

# IV. Emerging Market Companies

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## *Estimation Issues - Emerging Market Companies*

*Big shifts in economic environment (inflation, interest 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 by 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?

*Cross holdings can affect value of equity*

What is the value of equity in the firm?

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.*

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

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

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

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- 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

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- 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	12.50%	9.25%
- Stable Growth	10.39%	7.21%
Expected growth rate		
- High Growth	12.01%	8.78%
- Stable Growth	5.00%	2.00%
Return on Capital		
- High Growth	17.16%	13.78%
- Stable Growth	10.39%	7.21%
Value per share	Rs 614	\$12.79/share (roughly Rs 614 at current exchange rate)

## Lesson 3: The “corporate governance” drag

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- 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)

$.60 \times .092 = .0552$   
**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 Value<sub>5</sub> =  $2775 / (.1478 - .05) = 28,378$

Firm Value: 19,578  
 + Cash: 13,653  
 - Debt: 18,073  
 = Equity 15,158  
 - Options 0  
 Value/Share  
**Rs61.57**

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

Term Yr  
 6,079  
 3,304  
 2,775

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%

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

**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%

Reinvestment Rate  
 60%

### Expected Growth in EBIT (1-t)

$.60 \times .122 = .0732$   
 7.32%

Return on Capital  
 12.20%

### Stable Growth

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

Existing assets continue to generate negative excess returns.

Terminal Value<sub>5</sub> =  $3904 / (.1478 - .05) = 39.921$

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%

### Expected Growth

$60 \times .122 + .0581 = .1313$   
**13.13%**

Return on Capital  
 12.20%

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

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<sub>5</sub> =  $5081 / (.1478 - .05) = 51,956$

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%



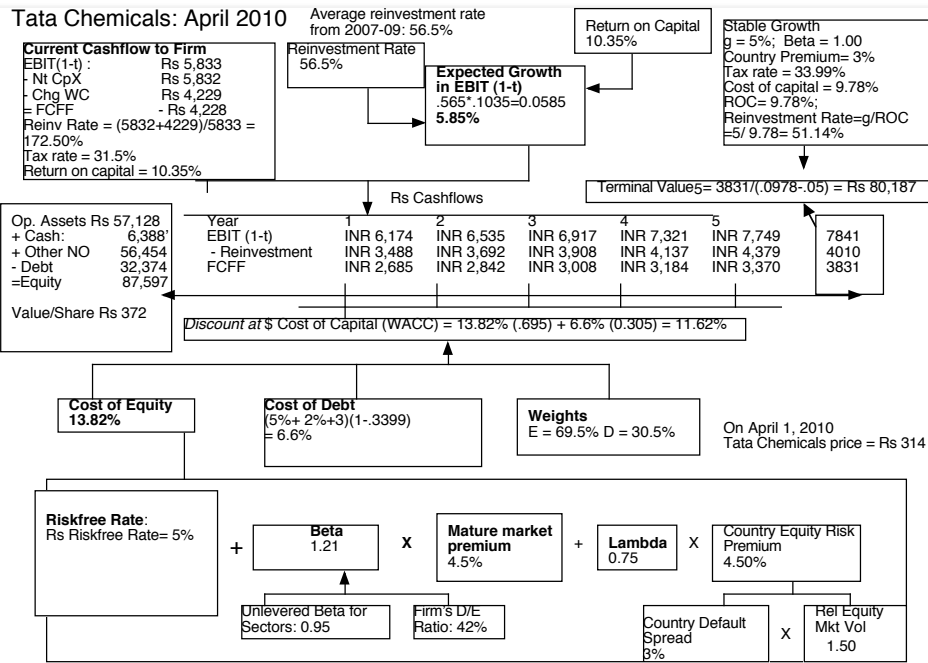
# Lesson 4: Watch out for cross holdings...

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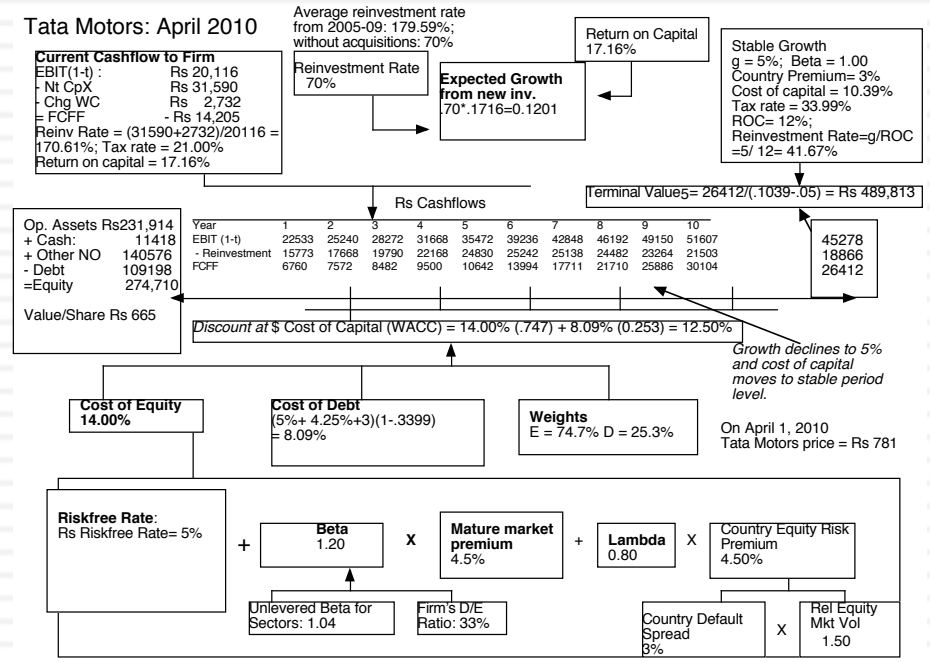
- Emerging market companies are more prone to having cross holdings than companies in developed markets. This is partially the result of history (since many of the larger public companies used to be family owned businesses until a few decades ago) and partly because those who run these companies value 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

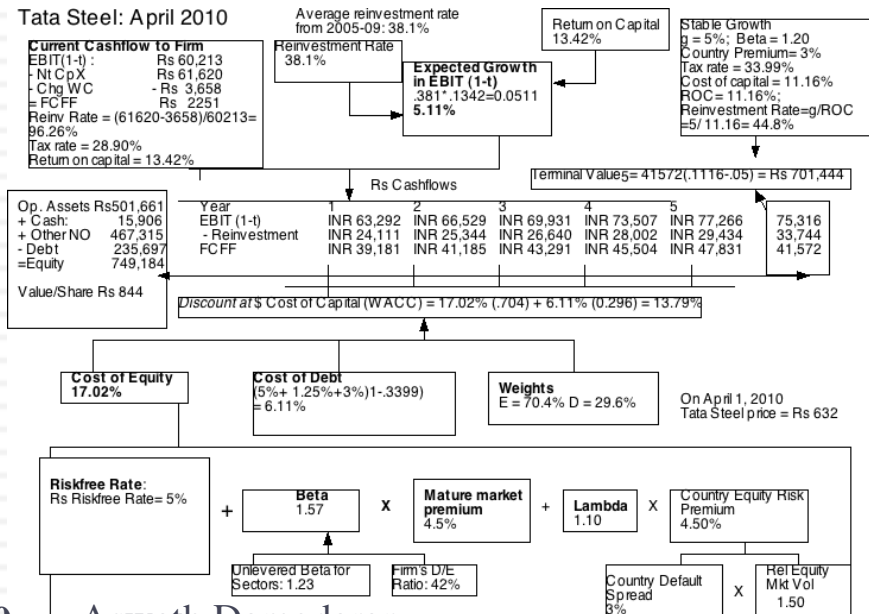
### Tata Chemicals: April 2010



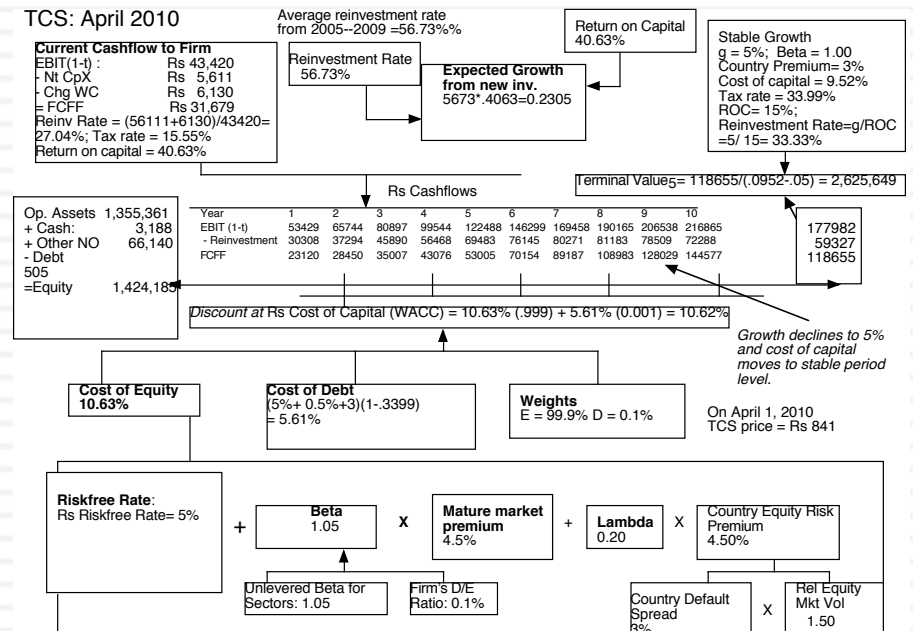
### Tata Motors: April 2010



### Tata Steel: April 2010

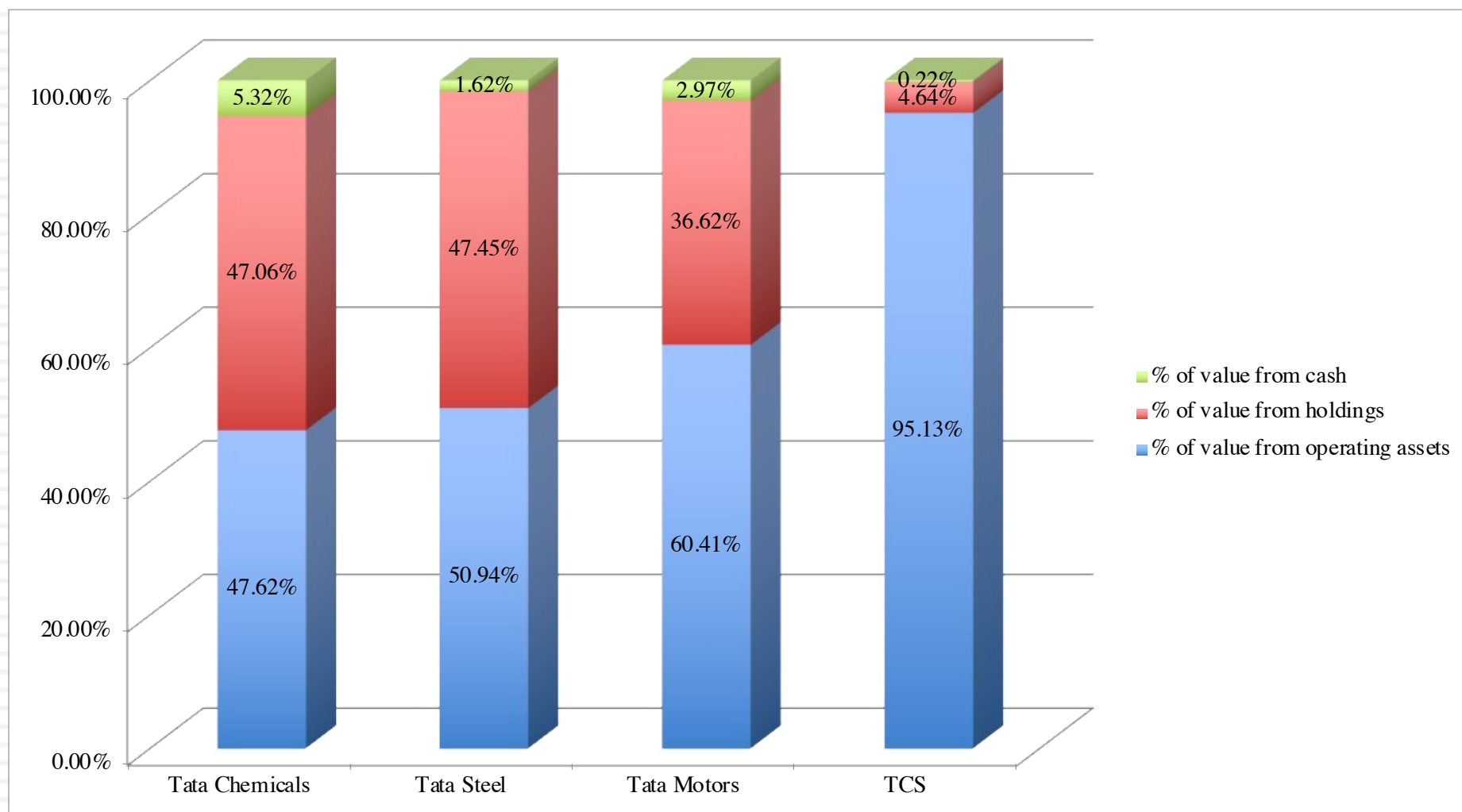


### TCS: April 2010



# Tata Companies: Value Breakdown

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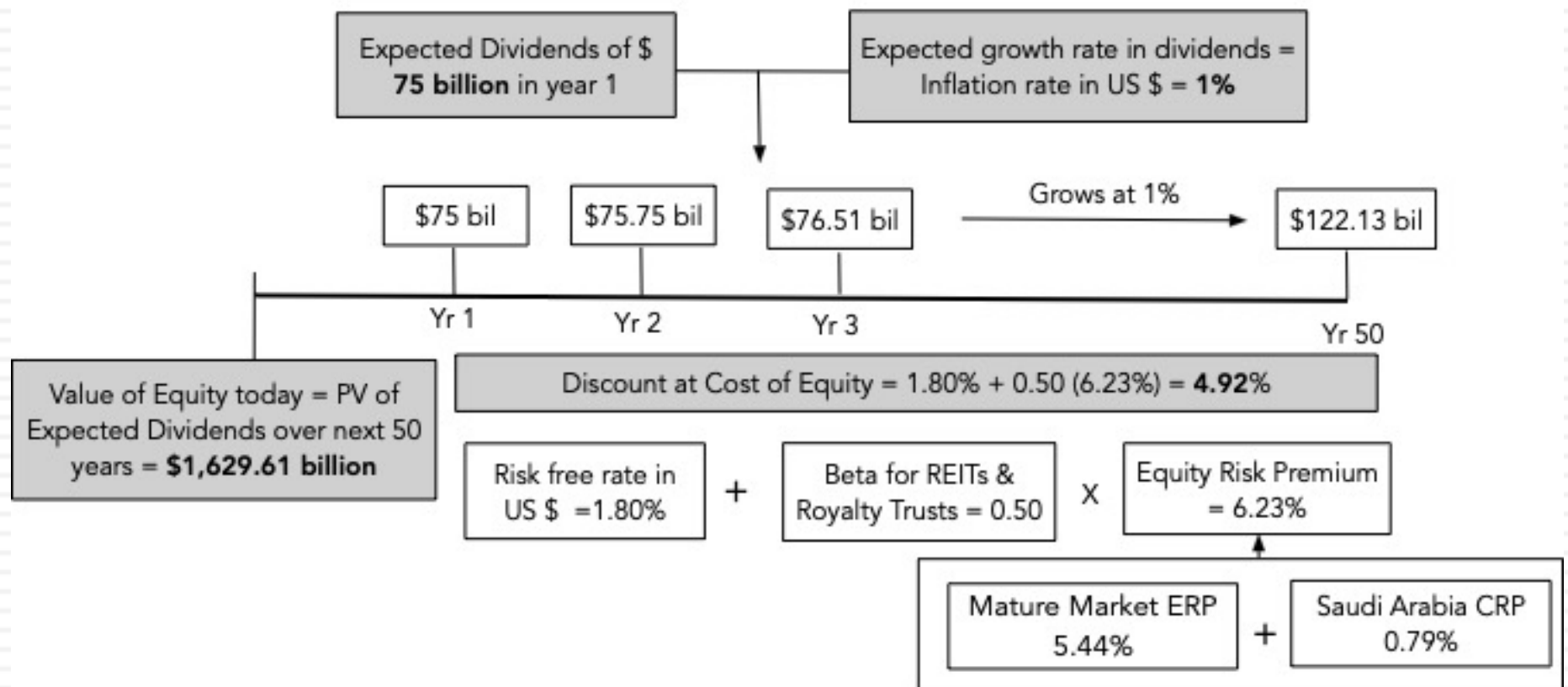
## Lesson 5: Truncation risk can come in many forms...

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- 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.

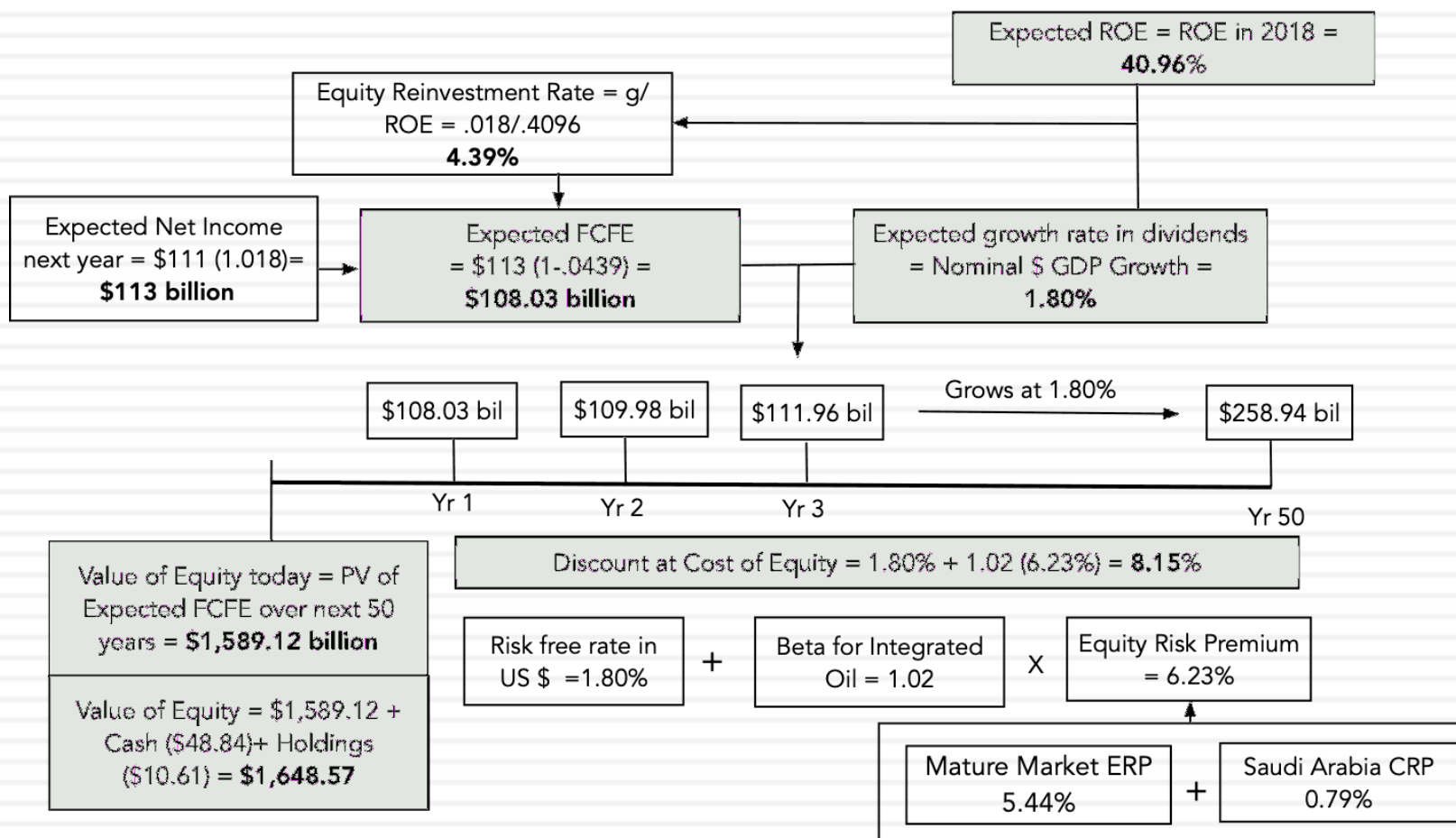
# Valuing Aramco: Promised Dividends

## A Dividend Discount Model Valuation of Aramco



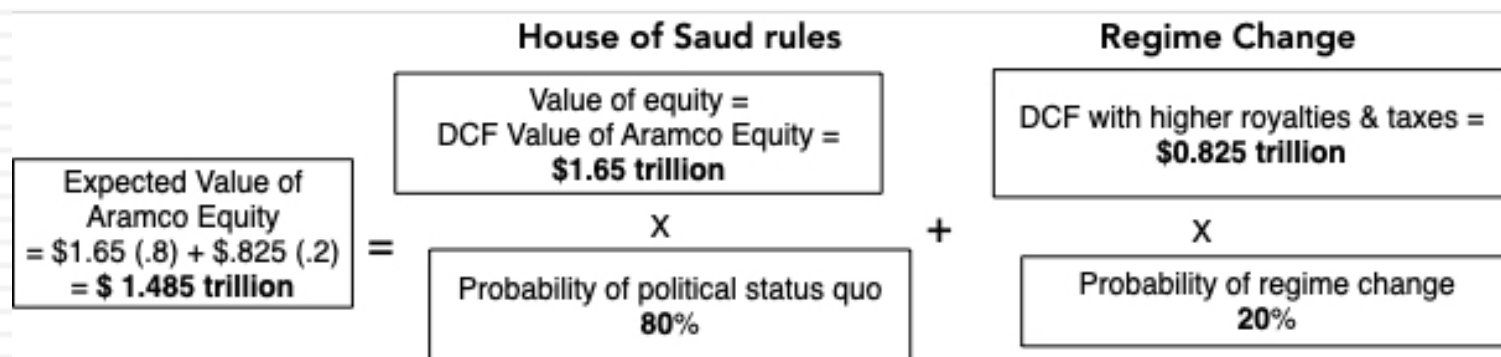
# Valuing Aramco: Potential Dividends

## A Potential Dividend (FCFE) Discount Model Valuation of Aramco



# 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

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*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?

*Preferred stock is a significant source of capital.*

What is the value of equity in the firm?

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

*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.*

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

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



# CIB Egypt in December 2015

## Valuation in Egyptian Pounds

ROE = 42.48%

Retention  
Ratio =  
75.25%

**Expected Growth**  
75.25% \*  
42.48% = 31.96%

### Dividends

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

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

	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

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

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

Discount at Cost of Equity

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

Forever

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

**Riskfree Rate:**  
In EGP  
10.53%

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

+

0.81

x

**Equity Risk Premium**  
15.7%

100% in Egypt

Average Beta for Banks

# Lesson 1: Financial service companies are opaque...

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- 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.

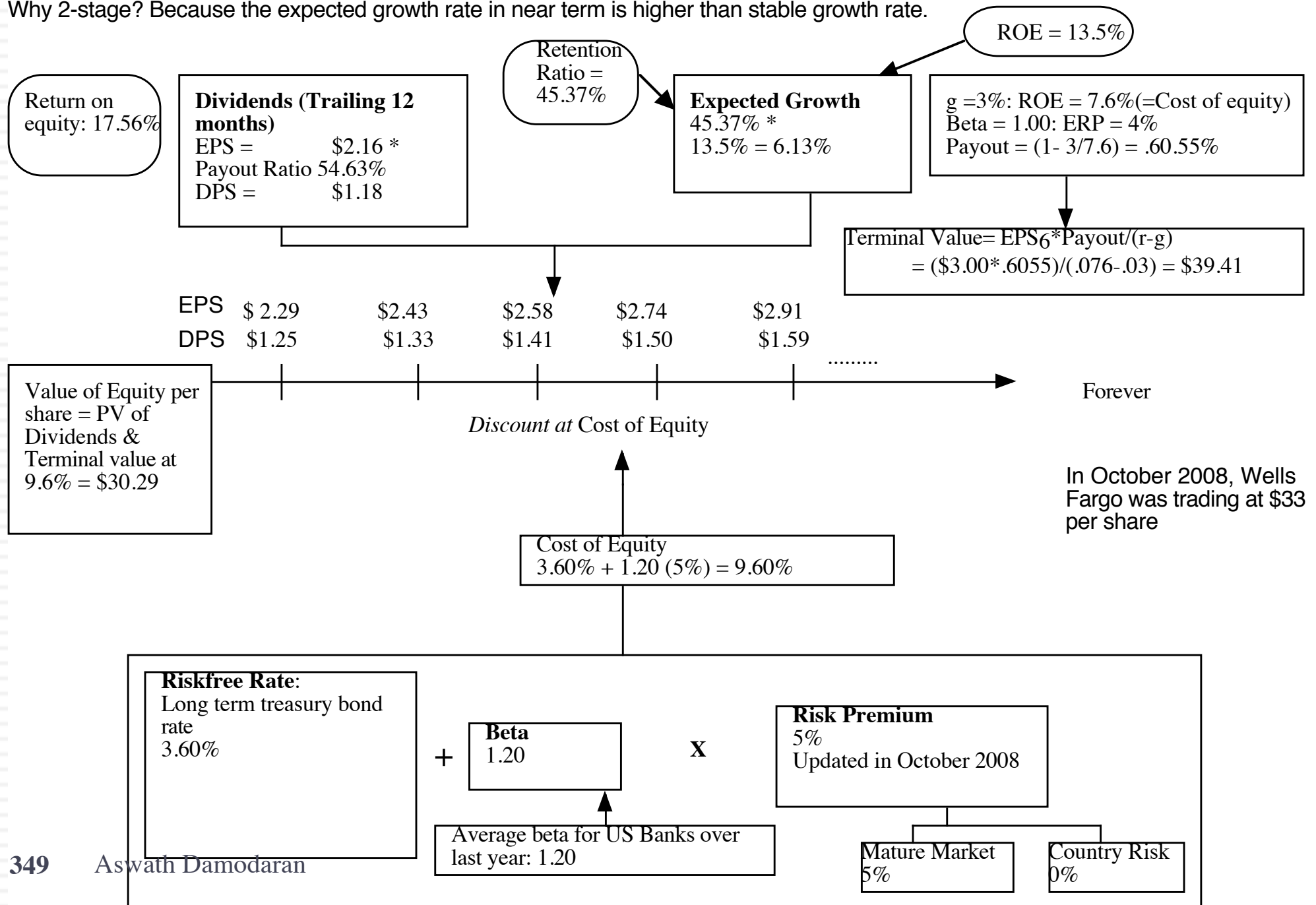
## 2c. Wells Fargo: Valuation on October 7, 2008

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

### 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.



## Lesson 2: For financial service companies, book value matters...

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- 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:
  - $FCFE = \text{Net Income} - \text{Reinvestment in regulatory capital (book equity)}$

## 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 * Tier 1 Capital Ratio)	\$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..

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- 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