

Musings on Valuation: Fair Value Accounting, ERP and the Dark Side of Valuation

Aswath Damodaran

Three valuation topics.. With no particular connecting thread..

- Fair value accounting is now the path that true accountants want to follow. While those pushing for it may have the best of intentions, I am skeptical. I don't know what "fair value" means (and neither do the rule writers, I will argue) and that is creating head aches for appraisers all over.
- The risk free rate and equity risk premium are numbers we have always taken for granted in the United States. As a developed, mature market (which is what we thought we were), we took the US treasury rates as riskfree and trusted Ibbotson to deliver us the "right" equity risk premiums. The world has changed and we may need to rethink both practices.
- The more things change, the more they stay the same... A decade after the dot com bust, we have the social media boom. Can we value Facebook, Twitter and LinkedIn? Unarguably yes, but only if you don't keep inventing new paradigms and metrics.



Fair Value Accounting: Visionary Thinking or Oxymoron?

Aswath Damodaran

Three big questions about fair value accounting

- Why fair value accounting?
- What is “fair value”?
- What are the first principles that should govern fair value accounting?

Why fair value accounting?

Three points of view...

- The Dreamer: To make accounting value (book value) a reasonable measure of the true value of a company.
- The Pragmatist: If we mark assets up to fair value, investors will have a better idea of what a firm is worth and there should be therefore less uncertainty about the true value and lower variance in that value.
- The Marginalist: Fair value accounting, even if imperfect and noisy, will provide investors with useful additional information which they can use to estimate value in a company or assess its risk.

1. A New World Order

Accountants as the final arbiters of value!!

- There are some (accountants, theorists and others) who believe that it is possible to replace the current accountant balance sheet with one that reflects the true value of the company.
- In their vision, investors would not look at the market to assess the fair value of a company but at accounting statements.

The traditional accounting balance sheet...

Valued based upon motive for investment – some marked to market, some recorded at cost and some at quasi-cost

Assets are recorded at original cost, adjusted for depreciation.

The Balance Sheet

Assets		Liabilities	
Long Lived Real Assets	Fixed Assets	Current Liabilities	Short-term liabilities of the firm
Short-lived Assets	Current Assets	Debt	Debt obligations of firm
Investments in securities & assets of other firms	Financial Investments	Other Liabilities	Other long-term obligations
Assets which are not physical, like patents & trademarks	Intangible Assets	Equity	Equity investment in firm

True intangible assets like brand name, patents and customer did not show up. The only intangible asset of any magnitude (goodwill) is a plug variable that is of consequence only if you do an acquisition.

Equity reflects original capital invested and historical retained earnings.

The intrinsic value balance sheet

Recorded at intrinsic value (based upon cash flows and risk), not at original cost

Assets		Liabilities	
Existing Investments Generate cashflows today Includes long lived (fixed) and short-lived (working capital) assets	Assets in Place	Debt	Fixed Claim on cash flows Little or No role in management <i>Fixed Maturity</i> <i>Tax Deductible</i>
Expected Value that will be created by future investments	Growth Assets	Equity	Residual Claim on cash flows Significant Role in management <i>Perpetual Lives</i>

Value will depend upon magnitude of growth investments and excess returns on these investments

Intrinsic value of equity, reflecting intrinsic value of assets, net of true value of debt outstanding.

The “market value” balance sheet

A Market Value Balance Sheet

Assets		Liabilities	
Existing Investments Generate cashflows today	Investments already made	Debt	Borrowed money
Expected Value that will be created by future investments	Investments yet to be made	Equity	Owner's funds

Assets recorded at market value, i.e, what investors will be willing to pay for the assets today (rather than original cost or intrinsic value)

Should equate to market value of equity, if publicly traded.

Accounting Balance Sheet = Intrinsic value Balance Sheet

The impossible dream!

- Even in a well functioning market, there will be a divergence between intrinsic and market value of both assets (and equity). The dreamer has to first decide which balance sheet he would like the accounting balance sheet to converge on.
- Even if we were able to write up every asset to intrinsic value, all that we will obtain is the fair value of the assets in place of a company.
- Growth assets will be either impossible to value (since they do not exist and may not even be identified yet) or valued haphazardly.
- *Bottom line: Fair value accounting, even if done precisely, will create a two tier system, providing accounting values that are close to true value for mature businesses and divergent values for growth businesses.*

2. Fair value accounting = Lower volatility in markets

- Fair value accounting has had its deepest roots in the financial service businesses, where mark to market has been part of accounting practice for several years now. If the premise of fair value accounting is right, the variance in stock prices should be lower for financial service firms than for otherwise equivalent (in terms of size and maturing) industrial companies.
- Some countries have been quicker to jump on the fair value bandwagon than others. In particular, many countries with high inflation currencies adopted variants of the fair value accounting approach, allowing companies to revalue assets at least to current replacement cost. If the hypothesis is right, securities in these countries should be less volatile than securities elsewhere.

Less volatility.. Says who?

- While it may be a little unfair to use the current crisis to make any long standing arguments, the securities with the most volatility were, in fact, stocks in financial service companies that marked-to-market.
 - Marking to market gave little or no advance indication of problems to come.
 - Even more problematic was the feedback loop created by marking to market in a sliding market. Markets dropped and book values were written down. As book values were written down, investors worried about regulatory capital ratios being breached, which led stock prices to drop even further.
- Even controlling for inflation differences, there is no evidence of lower stock price volatility in countries that adopted inflation accounting. On the contrary, stock prices were often more volatile in these countries.
- *Bottom line: The acceptance of fair value accounting is going to do little to dampen stock price volatility. It may actually increase it.*

3. Useful information for investors!

- Accounting rule changes have been motivated to either protect investors (by providing warnings about dangers lurking in a company) or to provide information to investors (so that they can better assess value). Thus, rules about showing pension obligations on balance sheets are protective, whereas rules about estimating the impairment of goodwill are designed to provide information.
- The ultimate test of whether investors actually find these rules to be protective or informative comes from how they react to changes in these numbers. For instance, if there is information in the impairment of goodwill, we should expect to see stock prices react to news about impairment.

Do investors care about accounting changes? SFAS 121 versus SFAS 142

- In 2002, the accounting standards governing goodwill measurement and reporting were changed. In particular, firms were required to estimate the fair value (as opposed to undiscounted cash flows) of acquired firms (and hence goodwill) every year (instead of when significant events occurred). The intent was to make the goodwill number more informative to investors.
- A study of stock price reactions to goodwill impairments(>5%) compared impairments and reactions in 1996-2001 (the SFAS 121 regime) with impairments in the second half of 2002 and all of 2003. It found that:
 - Goodwill impairments, on average, cause stock prices to decline albeit by about 3% (in the two days around the impairment charge).
 - The decline is larger for firms with fewer analysts (more informational content?) and for larger firms (better assessments?), but has little or no correlation with the complexity of the firm.
 - The effect on the stock price of goodwill impairments dropped significantly (about 1.2%) in the 2002-03 period, after the adoption of SFAS 142.

Why is there so little information in accounting changes?

- Takes too long: Accountants are deliberative. They take time to make their judgments. By the time they do, though, markets already have priced in the information.
- Too structured: Accounting rules have to be structured to prevent the unethical 10% from taking advantage of them. Every rule takes away some of the discretionary power that makes a valuation a “good” one.
- Mixing of the large with the small: The nature of accounting is to worry just as much about the small items as the large ones. The end result is an information dump, where investors have a difficult time separating what matters from what does not.

Bottom line: If investors wait for accounting statements to tell them what is happening in real time in a firm, it is already too late.

Fair Value: What is it?

- While the notion that fair value is in the eye of beholder is too loose for my taste, the fair value of an asset or business can vary depending upon how it is defined.
- It can be different, depending upon the following:
 - How you value: Intrinsic versus Relative Valuation, and within relative valuation, depending upon what you value it relative to.
 - Who you value it for: The valuation can be different depending upon whether you are valuing it for a passive investor or an active investor, and whether and what the latter plans to do with the asset.
 - For transaction or appraisal: The value attached to an asset can be different depending on whether you are planning to sell the asset or hold on to it for its cash flows.

A Test: Estimate the fair value of this company- Intrinsic Value

Expected next year (in millions)

Revenues	\$400
- Operating Expenses	\$250
- Depreciation	\$30
Operating Income	\$120
- Taxes	\$40
Operating Income after taxes	\$80

- Operating income is expected to remain the same (zero growth) forever (perpetuity). Capital expenditures offset depreciation and there are no working capital requirements.
- The firm is all equity funded and has a cost of equity of 10%.

Estimate the fair value again: Different management

- Assume now that the firm, run by superior (optimal) management, would make the following changes:
 - The after-tax operating margin will increase to 25% (from 20%). As a result the after-tax operating income would be \$100 million instead of \$ 80 million.
 - Changing the mix of debt and equity will lower the cost of capital to 8%.
- What is the intrinsic value of the firm, with new management?

“Expected” Intrinsic Value

- We have two estimates of fair value - \$ 800 million with the status quo and \$1,250 million with optimal management.
- Assume now that there is a 40% probability that the management of this firm will change and a 60% probability that it will not. In an efficient market, what is the “expected” intrinsic value of this firm?

And again: Relative Valuation

- Now assume that the firm is a mid-size chemical company and that publicly traded mid-size chemical companies trade at 5 times EBITDA.
- Given that this firm is expected to have EBITDA of \$ 150 million, estimate the value of the firm.

Yet again: For sale now!

- Now as a final estimate, assume that equity markets are fairly illiquid right now and that selling the entire business today can be accomplished only by discounting the value.
- If the illiquidity discount is 20% on estimated value, estimate the expected proceeds from selling the business today.

So what is the fair value? You be the judge

- We now have five estimates of fair value for this firm. Which of the following is the “right” fair value?
 - ❑ \$ 800 million: Intrinsic value, with status quo.
 - ❑ \$ 1250 million: Intrinsic value, with optimal management
 - ❑ \$ 980 million: Expected intrinsic value, with probability of change built in
 - ❑ \$ 750 million: Relative value, based upon sector multiple
 - ❑ \$ 600 million: Relative value, adjusted for illiquidity

Why?

So, what is FASB's vision? Glimmers from FAS 157

- The ubiquitous “market participant”: Through the entire statement, homage is paid to the ubiquitous market participants and what they think about risk and will be willing to pay for an asset. In effect, accountants are asked to attach values to assets/liabilities that market participants would have been willing to pay/ receive.
- Tilt towards relative value: “The definition focuses on the price that would be received to sell the asset or paid to transfer the liability (an exit price), not the price that would be paid to acquire the asset or received to assume the liability (an entry price).” The hierarchy puts “market prices”, if available for an asset, at the top with intrinsic value being accepted only if market prices are not accessible.
- Consideration of illiquidity: Accountants are asked to give consideration to specific restrictions on the sale/use of an asset in valuing it. Presumably, if there are restrictions on selling an asset, the value will have to be discounted for illiquidity.

My Road map for fair value accounting (as a user)

- The ultimate role of accounting is to provide investors who follow a company with information that they can use to estimate value and measure performance.
- Fair value accounting done right should make it easier for investors to value companies, not more difficult. It should follow these principles:
 - Do no harm.
 - Don't overreach.
 - Keep it simple.
 - Less is more.

Do no harm...

- The fundamental questions: Financial statements should (and have been designed to) answer three questions:
 - How much did you earn last year?
 - What do you own and how much did you invest to get what you own?
 - What do you owe?
- In the process of moving to fair value accounting, we should not lose information that has been used to answer these questions. Therefore:
 - Replacing existing book values of assets (which measure capital invested) with the fair or market value of those assets replaces a useful piece of information with one that is redundant (if it just reflects market value), misleading (if it incorrectly tries to reflect market value) or confusing (if no one is quite sure).
 - Adjusting earnings for past mistakes in fair value assessment (inevitable with all fair value accounting) will make earnings less informative.
 - Trying to include potential, possible and imagined liabilities in balance sheet dilutes the meaning of debt.

Focus.. And don' t over reach

- Be clear about what you want to accomplish: Fair value accounting has to be clear about what it is trying to accomplish. Rather than reaching for the ultimate, settle for the incremental.
- Be realistic: Accept the proposition that an accounting statement cannot be all things to all people. It will always be a reflection of the past and lag both intrinsic and market value.
- Don' t over reach: Accounting statements will not replace or even compete with market values and book values will be poor replacements for market values. Accountants are not (and should not try to be) analysts, appraisers or evaluators.

Keep it simple

- Stick with the easy assets: The assets that can be valued with simple rules should be the first targets. Assets that will require complicated or complex rules are best left untouched.
- Let others deal with complex assets: Provide the information (or raw data) for assessing fair value but don't take on the responsibility of doing it yourself.
- Principle based valuation, not rule based valuation: Less rules and more focus on first principles will lead to better valuations.

Less is more...

- Data is not information: Financial statements are increasingly becoming data dumps. There is little evidence that that 10Ks of today are more informative than the 10Ks of 20 years ago, but they are definitely more voluminous.
- Prioritize: Not all information is equally important. The level of detail (and effort spent) on any item should be proportionate to its importance.



Risk free Rates and Risk Premiums: Looking backwards and forwards...

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Risk free Rates & Risk Premiums: Ingredients in every expected return model

<i>Model</i>	<i>Expected Return</i>	<i>Inputs Needed</i>
CAPM	$E(R) = R_f + \beta (R_m - R_f)$	Riskfree Rate Beta relative to market portfolio Market Risk Premium
APM	$E(R) = R_f + \sum_{j=1} \beta_j (R_j - R_f)$	Riskfree Rate; # of Factors; Betas relative to each factor Factor risk premiums
Multi factor	$E(R) = R_f + \sum_{j=1, \dots, N} \beta_j (R_j - R_f)$	Riskfree Rate; Macro factors Betas relative to macro factors Macro economic risk premiums
Proxy	$E(R) = a + \sum_{j=1..N} b_j Y_j$	Proxies Regression coefficients

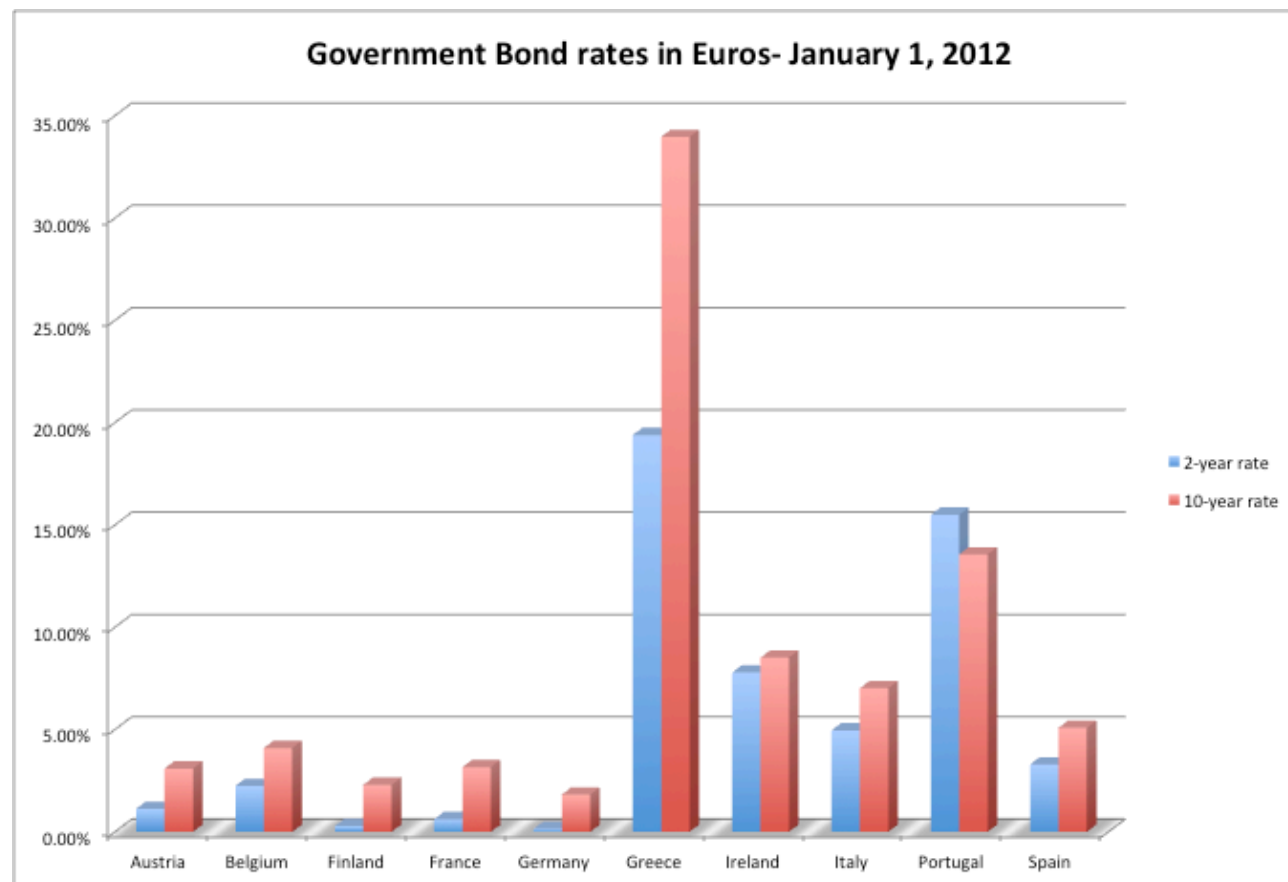
I. A Riskfree Rate

- On a riskfree asset, the actual return is equal to the expected return. Therefore, there is no variance around the expected return.
 - For an investment to be riskfree, then, it has to have
 - No default risk
 - No reinvestment risk
1. Time horizon matters: Thus, the riskfree rates in valuation will depend upon when the cash flow is expected to occur and will vary across time.
 2. Not all government securities are riskfree: Some governments face default risk and the rates on bonds issued by them will not be riskfree.

The Bottom Line on Riskfree Rates

- The riskfree rate that you use in an analysis should be in the same currency that your cashflows are estimated in.
- The conventional practice of estimating riskfree rates is to use the government bond rate, with the government being the one that is in control of issuing that currency. Implicitly, you are assuming that the government has no default risk, at least in the local currency.

What is the Euro riskfree rate? An exercise in 2012



No default free entity: Choices with riskfree rates....

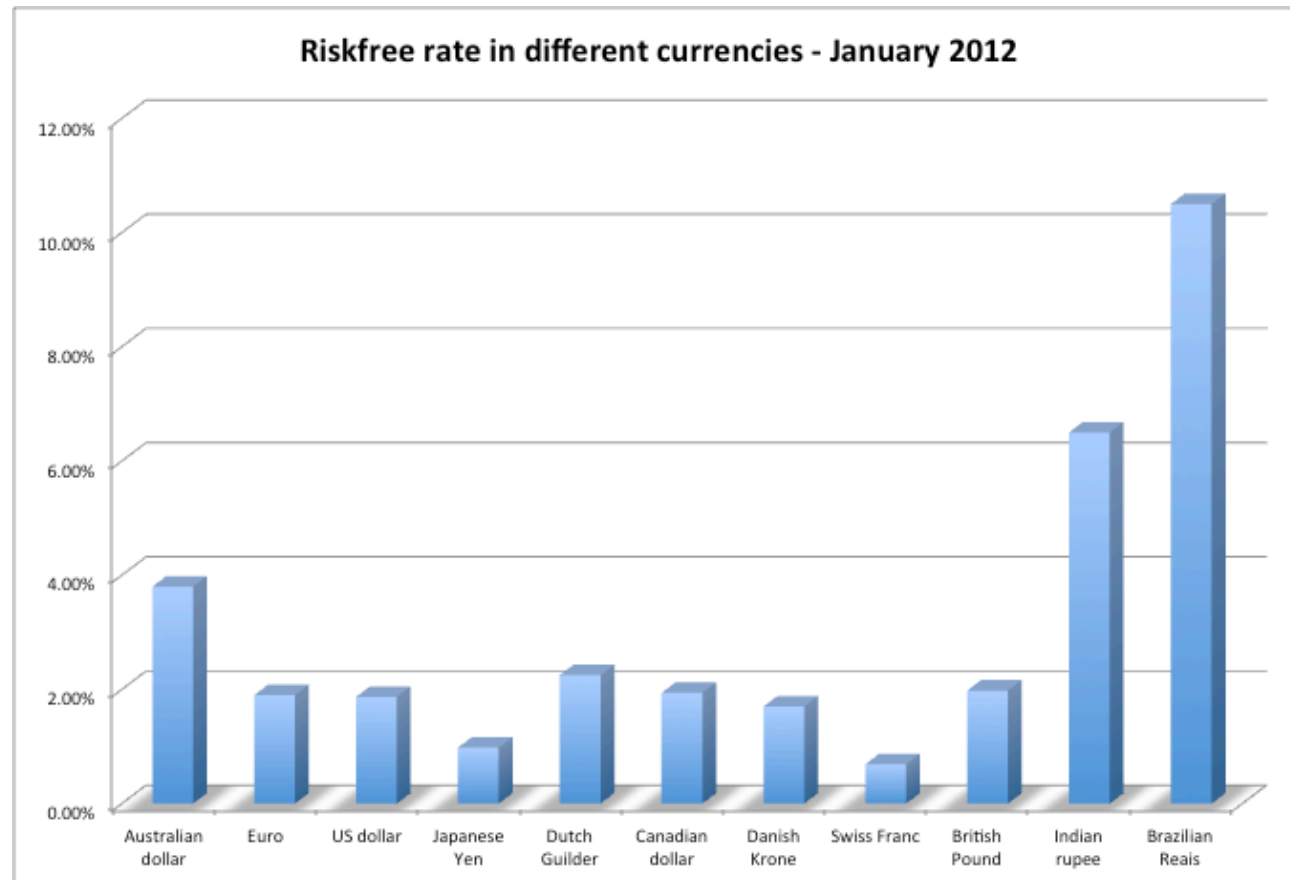
- Estimate a range for the riskfree rate in local terms:
 - Approach 1: Subtract default spread from local government bond rate:
Government bond rate in local currency terms - Default spread for Government in local currency
 - Approach 2: Use forward rates and the riskless rate in an index currency (say Euros or dollars) to estimate the riskless rate in the local currency.
- Do the analysis in real terms (rather than nominal terms) using a real riskfree rate, which can be obtained in one of two ways –
 - from an inflation-indexed government bond, if one exists
 - set equal, approximately, to the long term real growth rate of the economy in which the valuation is being done.
- Do the analysis in a currency where you can get a riskfree rate, say US dollars or Euros.

Sovereign Default Spread: Three paths to the same destination...

- Sovereign dollar or euro denominated bonds: Find sovereign bonds denominated in US dollars, issued by emerging markets. The difference between the interest rate on the bond and the US treasury bond rate should be the default spread. For instance, in January 2012, the US dollar denominated 10-year bond issued by the Brazilian government (with a Baa2 rating) had an interest rate of 3.5%, resulting in a default spread of 1.6% over the US treasury rate of 1.9% at the same point in time. (On the same day, the ten-year Brazilian BR denominated bond had an interest rate of 12%)
- CDS spreads: Obtain the default spreads for sovereigns in the CDS market. In January 2012, the CDS spread for Brazil in that market was 1.43%.
- Average spread: For countries which don't issue dollar denominated bonds or have a CDS spread, you have to use the average spread for other countries in the same rating class. For Brazil's rating, the default spread would have been 1.80%.

Why do riskfree rates vary across currencies?

January 2012 Risk free rates



II. Risk Premiums and Asset Prices

- If investors are risk averse, they need inducement to invest in risky assets. That inducement takes the form of a risk premium, a premium you would demand over and above the riskfree asset to invest in a risky asset.
- Every risky asset market has a “risk” premium that determines how individual assets in that market are priced.
 - In an equity market, that risk premium for dealing with the volatility of equities and bearing the residual risk is the equity risk premium.
 - In the bond market, the risk premium for being exposed to default risk is the default spread.
 - In real asset markets, there are equivalent (though less widely publicized markets).

General Propositions about Risk Premiums

- Proposition 1: Risk premiums and prices for risky assets are inversely related. When risk premiums go up, risky asset prices go down.
- Proposition 2: Any statement about the magnitude of expected risk premiums is really a statement about the level of asset prices. Thus, if you argue that expected risk premium for a risky asset is too low, you are arguing that its priced too high.
- Proposition 3: Asset allocation and market timing decisions are really judgment calls on the future direction of risk premiums in different asset markets.

The Equity Risk Premium

- Intuitively, the equity risk premium measures what investors demand over and above the riskfree rate for investing in equities as a class. Think of it as the market price for taking on average equity risk.
- It should depend upon
 - The risk aversion of investors
 - The perceived risk of equity as an investment class

Why equity risk premiums matter...

- Every statement about whether equity markets are over or under valued is really a statement about the prevailing equity risk premium.
- Every valuation of an individual stock that you do has embedded in it your implicit or explicit assumptions about the equity risk premium. Getting the premium wrong will lead to misvaluations.
- Fundamental corporate finance decisions depend upon equity risk premium assessments; over (under) estimating the number leads to under (over) investment.
- Many of the most significant financial decisions we make in our personal lives (how much to save... what to put into our pensions.. where to invest our savings) are based upon implicit assumptions on equity risk premiums.

The macro determinants of equity risk..

- Economic risk: As the underlying economy becomes more uncertain, equity risk will rise. Higher volatility in GDP -> Higher equity risk.
- Political risk: As the uncertainty about fiscal and government policy increases, equity risk will rise.
- Information opacity: As the information provides by companies becomes more opaque and difficult to assess, equity risk premiums will rise.
- Liquidity: As liquidity of equities decreases, equity risk increases.
- Catastrophic risk: There is always the potential for catastrophic risk in investing in equities. As that perceived likelihood increases, equity risk will rise.

How equity risk premiums are estimated in practice...

- Survey investors on their desired risk premiums and use the average premium from these surveys.
- Assume that the actual premium delivered over long time periods is equal to the expected premium - i.e., use historical data
- Estimate the implied premium in today's asset prices.

The Survey Approach

- Surveying all investors in a market place is impractical.
- However, you can survey a few individuals and use these results. In practice, this translates into surveys of the following:

Group Surveyed	Survey done by	Estimated ERP
Individual Investors	Securities Industries Assn	8.3% (December 2004)
Institutional Investors	Merrill Lynch	3.8% (2009)
CFOs	Campbell & Harvey	4.7% (2009)
Finance Academics	Fernandez	5.7% (2009)

- The limitations of this approach are:
 - there are no constraints on reasonability (the survey could produce negative risk premiums or risk premiums of 50%)
 - The survey results are extremely volatile
 - they tend to be short term; even the longest surveys do not go beyond one year.

Everyone uses historical premiums..

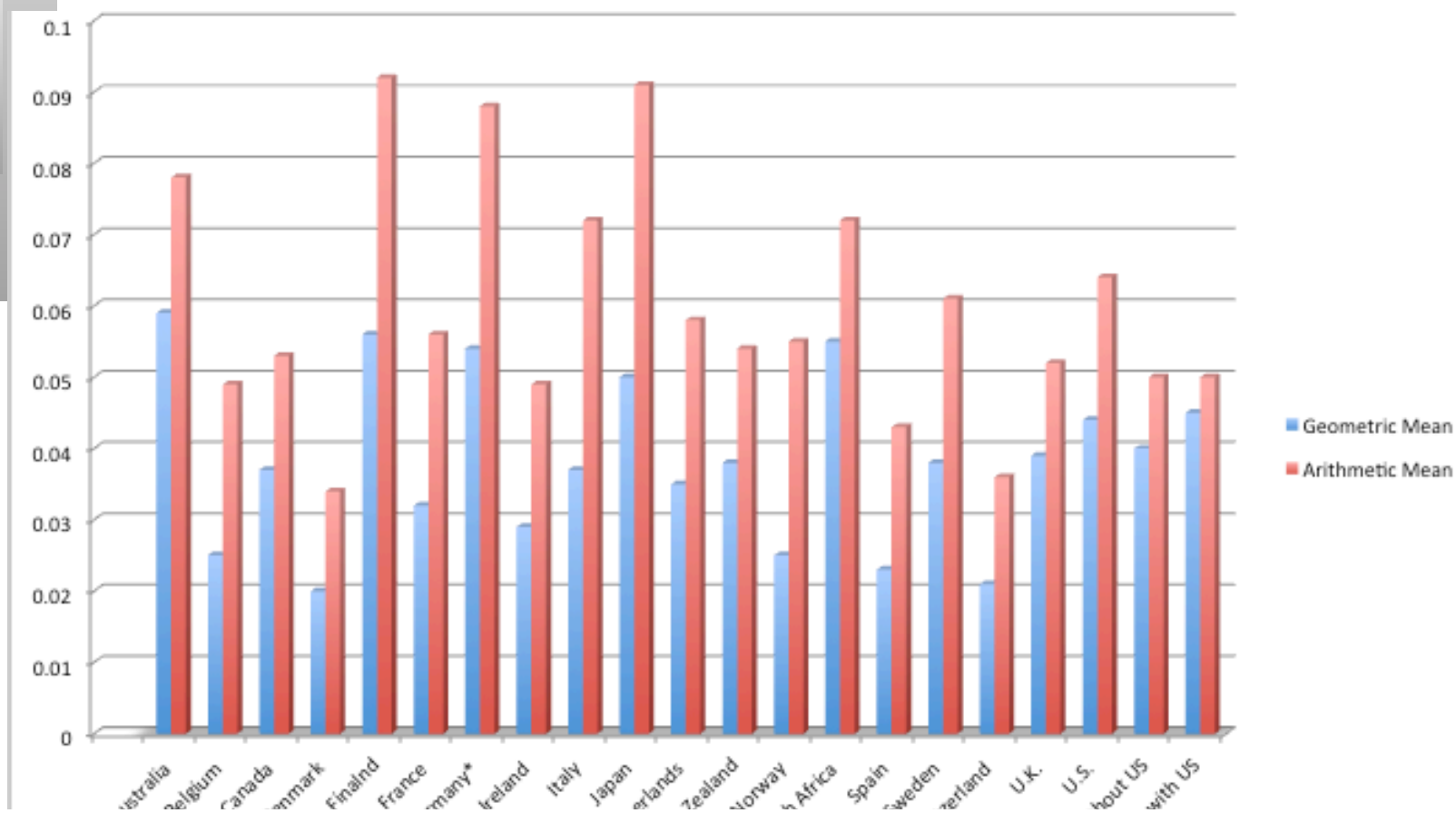
- Practitioners never seem to agree on the premium; it is sensitive to
 - How far back you go in history...
 - Whether you use T.bill rates or T.Bond rates
 - Whether you use geometric or arithmetic averages.
- For instance, looking at the US:

	Arithmetic Average		Geometric Average	
	Stocks - T. Bills	Stocks - T. Bonds	Stocks - T. Bills	Stocks - T. Bonds
1928-2011	7.55%	5.79%	5.62%	4.10%
	2.22%	2.36%		
1962-2011	5.38%	3.36%	4.02%	2.35%
	2.39%	2.68%		
2002-2011	3.12%	-1.92%	1.08%	-3.61%
	6.46%	8.94%		

But they stink...

- Noisy estimates: Even with long time periods of history, the risk premium that you derive will have substantial standard error.
- Survivorship Bias: Using historical data from the U.S. equity markets over the twentieth century does create a sampling bias. After all, the US economy and equity markets were among the most successful of the global economies that you could have invested in early in the century.
- Markets with no history: Even if you buy into a “historical” risk premium, most markets in the world do not have enough history to even compute a reliable historical risk premium.

Risk Premium for a Mature Market? Broadening the sample



Estimating an equity risk premium for an emerging market

- Country ratings measure default risk. While default risk premiums and equity risk premiums are highly correlated, one would expect equity spreads to be higher than debt spreads.
- Another is to multiply the bond default spread by the relative volatility of stock and bond prices in that market. Using this approach for Brazil in August 2004, you would get:
 - Country Equity risk premium = Default spread on country bond* $\frac{\sigma_{\text{Country Equity}}}{\sigma_{\text{Country Bond}}}$
 - Standard Deviation in Bovespa (Equity) = 34.56%
 - Standard Deviation in Brazil C-Bond = 26.34%
 - Default spread on C-Bond = 6.01%
 - Country Equity Risk Premium = 6.01% (34.56%/26.34%) = 7.89%

Country Risk Premiums January 2012

Canada	6.00%
United States of America	6.00%

Argentina	15.00%
Belize	15.00%
Bolivia	12.00%
Brazil	8.63%
Chile	7.05%
Colombia	9.00%
Costa Rica	9.00%
Ecuador	18.75%
El Salvador	10.13%
Guatemala	9.60%
Honduras	13.50%
Mexico	8.25%
Nicaragua	15.00%
Panama	9.00%
Paraguay	12.00%
Peru	9.00%
Uruguay	9.60%
Venezuela	12.00%

Austria [1]	6.00%
Belgium [1]	7.05%
Cyprus [1]	9.00%
Denmark	6.00%
Finland [1]	6.00%
France [1]	6.00%
Germany [1]	6.00%
Greece [1]	16.50%
Iceland	9.00%
Ireland [1]	9.60%
Italy [1]	7.50%
Malta [1]	7.50%
Netherlands [1]	6.00%
Norway	6.00%
Portugal [1]	10.13%
Spain [1]	7.28%
Sweden	6.00%
Switzerland	6.00%
United Kingdom	6.00%

Angola	10.88%
Botswana	7.50%
Egypt	13.50%
Mauritius	8.63%
Morocco	9.60%
Namibia	9.00%
South Africa	7.73%
Tunisia	9.00%

Albania	12.00%
Armenia	10.13%
Azerbaijan	9.60%
Belarus	15.00%
Bosnia and Herzegovina	13.50%
Bulgaria	8.63%
Croatia	9.00%
Czech Republic	7.28%
Estonia	7.28%
Georgia	10.88%
Hungary	9.60%
Kazakhstan	8.63%
Latvia	9.00%
Lithuania	8.25%
Moldova	15.00%
Montenegro	10.88%
Poland	7.50%
Romania	9.00%
Russia	8.25%
Slovakia	7.28%
Slovenia [1]	7.28%
Ukraine	13.50%

Bahrain	8.25%
Israel	7.28%
Jordan	10.13%
Kuwait	6.75%
Lebanon	12.00%
Oman	7.28%
Qatar	6.75%
Saudi Arabia	7.05%
Senegal	12.00%
United Arab Emirates	6.75%

Bangladesh	10.88%
Cambodia	13.50%
China	7.05%
Fiji Islands	12.00%
Hong Kong	6.38%
India	9.00%
Indonesia	9.60%
Japan	7.05%
Korea	7.28%
Macao	7.05%
Malaysia	7.73%
Mongolia	12.00%
Pakistan	15.00%
Papua New Guinea	12.00%
Philippines	10.13%
Singapore	6.00%
Sri Lanka	12.00%
Taiwan	7.05%
Thailand	8.25%
Turkey	10.13%
Vietnam	12.00%

Australia	6.00%
New Zealand	6.00%

Implied Equity Premiums

- If we assume that stocks are correctly priced in the aggregate and we can estimate the expected cashflows from buying stocks, we can estimate the expected rate of return on stocks by computing an internal rate of return. Subtracting out the riskfree rate should yield an implied equity risk premium.
- This implied equity premium is a forward looking number and can be updated as often as you want (every minute of every day, if you are so inclined).

An Updated Equity Risk Premium: January 2012

- On January 1, 2012, the S&P 500 was at 1257.60, essentially unchanged for the year. And it was a year of macro shocks – political upheaval in the Middle East and sovereign debt problems in Europe. The treasury bond rate dropped below 2% and buybacks/dividends surged.

In the trailing 12 months, the cash returned to stockholders was 74.17. Using the average cash yield of 4.71% for 2002-2011 the cash returned would have been 59.29.

Analysts expect earnings to grow 9.6% in 2012, 11.9% in 2013, 8.2% in 2014, 4.5% in 2015 and 2% thereafter, resulting in a compounded annual growth rate of 7.18% over the next 5 years. We will assume that dividends & buybacks will grow 7.18% a year for the next 5 years.

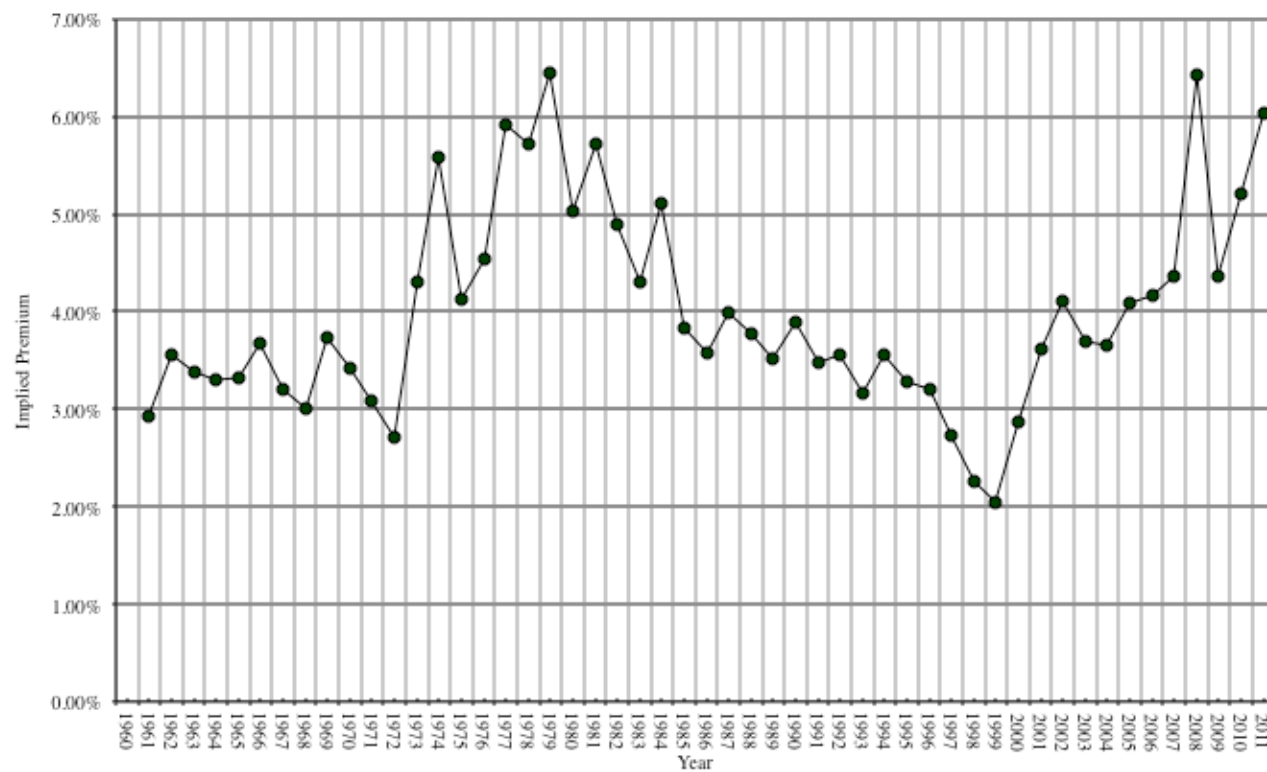
After year 5, we will assume that earnings on the index will grow at 1.87%, the same rate as the entire economy (= riskfree rate).

	63.54	68.11	73.00	78.24	83.86
January 1, 2012 S&P 500 is at 1257.60 Adjusted Dividends & Buybacks for 2011 = 59.29	$1257.60 = \frac{63.54}{(1+r)} + \frac{68.11}{(1+r)^2} + \frac{73.00}{(1+r)^3} + \frac{78.24}{(1+r)^4} + \frac{83.86}{(1+r)^5} + \frac{83.86(1.0187)}{(r-.0187)(1+r)^5}$				
	Expected Return on Stocks (1/1/12)		= 7.91%		
	T.Bond rate on 1/1/12		= 1.87%		
	Equity Risk Premium = 7.91% - 1.87%		= 6.04%		

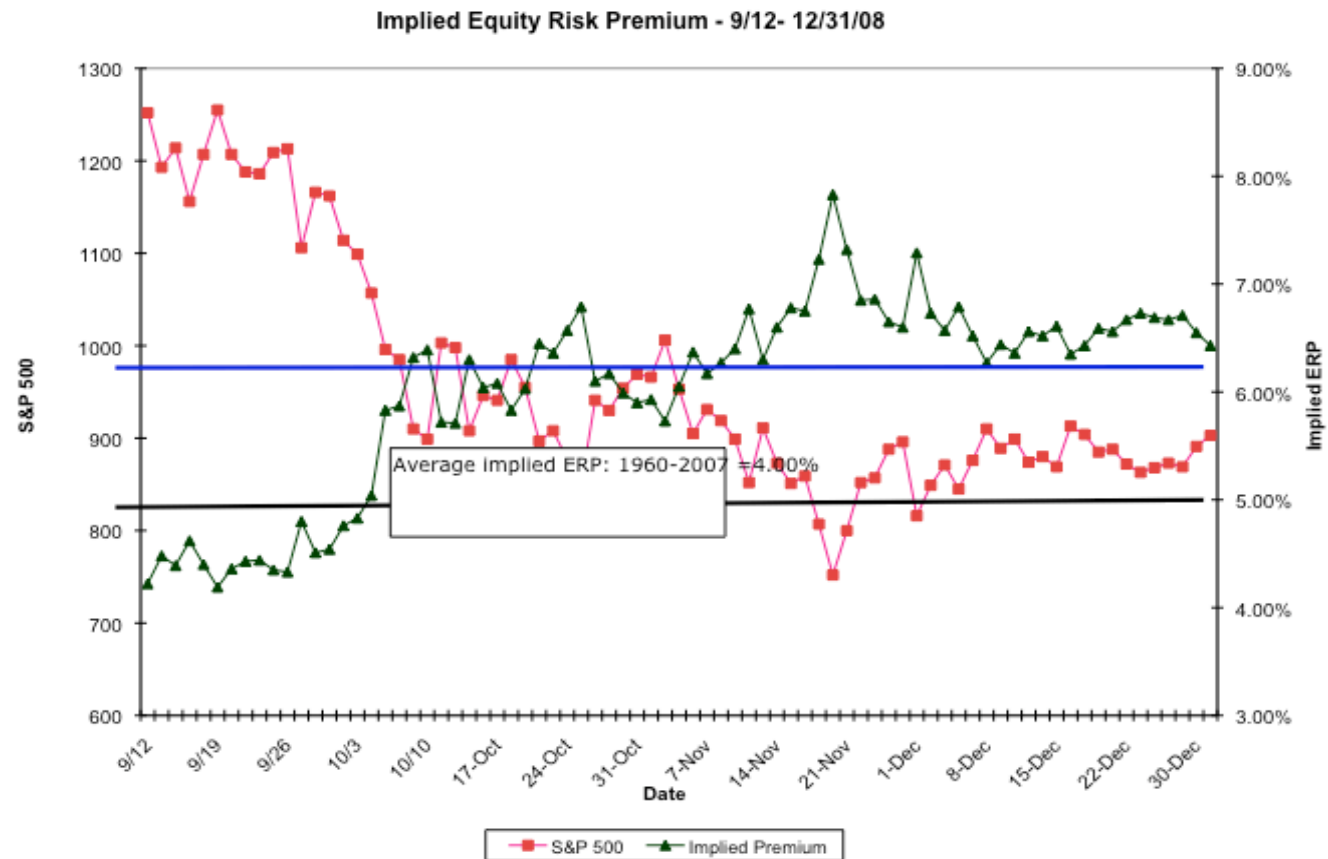
Data Sources:
Dividends and Buybacks last year: S&P
Expected growth rate: News stories, Yahoo! Finance, Bloomberg

Implied Premiums in the US: 1960-2012

Implied Premium for US Equity Market

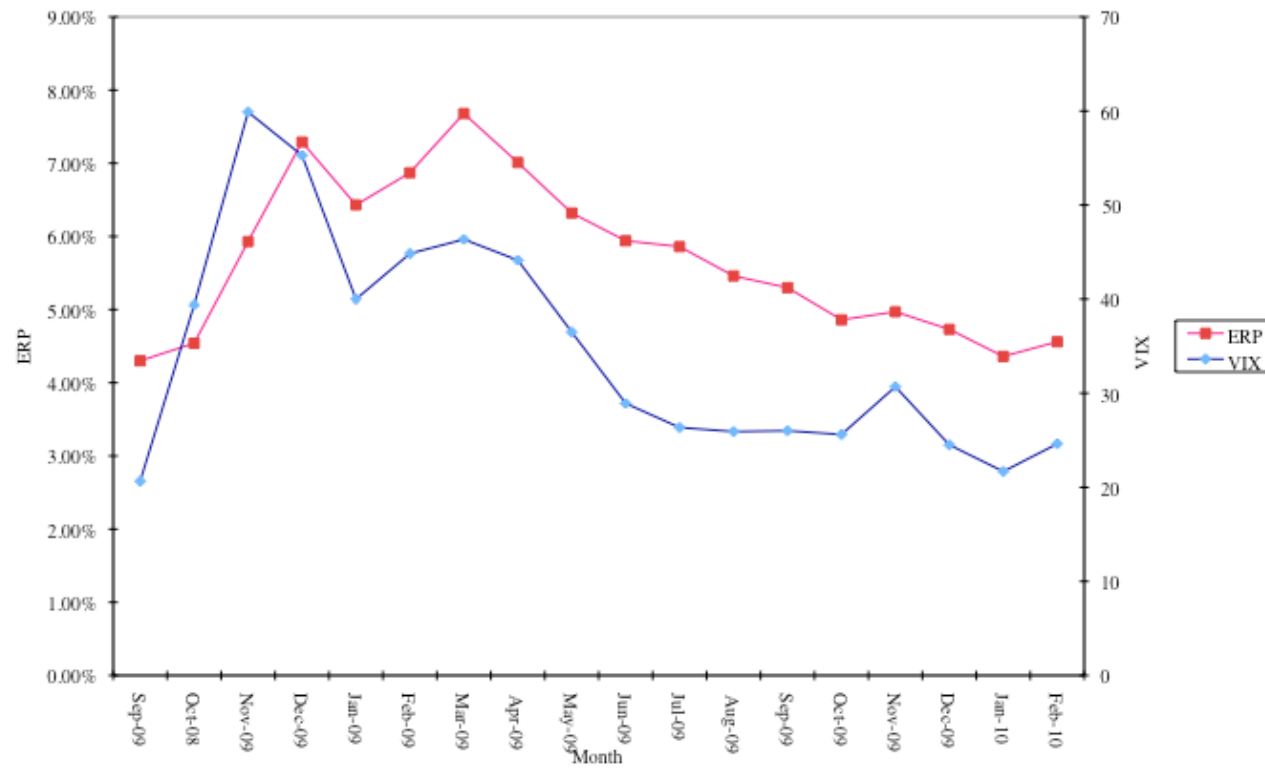


The Anatomy of a Crisis: Implied ERP from September 12, 2008 to January 1, 2009



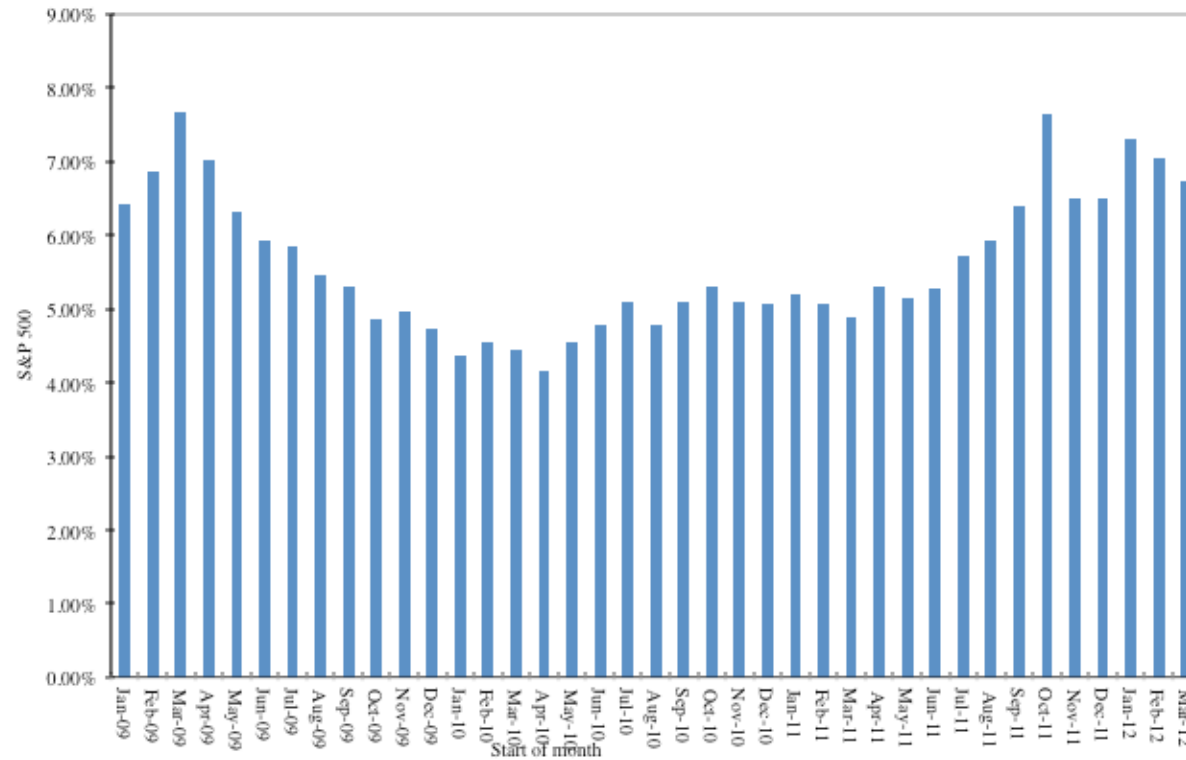
Connected to stock market volatility...

Figure 18: ERP versus VIX



Updated numbers...

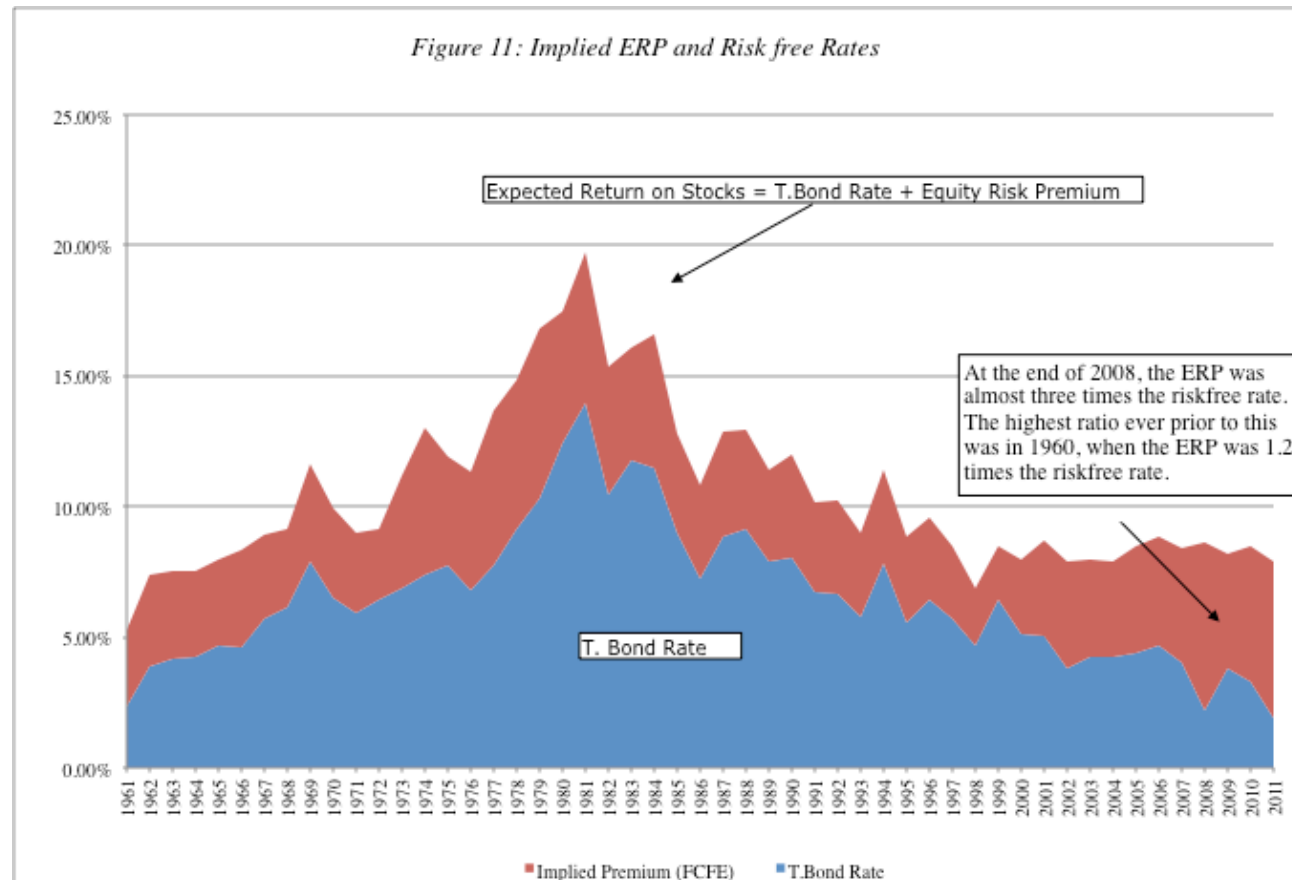
Figure 12: Implied ERP by month: S&P 500
January 2009- February 2012



Exploring interactions...

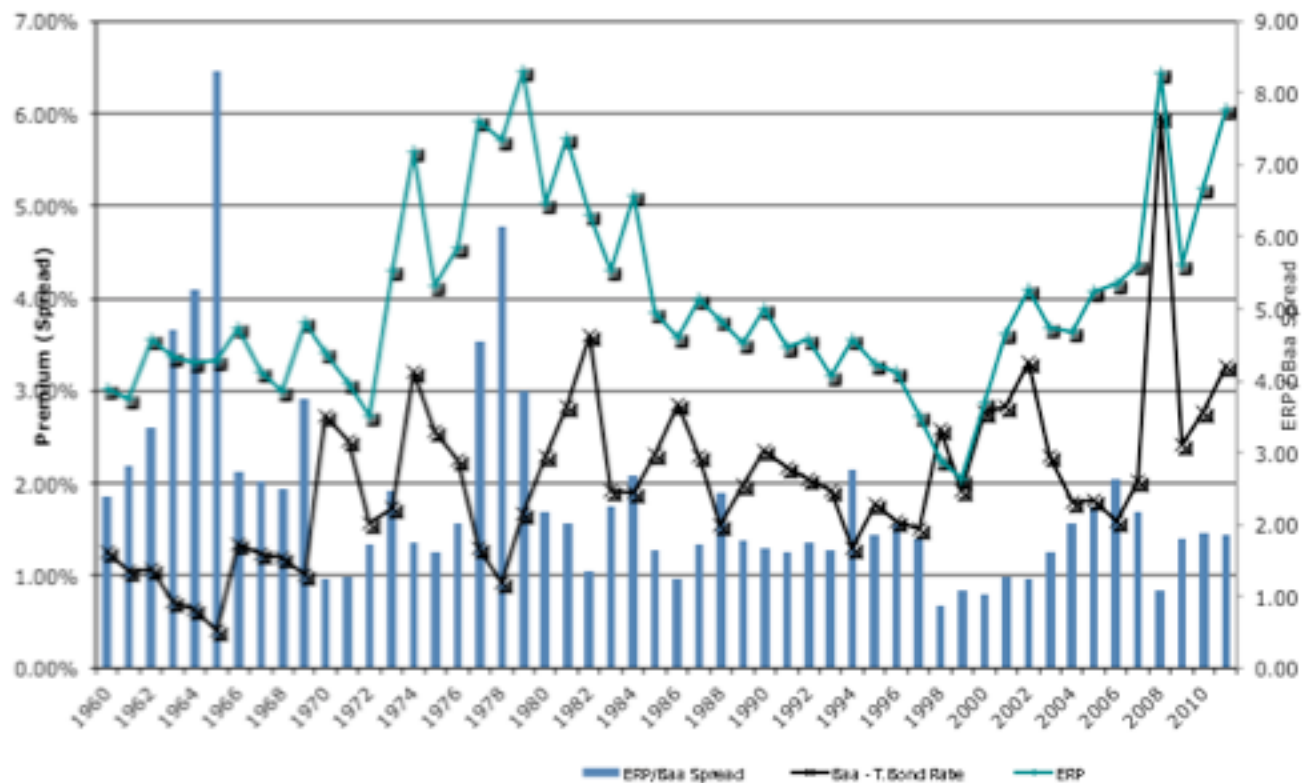
- No asset market exists in isolation. The same investors often invest across markets, and if they become more risk averse in one market, they should show similar tendencies in others.
 - When returns and risk premiums change significantly in one asset market, you should expect them to change in other markets as well.
 - When risk premiums move in different directions in different markets at the same time, it can reflect changing fundamentals in the markets or market mistakes.

Implied Premium versus Risk Free Rate

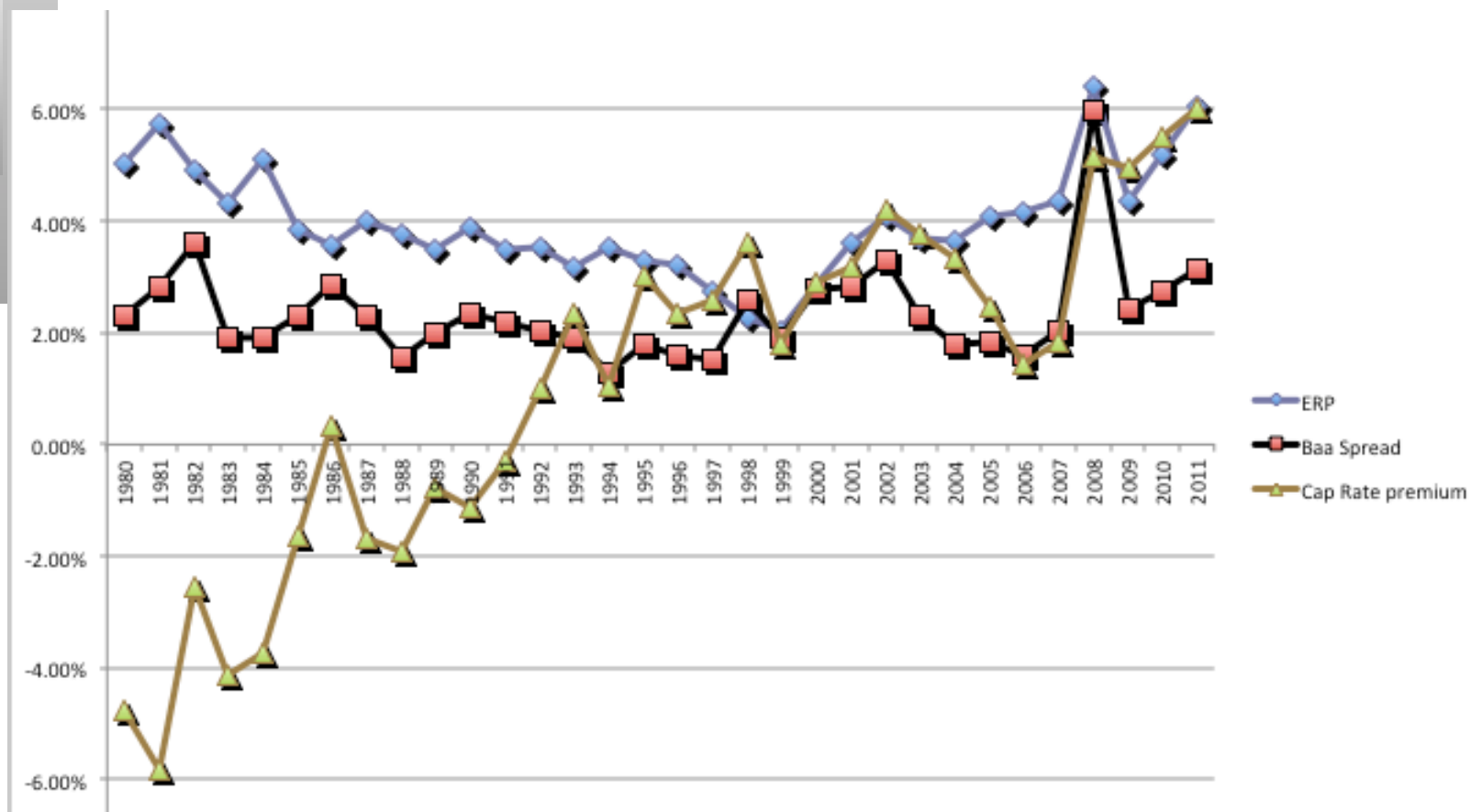


Equity Risk Premiums and Bond Default Spreads

Figure 15: Equity Risk Premiums and Bond Default Spreads

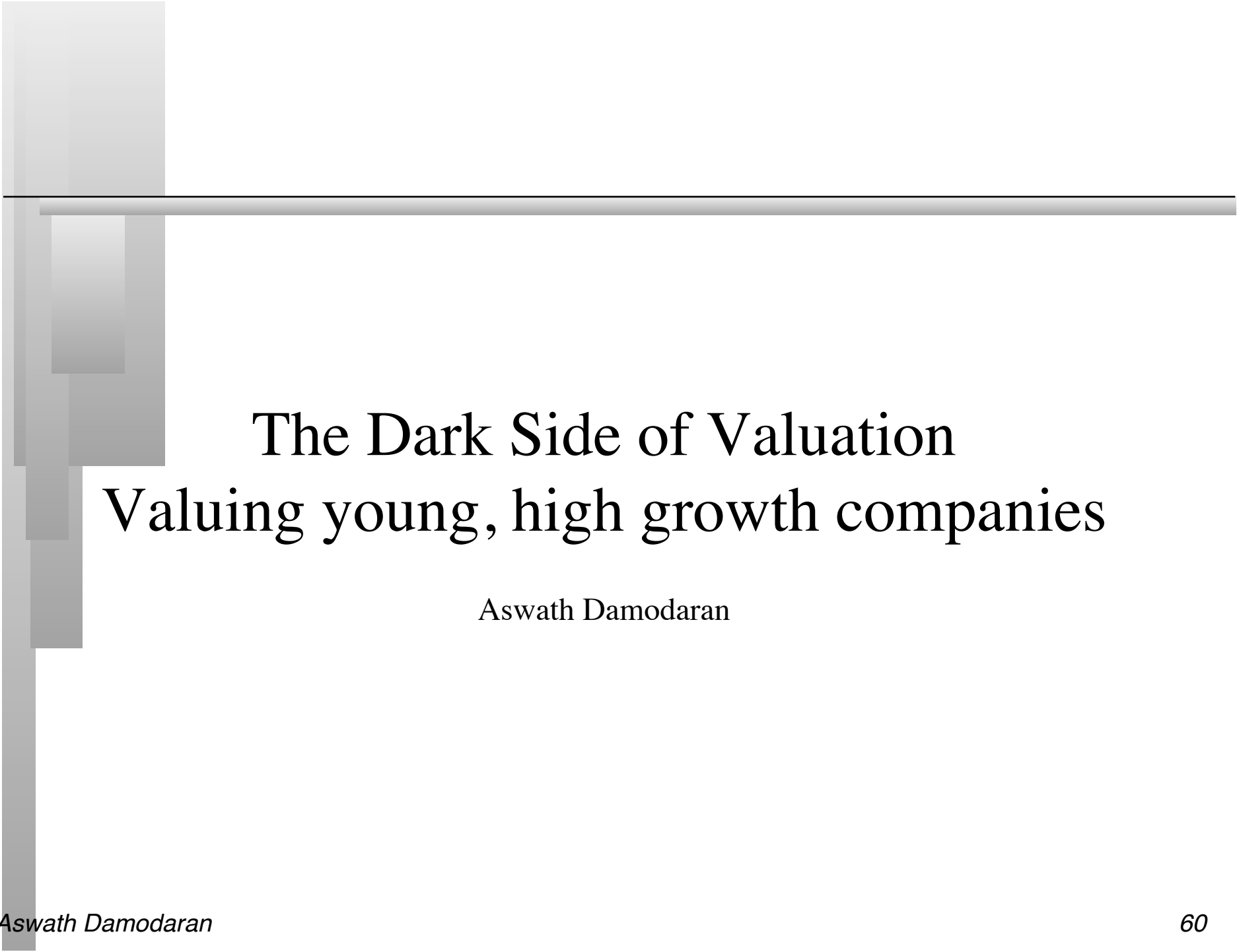


Equity Risk Premiums and Cap Rates (Real Estate)



The bottom line...

- The days of stable equity risk premiums are behind us. We are in a new world order, where all risk premiums will become more volatile.
- Sticking with a fixed risk premium or trusting mean reversion in this market is a recipe for disaster, since fundamentals shift so dramatically over time.
- Here is what we need to do:
 - Have dynamic, constantly recomputed forward looking estimates of risk premiums
 - Relate these risk premiums to real events and fundamentals
 - Compare these risk premiums across different markets to check for consistency and mispricing.



The Dark Side of Valuation

Valuing young, high growth companies

Aswath Damodaran

Risk Adjusted Value: Three Basic Propositions

The value of an asset is the present value of the expected cash flows on that asset, over its expected life:

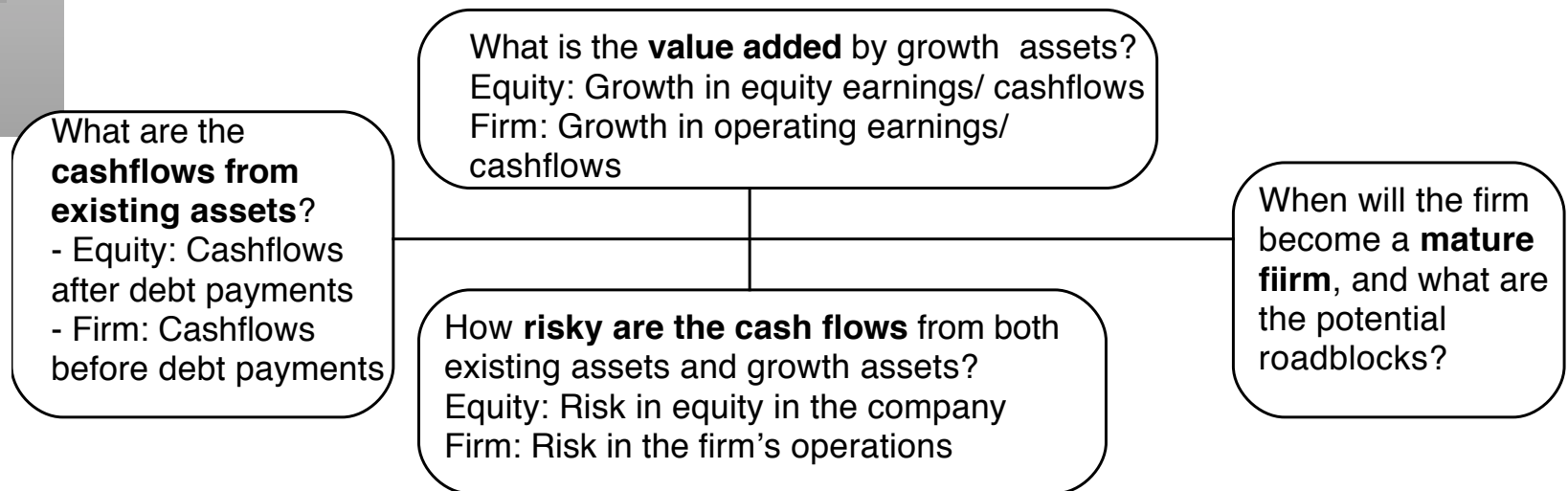
$$\text{Value of asset} = \frac{E(\text{CF}_1)}{(1+r)} + \frac{E(\text{CF}_2)}{(1+r)^2} + \frac{E(\text{CF}_3)}{(1+r)^3} \dots + \frac{E(\text{CF}_n)}{(1+r)^n}$$

Proposition 1: If “it” does not affect the cash flows or alter risk (thus changing discount rates), “it” cannot affect value.

Proposition 2: For an asset to have value, the expected cash flows have to be positive some time over the life of the asset.

Proposition 3: Assets that generate cash flows early in their life will be worth more than assets that generate cash flows later; the latter may however have greater growth and higher cash flows to compensate.

The fundamental determinants of value...



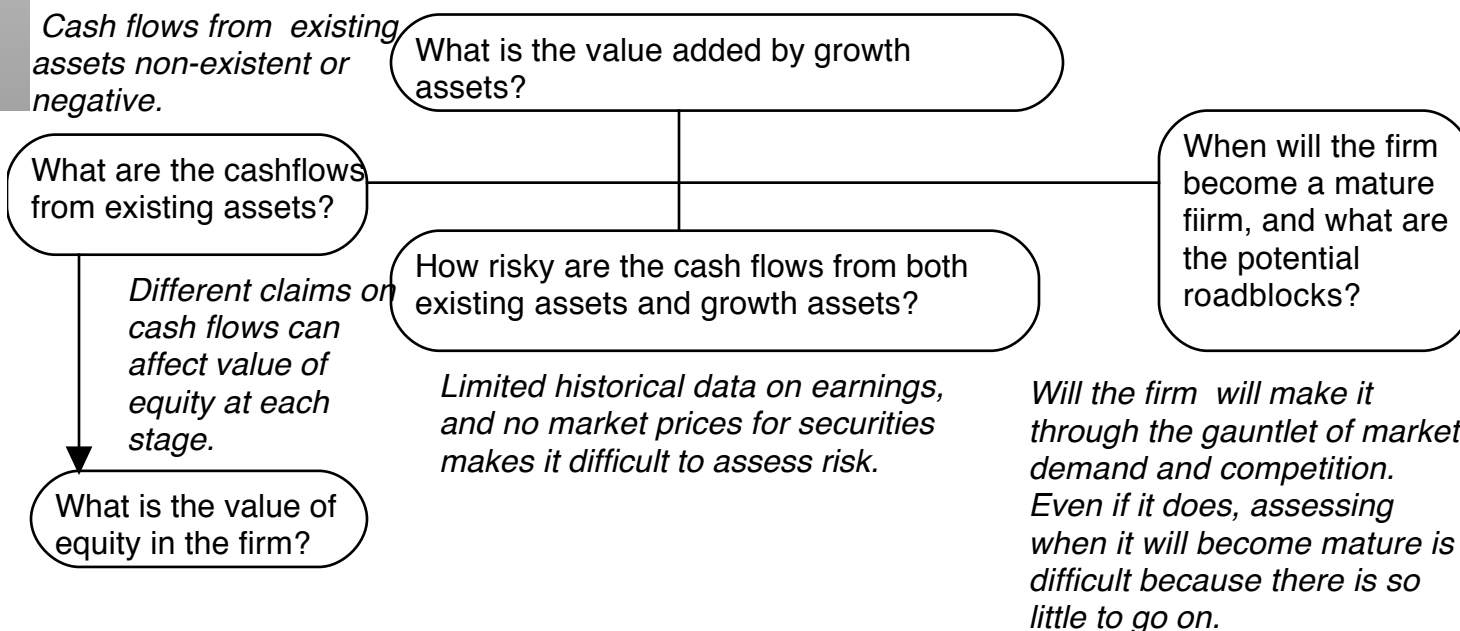
The Dark Side of Valuation...

- Valuing stable, money making companies with consistent and clear accounting statements, a long and stable history and lots of comparable firms is easy to do.
- The true test of your valuation skills is when you have to value “difficult” companies. In particular, the challenges are greatest when valuing:
 - Young companies, early in the life cycle, in young businesses
 - Companies that don’t fit the accounting mold
 - Companies that face substantial truncation risk (default or nationalization risk)
- It is when valuing these companies that analysts find themselves tempted by the dark side, where
 - “Paradigm shifts” happen...
 - New metrics are invented ...
 - The story dominates and the numbers lag...

The challenge with young companies...

Making judgments on revenues/ profits difficult because you cannot draw on history. If you have no product/ service, it is difficult to gauge market potential or profitability. The company;s entire value lies in future growth but you have little to base your estimate on.

Cash flows from existing assets non-existent or negative.

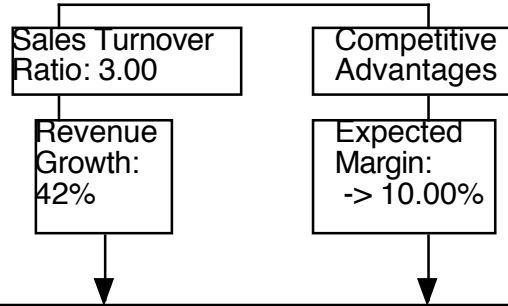
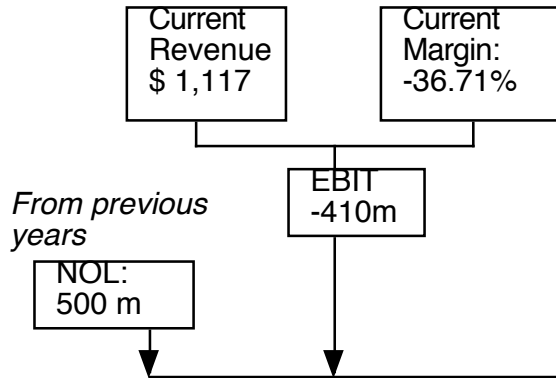
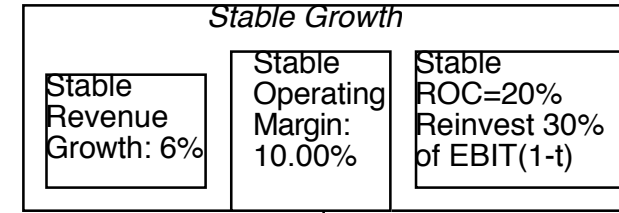


Upping the ante.. Young companies in young businesses...

- When valuing a business, we generally draw on three sources of information
 - The firm's current financial statement
 - How much did the firm sell?
 - How much did it earn?
 - The firm's financial history, usually summarized in its financial statements.
 - How fast have the firm's revenues and earnings grown over time?
 - What can we learn about cost structure and profitability from these trends?
 - Susceptibility to macro-economic factors (recessions and cyclical firms)
 - The industry and comparable firm data
 - What happens to firms as they mature? (Margins.. Revenue growth... Reinvestment needs... Risk)
- When we value young companies early in the life cycle in businesses where all companies share these characteristics, we are in “valuation hell:... and the dark side looks inviting.

9a. Amazon in January 2000

Sales to capital ratio and expected margin are retail industry average numbers



Terminal Value = $1881 / (.0961 - .06) = 52,148$

Value of Op Assets \$ 14,910
 + Cash \$ 26
 = Value of Firm \$ 14,936
 - Value of Debt \$ 349
 = Value of Equity \$ 14,587
 - Equity Options \$ 2,892
 Value per share \$ 34.32

Revenues	\$2,793	5,585	9,774	14,661	19,059	23,862	28,729	33,211	36,798	39,006
EBIT	-\$373	-\$94	\$407	\$1,038	\$1,628	\$2,212	\$2,768	\$3,261	\$3,646	\$3,883
EBIT (1-t)	-\$373	-\$94	\$407	\$871	\$1,058	\$1,438	\$1,799	\$2,119	\$2,370	\$2,524
- Reinvestment	\$559	\$931	\$1,396	\$1,629	\$1,466	\$1,601	\$1,623	\$1,494	\$1,196	\$736
FCFF	-\$931	-\$1,024	-\$989	-\$758	-\$408	-\$163	\$177	\$625	\$1,174	\$1,788

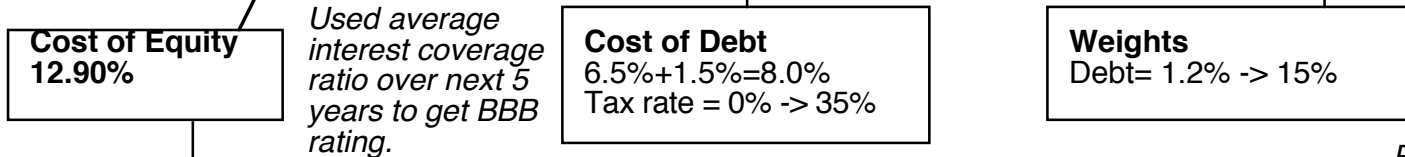
Term. Year \$41,346
 10.00%
 35.00%
 \$2,688
 \$ 807
 \$1,881

All existing options valued as options, using current stock price of \$84.

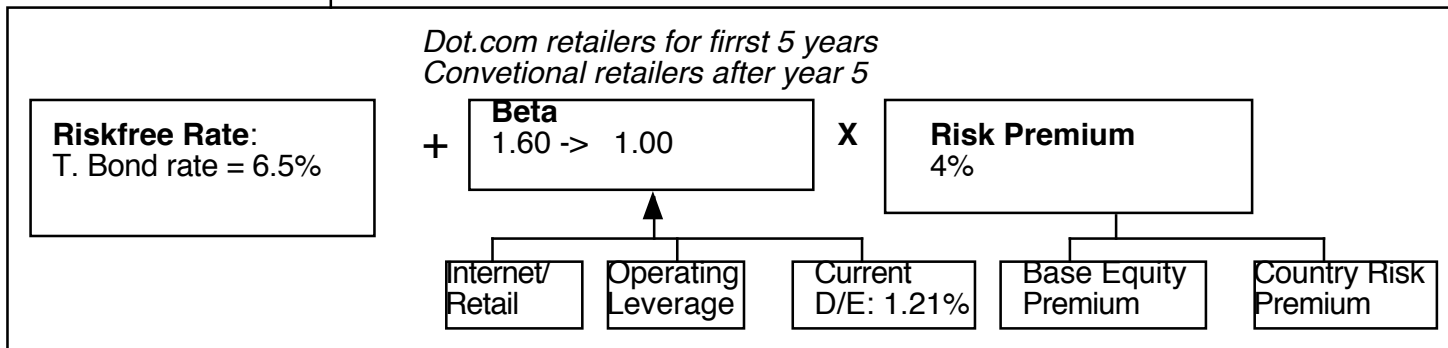
	1	2	3	4	5	6	7	8	9	10
Cost of Equity	12.90%	12.90%	12.90%	12.90%	12.90%	12.42%	12.30%	12.10%	11.70%	10.50%
Cost of Debt	8.00%	8.00%	8.00%	8.00%	8.00%	7.80%	7.75%	7.67%	7.50%	7.00%
AT cost of debt	8.00%	8.00%	8.00%	6.71%	5.20%	5.07%	5.04%	4.98%	4.88%	4.55%
Cost of Capital	12.84%	12.84%	12.84%	12.83%	12.81%	12.13%	11.96%	11.69%	11.15%	9.61%

Forever

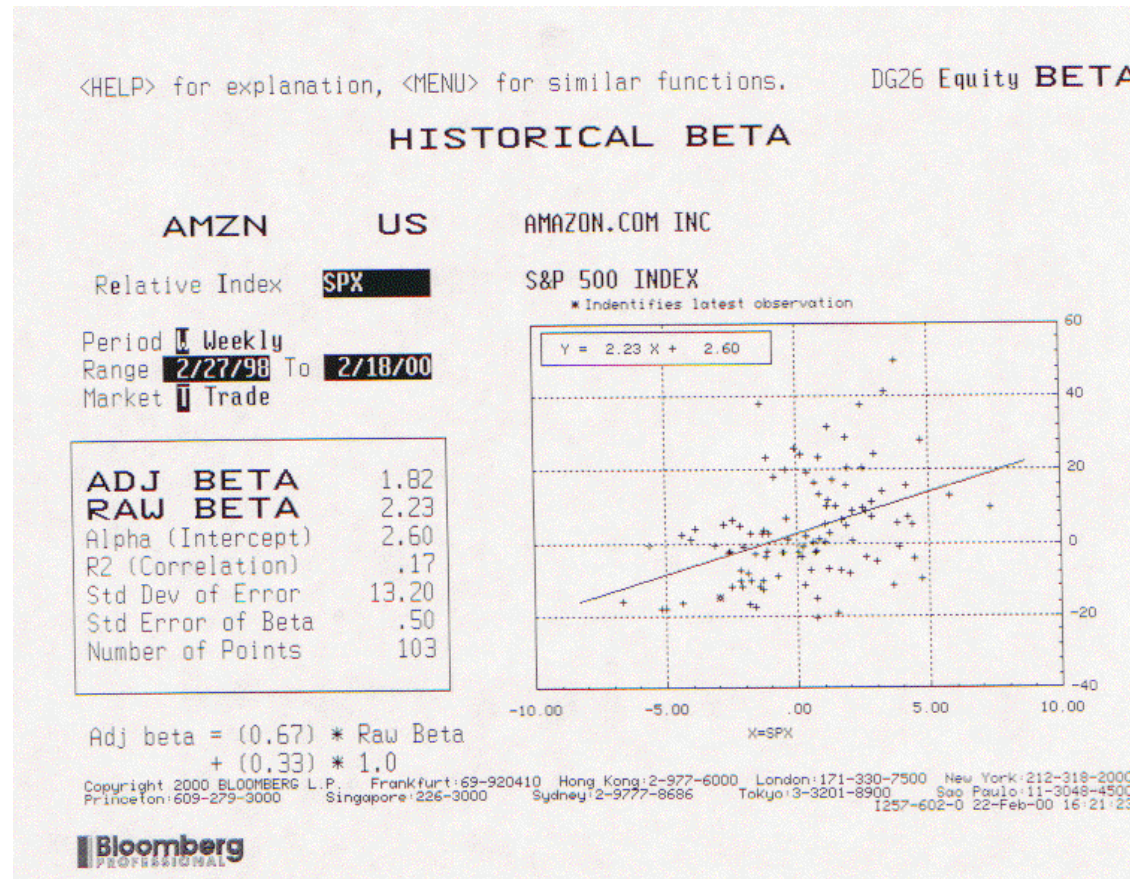
Amazon was trading at \$84 in January 2000.



Pushed debt ratio to retail industry average of 15%.



Lesson 1: Don't trust regression betas....



Lesson 2: The cost of capital will change over time...

Year	1	2	3	4	5
EBIT	-\$373	-\$94	\$407	\$1,038	\$1,628
Taxes	\$0	\$0	\$0	\$167	\$570
EBIT(1-t)-\$373	-\$94	\$407	\$871	\$1,058	
Tax rate	0%	0%	0%	16.13%	35%
NOL	\$500	\$873	\$967	\$560	\$0

	Yrs 1-3	4	5	6	7	8	9	10	Terminal year
Tax Rate	0.00%	16.13%	35.00%	35.00%	35.00%	35.00%	35.00%	35.00%	35.00%
Debt Ratio	1.20%	1.20%	1.20%	3.96%	4.65%	5.80%	8.10%	15.00%	15.00%
Beta	1.60	1.60	1.60	1.48	1.36	1.24	1.12	1.00	1.00
Cost of Equity	12.90%	12.90%	12.90%	12.42%	11.94%	11.46%	10.98%	10.50%	10.50%
Cost of Debt	8.00%	8.00%	8.00%	7.80%	7.75%	7.67%	7.50%	7.00%	7.00%
After-tax cost of debt	8.00%	6.71%	5.20%	5.07%	5.04%	4.98%	4.88%	4.55%	4.55%
Cost of Capital	12.84%	12.83%	12.81%	12.13%	11.62%	11.08%	10.49%	9.61%	9.61%

Lesson 3: Use updated numbers and the free cash flows will often be negative (even if the company is making money)

- When valuing Amazon in early 2000, the last annual report that was available was the 1998 annual report. For a young company, that is ancient data, since so much can change over the course of a short time period. To value Amazon the trailing 12-month numbers were used.
- Trailing 12-month inputs
 - Amazon's EBIT (Trailing 1999) = -\$ 410 million
 - Tax rate used = 0%
 - Capital spending (Trailing 1999) = \$ 243 million (includes acquisitions)
 - Depreciation (Trailing 1999) = \$ 31 million
 - Non-cash Working capital Change (1999) = - 80 million
- Estimating FCFF (1999)

Current EBIT * (1 - tax rate)	= - 410 (1-0)	= - \$410 million
- (Capital Spending - Depreciation)		= \$212 million
- Change in Working Capital		= -\$ 80 million
Current FCFF		= - \$542 million

Lesson 4: Many of the operating expenses may be capital expenses....

- Since young companies are focused on generating future growth, it is possible that some or a significant portion of what accountants categorize as operating expenses represent expenditures designed to generate future growth (and thus are capital expenditures).
- In the late 1990s, many dot-com companies argued that SG&A expenses were really focused on getting new customers and should be treated as capital expenditures. Amazon, for instance, would have reported a profit if the SG&A expenses from 1999 were treated as capital expenditures, rather than operating expenses.
- If we adopt this rationale, it will also mean that they are reinvesting far more than we think they are. It will, however, make not their cash flows less negative.
- Should Amazon.com's selling expenses be treated as cap ex?

Lesson 5: Work backwards

Year	Revenues	Operating Margin	EBIT	
Tr12m	\$1,117	-36.71%	-\$410	
1	\$2,793	-13.35%	-\$373	
2	\$5,585	-1.68%	-\$94	
3	\$9,774	4.16%	\$407	
4	\$14,661	7.08%	\$1,038	
5	\$19,059	8.54%	\$1,628	
6	\$23,862	9.27%	\$2,212	
7	\$28,729	9.64%	\$2,768	
8	\$33,211	9.82%	\$3,261	
9	\$36,798	9.91%	\$3,646	
10	\$39,006	9.95%	\$3,883	
TY(11)	\$41,346	10.00%	\$4,135	Industry Average

Lesson 6: Don't forget to pay for growth...

Year	Revenues	Operating Margin	EBIT	
Tr12m	\$1,117	-36.71%	-\$410	
1	\$2,793	-13.35%	-\$373	
2	\$5,585	-1.68%	-\$94	
3	\$9,774	4.16%	\$407	
4	\$14,661	7.08%	\$1,038	
5	\$19,059	8.54%	\$1,628	
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9	\$36,798	9.91%	\$3,646	
10	\$39,006	9.95%	\$3,883	
TY(11)	\$41,346	10.00%	\$4,135	Industry Average

Lesson 7: There are always scenarios where the market price can be justified...

	6%	8%	10%	12%	14%
30%	\$ (1.94)	\$ 2.95	\$ 7.84	\$ 12.71	\$ 17.57
35%	\$ 1.41	\$ 8.37	\$ 15.33	\$ 22.27	\$ 29.21
40%	\$ 6.10	\$ 15.93	\$ 25.74	\$ 35.54	\$ 45.34
45%	\$ 12.59	\$ 26.34	\$ 40.05	\$ 53.77	\$ 67.48
50%	\$ 21.47	\$ 40.50	\$ 59.52	\$ 78.53	\$ 97.54
55%	\$ 33.47	\$ 59.60	\$ 85.72	\$ 111.84	\$ 137.95
60%	\$ 49.53	\$ 85.10	\$ 120.66	\$ 156.22	\$ 191.77

Lesson 8: You will be wrong 100% of the time... and it really is not (always) your fault...

- No matter how careful you are in getting your inputs and how well structured your model is, your estimate of value will change both as new information comes out about the company, the business and the economy.
- As information comes out, you will have to adjust and adapt your model to reflect the information. Rather than be defensive about the resulting changes in value, recognize that this is the essence of risk.
- *A test: If your valuations are unbiased, you should find yourself increasing estimated values as often as you are decreasing values. In other words, there should be equal doses of good and bad news affecting valuations (at least over time).*

9b. Amazon in January 2001

Reinvestment:
Cap ex includes acquisitions
Working capital is 3% of revenues

Stable Growth

Stable Revenue Growth: 5%	Stable Operating Margin: 9.32%	Stable ROC=16.94% Reinvest 29.5% of EBIT(1-t)
---------------------------	--------------------------------	--

Current Revenue \$ 2,465
Current Margin: -34.60%

EBIT -853m

NOL: 1,289 m

Sales Turnover Ratio: 3.02

Revenue Growth: 25.41%

Competitive Advantage

Expected Margin: -> 9.32%

Terminal Value = $1064 / (.0876 - .05)$
= \$ 28,310

Term. Year

\$24,912
\$2,302
\$1,509
\$ 445
\$1,064

	1	2	3	4	5	6	7	8	9	10
Revenues	\$4,314	\$6,471	\$9,059	\$11,777	\$14,132	\$16,534	\$18,849	\$20,922	\$22,596	\$23,726
EBIT	-\$545	-\$107	\$347	\$774	\$1,123	\$1,428	\$1,692	\$1,914	\$2,087	\$2,201
EBIT(1-t)	-\$545	-\$107	\$347	\$774	\$1,017	\$928	\$1,100	\$1,244	\$1,356	\$1,431
- Reinvestment	\$612	\$714	\$857	\$900	\$780	\$796	\$766	\$687	\$554	\$374
FCFF	-\$1,157	-\$822	-\$510	-\$126	\$237	\$132	\$333	\$558	\$802	\$1,057

Value of Op Assets \$ 8,789
+ Cash & Non-op \$ 1,263
= Value of Firm \$10,052
· Value of Debt \$ 1,879
= Value of Equity \$ 8,173
· Equity Options \$ 845
Value per share \$ 20.83

	1	2	3	4	5	6	7	8	9	10
Debt Ratio	27.27%	27.27%	27.27%	27.27%	27.27%	24.81%	24.20%	23.18%	21.13%	15.00%
Beta	2.18	2.18	2.18	2.18	2.18	1.96	1.75	1.53	1.32	1.10
Cost of Equity	13.81%	13.81%	13.81%	13.81%	13.81%	12.95%	12.09%	11.22%	10.36%	9.50%
AT cost of debt	10.00%	10.00%	10.00%	10.00%	9.06%	6.11%	6.01%	5.85%	5.53%	4.55%
Cost of Capital	12.77%	12.77%	12.77%	12.77%	12.52%	11.25%	10.62%	9.98%	9.34%	8.76%

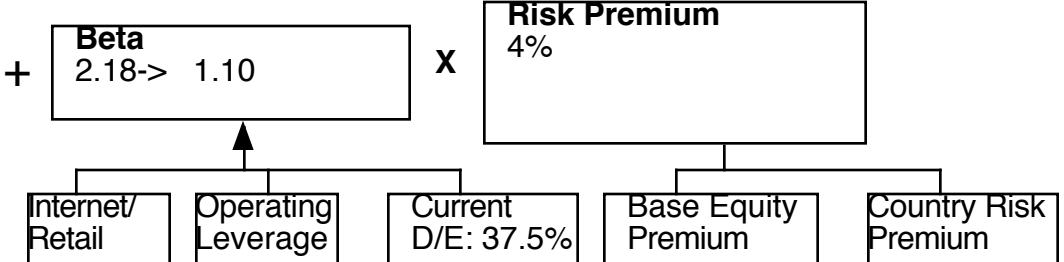
Forever

Cost of Equity
13.81%

Cost of Debt
6.5%+3.5%=10.0%
Tax rate = 0% -> 35%

Weights
Debt= 27.3% -> 15%

Riskfree Rate:
T. Bond rate = 5.1%



Amazon.com
January 2001
Stock price = \$14

Lesson 9: Here is your consolation price... the market makes even bigger adjustments...

