Is The Stock Market Over Or Under Valued?

The single most powerful force driving the stock markets over the long-term is **valuation** *(P/E Ratios)*, or the level at which the marketplace is pricing the present value of the future expected cash flows from a company. While valuations can sometimes be successfully ignored over the short-term, it is absolutely suicidal to fight them over the long-term. Popular greed and fear can certainly lead to short-term (cyclical) market movements contrary to what the state of valuations suggests (secular) ought to happen, but centuries of market history have painfully proven that there is ultimately absolutely no escaping from the overwhelming force of valuations in the end.

Investors today are faced with a daunting task of navigating a global market place with investments being influenced by geopolitical forces, accounting shenanigans, information immediacy and outright manipulation by hedge funds. Everyday, investors are bombarded through radio, television, print and email with the latest hot stock idea or why you are missing the boat by not being invested in the market. However, at the end of it all, investing success is primarily determined about what price you pay today for a future stream of cash flows generated by the investment. In the short run investors may have limited success by following the latest hot trend or fad investment, however, it is an unequivocal fact that if you overpay for an investment then your long term returns will have with minimal or disastrous results.

Lately, the train of talking heads on television have been espousing that the average investor needs to be fully invested in the market since interest rates are low and valuations, based on projected earnings, are so close to their long term average. Just recently, March of 2006, Elaine Garzarelli was quoted as saying ""…we're in an unmistakable bull market," and she sees both the Dow and the S&P 500 hitting all-time highs over the next 12 months, with each advancing in that period around 20%. The Nasdaq, she predicts, will do even better. If that is the case then that means the market is currently undervalued by 20% and with the S&P 500 trading right around 1300 that means that in the next twelve months it should rise to around 1560.

Therefore, the purpose of this article is to both teach you about the importance of valuation in regards to investing but also to look at the current intrinsic value of the market today to determine what the growth of the market over the next 10 years may look like.

Some Definitions First

Earnings: Earnings are located on an accounting document known as the **"income"** or **"profit and loss"** statement:

Revenue - Expenses = Net Income (Loss)

The income statement measures company performance over a specific period of time. You subtract expenses from revenues, and at the end of the annual accounting period the hoped for result is that the company has a net profit, which would result in the equity portion of the balance sheet getting larger. Wall Street usually refers to the profit or loss as **"earnings"**. Earnings are reported every calendar quarter, and the process makes up a substantial portion of CNBC's programming schedule. The reporting usually begins shortly after the end of the quarter and lasts about three months *(although 90% of companies will have reported within about six weeks after the quarter end)*.

Earnings Per Share ***(EPS):*** Earnings per share is the total earnings of the company divided by the number of shares outstanding. Therefore, if a company with 1,000,000 shares outstanding reports $100,000 in earnings for the quarter:

EPS = $100,000 ÷ 1,000,000 = .10 cents per share

The EPS reported for the most recent quarter are then added to the EPS for the prior three quarters, which gives us total earnings for the last 12 months. This is referred to as twelve-month trailing earnings or **"TMT"**, and this is used to calculate the P/E ratio.

*Price to Earnings Ratio **(P/E):*** When we divide the price per share of stock by the earnings per share, the result is the Price to Earnings Ratio or **P/E Ratio**. For example, if a company's stock is selling for $100 per share and annual earnings are $5 per share, we divide 100 by 5 and get a P/E of 20. The P/E is also referred to as a **"multiple"**. In this case we would say that the stock is selling at a multiple of 20 times earnings.

Another way to think of P/E is that it represents the number of years it will take to get a 100% return on the investment. In the above example it would theoretically take 20 years to double our money. When evaluating P/E, we should keep in mind that it takes about 12 years to get a 100% return when investing money at 6%.

Different Kinds of P/E Ratios

This is where it gets a little confusing. If you are going to value the stock market then you need earnings to do the calculation. Of course, the question then becomes which earnings do you use? In the "real world" the only earnings that count when it comes to paying taxes, financing operations, or borrowing money is what a company has "actually" earned and put into their bank account. This type of reported earnings are known as **"reported"** or **GAAP** earnings *(calculated using Generally Accepted Accounting Principals)*, and it is the standard for historical earnings comparisons.

Standard & Poor's has introduced a version called **"core"** earnings, which is more critical than GAAP *(as it takes into account the expensing of stock options)* and will probably become the standard in the future due to recent legislative and accounting changes.

Of course, if you are an investment banking firm that needs to sell company shares in the market place and you having trouble justifying a companies lack of earnings then you can use "**pro forma"** or **"operating earnings"**, which exclude some expenses, includes revenue that has not been realized and are deceptively optimistic. **"Pro forma"** earnings are what the company might have earned if everything had gone as they planned and became popular in the 1990s as a result of the investment sales industry's desperation to justify impossibly high valuations. Generally, operating earnings are useless and are often much higher than what is actually realized when the company reports actual earnings. Well, you can try to ignore them but unfortunately the financial media primarily report operating earnings in about 90% of their coverage. Fortunately, the quote systems still report GAAP earnings -- at least I'm not aware of any exceptions to that.

In the table below you will see the difference between reported, core and operating earnings:

		2005 Q3	***Est 2005 Q4***	***Est 2006 Q1***	***Est 2006 Q2***
TMT P/E Ratio **(GAAP)**	:	19.6	18.3	17.3	16.8
TMT P/E Ratio **(Core)**	:	20.6	19.9	N/A	N/A
TMT P/E Ratio **(Operating)** ..	:	17.6	17.1	16.7	16.4
TMT Earnings **(GAAP)**	:	66.57	71.47	75.42	77.98
TMT Earnings **(Core)**	:	63.40	65.80	N/A	N/A
TMT Earnings **(Operating)** ...	:	74.21	76.47	78.48	79.94

As you can see in the table above the trailing twelve months (TMT) operating earnings were projected to be $74.21 per share, however, when earnings were actually reported under GAAP standards only $66.57 were actually realized…this is roughly an 11.5% shortfall for the quarter – if you annualize that shortfall out for the full year you can see why historically there has been on average a 33% shortfall between actual earnings and operating earnings.

A Look At The Past

Before we can start finding a "fair market value" for the stock market today we need to understand a little about the past so that we can make sure that we are using the right data for our calculation. As we have seen above

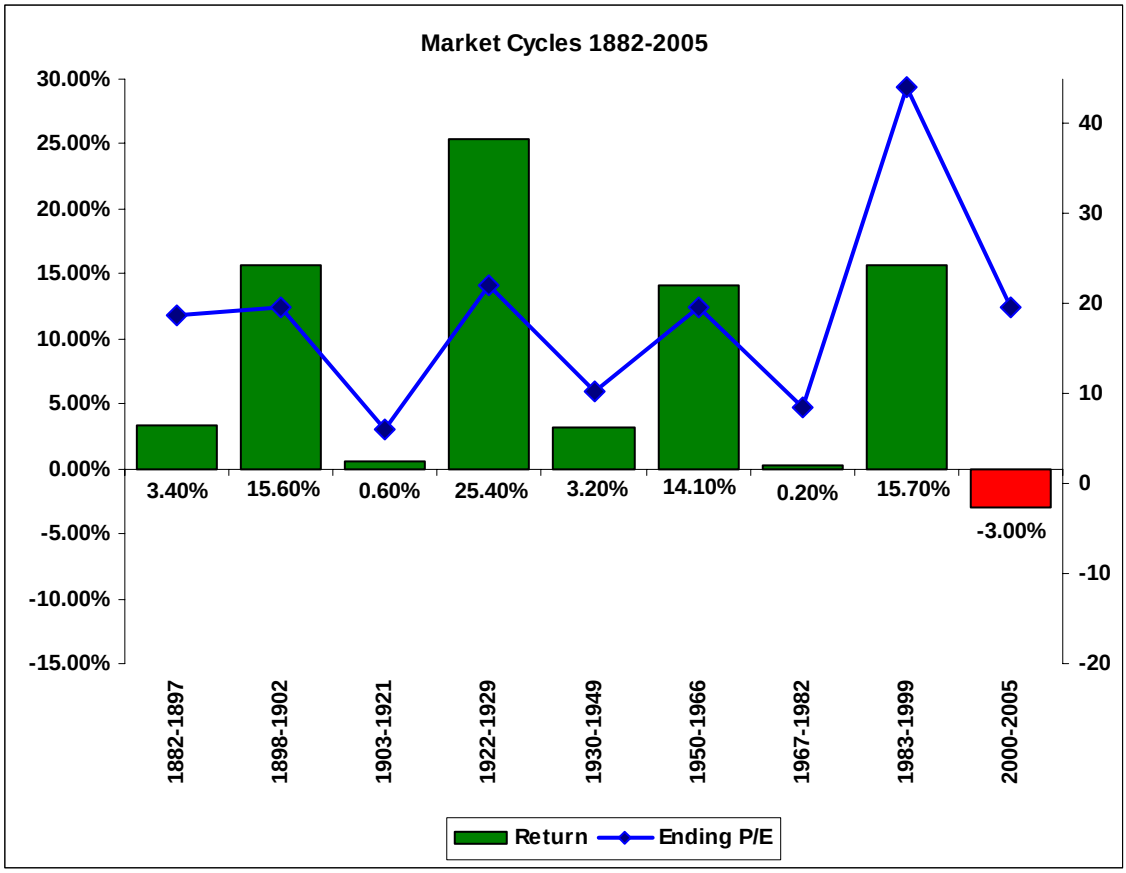
numbers can be manipulated to provide any result that you want to achieve. Therefore, we need to look at history in order to determine a baseline of data to start working from.

The historical average price-to-earnings ratio is 15 times earnings, meaning that, on average, over decades the fair value of stocks in general is a price that is 14x higher than the annual earnings that the underlying companies can produce. At this average P/E ratio, discounting potential growth, it takes a company 15 years after an investor bought it to earn back the original price that the investor paid.

However, the market cheerleaders who currently cite that the current market P/E multiple is 15-16 times earnings, and therefore fairly valued, are using **forecast operating** earnings and are mixing apples and oranges since the long-term average they are referring to is based on **trailing reported** earnings and, as we noted above, there forecasted operating earnings have been significantly higher than actual earnings turned out to be.

Therefore, since forecasted earnings are not audited or in accordance with generally accepted accounting principles (GAAP), and they *(conveniently for the cheerleaders)* result in a higher earnings number *(and a lower P/E multiple)* than trailing reported earnings, we will need to adjust the forecasted P/E ratio so that you get an equivalent comparison to the historical average P/E. Therefore, for the purposes of our study we will use a historical average of 15 times reported earnings.

Stated another way, using the reciprocal (1/15) of this historical average fair-value 15x P/E ratio, an investor can expect a long-term 6.6% annually compounded return in the stock markets, which is a fair level of compensation for risking scarce capital. *(This figure does not include dividends)* However, if you invest in stocks when valuations are at their historical highs around 23 times earnings then your return falls to 4% annually. *(As of March, 2006 the current P/E ratio is around 19.6 times operating earnings and 20.6 times core earnings)*



If you look at the chart of the financial market above you will see that the markets have had very distinct cycles to navigate. As you will notice when TTM P/E's are pushing multiples of 20 times every dollar earned markets tend to have very low rates of returns. As opposed to when multiples are low, around 5-7 times trailing earnings, the financial markets perform much better as multiples begin to expand once again. The markets are

currently contracting the historical peak of 42 times trailing earnings and are still at levels which have been more indicative of market peaks rather than market bottoms. Consequently, the markets are performing true to form currently by delivering low annualized returns as they have each time in the past when multiples are contracting rather than expanding.

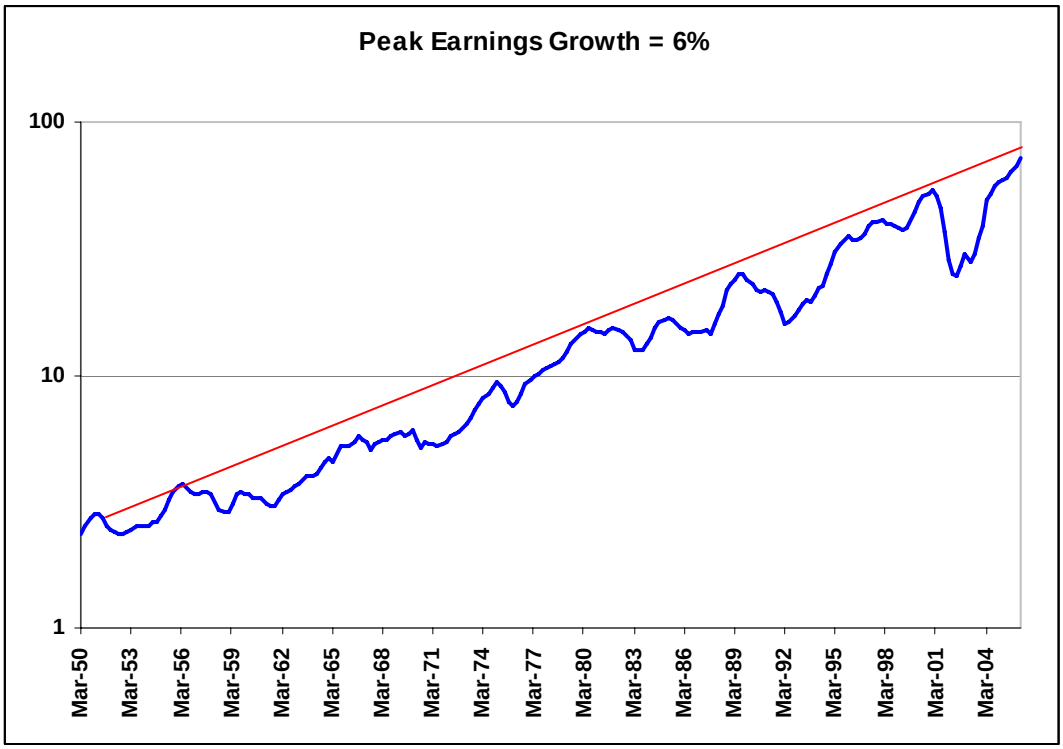
Assumptions To Valuation

Therefore, in order for us to begin finding out what a "fair market value" is for the markets we have to make several assumptions. First, we have already established that the historical average P/E is around 15 times trailing twelve months earnings.

We also need several other factors in order to do our market value calculations such as average annual gross domestic product (GDP) growth because corporations can not grow faster than the overall economy for very long. Average annual earnings growth for corporations since our calculation for a fair market value must include the growth in earnings, as well as, an average annual dividend growth rate since dividends have historically made up 40% of the average total return of the market overall.

The average historical annual earnings and GDP growth numbers are almost identical. If you look at the chart below you will note that measured peak-to-peak earnings on the S&P 500 earnings have never really grown any faster than 6% annually. This is something to keep in mind when you hear that *"earnings are growing at 18% annually,"* etc. from the talking heads on television because those figures represent trough-to-peak recoveries from depressed levels and NOT sustainable earnings trends that are appropriate for valuing stocks over the long-term.

This actually makes a lot of sense when you think about it. If the economy, as measured by GDP is only growing at an annual nominal rate of 6.7% then earnings can not grow faster than the economy for an extended period of time because if they did then gradually income from the economy would be completely absorbed by the stock market. This is also another reason to be very suspect of the talking heads on television as they never predict earnings growth to slow down, or worse, decline. However, if you look at the chart below you can see that there have been periods of time where earnings growth of companies had substantial declines.



The chart above updates S&P 500 earnings (net trailing) as of the most recent data. Notice that the latest data point takes earnings right up to the peak of that 6% growth line, an event that has historically been associated with a) roughly zero growth in S&P 500 earnings over the following 5 years and b) on average, a price/earnings ratio for the S&P 500 of about 12 – the current multiple is over 19.

Dividend growth is also an important factor of our overall fair market calculation methodologies. For example, in 2005 the S&P 500 had capital appreciation of 3% plus a dividend yield of 1.9% which gave investors who held the index for 12 months a total return of 4.9%. Notice, that the dividend yield made up almost 40% of the total return of the index in 2005. This is about in line with the historical average of how much the dividend yield makes up of the total return of markets. For the purposes of our study we will use the average historical growth rate in dividends of 5%.

So here are all the variables that we need to perform our fair market calculations to see if the markets are over or undervalued presently:

Average Historical Price to Earnings Ratio	**15**
Average GDP Growth Rate	**3.5%**
Average Annual Earnings Growth Rate	**6%**
Average Annual Dividend Growth Rate	**5%**
Average Historical Inflation Rate	**4%**
Average Historical Stock Returns	**7%**

Valuing The Market

What do we mean by the "true", or better to say "intrinsic", value of the stock market? To start with, it is the sum of the intrinsic values of all the companies in the market, or in the case of an index like the S&P 500, the sum of the intrinsic values of all the companies comprising the index.

So what is the intrinsic value of a company? This question has a very simple and clear-cut answer in concept, but an extremely difficult answer in practice. The intrinsic value of a company is simply the ***present value of its future stream of earnings.*** If someone were to buy an entire company, this is the economic value they would be receiving. That's really all there is to it, however, to actually determine this value in practice is very difficult because it is the present value of the **future** earnings of the company that one must calculate. Therefore, we have to use historic values as a guide to help us set the framework for estimating the future values, but there is no way to get around the fact that intrinsic value is based on future outcomes, and these must be estimated or *"guessed"* at as intelligently as possible.

We will focus on estimating the fair value of the S&P 500, which represents over 80% of the market value of all U.S. equities, and is a common proxy for the large cap domestic equity asset class. We will take the approach of valuing the S&P 500 as if it were a single company; i.e., we will estimate the present value of the future earnings stream of the whole set of companies comprising the index. To do this we will need the following variables:

1. The current level of earnings for the S&P 500 companies.

2. The future long run growth rate(s) of earnings.

3. The proper discount rate to use in the present value calculation, which is the sum of:

    a. The future "riskless" rate of return, typically assumed to be the rate on long term Treasury bonds.

    b. The equity risk premium, which is the extra return above the riskless rate that investors expect to receive in return for taking on the risk of investing in equities.

Therefore, the formula that we will use to calculate the fair market price for the S&P 500 index would simply be equal to the current earnings level divided by the discount rate minus the earnings growth rate. In equation form we have:

$$FV = \frac{E}{(D + g)}$$

Where:

FV = fair value of the market (measured by the S&P 500 index)
E = current level of earnings of the S&P 500
d = discount rate used to compute the present value of future earnings
g = future growth rate of earnings

As mentioned above, the discount rate (D) is equal to the sum of the riskless rate of return plus the equity risk premium. To continue with our notation:

$$D = rf + rp$$

Where:

rf = riskless interest rate
rp = equity risk premium

Risk-Free Rate of Return - First let's consider the risk-free rate of return. Currently, the nominal yield on 10 year Treasuries is 4.75%. In order to get a "real" rate we must subtract inflation. Therefore, if we use our long term historical average inflation rate of 3.5% this translates into a 1% real risk free rate. This is below the long run average *real* rate of return for long term Treasuries between 1926 and 2005 of 2.3%.

Equity Risk Premium - Estimating the equity risk premium is a major issue of financial economics. There are many different ways to approach the problem, and dozens of papers and books have been written about the subject. The long run average premium for large cap US stocks since 1926 has been about 5% over and above the return on government bonds. Large cap stocks have generated compound annual returns of about 10% which was derived from 6% annualized capital appreciation plus 4% in dividends. This is opposed to long-term government bonds have returned about 5% historically. However, can we count on getting 10% from stocks over the next decade? Let's do some math.

In order to calculate the equity risk premium we have to first estimate what the expected growth rate of stocks will be in the future. There are two ways to approach this task by using expected future P/E's or dividend yields – we will show you both methods.

Using price/peak earnings multiples and assuming peak-to-peak earnings growth of 6% annually, the projected annual total-return on the S&P over the next T years is:

$$\text{Future Returns} = (1+g)(\text{future PE} / \text{current PE})^{(1/T)} - 1 + d\,(\text{current PE} / \text{future PE} + 1) / 2$$

Where: g = growth rate of earnings (6% historically peak to peak)
P/E = price to earnings ratio
T = number of years to reach goal
d = dividend yield

The first term is just the annualized capital gain, while the second term reasonably approximates the average dividend yield over the holding period.

Therefore, if we go back to the start of this article we see that during periods of P/E contractions P/E's have generally ground themselves to levels of 5 to 7 times earnings. We will assume that since the markets are now global and technology has now brought investing to the masses we will assume that the markets will most likely find sponsorship at 10 times earnings over the next 10 years.

If we start from the current price/peak earnings multiple of 19 and a 1.9% dividend yield and forecast that over the next 10 years P/E's will fall to around 10 times earnings as earnings are still growing at 6% annually has they have done historically.

g = 6% in annualized earnings growth
P/E Current = 19
P/E Future = 10
T = 10 years
d = 1.9%

Therefore:

(1.06)(15/19)^(1/10)-1+.019(19/15+1)/2

= 5.67% annualized returns over the next 10 years.

As you can see due to the fact the P/E's are falling expected future returns are somewhat dismal which, as we showed at the beginning of this article is normal for secular bear market periods.

Since there has been a lot of talk through the media that since companies are beginning to issue more and more dividends that this should bode well for the stock market going forward. However, as you will see, when we adjust our formula to account for rising dividends the results are somewhat disappointing.

Future Returns = (1+g)(future d / current d)^(1/T) - 1 + d (current d / future d + 1) / 2

Where: g = growth rate of dividends (5% historically)
d = dividend yield
T = 10 years
Current d = 1.90%
Future d = 2.95% ***(1.9% growing 5% annually for 10 years)***

Therefore:

(1.05)(.0295/.019)^(1/10)-1+.019(.019/.0295+1)/2

= 5.41%

This is a little more promising but still a far cry from the 10% annualized return from the last century. However, since we now have to future expectations we can now solve for the equity risk premium portion of our valuation model.

	P/E Method	Dividend Method
Estimated Future Stock Returns	**5.67**	**5.41**
Less: Risk Free Investment (Treasury Bond)	**4.75**	**4.75**
Equals Equity Risk Premium	**.92**	**.66**

As you can see there is very little risk premium in the market at the current time which means investors are taking on an exceptional amount of risk for a potentially low rate of return. For the purposes of our study we will use the risk premium derived from the use of the P/E formula which is a risk premium of .92.

Earnings Growth Rate – For the purposes of our study and just to make sure that all things remain the same we will use the average historical growth rate of earnings on a peak-to-peak basis of 6% as we discussed above.

Starting Level of Earnings - The remaining variable we must estimate is the current level of earnings for the S&P 500. Again, since we are talking about historical dividend and earnings growth rates we will need to historical GAAP earnings as we discussed above. For the most recent trailing twelve month period the market had earnings of $66.57 as of third quarter of 2005 reporting period.

Fair Value Of The Market

We now have all of the assumptions needed to estimate the fair value of the S&P 500, which we re-summarize below:

- Real risk-free rate = 4.75%
- Equity risk premium = .92%
- Real discount rate (the sum of the above) = 5.67%
- Real long tern earnings growth rate = 6.0%
- Starting level of S&P 500 earnings = $66.57

Plugging these values into the equation above is all we need to do to come up with our estimate of the fair value of the S&P 500.

FV = E / (D + g)
= 66.57 / (.0567 +.06)
= 570.37

The answer is **570.37**. By comparison, the market closed at **1307** as of this writing (March 18, 2006) which means the market would need to correct by more than **56%** from today's levels. Ouch!

So, in order to get valuations corrected either the market has to have a major price drop OR earnings can continue to grow at 6% for the next 10 years while the value of the market stays at roughly the same level. Neither option is much good for investors who are inherently long the market at all times. This continues to support the argument of P/E contractions led to low market returns and why fixed income and cash will most likely out perform equities over the next decade.

Hoover P/E Model

Of course, there are many methods for determining what the intrinsic value of the market is. An easier method to all of this madness was pointed out to me by my friend Cliff Hoover, Jr. of NFJ Investments. Cliff, who is a true value investor, stated that one way to reach a valuation estimate is to simple do the reverse of a P/E calculation to obtain what a fair market value would be based on the current earnings stream.

"One way of doing it is to take a long term average P/E of 14 and apply average earnings on the S&P which over the last ten years is about $53.00. This would give you a 740ish fair value! The current S&P earnings number of $81 is not useful in my opinion for a true fair value analysis due to current record profit margins which ***are not sustainable and will revert downward toward the mean going forward.***

I would agree with the 750 range number! If the S&P went to fair value tomorrow a 43% hit would occur or the overvaluation could grind lower slowly, say over a ten year period which generates the single digit return scenario!"

Let's do the math so you can see how Cliff arrived at his numbers. Cliff is using the average historical P/E over the last century and depending on where you start your calculations you will either come up with 14 or 15 times earnings. The mathematics involved here is simply solving for the price of the market rather than solving for the multiple of earnings in the P/E ratio calculation, therefore:

P = M * e

Where: P = Fair Market Price
M = Earnings Multiple
e = Earnings Per Share

Therefore:

P = 14 * 53

P = 742

From the current level of 1307 the market would have to decline by 43% OR like Cliff said earnings could continue to grow while the market grinds out very low returns over the next 10 years.

Of course, if we use our numbers, just to remain constant, the valuation gets worse and closer in line with our first fair value calculation. Since we expect the market to continue to contract, or revert, past the historical average, which has happened 100% of the time historically, back towards 10 times earnings and that current GAAP earnings are $66.57 the calculation looks like this:

P = M * e

Where: P = Fair Market Price
M = Earnings Multiple
e = Earnings Per Share

Therefore:

P = 10 * 66.57
P = 665.70

Again, this is not too far out of line with our more sophisticated valuation model above and the market is still way overvalued currently. From the current level of 1307 it would take a drop of 49% to reach fair market value OR, as we stated before, the market can spend a lot of time treading water as earnings continue to grow and catch up with the current valuation levels. In either case…not a lot of fun.

Discounted Growth Model

No fair market valuation study would be complete without a look at discounted growth model. Since dividends have historically, and recently, provided as much as 40% of the total long term return of the index, we must look at the future value that dividends bring to the market since, in the strictest terms, this is the only cash flow you receive from an equity investment. Furthermore, we know that inflation and growth in the economy affect the market value as well as interest rates.

The argument that is most often touted by the media is that stocks are fairly valued because the economy is strong and interest rates are low. Well, once again, let's do the math so we need our different variables to plug into our formula:

Where:

d	**Current Dividend (in dollars)**	**24.32**
Gdp	**Historical GDP Growth Rate**	**3.50%**
dg	**Historical Dividend Growth Rate**	**5.00%**
i	**Historical Average Inflation Rate**	**4.00%**
r	**Historical Stock Returns**	**7.00%**

Therefore:

Xd	**Expected Dividend Next Year**	**(d * dg) + d**	**25.54**
Dd	**Dividend Discount Rate**	**i + r**	**11.00%**
Gg	**GDP Growth Rate**	**Gdp + i**	**7.50%**

Finally:

FV = Xd ÷ (Dd – Gg)
= 25.54 ÷ (11.00 – 7.50)
= 729.60

As you can see interest rates, inflation and economic growth when weighed in our model still produce values that show the market is currently very overvalued and future returns are most likely going to be low as we work the over valuation off.

Conclusion

Of course, many of you reading this article, if you have made it this far, are saying to yourself that this would never happen and that over the last 25 years the markets have had exceptional returns and will never go back down to levels that we have discussed above. That may be true, but, if you refer back to where we started this article, the market has provided anecdotal evidence the during periods of contracting valuations the market provides exceptionally low rates of returns which falls in line with our calculations. Let's review the evidence in the table below:

Time Span	Return	Starting P/E	Ending P/E	# of Years
1898-1902	15.60	11	20	4
1903-1921	0.60	20	5	18
1922-1929	25.40	5	23	7
1930-1949	3.20	23	5	19
1950-1966	14.10	5	23	16
1967-1982	0.20	23	7	15
1983-1999	15.70	7	42	16
2000-2006	(3.00)	42	19	6

As you can see there are clearly long periods of time when you returns for investing in the markets was less than desirable. If you look closer you will see each of those periods started when valuations were high at the beginning of the period and fall to low levels at the end of the period.

These are just three of the many different types of valuation methods that are used today. Of course, by manipulating numbers you can achieve any result that you want which is why we used historical averages which are rather difficult to argue with.

The point of the article is to educate you enough to understand that when you invest it is the return on that investment that you are looking for. Therefore, if you over pay for an investment at the beginning of your investment time frame your return on that investment will ultimately be less than desirable.

If you do not know what something is worth, how could you possibly know whether it is cheap or expensive? Without this knowledge, your decisions are subject to guesswork and emotional swings. Even if you invest in a company and are lucky enough to have it go up, how would you know when to sell if you do not know what it is worth?

Don't subject your life-savings to guesswork. **Be an investor, not a speculator!**

Disclaimer & Contact Information

If you have any questions about your portfolio, strategy or investment plan or need assistance in developing one – please feel free to contact us at the numbers or emails listed below.

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