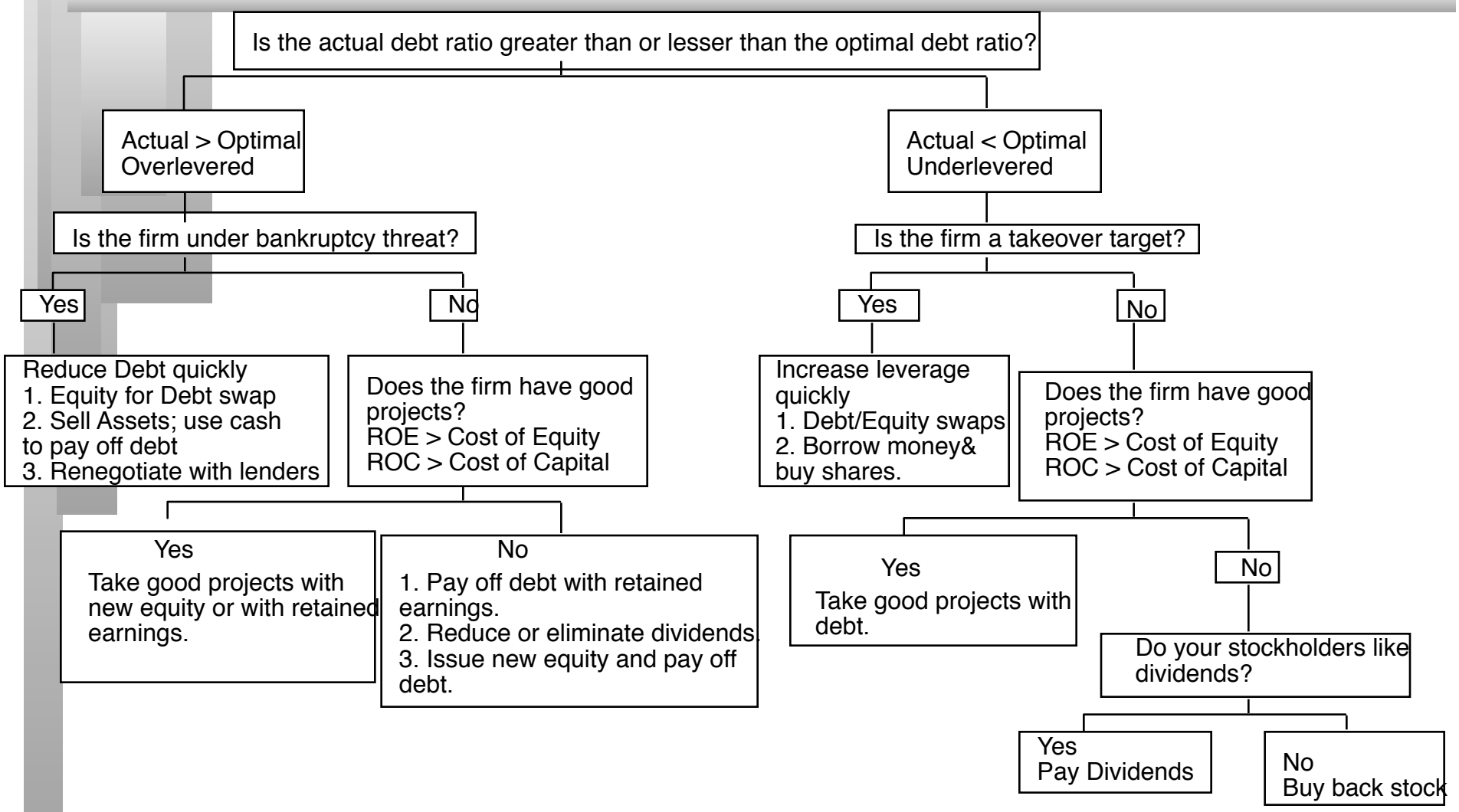
| Business | Cost of equity | Pre-tax cost of debt | After-tax cost of debt | D/(D+E) | Cost of capital |
|---|---|---|---|---|---|
| Fertilizers | 14.14% | 10.0% | 6.60% | 34.02% | 11.58% |
| Chemicals | 13.58% | 10.0% | 6.60% | 34.02% | 11.21% |
| Tata Chemicals | 13.93% | 10.0% | 6.60% | 34.02% | 11.44% |

## Optimal

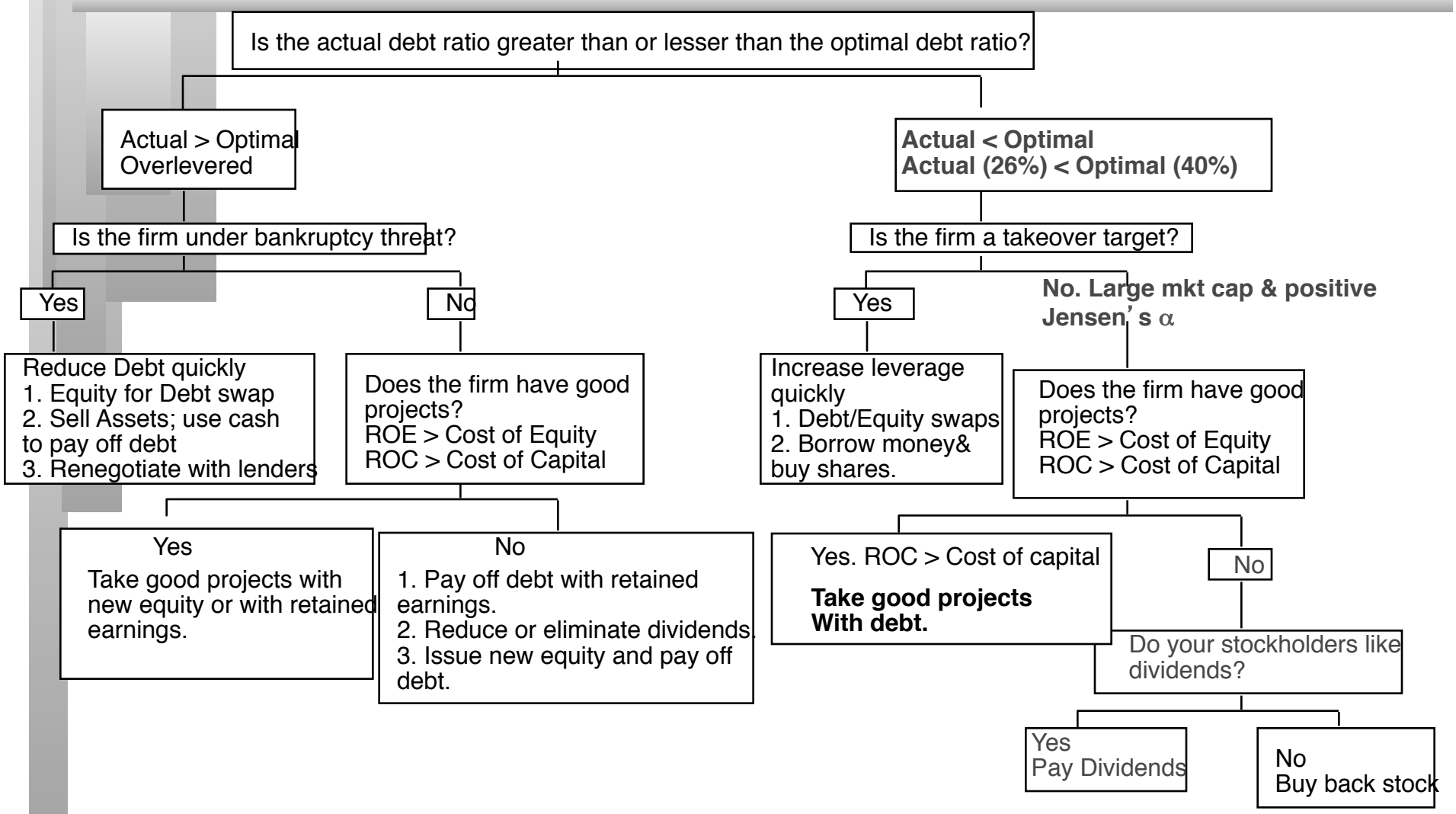
| Debt Ratio | Beta | Cost of Equity | Bond Rating | Interest rate on debt | Tax Rate | Cost of Debt (after-tax) | WACC | Firm Value (G) |
|---|---|---|---|---|---|---|---|---|
| 0% | 0.70 | 11.39% | AAA | 8.25% | 33.99% | 5.45% | 11.39% | Rs 79,626 |
| 10% | 0.75 | 11.93% | A+ | 9.25% | 33.99% | 6.11% | 11.35% | Rs 80,084 |
| 20% | 0.82 | 12.61% | BB | 12.00% | 33.99% | 7.92% | 11.67% | Rs 76,586 |
| 30% | 0.90 | 13.48% | B- | 15.50% | 33.99% | 10.23% | 12.51% | Rs 68,768 |
| 40% | 1.01 | 14.64% | CC | 19.00% | 33.99% | 12.54% | 13.80% | Rs 59,257 |
| 50% | 1.23 | 16.98% | C | 22.00% | 24.43% | 16.63% | 16.80% | Rs 44,637 |
| 60% | 1.58 | 20.64% | D | 27.00% | 16.59% | 22.52% | 21.77% | Rs 31,272 |
| 70% | 2.11 | 26.19% | D | 27.00% | 14.22% | 23.16% | 24.07% | Rs 27,325 |
| 80% | 3.17 | 37.28% | D | 27.00% | 12.44% | 23.64% | 26.37% | Rs 24,189 |
| 90% | 6.33 | 70.56% | D | 27.00% | 11.06% | 24.01% | 28.67% | Rs 21,638 |

Tata Chemical looks like it is over levered (34% actual versus 10% optimal), but it is tough to tell without looking at the rest of the group.

# A Framework for Getting to the Optimal



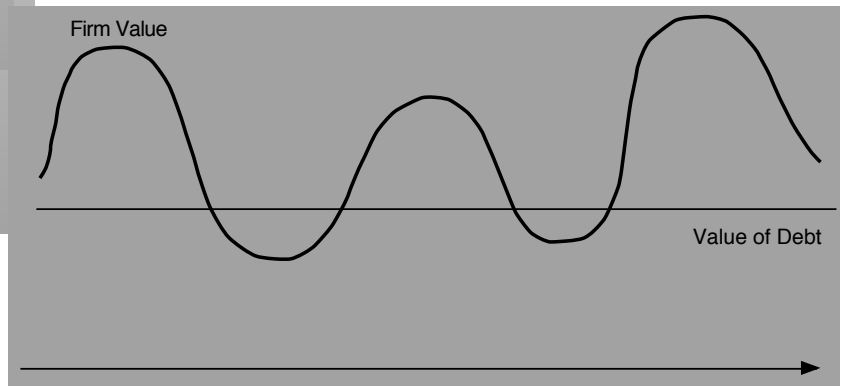
# Disney: Applying the Framework



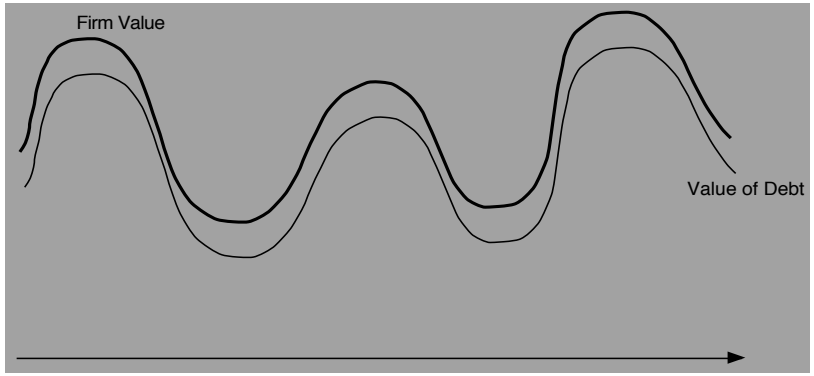
# Designing Debt: The Fundamental Principle

- The objective in designing debt is to make the cash flows on debt match up as closely as possible with the cash flows that the firm makes on its assets.
- By doing so, we reduce our risk of default, increase debt capacity and increase firm value.

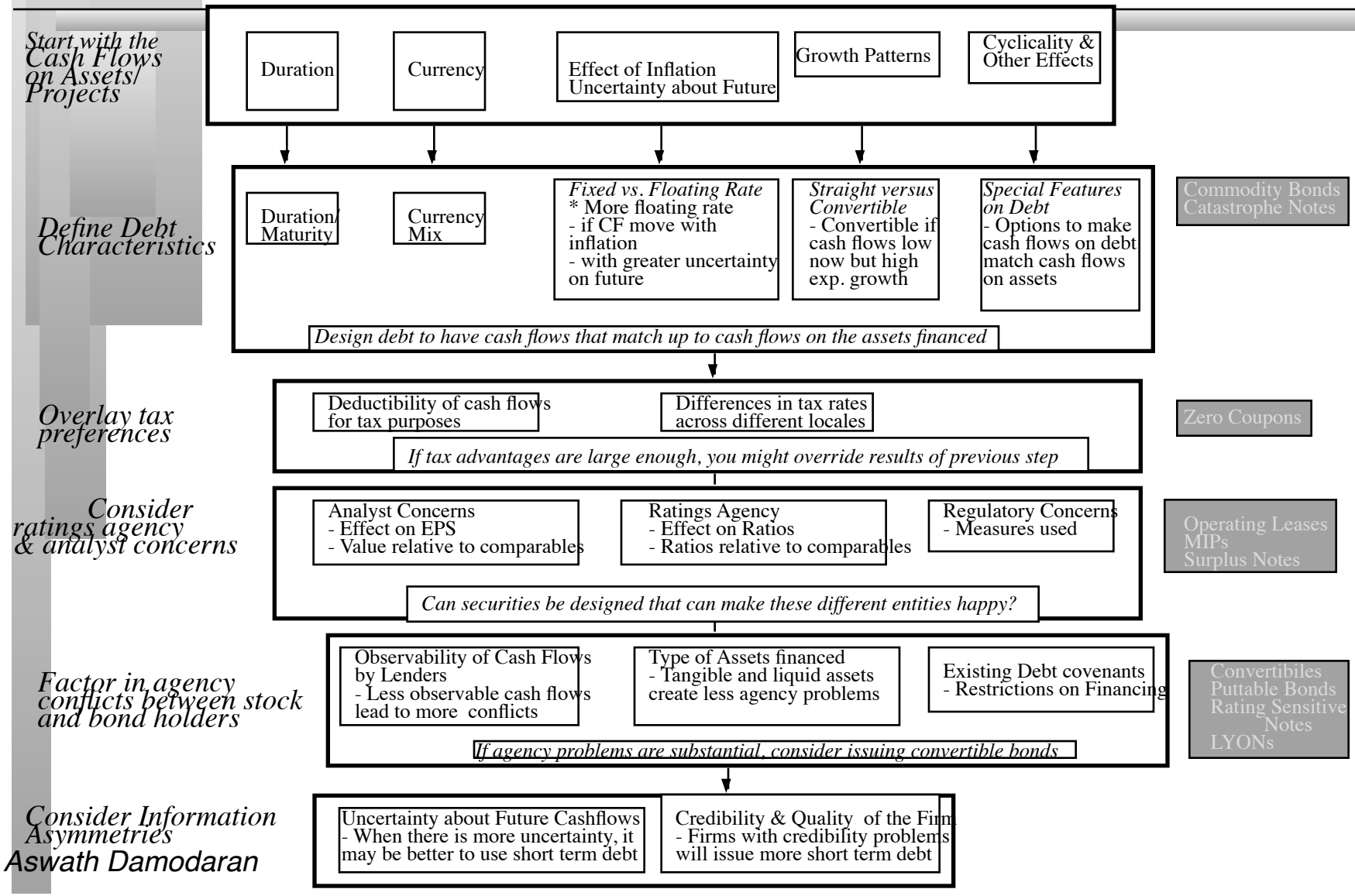
Unmatched Debt




Matched Debt



# Designing Debt: Bringing it all together



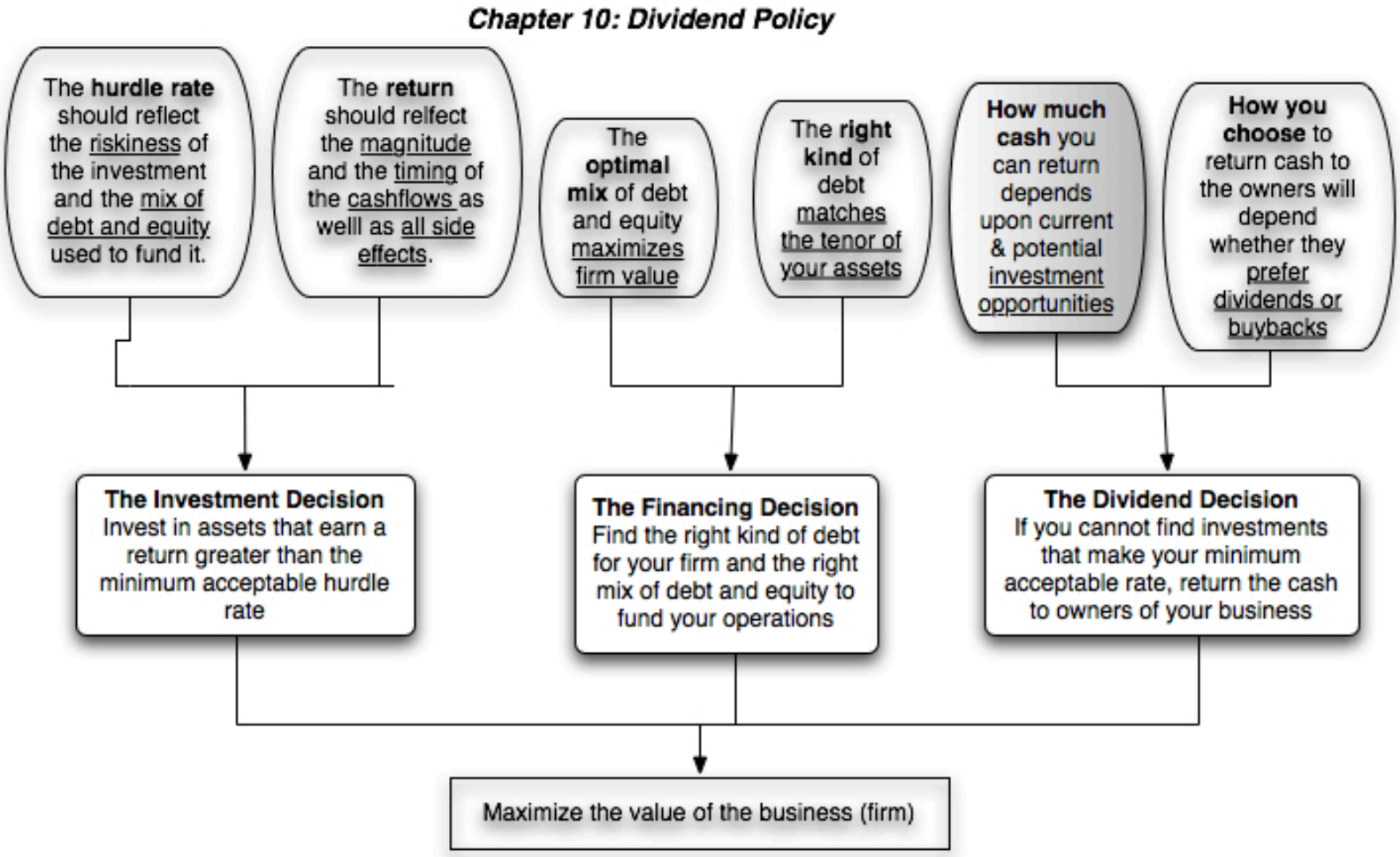
# Designing Disney's Debt

| *Business* | *Project Cash Flow Characteristics* | *Type of Financing* |
|---|---|---|
| Studio entertainment | Movie projects are likely to<br>1. Be short-term<br>2. Have cash outflows primarily in dollars (because Disney makes most of its movies in the U.S.), but cash inflows could have a substantial foreign currency component (because of overseas revenues)<br>3. Have net cash flows that are heavily driven by whether the movie is a hit, which is often difficult to predict | Debt should be<br>1. Short-term<br>2. Primarily dollar debt<br>3. If possible, tied to the success of movies (Lion King or Mulan bonds) |
| Media networks | Projects are likely to be<br>1. Short-term<br>2. Primarily in dollars, though foreign component is growing<br>3. Driven by advertising revenues and show success (Nielsen ratings) | Debt should be<br>1. Short-term<br>2. Primarily dollar debt<br>3. If possible, linked to network ratings |
| Park resorts | Projects are likely to be<br>1. Very long-term<br>2. Primarily in dollars, but a significant proportion of revenues come from foreign tourists, who are likely to stay away if the dollar strengthens<br>3. Affected by success of studio entertainment and media networks divisions | Debt should be<br>1. Long-term<br>2. Mix of currencies, based on tourist makeup |
| Consumer products | Projects are likely to be short- to medium-term and linked to the success of the movie division; most of Disney's product offerings are derived from their movie productions | Debt should be<br>a. Medium-term<br>b. Dollar debt |

# Analyzing Disney's Current Debt

- Disney has $16 billion in debt with a face-value weighted average maturity of 5.38 years. Allowing for the fact that the maturity of debt is higher than the duration, this would indicate that Disney's debt is of the right maturity.
- Of the debt, about 10% is yen denominated debt but the rest is in US dollars. Based on our analysis, we would suggest that Disney increase its proportion of debt in other currencies to about 20% in Euros and about 5% in Chinese Yuan.
- Disney has no convertible debt and about 24% of its debt is floating rate debt, which is appropriate given its status as a mature company with significant pricing power. In fact, we would argue for increasing the floating rate portion of the debt to about 40%.

# First Principles



# Assessing Dividend Policy

- Step 1: How much could the company have paid out during the period under question?
- Step 2: How much did the the company actually pay out during the period in question?
- Step 3: How much do I trust the management of this company with excess cash?
  - How well did they make investments during the period in question?
  - How well has my stock performed during the period in question?

# How much has the company returned to stockholders?

- As firms increasing use stock buybacks, we have to measure cash returned to stockholders as not only dividends but also buybacks.
- For instance, for Disney and Tata Chemicals, we obtain the following

| | **Disney** | | **Aracruz** | | **Tata Chemicals** | | **Deutsche Bank** | |
|---|---|---|---|---|---|---|---|---|
| *Year* | *Dividends* | *Buybacks* | *Dividends* | *Buybacks* | *Dividends* | *Buybacks* | *Dividends* | *Buybacks* |
| 2004 | $430 | $335 | $74 | $0 | Rs 1,307 | $0 | € 924 | € 0 |
| 2005 | $490 | $2,420 | $109 | $0 | Rs 1,338 | $0 | € 1,386 | € 0 |
| 2006 | $519 | $6,898 | $199 | $0 | Rs 1,589 | $0 | € 1,995 | € 0 |
| 2007 | $637 | $6,923 | $139 | $0 | Rs 1,716 | $0 | € 2,255 | € 0 |
| 2008 | $664 | $4,453 | $252 | $0 | Rs 2,010 | $0 | € 285 | € 0 |

# A Measure of How Much a Company Could have Afforded to Pay out: FCFE

- The Free Cashflow to Equity (FCFE) is a measure of how much cash is left in the business after non-equity claimholders (debt and preferred stock) have been paid, and after any reinvestment needed to sustain the firm's assets and future growth.

  Net Income

  + Depreciation & Amortization

  = Cash flows from Operations to Equity Investors

  - Preferred Dividends

  - Capital Expenditures

  - Working Capital Needs

  - Principal Repayments

  + Proceeds from New Debt Issues

  = Free Cash flow to Equity

# Disney's FCFE

| Year | Net Income | Capital Expenditures | Depreciation | Chg in WC | Change in Net Debt | FCFE |
|---|---|---|---|---|---|---|
| 1999 | $1,300 | $6,113 | $3,779 | -$363 | $176 | -$495 |
| 2000 | $920 | $1,091 | $2,195 | -$1,184 | $2,118 | $5,326 |
| 2001 | -$158 | $2,015 | $1,754 | $244 | -$77 | -$740 |
| 2002 | $1,236 | $3,176 | $1,042 | $27 | -$1,892 | -$2,817 |
| 2003 | $1,267 | $1,034 | $1,077 | -$264 | $1,145 | $2,719 |
| 2004 | $2,345 | $1,484 | $1,210 | $51 | $2,203 | $4,223 |
| 2005 | $2,533 | $1,691 | $1,339 | $270 | $699 | $2,610 |
| 2006 | $3,374 | $1,300 | $1,437 | -$136 | -$941 | $2,706 |
| 2007 | $4,687 | $627 | $1,491 | $45 | -$2,696 | $2,810 |
| 2008 | $4,427 | $2,162 | $1,582 | $485 | -$528 | $2,834 |
| Aggregate | $21,931 | $20,693 | $16,906 | -$825 | $207 | $19,176 |
| Average | | | | | $21 | $1,918 |

# Disney's actual cash returned…

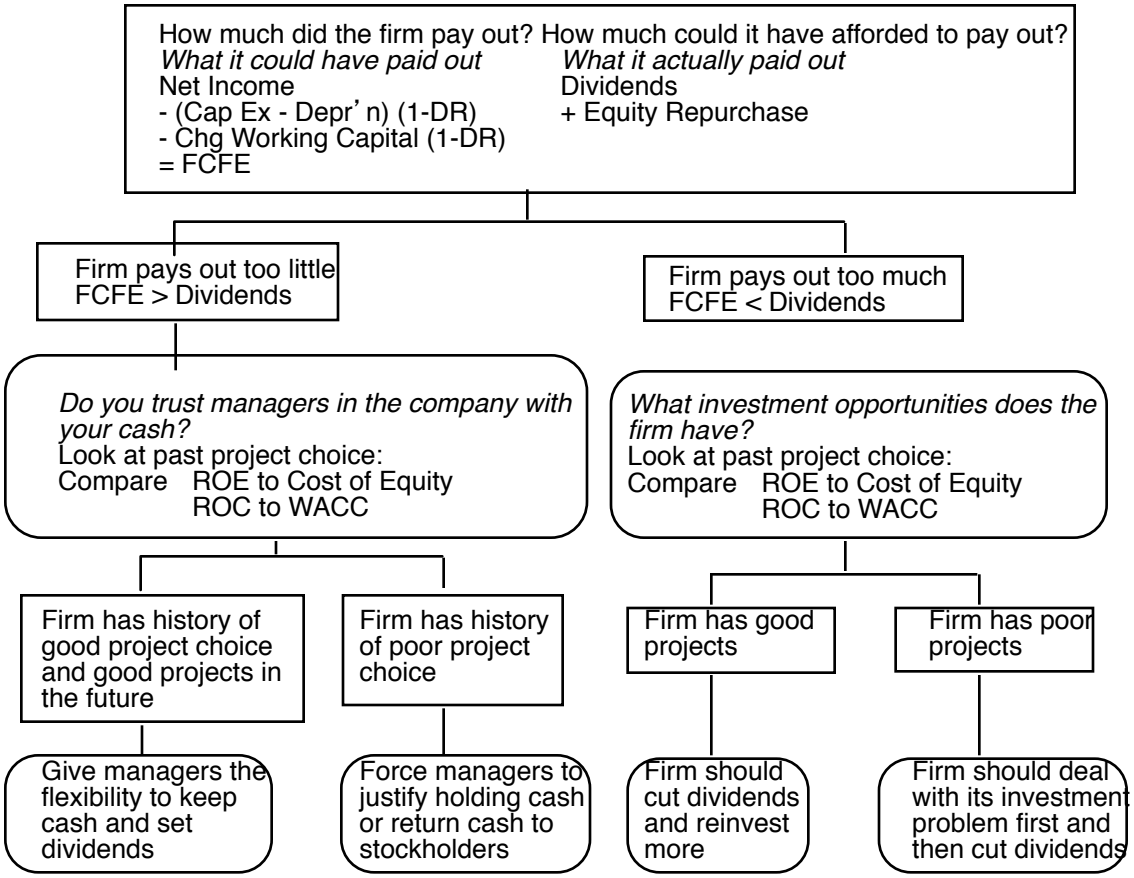
| Year | Dividends | Earnings | Payout Ratio | Cash Returned | FCFE | Cash/FCFE |
|---|---|---|---|---|---|---|
| 1999 | $0.00 | $1,300.00 | 0.00% | $19.00 | -$495.00 | -3.84% |
| 2000 | $434.00 | $920.00 | 47.17% | $600.00 | $5,326.00 | 11.27% |
| 2001 | $438.00 | -$158.00 | -277.22% | $1,511.00 | -$740.00 | -204.19% |
| 2002 | $428.00 | $1,236.00 | 34.63% | $428.00 | -$2,817.00 | -15.19% |
| 2003 | $429.00 | $1,267.00 | 33.86% | $429.00 | $2,719.00 | 15.78% |
| 2004 | $430.00 | $2,345.00 | 18.34% | $765.00 | $4,223.00 | 18.12% |
| 2005 | $490.00 | $2,533.00 | 19.34% | $2,910.00 | $2,610.00 | 111.49% |
| 2006 | $519.00 | $3,374.00 | 15.38% | $7,417.00 | $2,706.00 | 274.09% |
| 2007 | $637.00 | $4,687.00 | 13.59% | $7,560.00 | $2,810.00 | 269.04% |
| 2008 | $664.00 | $4,427.00 | 15.00% | $5,117.00 | $2,834.00 | 180.56% |
| Aggregate | $4,469.00 | $21,931.00 | 20.38% | $26,756.00 | $19,176.00 | 139.53% |

# 5. Tata Chemicals: The Cross Holding Effect: 2009

| | Average | Standard Deviation | Maximum | Minimum |
|---|---|---|---|---|
| Free CF to Equity | INR 2,258 | INR 6,557 | INR 11,176 | (INR 7,141) |
| Dividends | INR 1,592 | INR 290 | INR 2,010 | INR 1,307 |
| Dividends+Repurchases | INR 1,592 | INR 290 | INR 2,010 | INR 1,307 |
| | | | | |
| Dividend Payout Ratio | 25.65% | | | |
| Cash Paid as % of FCFE | 70.50% | | | |
| | | | | |
| ROE | 17.34% | | | |
| Return on Stock | 17.97% | | | |
| Required Return | 19.89% | | | |
| ROE - Required return | -2.55% | | | |
| Actual - Required Return | -1.91% | | | |

Much of the cash held back was invested in other Tata companies.

# A Practical Framework for Analyzing Dividend Policy



# Disney in 2003

- FCFE versus Dividends
  - Between 1994 & 2003, Disney generated $969 million in FCFE each year.
  - Between 1994 & 2003, Disney paid out $639 million in dividends and stock buybacks each year.
- Cash Balance
  - Disney had a cash balance in excess of $ 4 billion at the end of 2003.
- Performance measures
  - Between 1994 and 2003, Disney has generated a return on equity, on it's projects, about 2% less than the cost of equity, on average each year.
  - Between 1994 and 2003, Disney's stock has delivered about 3% less than the cost of equity, on average each year.
  - The underperformance has been primarily post 1996 (after the Capital Cities acquisition).

# Can you trust Disney's management?

- Given Disney's track record between 1994 and 2003, if you were a Disney stockholder, would you be comfortable with Disney's dividend policy?
  - Yes
  - No
- Does the fact that the company is run by Michael Eisner, the CEO for the last 10 years and the initiator of the Cap Cities acquisition have an effect on your decision.
  - Yes
  - No

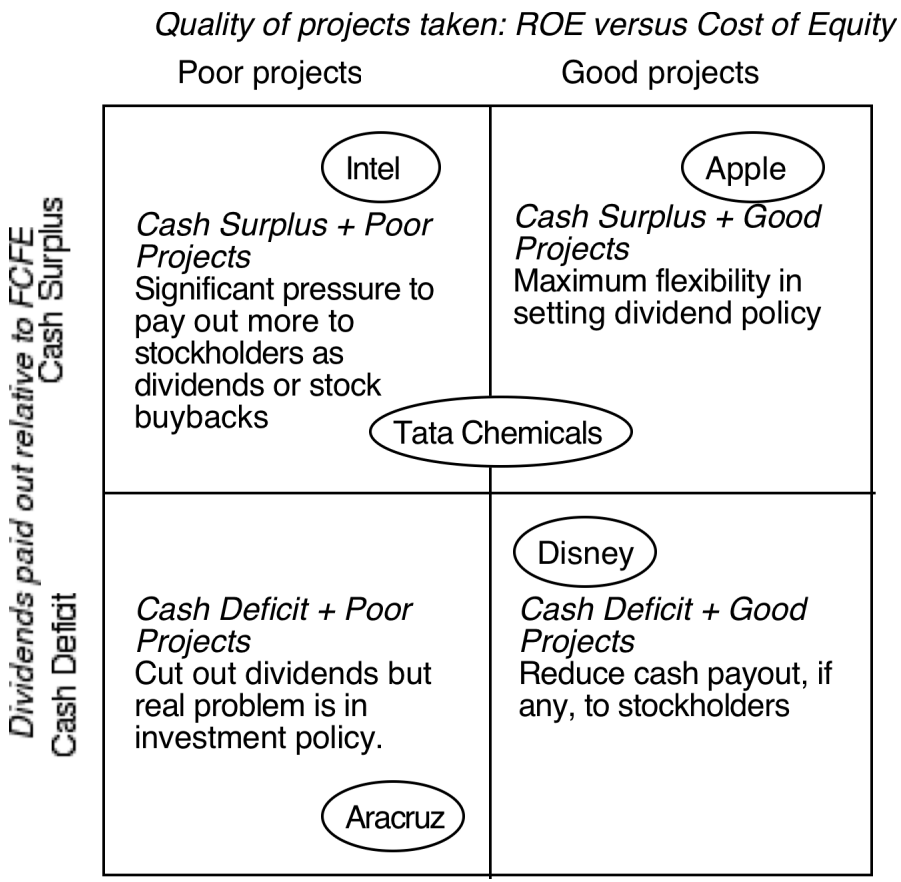
# Following up: Disney in 2009

- Between 2004 and 2008, Disney made significant changes:
  - It replaced its CEO, Michael Eisner, with a new CEO, Bob Iger, who at least on the surface seemed to be more receptive to stockholder concerns.
  - It's stock price performance improved (positive Jensen's alpha)
  - It's project choice improved (ROC moved from being well below cost of capital to above)
- The firm also shifted from cash returned < FCFE to cash returned > FCFE and avoided making large acquisitions.
- If you were a stockholder in 2009 and Iger made a plea to retain cash in Disney to pursue investment opportunities, would you be more receptive?

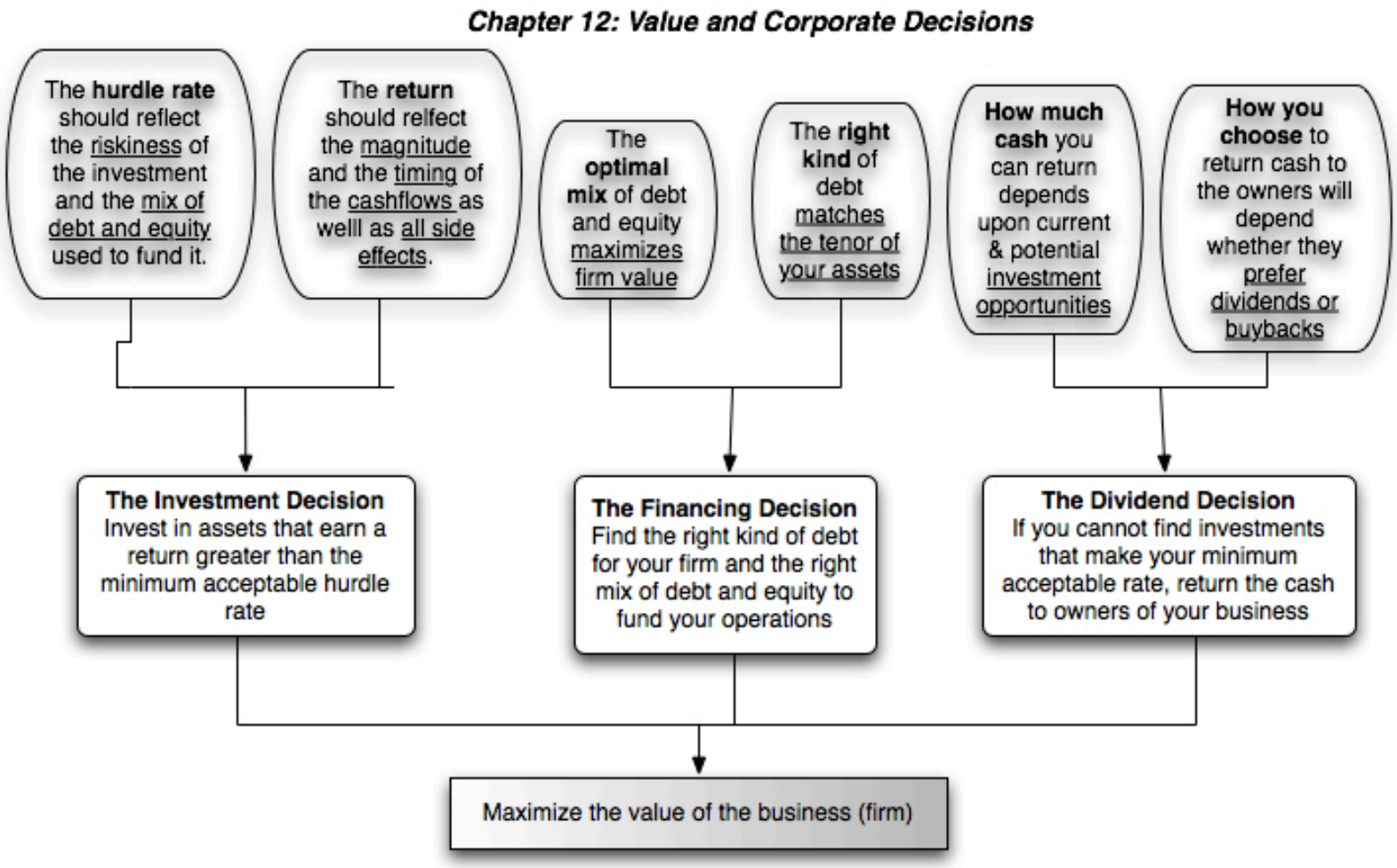
a) Yes

b) No

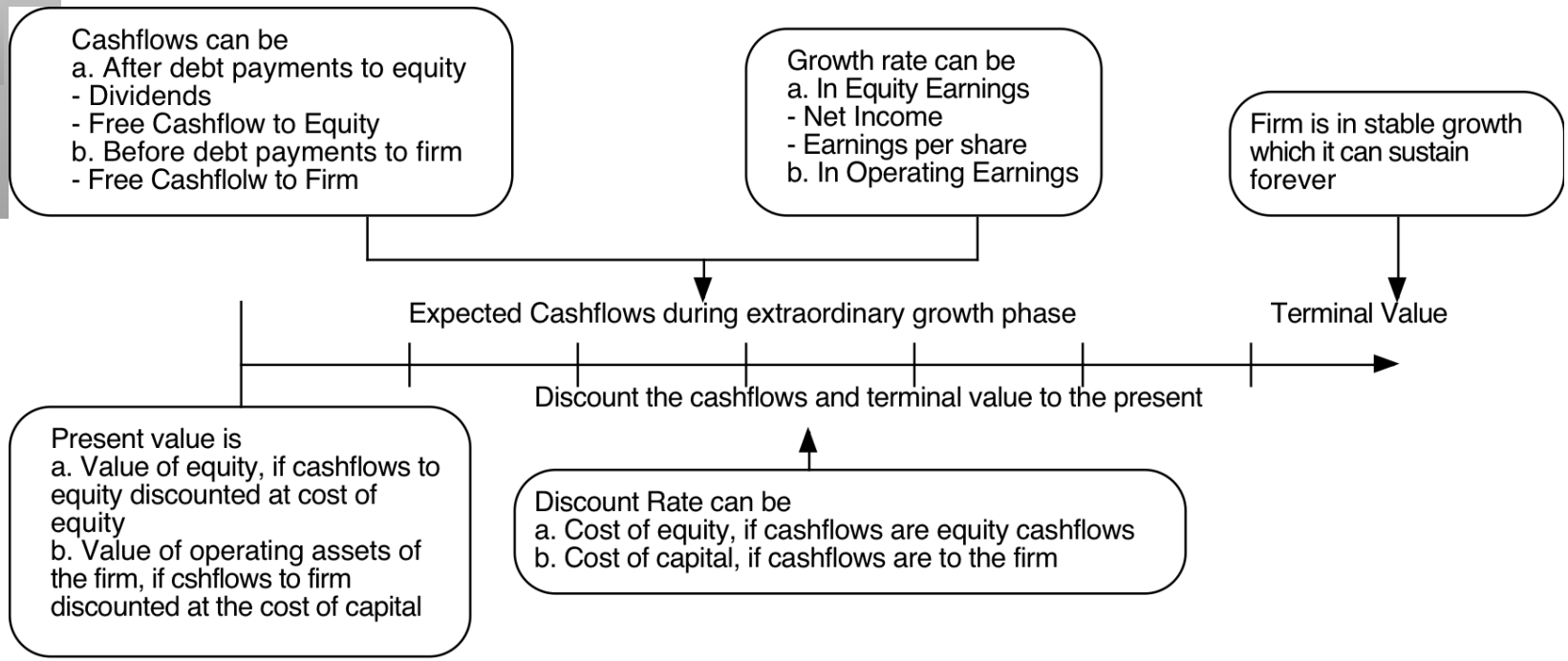
# Summing up…


Quality of projects taken: ROE versus Cost of Equity
Poor projects
Good projects
Dividends paid out relative to FCFE
Cash Surplus
Cash Deficit
Intel
Apple
Cash Surplus + Poor Projects
Significant pressure to pay out more to stockholders as dividends or stock buybacks
Cash Surplus + Good Projects
Maximum flexibility in setting dividend policy
Tata Chemicals
Disney
Cash Deficit + Poor Projects
Cut out dividends but real problem is in investment policy.
Cash Deficit + Good Projects
Reduce cash payout, if any, to stockholders
Aracruz

# First Principles



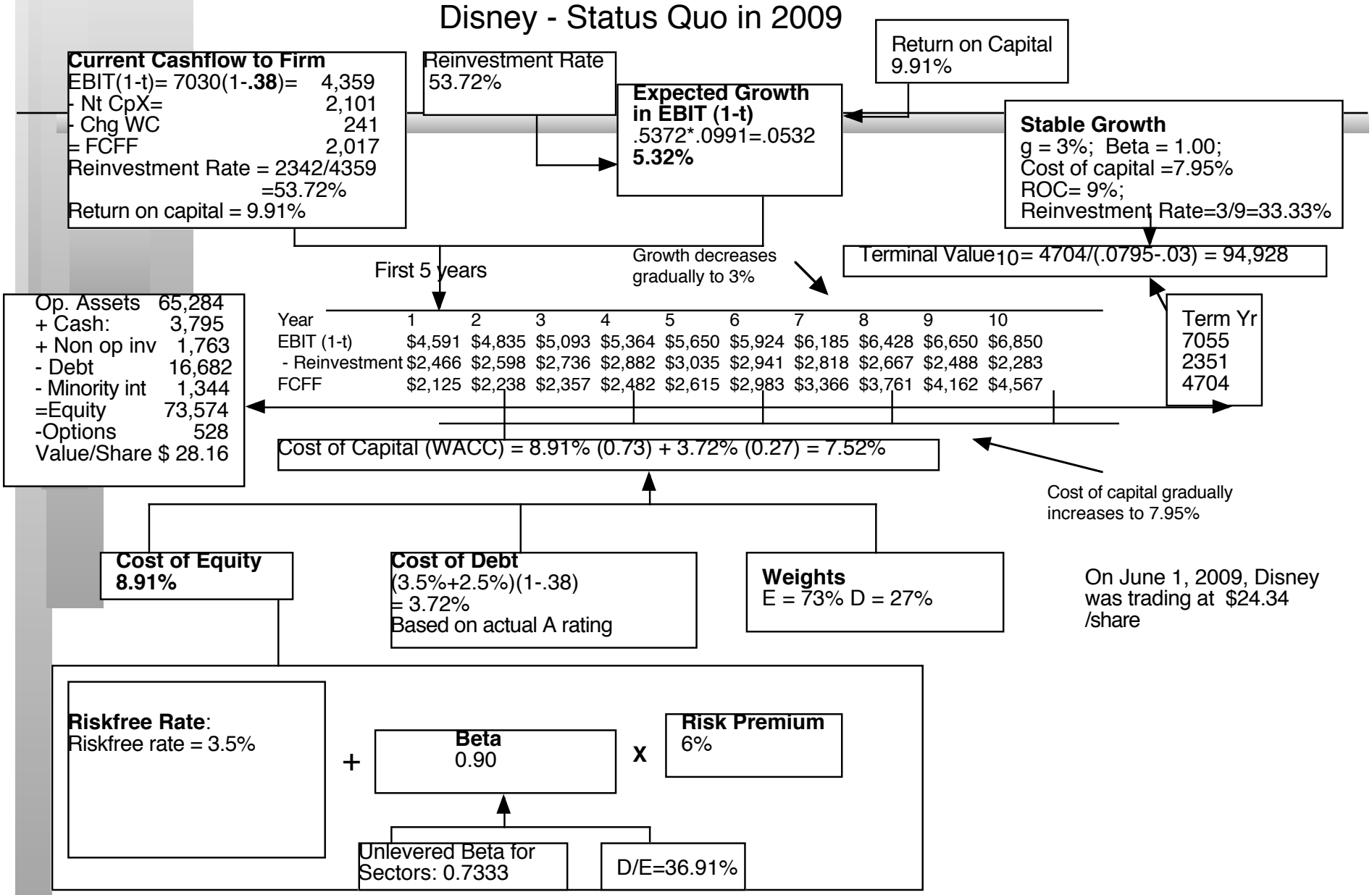
# The Ingredients that determine value.



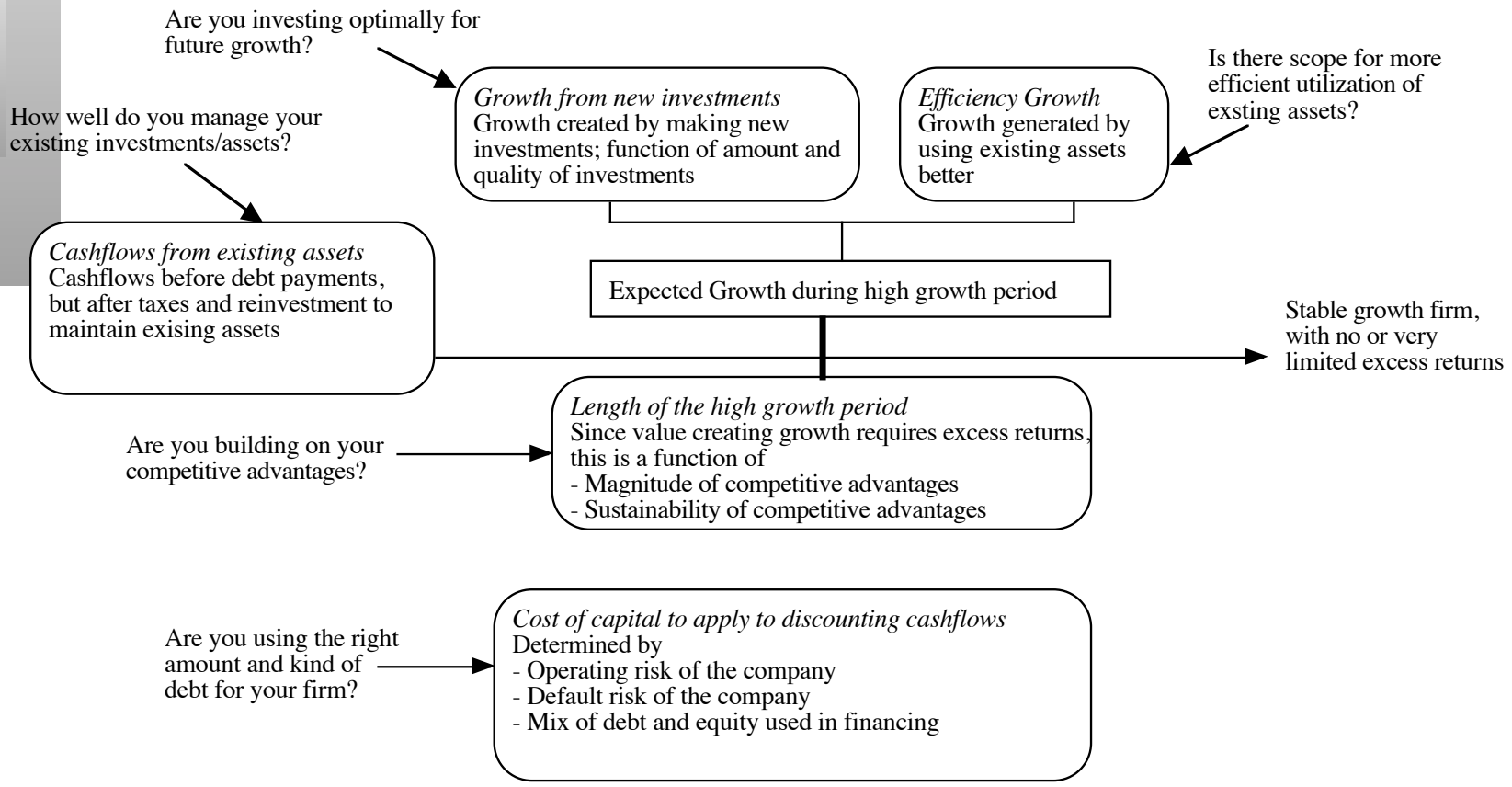
# Disney: Inputs to Valuation

| | *High Growth Phase* | *Transition Phase* | *Stable Growth Phase* |
|---|---|---|---|
| Length of Period | 5 years | 5 years | Forever after 10 years |
| Tax Rate | 38% | 38% | 38% |
| Return on Capital | 9.91% | Declines linearly to 9% | Stable ROC of 9% |
| Reinvestment Rate (Net Cap Ex + Working Capital Investments/EBIT) | 53.72% (based on normalized acquisition costs) | Declines to 33.33% as ROC and growth rates drop: Reinvestment Rate = g/ROC | 33.33% of after-tax operating income, estimated from stable growth rate of 3% and return on capital of 9%. Reinvestment rate = 3/9=33.33% |
| Expected Growth Rate in EBIT | ROC * Reinvestment Rate = 9.91%*53.72% = 5.32% | Linear decline to Stable Growth Rate of 3% | 3% |
| Debt/Capital Ratio | 26.7% | Stays unchanged | Stays unchanged |
| Risk Parameters | Beta = 0.9033, $k_e$ = 8.91%% Pre-tax Cost of Debt = 6% Cost of capital = 7.52% | Beta changes linearly to 1.00; Cost of debt stays at 6% Cost of capital goes to 7.95% | Beta = 1.00; $k_e$ = 9.5% Cost of debt stays at 6% Cost of capital = 7.95% |

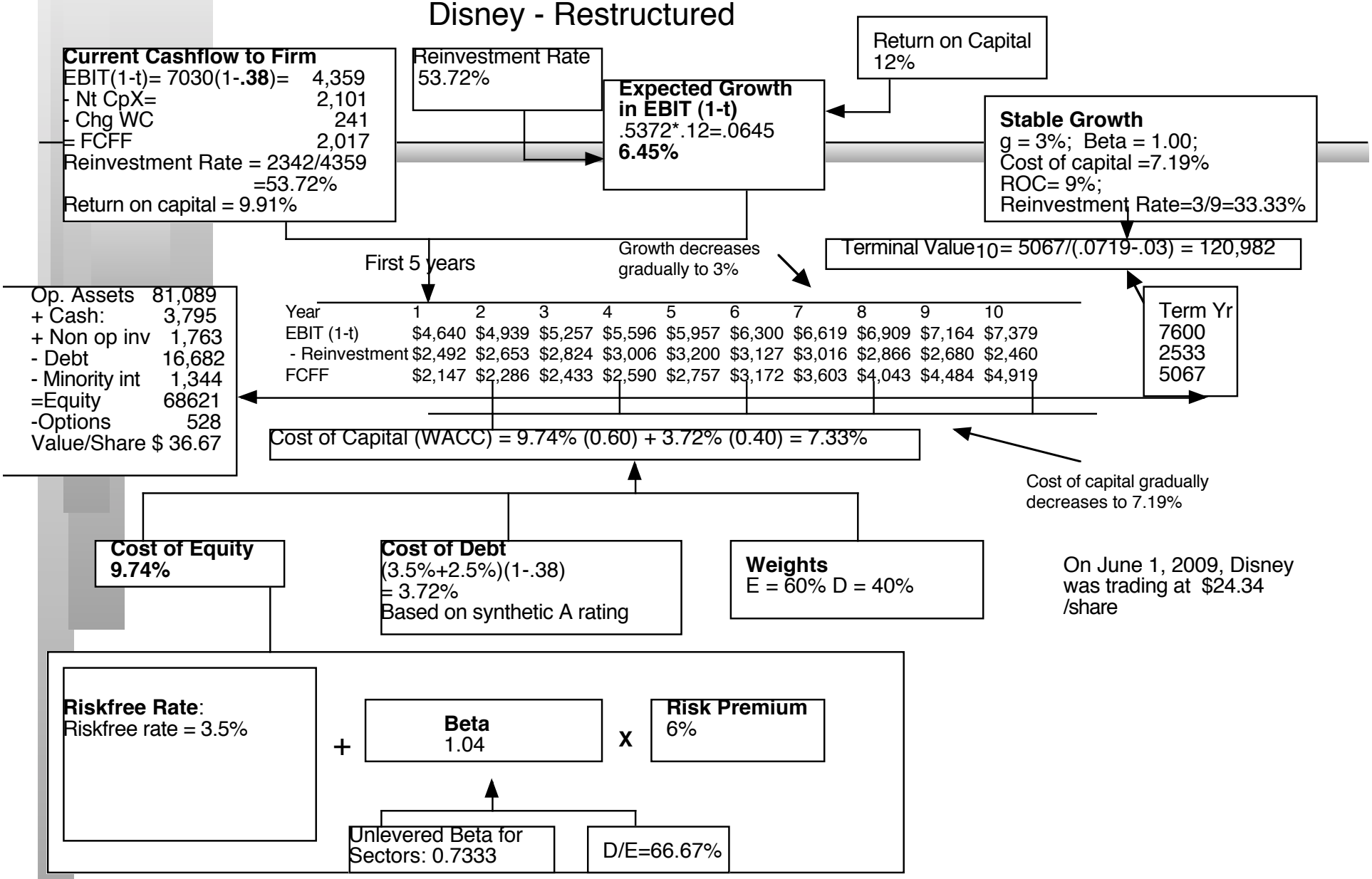
# Disney - Status Quo in 2009



# Ways of changing value…



# Disney - Restructured



# First Principles