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FIRST QUARTER 2006

“LIES, DAMNED LIES AND STATISTICS”¹

by Terry Price

Despite a growing and robust economic recovery since 2002, monthly reports of a few select economic statistics portray an opposite, even negative story. For example, when was the last time anyone remembers a positive trade report with Americans selling more goods to foreign nations than we bought from them? If carried to the ultimate extreme, there are those who warn we may eventually be buying only foreign-manufactured products and never produce anything at all – a recipe for economic ruin.

Similarly, when it comes to personal savings or investment, we’re constantly being told as a nation we save nothing, particularly when compared with the Japanese – the acknowledged savings champions of the world. It’s amazing we ever have enough money to repair things that wear out or break down.

Nevertheless, despite these negative reports, the overall economy continues to grow year after year. Consumers continue to spend and balance sheets, both household and corporate, seem to be in pretty good shape. Productivity increases are at the highest levels seen in generations and unemployment has recently dropped to impressive historical lows. Can these apparent dichotomies be reconciled? Are they lies?

¹ *British Prime Minister Benjamin Disraeli*

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THE SQUARE ROOT OF MAN IS NOT A CONSTANT

by Randy Zaharia

My father, a retired government and history teacher, enjoyed quoting this provocative statement in his classes. The quote meant that “man” was not a predictable entity, not something easily modeled, especially as it related to political forces and governmental systems. This same saying comes to mind when I consider the continuing assault on the underpinnings of modern investment portfolio theory, with all of its assumptions of a perfect world, rational investors, and efficient markets – assumptions which seemingly downplay any “square root of man” truisms. As Susan Trammell wrote recently (“Rethinking the Rational Man,” *CFA Magazine*, March/April 2006), “From analyst conferences to academic papers (not to mention articles in the popular press), neoclassical finance [modern portfolio theory] is under siege.”

Modern Portfolio Theory (MPT) grew out of the seminal works of Markowitz, Miller & Modigliani, and Sharpe during the 1950s and 1960s. Some of the assumptions to the efficient frontier, the capital asset pricing model, and other related works were that 1) returns are related to the volatility of returns in general, 2) investors can borrow or lend at the risk-free or government rate, 3) all investors have identical expectations, 4) there are no taxes or transactions costs, and 5) there is no inflation or change in interest

rates. In fact, MPT assumed an efficient market, where above market returns were difficult, if not impossible, to obtain. Overall, MPT has been an elegant model for academics and serious finance professionals to understand aspects of the market place. The problem is that many have forgotten the fragile pillars on which these models and theories were built.

In 2005, Robert Arnott, editor of the *Financial Analyst Journal*, underscored the need to view much of modern portfolio theory with a skeptical eye. He noted in “Whither Finance Theory?” that the “sheer brilliance of many of the theories actually blinds us to their limitations.” In particular, Mr. Arnott stated that in accepting the theories, some inadvertently accept the “implausible assumptions” that underlie these models as fact. For example, he noted

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In answer to our question, no. Some economic observers have recently begun to revisit the decades-old method used to measure economic growth, or Gross Domestic Product (GDP), in our country. Born during the Great Depression, GDP was a new tool used by the U. S. Department of Commerce to determine if the economy was growing or shrinking by counting newly produced tangible assets like machinery, automobiles, cans of food, houses, buildings, etc. At that time, the United States was a heavily industrialized economy and the methodology worked fairly well. Back then, when economists counted more things being produced, it was fairly certain the economy was growing – and vice versa.

Even from the beginning, however, the system did not record some business expenditures for things such as education, research & development, or employee training. For example, AT&T’s initial funding of Bell Labs early in the 20th century would not have been included in that year’s GDP calculation. Yet, from that lab sprang forth the invention of many leading-edge products such as the transistor. In fairness to the system, such non-tangible investments or products were a small economic minority at the time.

However, today things have changed a lot, perhaps even been turned upside down since the Great Depression. A much larger percentage of physical, tangible products produced by American companies are actually manufactured in other lands. Also, much of what US firms now create is more service or knowledge oriented than before. Consider the popular iPod created by Apple Computer just a few years ago.

When introduced, these small devices were a leading-edge technological consumer hit. Combined with extremely clever marketing, the iPod has turned into a highly successful brand name for Apple. Tens of millions have been sold, and the brand has been turned into a whole family of products and services, the latest being an internet store selling downloadable

“AS WE MOVE FORWARD ANALYZING THE US ECONOMY AND ITS FUTURE EXPANSIONS AND RECESSIONS, IT MAY BE WORTHWHILE TO CONSIDER JUST HOW THOSE FUTURE ECONOMIC EVENTS ARE MEASURED.”

music and television shows. Yet, even though they have a cool California look, iPods are manufactured in the Far East and thus not counted as part of the United States’ GDP.

It is clear there have been hundreds of millions of dollars spent in California developing, designing, marketing, promoting, and training employees for this very successful product. These expenses are often referred to as research and development. Importantly, they were perhaps the single-most-necessary ingredient to create the iPod brand and to produce the iPod phenomenon. Yet, these huge expenditures are not counted under the current system of national accounting. Moreover, they certainly added to our country’s economic growth by providing thousands of jobs for US workers, not to mention the billions of dollars in sales iPod has produced for Apple Computer.

Another example of an intangible investment can be found at Intel, the world’s leading chip maker. In February, the company announced its plan to immediately build a new \$300 million semiconductor facility in Vietnam. Under the current system of measuring national economic growth, the \$300 million cost will be counted as a foreign investment, a positive addition to the balance of trade and an easy statistic to measure.

What will not be counted are the costs to bring the new facility into full operation. The normal start-up strategy adopted by Intel in 1996 is a company program called *Copy Exactly*. According to Intel’s own press release, the *Copy Exactly* strategy “. . . solves the problem of getting production facilities up to speed quickly by duplicating everything from the [research &] development plant to the volume-manufacturing plant. . . . To do that, managers from high-volume facilities participate at the development plant as

a new process technology is created.” Most of the managers sent to Vietnam will come from the US. And as managers from the United States enter Vietnam to *Copy Exactly* Intel’s already proven and successful processes, how will those expenses be treated on our national accounts? They will not be treated as exports, nor will the months and months of training costs associated in bringing the Vietnamese employees up to speed.

This mission-critical corporate investment is a transfer of knowledge, sometimes referred to as human capital. It is something many companies such as Intel do both here and abroad. However, it will not be considered a US export as will the brick and mortar investment of the new factory in which all those newly-trained knowledgeable people will work.

So why all this fuss about statistics? As we move forward analyzing the US economy and its future expansions and recessions, it may be worthwhile to consider just how those future economic events are measured. As we consider the recent 2001 recession, such thoughts may have helped us make more sense out of what was reported. For example, as recessions go, this last one was reported to be extremely mild at the worst.

We do know millions of people lost their jobs. But many of those jobs in our present-day economy are knowledge-based innovative occupations, such as we’ve been discussing. Perhaps stretching the point, but maybe not unreasonably, one could even imagine the following scenario may have occurred if a brand manager at a high-tech manufacturer had been laid off.

That employee’s contribution to the company would never have been counted negatively in the official GDP statistics because the specific tasks involved only ideas, not meas-

urable goods. So, if our employee were laid off, the GDP for statistical purposes would have actually remained unchanged so long as the product continued to be produced at the same rate. Yet, the cost per part going into those products would have actually fallen by the amount of our employee's wages. Thus, the productivity of that company may have actually improved. Not a "damned lie," but perhaps a misleading positive economic statistic as currently measured.

This may have explained the extremely shallow 2001 recession as reported by the Department of Commerce (DOC), during which millions of Americans found themselves in unemployment lines. It may also explain the so-called jobless recovery. As conditions did eventually improve, and knowledge employees were rehired, reported GDP conversely may not have reflected the full strength of the positive economic trend right away. And we would not be surprised if actual GDP growth has been much stronger these past few years than the official reported data suggests.

We're not sure how we resolve such statistical problems. The national account numbers are invaluable. And they're not lies . . . let alone "damned lies." However, they are statistically generated and we suspect the statisticians and economists charged with measuring the national economic health of the world's largest economy are somewhat more comfortable counting tangible things rather than abstract concepts for which arbitrary values are often hard to come by.

As once expressed by Mark Twain, "Get your facts first, and then you can distort them as much as you please." If we follow Mr. Twain's advice, it may be wise for investors to also consider the methodology that surrounds much of statistical data found in future press releases. In so doing, considering how the composition of our economy has changed since the Great Depression's Industrial Age, some apparent modern-day dichotomies may be more easily explained than by relying only on those "damned" statistics. §

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that capitalization-weighted portfolios (such as Standard & Poor's 500 index-weighted funds) are subject to an overweighting, or momentum bias, when large-cap stocks are appreciating very quickly, thus potentially distorting the performance of an indexed portfolio and ultimately creating inefficiencies. As a result, one might need to question the efficacy of a particular index. That is, is the Standard & Poor's 500 Index a better or worse measure of market performance than the Dow Jones Industrial Average (an equal weight index)?

Possible biases in appropriate indices are just one issue to consider. Another is what the specific questions and concerns are. For example, Ibbotson & Kaplan, in a 2000 study published in the *Financial Analyst Journal*, found that the explanatory power of an asset allocation strategy could actually vary between 40% and 100%, rather than the 90%+ quoted by many financial professionals. Once again, unless an investor is asking the right questions and interjecting a measure of skepticism, bold statements may go unchallenged. Is the person talking about performance between funds over time? Is the

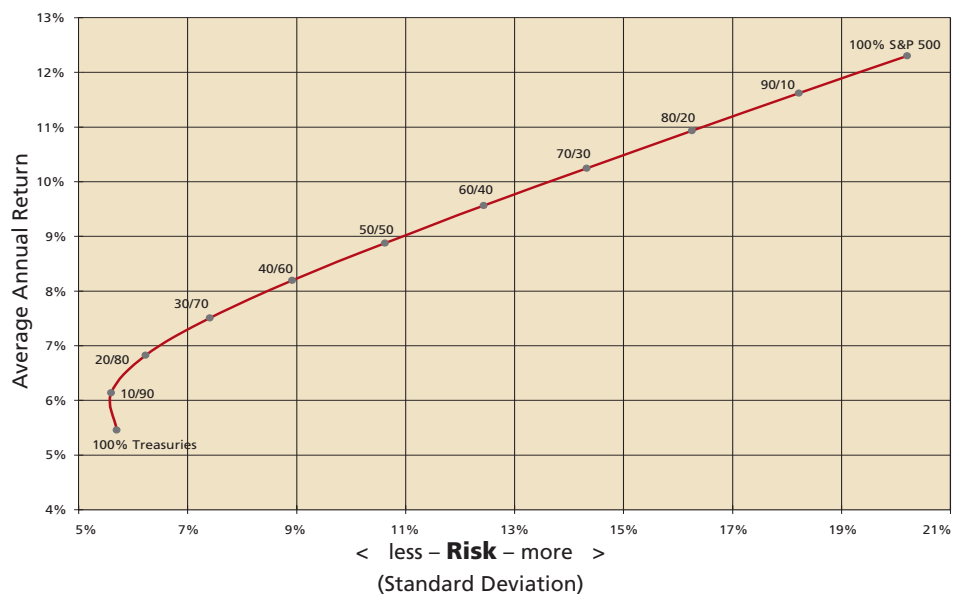
person talking about the variation between funds today? If the studies were done on mutual funds and pension assets (which they were), how relevant are these studies to me, an individual tax-paying investor who has capital gains and losses to deal with in my portfolio? Reality is sometimes a few steps beyond the multi-color glossies and smooth presentations of the banks and brokerage companies, and it requires a questioning, critical, and thorough review to ferret out the unrealistic assumptions, such as no taxes or costs incorporated.

In one of the chapters of a recent CFA (Chartered Financial Analyst) Institute research foundation book dealing with tax-advantaged and tax-efficient portfolio management, there was a discussion about how to handle asset allocations, whether taxable or tax-exempt (such as an IRA). The chapter discusses the arbitrage between the account subject to taxes and the one not subject to taxes, and which one should hold equities, taxable bonds, and municipal bonds, depending on the after-tax consequences from these decisions. Unfortunately, these particular issues are nowhere present in the analyses done by Ibbotson and are "assumed away" in modern portfo-

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Efficient Frontier

Risk versus Return: S&P 500 and 5 Year Treasuries 1926 – 2005



DATA SOURCE: IBBOTSON ASSOCIATES



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lio theory. Yet, capital gains taxes, for example, can impact after-tax portfolio returns significantly.

Over the last twenty years, one of the biggest challenges to MPT has come from the behavioral finance theorists. While Markowitz, et.al., were instrumental in building the foundation of today's modern portfolio theory – theory taught prominently and vigorously in university economics and finance departments – others such as Kahneman, Tversky, Haugen, and Vernon Smith were posing alternative explanations for market performance, which focused on human behavior, psychology, and other irrational trends. Kahneman's and Tversky's psychological research in the 1970s resulted in the discovery of long held patterns of human behavior affecting market outcomes. In the 1990s, Dr. Haugen's book, *The New Finance: the Case against Efficient Markets*, sarcastically refers to MPT as the "Holy Grail," a symbol of unattainable perfection. His arguments and work bolstered the case for inefficient markets and posed methods to exploit these inefficiencies. Finally, Smith recreated and effectively demonstrated boom-and-bust behavior in experimental economic labs over the last thirty years. Of course, this was not frivolous bickering as both sides of the argument were recognized for their brilliance and financial relevance. Kahneman and Smith were Nobel laureates on the behavioral side, as were Markowitz, Modigliani, Miller, and Sharpe on the MPT side.

Even more recently, Dr. Andrew Lo, a finance professor at the Massachusetts Institute of Technology (MIT), researched neuroscience and cognitive psychology, as noted in a February 20, 2006 BusinessWeek article, "Darwinian Investing." This article noted that Dr. Lo and his researchers tested emotional responses of financial professionals such as traders. Specifically, Dr. Lo postulated that emotions were central to the markets, that investors learned adaptive patterns through trial and error, and competed for optimum returns in a competitive environment. Lo noted that "it's

a Darwinian world where market shifts render some strategies obsolete, resulting in chances missed and money lost." Bottom line, this research at MIT undercuts again the efficient market hypothesis, and underscores the inefficient market and its return opportunities...Darwin style.

Overall, MPT and much of its related research work have allowed academics and finance professionals to look at aspects and key issues of finance and investments. Even here at Clifford Associates, we utilize the efficient frontier and MPT-based software developed by Ibbotson. These tools are helpful, yet we know their limitations. With respect to the efficiency or inefficiency of the markets, reality is probably somewhere in between. Academics have postulated that efficiency increases as the richness of information increases and the asymmetry of that information is reduced. At times, human behavior and emotional response (e.g., fear and the "herd response") will overwhelm the marketplace. Maybe one way to look at the markets is as a moving target, and that parts of the market are, at times, efficient. Nonetheless, other areas remain inefficient and provide opportunities, for a time, for astute investors. Much like a flashlight in a dark room, parts of the markets are highly efficient (and "lit"), while other areas are less efficient and still in the dark.

Ultimately, what is critical for the individual investor and for the investment professional is to maintain a skeptical and critical frame of mind. As investment advisors, we attempt to blend serious review and consideration of the data with our many years of expertise and judgment, using the models as rough guides.

So, whether in a dark or lit corner of the room, or whether there are moving targets or not, the world and the markets can not be reduced to a simple equation. Each investor is unique. Each environment is unique. Each set of circumstances is unique. Even the year 2006 is unique, given its political and economic flavor. In the final analysis, the square root of man is NOT a constant and the square root of an investor is also NOT a constant. Forget not the art...with the science. \$

**"REALITY IS SOMETIMES A FEW STEPS BEYOND THE MULTI-COLOR
GLOSSIES AND SMOOTH PRESENTATIONS..."**