

III. Dealing with decline and distress...

Historical data often reflects flat or declining revenues and falling margins. Investments often earn less than the cost of capital.

Growth can be negative, as firm sheds assets and shrinks. As less profitable assets are shed, the firm's remaining assets may improve in quality.

What is the value added by growth assets?

What are the cashflows from existing assets?

Underfunded pension obligations and litigation claims can lower value of equity. Liquidation preferences 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?

Depending upon the risk of the assets being divested and the use of the proceeds from the divestiture (to pay dividends or retire debt), the risk in both the firm and its equity can change.

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

There is a real chance, especially with high financial leverage, that the firm will not make it. If it is expected to survive as a going concern, it will be as a much smaller entity.

a. Dealing with Decline

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- In decline, firms often see declining revenues and lower margins, translating in negative expected growth over time.
- If these firms are run by good managers, they will not fight decline. Instead, they will adapt to it and shut down or sell investments that do not generate the cost of capital. This can translate into negative net capital expenditures (depreciation exceeds cap ex), declining working capital and an overall negative reinvestment rate. The best case scenario is that the firm can shed its bad assets, make itself a much smaller and healthier firm and then settle into long-term stable growth.
- As an investor, your worst case scenario is that these firms are run by managers in denial who continue to expand the firm by making bad investments (that generate lower returns than the cost of capital). These firms may be able to grow revenues and operating income but will destroy value along the way.

Figure 14.5: A Valuation of JC Penney

Declining business: Revenues expected to drop by 3% a year for next 5 years

	Base year	1	2	3	4	5	6	7	8	9	10
Revenue growth rate		-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	-2.00%	-1.00%	0.00%	1.00%	2.00%
Revenues	\$ 12,522	\$12,146	\$11,782	\$11,428	\$11,086	\$10,753	\$10,538	\$10,433	\$10,433	\$10,537	\$10,748
EBIT (Operating) margin	1.32%	1.82%	2.31%	2.80%	3.29%	3.79%	4.28%	4.77%	5.26%	5.76%	6.25%
EBIT (Operating income)	\$ 166	\$ 221	\$ 272	\$ 320	\$ 365	\$ 407	\$ 451	\$ 498	\$ 549	\$ 607	\$ 672
Tax rate	35.00%	35.00%	35.00%	35.00%	35.00%	35.00%	36.00%	37.00%	38.00%	39.00%	40.00%
EBIT(1-t)	\$ 108	\$ 143	\$ 177	\$ 208	\$ 237	\$ 265	\$ 289	\$ 314	\$ 341	\$ 370	\$ 403
- Reinvestment		\$ (188)	\$ (182)	\$ (177)	\$ (171)	\$ (166)	\$ (108)	\$ (53)	\$ -	\$ 52	\$ 105
FCFF		\$ 331	\$ 359	\$ 385	\$ 409	\$ 431	\$ 396	\$ 366	\$ 341	\$ 318	\$ 298
Cost of capital		9.00%	9.00%	9.00%	9.00%	9.00%	8.80%	8.60%	8.40%	8.20%	8.00%
PV(FCFF)		\$ 304	\$ 302	\$ 297	\$ 290	\$ 280	\$ 237	\$ 201	\$ 173	\$ 149	\$ 129
Terminal value	\$ 5,710										
PV(Terminal value)	\$ 2,479										
PV (CF over next 10 years)	\$ 2,362										
Sum of PV	\$ 4,841										
Probability of failure =	20.00%	High debt load and poor earnings put survival at risk. Based on bond rating, 20% chance of failure and liquidation will bring in 50% of book value									
Proceeds if firm fails =	\$2,421										
Value of operating assets =	\$4,357										

Margins improve gradually to median for US retail sector (6.25%)

As stores shut down, cash released from real estate.

The cost of capital is at 9%, higher because of high cost of debt.

b. Dealing with the “downside” of Distress

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- A DCF valuation values a firm as a going concern. If there is a significant likelihood of the firm failing before it reaches stable growth and if the assets will then be sold for a value less than the present value of the expected cashflows (a distress sale value), DCF valuations will overstate the value of the firm.
- Value of Equity= DCF value of equity (1 - Probability of distress) + Distress sale value of equity (Probability of distress)
- There are three ways in which we can estimate the probability of distress:
 - ▣ Use the bond rating to estimate the cumulative probability of distress over 10 years
 - ▣ Estimate the probability of distress with a probit
 - ▣ Estimate the probability of distress by looking at market value of bonds..
- The distress sale value of equity is usually best estimated as a percent of book value (and this value will be lower if the economy is doing badly and there are other firms in the same business also in distress).

Current Revenue
\$ 4,390

Current Margin:
4.76%

EBIT
\$ 209m

Reinvestment:
Capital expenditures include cost of new casinos and working capital

Extended reinvestment break, due to investment in past

Industry average

Expected Margin:
-> 17%

Stable Growth

Stable Revenue Growth: 3%	Stable Operating Margin: 17%	Stable ROC=10% Reinvest 30% of EBIT(1-t)
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Terminal Value = $758 \cdot (0.0743 - 0.03)$
= \$ 17,129

Value of Op Assets \$ 9,793
+ Cash & Non-op \$ 3,040
= Value of Firm \$ 12,833
- Value of Debt \$ 7,565
= Value of Equity \$ 5,268

Value per share \$ 8.12

Revenues	\$4,434	\$4,523	\$5,427	\$6,513	\$7,815	\$8,206	\$8,616	\$9,047	\$9,499	\$9,974	\$10,273
Oper margin	5.81%	6.86%	7.90%	8.95%	10%	11.40%	12.80%	14.20%	15.60%	17%	17%
EBIT	\$258	\$310	\$429	\$583	\$782	\$935	\$1,103	\$1,285	\$1,482	\$1,696	\$1,746
Tax rate	26.0%	26.0%	26.0%	26.0%	26.0%	28.4%	30.8%	33.2%	35.6%	38.00%	38%
EBIT * (1 - t)	\$191	\$229	\$317	\$431	\$578	\$670	\$763	\$858	\$954	\$1,051	\$1,083
- Reinvestment	-\$19	-\$11	\$0	\$22	\$58	\$67	\$153	\$215	\$286	\$350	\$325
FCFF	\$210	\$241	\$317	\$410	\$520	\$603	\$611	\$644	\$668	\$701	\$758
	1	2	3	4	5	6	7	8	9	10	Forever
Beta	3.14	3.14	3.14	3.14	3.14	2.75	2.36	1.97	1.59	1.20	
Cost of equity	21.82%	21.82%	21.82%	21.82%	21.82%	19.50%	17.17%	14.85%	12.52%	10.20%	
Cost of debt	9%	9%	9%	9%	9%	8.70%	8.40%	8.10%	7.80%	7.50%	
Debt/ratio	73.50%	73.50%	73.50%	73.50%	73.50%	68.80%	64.10%	59.40%	54.70%	50.00%	
Cost of capital	9.88%	9.88%	9.88%	9.88%	9.88%	9.79%	9.50%	9.01%	8.32%	7.43%	

Term. Year
\$10,273
17%
\$1,746
38%
\$1,083
\$325
\$758

Cost of Equity
21.82%

Cost of Debt
 $3\% + 6\% = 9\%$
 $9\% (1 - 0.38) = 5.58\%$

Weights
Debt = 73.5% -> 50%

Riskfree Rate:
T. Bond rate = 3%

+ **Beta**
3.14 -> 1.20

Risk Premium
6%

Casino
1.15

Current
D/E: 277%

Base Equity
Premium

Country Risk
Premium

Las Vegas Sands
February 2009
Trading @ \$4.25

Adjusting the value of LVS for distress..

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- In February 2009, LVS was rated B+ by S&P. Historically, 28.25% of B+ rated bonds default within 10 years. LVS has a 6.375% bond, maturing in February 2015 (7 years), trading at \$529. If we discount the expected cash flows on the bond at the riskfree rate, we can back out the probability of distress from the bond price:

$$529 = \sum_{t=1}^{t=7} \frac{63.75(1 - \Pi_{\text{Distress}})^t}{(1.03)^t} + \frac{1000(1 - \Pi_{\text{Distress}})^7}{(1.03)^7}$$

- Solving for the probability of bankruptcy, we get:
 - π_{istress} = Annual probability of default = 13.54%
 - Cumulative probability of surviving 10 years = $(1 - .1354)^{10} = 23.34\%$
 - Cumulative probability of distress over 10 years = $1 - .2334 = .7666$ or 76.66%
- If LVS is becomes distressed:
 - Expected distress sale proceeds = \$2,769 million < Face value of debt
 - Expected equity value/share = \$0.00
- Expected value per share = $\$8.12 (1 - .7666) + \$0.00 (.7666) = \$1.92$

IV. Emerging Market Companies

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.

A \$ Valuation of Embraer

Avg Reinvestment rate = 40%

Current Cashflow to Firm

EBIT(1-t) : \$ 434
 - Nt CpX - 11
 - Chg WC 178
 = FCFF \$ 267
 Reinvestment Rate = $167/289 = 56\%$
 Effective tax rate = 19.5%

Reinvestment Rate 40%

Expected Growth in EBIT (1-t)

$.40 \times .181 = .072$
7.2%

Return on Capital 18.1%

Stable Growth
 $g = 3.8\%$; Beta = 1.00;
 Country Premium = 1.5%
 Cost of capital = 7.38%
 ROC = 7.38%; Tax rate = 34%
 Reinvestment Rate = $g/ROC = 3.8/7.38 = 51.47\%$

Terminal Value₅ = $254 \times (.0738 - .038) = 8,371$

\$ Cashflows

Year	2	3	4	5	
EBIT (1-t)	\$465	\$499	\$535	\$574	\$615
- Reinvestment	\$186	\$200	\$214	\$229	\$246
FCFF	\$279	\$299	\$321	\$344	\$369

Term Yr
524
270
= 254

Discount at \$ Cost of Capital (WACC) = $8.31\% (.788) + 4.36\% (0.212) = 7.47\%$

Op. Assets \$ 6,239
 + Cash: 3,068
 - Debt 2,070
 - Minor. Int. 177
 = Equity 7,059
 - Options 4
 Value/Share \$9.53
 R\$ 15.72

Cost of Equity 8.31%

Cost of Debt
 $(3.8\% + 1.7\% + 1.1\%) \times (1 - .34) = 4.36\%$

Weights
 E = 78.8% D = 21.2%

On May 22, 2008
 Embraer Price = R\$ 17.2

Riskfree Rate:
 US\$ Riskfree Rate = 3.8%

+ **Beta**
 0.88

x **Mature market premium**
 4%

+ **Lambda**
 0.27

x **Country Equity Risk Premium**
 3.66%

Unlevered Beta for Sectors: 0.75

Firm's D/E Ratio: 26.84%

Country Default Spread 2.2%

x Rel Equity Mkt Vol 1.64

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).

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*.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

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

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

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*.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 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**

	Year 1	Year 2	Year 3	Year 4	Year 5
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

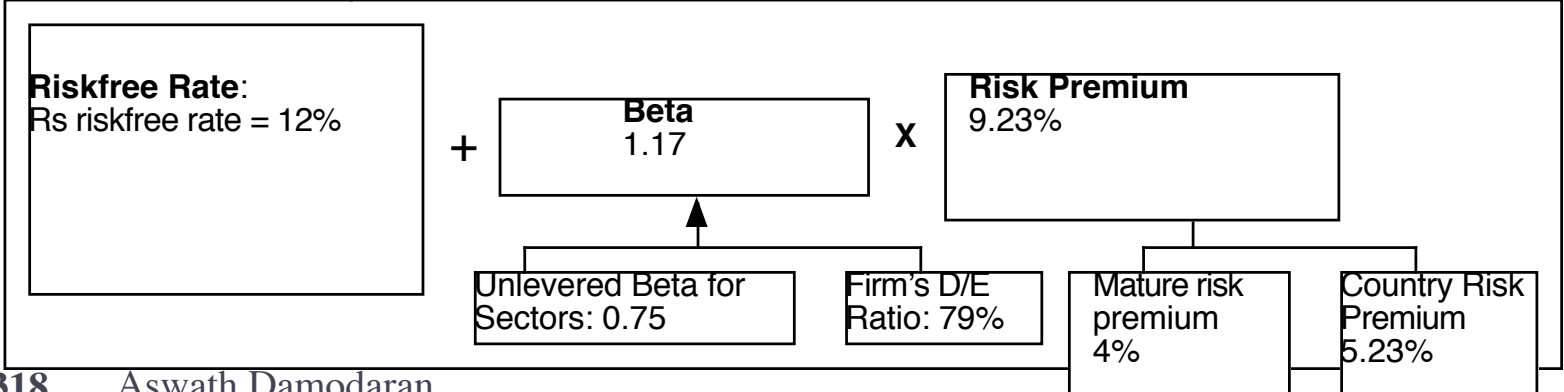
Term Yr
6,615
2,711
3,904

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%



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
 $60 \cdot .122 + .0581 = .1313$
13.13%

Return on Capital
12.20%

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

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

Terminal Value₅ = $5081 / (.1478 - .05) = 51,956$

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

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%