

International Financial Management Supplement

How To Find P/E And PEG Ratios

By [Thomas Smith](#) | Updated September 1, 2017

When reading about or researching company performance, you will often be reflecting on earnings calculations - but do these numbers make any sense to you? And could you tell the difference between a [P/E ratio and a PEG ratio](#)?

The stock price (per share) of a company divided by its most recent 12-month [earnings per share](#) is called its [price-to-earnings ratio](#) (P/E ratio). If this P/E ratio is then divided by expected earnings growth going forward, the result is called the [price/earnings to growth ratio](#) (PEG ratio). A lot of the information out there about how to determine a stock's proper ratios and use them to effectively value a stock discusses [metrics](#) like the stock's historic ratios, using them to compare industry ratios, or make statements like "a PEG below 1 is good."

This information isn't wrong, but if you need to understand and find these ratios for yourself, you'll need some extra help. Fortunately, with the aid of a simple hand-held financial calculator, there is a simple mathematical approach to [finding rational P/E and PEG ratios](#).

The best way to understand the significance of the P/E ratio is to turn it upside down. If you divide the earnings by the price (E/P) you get the inverse of the P/E ratio, which is called the [earnings yield](#). The earnings yield tells an investor how much return (on a per-share basis) the stock's shareholders earned over the past 12 months, based on the current [share price](#). Remember that earnings, regardless of whether they are paid out in the form of a [dividend](#) or [retained](#) by the company for [reinvestment](#) into further growth opportunities, still belongs to the shareholders. Shareholders hope that these earnings will grow going forward, but there is no way to perfectly predict what that growth will be.

Earnings Yield Vs. Bond Yields

Investors have a vast array of investment options at their disposal at all times. For the purposes of this discussion, let's assume that the choice is limited to stocks or bonds. [Straight bonds](#), whether government or corporate, pay a guaranteed fixed [rate of return](#) for some period of time, as well as a guaranteed return of the original investment at the end of that fixed period. The earnings yield on a stock is neither guaranteed nor of a definite time period. However, earnings can grow, while [bond yields remain fixed](#). How do you compare the two? What are the key factors to consider?

Growth Rate, Predictability and Fixed-Income Rates

The key factors you need to consider are: growth rate, earnings predictability and current fixed-income rates. Let's assume you have \$10,000 to invest and that United States government [Treasury bonds](#) of five-year maturity are yielding 4%. If you

invest in these bonds, you can earn interest of \$400 per year (4% of \$10,000) for a [cumulative return](#) of \$2,000 over five years. At the end of five years, you get your \$10,000 investment back when the bond matures. The cumulative return over the five-year period is 20% ($\$2,000/\$10,000$).

Example - Calculating a Stock's P/E

Now, let's assume that you buy stock in XYZ Corp. for \$40 per share, and that XYZ had earnings over the last 12 months of \$2 per share. The P/E ratio of XYZ stock is 20 ($\$40/\2). The earnings yield of XYZ is 5% ($\$2/\40). Over the next five years, XYZ's earnings are expected to grow by 10% per year. Let's further assume that this earnings growth is 100% predictable. In other words, the earnings are guaranteed to grow by 10% per year - no more, no less. What P/E ratio should XYZ stock have to make it an equal investment opportunity to the five-year Treasury bond yielding 4%?

Using a [present value](#)/future value calculator, we can determine a mathematical value for XYZ. To do this, we take the 20% cumulative yield of the bond over the next five years and enter that as the [future value \(FV\)](#). Enter "0" as the present value (PV). Enter "5" as the number of periods (n). Enter 10 as the annual [interest rate \(i\)](#). Now, using a beginning period setting (BGN), calculate payment (PMT). The answer will show as -2.98. Drop the negative to find that the comparable earnings yield should be 2.98%. If we divide 1 by 2.98% (.0298) we find that the P/E should be 33.56. Because current earnings per share are \$2, the price of the stock should be \$67.12 ($\2×33.56). The earnings yield is 2.98% ($\$2/\67.12).

If we invest our \$10,000 in XYZ stock at that price we get 149 shares. In year one, earnings per share should increase by 10%, from \$2 per share to \$2.20 per share. Our return will be approximately \$328 (149 shares \times \$2.20 per share). In year two, the earnings return on our investment will increase by another 10% to approximately \$360 per share. Year three will be \$396, followed by year four at \$436 and finally year five at \$480. If you add these together, you get a cumulative earnings return of \$2,000 - the same as you would have received from the Treasury bond. The stock owner will receive this \$2,000 in the form of dividends or an increase in the stock's value or both. (*Note:* For the sake of simplicity we are ignoring the [time value of money](#) considerations of receiving [cash flows](#) earlier over the five-year period for the Treasury bond as opposed to the stock.)

What is the P/E if XYZ earnings growth is projected to be 20% per year? The answer would be 44.64 and the price of the stock should be \$89.28. The earnings yield would be 2.24%. The earnings on your \$10,000 (112 shares) investment would be \$269, \$323, \$387, \$464 and \$557 for a total of \$2,000. It seems intuitive that a stock with earnings growth that is projected to be greater than another's would trade at a higher P/E. Now you see why this is the case from a mathematical perspective.

The Real World

In the example above, the P/E of XYZ rose from 33.56 to 44.64, when earnings expectations rose from 10% to 20%. What happened to the PEG? At 10%, the PEG

would be 3.36 (33.56/10). At 20%, the PEG would be 2.23 (44.64/20). All things being equal then, the PEG of higher [growth companies](#) will normally be lower than the PEG of slower growing companies, even though the P/E may be higher.

In real life, earnings are not perfectly predictable, so you must adjust your required earnings yield up from the guaranteed yield of bonds to compensate for that lack of predictability. The amount of that adjustment is purely subjective and fluctuates constantly as [economic conditions](#) change. In analyzing a particular stock, you need to consider how predictable that company's earnings growth has been in the past as well as possible interruptions to growth going forward.

In the example above, the price of XYZ stock is \$40 per share. The reason it's trading for \$40 probably revolves around uncertainties regarding the predictability of that expected earnings growth. As a result, the market, based on the cumulative subjective perspective of thousands of investors, has built in a higher return requirement. If XYZ does indeed experience a 10% earnings growth over the next five years, an investor buying the stock at \$40 per share will be well rewarded as the earnings stream on \$10,000 (250 shares) will be \$500, \$550, \$605, \$665 and \$732 for a total of \$3,052, rather than \$2,000. The possibility of this additional return compensates the investor for the risk that the expected earnings growth rate of 10% may not materialize.

Summing up

Despite the subjective risk-assessment variables, P/E ratios and PEG ratios do have a mathematical rationale. First, the ratios are based on the earnings yield theory, which is married to current fixed rates of return. As interest rates rise, P/E ratios will tend to fall because they're inverse and the earnings yield (E/P) needs to rise to be competitive. As rates fall, P/E ratios tend to rise on average and earnings yields fall.

The Bottom Line

Over and above the fixed-income impact, P/E ratios will be higher for stocks with more predictable earnings growth and lower for stocks with less predictable earnings growth. If two stocks have comparable levels of predictability, the P/E will be higher for stocks with higher expected earnings growth and lower for stocks with lower expected earnings growth. [PEG ratios for slower-growing companies](#) will normally be higher than for faster-growing companies. Using a basic financial calculator, you can determine what these ratios should be at any given point under any given set of circumstances.

<http://www.investopedia.com/articles/fundamental-analysis/09/price-to-earnings-and-growth-ratios.asp#ixzz4wuav0gT1>

Why Stock Investors Shouldn't Sell Now

(Morgan Stanley)

By [Mark Kolakowski](#) | November 16, 2017

Investors should remain invested in equities and not get scared into selling by pullbacks in the market, according to strategists at Morgan Stanley ([MSM Morgan Stanley 48.63+1.10%](#)), [as quoted by Bloomberg](#). In a detailed report of more than 40 pages, Morgan Stanley acknowledges that "most major asset classes look rich versus history," but they add that "equities can still get richer into end-of-cycle," per Bloomberg.

Three factors typically send economies into recession and stock markets tumbling, Morgan Stanley says: excessive tightening of credit by central banks, large increases in debt, and extreme optimism among investors that former [Federal Reserve](#) Chairman [Alan Greenspan](#) once dubbed "[irrational exuberance](#)." Morgan Stanley does not see any of these three factors in place right now, Bloomberg says.

How Long Can the Bulls Run?

Joseph Zidle of Bernstein Portfolio Advisors LLC, recently among the most bullish strategists, now expects excessive tightening by the Fed to be an inevitable recessionary trigger, though he adds that the bull market may have many more months left to run. Meanwhile, another prominent strategist, Jonathan Golub of Credit Suisse Group ([CSCSCS Group 16.05+0.97%](#)), expects the S&P 500 Index (SPX) to reach 2,875 in 2018, an advance of nearly 12% from its opening on November 15. (For more, see also: [Get Ready For The Coming Bear Market and Recession](#).)

Investors should be on the lookout for three [leading indicators](#) of a downturn in the economy and in equities, Morgan Stanley says. First, when the currencies of [emerging market countries](#) and key commodities peak in value versus the U.S. dollar, the S&P 500 tends to reach its own peak about seven to 10 months later. Second, [credit spreads](#), or the difference in yield on U.S. Treasury debt and lower-quality bonds with similar maturities issued by corporate borrowers, tend to bottom out about four months before the U.S. stock market peaks. Third, declining measures of economic activity, such as manufacturing surveys, orders for durable goods, and average weekly hours worked, tend to precede an equity market peak by four to six months.

Actions to Take Now

Morgan Stanley suggests keeping some cash at the ready as a prudent measure right now. They also recommend that cautious investors shift their equity holdings into call options on the S&P 500 as a way to participate in further upside while capping the downside. They also recommend using a [bear put spread](#) options strategy on [high yield debt](#) as a hedge, Bloomberg indicates. (For more, see also: [Stock Investors' Handbook for a Bear Market](#).)

The Economics of Scarcity

Meanwhile, publicly-traded stocks are becoming an increasingly scarce commodity, driving equity prices upward for this reason alone, [the Financial Times reports](#). Share repurchases by U.S. corporations since the [financial crisis](#) have added up to a staggering figure of nearly \$5 trillion, per the FT. According to research by S&P Global, the number of [shares outstanding](#) from S&P 500 companies is about the same as it was a decade ago, even as the index has almost doubled in value.

Another factor driving scarcity is the growth of [passive investing](#) in [index funds](#) and [ETFs](#), the FT adds, citing analysis by Christopher Harvey at Wells Fargo & Co. ([WFCWFCWells Fargo & Co54.24+0.92%](#)). As these funds grow in size, they need to buy more of the equities in the market indexes that they track, removing yet more shares from general circulation. This only adds to the scarcity of equity shares in the open market, propping up their prices. Harvey sees a parallel with [quantitative easing](#) by central banks, which took government bonds out of the open market, thereby boosting their prices. (For more, see also: [The Incredible Shrinking Stock Market.](#))

Read more: [Why Stock Investors Shouldn't Sell Now: Morgan Stanley | Investopedia](#)
<https://www.investopedia.com/news/why-stock-investors-shouldnt-sell-now-morgan-stanley/#ixzz4ycF75hDH>

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The High Bar for Future Crashes

Since the 2007-2009 Global Financial Crisis, there have been some market events that were widely reported as crashes or crises. These include the European credit crisis, which was set off by the Global Financial Crisis and continues even a decade later. There was also the Flash Crash of 2010 where technical glitches and programmatic trading took the Dow down 9% in moments before it recovered minutes later. There was the [2015-16 Chinese stock market crash](#) where the Shanghai stock market lost 30% over a few weeks in July 2015. These events should all seem familiar, much like the oil price collapse covered in the third chapter. The reason they don't merit a separate entry is that the increasingly global economy can now take a blow *somewhat* better than in the past. There are more protections in the system against collapse than ever before and more awareness of what letting a crisis run wild will do to all national economies. This has made governments more likely to push on the regulatory side and more ready to dive in on the financial stability side. With any event approaching crash levels, we now get a near immediate government response aimed at slowing the panic and buying time for the market to adjust without collapsing systematically important institutions. (Related: [Quantitative Easing: Does It Work?](#))

Yet There are New Areas of Exposure

With all due respect to the power of national governments and their powers to do everything from changing laws to printing more money, the fact still remains that the Great Recession of 2007, one of the worst crashes in history - a crash that is neck and neck with the 1929 crash that precipitated the Great Depression - is the most recent. Despite laws, regulations, the SEC, Fannie Mae, Freddie Mac and so on, we still had a massive, made-in-America bubble that nearly took down the global financial system. Worse yet, the core mechanisms of the housing bubble and credit crisis were something we generally value: financial innovation. Even with all the regulations and oversight, there are still cases where the financial innovation coming out of Wall Street and other centers exceeds both the creators' and the regulators' ability to predict the market impact.

It is also worth noting that financial innovation hasn't really slowed down or changed since 2009. [Synthetic CDOs](#), for example, didn't go away. Neither did mortgage-backed securities. People in finance don't really know how things like dark pools, high frequency trading and self learning AI traders will affect the market during the next crisis. While the world economy is more resilient than ever due to its size and the easy flow of capital, we are continually at risk of unleashing a new financial force that can use that same inter-connectivity to spread the right type of [contagion](#) across the globe. Since we can't always be acting out of a place of fear, particularly when it comes to investing, we just have to hope that our regulatory bodies and financial backstops are strong enough to mitigate the damage. If we can take a correction or two rather than a crash, it improves our chances of learning our lessons without losing our shirts.

Lessons for the Future

On the topic of lessons, we should take the time to highlight what we can learn from these past market slaughters. First off, we should point out that most market [volatility](#) is all our fault. In reality, people create most of the risk in the market place by inflating asset prices beyond the value of the underlying company. When assets are flying through the stratosphere like rockets, it is usually a sign of a bubble. That's not to say that assets cannot legitimately enjoy a huge leap in value, but this leap should be justified by the prospects of the underlying companies in the case of stocks, not just by a mass of investors following each other.

Read more: [Market Crashes: Conclusion](#)

<https://www.investopedia.com/features/crashes/crashes10.asp#ixzz4yerNwGQQ>

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