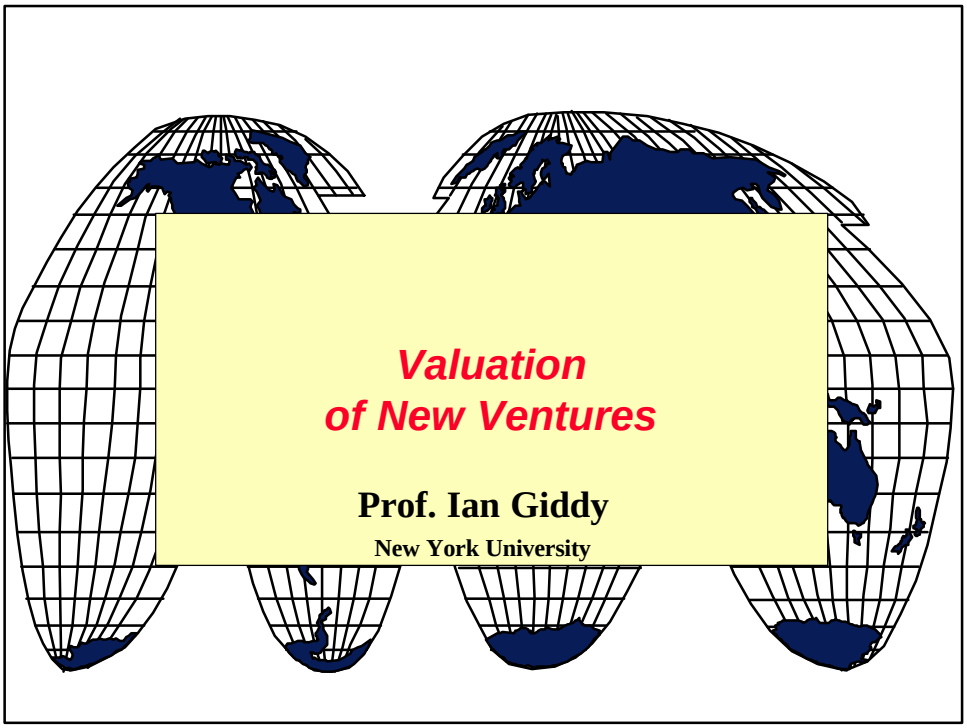

What's a Company Worth? Alternative Models

- The options approach
  - Option to expand
  - Option to abandon
- Creation of key resources that another company would pay for
  - Patents or trademarks
  - Teams of employees
  - Customers
- *Examples?*

Amazon

Lycos

Messageclick.com

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Discounted Cashflow Valuation: Basis for Approach

$$\text{Value} = \sum_{t=1}^{t=n} \frac{CF_t}{(1+r)^t}$$

- where
- n = Life of the asset
- CF_t = Cashflow in period t
- r = Discount rate reflecting the riskiness of the estimated cashflows

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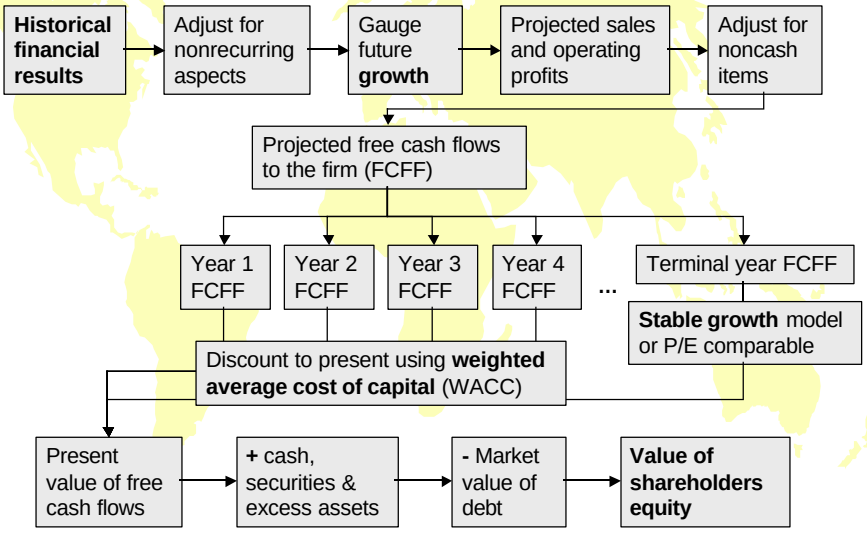
Valuing a Firm with DCF: An Illustration



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Valuation Example

Fong Industries (Pte) Ltd Singapore

Profit & Loss (S$'000) *FYE 30 Jun*	1994	1995		1996		1997		1998		1999
Turnover	9,651	57,888		125,010		120,323		136,003		134,813
Directors' Fees & Rem	107	249		368		820		961		964
Amortisation	0	269		279		280		35		39
Depreciation	639	1,041		1,277		3,812		4,673		4,494
Interest Expense	227	445		615		1,002		1,078		697
Bad Debts W/O								100		
Fixed Assets W/O	4							543		27
FX loss						85		282		
Profit b/f Tax	933	1,990		838		1,250		3,774		6,897
Assoc Co						(74)		37		(14)
	933	1,990		838		1,176		3,811		6,883
Tax	3			96		292		929		178
Profit a/f Tax	930	1,990		742		884		2,882		6,705
Effective Tax Rate	0.32%	0.00%		11.46%		24.83%		24.38%		2.59%
EOI				7,292		(768)		(7)		(156)
EBITDA	**1,799**	**3,745**	108.17%	**3,009**	-19.65%	**6,270**	108.37%	**9,597**	####	**12,113**
ISC	**792.51%**	**841.57%**		**489.27%**		**625.75%**		**890.26%**		**1737.88%**

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The Value of a Corporate Option

- Having the exclusive rights to a product or project is valuable, even if the product or project is not viable today.
- The value of these rights increases with the volatility of the underlying business.
- The cost of acquiring these rights (by buying them or spending money on development - R&D, for instance) has to be weighed off against these benefits.

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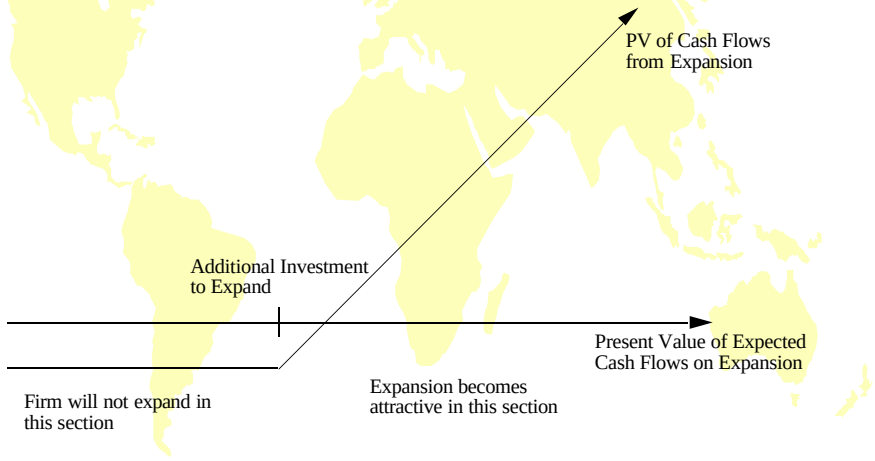
The Option to Expand



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An Example of a Corporate Option

- J&J is considering investing $110 million to purchase an internet distribution company to serve the growing on-line market.
- A conventional NPV financial analysis of the cash flows from this investment suggests that the present value of the cash flows from this investment to J&J will be only $95 million. Thus, by itself, the corporate venture has a **negative NPV of $15 million**.
- If the on-line market turns out to be more lucrative than currently anticipated, J&J **could expand** its reach a global on-line market with **an additional investment of $125 million** any time over the next 2 years. While the current expectation is that the PV of cash flows from having a worldwide on-line distribution channel is only **$100 million** (still negative NPV), there is considerable uncertainty about both the potential for such an channel and the shape of the market itself, leading to significant variance in this estimate.
- ***This uncertainty is what makes the corporate venture valuable!***

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Valuing the Corporate Venture Option

- *The corporate option would cost an expected $15 million. But what is it worth to J&J?*
- Value of the underlying asset (S) = PV of cash flows from purchase of on-line selling venture, if done now =$100 Million
- Strike Price (K) = cost of expansion into global on-line selling = $125 Million
- We estimate the variance in the estimate of the project value by using the annualized volatility (standard deviation) in firm value of publicly traded on-line marketing firms in the global markets, which is approximately 50%.
  - Variance in Underlying Asset's Value = SD^2=.25
- Time to expiration = Period for which "venture option" applies = 2 years
- 2-year interest rate: 6.5%

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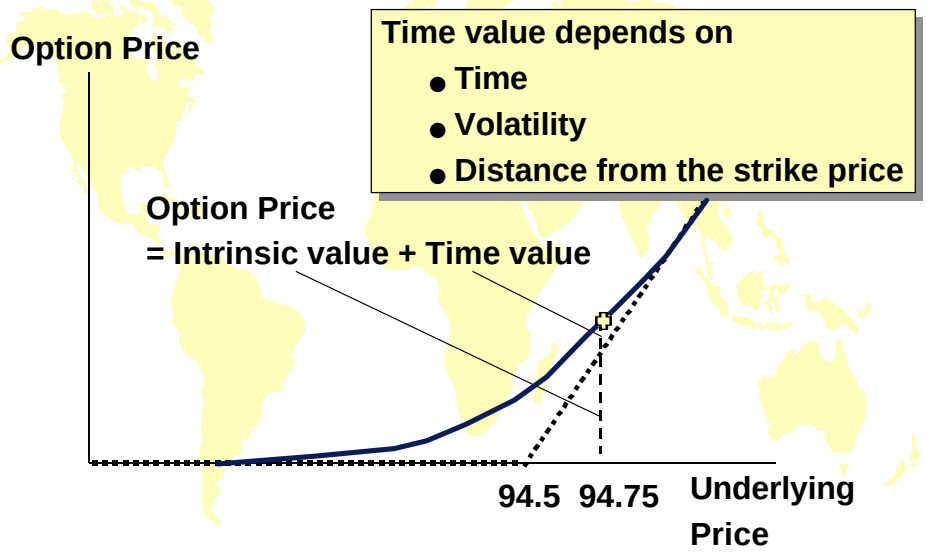
Option Pricing



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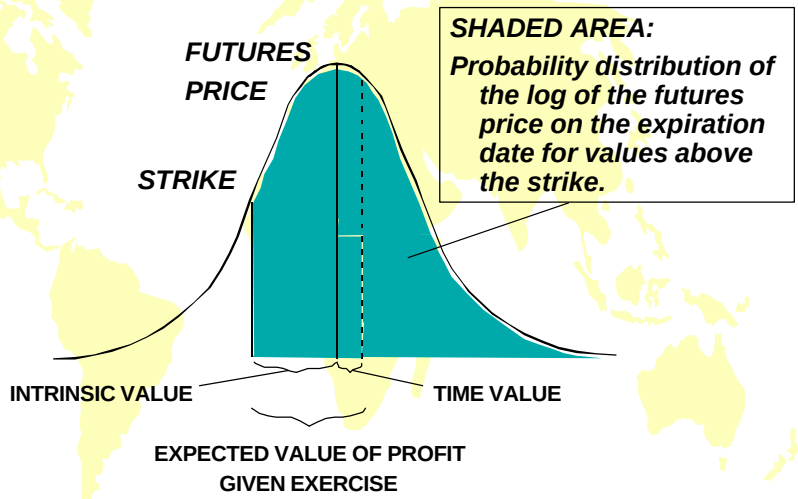
Value of Call Option



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Black-Scholes Option Valuation

Call value = $S_o N(d_1) - Xe^{-rT} N(d_2)$

$d_1 = [\ln(S_o/X) + (r + \sigma^2/2)T] / (\sigma T^{1/2})$

$d_2 = d_1 - (\sigma T^{1/2})$

where

S_o = Current stock price

X = Strike price, T = time, r = interest rate

N(d) = probability that a random draw from a normal distribution will be less than d.

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Valuing the Corporate Venture Option

- Value of the underlying asset (S) = PV of cash flows from purchase of on-line selling venture, if done now =$100 Million
- Strike Price (X) = cost of expansion into global on-line selling = $125 Million
- We estimate the variance in the estimate of the project value by using the annualized standard deviation in firm value of publicly traded on-line marketing firms in the global markets, which is approximately 50%.
  - Variance in Underlying Asset's Value = SD^2=0.25
- Time to expiration = Period for which "venture option" applies = 2 years
- 2-year interest rate: 6.5%

Call Value = 100 $N(d_1)$ -125 (exp(-0.065)(2)) $N(d_2)$
= $ 24.2 Million

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Conclusion?

Johnson & Johnson should go ahead and invest in the venture -- the value of the option ($24 million) exceeds the cost ($15 million)

Can this approach be used to value highly speculative ventures?

Option pricing:

http://www.axone.ch/JavaCalculators.htm

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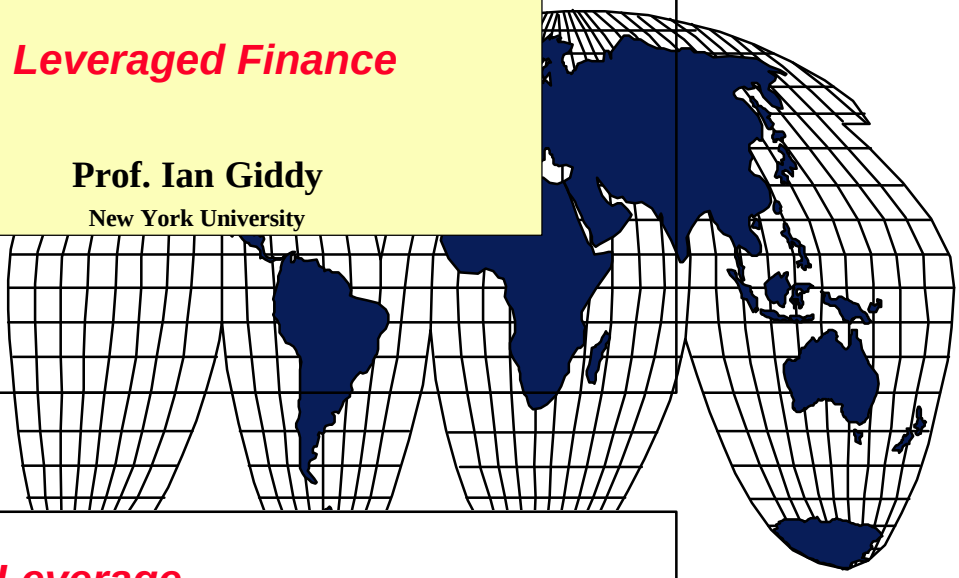
Leveraged Finance

Prof. Ian Giddy
New York University



M&A and Leverage

Company has unused debt capacity

- **Takeover?**
- **Leveraged buyout?**
- **Leveraged recapitalization?**

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Leveraged Financing

Leveraged Finance is the provision of bank loans and the issue of high yield bonds to fund acquisitions of companies or parts of companies by

- an existing internal management team (a management buy-out),
- an external management team (a management buy-in), or
- a third party (a leveraged acquisition).

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Leveraged Finance is Driven by Free Cash Flow

- Free cash flow is cash flow in excess of that required to fund all the company's positive net present value investment opportunities
- Free cash flow tempts companies to waste cash
- Leveraged finance is designed to take advantage of a company’s free cash flow

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Asian LBO Examples

- CCM Malaysia
- ASAT Hong Kong
- Mando Korea
- "EMAS"

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CCM's Buyout of ICI Malaysia

- November 1994: management buy-out of 50.1% equity interest in ICI (Malaysia) to three executive directors of CCM for RM 206.00 million
- The buy-out was financed primarily by bank loans that served as bridge financing. The bridge financing was repaid out of the proceeds of divestitures of non-core businesses, and from a RM150 million bond issue in 1995

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ASAT LBO

- November 1999: a financial investor group led by Chase Manhattan Corp's private equity arm for Asian investments buys a 50% stake from ASAT's loss-plagued parent, QPL
- Financing of the deal done through a US$150m high-yield bond, a US$60m syndicated bank loan and equity contributions from the partners in the consortium

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Mando LBO

- South Korea's Mando Machinery Corp purchased in early 1999 by Chase Capital Partners and UBS for $446 million
- Funded with $167 million of equity from the investors and a 316 billion won ($279 million) bridge loan facility from Korean financial institutions

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The Alchemy

Successful leveraged finance depends on:

- Free cash flow analysis
- Before-and-after valuation
- Structuring the financing

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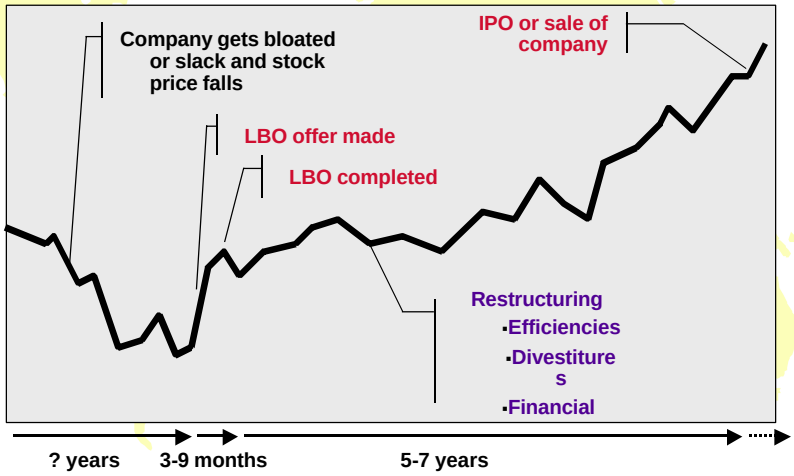
Typical LBO Sequence



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The John M Case Leveraged Buy-Out

- What are the most important operating and financial characteristics of the Case Company ?
- Is the company worth Mr Case's $20 million asking price ?
- Can the $20 million purchase be financed so that management can retain at least 51% ownership ? What sources should management tap ? In what amounts? Is the return being sought by the venture capital reasonable ?

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QUESTIONS cont.

4. How compelling a buyout opportunity is this proposition for the four managers ?

5. Would you, as a commercial banking lender, provide the loan needed to finance the seasonal buildup in accounts receivable and inventory ? On what terms ?

6. Would you, as the venture capital firm, provide the balance of the funds needed ? If so, on what terms ?

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POSITIVES :

- The company has a stable product
- The company enjoys good profit margins
- There are important barriers to competitor entry
- The business is not too asset-intensive
- The four key managers know the business well

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NEGATIVES :

- Sales growth is probably quite limited
- This low-tech product has no patent protection
- Even if outsiders find it difficult to penetrate the market, that may not apply to vendors already in the industry, most particularly, the Watts Company

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Book Value Basis :

- Asking price : twice the value of the company's equity
- Why would anyone pay this ?
- If the profitability of the company justifies it
- - in this case, it appears to – ROE around 20 % or $ 2 million in 1984

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Comparable Company Value

- Common practice to compare its value with those accorded to publicly traded companies in a similar business
- After comparisons made, it is seen that the Case asking price is in line with the market value of a publicly traded competitor

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FINANCING SOURCES :

- Bank Loan
- Loan from Mr Case
- Venture Capitalists' Investment

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John M Case LBO

John Case, owner

Company $20 million

buyers

Payment:

- **Bank debt $6m**
- **Seller note $4m**
- **Sub debt with warrants $9.5m**
- **Manager's equity $0.5m**

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John Case Valuation Spreadsheet

John Case Valuation		1	2	3	4	5	6
Year		1985	1986	1987	1988	1989	1990
Principal Repayment							7500
Coupon payments		675	675	675	675	675	675
Total Repayments		675	675	675	675	675	8175
Return @ 20%		0.2	0.2	0.2	0.2	0.2	0.2
NPV		562.5	468.75	390.625	325.5208	271.2674	2737.791
NPV @ yr0	4756.454						
Equity	2743.546						
Total VC	7500						
I) FCF#1: Original Core Business							
FCF after financing:		1448	1702	1920	2114	1982	2002
NPV of FCF after financing		1362.759	1507.512	1600.491	1658.469	1463.379	1391.13
NPV of FCF @ yr 0	8983.741						
NPV of VC Equity	2743.546						
Total Equity	11727.29						
II) FCF#2: Expansion Plan							
Turnover		1000	1400	1960	2744	3073.28	3442.074
Profit (margin of 6%)		60	84	117.6	164.64	184.3968	206.5244
NPV of FCF after financing		56.46793	74.4013	98.03004	129.1629	136.1465	143.5077
NPV of FCF @ yr 0	637.7164						
III) Total Equity Valuatic	12365						

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Simplified Balance Sheet for a restructured J.M.Case Company

Assets		*Liabilities*	
Cash	$5762	Current Liab	$1266
Other current	3236	Bank loan	6000
Fixed & other	2184	Case loan	4000
Good will	10084	Plug figure	9500
		Managers' equity	500
Total	21,266	Total	21,266

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John Case
Cost of Capital

Liabilities		Nominal	Effective	Weight	Product
Current	$1,266	0%	0.00%	5.95%	0.00%
Bank loan	$6,000	12%	8.40%	28.21%	2.37%
Seller note	$4,000	4%	8.17%	18.81%	1.54%
VC plug	$9,500	9%	21.40%	44.67%	9.56%
Managers' equity	$500		30%	2.35%	0.71%
	$21,266				14.17%

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