A decorative vertical bar on the left side of the slide, composed of several overlapping rectangular segments of varying shades of gray. A horizontal line extends from the top of this bar across the top of the slide.

Information Transparency: Can you value what you cannot see?

Aswath Damodaran

An Experiment

	Company A	Company B
Operating Income	\$ 1 billion	\$ 1 billion
Tax rate	40%	40%
ROIC	10%	10%
Expected Growth	5%	5%
Cost of capital	8%	8%
Business Mix	Single Business	Multiple Businesses
Holdings	Simple	Complex
Accounting	Transparent	Opaque

■ *Which firm would you value more highly?*

Transparency: The Basic Questions

- Some companies reveal more about themselves in their financials than others.
- The key questions that relate to transparency are the following:
 - What is it that we would like to know about companies when we value them?
 - Why are some companies more opaque than others?
 - How do we measure transparency?
 - How, if at all, should we consider transparency in the context of valuation?

Sources of Complexity

- Accounting Standards
- Nature and mix of businesses
- Structuring of businesses
- Financing Choices

1. Accounting Standards

- Inconsistency in applying accounting principles
 - Operating leases versus Debt
 - Investment in Plant & Equipment versus R&D
 - Pooling versus Purchase Accounting
 - Salary based compensation versus Option based compensation
- Fuzzy Accounting Standards
 - One-time charges
 - Hidden Assets
 - Earnings Smoothing
- Unintended Consequences of Increased Disclosure

2. Nature and Mix of Businesses

- **Industry mix:** Diversification and increasing size has led many firms to enter multiple businesses which often are very different. This makes the resulting financial statements difficult to decipher.
- **Country mix:** For other firms the complexity has come from global expansion. The financial statements have to wrestle with questions of exchange rate conversions and their effects on asset value and earnings.

3. Structuring of Businesses

- Accounting for Cross Holdings: The different and often inconsistent ways in which cross holdings are accounted for can make valuation hazardous.
 - With majority active holding, the full consolidation of financials even when the firm owns less than 100% opens up the question of how to deal with minority holdings.
 - With minority holdings, tracing the income from the holding and the assets of the holding can be difficult especially with private holdings.
- Creative holding structures: Special purpose entities and other such structures can result in assets and liabilities being moved off the books (for legitimate and illegitimate purposes).

4. Financing Choices

- Financing choices have proliferated in the last two decades. From a simple mix of bonds and stocks, firms have progressively moved on to add
 - Hybrid securities that are combinations of debt and equity, thus making them difficult to categorize
 - New securities that defy description...
Derivative securities
- These financing choices have made accounting statements more complicated creating new categories (quasi equity) and confounding old ones.

Reasons for Complexity

■ Control

- Complex holding structures were designed to make it more difficult for outsiders (which includes investors) to know how much a firm is worth, how much it is making and what assets it holds.
- Multiple classes of shares and financing choices also make it more likely that incumbents can retain control in the event of a challenge.

■ Tax Benefits

- Complex tax law begets complex business mixes and holding structures.
 - Different tax rates for different locales and different transactions
 - Tax credits

■ Deceit

Measuring Complexity

- Volume of data in financial statement
- The Opacity Index (Price Waterhouse)
- Information Based Index

1. Volume of Data in Financial Statements

<i>Company</i>	<i>Number of pages in last 10Q</i>	<i>Number of pages in last 10K</i>
General Electric	65	410
Microsoft	63	218
Wal-mart	38	244
Exxon Mobil	86	332
Pfizer	171	460
Citigroup	252	1026
Intel	69	215
AIG	164	720
Johnson & Johnson	63	218
IBM	85	353

2. The Opacity Index (PW)

■ $O_i = 1/5 * [C_i + L_i + E_i + A_i + R_i]$,

where i indexes the countries and:

- **O** refers to the composite O-Factor (the final score);
- **C** refers to the impact of corrupt practices;
- **L** refers to the effect of legal and judicial opacity (including shareholder rights);
- **E** refers to economic/policy opacity;
- **A** refers to accounting/corporate governance opacity; and
- **R** refers to the impact of regulatory opacity and uncertainty/arbitrariness.

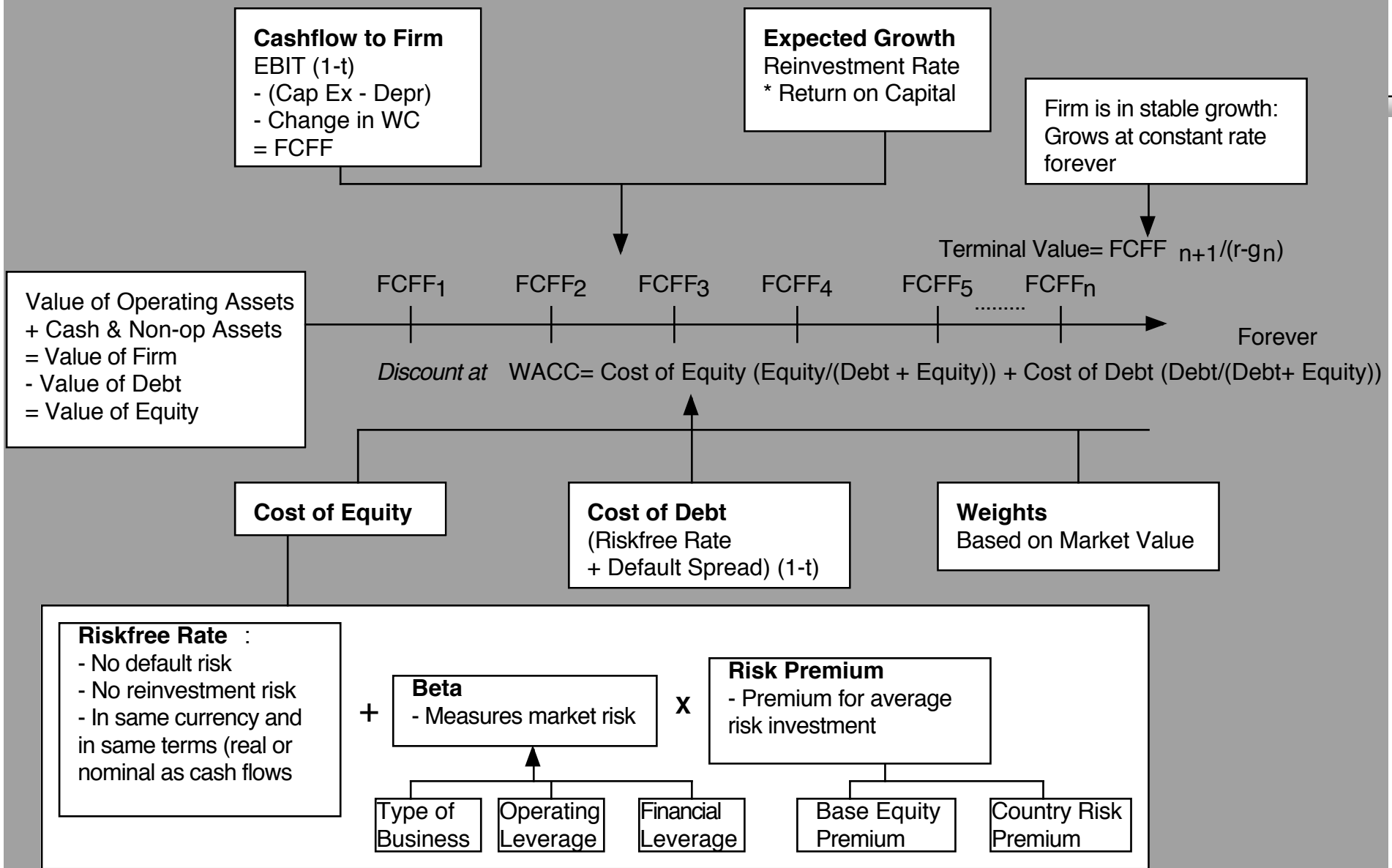
Most Opaque and Least Opaque Countries

<i>Country</i>	<i>C</i>	<i>L</i>	<i>E</i>	<i>A</i>	<i>R</i>	<i>O-Factor</i>
Least Opaque						
Singapore	13	32	42	38	23	29
Chile	30	32	52	28	36	36
USA	25	37	42	25	48	36
UK	15	40	53	45	38	38
Hong Kong	25	55	49	53	42	45
Most Opaque						
South Korea	48	79	76	90	73	73
Turkey	51	72	87	80	81	74
Indonesia	70	86	82	68	69	75
Russia	78	84	90	81	84	84
China	62	100	87	86	100	87

3. An Information Based Index

Assets		Liabilities	
<p>What are the assets in place? How valuable are these assets? How risky are these assets?</p>	Assets in Place	Debt	<p>What is the value of the debt? How risky is the debt?</p>
<p>What are the growth assets? How valuable are these assets?</p>	Growth Assets	Equity	<p>What is the value of the equity? How risky is the equity?</p>

DISCOUNTED CASHFLOW VALUATION



Devising the Index

Valuation Input	Complexity Factors	Reasons
Operating Income	<ol style="list-style-type: none"> 1. Multiple Businesses 2. One-time income and expenses 3. Income from unspecified sources 4. Items in income statement that are volatile 	<p>Makes it difficult to trace source of operating income</p> <p>Makes forecasting of future income difficult</p> <p>Makes forecasting of future income difficult</p> <p>Makes forecasting of future income difficult</p>
Tax Rate	<ol style="list-style-type: none"> 1. Income from multiple locales 2. Different tax and reporting books 3. Headquarters in tax havens 4. Volatile effective tax rate 	<p>Different tax rates in different locales</p> <p>Effective tax rate is meaningless</p> <p>Maneuvers to reduce taxes can lead to complexity</p> <p>Forecasting tax rate becomes difficult</p>
Capital Expenditures	<ol style="list-style-type: none"> 1. Volatile capital expenditures 2. Frequent and large acquisitions 3. Stock payment for acquisitions and investments 	<p>Forecasting becomes difficult</p> <p>Requires normalization over several years</p> <p>Difficult to figure out how much acquisitions cost</p>
Working capital	<ol style="list-style-type: none"> 1. Unspecified current assets and current liabilities 2. Volatile working capital items 	<p>Becomes repository for miscellaneous assets</p> <p>Forecasting working capital needs is difficult.</p>
Expected Growth rate	<ol style="list-style-type: none"> 1. Off-balance sheet assets and liabilities (operating leases and R&D) 2. History of stock buybacks 3. Changing return on capital over time 	<p>Makes measuring capital invested difficult</p> <p>Pushes down book value of equity and increases returns</p> <p>Makes forecasting returns more difficult</p>
Cost of capital	<ol style="list-style-type: none"> 1. Multiple businesses 2. Operations in emerging markets 3. No market traded debt 4. No bond rating 5. Off-balance sheet debt 	<p>As business mix changes, the beta will change</p> <p>Different risk premiums for different markets</p> <p>You have to estimate market value of debt</p> <p>Estimating default spread becomes difficult</p> <p>Debt ratio difficult to estimate</p>
Cross Holdings	<ol style="list-style-type: none"> 1. Holdings in publicly traded firms 2. Holdings in private companies 3. Holdings in other entities 	<p>Requires that these companies be valued</p> <p>Impossible to get information on private company holdings</p> <p>Used to hide assets, debt and other unpleasant facts</p>
Employee options	<ol style="list-style-type: none"> 1. Options granted in the past 2. Continuing option grants 	<p>Insufficient information to value options</p> <p>Difficult to estimate expected drain in future periods</p>

Using the Index

<i>Item</i>	<i>Factors</i>	<i>Follow-up Question</i>	<i>Answer</i>	<i>Complexity score</i>
Operating Income	1. Multiple Businesses	Number of businesses (with more than 10% of revenues) =	2	4
	2. One-time income and expenses	Percent of operating income =	20%	1
	3. Income from unspecified sources	Percent of operating income =	15%	0.75
	4. Items in income statement that are volatile	Percent of operating income =	5%	0.25
Tax Rate	1. Income from multiple locales	Percent of revenues from non-domestic locales =	100%	3
	2. Different tax and reporting books	Yes or No	Yes	3
	3. Headquarters in tax havens	Yes or No	Yes	3
	4. Volatile effective tax rate	Yes or No	Yes	2
Capital Expenditures	1. Volatile capital expenditures	Yes or No	Yes	2
	2. Frequent and large acquisitions	Yes or No	Yes	4
	3. Stock payment for acquisitions and investments	Yes or No	Yes	4
Working capital	1. Unspecified current assets and current liabilities	Yes or No	Yes	3
	2. Volatile working capital items	Yes or No	Yes	2
Expected Growth rate	1. Off-balance sheet assets and liabilities (operating leases and R&D)	Yes or No	Yes	3
	2. Substantial stock buybacks	Yes or No	Yes	3
	3. Changing return on capital over time	Is your return on capital volatile?	Yes	5
	4. Unsustainably high return	Is your firm's ROC much higher than industry average?	Yes	5
Cost of capital	1. Multiple businesses	Number of businesses (more than 10% of revenues) =	2	2
	2. Operations in emerging markets	Percent of revenues=	30%	1.5
	3. Is the debt market traded?	Yes or No	Yes	0
	4. Does the company have a rating?	Yes or No	Yes	0
	5. Does the company have off-balance sheet debt?	Yes or No	No	0
Complexity Score =				51.5

Consequences of Complexity

- Opacity is diversifiable risk and there is no cost to opacity.
- Opacity has a cost.
 - Price Waterhouse converted their opacity index into a tax rate equivalent. For instance, a company operating in China faces a tax rate about 46% higher than it would in a country with complete transparency.
 - Evidence suggests that conglomerates are discounted about 10% relative to the value of their parts.
 - Other evidence consistent with a complexity cost
 - Returns on IPOs are inversely proportional to the number of pages in prospectus.
 - Emerging market stocks that list ADRs see stock prices increase on listing.

Dealing with Complexity

- **The Aggressive Analyst:** Trust the firm to tell the truth and value the firm based upon the firm's statements about their value.
- **The Conservative Analyst:** Don't value what you cannot see.
- **The Compromise:** Adjust the value for complexity
 - Adjust cash flows for complexity
 - Adjust the discount rate for complexity
 - Adjust the expected growth rate/ length of growth period
 - Value the firm and then discount value for complexity

1. Adjust the Cash Flows for Complexity

- a. Identify how much of the earnings of the firm come from assets that are invisible or not clearly identified. In particular, focus on earnings from holdings in private businesses (or special purpose entities) as well as other non-operating income (such as income from pension funds and non-recurring transactions)
- b. Assign a probability that management of the firm can be trusted with their forecasts. This is difficult to do, but it should reflect both objective and subjective factors. Among the objective factors is the history of the firm – past accounting restatements or errors will weigh against the management – and the quality of corporate governance – firms with strong and independent boards should be more likely to be telling the truth. The subjective factors come from your experiences with the management of the firm, though some managers can be likeable and persuasive, even when they are misrepresenting the facts.

2. Adjust the Discount rate for complexity

- Estimate the historical risk premium attached to complex firms by comparing the returns you would have made on a portfolio of complex firms historically to the returns you would have earned on a market index.
- Adjust the betas of complex firms for the lack of the transparency. If you trust markets, it is possible that the betas of complex firms will be higher than the betas of simple firms.
- Relate the adjustment of the discount rate to the information that is not provided in the financial statements. You can estimate the beta of a firm by taking a weighted average of the betas of the businesses it is in. If the financial statements are so opaque that you cannot get one or another of these two pieces of information for some of the businesses that the firm operates in, you should err on the side of caution and assume that these businesses are much riskier than the rest of the firm and attach a large enough weight to these businesses to make the overall beta increase.
- d. If the complexity is not in the asset side of the balance sheet but on the liability side, you could adjust the debt to equity ratio to reflect the true leverage of the firm (including the off-balance sheet debt).

3. Adjust Expected Growth/ Length of Growth Period

- In valuing any firm, two key inputs that determine value are the length of the growth period and the expected growth rate during the period. More fundamentally, it is the assumptions about excess returns on new investments made by the firm during the period that drive value.
- One way to adjust the value of complex companies then is to assume a lower return on capital on future investments and assume that these excess returns will fade much more quickly. In practical terms, the lower expected growth rate and shorter growth periods that emerge will result in a lower value for the firm.

4. Estimate a complexity discount to value

1. One is to develop a rule of thumb, similar to those used by analysts who value private companies to estimate the effect of illiquidity.
2. A slightly more sophisticated option is to use a complexity scoring system, to measure the complexity of a firm's financial statements and to relate the complexity score to the size of the discount.
3. You could compare the valuations of complex firms to the valuation of simple firms in the same business, and estimate the discount being applied by markets for complexity. With the hundred largest market cap firms, for instance:

$$PBV = 0.65 + 15.31 \text{ ROE} - 0.55 \text{ Beta} + 3.04 \text{ Expected growth rate} - 0.003 \text{ \# Pages in 10K}$$

Thus, a firm with a 15% return on equity, a beta of 1.15, and expected growth rate of 10% and 350 pages in the 10K would have a price to book ratio of

$$PBV = 0.65 + 15.31 (.15) - 0.55 (1.20) + 3.04 (.10) - .003 (350) = 1.54$$

4. If a firm is in multiple businesses, and some businesses are simple and others are complex, you could value the company in pieces attaching no discount to the simple pieces and a greater discount to the more complex parts of the firm.

Cures for Complexity

- Legislation
 - Useful for creating a uniform base standard and show moral outrage
 - Blunt instrument with unintended consequences
- Auditing and Accounting Integrity
 - Reduce conflicts of interest
 - Have fewer and simpler rules, with less discretion on rules.
 - One set of books for both reporting and tax purposes
 - Better reporting when in multiple businesses
 - Capital arms (GE capital etc.) should report separately
- Skeptical investors and Proactive Analysts
- Stronger Corporate Governance