The Index Investor

Why Pay More for Less?

Model Portfolio Performance Update

Through August 31st, our benchmark Vanguard S&P 500 index was up 4.2% for the year, while the Vanguard total bond market index was up 6.3%. Our risk-based portfolios try to match the volatility of different combinations of these benchmarks while providing superior returns. Thus far, they continue to perform as we had expected.

Our high risk portfolio attempts to match the risk of a benchmark made up of 80% S&P 500 and 20% Total Bond Market Index while generating superior returns. Thus far, it is up 11.7% on the year, versus 4.6% for its benchmark. It has benefited from the very strong performance delivered by the Oppenheimer Real Asset Fund (up 37.9%), as well as the Vanguard Mid-Cap Index (up 23.5%) and the Vanguard Small-Cap Value Index (up 13.5%).

Our medium risk portfolio attempts to match the risk of a benchmark made up of 60% S&P 500 and 40% Total Bond Market. Year to date, this benchmark is up 5.0% through the end of August. Our medium risk portfolio is up 8.2% year to date, largely on the strength of its holdings of the Real Assets Fund, the Vanguard Long Term Bond Market Index (up 10.3%), and the Vanguard Small Cap Value Index. Our biggest disappointment with this portfolio is the performance of the T. Rowe Price International Bond Fund, which is down by (6.9%) year to date. However, we continue to believe strongly in the long-term value of this asset class, because of the protection it provides in case of a substantial drop in the value of the dollar.

Our low risk portfolio attempts to match the risk of a benchmark made up of 20% S&P 500 and 80% Total Bond Market. It is up 9.2% year to date, versus 5.9% for its benchmark. The overwhelming story here is once again the performance of the

Oppenheimer Real Asset Fund. As we have said before, the power of having an asset class in a portfolio whose returns are negatively correlated with all its other holdings is difficult to overstate.

Our return based portfolios are structured to maximize the probability of achieving a specific target rate of return while taking on the lowest possible amount of risk. They are designed for investors who have a very clear idea of the minimum average annual rate of return they must earn on their portfolio to fully fund their liabilities over a specified period of time. In the case of these portfolios, our decision to prevent them from investing in the Oppenheimer Real Assets Fund (due to the fact that many readers were, in the past, uncomfortable with this asset class) has, every month, come back to haunt us. While their returns are in line with their relative risk, they are still well below where we would like them to be. For the 12% target return portfolio (that is, the portfolio which, over a twenty year holding period, has the highest probability of achieving compound returns of 12% per year, with the lowest possible risk given the asset classes it can invest in), performance year to date is (.9%). For the 10% target return portfolio, the year to date return is 2.1%. For the 8% target return portfolio, the year to date return is 3.3%, and for the 6% target return portfolio, the year to date return is 3.6%. Clearly, these portfolios will be substantially restructured next year (in fact, that process is currently underway, as we attempt to learn from and quantify the size of our mistake in judgement).

Growth and Value Indexes Compared

The introduction of Barclay's "iShare" exchange traded index funds enables investors to invest in a wider range of indexes than were previously available. To help them decide between them, we have looked at both the broad market indexes (in our June issue) and size based indexes (in our July issue). Our subject this month is indexes based on growth and value. Next month we will look at sector based indexes. We will wrap up this series

in October, with a look at the pros and cons of investing in anything other than the broad market indexes. Now on to growth and value.

Let's start by looking at the large cap indexes, where investors can now choose between growth and value indexes for both the Russell 1000 and the S&P 500. For our comparisons, we have used the longest possible set of data, covering the entire period during which both indexes were in existence. In this case, the period covers January, 1979 through July, 2000. Over this period, the Russell 1000 growth index had an average annual return of 19.26 percent, with a standard deviation of 20.09 percent. For each unit of risk you took on, you received .9587 units of return (19.26/20.09). During this same period, the S&P/BARRA 500 growth index had an average annual return of 19.22 percent, with a standard deviation of 19.27 percent. In this case, for each unit of risk you took on, you received .9974 units of return. While an extra .0387 units of return per unit of risk doesn't sound like much from year to year, it can compound over time to create a big advantage. Our large cap growth index winner is therefore the S&P/BARRA 500 product.

But what about large cap value? Over the same 1/70 to 7/00 comparison period, the Russell 1000 had an average annual return of 17.49 percent, with a standard deviation of 16.68 percent, or 1.0486 units of return per unit of risk. Meanwhile, the S&P/BARRA 500 value index had an average annual return of 17.61 percent, with a standard deviation of 16.86 percent. In this case, an investor received 1.0445 units of return per unit of risk. So far, a toss up. On to the tiebreakers! Looking at the distributions of the two indexes returns, we find that the Russell 1000 Value is less negatively skewed (at -.65) than the S&P/BARRA 500 Value (at -.68) and has tails that aren't as fat, with a Kurtosis of .35 versus .55. On balance, this means that an investors is less likely to be surprised on the downside by the Russell 1000 value index. For this reason, it is our winner in the large cap value category.

Moving on to the small cap indexes, investors face similar choice between the Russell 2000 growth and value variants, and their S&P/BARRA 600 peers. Unfortunately, the

latter is relatively new, so our comparative data only covers the January, 1994 through July, 2000 period.

In the small cap growth area, the Russell 2000 growth index delivered an average annual return of 15.71 percent over this period, with a standard deviation of 28.35 percent. In other words, investors received .5541 units of return for each unit of risk they took on. Not the best risk adjusted performance! Unfortunately, things weren't much better for those who held the S&P/BARRA 600 growth index. They received an average annual return of 13.79 percent with a standard deviation of 23.92 percent, or .5762 units of return per unit of risk they took on. The S&P/BARRA index wins in a race between two very lame horses.

Had our investors held the Russell 2000 value index over this period, they would have received an average annual return of 12.03 percent, with a standard deviation of 14.64 percent. Worse in terms of total returns than the growth index, but better in terms of units of return (.8217) per unit of risk. The same story holds for the S&P/BARRA 600 value index, which had an average annual return of 14.36 percent over this period, with a standard deviation of 17.17 percent, or .8363 units of return per unit of risk. In terms of risk adjusted returns, the 600 wins by a whisker. However, offset against this is the fact that the returns of the Russell 2000 value index are slightly less skewed, at (1.20) versus (1.28). Given the relatively small amount of data on which this comparison is based, we end up rating it as a tie.

Finally, regardless of the specific index used, this analysis tells a consistent story about the history of the U.S. equity market since January, 1994. In short, large cap growth investors have realized the highest returns, followed by large cap value investors. Small cap investors have done less well, and, within this category, value investors have significantly outperformed growth investors.

Information Flows and Group Investing Behavior

In April and July, we looked at the psychology of individual investors. This month, we will begin to look at the way information passes between investors, and how this gives rise to group behavior. Next month we will look at how the structure and institutions of the markets themselves affect behavior and returns. In October, we will bring all these strands of thinking together to see if they can help us better understand the wide variations we observe in index performance, along with the patterns that seem to recur across a range of markets.

Individual investors don't operate in a vacuum. Rather, they interact everyday with other investors, either directly by trading with them or indirectly by observing the consequences of their actions (for example, changes in the price of a stock, its trading volume, etc.).

At the same time, investors are dealing with information about the stocks they own and the ones they would like to buy or sell short. Some of this information costs them very little to obtain (e.g., yesterday's prices and volumes, or prices relative to an index or moving average), while the cost (in time or money) to obtain other information can be quite high (e.g., buying a research report from Multex, or interviewing customers to check on the relative performance of a company's products). On top of this, not all information available to an investor is an equally reliable guide to a company's future stock price – either because it may not be accurate, or because the way other investors will interpret it may not be clear. Finally, investors differ in terms of their perceptions of their own abilities relative to others to accurately interpret the information they have. For example, while Venus Williams certainly wouldn't defer to Morgan Stanley's internet analyst when it comes to choosing a tennis racquet, she probably would when it came to buying a technology stock.

These starting points give rise to a number of interesting phenomena in financial markets. Let's look at the most interesting of these: bubbles and crashes, which are both examples

of the phenomena known as “herding”. We’ll use an example to show how these play out.

Let’s start with ten people, one of whom is a well known analyst at a famous Wall Street Investment Bank, one of whom is your cousin Al who regularly drones on at family parties about his great record “in the market”, and one of whom is your friend Lisa who has a PhD. in software engineering. Further assume that the other seven people (including you) are regular Janes and Joes. On Monday morning, following the release of strong quarterly results by the company, Well Known Analyst announces a strong buy recommendation on XYZ.com, a firm you’ve never heard about before. All of the regular folks hear about this (it is public information), and so take an interest in XYZ. A couple of them buy solely on the strength of the analyst’s recommendation, but everyone else holds back because they are cynical about sell side analysts. On Tuesday, Lisa tells you that she has bought some XYZ, and its price went up ten percent. At the same time, you are sitting at Starbucks and overhear two skateboarders with multiple tattoos and body piercings strongly criticizing XYZ’s website.

That night, you mull over your decision. The analyst recommended it. And Lisa (who at the very least knows more about software than you do, and is therefore better able to make sense of the public information about XYZ, even if she doesn’t have any private information about the company) bought it, and earned a quick ten percent profit (assuming minimal trading costs). On the other hand, you also have private information (from Starbucks), that isn’t positive. On balance, you decide that the weight of the public information (the analyst recommendation and the financial information disclosed by the company), and what you infer from the actions of others about the information they have (Lisa’s and the others’ purchases, and the rise in the stock price), together with the results of those actions (the stock is up ten percent) more than offsets the weight of your private information, and you decide to buy.

On Wednesday, the stock price is up another ten percent. That night Cousin Al sees that XYZ has been among the market’s best performers for the past two days. As you’ve

suspected all along, Al has neither the time nor the inclination to do any in-depth research on the company, so he has no private information about it. Instead, he looks at the analyst recommendation, the company's public financial information, and recent trading volume and price changes in the stock, infers that other people must have private information that is positive, and decides to invest.

On Thursday, three things happen. Two other people besides Al invest in XYZ, and its stock pops another twenty percent. Al calls you to brag about the latest hot stock he has found, and urges you to get in before it's too late (you change the subject). Later, while eating at your favorite restaurant, you overhear another diner tell his date that he is the head of sales at XYZ and is worried that they may lose a big new sale they had been counting on getting. As a result, earnings might be fifty percent less than expected. When you get home, you think about what is happening. On the one hand, a lot of relatively uninformed people seem to be piling into XYZ – you know for sure that Al can't have any private positive information about the company that would help him determine that it was undervalued. Nope, Al just bought because XYZ was heading up. You realize that the herd has begun to move, and a bubble may be developing (if the stock price is above the company's fundamental value, then it is a bubble; however, due to uncertainty about the fundamentals – that sale they may or may not lose, for example – you can't be sure yet). Moreover, you know that some other investors probably realize this too. You conclude that the risk of holding XYZ has probably increased. On the other hand, you don't want to be the first one to sell if the stock is still going up (you can just imagine what Al would say if he finds out you got out too soon). Trading off all these considerations, you decide to stay invested in XYZ only if its price gains get larger, to compensate you for what you perceive is the increased risk of holding a potential bubble stock.

On Friday, that is exactly what happens. XYZ finished the day up thirty percent, as two more people buy XYZ stock in a very thin market (nobody else wants to be the first one to leave either). On Saturday, however, you are back at your favorite restaurant, and see the XYZ sales manager sitting at the bar working on his resume, and overhear him telling

the bartender that he's looking for a new job because things are falling apart at the (unnamed) company where he works. On Sunday, you realize that you now have a piece of private information (which, because of the way you obtained it, is legally not "inside" information) that provides a very clear signal about the worsening state of affairs at XYZ.

On Monday, you not only sell your shares in XYZ, but also sell more shares short at a price that is fifty percent under the current market (taking on the risk that XYZ's price will keep rising and you will lose money in spite of the bad news you expect them to announce). The stock finishes the day fifteen percent up, as current investors (including, loudly, Cousin Al) add to their holdings.

On Tuesday, the short sale data for XYZ stock becomes publicly available, and the company announces that its vice president of sales has resigned. A few investors who were already nervous about a possible bubble begin to sell, and the stock price heads south. Under pressure from the investment bankers at his firm (who are trying to convince XYZ to acquire ABC in an all stock deal), Famous Analyst reiterates his buy, all the while feverishly making calls to his contacts at the company to try to figure out what is going on. At the end of the day, Famous Analyst checks with his trading desk and finds that the short sellers don't appear to have covered their position yet (that is, they have yet to buy the stock they have committed to deliver via their short sale), even though the stock is down fifteen percent on the day. That night, Soon-to-be-Infamous Analyst has that sinking feeling that somebody out there knows more than he does, and what they know isn't good. On Wednesday morning he downgrades XYZ.

At this point, the same phenomenon seen at baseball games and rock concerts kicks in. We're all familiar with it – nobody wants to be the first one to stand up, but once a few people do, everyone else soon follows. Wednesday becomes famous in the short history of XYZ as the day the stock lost sixty percent of its value and employees' options sunk under the waves.

Let's summarize what this example tells us about financial markets:

- Investors differ in their access to information (about both companies and about other investors' information and opinions). Some people only have access to public information (about companies or about other investors' actions), while others have access to private information too.

- Publicly available information is asymmetric, because the prices of short sales are not disclosed, while the prices of long purchases are. In other words, the positive information about a stock is always in the market (and the price), but some of the negative information is not (until the price starts falling).

- Similarly, sell side analysts typically underreact to negative news and overreact to positive news about the companies they follow. In other words, they are systematically over-optimistic. This is logical, given their need to maintain preferential access to the company's executives (e.g., to sell investment banking business and to develop accurate earnings forecasts), who tend not to like "hold" recommendations on their stock.

- The quality of private information is usually poor (that is, it rarely provides a clear signal to buy or sell).

- Investors differ in their ability to interpret the meaning of the public and private information they possess. Another way of saying this is that investors use a wide variety of models to convert the information they have into buy/sell recommendations. For this same reason, investors are prone to copying the decisions of those people whom they regard as having more relevant expertise than they do.

- Two conditions can set off herding. The first is when many investors follow the same public signal. For example, this could be the recommendation of a famous analyst (often known as a "lead steer" because of his or her apparent ability to get

the herd moving) or the announcement that a company has significantly exceeded its expected earnings. The second is when many investors decide to buy or sell based on the belief that the private information they have about a company (e.g., "Charlie was just laid off from there") is more than offset by opposing public information they infer from the transactions they observe in the company's stock ("everybody is buying it and getting rich, so they must know something I don't").

- Bubbles usually begin slowly, because a typical investor must accumulate a substantial amount of information to change his or her views about a stock. Once that view has changed, however, herding often accelerates because people tend to look for and overweight information that confirms their opinions and screen out and underweight information that threatens them.

- Bubbles (upside herding) are inherently fragile, because as more people realize they are in one, and realize that others probably also know the same thing, the rate of price increase has to keep on increasing to compensate for the increasing risk and keep them from selling. At some point, this process has to come to an end.

- Bubbles tend to pop either when new public information is released (e.g., a company misses an earnings target or is downgraded by a highly respected analyst) or when relatively unambiguous new private information is received, and percolates among investors directly (via communication) and indirectly (via what people infer from other investors' trades).

- Crashes (downside herding) tend to develop quickly for two reasons. First, information held by short sellers is only disclosed through their trading (or absence of it) when the market is falling (e.g., "XYZ fell through its support level today, and investors really began to bail out"). In other words, just as available public information tends to be asymmetrically positive when a stock is going up in price, the opposite is true when its price is falling. Second, for most people fear seems to be a more strongly felt (and contagious) emotion than hope (or even

envy). More specifically, price falls tend to trigger changes in investors' beliefs about the likely actions of other investors faster than prices rises do. For this reason, most of the largest one-day percentage changes in index values have been on the downside rather than the upside.

Statistically, herding causes the distribution of returns in financial markets to deviate from the normal distribution. Instead, a typical distribution of financial returns tends to be negatively skewed (big moves are more likely on the downside) as well as "fat tailed" (big moves in either direction are more likely than they would be in the case of a normal distribution), and its volatility (standard deviation) tends to change ("cluster") over time rather than remaining constant