Lecture 9

Corporate Equities, Investment Trends and Capitalist Finance

Armed with a theory of interest, an understanding of net present value and a stylized vision of fixed income instruments we are now ready to apply basic financial market concepts to the equity market. Throughout most of this chapter we will be operating under the EMH. Indeed, we begin by analyzing asset prices in terms of their income generating capabilities. Some simple corporate equity barometers are then presented. Sector and market wide barometers are also reviewed. We sketch out historical returns for asset classes and the long run earnings trajectory for the U.S. economy. We then investigate the process by which swings in equity share prices drive the allocation of capital.

As was true in the previous chapter, however, the EMH, at times, unquestionably fails us. Thus we conclude this chapter with a description of the power of adaptive expectations, the long history of bubble formations in asset markets, and the parts that combine to allow for a bubble to form.

Asset Valuation ABCs

How do individuals and corporations make judgments about potential investments? Before we think about the special circumstances of equities, we explore the basics of asset finance and the comparison of asset cash flow generation versus financing costs.
Consider the table on the next page. The ABC trucking company is contemplating the purchase of another truck. The particulars of this potential investment are provided (see page 2). The company CFO forecasts that the truck, if purchased, will generate $88,000 per year. She estimates that operating costs will amount to $62,700 per year—before financing costs. Thus the company expectations are that the truck will generate $25,300 in cash in each of the five years of the truck's useful life.

Should the company buy the truck? What is the net present value of a $25,300 per year stream of earnings? That depends, of course, upon the discount rate we use in the calculation. We can reverse the question and ask what interest rate would render the purchase price of the truck equal to its projected five year earnings stream? The formula for converting a stream of earnings into a present value:

$$PV\ (A,r,n) = (A/r)*[1-(1/(1+r))^n]$$

In this case:

$$\$50{,}000 = \$(25{,}300/.418)*[1-(1/(1.418))^5]$$

Thus the company, based upon its projections for revenues and costs, knows that it would be indifferent to buying the truck if it judged its discount rate to be 41.8%.

Keep on Trucking???

2006 Freight Liner **$50,000 Price**
Box Truck **5-Year Useful Life**

5-Year Financing, No Down Payment, 7% = $12,000 /Year

5-Year Financing, No Down Payment, 13% = $14,000/Year

Cash Flow Statement (Expectations)

Revenues	$88,000
Costs:	
Maintenance	$3,000
Gasoline	$13,125
Truck Driver Wages	46,575
Cash Flow (Excluding Loan)	$25,300
Loan Payments (7%)	$12,000
net cash flow (7% Interest)	$13,300
cash flow margin	15%
Loan Payments (13%)	$14,600
net cash flow (13%)	$3,000
cash flow margin	12%

Alternative Approach									
Compute Asset's Net Present Value:									
Years	(1)		(2)		(3)		(4)		(5)
Earnings	25,300		25,300		25,300		25,300		25,300
Earnings N.P.V @ 7%	23,645	+	22,098	+	20,652	+	19,301	+	18,039
=	103,735								
Earnings N.P.V. @ 13%	22,389	+	19,814	+	17,534	+	15,517	+	13,732
=	88,986								
Yearly Earnings (Weak Economy)	12,000		12,000		12,000		12,000		12,000
			1.28		1.44		1.63		1.84
N.P.V. @ 13%	10,619	+	9,398	+	8,317	+	7,360	+	6,513
=	42,207								
Thus At 13%, with Weak top line, trucking is a losing proposition!									

The company could choose to borrow to finance the project. In this example, bank finance is available, in normal times, at 7%. At 7% the annual loan payments amount to $12,000 per year. Profit from the truck, after operating and interest expenses, totals $13,300 per year.

Corporate finance theory provides **hurdle rate** formulas that drive company investment decisions—both for investing in general and for investing in specific projects. When a firm chooses to borrow to finance a project, common practice is to use the borrowing rate as the discount rate to evaluate the investment. On page 3 we calculate the net present value of the projected earnings streams from the proposed truck purchase, using the two hypothetical borrowing rates. We also calculate the net present value of a reduced stream of cash flows, using the higher interest rate.

Our effort, in this simple example, is not to investigate the challenges of corporate finance decision making. As economic forecasters, not Chief Financial Officers, we simply need to recognize two truths. The two drivers in the business investment decision are the **estimated cash flows** and the **discount rate**. Both cash flow conjecture and discount rates are highly pro-cyclical.

What happens at business cycle turning points? Interest rates leap and expected revenues disappoint. In our simplified example, we push rates sharply higher. Borrowing costs now are 13%, loan payments rise to $14,600 per year. A direct consequence of higher borrowing costs, projected earnings fall to $3,000 per year. But revenue projections also disappoint, at turning points. If we pencil in revenues of $80,300 per year and keep financing costs at 13% the truck purchase now is set up to lose money. Simply put, higher interest rates and faltering top lines for companies weigh heavily on business investment decisions as recessions take hold. And the magic of monetary policy? A plunge for interest rates can take borrowing costs back down, and put potential investments back in the black, notwithstanding newfound more conservative revenue projections.

More Formally: Valuing an Asset with Equity Characteristics

Firm ownership, an equity position in a company, introduces several levels of uncertainty into asset valuation calculations. Treasury bonds offer fixed cash flows and guarantee payment. Corporate bonds promise fixed cash flows, with some risk of default. An equity instrument has no specified coupon payment linked to it. Nonetheless, fundamental equity market valuation calculations look remarkably similar to credit instrument assessments. At their essence, they are about ***expected cash flows***. These cash flows, in turn, are discounted with an interest rate that reflects a measure of the equity cost of capital.

What are the relevant cash flows for an owner of equity? Recall our investigation into the investment decision of the ABC Trucking company. Buying the truck, in effect, makes you the equity owner of that single capital asset. We estimated that the annual cash flow generated for the owner of that truck was $17,000 before interest payments and $5,000 after interest payments, in a healthy economy with 8% financing costs. This final cash flow, cash available after operating expenses, taxes, and debt payments is labeled **cash flow to equity investors**.

How do we value this stream of cash? We need a discount rate. We begin, as we did when we derived a formula for valuing cash flows associated with corporate bonds, with the **risk free rate**. In this case, however, we need to add an equity risk premium to the risk free rate, in order to value the stream of earnings.

The most straightforward way to estimate the equity risk premium is by using historical performance. From 1925 through 2004 treasury bonds delivered an average return of 3.75%. The S&P 500, in contrast, provided an average annual return of 10%. We can, therefore say, for share prices overall, the extra return delivered, relative to the risk free bond, was 6.25%. Formulaically:

$$\text{Equity discount rate} = \underset{3.75\%}{\text{risk free rate}} + \underset{6.25\%}{\text{equity risk premium}}$$

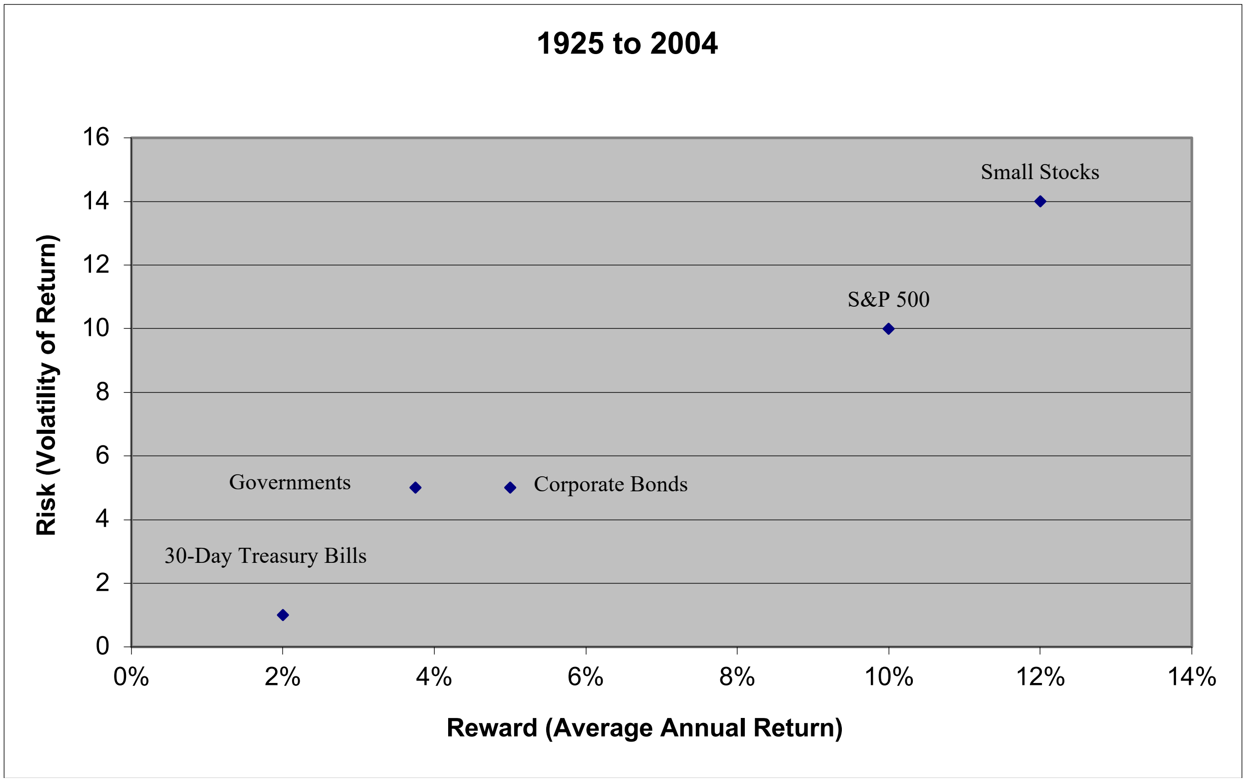
More generally, we define the value of equity as the discounted value of the stream of expected earnings, discounted by the equity cost of capital. Formulaically:

$$\text{Value of Equity} = \frac{\text{earnings (1)}}{(1+\text{edr})} + \frac{\text{earnings (2)}}{(1+\text{edr})^2} \ldots \frac{\text{earnings (XX)}}{(1+\text{edr})^{xx}}$$

Where edr is the equity discount rate

Historical Risk/Return Performances:

1925 To 2005		
	Average Annual Return	Volatility Of Return
30-Day Treasury Bills	2%	1
Governments	3.75%	5
Corporate Bonds	5%	5
S&P 500	10%	10
Small Stocks	12%	14



Share Prices

We now have a fundamental calculation that allows us to link the expected cash flows of an asset to its "value". If we invoke the EMH, we assert that asset prices, including and especially equity share prices, are the discounted present value of the expected earnings that the owners of the asset in question expect to collect. Share prices, in this construct, reflect attitudes about profit growth and interest rates.

We can create the simplest of profit models:

> Profits = f(economic growth, corporate margins)
> Note: margins measure the share of top line revenues that accrue to earnings.
> For the national economy we define margins as the ratio of
> Corporate Profits to Gross Domestic Product (see graphs on next page).

When forecasting profits, we acknowledge two truths about profits:

> Profits grow much faster than the economy for much of the business cycle, but plunge during economic downturns (margins are violently pro-cyclical).
>
> A forecast of long run margin expansion is nonsense. If the long run trend for profits has them rising as a share of income, over time all income accrues to capital, and the U.S. becomes ancient Egypt—owners of Capital collect all income, the rest are slaves.

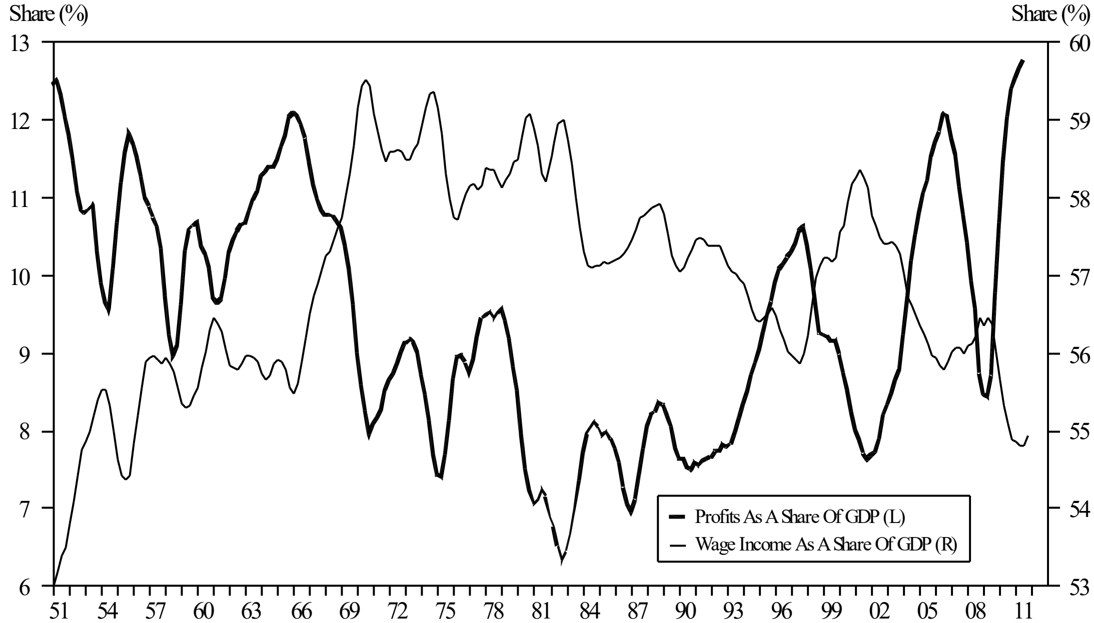
When we think about the U.S. stock market, we can think about it in one of two ways. It is a *stock market*, an aggregation of U.S. equity that reflects the aggregate performance of corporate earnings and changing interest rates. Alternatively, we are looking at a *market of stocks.* We perform company specific expected cash flow calculations and estimate present values using the appropriate discount rates for each firm. As we noted in the previous chapter, both cash flow expectations and interest rate assessments are influenced by company specific and big picture considerations. Wall Street jargon says both bottom up and top down insights influence asset price valuation.

In rendering opinions about equity share prices, a number of standard metrics are used. These include:

EPS, earnings per share
PE Ratio, price earnings ratio, (price per share)/(earnings per share)
PEG Ratio, PE Ratio/estimated long term growth rate
Earnings yield, projected EPS/price per share (Note: inverse of the PE ratio)

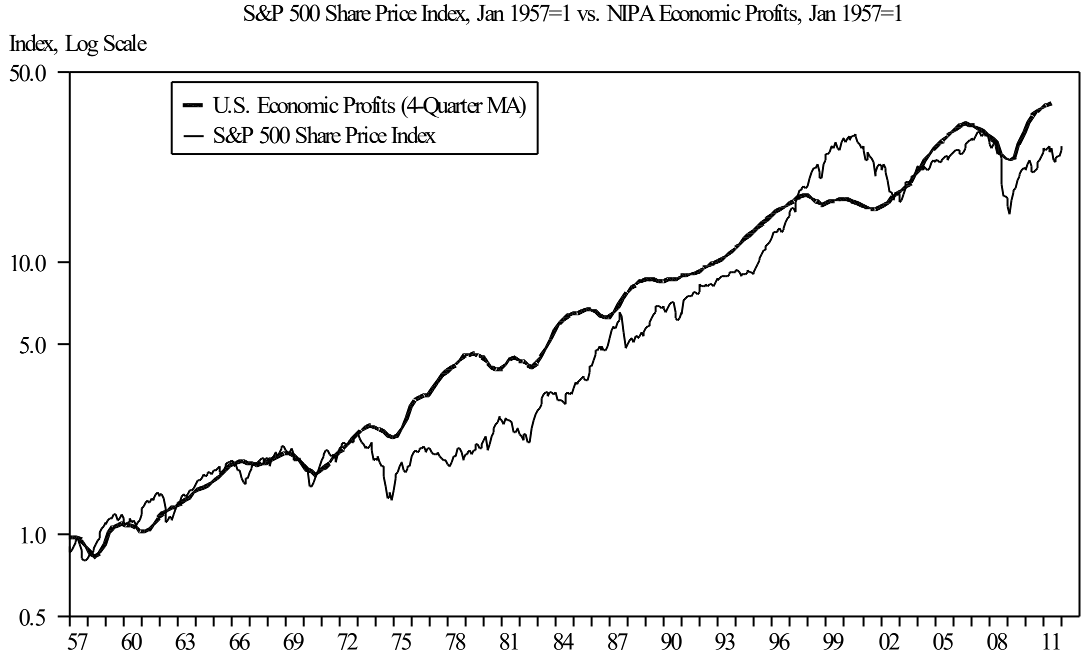
Profit Margins: Two Neighbohoods, Since 1950, With Violent Business Cycle Sensitivity.

Corporate Profits As A Share of GDP vs. Wage Income As A Share Of GDP



Profits Drive Share Prices Although Divergences Are Common.

S&P 500 Share Price Index, Jan 1957=1 vs. NIPA Economic Profits, Jan 1957=1



Equity Market Valuations: A Second Look at Equity Risk Premia

We pointed out, earlier in this chapter, that an historical measure of the equity risk premium revealed an average excess annual return, relative to treasuries, of 6.25%.
Comparing expected corporate earnings with prevailing risk free interest rates, in effect, estimating the equity risk premium at a moment in time, allows us to reflect on whether share prices are being valued expensively or cheaply, in comparison to the values placed on risk free bonds.

One way to approach this is to use a rough measure of the equity risk premium. This involves comparing one year forward earnings expectations to the ex-ante real return on a risk free bond. Formulaically:

Equity Risk Premium = (earnings yield) - (risk free real yield)

	EARLY APRIL 2006	EARLY APRIL 2008	EARLY APRIL 2009	EARLY APRIL 2013	EARLY APRIL 2014	EARLY APRIL 2015	LATE MARCH 2016	LATE MARCH 2017
ESTIMATED EARNINGS PER SHARE (EPS)	$88/SHARE	$93/SHARE	$78/SHARE	$111/SHARE	$118/SHARE	$118/SHARE	$118/SHARE	$129/SHARE
PRICE PER SHARE (PPS)	1310	1420	800	1563	1890	2060	2069	2369
(YOY, % CHANGE)			-43.7%		20.9%	9.0%	0.4%	14.5%
EARNINGS YIELD (EPS/PPS)	6.72%	6.55%	9.75%	7.10%	6.24%	5.73%	5.70%	5.44%
EX-ANTE REAL 10-YEAR RISK FREE rate, r	2.35%	1.45%	1.05%	-0.75%	0.51%	0.08%	0.19%	0.44%
EQUITY RISK PREMIUM (ERP) =EY-r	4.37%	5.10%	8.70%	7.85%	5.73%	5.65%	5.51%	5.00%
U.S. 10-year	5%	3.50%	2.90%	1.70%	2.70%	1.92%	1.85%	2.40%
Moody's Baa	6.60%	7.00%	8.60%	4.60%	4.90%	4.45%	4.94%	4.65%
Baa 10-year spread	1.60%	3.50%	5.70%	2.90%	2.20%	2.53%	3.09%	2.25%
Equity Premium - Real Baa Yield	0.42%	0.15%	1.95%	5.70%	3.02%	3.04%	2.23%	2.31%

Why do we subtract inflation from the bond yield? The relevant comparison of cash flows would look at the perpetual stream of corporate earnings from the S&P 500 companies. These nominal streams will grow with time. Thus the earnings yield, a ratio of today's asset price to the expected earnings only one year forward understates the yield implied by the stream of growing corporate earnings. A useful short-hand for calculating the ERP is to simply subtract the real risk-free rate from the earnings yield.

Note: If a company priced at $100/share has earnings expected to be $10/share next year, and if they are expected to grow by 5% per year in perpetuity, we can calculate the yield of the company:

Recall that, invoking EMH, the share price ($100) is the net present value of the earnings stream. The formula for the net present value of a growing perpetuity:

$$\text{PVG}(\infty) = \frac{C1}{r-g}$$

Where C1≡ flow in year 1; g ≡ the growth rate for C; r ≡ interest rate per period (the yield)

Solving: $100 = \frac{C1}{r-g} = \frac{10}{r-.05}$ r-.05 = 0.1 r = 0.15 = 15%

Now if we used our simplified method to calculate the earnings yield, the one used to derive the table above, we simply divide next year's earnings expectation by the share price, 10/100, or 10%. Thus, in this case the simplified measure of the earnings yield is 10%, but the yield implied by a net present value of the cash flows is 15%. Recall that we subtract the real risk free rate from the earnings yield, to get our equity risk premium.

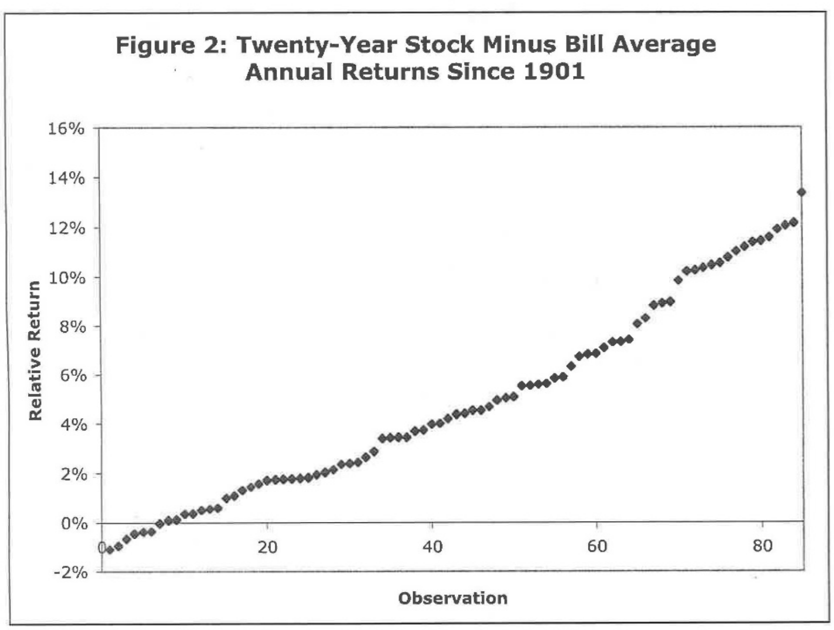
Using the more foprmal calculation, we would subtract a conjectural perpetual risk free nominal rate (in a world of 10% earnings growth, perhaps a 6% bond), from the more formally derived earnings yield :

15-6 =9

Versus 10-2=8 (EY- real 10-year)

The Improbable Nature of the Equity Premium

Brad Delong and Konstantin Magin (***The U.S. Equity Return Premium: Past, Present and Future***) provide graphic evidence of just how *improbable* the U.S. equity risk premium turns out to be.



The chart looks at rolling 20-year returns for U.S. stocks minus the comparable period returns for t-bills. (Compounded annualized geometrically weightred returns, CAGR).

It organizes the spreads into a histogram. What percent of the time did average annual gains for shares beat t-bills by 2% or less? Look at the horizontal axis, and we see roughly 20% of the time. What percent of the time did shares fail to beat t-bill returns? The line crosses the '0' at about 9%.

So, 91% of the time, for 20-year rolling periods, shares beat t-bill returns! That suggests a crazy level of risk aversion.

The Delong paper came out in 2007. Students of the equity market, and most people who can read, know that the stock market took a terrible beating in 2008 and early 2009. Would the chart he presents look very different, if we update it, through close of business 2015? The table below provides ther inputs needed.

If you bought shares end of 1988 and sold them end of 2008, what was your annualized return? At 8.4%, it still easily beats the 4.4% t-bill return. Indeed in each year since 2007 the 20-year rolling average equity return easily beats t-bill returns. Thus depite the financial crisis and the Great Recession, the equity premium puzzle seems intact.

	TWENTY	YEAR	
	t-bill return (%)	S&P CAGR (%)	STOCK MINUS BILL
2008	4.4	8.4	4.0
2009	4.0	8.2	4.2
2010	3.6	9.1	5.5
2011	3.3	7.8	4.5
2012	3.1	8.2	5.1
2013	3.0	9.3	6.3
2014	2.7	9.4	6.7
2015	2.4	9.4	7.0

Why Falling Real Rates May Lift Equity Share Prices

We can reorganize the terms in the equation above, and come to understand why investors in equities, at times, are cheered by falling real interest rates.

ERP= (EPS/Share price)-real 10-year rate

ERP + real 10-year rate = EPS/Share price Share Price = (EPS) / (ERP + real 10-year rate)

If we make several heroic assumptions, we see the logic of rising share prices, when real rates decline. Assume no change in EPS expectations and/or the ERP. In such circumstances falling real rates lift the NPV of the earnings stream.

What might Paul Samuleson say about this simple notion? Real rates, in his 3 cohort world, turned out to reflect the economiues real growth rate. Ifr the fall for real rates reflects falling growth prospects, the uspdie for stocks is hard to justify.

S&P 500 Sectors

The S&P 500 share price index is sub-divided into sectors and industries:
Energy, financial cos., drugs, high tech, retailers, defense contractors, motor vehicle companies… This affords an economic forecaster with important information. We can look at total market capitalization for the S&P 500 and then look at shares of market cap by sector and/or industry. We also can monitor changes in market cap shares, as a window onto global collective opinion about changing profit opportunities in various sectors.

Consider the sharp shifts in sector market capitalization occurring over the past 35 years:
Source:
http://www.sectorspdr.com/sectorspdr/Pdf/All%20Funds%20Documents/Document%20Resources/10%20Year%20Sector%20Returns

	1980	1990	2000	2005	2010	2015
Energy	28.2%	13.1%	6.6%	9.3%	12.0%	6.5%
Financials	5.0%	7.2%	17.3%	21.3%	16.1%	16.5%
Information Technology	8.7%	8.8%	21.2%	15.3%	18.8%	20.7%
Health Care	8.0%	10.3%	14.4%	13.3%	10.9%	15.2%

Violent changes in the relative capitalization weights for sectors were driven:

The quadrupling of oil prices in 1979
The technology boom/bubble of the late 1990s
The surge in financial company leverage, 1990-2005
The plunge to $10/bbl for oil, 1999
The surge to $100/bbl for oil. 2010

The collapse to $30/bbl for oil, 2016
The steady rise in the importance of health care provision

What unfolded in the technology sector in the 1990s? Surging growth in earnings led to surging share prices, as the EMH suggested it should. Climbing share prices, over time, drove PE multiples higher, and axiomatically, earnings yields lower. As we demonstrated in the equations above, a falling earnings yield lowers the equity risk premium, lowering the equity cost of capital and engendering investment in the sector in question. We saw that pattern go from boom to bust in High Tech; we have witnessed boom/bust cycles in energy for over 30 years.

Allocating Capital and Tobin's Q

Changing expectations, in an uncertain world, when coupled with free market capitalist finance, we believe, is enough to explain, endogenously, the persistence of business cycles in free market economies.

But we don't want to throw out the baby with the bathwater. Socializing investment decisions has already been tried, and the disasters of Soviet Russia and rest of former communist block make it clear that the invisible hand of capitalism, with self-interest as the motive, still does the best job, over the long haul, of getting money to sectors that the world judges to be most fruitful for investment.

How do the ups and downs of the equity market send capital flows in appropriate directions? Let's investigate a super simplified example and along the way learn about Tobin's Q and the buy or build decision.

Ollie's Oil Company

Ollie decides to use $1,000,000 of newly inherited money to form a small oil company. The company erects 1 oil rig, at a cost of exactly $1,000,000. His balance sheet, see below, is straightforward. Ollie issues himself 10,000 shares at $100 per share. His equity exactly equals the value of the sole asset, the oil rig.

Ollie sells oil at $50/bbl. His costs are $30/bbl, netting him $20/bbl in profit.

Tobin's Q is a measure of the market value compared to the replacement cost of a company's assets. In our super simplified example, we begin with Ollie's company sporting a Tobin's Q of 1.

We assume in this example, that Ollie's $100/share price correctly reflects the DPV of the stream of earnings that $50/bbl oil implies.

Now we have a shock. Chinese and Indian consumers begin to drive motor vehicles. Oil leaps to $100/bbl.

Ollie's company now generates $70/bbl in profit. The DPV of this more than tripling of cash flow causes his share price to triple.

What happens to the Q ratio of Ollie's company? The market value of Ollie's stock is now $3,000,000. The replacement cost to build another rig remains at $1,000,000.

Thus the Q ratio is now 3. When the Q ratio is well above 1, it is in the shareholders' interest to sell equity and invest in additional physical capital.

Consider the opportunity presented to Ollie. He can issue 3,333 additional shares at $300 per share, raising another $1,000,000. He then uses the proceeds to build a second oil rig. In so doing he doubles the company's earnings. But he did not double shares outstanding, thanks to the new higher price that his shares sport.

As the table above reveals, Ollie doubles his earnings, with the second Oil Rig. But the 33% increase in shares outstanding means that per share earnings rises to $22.50/share. Ollie now "owns" $225,000 worth of earnings, up from $150,000. The new shareholder has claim on $75,000 given his ownership of 3333 share.

More generally, when the q ratio is well above 1, the equity cost of capital is low and investment climbs in said area. So a leap in oil prices drives share prices higher, inviting equity issuance to finance bricks and mortar—or deep water oil rig—investments

What happens if share prices plunge? If you have company with a Q ratio well below 1, there is no incentive to expand productive capability. If a factory cost $1,000,000 to reproduce, and the market capitalization of the company is $600,000, and you have a hankering to be in that business, you can buy the factory, by buying the company for $600,000.

Thus sharp swings in the market capitalization of sectors within equity markets changes the equity cost of capital, relative to replacement cost, and drives investment as the market perceives changing return opportunities in different sectors.

"Forecasts Don't Drive Markets, Markets Drive Forecasts"

"Around twenty years ago, when I was a rookie Wall Street guru at E.F. Hutton, the firm's technician uttered the phrase that is the title for this note (see above). It made me crazy. Armed with a PhD, and years of teaching and Washington experience, I was insulted by Phil Roth's quip. As my teeth grew longer, I came to appreciate Phil's wisdom.

Alan Greenspan, unfortunately at a critical juncture, failed to embrace Phil's assessment. On April 4th of 2000, at the White House Conference on the New Economy, Greenspan cited Wall Street technology analysts' euphoric long-term earnings expectations as a reason to be optimistic that "technology synergies are still expanding." Greenspan went on to hedge his bet. "There are many who arg.ue, of course, that this is not prescience but wishful thinking. History will judge." Qualification notwithstanding, in front of a throng of believers, with President Clinton a few feet away, Greenspan chose to emphasize the upside for the future of technology spending.

We found his comfort level to be inexplicable. A week later we published a note, reproduced below. Our simple message? Technology analysts' profit expectations, by spring 2000, had gone way beyond being optimistic. In fact, they had become impossible (see below). A swoon for share prices, not an extended surge for tech spending, was the obvious outcome in April 2000. Using Phil's framework, earnings expectations reflected the stocks' previous explosive rise. Conversely, on the way down, one would expect a plunge for share prices first, followed by stepwise downward revisions to long-term earnings expectations.
Which is, of course, exactly what we witnessed. As the table below makes clear, the lion's share of the swoon for shares occurred from April 2000 through April 2001. Over that first year of slide, however, the downward adjustment to long-term earnings expectations was small. Over the next year, earnings expectations were ratcheted down, with only modest further share price decline. Over the third year, however, with another small move down for tech share prices, their long-term earnings expectations moved lower still.

Too Good To Be True: Three Years Later

		Long-Term Annual Growth				Share Price			
	Companies	4/7/00	4/2/01	4/10/02	4/4/03	4/7/00	4/2/01	4/10/02	4/4/03
1	Cisco Systems (CSCO)	30	30	25	16	72.9	15.1	15.6	13.8
2	Microsoft (MSFT)	25	18	16	14	89.1	55.8	56.3	25.4
3	Intel (INTC)	20	18	18	16	68.4	25.8	29.3	17.1
4	Oracle (ORCL)	25	23	21	15	43.6	15.3	11.6	11.4
5	Int'l Business Machines (IBM)	14	14	11	10	123.1	94.7	89.0	80.6
6	Lucent Technologies (LU)	20	17	13	11	56.4	8.8	4.0	1.5
7	Nortel Networks (NT)	21	25	16	14	62.5	14.0	3.5	2.2
8	America Online (AOL)	50	30	21	12	68.8	37.2	20.7	11.5
9	Sun Microsystems (SUNW)	21	23	18	13	49.4	15.2	8.1	3.4
10	Dell Computer (DELL)	33	22	17	17	55.2	24.1	26.8	29.0
11	Hewlett-Packard (HWP)	15	15	12	na	60.9	28.9	17.7	na
12	EMC (EMC)	31	30	23	15	70.4	29.3	10.2	7.7
13	Texas Instruments (TXN)	24	23	21	19	83.3	28.4	32.2	16.9
14	Qualcomm (QCOM)	38	35	26	22	152.3	51.5	35.3	34.1
15	Motorola (MOT)	19	21	18	15	51.3	14.7	13.9	8.5
16	Yahoo! (YHOO)	56	23	31	28	151.1	14.0	18.4	23.9
17	Applied Materials (AMAT)	24	24	20	18	114.9	40.0	51.1	13.5
18	Veritas Software (VRTS)	49	47	36	18	126.3	47.4	17.0	19.1
19	Compaq Computer (CPQ)	19	16	14	na	29.9	18.0	9.8	na
20	Computer Associates (CA)	18	16	15	15	61.6	27.3	21.8	14.0
	Average	*27.6*	*23.5*	*19.6*	*16.0*	*79.6*	*30.3*	*24.6*	*18.5*

Bubbles in Growth Stocks and the Square Root Rule
(excerpt from Cost of Capitalism, page 115)

The [2000-2001] swoon for tech shares was awe-inspiring.In its middle stages, with NASDAQ down by over 40%, I asked a respected colleague and kindred spirit how far he thought tech stocks

could fall. “I’m 65 years old, I was there for the late 1960s bubble. At the peak evferone knows you have to own growth companies. And tech grows the fastest, so its tech, tech, tech. By the time you bottom, peopleonly want value—after all, in the end another company with a better widget always puts yesterday’s tech darling out of business.”
“You didn’t answer my question,” Isaid. “how far can they fall?
“Simple, use the square root rule. Look at the companies peak share price. Take the square root. When it hits that level its a buy.”

CHECK OUT CISCO SHARE PRICES AND TEST HIS WILD ASSERTION!
(NOTE: RED LINE IS AT $81/SHARE AND WHITE LINE IS AT $9/SHARE)