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Demystifying the P/E

(Price – Earnings Ratio)

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Introduction to the Price Earnings Ratio

Its Importance as an Investing Tool:

One of the most important tools for the serious investor is the Price Earnings (PE) Ratio. It is, however, one of the most misunderstood and misused tools. Learning how to use it properly and understanding its significance will significantly increase returns and lower risk.

Perhaps the most important thing to realize when using PE Ratios as an investment tool is **the PE Ratio by itself is virtually worthless**.

The PE Ratio's value is as a barometer or tool used to measure important investment principles relative to each other. Unfortunately, most investors fail to realize this and therefore miss the long-term benefits it offers.

The PE Ratio, used properly, assists the investor in the rational evaluation of the realistic probabilities of achieving a long-term rate of return and the amount of risk taken to get there.

In short, the PE Ratio helps you ascertain both current and future valuation.

The PE Ratio - Definitions:

The PE Ratio can be defined in several ways, with each definition adding insight to its significance. The simplest definition is simply the price of the common stock divided by its earnings per share. This is a basic mathematical definition expressed as follows: **PRICE/Earnings = PE Ratio.**

A second commonly used definition is: **The PE Ratio is the price you pay to buy $1.00 worth of a company's earnings or profits**. For example, if a company's stock has a PE Ratio of 10, then you must pay $10 for every dollar's worth of that company's earnings or profits you buy. If its PE Ratio is 20, then you pay $20 for every dollar's worth of that company's earnings or profits, and so on.

It is important to note, however, that a higher PE Ratio does not necessarily mean that the company has a higher valuation or that it is more expensive than a company with a lower PE Ratio. This fact is not understood by many investors and is the key reason that the PE Ratio has little value by itself or if used in a vacuum. It is theoretically possible, depending on each company's future prospects, that a company with a PE Ratio of 2 can be significantly more expensive than a company with a PE Ratio of 40. *(This important principle will be developed more fully later in this document.)*

A third definition would be: **How many years in advance you are paying for this year's earnings.** For example, if a company has a PE Ratio of 20, this means you are paying 20 times this year's earnings. If the PE Ratio is 10, you are paying 10 times this year's earnings, and so on. This definition illustrates a simple premise of what an operating business is worth.

For example, if you had a private business that was netting you $100,000 net-net, (net after all expenses and taxes), it is unlikely that you would sell it to me for $100,000, or a PE Ratio of 1.

A business that generates an annual revenue stream for its owner has a value greater than one year's profits.

Furthermore, if I offered you $1 million for your business, or a PE Ratio of 10, your decision to sell or not would now depend on how bright you felt the business's future was. In summary, if you believed that future profits were shrinking or declining, you would be more motivated to sell at a lesser price than if you believed future profits were going to grow rapidly.

The PE Ratio: Its Significance For Growth Stocks:

Many, if not most, of the world's most successful investors adhere to an important rule-of-thumb relating to PE Ratios and its importance regarding when to buy or sell a growth company. These investors will only purchase a growth company when its PE Ratio is either equal to, or preferably, lower than the growth company's earnings per share growth rate. (Value = PE = growth rate). This is based on the rational understanding and reality that a faster growing company is worth more than a slower growing one. These investors also are keenly aware of and understand the miracle and power of compounding numbers. This is most important and a principle key to long-term investing success.

THE PE Ratio and The Power of Compounding:

It is alleged that Albert Einstein once said that compounding numbers is the most powerful force on earth. Whether or not Mr. Einstein actually said this, regarding matters of investing, compounding is paramount. The understanding of the geometry of compounding numbers is vital to long-term wealth creation. Throughout all of economic history the most successful investors either intuitively understood compounding or had the good sense to learn it cold. Fortunately, the understanding of compounding requires only basic math skills and can therefore be learned and understood by anyone with money to invest.

Our value growth stock formula (Value = P/E = Earnings Growth Rate) is based on the law of compounding and the economic realities it generates. Following it with discipline empowers investors to deploy or allocate capital where their potential return is attractive and commensurate with the risk they take. The mastery of this concept empowers you to correctly decide whether you would be economically better off paying a PE ratio of 10 for company A or a PE Ratio of 20 for company B. At first glance company A appears cheaper or the better buy, but as we will illustrate through compounding that this may or may not be true or accurate.

To clarify and validate this important premise, we will create and analyze a few simple scenarios. We will then apply the principles of compounding and clearly illustrate the significance of the PE ratio as a relative and critical tool for investors.

First, let's create five hypothetical private companies (no stock market), that each earned a $100,000 net-net profit last year. Next, let's assume that the qualities of each company’s profits are identical and pure as a fresh driven snowfall, (no accounting magic). The only difference between these companies and their profits or earnings is the rate of change or growth rate of those profits. Let's also assume that we have perfect knowledge of what each company's growth rate will be for the next ten years. Also, since these are private companies, we assume that 100% of the earnings are paid out as dividends in order to create a measureable income component. Finally, our task is to determine what price or (valuation) expressed as various PE ratios we should intelligently be willing to pay for each to assure an acceptable return at sensible risk. We will identify these as companies **A**, B, C, D and **E**. In Table I, we will list each company, assign its perspective

growth rate and compound our $100,000 net-net profit accordingly.

Table I

Year	Company A (Growth Rate 10%)	Company B (Growth Rate 15%)	Company C (Growth Rate 20%)	Company D (Growth Rate 30%)	Company E (Growth Rate 40%)
1	**$110,000**	$115,000	$120,000	$130,000	**$140,000**
2	**$121,000**	$132,250	$144,000	$169,000	**$196,000**
3	**$133,100**	$152,088	$172,800	$219,700	**$274,400**
4	**$146,410**	$174,901	$207,360	$285,610	**$384,160**
5	**$161,051**	$201,136	$248,832	$371,293	**$537,824**
6	**$177,156**	$231,306	$298,598	$482,681	**$752,954**
7	**$194,872**	$266,002	$358,318	$627,485	**$1,054,135**
8	**$214,359**	$305,902	$429,982	$815,731	**$1,475,789**
9	**$235,795**	$351,788	$515,978	$1,060,450	**$2,066,105**
10	**$259,374**	$404,556	$619,174	$1,378,585	**$2,892,547**
Total	**$1,753,117**	**$2,334,928**	**$3,115,042**	**$5,540,535**	**$9,773,913**

It's quite obvious from Table I that over the next 10 years **Company E** with its 40% growth rate will generate over 9.7 million dollars in earnings or cash flow, while **Company A** with its 10% growth rate will only generate slightly over 1.7 million dollars. The cash flow or earnings of **Company E** is clearly worth multiples of the cash flow or earnings of **Company A**. Using our formula for value of PE = Earnings Growth Rate we value **Company A** at $1,000,000 today (PE 10 x $100,000) and **Company E** at $4,000,000 (PE 40 x $100,000).

Since we have assumed that we have perfect knowledge of each company's growth rate (10% for **Company A**, 40% for **Company E**), you should note that in our example **Company E** is actually cheaper than **Company A**. A simple calculation shows that **Company E** gives us just under 6 times as much future cash flow as **Company A** ($9,773,913 divided by $1,753,117 = 5.60). Mathematically speaking, based on the assumptions of our example you could theoretically pay a PE of 56.0 for **Company E** and earn the equivalent return on each dollar invested as you would if you paid a PE of 10 for **Company A**. This further illustrates the power of compounding.

In the real world, however, common sense will tell you that it is a lot harder to grow a business at 40% per year than at 10% per year. Therefore, even though paying a PE of 40 for **Company E** satisfies our value formula, the risk of actually achieving this growth is high, in fact it is much higher than **Company A's** 10% target which is closer to a historical normal growth rate for a well managed company. Consequently, **Company E** needs to offer a higher return even following our rule, because the risk of actually getting it is higher. A prudent investor only takes a higher risk if he or she believes it can offer a higher return.

The PE Ratio and Paying Too Much:

In the previous section we demonstrated the validity of our formula for valuing a growth stock (PE = Earnings Growth Rate). Significant additional insights into the importance of the PE ratio as an analytical barometer can be gained by evaluating the dangers and risks of paying too much. This important point is best illustrated and understood by continuing with the example of our five private companies **A**, B, C, D & E.

It is useful and important to note that every investment you make competes with all other investments available. In other words, an investor always has numerous choices as to where to place their money. The ultimate competition and the common denominator that all investments are measured against are Treasury Bonds. The primary reasons for this are that Treasury Bonds (if held to maturity) have no principle risk and provide a certainty of return (no inflation considerations).

Consequently, it is logical and prudent for an investor to compare any contemplated investments to Treasury Bonds. Since Treasuries are the only security that theoretically has no risk if held to maturity, any other investment choice must compensate the investor for the risk they take. Successful investors either intuitively or through a simple analysis always make this rational comparison. This simple, yet important process is clearly illustrated using our hypothetical **Company A** as follows:

As you recall, **Company A** earned a $100,000 net-net profit last year and its profits are growing by 10%. (see Table II)

Table II

	Company A
Year	(Growth Rate 10%)
1	$110,000
2	$121,000
3	$133,100
4	$146,410
5	$161,051
6	$177,156
7	$194,872
8	$214,359
9	$235,795
10	$259,374
Total	$1,753,117

Applying our formula for value (PE = Earnings Growth Rate), **Company A** is worth a PE of 10 (10 x $100,000 or $1,000,000). The proper analysis of the economic benefit of an investment is done on a total return basis. Total return is the collective result you expect to enjoy from both income paid and capital appreciation potential. When doing the analysis it is simpler and therefore clearer to evaluate each component separately. To illustrate how important this is we will compare **Company A** to a 10 year Treasury Bond, first from an income and next from a capital appreciation (preservation) perspective.

In Table III, let's examine how **Company A's** income stream compares to a 10 year Treasury Bond with a 6% yield (historical normal) when **Company A** is bought at value or a PE of 10.

From an income perspective only,

Table III

6% 10 year Treasury Bond. As a result of buying **Company A** at a reasonable price (value) we are attractively compensated on an income basis for the risk we take and therefore the investment is sensible.

Year	(Growth Rate 10%)	Annual Yield	6%	Annual Yield
1	**$110,000**	**11.00%**	$60,000	6%
2	**$121,000**	**12.10%**	$60,000	6%
3	**$133,100**	**13.31%**	$60,000	6%
4	**$146,410**	**14.64%**	$60,000	6%
5	**$161,051**	**16.11%**	$60,000	6%
6	**$177,156**	**17.72%**	$60,000	6%
7	**$194,872**	**19.49%**	$60,000	6%
8	**$214,359**	**21.44%**	$60,000	6%
9	**$235,795**	**23.58%**	$60,000	6%
10	**$259,374**	**25.94%**	$60,000	6%
Total	**$1,753,117**		**$600,000**	

Look what happens, however, when we pay a PE of 20 or $2,000,000 for **Company A**, twice what our rule dictates it is worth.

Table IV shows that if we invested the same $2,000,000 into a 6% Treasury Bond, the income advantage **Company A** offers is greatly diminished (cut in half).

For the first three years. The Treasury Bond would give us approximately the same income with no risk. Even after 10 years, it is questionable what the differential between **Company A's** income stream and the Treasury Bond's is adequate to cover our risk.

Table IV

	Company A		**Treasury Bond**	
Year	(Growth Rate 10%)	Annual Yield	6%	Annual Yield
1	**$110,000**	**5.50%**	$120,000	6%
2	**$121,000**	**6.05%**	$120,000	6%
3	**$133,100**	**6.66%**	$120,000	6%
4	**$146,410**	**7.32%**	$120,000	6%
5	**$161,051**	**8.05%**	$120,000	6%
6	**$177,156**	**8.86%**	$120,000	6%
7	**$194,872**	**9.74%**	$120,000	6%
8	**$214,359**	**10.72%**	$120,000	6%
9	**$235,795**	**11.79%**	$120,000	6%
10	**$259,374**	**12.97%**	$120,000	6%
Total	**$1,753,117**		**$1,200,000**	

Tables V and VI carry this concept to the extreme. When an investor pays 3 or 4 times (PE 30, PE 40) what our rule dictates, the equivalent investment in Treasury Bonds in both cases generates more income than our risk investment **Company A** does.

Table V

At 30 times earnings ($3,000,000) it takes the better part of seven years before our **Company A's** income streams equal or exceeds the Treasury Bond.

Year	(Growth Rate 10%)	Annual Yield	6%	Annual Yield
1	**$110,000**	3.67%	$180,000	6%
2	**$121,000**	4.03%	$180,000	6%
3	**$133,100**	4.44%	$180,000	6%
4	**$146,410**	4.88%	$180,000	6%
5	**$161,051**	5.37%	$180,000	6%
6	**$177,156**	5.91%	$180,000	6%
7	**$194,872**	6.50%	$180,000	6%
8	**$214,359**	7.15%	$180,000	6%
9	**$235,795**	7.86%	$180,000	6%
10	**$259,374**	8.65%	$180,000	6%
Total	**$1,753,117**		**$1,800,000**	

Table VI

At 40 times earnings ($4,000,000) it takes the better part of 10 years, and the total ten years income dramatically exceeds our **Company A**.

	Company A		**Treasury Bill**	
Year	(Growth Rate 10%)	Annual Yield	6%	Annual Yield
1	**$110,000**	**2.75%**	$240,000	6%
2	**$121,000**	**3.03%**	$240,000	6%
3	**$133,100**	**3.33%**	$240,000	6%
4	**$146,410**	**3.66%**	$240,000	6%
5	**$161,051**	**4.03%**	$240,000	6%
6	**$177,156**	**4.43%**	$240,000	6%
7	**$194,872**	**4.87%**	$240,000	6%
8	**$214,359**	**5.36%**	$240,000	6%
9	**$235,795**	**5.89%**	$240,000	6%
10	**$259,374**	**6.48%**	$240,000	6%
Total	**$1,753,117**		**$2,400,000**	

Again, from an income perspective only, paying 20, 30 or 40 times earnings for a mere 10% growth makes little sense. Nevertheless, this has been and continues to be a common practice throughout the latter part of the 1990's. Unbelievably, many renowned professional analysts and money managers were publicly stating that value or valuation didn't matter anymore. We hope you realize and therefore agree that the above math and the economic dynamic's it shows does not support this view.

Perhaps this aggressive valuation is justified by our second component of return - capital appreciation? The only way to truly know is to think it through. In other words, let's run the capital appreciation component through the same type of economic and mathematical scrutiny we applied to the income component. We will once again apply our formula for valuing a growth stock (PE = Growth Rate). Our objective is to illustrate that the application of this rationale formula provides the investor a sound opportunity to make money and most importantly a **margin of safety**.

Once again using our **Company A** example of a private business with a $100,000 net-net profit which is growing by 10% per year will produce a profit of $259,374 in the 10th year. This 10th year's profit can be capitalized precisely as the original $100,000 profit was under various assumptions from bad to good. Starting with the bad (margin of safety) let's examine what would happen if 10 years after we paid 10 times earnings (PE 10) or a $1,000,000 of our capital assuming a bad market for private companies. If our $259,374 current profit only fetched a PE of 5 or one half our value model the simple math is as follows:

Five times $259,374 equal $1,296,870. This gives us $296,870 more than we originally invested plus our 10 year income stream of $1,753,117. If you add the two together ($1,296,870 + $1,753,117) you get a total return of $3,049,987. Since we only originally invested $1,000,000, we actually received an annual result of between 10% and 12%. compared to our Treasury Bond which would have returned our $1,000,000 plus a $600,000 cash flow for a total of $1,600,000, (a simple 6%), our bad market return of $3,049,987 is not to shabby. True this may not be what we hoped for, yet it still compensated us for our risk. Herein lies your margin of safety.

From an opportunity to make money viewpoint, Table VII shows a normal or value market (PE 10), Table VIII shows an excellent market (PE 20), and Table IX shows an irrationally exuberant market (PE 40).

Table VII

Co. A- 10% Growth (PE 10) $1,000,000 Investment				
10 Years Later - $259,374 Current Profit				
Normal Market - PE 10				
10	x	$259,374	$2,593,740	Capital Appreciation
			$1,753,117	Income (No Reinvestment)
			$4,346,857	
15.8% Compounded Return				

Table VIII

Co. A- 10% Growth (PE 10) $1,000,000 Investment
10 Years Later - $259,374 Current Profit
Excellent Market - PE 20

20	x	$259,374	$5,187,480	Capital Appreciation
			$1,753,117	Income (No Reinvestment)
			$6,940,597	

21.38% Compounded Return

Table IX

Co. A- 10% Growth (PE 10) $1,000,000 Investment
10 Years Later - $259,374 Current Profit
Exuberant Market - PE 40

40	x	$259,374	$10,374,960	Capital Appreciation
			$1,753,117	Income (No Reinvestment)
			$12,128,077	

28.3% Compounded Return

When you follow the simple value rule (Value = PE = Growth Rate) you not only enjoy a margin of safety, but as Tables VII through IX clearly illustrates, you can expect a solid return in normal and rational markets. Perhaps even better, if you get lucky and experience frothy markets, your returns can be extraordinary. Low risk (margin of safety) and high returns is the ideal recipe for any investor. Investing money rationally is a powerful and reliable exercise. All you have to do is be sane and follow the rule (Value = PE = Growth Rate).

The consequences of violating the rule are even more profound than the benefits of following it. Tables X through XXI illustrates the dangers and pitfalls of ignoring sound valuations and economic principles. In other words, the danger of paying too much for even the best of companies.

Tables X through XXI show what can happen in the long run by paying 2, 3 or 4 times what our value rule (Value = PE = Growth Rate) dictates you should. (A practice many people were actually doing in the late 1990s into calendar year 2000.)

Company A - PE 20

Table X

Co. A- 10% Growth (PE 20) $2,000,000 Investment
10 Years Later - $259,374 Current Profit

Bad Market - PE Falls to 5					
5	x	$259,374	$1,296,870	Capital Appreciation	
			$1,753,117	Income (No Reinvestment)	
			$3,049,987		

4.3% Compounded Return

Table XI

Co. A- 10% Growth (PE 20) $2,000,000 Investment					
10 Years Later - $259,374 Current Profit					
Normal Market - PE 10 (Value)					
10	x	$259,374	$2,593,740	Capital Appreciation	
			$1,753,117	Income (No Reinvestment)	
			$4,346,857		

8.1% Compounded Return

Table XII

Co. A- 10% Growth (PE 20) $2,000,000 Investment					
10 Years Later - $259,374 Current Profit					
Excellent Market - PE 20					
20	x	$259,374	$5,187,480	Capital Appreciation	
			$1,753,117	Income (No Reinvestment)	
			$6,940,597		

13.2% Compounded Return

Table XIII

Co. A- 10% Growth (PE 20) $2,000,000 Investment				
10 Years Later - $259,374 Current Profit				
Exuberant Market - PE 40				
40	x	$259,374	$10,374,960	Capital Appreciation

			$1,753,117	Income (No Reinvestment)	
			$12, 128,077		
19.8% Compounded Return					

Company A - PE 30

Table XIV

Co. A- 10% Growth (PE 30) $3,000,000 Investment					
10 Years Later - $259,374 Current Profit					
Bad Market - PE Falls to 5					
5	x	$259,374	$1,296,870	Capital Appreciation	
			$1,753,117	Income (No Reinvestment)	
			$3,049,987		
0.2% Compounded Return					

Table XV

Co. A- 10% Growth (PE 30) $3,000,000 Investment					
10 Years Later - $259,374 Current Profit					
Normal Market - PE 10 (Value)					
10	x	$259,374	$2,593,740	Capital Appreciation	
			$1,753,117	Income (No Reinvestment)	
			$4,346,857		
3.8% Compounded Return					

Table XVI

Co. A- 10% Growth (PE 30) $3,000,000 Investment					
10 Years Later - $259,374 Current Profit					
Excellent Market - PE 20					
20	x	$259,374	$5,187,480	Capital Appreciation	

			$1,753,117	Income (No Reinvestment)	
			$6,940,597		
8.7% Compounded Return					

Table XVII

Co. A- 10% Growth (PE 30) $3,000,000 Investment					
10 Years Later - $259,374 Current Profit					
Exuberant Market - PE 40					
40	x	$259,374	$10,374,960	Capital Appreciation	
			$1,753,117	Income (No Reinvestment)	
			$12, 128,077		
15% Compounded Return					

Company A - PE 40

Table XVIII

Co. A- 10% Growth (PE 40) $4,000,000 Investment					
10 Years Later - $259,374 Current Profit					
Bad Market - PE Falls to 5					
5	x	$259,374	$1,296,870	Capital Appreciation	
			$1,753,117	Income (No Reinvestment)	
			$3,049,987		
-2.7% Compounded Return					

Table XIX

Co. A- 10% Growth (PE 40) $4,000,000 Investment					
10 Years Later - $259,374 Current Profit					
Normal Market - PE 10 (Value)					

10	x	$259,374	$2,593,740	Capital Appreciation
			$1,753,117	Income (No Reinvestment)
			$4,346,857	

0.8% Compounded Return

Table XX

Co. A- 10% Growth (PE 40) $4,000,000 Investment
10 Years Later - $259,374 Current Profit
Excellent Market - PE 20

20	x	$259,374	$5,187,480	Capital Appreciation
			$1,753,117	Income (No Reinvestment)
			$6,940,597	

5.7% Compounded Return

Table XXI

Co. A- 10% Growth (PE 40) $4,000,000 Investment
10 Years Later - $259,374 Current Profit
Exuberant Market - PE 40

40	x	$259,374	$10,374,960	Capital Appreciation
			$1,753,117	Income (No Reinvestment)
			$12, 128,077	

11.7% Compounded Return

It is obvious from Tables X through XXI that paying too much for even the best companies can be devastating to your long-term financial security. The company delivered the operating results you expected, but the laws of mathematics destroyed your results. The math makes it clear, anyone who pays 20, 30 or 40 times earnings for a company (stock) that is only growing at 10% per year is speculating, not investing. This is commonly referred to as the "Greater Fool Theory." This theory implies that if you foolishly pay more than sound economics dictate you should, it is only on the basis that a fool greater than you will come along and pay you more. Not a sound practice is it?

The examples we illustrated in this site were based on buying a private company (**Company A**) in its entirety. It is important to note that the dynamics and the math do not change whether you buy one share of a company's stock or the whole company. For example, if **Company A** had 100,000 shares of stock divided into the $100,000 profit each share would represent $1 (one dollar) worth of earnings. Using our Value = PE = Growth Rate formula, one share would be worth $10 (10 x $1 per share). If there were 1,000,000 shares, then each share would represent $.10 (ten cents) worth of earnings and 10 x .10 = $1 per share and so on.

In summary, it is now hopefully quite clear how important a tool the PE Ratio really is, especially when used appropriately. The value formula for valuing a growth stock (PE = Growth Rate) is also a powerful and valid concept. May we suggest that you go back to Table I and run the same analysis for Companies B, C & D that we did for Companies A and E. The more you test the logic and validity of the value rule (PE = Growth Rate) the better you will understand it. May we also point out that our F.A.S.T. Graphs™ (Fundamentals Analysis Software Tool) is based on the logic presented in this paper. In essence, our chart program allows you to do and see these mathematical relationships visually. Once you learn to use our charts, and they are easy to learn how to use, your investing expertise will increase dramatically.

In conclusion, the purpose of the above was to provide you the mathematical basis of sound investing principles. We overly simplified the process for clarity. The underlying principles however, are sound and serve as a foundation for successful long-term investing. There are many differences between investing and mere speculating. Most prominent investors behave rationally and follow sound and prudent practices. Speculators will gamble and take risks. The decision of which to be is yours. However, when you understand the fundamentals, truly understand them; investing is the most reliable and ultimately most successful strategy in the longer run.

Investors know that in the long run, Earnings Determine Market Price, always have, always will.

PS: Our F.A.S.T. Graphs™ do the math for you and presents it visually.