

The Index Investor

Why Pay More for Less?

Model Portfolios Performance Update

The performance of the U.S. equity market in March, 2000 brings to mind the words of an old Chinese curse: "may you live in interesting times." Through the end of February, the year to date return on the S&P 500 Index was negative 6.8%; by the end of March, this had rebounded to a positive year to date return of 2.2%. On the other hand, this gut wrenching performance does help to highlight the way that diversification across asset classes tends to reduce volatility without sacrificing much in the way of returns. On balance, diversification allows for a better night's sleep, and leaves one with energy to devote to more pleasurable pursuits than tracking the ups and downs of one's investment portfolio. Consider the performance of our model portfolios over the past two months:

Our risk based portfolios attempt to match the volatility of our benchmark portfolios while providing superior returns. Through March, that is exactly what they have been doing. Our high risk portfolio is up 6.3% year-to-date, versus 2.2% for its benchmark 80% S&P 500/20% Lehman Aggregate Bond Market portfolio. One month ago, our model high risk portfolio was up 4.9% on the year, versus a loss of 5.2% on the benchmark. No points for guessing who slept better over the last month. More specifically, over the past month our high risk portfolio has particularly benefited from sector rotation into mid-cap companies, the "rediscovery" of the joys of small cap value stocks, and the continued strong performance of the Oppenheimer Real Asset Fund, which, in line with our expectations, is delivering returns that are negatively correlated with the benchmark portfolio.

The story is much the same in our medium risk portfolio, whose returns are up 4.0% year-to-date, versus 2.3% for its 60% S&P 500/40% Aggregate Bond Market benchmark, and in our low risk portfolio, whose returns are up 4.1% versus 2.4% for its 20% S&P

500 /80% Aggregate Bond Market benchmark. Both of these portfolios have a recommended 9% weighting in international bonds, via the T. Rowe Price International Bond Fund. Year-to-date this fund is down 2.0%. Along with the real asset fund, this is an investment whose returns historically have had a very low correlation with those of other assets in the portfolios. Here is the scenario under which this asset class could deliver superior returns in the months ahead: a sharp drop in the U.S. equity market leads to a flight into U.S. bonds, which drives down U.S. interest rates relative to those available in Europe, which in turn causes a flow out of U.S. dollars and a depreciation of the exchange rate relative to the Euro and the British pound. While we aren't predicting that this is what will happen, we sleep well at night knowing we are prepared if this dark scenario does come to pass.

Our return based portfolios are structured to maximize the probability of achieving their respective target returns with the lowest possible degree of risk. They are designed for use by investors who have a very clear idea of the minimum annual returns they must earn on their portfolios to fully fund their future liabilities in light of their expected levels of future saving. Here again, the year-to-date results are encouraging: our 12% target portfolio is up 1.7% year to date; our 10% target portfolio is up 2.2%, our 8% target portfolio is up 2.4%, and our 6% target portfolio is up 1.8%. In the case of the latter, return has also been held back a bit by our recommended 12% holding of international bonds; however, as we noted above, one can easily see how this could change fairly dramatically later this year.

Options for Locking in Your Gains Now

What should you do if you are sitting on top of attractive gains on your S&P 500 investment, and you now think the market is overvalued?

On the one hand, there is an argument for not doing anything at all, beyond rebalancing your portfolio to ensure that its weights are in line with your target asset allocation. The logic behind this point of view is a body of research that says market timing is a very

difficult strategy to successfully employ on a consistent basis. Arguments based on this logic usually show how being out of the market for just a few key months during a five year period can substantially reduce a portfolio's rate of return. As far as they go, arguments of this type are correct -- the evidence suggests that over time, it is difficult to consistently earn returns above an index by "timing" a market.

However, arguments of this type should not be taken to imply that one can never successfully time a market. It is certainly possible that from time to time relative valuations (e.g., of bonds versus equities) will get so glaringly out of line that it makes sense to temporarily move beyond your target portfolio weights for each asset class. If you believe that this is the case today in the United States, then your next question is "what can I do about it?"

In the March and April Index Newsletters we will discuss four different ideas for action you could take.

The first option is to simply sell your S&P 500 index, and reinvest the proceeds in a bond market index fund. If you believe that a sharp drop in equity values would be accompanied by an equally sharp fall in interest rates (caused, perhaps, by the Federal Reserve pumping up the money supply after a crash to avoid a sharp downturn in the economy), then you would want to invest in a fund that tracked the return on long term bonds (e.g., the Vanguard Long Term Bond Index Fund). Such a fund would realize the biggest gain in value as rates fell. If you were unsure about the future course of interest rates, you might instead choose to invest in either a total bond market fund (e.g., the Vanguard Total Bond Market Index Fund) or an intermediate term fund (e.g., the Vanguard Intermediate Term Bond Index Fund).

There are two major considerations with respect to this option. The first is taxes. If your S&P investment is held in a tax-exempt (retirement) account, there is no tax impact. However, if it is held in a taxable account, and you have built up substantial gains, the tax impact could be substantial. The second consideration is missing out on future gains in

the S&P if you are wrong about the future direction of the market. If you switch to bonds, there is no way to capture them.

The second option is to purchase a put option on the S&P 500 Index. This puts a floor under the value of your investment in the S&P 500 while still giving you the chance to capture any further upside moves in the equity market. One of the best ways to implement this option is via the purchase of SPX LEAPS (Long-term Equity Anticipation Securities), which are long dated options on the S&P 500. SPX Index LEAPS are equal to 1/10 the value of the S&P 500. For example, a LEAP with a strike price of 150 is equal to an S&P index value of 1500. To make matters a bit confusing, the "multiplier" used to calculate the pricing of Index LEAPS is \$100. The best way to work through this is via an example.

Assume the S&P 500 index is currently at 1500, and your investment in an S&P 500 index fund is currently worth \$100,000. Assume you want to protect yourself against any loss below an S&P 500 index value of 1300. To do this, you need to purchase 8 LEAP index put contracts [$\$100,000 / (130 \times \$100)$]. Each of these LEAP contracts expires in December, 2002, and has a quoted price of $9 \frac{3}{8}$, which translates into \$937.50 per contract ($9 \frac{3}{8} \times \100). The all-in cost to hedge your \$100,000 portfolio against drops in the S&P 500 index between now and December, 2002 is therefore \$7,500 ($8 \times \937.50). In other words, you have paid an amount equal to 7.5% of your investment to purchase more than two and a half years of insurance on your equity investment.

What happens if the value of the S&P 500 has fallen to 1000 by December, 2001? The value of your equity investment has fallen by one third, to \$66,667. However, this loss has been partially offset by a \$30,000 increase in the value of your S&P LEAP puts [$(1300-1000) \times \$100$]. After taking the cost of the put into account, your net loss is only \$10,833 ($-\$33,333 + \$30,000 - \$7,500$). On the other hand, if the S&P 500 appreciates to 1800, the investor realizes the full upside, and is able to take a capital loss on the premium paid for the LEAPS.

Why don't more people take advantage of the opportunity to insure their portfolio by buying equity index puts? First, as you can see, the calculations can be a bit daunting. Second, many people may resist signing the additional forms that brokerages require before they allow you to trade options in your account. Third, LEAPS require an additional cash outlay, which some people may not be able to afford. Finally, if the LEAPS are held in a taxable account, they can be a bit complicated. Under Section 1256 of the Internal Revenue Code, they must be "marked to market" at the end of each year. Practically, this is the same thing as selling them at their fair market value at the end of each year and then instantly repurchasing them at the same price. Any resulting annual capital gain or loss on the LEAPS is automatically treated as 60 percent long term and 40 percent short term. In the April Index Newsletter we will discuss two other ideas for hedging your exposure in an overvalued market.

Is the Market Overvalued?

We are often asked whether or not we believe the U.S. equity market is overvalued. Our answer is a resounding "yes!" Here's why:

Between 1968 and 1998, the Price/Earnings ratio on the S&P 500 averaged 15.6x. Today it stands at 32.1x. Rather than just saying, "that's too high", let's look at some of the arguments that have been used to justify this lofty multiple. In other words, what would have to be true in order for this valuation to be fair or low.

One of the better arguments that we have seen is that earnings are understated because old accounting rules are no longer appropriate for the "new economy." More specifically, in the new economy, knowledge, brands and human capital ("talent") are much more important drivers of value creation than they have been in the past (arguable, but let's accept it as legitimate for now). However, even though these assets produce income across multiple time periods, many of the investments associated with them (for example, R+D spending, advertising, and training costs) are expensed in the year they are

incurred, rather than capitalized and depreciated over time (as one would do when spending cash on a machine or building). The net effect of this is a serious understatement of annual earnings. If this is true, the P/E ratio may not be too high after all.

On its face, this is a good argument. However, what it neglects is another aspect of the “new economy” that undoubtedly offsets some of the earnings understatement it claims is occurring. We refer, of course, to the substantial increase in the use of stock options in recent years to compensate some or all of a company’s employees. While the details are too technical to go into at length, the key point is that the full cost of issuing and exercising these options does not show up as an expense in a company’s profit and loss statement. As a result, the use of stock options in companies’ compensation plans has resulted a substantial overstatement of their earnings. One of the most popular examples of this argument is Microsoft, and an extensive discussion of the earnings impact can be found on [ADD URL].

Another argument that has been used to justify today’s high market P/E is that the many changes wrought by the “new economy” have fundamentally raised the rate at which the U.S. economy can grow without triggering inflation. In other words, if you look at the growth side of the equation, the P/E to growth (or PEG) ratio for the market is not overvalued (that is, it is less than 1.5 to 2.0). Rather, the current market P/E represents the opportunity “to buy growth at a reasonable price.” Okay, let’s test this.

First, let’s look at the growth of after tax business profits in the United States (as described in the 2000 Economic Report of the President (available at <http://www.gpo.gov>). Between 1959 and 1998, after tax business profits grew at a compound rate of 7.2% per year. But let’s be a bit more aggressive, and date the beginning of the new economy right about the time this long bull market began, in 1982. From 1982 to 1998, after tax business profits have grown by 9.5% per year. Now let’s use this rate to calculate a PEG ratio for the market as a whole, and let’s use Peter Lynch’s approach, and add the current dividend yield on the S&P 500 of 1.19% to the

growth rate. The equation looks like this: P/E Ratio divided by (growth rate plus dividend yield times 100), or $32.06/10.69$. The resulting PEG ratio is about 3.00, which is well into the overvalued range.

Ah, but some will say, remember that corporate profit numbers can be distorted by outmoded accounting rules. You really have to look at the impact of the “new economy” on overall economic growth. Fair enough; let’s have a go at that too.

In the long term, the nominal growth rate of output in an economy is driven by three factors: (1) the rate at which the population is growing (a proxy for labor force growth); (2) the rate at which real output per worker (labor productivity) is growing; and (3) the rate of inflation. Over the past ten years, the population of the United States has grown by about 1% per year. The growth of labor productivity is a more interesting story. Between 1900 and 1970, real output per hour grew at an average rate of 2.3% per year. The high point during this period was the 1950s, where it reached 3.0% per year. In the 1970s, growth in output per worker declined to 1.1% per year, and in the 1980s it improved only slightly to 1.3% per year. In the 1990s, things substantially improved: over the decade as a whole, output per worker grew by 2.01% annually, while in 1997, 1998, and 1999 it grew by respectively 2.2%, 2.8% and 3.0%. What then is a reasonable rate of future growth to assume for the economy as a whole?

Let’s be aggressive here, and assume population growth of 1% per year, labor productivity growth of 3% per year, and average inflation of 3.5% per year. This gives us an expected nominal growth rate of 7.5% per year. Now let’s add to that a dividend yield of 2% per (again, let’s be aggressive), and calculate our PEG ratio. Here’s what it looks like: $32.06/9.5 = 3.37$. Again, this suggests a very overvalued market. In fact, given the current P/E of 32.06, getting the PEG down to a “reasonable” value of 1.5 requires an expected earnings growth rate of about 20% per year. For individual stocks, this is undoubtedly achievable, at least for a period of time. For the market as a whole, however, it is not. Once again, the market appears overvalued.

Finally, let's take a look at one last valuation measure, the ratio of the rate of return on the 30 year Treasury Bond to the earnings yield on the S&P 500 (which is the inverse of the P/E ratio). Given today's long bond yield of 6.15%, and the 32.06 P/E on the S&P 500, we have bond/earnings yield ratio of 1.97x. Since 1984, this has averaged 1.4x. Again, another sign that the market is overvalued.

Does this analysis mean you should rush out and sell all your S&P 500 investments? No, it doesn't. A great deal of research (which we'll cover in a later issue) suggests that market timing is a very difficult game to win. The better approach, which we strongly advocate, is to (1) allocate your investments across a range of asset classes, (2) using low cost index funds, and (3) dollar cost averaging, and (4) regularly rebalance your investments to maintain your target portfolio weights. For example, a portfolio that contains a mix of U.S. equity, European equity, U.S. bond and Non-U.S. bond index funds will probably be down far less than a pure S&P 500 portfolio when the latter's valuation inevitably returns to normal levels.