IV. Emerging Market Companies

Estimation Issues - Emerging Market Companies

Big shifts in economic environment (inflation, itnerest rates) can affect operating earnings history. Poor corporate governance and weak accounting standards can lead to lack of transparency on earnings.

Growth rates for a company will be affected heavily be growth rate and political developments in the country in which it operates.

What is the value added by growth assets?

What are the cashflows from existing assets?

When will the firm become a mature fiirm, and what are the potential roadblocks?

Cross holdings can affect value of equity

How risky are the cash flows from both existing assets and growth assets?

Even if the company's risk is stable, there can be significant changes in country risk over time.

Economic crises can put many companies at risk. Government actions (nationalization) can affect long term value.

What is the value of equity in the firm?

Lesson 1: Country risk has to be incorporated… but with a scalpel, not a bludgeon

- Emerging market companies are undoubtedly exposed to additional country risk because they are incorporated in countries that are more exposed to political and economic risk.
- Not all emerging market companies are equally exposed to country risk and many developed markets have emerging market risk exposure because of their operations.
- You can use either the "weighted country risk premium", with the weights reflecting the countries you get your revenues from or the lambda approach (which may incorporate more than revenues) to capture country risk exposure.

Lesson 2: Currency should not matter

- You can value any company in any currency. Thus, you can value a Brazilian company in nominal reais, US dollars or Swiss Francs.
- For your valuation to stay invariant and consistent, your cash flows and discount rates have to be in the same currency. Thus, if you are using a high inflation currency, both your growth rates and discount rates will be much higher.
- For your cash flows to be consistent, you have to use expected exchange rates that reflect purchasing power parity (the higher inflation currency has to depreciate by the inflation differential each year).

Valuing Infosys: In US$ and Indian Rupees

	In Indian Rupees	In US $
Risk free Rate	5.00%	2.00%
Expected inflation rate	4.00%	1.00%
Cost of capital - High Growth - Stable Growth	 12.50% 10.39%	 9.25% 7.21%
Expected growth rate - High Growth - Stable Growth	 12.01% 5.00%	 8.78% 2.00%
Return on Capital - High Growth - Stable Growth	 17.16% 10.39%	 13.78% 7.21%
Value per share	Rs 614	$12.79/share (roughly Rs 614 at current exchange rate)

Lesson 3: The “corporate governance” drag

- Stockholders in Asian, Latin American and many European companies have little or no power over the managers of the firm. In many cases, insiders own voting shares and control the firm and the potential for conflict of interests is huge.
- This weak corporate governance is often a reason for given for using higher discount rates or discounting the estimated value for these companies.
- Would you discount the value that you estimate for an emerging market company to allow for this absence of stockholder power?

a. Yes
b. No.

6a. Tube Investments: Status Quo (in Rs)

Current Cashflow to Firm
EBIT(1-t) : 4,425
- Nt CpX 843
- Chg WC 4,150
= FCFF - 568
Reinvestment Rate =112.82%

Reinvestment Rate
60%

Expected Growth in EBIT (1-t)
.60*.092-= .0552
5.52%

Return on Capital
9.20%

Stable Growth
g = 5%; Beta = 1.00;
Debt ratio = 44.2%
Country Premium= 3%
ROC= 9.22%
Reinvestment Rate=54.35%

Terminal Value5= 2775/(.1478-.05) = 28,378

						Term Yr
EBIT(1-t)	$4,670	$4,928	$5,200	$5,487	$5,790	6,079
- Reinvestment	$2,802	$2,957	$3,120	$3,292	$3,474	3,304
FCFF	$1,868	$1,971	$2,080	$2,195	$2,316	2,775

Firm Value: 19,578
+ Cash: 13,653
- Debt: 18,073
=Equity 15,158
-Options 0
Value/Share
Rs**61.57**

Discount at Cost of Capital (WACC) = 22.8% (.558) + 9.45% (0.442) = 16.90%

In 2000, the stock was trading at 102 Rupees/share.

Cost of Equity
22.80%

Cost of Debt
(12%+1.50%)(1-.30)
= 9.45%

Weights
E = 55.8% D = 44.2%

Riskfree Rate:
Rs riskfree rate = 12%

+

Beta
1.17

X

Risk Premium
9.23%

Unlevered Beta for Sectors: 0.75

Firm's D/E Ratio: 79%

Mature risk premium
4%

Country Risk Premium
5.23%

6b. Tube Investments: Higher Marginal Return(in Rs)

Company earns higher returns on new projects

Current Cashflow to Firm
EBIT(1-t) : 4,425
- Nt CpX 843
- Chg WC 4,150
= FCFF - 568
Reinvestment Rate =112.82%

Existing assets continue to generate negative excess returns.

Reinvestment Rate
60%

Return on Capital
12.20%

Expected Growth in EBIT (1-t)
.60*.122-= .0732
7.32%

Stable Growth
g = 5%; Beta = 1.00;
Debt ratio = 44.2%
Country Premium= 3%
ROC=12.2%
Reinvestment Rate= 40.98%

Terminal Value5= 3904/(.1478-.05) = 39.921

Firm Value: 25,185
+ Cash: 13,653
- Debt: 18,073
=Equity 20,765
-Options 0
Value/Share **84.34**

EBIT(1-t)	$4,749	$5,097	$5,470	$5,871	$6,300
- Reinvestment	$2,850	$3,058	$3,282	$3,522	$3,780
FCFF	$1,900	$2,039	$2,188	$2,348	$2,520

Term Yr
6,615
2,711
3,904

Discount at Cost of Capital (WACC) = 22.8% (.558) + 9.45% (0.442) = 16.90%

Cost of Equity
22.80%

Cost of Debt
(12%+1.50%)(1-.30)
= 9.45%

Weights
E = 55.8% D = 44.2%

Riskfree Rate:
Rs riskfree rate = 12%

+

Beta
1.17

X

Risk Premium
9.23%

Unlevered Beta for Sectors: 0.75

Firm's D/E Ratio: 79%

Mature risk premium
4%

Country Risk Premium
5.23%

6c.Tube Investments: Higher Average Return

Current Cashflow to Firm
EBIT(1-t) : 4,425
- Nt CpX 843
- Chg WC 4,150
= FCFF - 568
Reinvestment Rate =112.82%

Reinvestment Rate
60%

Return on Capital
12.20%

Improvement on existing assets
$\{ (1+(.122-.092)/.092)^{1/5}-1\}$

Expected Growth
60*.122 +
.0581 = .1313
13.13%

5.81%

Stable Growth
g = 5%; Beta = 1.00;
Debt ratio = 44.2%
Country Premium= 3%
ROC=12.2%
Reinvestment Rate= 40.98%

Terminal $Value_5$= 5081/(.1478-.05) = 51,956

Firm Value: 31,829
+ Cash: 13,653
- Debt: 18,073
=Equity 27,409
-Options 0
Value/Share **111.3**

EBIT(1-t)	$5,006	$5,664	$6,407	$7,248	$8,200
- Reinvestment	$3,004	$3,398	$3,844	$4,349	$4,920
FCFF	$2,003	$2,265	$2,563	$2,899	$3,280

Term Yr
8,610
3,529
5,081

Discount at Cost of Capital (WACC) = 22.8% (.558) + 9.45% (0.442) = 16.90%

Cost of Equity
22.80%

Cost of Debt
(12%+1.50%)(1-.30)
= 9.45%

Weights
E = 55.8% D = 44.2%

Riskfree Rate:
Rsl riskfree rate = 12%

+

Beta
1.17

X

Risk Premium
9.23%

Unlevered Beta for
Sectors: 0.75

Firm's D/E
Ratio: 79%

Mature risk
premium
4%

Country Risk
Premium
5.23%

Lesson 4: Watch out for cross holdings…

- Emerging market companies are more prone to having cross holdings that companies in developed markets. This is partially the result of history (since many of the larger public companies used to be family owned businesses until a few decades ago) and partly because those who run these companies value control (and use cross holdings to preserve this control).
- In many emerging market companies, the real process of valuation begins when you have finished your DCF valuation, since the cross holdings (which can be numerous) have to be valued, often with minimal information.

8. The Tata Group – April 2010

Tata Chemicals: April 2010

Average reinvestment rate from 2007-09: 56.5%

Current Cashflow to Firm
EBIT(1-t) : Rs 5,833
- Nt CpX Rs 5,832
- Chg WC Rs 4,229
= FCFF - Rs 4,228
Reinv Rate = (5832+4229)/5833 = 172.50%
Tax rate = 31.5%
Return on capital = 10.35%

Reinvestment Rate
56.5%

Return on Capital
10.35%

Expected Growth in EBIT (1-t)
.565*.1035=0.0585
5.85%

Stable Growth
g = 5%; Beta = 1.00
Country Premium= 3%
Tax rate = 33.99%
Cost of capital = 9.78%
ROC= 9.78%;
Reinvestment Rate=g/ROC
=5/ 9.78= 51.14%

Terminal Value$_5$= 3831/(.0978-.05) = Rs 80,187

Rs Cashflows

Year	1	2	3	4	5	
EBIT (1-t)	INR 6,174	INR 6,535	INR 6,917	INR 7,321	INR 7,749	7841
- Reinvestment	INR 3,488	INR 3,692	INR 3,908	INR 4,137	INR 4,379	4010
FCFF	INR 2,685	INR 2,842	INR 3,008	INR 3,184	INR 3,370	3831

Op. Assets Rs 57,128
+ Cash: 6,388'
+ Other NO 56,454
- Debt 32,374
=Equity 87,597

Value/Share Rs 372

Discount at $ Cost of Capital (WACC) = 13.82% (.695) + 6.6% (0.305) = 11.62%

Cost of Equity
13.82%

Cost of Debt
(5%+ 2%+3)(1-.3399)
= 6.6%

Weights
E = 69.5% D = 30.5%

On April 1, 2010
Tata Chemicals price = Rs 314

Riskfree Rate:
Rs Riskfree Rate= 5%
+
Beta
1.21
X
Mature market premium
4.5%
+
Lambda
0.75
X
Country Equity Risk Premium
4.50%

Unlevered Beta for Sectors: 0.95

Firm's D/E Ratio: 42%

Country Default Spread
3%
X
Rel Equity Mkt Vol
1.50

Tata Motors: April 2010

Average reinvestment rate from 2005-09: 179.59%; without acquisitions: 70%

Current Cashflow to Firm
EBIT(1-t) : Rs 20,116
- Nt CpX Rs 31,590
- Chg WC Rs 2,732
= FCFF - Rs 14,205
Reinv Rate = (31590+2732)/20116 = 170.61%; Tax rate = 21.00%
Return on capital = 17.16%

Reinvestment Rate
70%

Return on Capital
17.16%

Expected Growth from new inv.
.70*.1716=0.1201

Stable Growth
g = 5%; Beta = 1.00
Country Premium= 3%
Cost of capital = 10.39%
Tax rate = 33.99%
ROC= 12%;
Reinvestment Rate=g/ROC
=5/ 12= 41.67%

Terminal Value$_5$= 26412/(.1039-.05) = Rs 489,813

Rs Cashflows

Year	1	2	3	4	5	6	7	8	9	10	
EBIT (1-t)	22533	25240	28272	31668	35472	39236	42848	46192	49150	51607	45278
- Reinvestment	15773	17668	19790	22168	24830	25242	25138	24482	23264	21503	18866
FCFF	6760	7572	8482	9500	10642	13994	17711	21710	25886	30104	26412

Op. Assets Rs231,914
+ Cash: 11418
+ Other NO 140576
- Debt 109198
=Equity 274,710

Value/Share Rs 665

Discount at $ Cost of Capital (WACC) = 14.00% (.747) + 8.09% (0.253) = 12.50%

Growth declines to 5% and cost of capital moves to stable period level.

Cost of Equity
14.00%

Cost of Debt
(5%+ 4.25%+3)(1-.3399)
= 8.09%

Weights
E = 74.7% D = 25.3%

On April 1, 2010
Tata Motors price = Rs 781

Riskfree Rate:
Rs Riskfree Rate= 5%
+
Beta
1.20
X
Mature market premium
4.5%
+
Lambda
0.80
X
Country Equity Risk Premium
4.50%

Unlevered Beta for Sectors: 1.04

Firm's D/E Ratio: 33%

Country Default Spread
3%
X
Rel Equity Mkt Vol
1.50

Tata Steel: April 2010

Average reinvestment rate from 2005-09: 38.1%

Current Cashflow to Firm
EBIT(1-t) : Rs 60,213
- Nt CpX Rs 61,620
- Chg WC - Rs 3,658
= FCFF Rs 2251
Reinv Rate = (61620-3658)/60213= 96.26%
Tax rate = 28.90%
Return on capital = 13.42%

Reinvestment Rate
38.1%

Return on Capital
13.42%

Expected Growth in EBIT (1-t)
.381*.1342=0.0511
5.11%

Stable Growth
g = 5%; Beta = 1.20
Country Premium= 3%
Tax rate = 33.99%
Cost of capital = 11.16%
ROC= 11.16%;
Reinvestment Rate=g/ROC
=5/ 11.16= 44.8%

Terminal Value$_5$= 41572(.1116-.05) = Rs 701,444

Rs Cashflows

Year	1	2	3	4	5	
EBIT (1-t)	INR 63,292	INR 66,529	INR 69,931	INR 73,507	INR 77,266	75,316
- Reinvestment	INR 24,111	INR 25,344	INR 26,640	INR 28,002	INR 29,434	33,744
FCFF	INR 39,181	INR 41,185	INR 43,291	INR 45,504	INR 47,831	41,572

Op. Assets Rs501,661
+ Cash: 15,906
+ Other NO 467,315
- Debt 235,697
=Equity 749,184

Value/Share Rs 844

Discount at $ Cost of Capital (WACC) = 17.02% (.704) + 6.11% (0.296) = 13.79%

Cost of Equity
17.02%

Cost of Debt
(5%+ 1.25%+3%)1-.3399)
= 6.11%

Weights
E = 70.4% D = 29.6%

On April 1, 2010
Tata Steel price = Rs 632

Riskfree Rate:
Rs Riskfree Rate= 5%
+
Beta
1.57
X
Mature market premium
4.5%
+
Lambda
1.10
X
Country Equity Risk Premium
4.50%

Unlevered Beta for Sectors: 1.23

Firm's D/E Ratio: 42%

Country Default Spread
3%
X
Rel Equity Mkt Vol
1.50

TCS: April 2010

Average reinvestment rate from 2005--2009 =56.73%%

Current Cashflow to Firm
EBIT(1-t) : Rs 43,420
- Nt CpX Rs 5,611
- Chg WC Rs 6,130
= FCFF Rs 31,679
Reinv Rate = (56111+6130)/43420= 27.04%; Tax rate = 15.55%
Return on capital = 40.63%

Reinvestment Rate
56.73%

Return on Capital
40.63%

Expected Growth from new inv.
5673*.4063=0.2305

Stable Growth
g = 5%; Beta = 1.00
Country Premium= 3%
Cost of capital = 9.52%
Tax rate = 33.99%
ROC= 15%;
Reinvestment Rate=g/ROC
=5/ 15= 33.33%

Terminal Value$_5$= 118655/(.0952-.05) = 2,625,649

Rs Cashflows

Year	1	2	3	4	5	6	7	8	9	10	
EBIT (1-t)	53429	65744	80897	99544	122488	146299	169458	190165	206538	216865	177982
- Reinvestment	30308	37294	45890	56468	69483	76145	80271	81183	78509	72288	59327
FCFF	23120	28450	35007	43076	53005	70154	89187	108983	128029	144577	118655

Op. Assets 1,355,361
+ Cash: 3,188
+ Other NO 66,140
- Debt
505
=Equity 1,424,185

Discount at Rs Cost of Capital (WACC) = 10.63% (.999) + 5.61% (0.001) = 10.62%

Growth declines to 5% and cost of capital moves to stable period level.

Cost of Equity
10.63%

Cost of Debt
(5%+ 0.5%+3)(1-.3399)
= 5.61%

Weights
E = 99.9% D = 0.1%

On April 1, 2010
TCS price = Rs 841

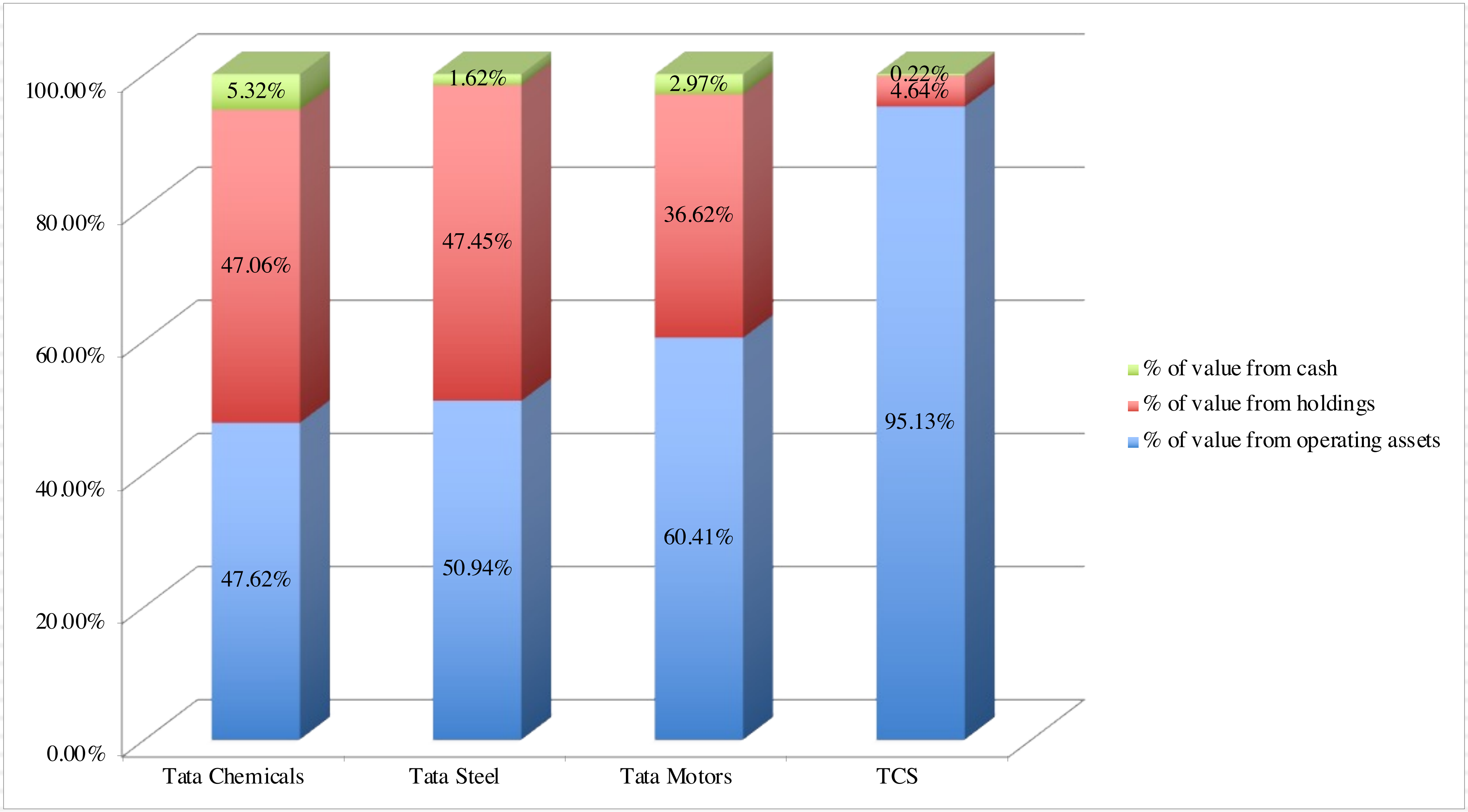
Riskfree Rate:
Rs Riskfree Rate= 5%
+
Beta
1.05
X
Mature market premium
4.5%
+
Lambda
0.20
X
Country Equity Risk Premium
4.50%

Unlevered Beta for Sectors: 1.05

Firm's D/E Ratio: 0.1%

Country Default Spread
3%
X
Rel Equity Mkt Vol
1.50

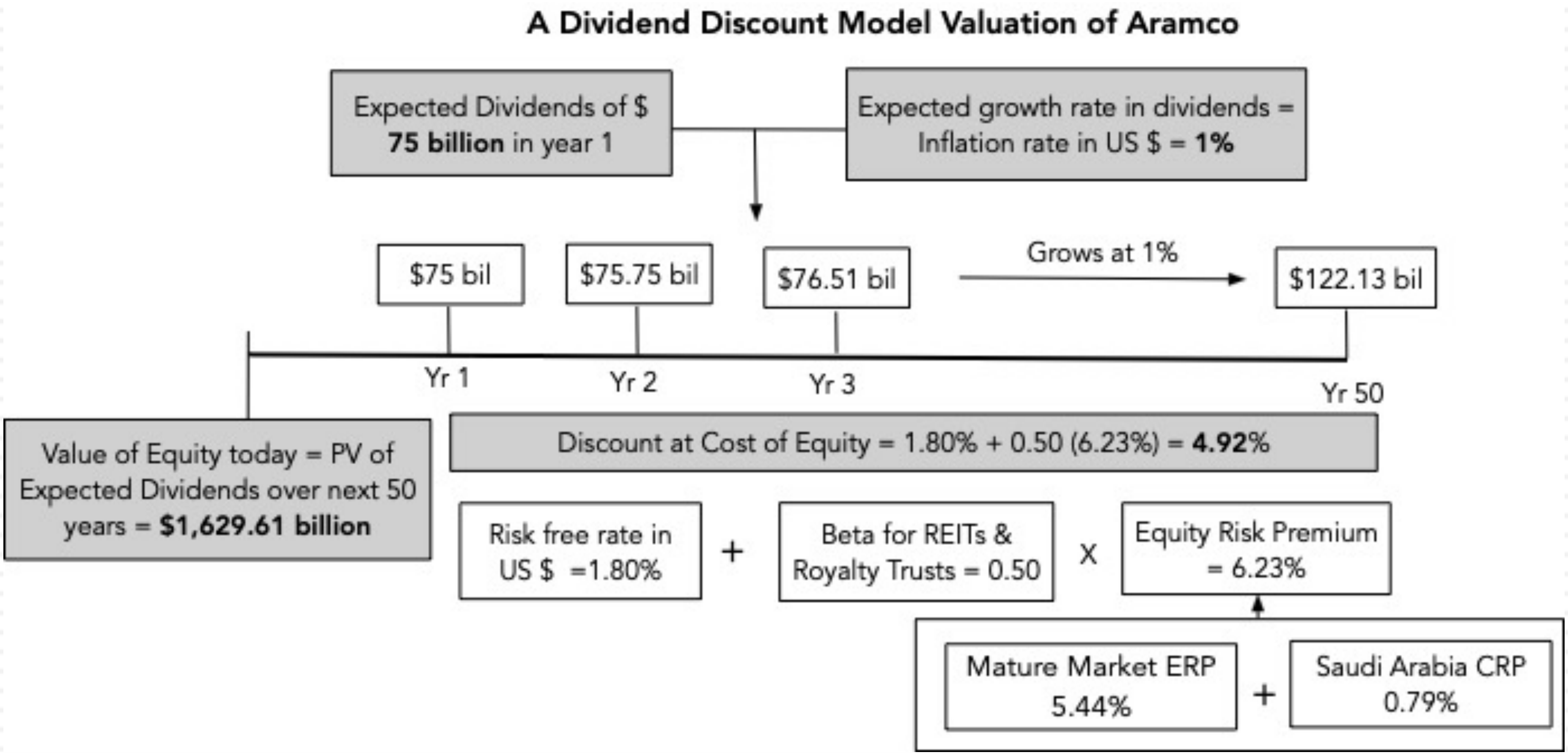
Tata Companies: Value Breakdown



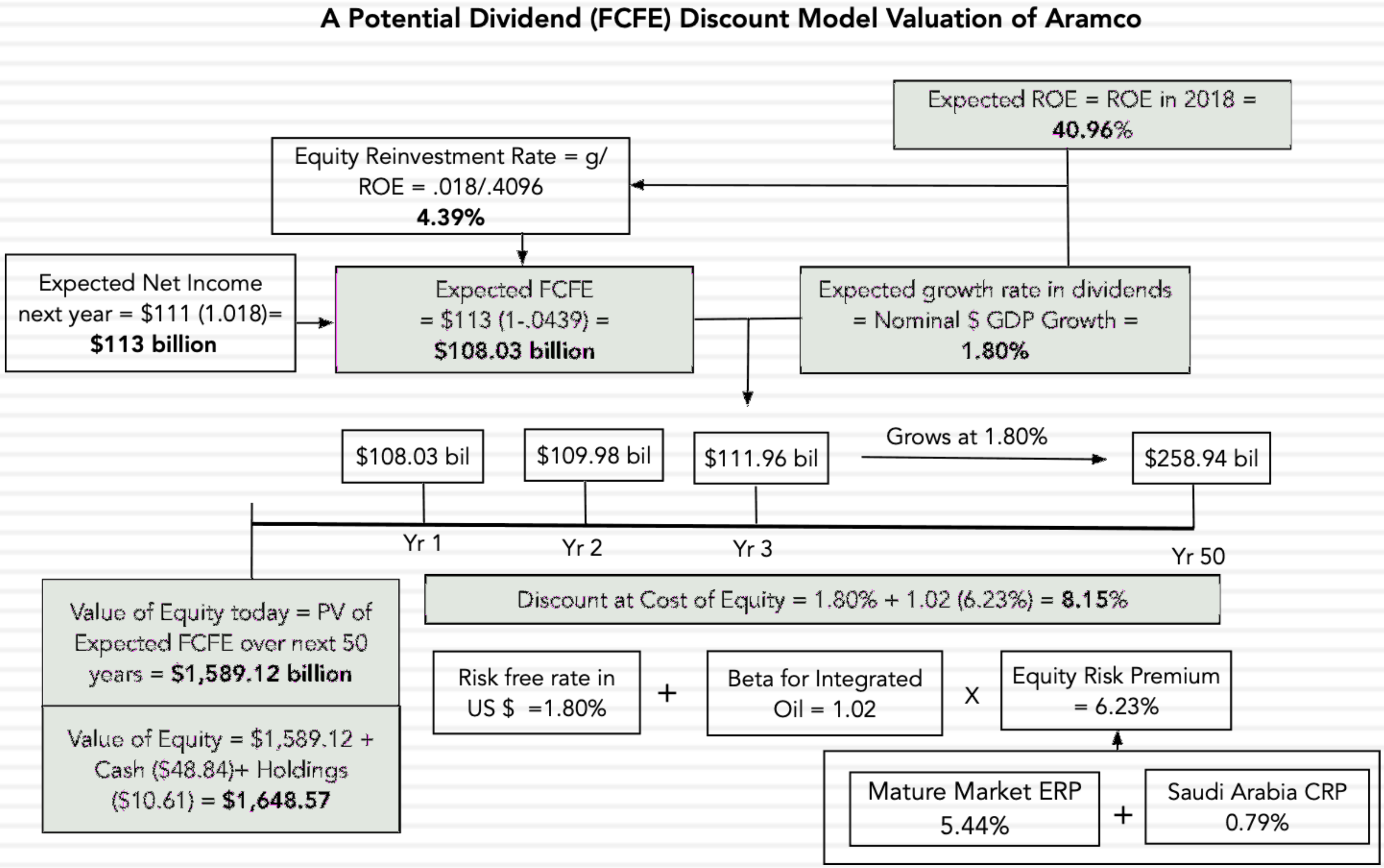
Lesson 5: Truncation risk can come in many forms…

- Natural disasters: Small companies in some economies are much exposed to natural disasters (hurricanes, earthquakes), without the means to hedge against that risk (with insurance or derivative products).
- Terrorism risk: Companies in some countries that are unstable or in the grips of civil war are exposed to damage or destruction.
- Nationalization risk: While less common than it used to be, there are countries where businesses may be nationalized, with owners receiving less than fair value as compensation.

Valuing Aramco: Promised Dividends

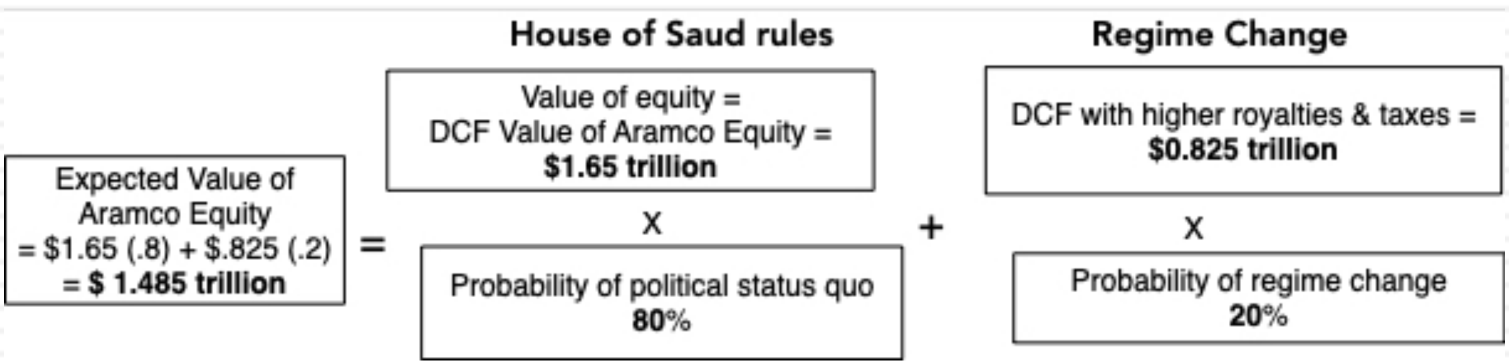


Valuing Aramco: Potential Dividends



Adjusting for regime change

- If you believe that there is no chance of regime change, your expected value will remain $1.65 trillion.
- If you believe that regime change is imminent, and that your equity will be fully expropriated, your expected value will be zero.
- If you believe that there remains a non-trivial chance (perhaps as high as 20%) that there will be a regime change and that if there is one, there will be changes that reduce, but not extinguish, your equity claim:



V. Valuing Financial Service Companies

Existing assets are usually financial assets or loans, often marked to market. Earnings do not provide much information on underlying risk.

Defining capital expenditures and working capital is a challenge.Growth can be strongly influenced by regulatory limits and constraints. Both the amount of new investments and the returns on these investments can change with regulatory changes.

What is the value added by growth assets?

What are the cashflows from existing assets?

When will the firm become a mature fiirm, and what are the potential roadblocks?

How risky are the cash flows from both existing assets and growth assets?

Preferred stock is a significant source of capital.

What is the value of equity in the firm?

For financial service firms, debt is raw material rather than a source of capital. It is not only tough to define but if defined broadly can result in high financial leverage, magnifying the impact of small operating risk changes on equity risk.

In addition to all the normal constraints, financial service firms also have to worry about maintaining capital ratios that are acceptable ot regulators. If they do not, they can be taken over and shut down.

CIB Egypt in December 2015
Valuation in Egyptian Pounds

Retention Ratio = 75.25%

ROE = 42.48%

Dividends
EPS = 4.04 EGP
* Payout Ratio 24.75%
DPS = 1.00 EGP

Expected Growth
75.25% * 42.48% = 31.96%

g =10%: ROE = 25%(=Cost of equity)
Beta = 0.81
Payout = (1- 10/25) = .60

Terminal Value
= EPS_6*Payout/(r-g)
= (37.97*.6)/(.2325-.10) = 189.20

	1	2	3	4	5	6	7	8	9	10
Expected Growth Rate	31.96%	31.96%	31.96%	31.96%	31.96%	27.57%	23.18%	18.79%	14.39%	10.00%
Earnings per share	5.33 ج.م.	7.04 ج.م.	9.28 ج.م.	12.25 ج.م.	16.17 ج.م.	20.63 ج.م.	25.41 ج.م.	30.18 ج.م.	34.52 ج.م.	37.97 ج.م.
Payout ratio	24.75%	24.75%	24.75%	24.75%	24.75%	31.80%	38.85%	45.90%	52.95%	60.00%
Dividends per share	1.32 ج.م.	1.74 ج.م.	2.30 ج.م.	3.03 ج.م.	4.00 ج.م.	6.56 ج.م.	9.87 ج.م.	13.85 ج.م.	18.28 ج.م.	22.78 ج.م.
Cost of Equity	23.25%	23.25%	23.25%	23.25%	23.25%	23.25%	23.25%	23.25%	23.25%	23.25%
Cumulative Cost of Equity	123.25%	151.90%	187.21%	230.73%	284.37%	350.48%	431.95%	532.37%	656.13%	808.66%
Present Value	1.07 ج.م.	1.15 ج.م.	1.23 ج.م.	1.31 ج.م.	1.41 ج.م.	1.87 ج.م.	2.29 ج.م.	2.60 ج.م.	2.79 ج.م.	2.82 ج.م.

....

Value of Equity per share = PV of Dividends & Terminal value = 41.93 EGP

Forever

Discount at Cost of Equity

In December 2015, CIB was trading at 36 EGP per share

Cost of Equity
10.53% + 0.81 (15.70%) = 23.25%

Riskfree Rate:
In EGP
10.53%

+

0.81

X

Equity Risk Premium
15.7%

US $ risk free rate (2.27%) adjusted for diff inflation (1.0227)*(1.097/1.015)-1

Average Beta for Banks

100% in Egypt

Lesson 1: Financial service companies are opaque…

- With financial service firms, we enter into a Faustian bargain. They tell us very little about the quality of their assets (loans, for a bank, for instance are not broken down by default risk status) but we accept that in return for assets being marked to market (by accountants who presumably have access to the information that we don't have).
- In addition, estimating cash flows for a financial service firm is difficult to do. So, we trust financial service firms to pay out their cash flows as dividends. Hence, the use of the dividend discount model.
- During times of crises or when you don't trust banks to pay out what they can afford to in dividends, using the dividend discount model may not give you a "reliable" value.

2c. Wells Fargo: Valuation on October 7, 2008

Rationale for model
Why dividends? Because FCFE cannot be estimated
Why 2-stage? Because the expected growth rate in near term is higher than stable growth rate.

Assuming that Wells will have to increase its capital base by about 30% to reflect tighter regulatory concerns. (.1756/1.3 =.135

ROE = 13.5%

Return on equity: 17.56%

Dividends (Trailing 12 months)
EPS = $2.16 *
Payout Ratio 54.63%
DPS = $1.18

Retention Ratio = 45.37%

Expected Growth
45.37% * 13.5% = 6.13%

g =3%: ROE = 7.6%(=Cost of equity)
Beta = 1.00: ERP = 4%
Payout = (1- 3/7.6) = .60.55%

Terminal Value= EPS_6*Payout/(r-g)
= ($3.00*.6055)/(.076-.03) = $39.41

EPS	$ 2.29	$2.43	$2.58	$2.74	$2.91	
DPS	$1.25	$1.33	$1.41	$1.50	$1.59	....

Forever

Value of Equity per share = PV of Dividends & Terminal value at 9.6% = $30.29

Discount at Cost of Equity

In October 2008, Wells Fargo was trading at $33 per share

Cost of Equity
3.60% + 1.20 (5%) = 9.60%

Riskfree Rate:
Long term treasury bond rate
3.60%

+

Beta
1.20

Average beta for US Banks over last year: 1.20

X

Risk Premium
5%
Updated in October 2008

Mature Market
5%

Country Risk
0%

Lesson 2: For financial service companies, book value matters…

- The book value of assets and equity is mostly irrelevant when valuing non-financial service companies. After all, the book value of equity is a historical figure and can be nonsensical. (The book value of equity can be negative and is so for more than a 1000 publicly traded US companies)
- With financial service firms, book value of equity is relevant for two reasons:
  - Since financial service firms mark to market, the book value is more likely to reflect what the firms own right now (rather than a historical value)
  - The regulatory capital ratios are based on book equity. Thus, a bank with negative or even low book equity will be shut down by the regulators.
- From a valuation perspective, it therefore makes sense to pay heed to book value. In fact, you can argue that reinvestment for a bank is the amount that it needs to add to book equity to sustain its growth ambitions and safety requirements:
  - FCFE = Net Income – Reinvestment in regulatory capital (book equity)

Deutsche Bank: A Crisis Valuation (October 2016)

Risk adjusted assets grows at inflation rate of 1% a year forever.

Tier 1 capital ratio increases to 15.67%, the 75th percentile for all banks

Expected DOJ fine of $10 billions lower Tier 1 capital today

Common Equity increases in tandem with Tier 1 capital

Cost of equity starts at 10.2% (75th percentile of banks) & decreases after year 5 to 9.44% (median across banks).

	Current	1	2	3	4	5	6	7	8	9	10
Risk Adjusted Assets	$ 445,570	$ 450,026	$ 454,526	$ 459,071	$ 463,662	$ 468,299	$ 472,982	$ 477,711	$ 482,488	$ 487,313	$ 492,186
Tier 1 Capital Ratio	12.41%	13.74%	13.95%	14.17%	14.38%	14.60%	14.81%	15.03%	15.24%	15.46%	15.67%
Tier 1 Capital (Risk Adjusted Assets * T	$55,282	$61,834	$63,427	$65,045	$66,690	$68,361	$70,059	$71,784	$73,537	$75,317	$77,126
Change in regulatory capital (Tier 1)		$6,552	$1,593	$1,619	$1,645	$1,671	$1,698	$1,725	$1,753	$1,780	$1,809
Book Equity	$64,609	$71,161	$72,754	$74,372	$76,017	$77,688	$79,386	$81,111	$82,864	$84,644	$86,453
Expected ROE	-13.70%	-7.18%	-2.84%	0.06%	1.99%	5.85%	6.568%	7.286%	8.004%	8.722%	9.440%
Net Income (Book Equity * ROE)	$ (8,851)	$ (5,111)	$ (2,065)	$ 43	$ 1,512	$ 4,545	$ 5,214	$ 5,910	$ 6,632	$ 7,383	$ 8,161
- Investment in Regulatory Capital		$ 6,552	$ 1,593	$ 1,619	$ 1,645	$ 1,671	$ 1,698	$ 1,725	$ 1,753	$ 1,780	$ 1,809
FCFE		$ (11,663)	$ (3,658)	$ (1,576)	$ (133)	$ 2,874	$ 3,516	$ 4,185	$ 4,880	$ 5,602	$ 6,352
Terminal value of equity											$87,317
Present value		$ (10,583)	$ (3,012)	$ (1,178)	$ (90)	$ 1,768	$ 1,966	$ 2,129	$ 2,262	$ 2,370	$ 36,207
Cost of equity	10.20%	10.20%	10.20%	10.20%	10.20%	10.20%	10.048%	9.896%	9.744%	9.592%	9.440%
Cumulative Cost of equity		1.1020	1.2144	1.3383	1.4748	1.6252	1.7885	1.9655	2.1570	2.3639	2.5871
Value of equity today =	$31,838.74										
Number of shares outstanding =	1386.00										
DCF Value per share =	**$ 22.97**										
Probability of equity wipeout	10.00%										
Adjusted value per share =	**$ 20.67**										
Stock price on October 3, 2016=	**$ 13.33**										

Value per share adjusted for probability of catastrophic failure (bailout) resulting in complete loss of equity.

Return on equity increases to 5.85% (25th percentile of banks) in year 5 and 9,44% (cost of equity) in year 10

Lesson 3: Not all financial service firms are built alike..

- Financial service is a broad category, and while banks may be its most substantive component, there are a range of other companies, with very different business models.
- For instance, payment processing companies and credit card companies are also financial service companies, but they derive their value from
  - Getting consumers to use their platforms to make payments to businesses or to each other, resulting in transactions on the platform (called Gross Merchandising Value or GMV)
  - Keeping a slice, called a take rate, of the GMV for themselves.

Paytm						Sep-21

The Story

Paytm will continue its dominance of the Indian mobile payment market, while that market continues to grow. Along the way, its management will focus more on converting transactions on its platform into revenues, and revenues into operating income.

The Assumptions

	Base year	*Next year*	*Years 2-5*	*Years 6-10*	*After year 10*	*Link to story*
GMV	₹ 4,033,000	40.00%	40.00%	4.19%	4.19%	Growing mobile payment market
Revenue as % of GMV	0.79%	0.83%	1.00%	2.00%	2.00%	Take rate improves, as company matures
Operating margin (b)	-49.00%	-20.0%	5.00%	30.00%	30.00%	High-margin intermediary business
Tax rate	25.00%		25.00%	25.00%	25.00%	Converge on statutory tax rate
Reinvestment (c)		3.00	2.45	2.45	27.93%	Industry average reinvestment, for capital intensive business.
Return on capital	-21.78%	Marginal ROIC =	80.13%		15.00%	Competitive advantages fade over time.
Cost of capital (d)			10.44%	8.91%	8.91%	Cost of capital relatively stable.

The Cash Flows

	GMV	*Revenues*	*Operating Margin*	*EBIT (1-t)*	*Reinvestment*	*FCFF*
1	₹ 5,646,200	₹ 46,984.56	-20.00%	₹ -9,396.91	₹ 5,038.85	₹ -14,435.77
2	₹ 7,904,680	₹ 69,095.49	-10.00%	₹ -6,909.55	₹ 9,024.87	₹ -15,934.42
3	₹ 11,066,552	₹ 101,377.63	-5.00%	₹ -5,068.88	₹ 13,176.38	₹ -18,245.27
4	₹ 15,493,173	₹ 148,430.20	0.00%	₹ -0.00	₹ 19,205.13	₹ -19,205.13
5	₹ 21,690,442	₹ 216,904.42	5.00%	₹ 10,845.22	₹ 27,948.66	₹ -17,103.44
6	₹ 28,813,149	₹ 345,757.79	10.00%	₹ 28,564.36	₹ 52,593.21	₹ -24,028.85
7	₹ 36,211,213	₹ 506,956.99	15.00%	₹ 57,032.66	₹ 65,795.59	₹ -8,762.93
8	₹ 42,915,357	₹ 686,645.72	20.00%	₹ 102,996.86	₹ 73,342.34	₹ 29,654.52
9	₹ 47,787,109	₹ 860,167.96	25.00%	₹ 161,281.49	₹ 70,825.40	₹ 90,456.09
10	₹ 49,789,389	₹ 995,787.77	30.00%	₹ 224,052.25	₹ 55,355.03	₹ 168,697.22
Terminal year	₹ 51,875,564	₹ 1,037,511.28	30.00%	₹ 233,440.04	₹ 65,207.58	₹ 168,232.45

The Value

Terminal value	₹ 3,564,246.92		
PV(Terminal value)	₹ 1,377,090.74		
PV (CF over next 10 years)	₹ 36,169.53		
Value of operating assets =	₹ 1,413,260.27		
Adjustment for distress	₹ 35,331.51	Probability of failure =	5.00%
- Debt & Minority Interests	₹ 12,006.00		
+ Cash & Other Non-operating assets	₹ 7,785.00		
+IPO Proceeds	₹ 83,000.00	*Total proceeds expected to be 166,000, but half will be cashing out existing stockholders.*	
Value of equity	₹ 1,456,707.76		
- Value of equity options	₹ 45,696.90		
Number of shares	644.23		
Value per share	₹ 2,190.24	Stock was trading at =	₹ 2,950.00