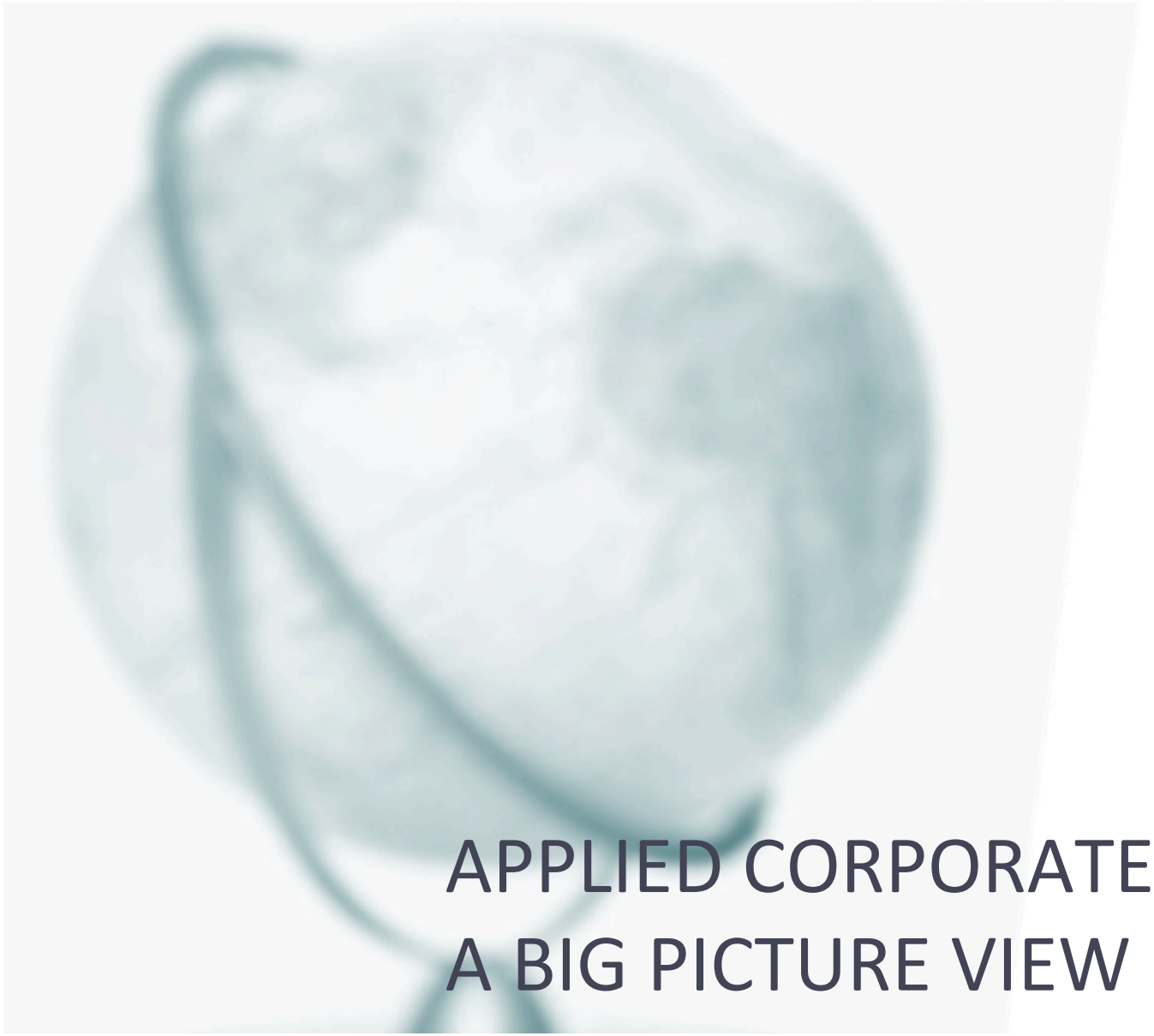
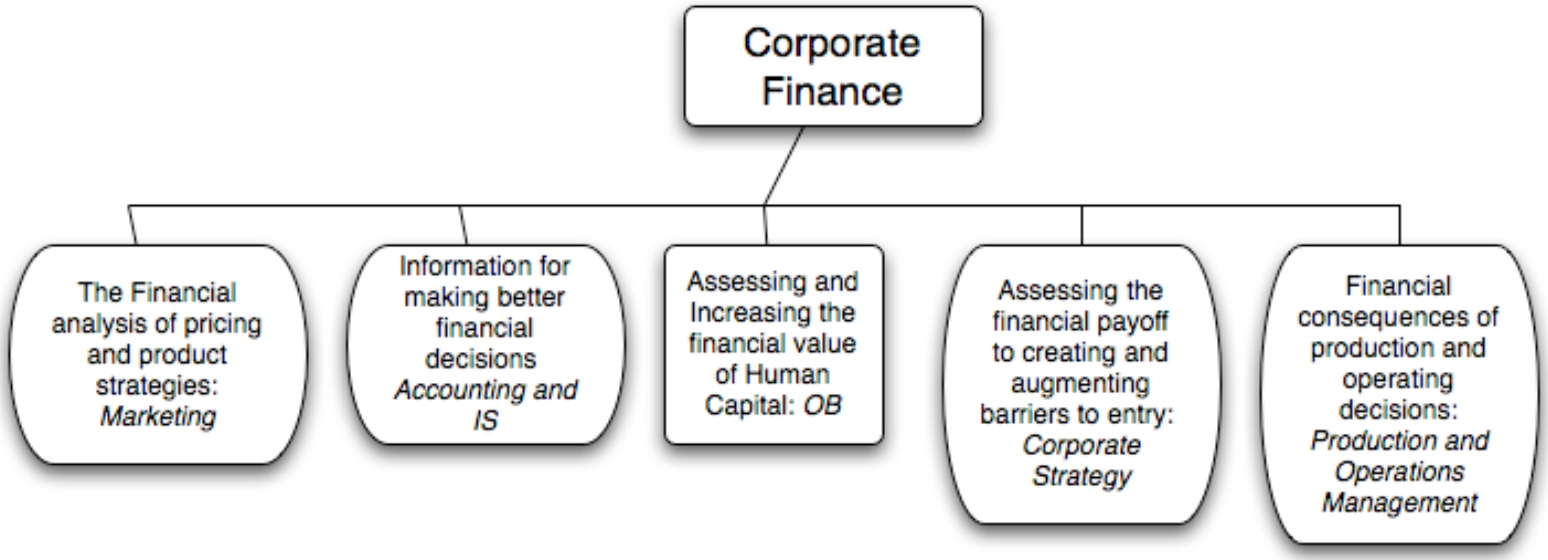


APPLIED CORPORATE FINANCE: A BIG PICTURE VIEW

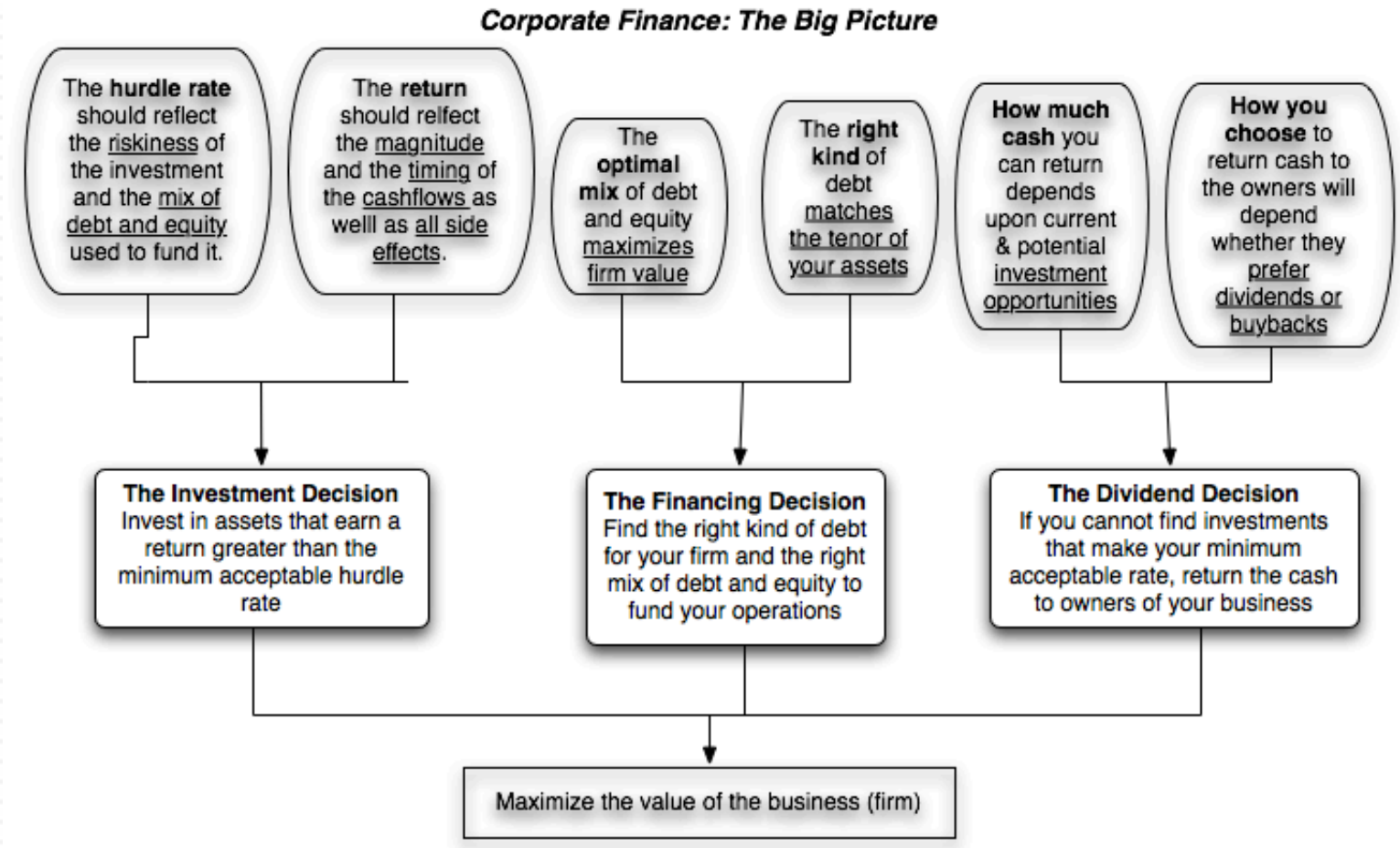
Aswath Damodaran
www.damodaran.com

What is corporate finance?

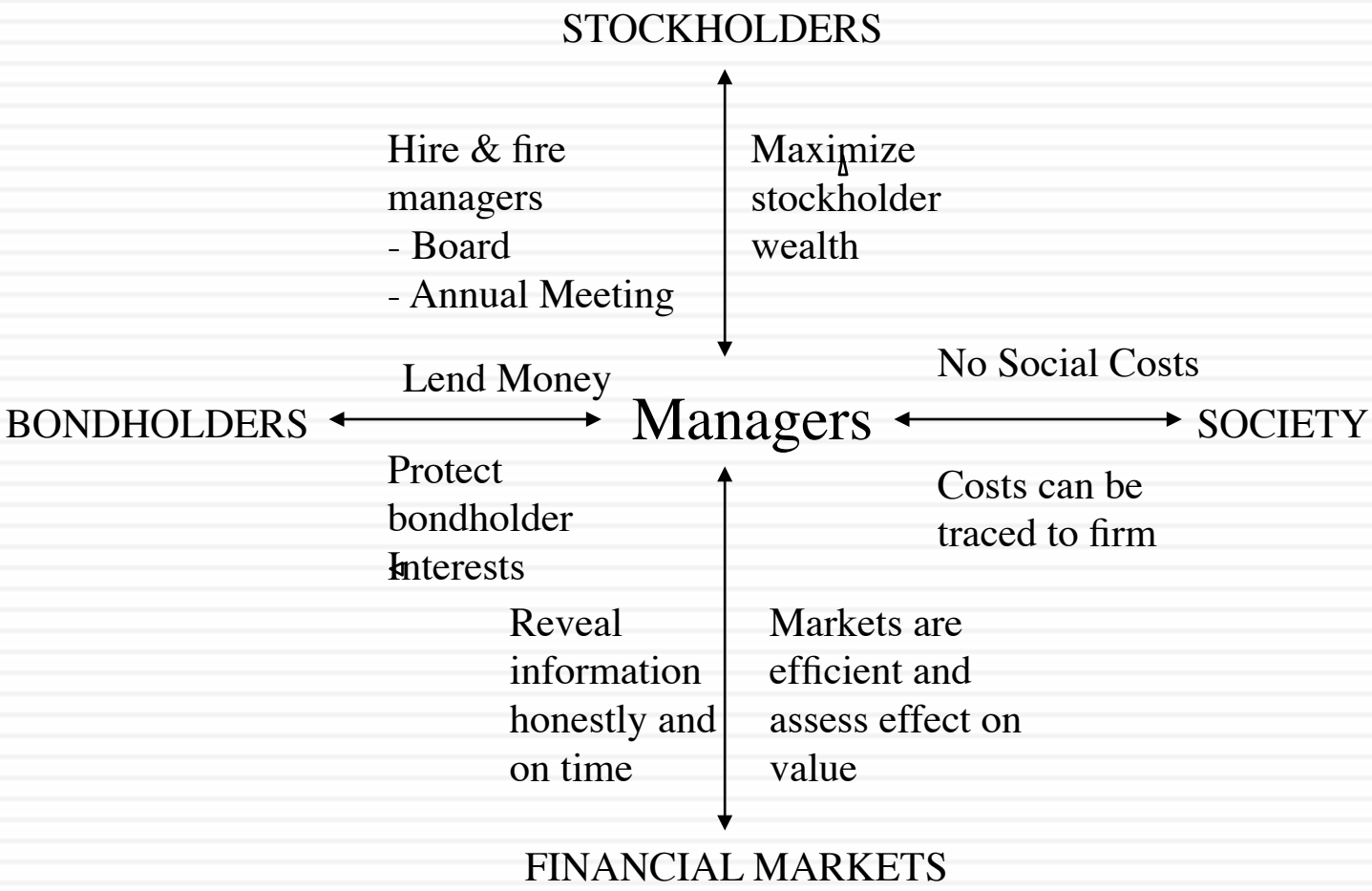
- Every decision that a business makes has financial implications, and any decision which affects the finances of a business is a corporate finance decision.
- Defined broadly, everything that a business does fits under the rubric of corporate finance.



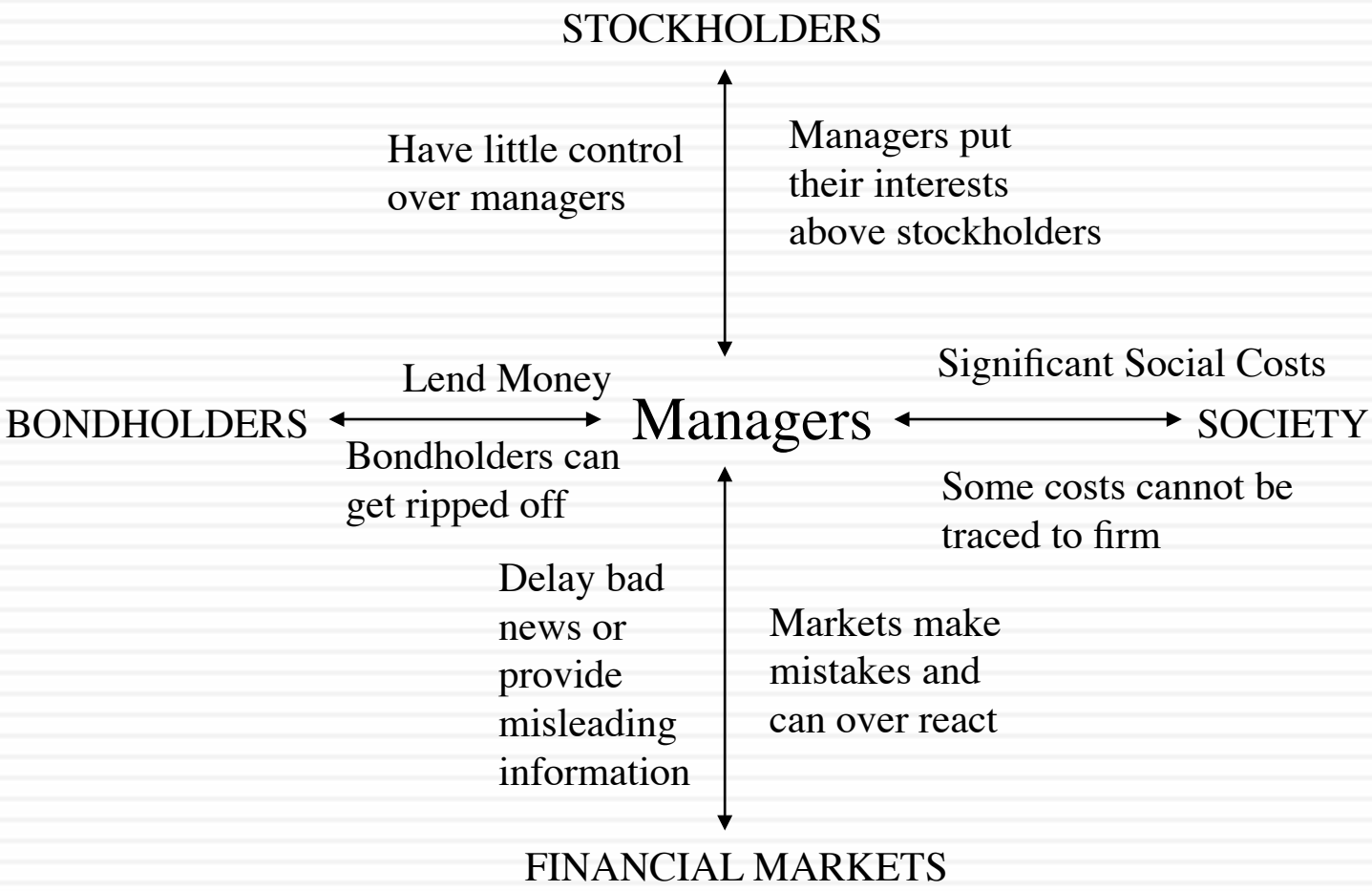
First Principles



The Classical Objective Function



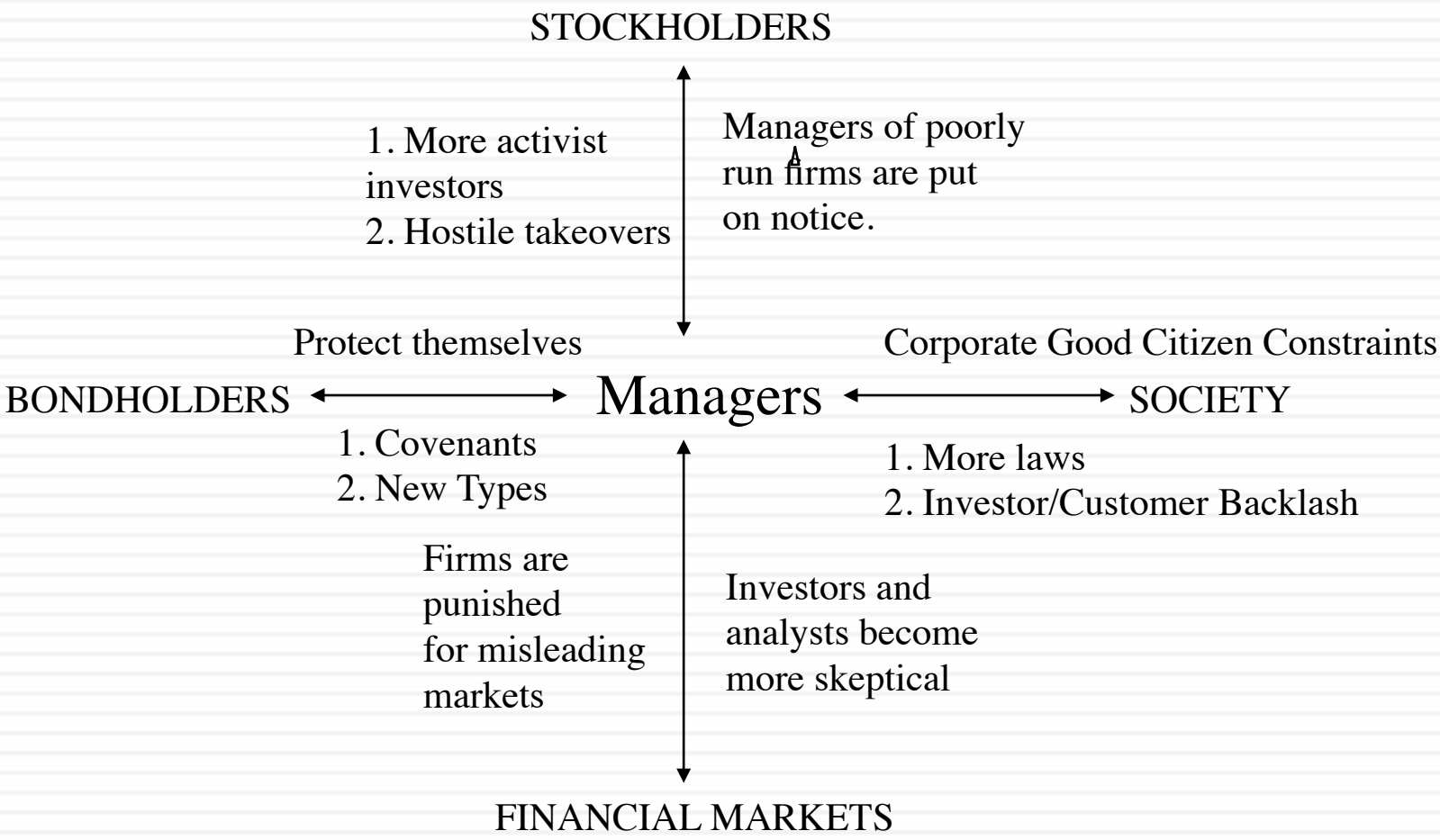
What can go wrong?



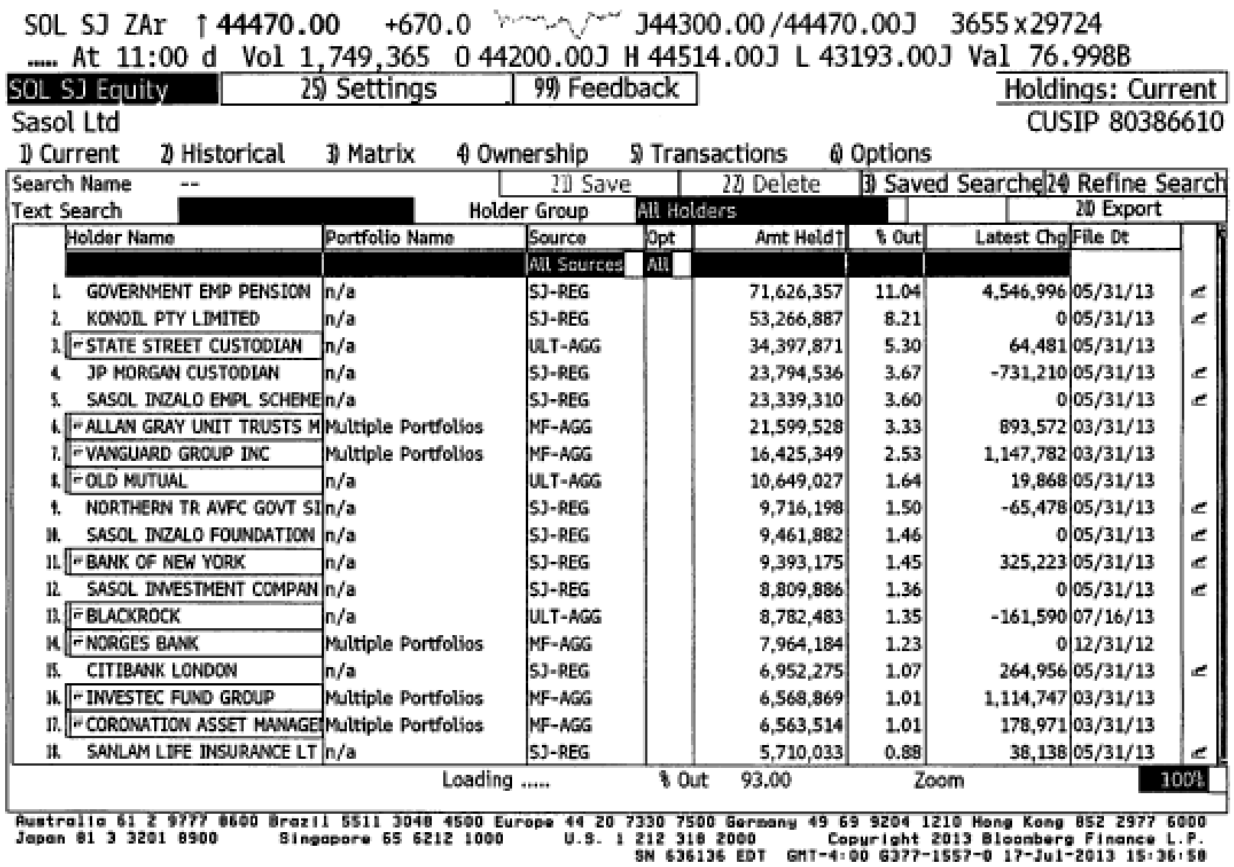
Who's on Board? Sasol's board of directors in 2013

Director	Other information
David E. Constable	CEO & Executive Director (2011)
Christine Ramon	CFO & Executive Director (2006)
Nolitha Fakude	Executive Director (2005)
Hixonia Nyasulu	Chair of Nomination committee (2006)
Colin Beggs	Chair of Audit Committee (2009)
Henk Dijkgraaf	Chair of Remuneration Committee (2006)
Mandla Gantsho	Member of Audit Committee (2003)
Imogen Mkhize	Member of Risk & Safety Committee (2005)
Moses Mkhize	Member of Nomination Committee (2011)
JJ Nkeje	Member of Audit Committee (2009)
Peter Robertson	Member of Nomination Committee (2012)
Jurgen Schrempp	Member of Nomination Committee (2008)
Stephen Westwell	Member of Audit Committee (2012)

A Market Based Solution



Splintering of Stockholders
Sasol's top stockholders in 2003



SOL SJ ZAr ↑ 44470.00 +670.0 J44300.00/44470.00J 3655x29724
..... At 11:00 d Vol 1,749,365 O 44200.00J H 44514.00J L 43193.00J Val 76.998B

SOL SJ Equity | 25) Settings | 99) Feedback | Holdings: Current

Sasol Ltd | CUSIP 80386610

1) Current 2) Historical 3) Matrix 4) Ownership 5) Transactions 6) Options

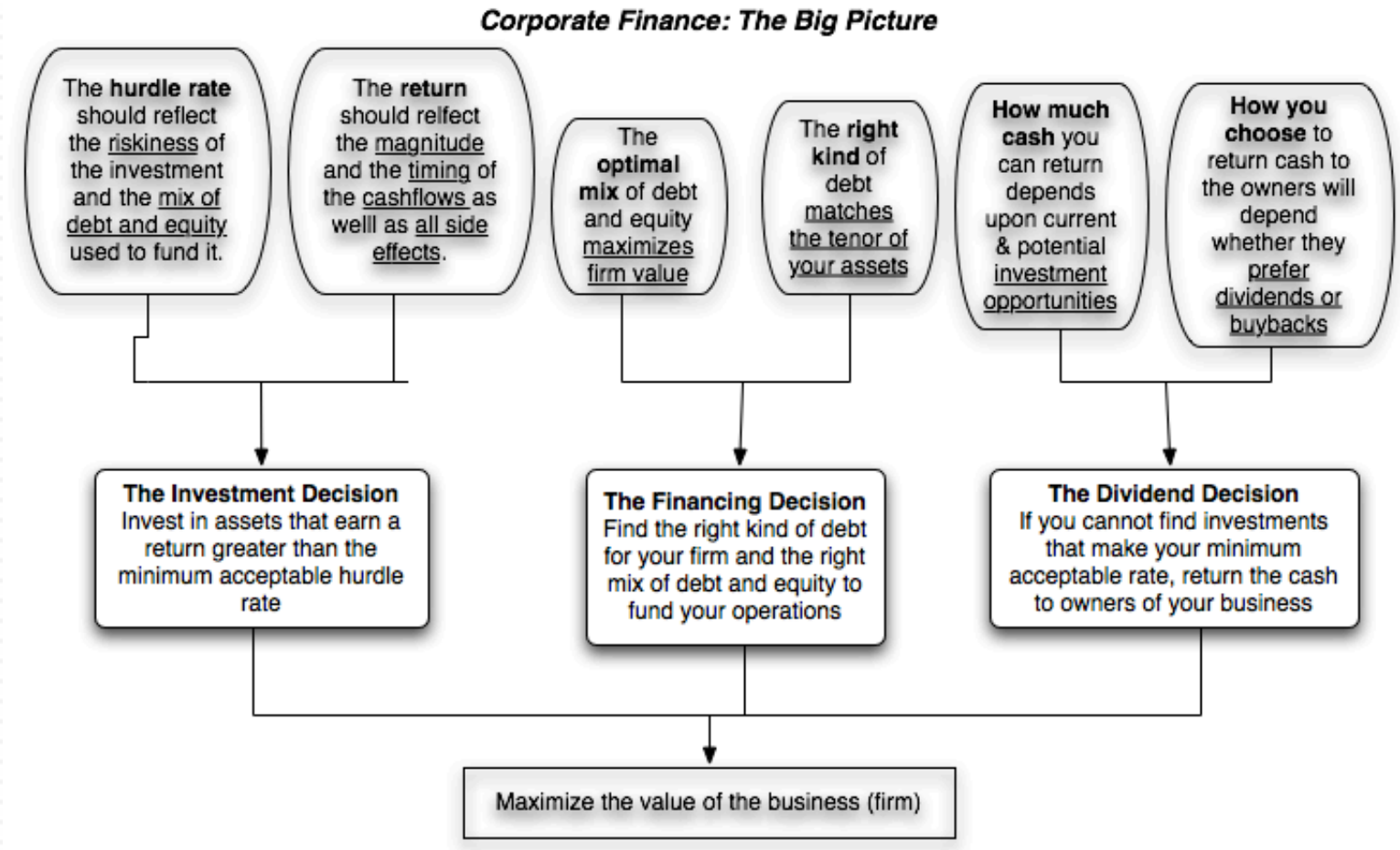
Search Name -- | 21) Save | 22) Delete | 23) Saved Searches | 24) Refine Search

Text Search | Holder Group All Holders | 20) Export

	Holder Name	Portfolio Name	Source	Opt	Amt Held↑	% Out	Latest Chg	File Dt	
			All Sources	All					
1.	GOVERNMENT EMP PENSION	n/a	SJ-REG		71,626,357	11.04	4,546,996	05/31/13	
2.	KONOIL PTY LIMITED	n/a	SJ-REG		53,266,887	8.21	0	05/31/13	
3.	STATE STREET CUSTODIAN	n/a	ULT-AGG		34,397,871	5.30	64,481	05/31/13	
4.	JP MORGAN CUSTODIAN	n/a	SJ-REG		23,794,536	3.67	-731,210	05/31/13	
5.	SASOL INZALO EMPL SCHEME	n/a	SJ-REG		23,339,310	3.60	0	05/31/13	
6.	ALLAN GRAY UNIT TRUSTS M	Multiple Portfolios	MF-AGG		21,599,528	3.33	893,572	03/31/13	
7.	VANGUARD GROUP INC	Multiple Portfolios	MF-AGG		16,425,349	2.53	1,147,782	03/31/13	
8.	OLD MUTUAL	n/a	ULT-AGG		10,649,027	1.64	19,868	05/31/13	
9.	NORTHERN TR AVFC GOVT SI	n/a	SJ-REG		9,716,198	1.50	-65,478	05/31/13	
10.	SASOL INZALO FOUNDATION	n/a	SJ-REG		9,461,882	1.46	0	05/31/13	
11.	BANK OF NEW YORK	n/a	SJ-REG		9,393,175	1.45	325,223	05/31/13	
12.	SASOL INVESTMENT COMPAN	n/a	SJ-REG		8,809,886	1.36	0	05/31/13	
13.	BLACKROCK	n/a	ULT-AGG		8,782,483	1.35	-161,590	07/16/13	
14.	NORGES BANK	Multiple Portfolios	MF-AGG		7,964,184	1.23	0	12/31/12	
15.	CITIBANK LONDON	n/a	SJ-REG		6,952,275	1.07	264,956	05/31/13	
16.	INVESTEC FUND GROUP	Multiple Portfolios	MF-AGG		6,568,869	1.01	1,114,747	03/31/13	
17.	CORONATION ASSET MANAGE	Multiple Portfolios	MF-AGG		6,563,514	1.01	178,971	03/31/13	
18.	SANLAM LIFE INSURANCE LT	n/a	SJ-REG		5,710,033	0.88	38,138	05/31/13	

Loading ..... % Out 93.00 Zoom 100%

First Principles



What is Risk?

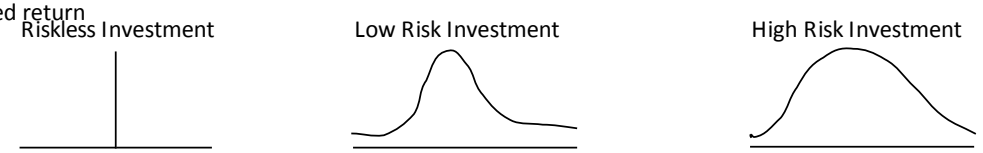
- Risk, in traditional terms, is viewed as a ‘negative’. Webster’s dictionary, for instance, defines risk as “exposing to danger or hazard”. The Chinese symbols for risk, reproduced below, give a much better description of risk

- 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.

Measuring risk to a supremely diversified investor (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

1. If you assume that there are (a) no transactions costs and (b) that no one has the capacity to pick under and over valued stocks, the logical limit of diversification is that you hold a portfolio of every traded asset in the market, held in proportion to its market value.
2. If everyone holds this market portfolio, the risk of any asset will be the risk added to this portfolio, which can be measured statistically as the covariance of the asset with the market portfolio.
3. Dividing the covariance of every asset by the variance of the overall market yields a standardized measure (around one) of this added risk, called the beta.

Expected Return = Risk free rate + Beta of the investment (Expected risk premium for investing in the market portfolio)

Inputs required to use the CAPM

Expected Return on a Risky Investment

=

Risk free Rate
Rate of return on a long term, default free bond.

+

Beta
Relative measure of risk added to a diversified portfolio.

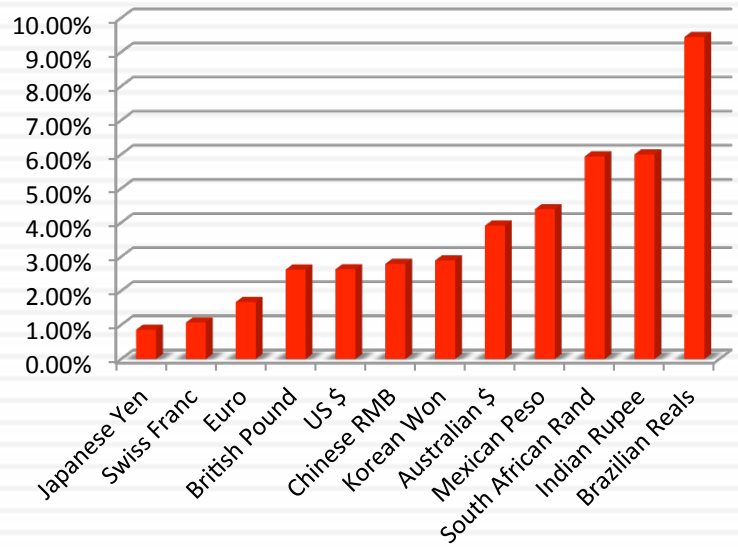
X

Equity Risk Premium
Premium investors demand over and above the risk free rate for investing in equities as a class.

What is the riskfree rate?

When we use the T.Bond rate as a riskfree rate in US dollars, what are we assuming about the default risk in the US Treasury? Is that reasonable? What if it is not?

Risk free Rates by Currency: July 2013



The South African government had 10-year bonds outstanding, with a yield to maturity of about 7.64% on July 1, 2013. At the time, the South African government had a local currency sovereign rating of Baa1. The typical default spread for A3 rated country bonds in July 2013 was 1.70%. The riskfree rate in South African Rand is

a. The yield to maturity on the 10-year bond (7.64%)
b. The yield to maturity on the 10-year bond + Default spread (9.34%)
c. The yield to maturity on the 10-year bond – Default spread (5.94%)

What is the equity risk premium?

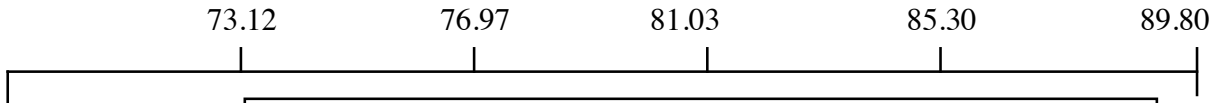
	Arithmetic Average		Geometric Average	
	Stocks - T. Bills	Stocks - T. Bonds	Stocks - T. Bills	Stocks - T. Bonds
1928-2012	7.65%	5.88%	5.74%	4.20%
	2.20%	2.33%		
1962-2012	5.93%	3.91%	4.60%	2.93%
	2.38%	2.66%		
2002-2012	7.06%	3.08%	5.38%	1.71%
	5.82%	8.11%		

← *Historical premium*

In 2012, the actual cash returned to stockholders was 72.25. Using the average total yield for the last decade yields 69.46

Analysts expect earnings to grow 7.67% in 2013, 7.28% in 2014, scaling down to 1.76% in 2017, resulting in a compounded annual growth rate of 5.27% over the next 5 years. We will assume that dividends & buybacks will tgrow 5.27% a year for the next 5 years.

After year 5, we will assume that earnings on the index will grow at 1.76%, the same rate as the entire economy (= riskfree rate).



$$1426.19 = \frac{73.12}{(1+r)} + \frac{76.97}{(1+r)^2} + \frac{81.03}{(1+r)^3} + \frac{85.30}{(1+r)^4} + \frac{89.80}{(1+r)^5} + \frac{89.80(1.0176)}{(r-.0176)(1+r)^5}$$

January 1, 2013
S&P 500 is at 1426.19
Adjusted Dividends & Buybacks for base year = 69.46

Expected Return on Stocks (1/1/13) = 7.54%
T.Bond rate on 1/1/13 = 1.76%
Equity Risk Premium = 7.54% - 1.76% = 5.78%

Data Sources:
Dividends and Buybacks last year: S&P
Expected growth rate: S&P, Media reports, Factset, Thomson-Reuters

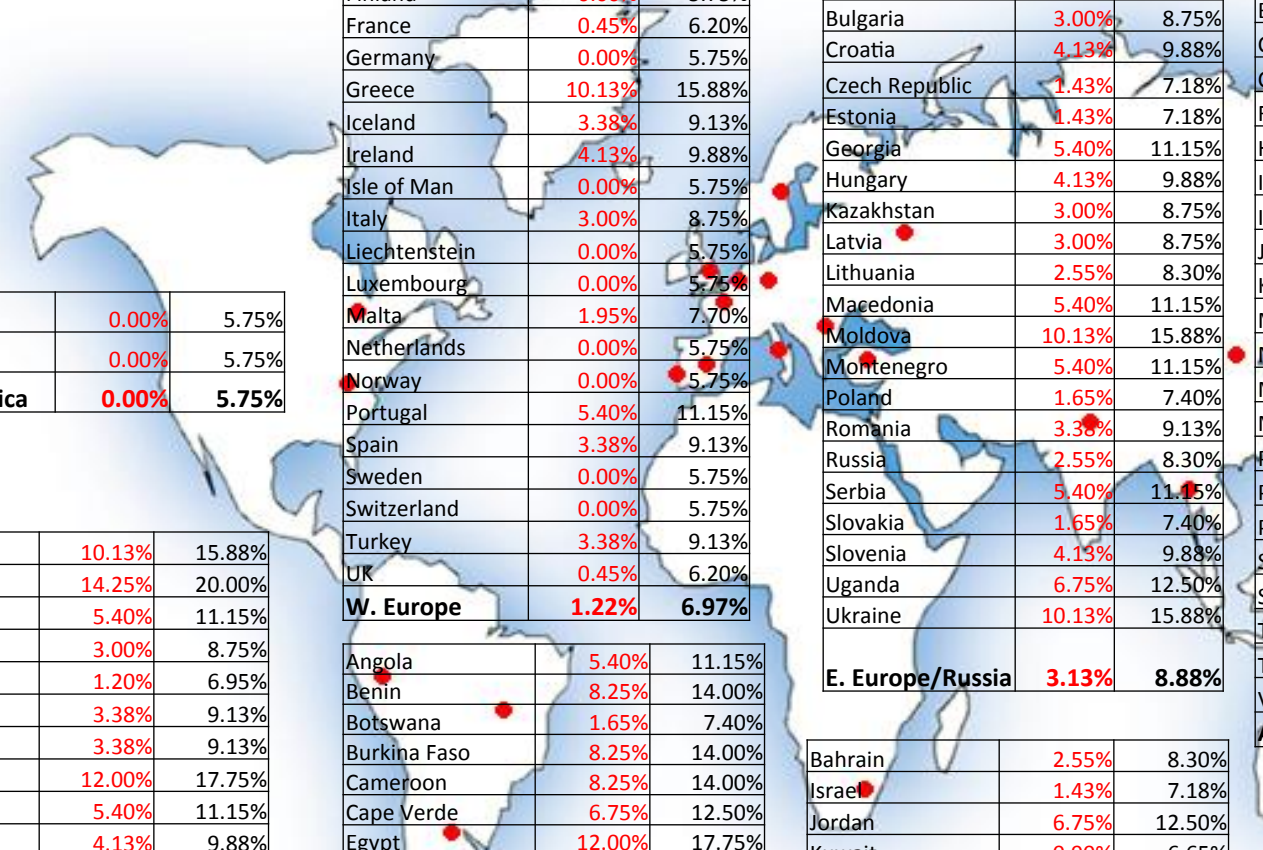
Country Risk: Look at a country's bond rating and default spreads as a start

- 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 July 2013, the local currency rating, from Moody's, for South Africa was Baa1. 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. South Africa had a CDS spread of 2.91%.
  - You can use the typical spread for the rating, based upon other rated countries, to estimate a spread for the country. In July 2013, this would have yielded 1.80%.
- 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 7.45 for South Africa, if we use 5.75% 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 South Africa in July 2013
  - Standard Deviation in JSE = 21%
  - Standard Deviation in South African government Bond = 14%
  - Default spread on Bond = 1.70%
  - Country Risk Premium (CRP) for South Africa= 1.70% (21%/14%) = 2.55%
  - Total Risk Premium for South Africa= US risk premium (in 7/13) + CRP
    = 5.75% + 2.55% = 8.30%

Country Risk Premiums
July 2013



Canada	0.00%	5.75%
United States	0.00%	5.75%
North America	**0.00%**	**5.75%**

Argentina	10.13%	15.88%
Belize	14.25%	20.00%
Bolivia	5.40%	11.15%
Brazil	3.00%	8.75%
Chile	1.20%	6.95%
Colombia	3.38%	9.13%
Costa Rica	3.38%	9.13%
Ecuador	12.00%	17.75%
El Salvador	5.40%	11.15%
Guatemala	4.13%	9.88%
Honduras	8.25%	14.00%
Mexico	2.55%	8.30%
Nicaragua	10.13%	15.88%
Panama	3.00%	8.75%
Paraguay	5.40%	11.15%
Peru	3.00%	8.75%
Suriname	5.40%	11.15%
Uruguay	3.38%	9.13%
Venezuela	6.75%	12.50%
Latin America	**3.94%**	**9.69%**

Andorra	1.95%	7.70%
Austria	0.00%	5.75%
Belgium	1.20%	6.95%
Cyprus	16.50%	22.25%
Denmark	0.00%	5.75%
Finland	0.00%	5.75%
France	0.45%	6.20%
Germany	0.00%	5.75%
Greece	10.13%	15.88%
Iceland	3.38%	9.13%
Ireland	4.13%	9.88%
Isle of Man	0.00%	5.75%
Italy	3.00%	8.75%
Liechtenstein	0.00%	5.75%
Luxembourg	0.00%	5.75%
Malta	1.95%	7.70%
Netherlands	0.00%	5.75%
Norway	0.00%	5.75%
Portugal	5.40%	11.15%
Spain	3.38%	9.13%
Sweden	0.00%	5.75%
Switzerland	0.00%	5.75%
Turkey	3.38%	9.13%
UK	0.45%	6.20%
W. Europe	**1.22%**	**6.97%**

Angola	5.40%	11.15%
Benin	8.25%	14.00%
Botswana	1.65%	7.40%
Burkina Faso	8.25%	14.00%
Cameroon	8.25%	14.00%
Cape Verde	6.75%	12.50%
Egypt	12.00%	17.75%
Gabon	5.40%	11.15%
Ghana	6.75%	12.50%
Kenya	6.75%	12.50%
Morocco	4.13%	9.88%
Mozambique	6.75%	12.50%
Namibia	3.38%	9.13%
Nigeria	5.40%	11.15%
Rwanda	8.25%	14.00%
Senegal	6.75%	12.50%
South Africa	2.55%	8.30%
Tunisia	4.73%	10.48%
Zambia	6.75%	12.50%
Africa	**5.90%**	**11.65%**

Albania	6.75%	12.50%
Armenia	4.73%	10.48%
Azerbaijan	3.38%	9.13%
Belarus	10.13%	15.88%
Bosnia	10.13%	15.88%
Bulgaria	3.00%	8.75%
Croatia	4.13%	9.88%
Czech Republic	1.43%	7.18%
Estonia	1.43%	7.18%
Georgia	5.40%	11.15%
Hungary	4.13%	9.88%
Kazakhstan	3.00%	8.75%
Latvia	3.00%	8.75%
Lithuania	2.55%	8.30%
Macedonia	5.40%	11.15%
Moldova	10.13%	15.88%
Montenegro	5.40%	11.15%
Poland	1.65%	7.40%
Romania	3.38%	9.13%
Russia	2.55%	8.30%
Serbia	5.40%	11.15%
Slovakia	1.65%	7.40%
Slovenia	4.13%	9.88%
Uganda	6.75%	12.50%
Ukraine	10.13%	15.88%
E. Europe/Russia	**3.13%**	**8.88%**

Bahrain	2.55%	8.30%
Israel	1.43%	7.18%
Jordan	6.75%	12.50%
Kuwait	0.90%	6.65%
Lebanon	6.75%	12.50%
Oman	1.43%	7.18%
Qatar	0.90%	6.65%
Saudi Arabia	1.20%	6.95%
UAE	0.90%	6.65%
Middle East	**1.38%**	**7.13%**

Bangladesh	5.40%	11.15%
Cambodia	8.25%	14.00%
China	1.20%	6.95%
Fiji	6.75%	12.50%
Hong Kong	0.45%	6.20%
India	3.38%	9.13%
Indonesia	3.38%	9.13%
Japan	1.20%	6.95%
Korea	1.20%	6.95%
Macao	1.20%	6.95%
Malaysia	1.95%	7.70%
Mauritius	2.55%	8.30%
Mongolia	6.75%	12.50%
Pakistan	12.00%	17.75%
Papua NG	6.75%	12.50%
Philippines	4.13%	9.88%
Singapore	0.00%	5.75%
Sri Lanka	6.75%	12.50%
Taiwan	1.20%	6.95%
Thailand	2.55%	8.30%
Vietnam	8.25%	14.00%
Asia	**1.77%**	**7.52%**

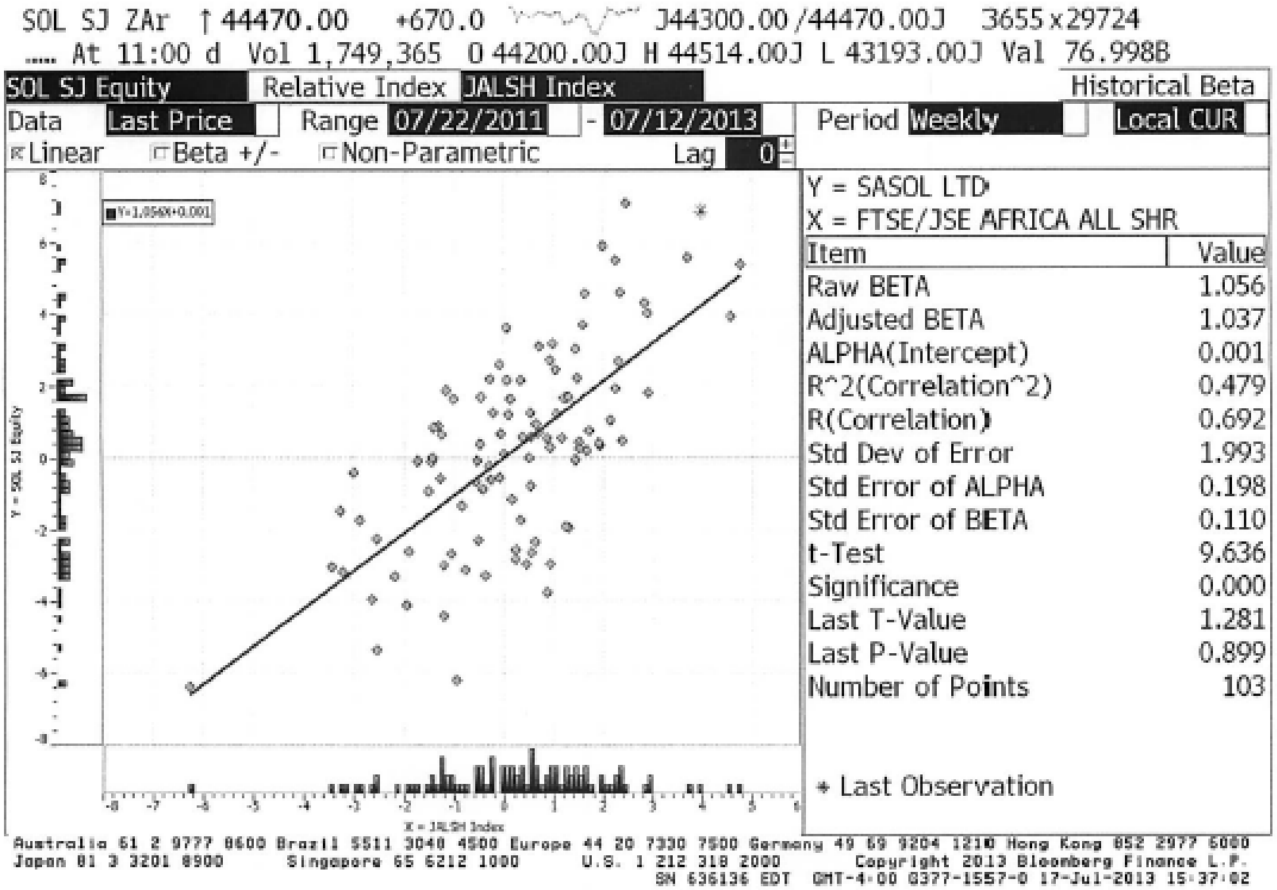
Australia	0.00%	5.75%
Cook Islands	6.75%	12.50%
New Zealand	0.00%	5.75%
Australia & NZ	**0.00%**	**5.75%**

Black #: Total ERP
Red #: Country risk premium
AVG: GDP weighted average

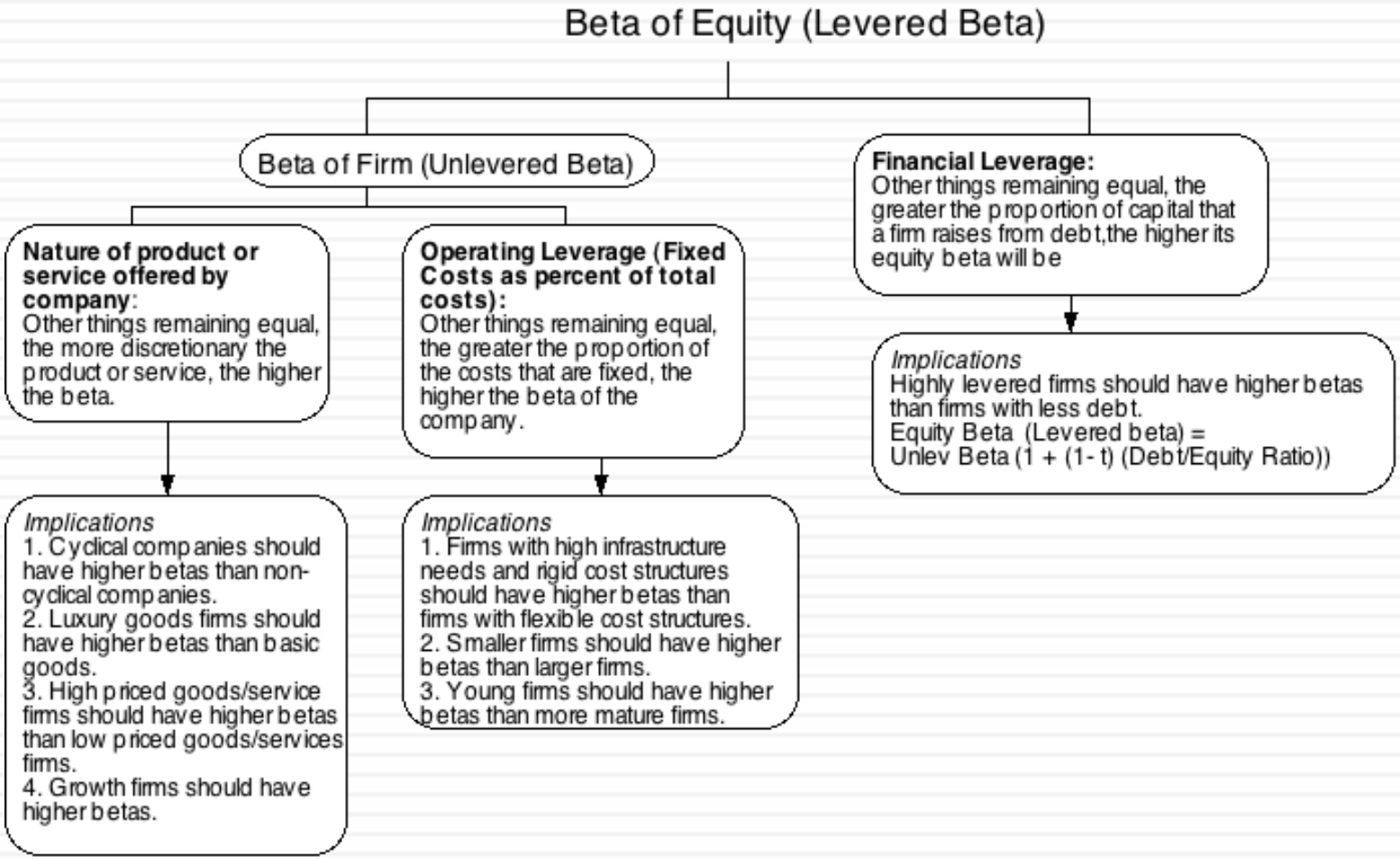
Country risk derives from operations, not where you are incorporated.. Sasol's ERP

Region/Country	*Revenues*	*Weight*	*ERP*
South Africa	R 84,100.00	49.62%	8.30%
Europe	R 38,900.00	22.95%	6.97%
North America	R 18,200.00	10.74%	5.75%
Asia	R 13,500.00	7.96%	7.52%
Rest of Africa	R 14,800.00	8.73%	12.93%
	R 169,500.00	100.00%	8.06%

Estimating Beta: The Regression Approach



Determinants of Betas



Bottom up beta for SASOL

Sasol is in two businesses, oil and chemicals, and it is an emerging market company. I used the average unlevered beta of emerging market oil and chemical companies.

Business	*Revenues*	*EV/Sales*	*Estimated Value*	*Weight*	*Unlevered Beta*	*D/E ratio*	*Levered Beta*
Oil	$95.00	0.75	$71.25	45.89%	1.06	10.94%	1.14
Chemicals	$75.00	1.12	$84.00	54.11%	1.15	10.94%	1.23
Sasol	**$170.00**		**$155.25**	**100.00%**	**1.11**	**10.94%**	**1.19**

Sasol's D/E ratio
= 31,563/ 288,553
= 10.94%

Marginal tax rate for South Africa
= 34.55%

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 Sasol,
  - Interest coverage ratio

    = Operating Income/ Interest Expense

    = 35722/2091= 17.08

Interest Coverage Ratios, Ratings and Default Spreads

If interest coverage ratio is			
>	*≤ to*	*Rating is*	*Spread is*
8.50	100000	AAA	0.40%
6.5	8.499999	AA	0.70%
5.5	6.499999	A+	0.85%
4.25	5.499999	A	1.00%
3	4.249999	A-	1.30%
2.5	2.999999	BBB	2.00%
2.25	2.49999	BB+	3.00%
2	2.2499999	BB	4.00%
1.75	1.999999	B+	5.50%
1.5	1.749999	B	6.50%
1.25	1.499999	B-	7.25%
0.8	1.249999	CCC	8.75%
0.65	0.799999	CC	9.50%
0.2	0.649999	C	10.50%
-100000	0.199999	D	12.00%

Sasol: Market Cap>$5 billion: 17.08 → AAA

Cost of debt = 5.94% + 1.70% (Country default spread) + 0.40%= 8.04%

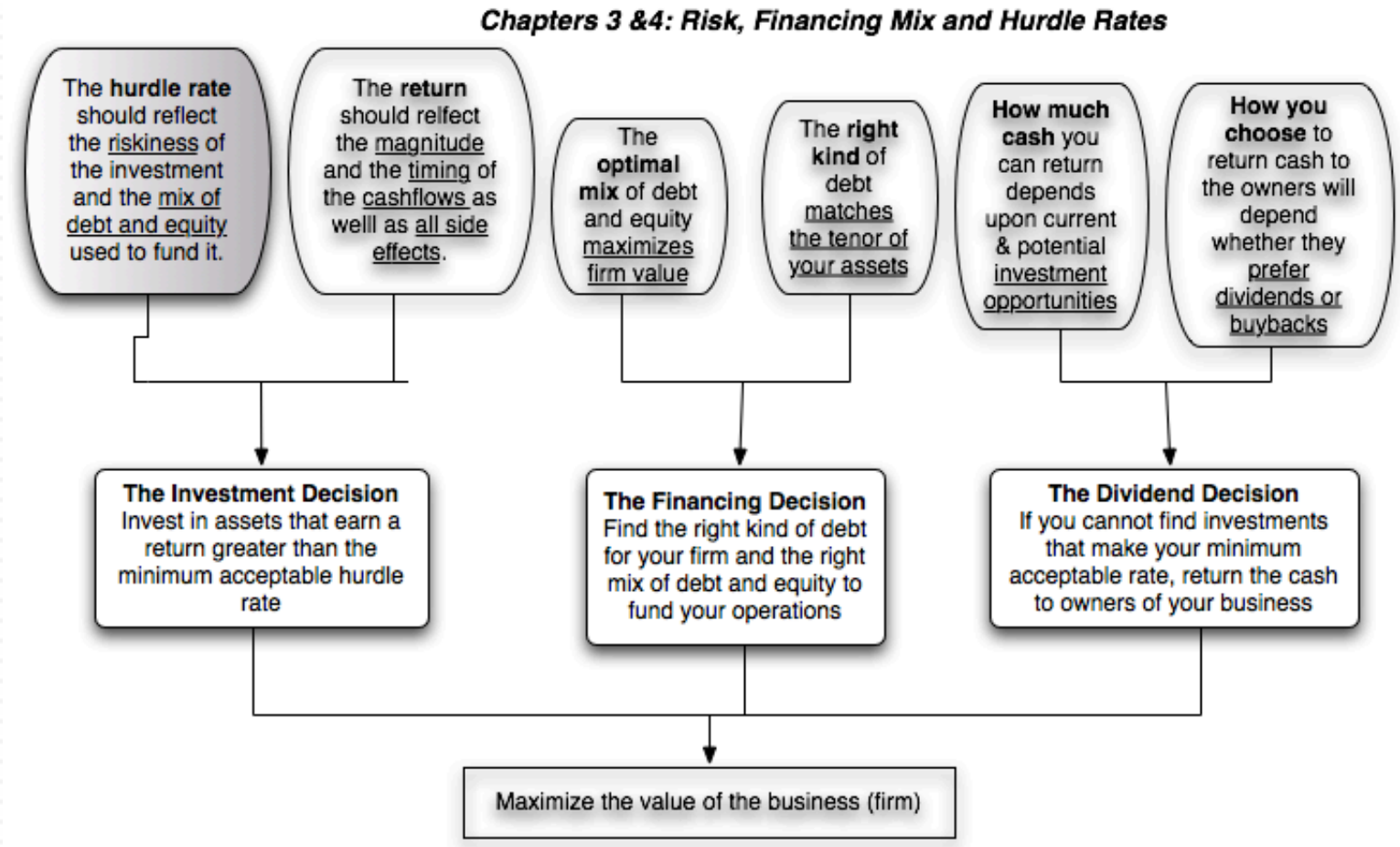
Current Cost of Capital for Sasol

- Equity
  - Cost of Equity = Riskfree rate + Beta * Risk Premium
    = 5.94% + 1.19 (8.06%) = 15.53 %
  - Market Value of Equity = 288,553 million ZAR
  - Equity/(Debt+Equity) = 90.14%
- Debt
  - After-tax Cost of debt

  =(Riskfree rate + Country Spread+ Company Spread) (1-t)

  = (5.94%+1.70%+0.40%) (1-.3455) = 5.26%
  - Market Value of Debt = 31,563 million ZAR
  - Debt/(Debt +Equity) = 9.86%
- Cost of Capital = 15.53%(.9014)+ 5.26%(.0986) = 14.52%

Back to First Principles



Measuring Returns Right: The Basic Principles

1. Use cash flows rather than earnings. You cannot spend earnings.
2. 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.
3. 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"

Example: Sasol's proposed ethane cracker/ gas plant in Louisiana

- Sasol is proposing investing $7.5 billion in a new ethane cracker plant in Westlake, Louisiana. It will take three years to get the plant operating.
- The plant is expected to generate 1.5 million tons of ethylene each year for 25 years. The price per ton of ethylene currently is $1,400.
- The EBITDA margin is expected to be 40% and the tax rate is 34.55%.
- At the end of year 25, the plant will be shut down and the salvage value is $ 2.5 billion. It will be depreciated straight line for 25 years.

Average Annual Earnings and Return on Capital from the plant

Revenues	$2,100
EBITDA	$945
DA	$500
EBIT	$445
Taxes	$154
EBIT (1-t)	$291
Average investment	$5,000
ROIC	5.83%

Cost of capital for the plant

- The cost of capital will be computed in US dollars, since the earnings and cash flows for the plant will be in US $.
  - Cost of equity
    - Risk free rate = 2.5% (US ten-year T.Bond rate)
    - Beta = 1.14 (Beta for oil business)
    - Equity risk premium = 5.75% (revenues will be in US)
    - Cost of equity = 2.5% + 1.14 (5.75%) = 9.06%
  - Cost of debt = (2.5%+ 1.7%+.4%)(1 -.3455) = 3.01%
  - Cost of capital = 9.06% (.9014)+ 3.01%(.0986) = 8.46%

From annual earnings to annual cash flows, and on to NPV

EBIT (1-t)	$291
+ Depreciation	$500
Cash flow	$791

Initial investment	-7500
Salvage value	2500

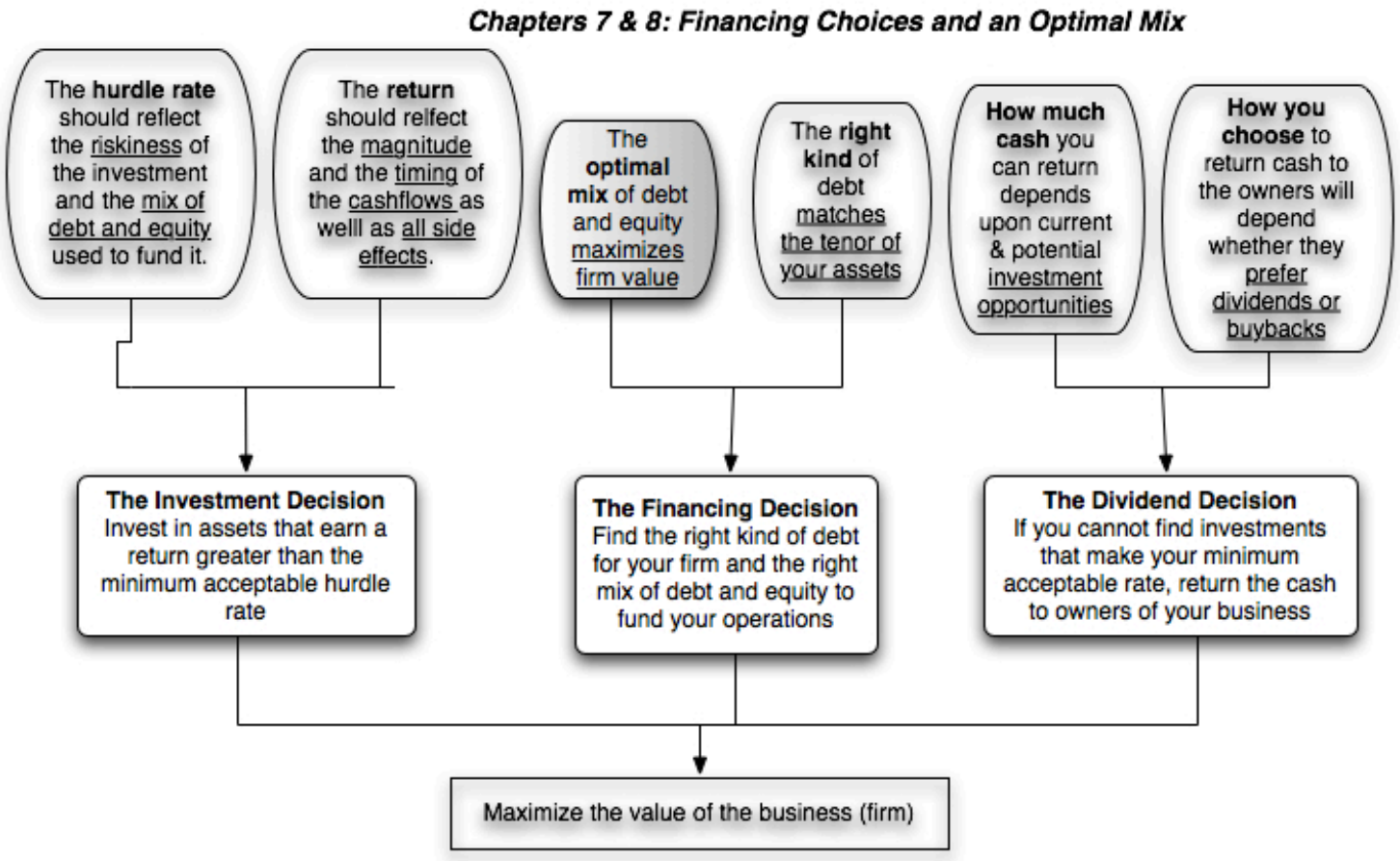
NPV =	$954

NPV = -7500 + $791 (PV of annuity, 25 years, 8.46%)+$2500 (PV of FV, 25 years, 8.46%) = $ 954 million

Looking at Sasol's existing investments

- The return on capital for the entire company can be computed using the most recent year's numbers:
  - Operating income most recent year = 35,722 million ZAR
  - Effective tax rate = 31.79%
  - Invested Capital last year = Debt + Equity – Cash = =13,088+128,314- 13,172 = 128,230 million ZAR
  - ROIC = 35,722 (1-.3179)/128,230 = 18.56%
- The cost of capital for the company is 14.52%.
  - Excess return = 18.56% - 14.52% = 4.04%
  - The excess returns are positive. What is the source or sources of these excess returns?

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. *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. *Implication:* *1. Firms with more stable earnings should borrow more, for any given level of earnings.* *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. *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). *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. *Implication:* 1. *Firms that can forecast future funding needs better should be able to borrow more.* 2. *Firms with better access to capital markets should be more willing to borrow more today.*

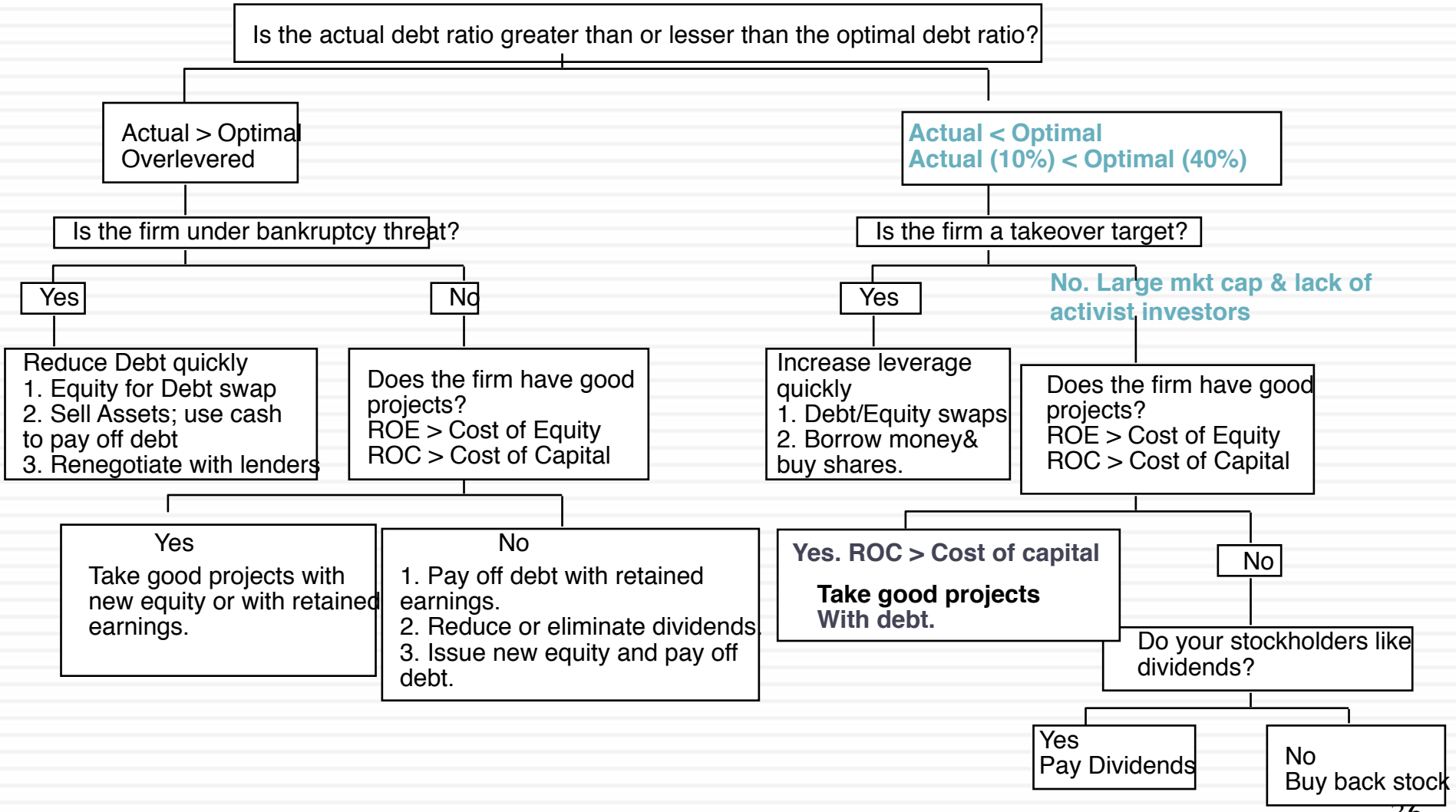
Sasol: Optimal Capital Structure

The current debt ratio for Sasol is approximately 10% and it has a cost of capital of 14.52%.

Debt Ratio	Beta	Cost of Equity	Bond Rating	Interest rate on debt	Tax Rate	Cost of Debt (after-tax)	WACC	Firm Value (G)
0%	1.11	14.91%	Aaa/AAA	8.04%	34.55%	5.26%	14.91%	$306,160
10%	1.19	15.56%	Aaa/AAA	8.04%	34.55%	5.26%	14.53%	$319,617
20%	1.30	16.38%	Aa2/AA	8.34%	34.55%	5.46%	14.20%	$332,722
30%	1.43	17.43%	A3/A-	8.94%	34.55%	5.85%	13.96%	$342,698
40%	1.60	18.83%	Baa2/BBB	9.64%	34.55%	6.31%	13.82%	$348,596
50%	1.84	20.78%	B2/B	14.14%	34.55%	9.25%	15.02%	$302,541
60%	2.21	23.72%	C2/C	16.39%	34.55%	10.73%	15.92%	$275,118
70%	2.83	28.79%	C2/C	16.39%	33.73%	10.86%	16.24%	$266,704
80%	4.25	40.21%	C2/C	16.39%	29.51%	11.55%	17.28%	$242,137
90%	8.62	75.41%	Ca2/CC	17.14%	25.08%	12.84%	19.10%	$208,778

The optimal debt ratio for Sasol is approximately 40%, where it's cost of capital is 13.82%. Specifically, this will require that Sasol quadruple its debt and pay a special dividend.

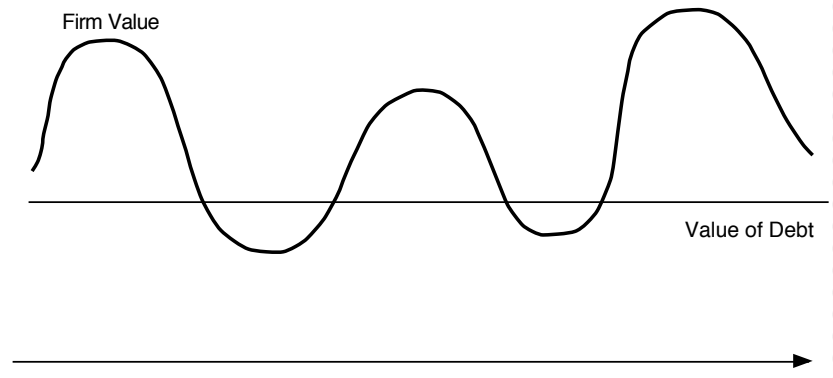
Sasol: Applying the Framework



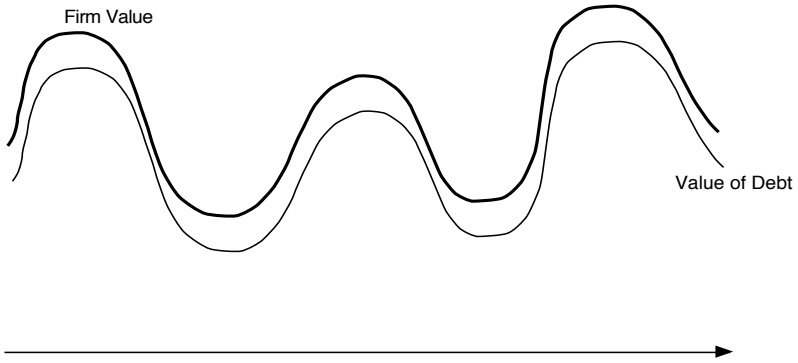
Designing Debt: The Fundamental Principle

- 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

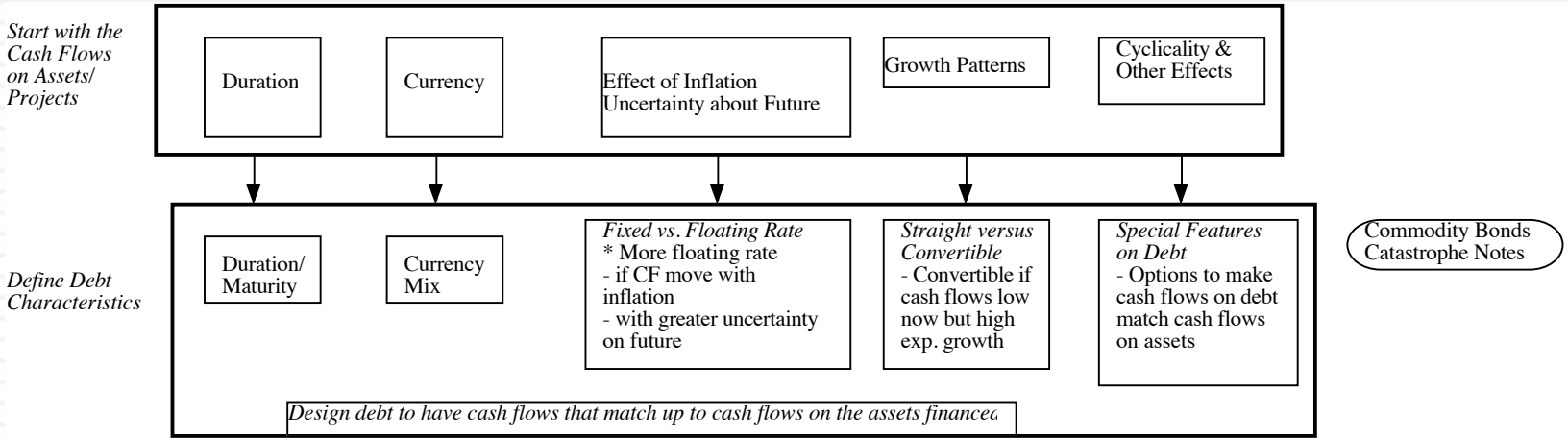


Matched Debt



Customized Financing

- The perfect financing instrument will
  - Have all of the tax advantages of debt
  - While preserving the flexibility offered by equity

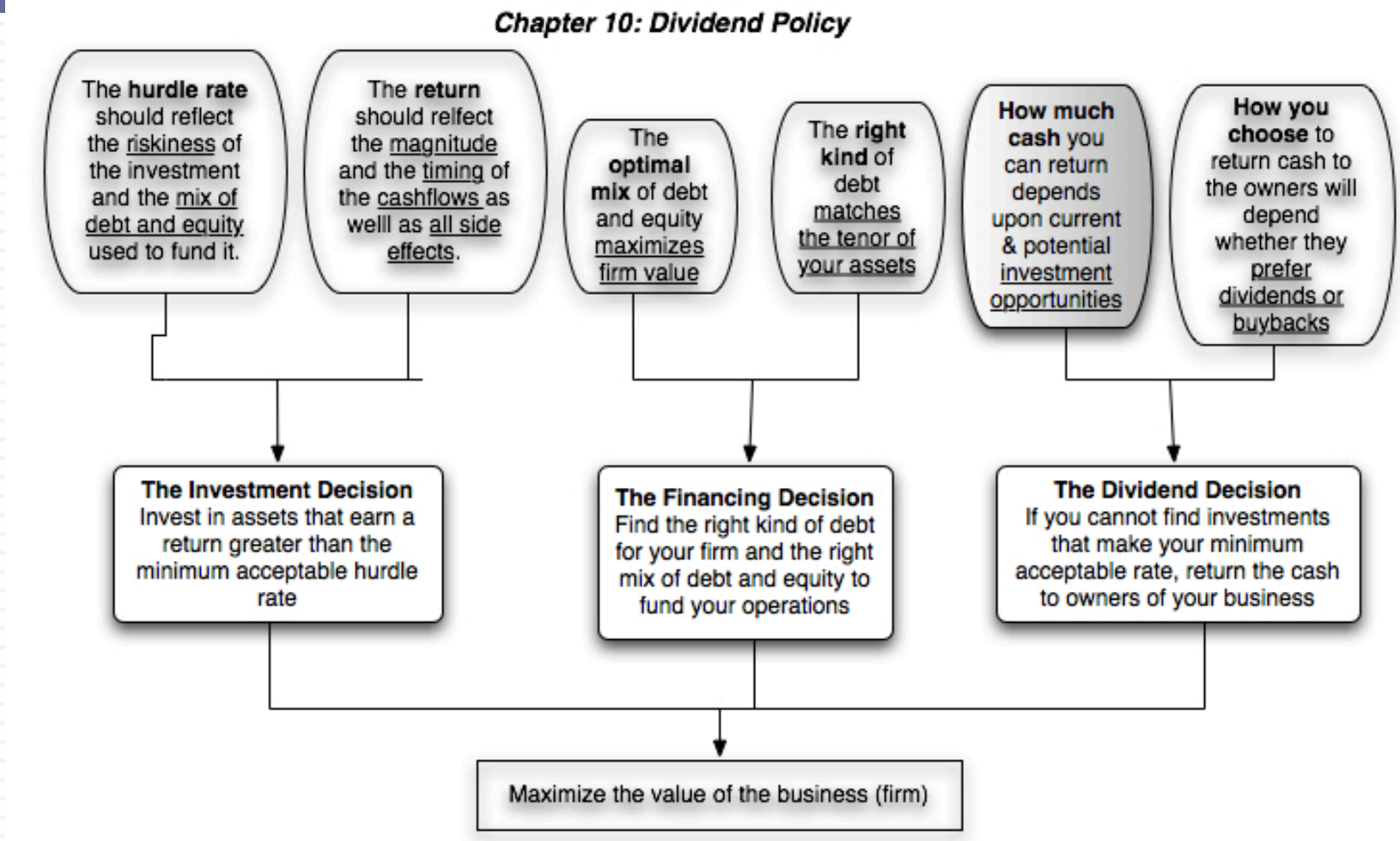


Sasol's perfect debt

- Duration: Projects are typically long term, with long gestation periods where cash flows are negative.
- Currency: The currency will depend upon the part where the project is located. Since Sasol operates across the globe, the overall debt in the firm should reflect its global mix.
- Pricing power: Sasol operates in businesses where the products are commodities. It has little pricing power.
- Growth potential: Sasol is a mature company.

Bottom line: The right debt for Sasol is long term, fixed rate, multi-currency, straight debt.

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 Sasol, we obtain the following

Year	Dividends	Buybacks	Cash returned
2006	R 3,660.00	R 0.00	R 3,660.00
2007	R 4,613.00	R 3,669.00	R 8,282.00
2008	R 5,766.00	R 7,300.00	R 13,066.00
2009	R 7,776.00	R 1,114.00	R 8,890.00
2010	R 5,678.00	R 0.00	R 5,678.00
2011	R 7,033.00	R 0.00	R 7,033.00
2012	R 11,171.00	R 0.00	R 11,171.00
2006-2102	**R 45,697.00**	**R 12,083.00**	**R 57,780.00**

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

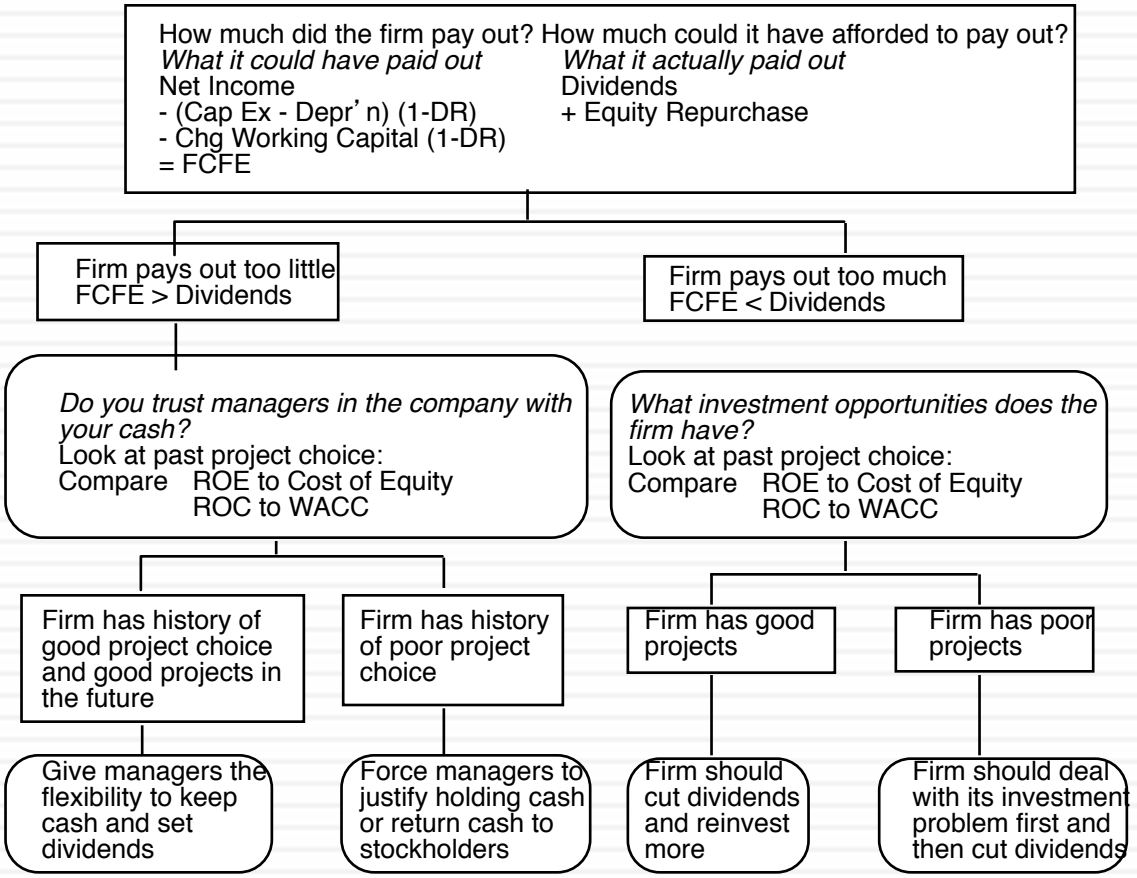
  + Proceeds from New Debt Issues

  = Free Cash flow to Equity

Sasol's FCFE

Year	Net Income	Depreciation	Cap Ex	Chg in WC	Chg in Debt	FCFE
2006	R 10,406.00	R 4,268.00	R 13,269.00	R 3,749.00	-R 1,362.00	-R 3,706.00
2007	R 17,636.00	R 4,015.00	R 12,023.00	R 1,259.00	R 1,341.00	R 9,710.00
2008	R 22,417.00	R 5,212.00	R 10,878.00	R 7,404.00	-R 1,278.00	R 8,069.00
2009	R 13,648.00	R 6,245.00	R 15,546.00	R 10,993.00	R 210.00	-R 6,436.00
2010	R 15,941.00	R 6,712.00	R 16,057.00	R 3,424.00	-R 2,685.00	R 487.00
2011	R 19,794.00	R 7,400.00	R 20,665.00	R 2,379.00	R 531.00	R 4,681.00
2012	R 21,846.00	R 10,703.00	R 28,921.00	R 2,271.00	R 13,558.00	R 14,915.00
2006-2102	**R 121,688.00**	**R 44,555.00**	**R 117,359.00**	**R 31,479.00**	**R 10,315.00**	**R 27,720.00**

A Practical Framework for Analyzing Dividend Policy



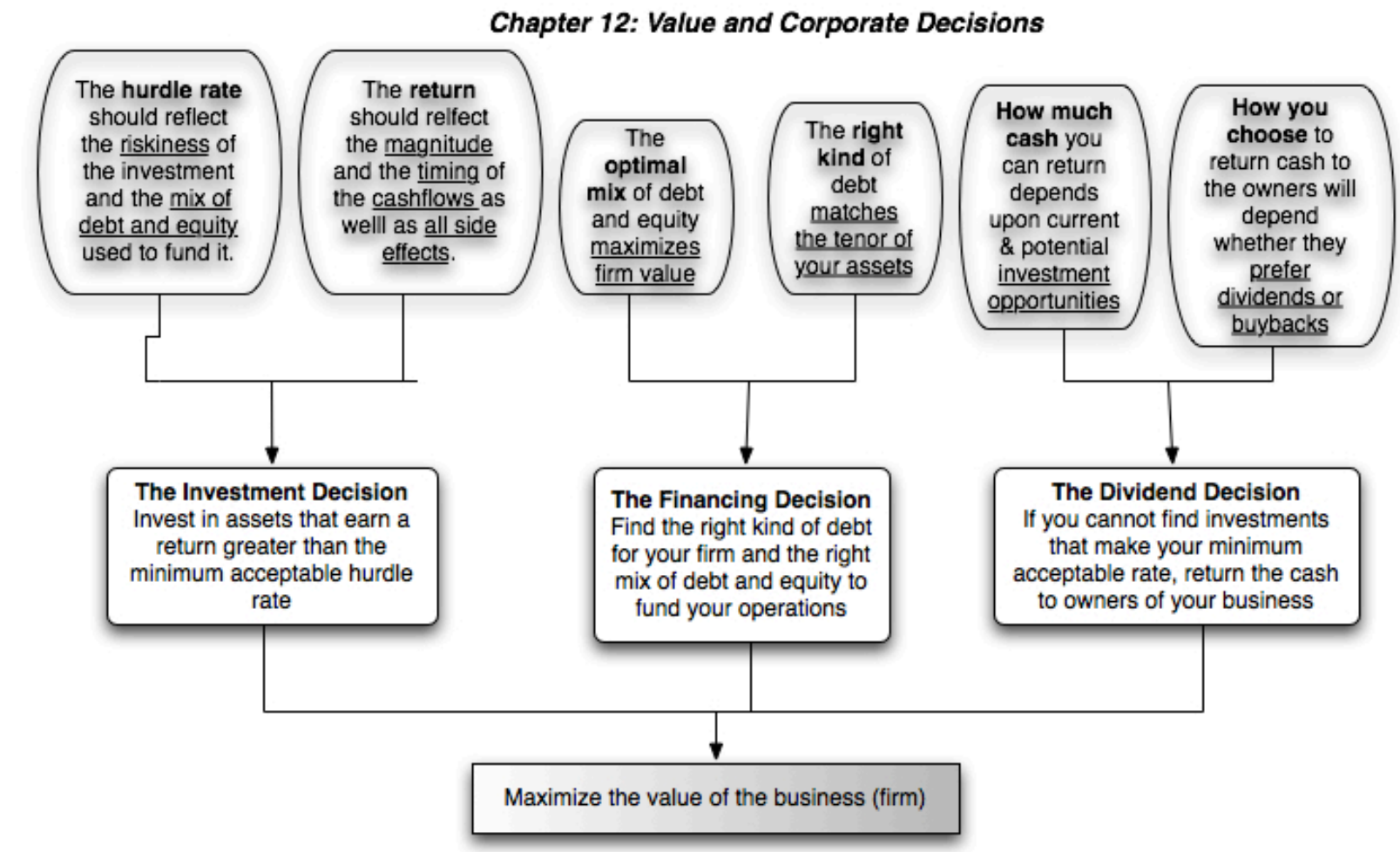
Sasol: Making your assessment

- Sasol has been returning far more cash than it has available in FCFE over time.

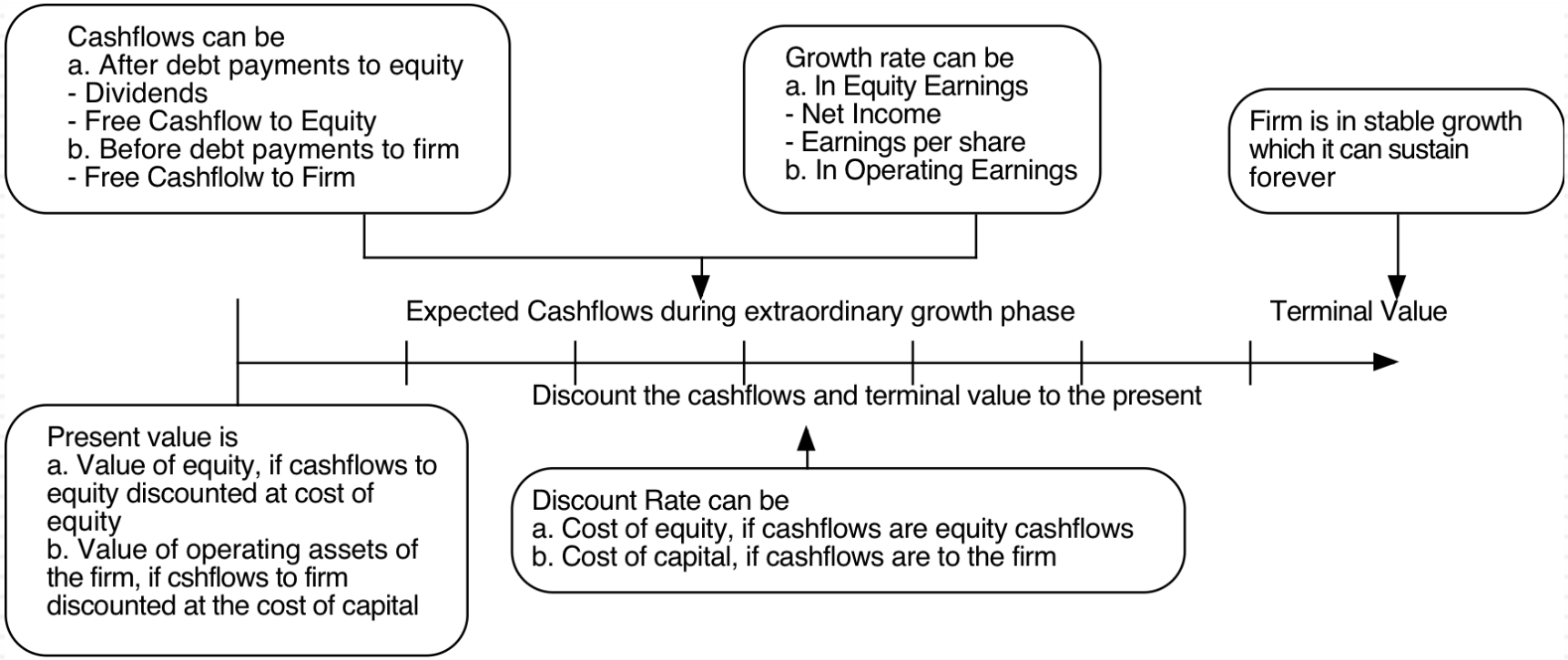
Year	Cash returned	FCFE
2006	R 3,660.00	-R 3,706.00
2007	R 8,282.00	R 9,710.00
2008	R 13,066.00	R 8,069.00
2009	R 8,890.00	-R 6,436.00
2010	R 5,678.00	R 487.00
2011	R 7,033.00	R 4,681.00
2012	R 11,171.00	R 14,915.00
2006-2102	**R 57,780.00**	**R 27,720.00**

- Do you agree with this policy?
  - If yes, how can you sustain it?
  - If not, how can you change it?

First Principles



The Ingredients that determine value.



Sasol: My valuation (July 2013)

	Company	Industry (US)	Industry (Global)
Revenues	$171,583		
Operating income	$ 35,722		
Revenue growth=	1.26%	24.94%	14.00%
Operating margin	20.82%	11.99%	10.78%
Sales to capital =	1.19	2.03	1.69
ROIC =	18.56%	14.65%	12.65%

Revenue growth of **7%** a year for 5 years, tapering down to 5.94% in year 10

Pre-tax operating margin stays at 20.82**%** over time.

Sales to capital ratio stays at 1.19 for next 10 years

Stable Growth
g = 5.94%; Beta = 1.00;
Cost of capital = 9%
ROC= 9%;
Reinvestment Rate=5.94%/9% = 66%

Terminal Value$_{10}$= 16,079/(.09-.0594) = 525,468

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
Revenue growth rate	7.00%	7.00%	7.00%	7.00%	7.00%	6.79%	6.58%	6.36%	6.15%	5.94%
Revenues	$183,593.81	$196,445.38	$210,196.55	$224,910.31	$240,654.03	$256,989.63	$273,889.27	$291,319.58	$309,241.56	$327,610.51
EBIT (Operating) margin	20.82%	20.82%	20.82%	20.82%	20.82%	20.82%	20.82%	20.82%	20.82%	20.82%
EBIT (Operating income)	$ 38,222.54	$ 40,898.12	$ 43,760.99	$ 46,824.26	$ 50,101.95	$ 53,502.87	$ 57,021.22	$ 60,650.05	$ 64,381.24	$ 68,205.49
Tax rate	31.79%	31.79%	31.79%	31.79%	31.79%	32.34%	32.89%	33.45%	34.00%	34.55%
EBIT(1-t)	$ 26,071.59	$ 27,896.61	$ 29,849.37	$ 31,938.82	$ 34,174.54	$ 36,198.97	$ 38,264.66	$ 40,365.04	$ 42,492.91	$ 44,640.49
- Reinvestment	$ 10,078.39	$ 10,783.88	$ 11,538.75	$ 12,346.46	$ 13,210.71	$ 13,707.36	$ 14,180.65	$ 14,625.95	$ 15,038.51	$ 15,413.57
FCFF	$ 15,993.20	$ 17,112.73	$ 18,310.62	$ 19,592.36	$ 20,963.83	$ 22,491.61	$ 24,084.01	$ 25,739.09	$ 27,454.40	$ 29,226.93

Term yr	
EBIT (1-t)	47,292
- Reinv	31,213
FCFF	16,079

Operating assets	264.714
+ Cash	23,248
- Debt	31,503
- Minority Interests	3,294
Value of equity	253,165
/ No of shares	648.87
Value/share	390.16

Cost of capital = 15.53% (.901) + 5.26% (.099) = 14.52%

Cost of capital decreases to 9% from years 6-10

Cost of Equity
15.53%

Cost of Debt
Bond rating: AAA (Synthetic)
(5.94%+1.7%+0.4%)(1-.3455) = 5.26%

Weights
E = 90.1% D = 9.9%

In July 2013, the stock was trading at 445/share.

Riskfree Rate:
Riskfree rate = 5.94%

+

Beta
1.19

Unlevered Beta for Businesses: 1.11

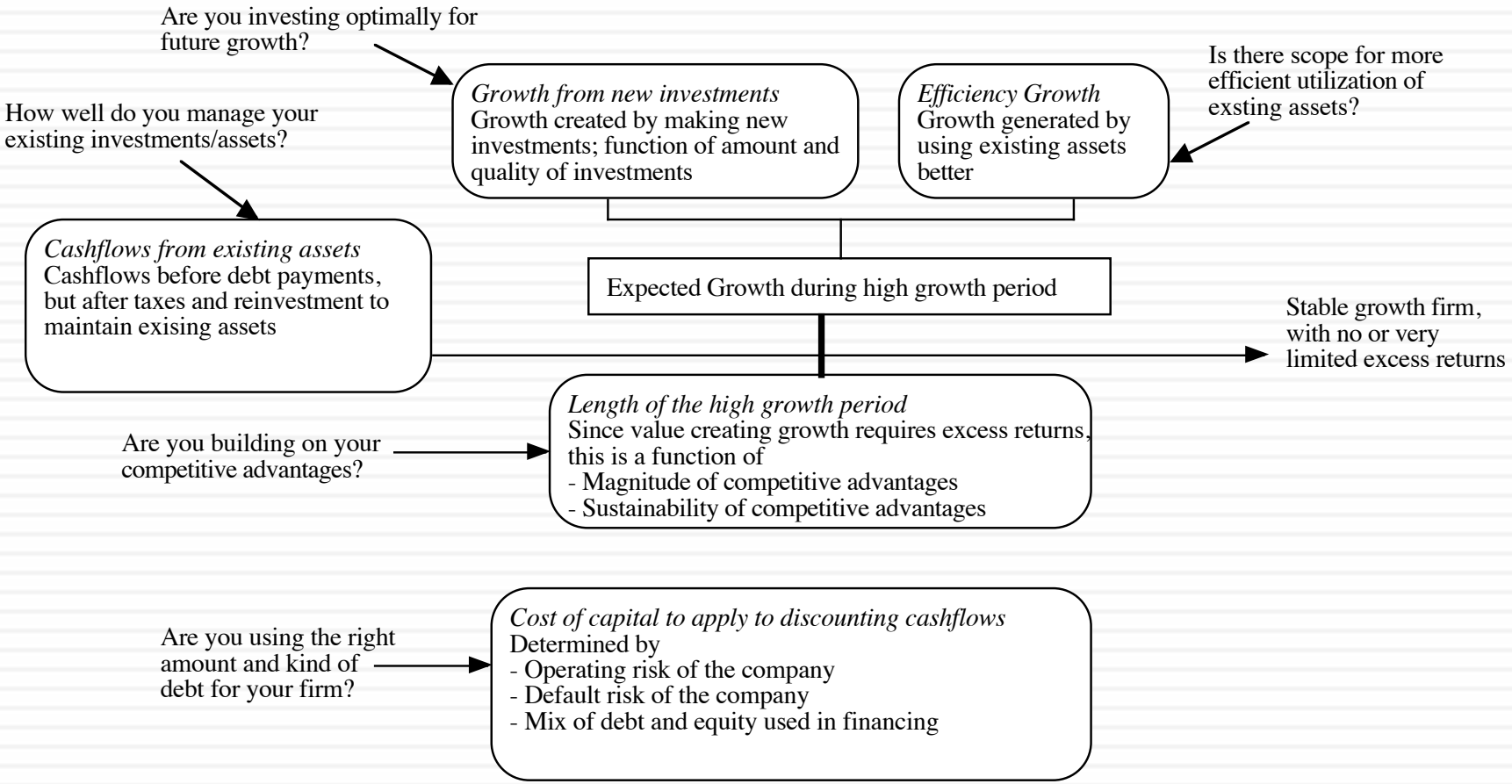
D/E=10.94%

X

ERP
8.06%

Region/Country	*Revenue Weight*	*ERP*
South Africa	49.62%	8.30%
Europe	22.95%	6.97%
North America	10.74%	5.75%
Asia	7.96%	7.52%
Rest of Africa	8.73%	12.93%
Company	100.00%	8.06%

Ways of changing value…



First Principles