Don’t Count On It!
The Perils of Numeracy

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Mysterious, seemingly random, events shape our lives, and it is no exaggeration to say that had I not attended Princeton University, Vanguard never would have come into existence. Had it not, it seems altogether possible that no one else would have invented it. I’m not saying that our existence matters, for in the grand scheme of human events Vanguard would not even be a footnote. But our contributions to the world of finance—the unique mutual structure, the index mutual fund, the three-tier bond fund, the simple investment philosophy, and the over-weening focus on low costs—have in fact made a difference to investors. And it all began when I took the first nervous steps in my academic career some 55 years ago.

My introduction to economics came in my sophomore year when I opened the first edition of Paul Samuelson’s *Economics: An Introductory Analysis.* A year later, as an Economics major, I was considering a topic for my senior thesis, and stumbled upon an article in *Fortune* magazine on the “tiny but contentious” mutual fund industry. Intrigued, I immediately decided it would be the topic of my thesis. The thesis, in turn, proved the key to my graduation with high honors, which in turn led to a job offer from Princeton alumnus Walter L. Morgan, an industry pioneer and founder of Wellington Fund in 1928. Now one of 100-plus mutual funds under the Vanguard aegis, that classic balanced fund has continued to flourish to this day, the largest balanced fund in the world.

In that ancient era, the study of economics was heavily conceptual and traditional. Our study included both the elements of economic theory and the worldly philosophers from the 18th century on—Adam Smith, John Stuart Mill, John Maynard Keynes, and the like. Quantitative analysis was, by today’s standards, conspicuous by its absence. (My recollection is that Calculus was not even a department prerequisite.) But it was almost at the very moment that I began my study of economics that the turning point came. Here’s how one journalist recently put it[1]:

> “The idea that economic activity can be explained as rational individuals trying to maximize their wealth goes back at least to 18th century Scotsman Adam Smith, and the thought that all this was best expressed mathematically occurred to economists as long ago as the 1870s. But the approach didn’t really take off until the 1947 publication of MIT professor Paul Samuelson’s Foundations of Economic Analyses, which recast the principles of economics in the language of Newtonian calculus. *The mathematization of economics that followed swept all before it.*”

[1] “Is the Market Rational?,” Justin Fox, *FORTUNE*, December 3, 2002.

That "mathematization," to be sure, required the instruments to do the counting, and we soon had them: In 1946, the first computer; cumbersome and 30 tons of heft; next, in 1970, the production of the first hand-held electronic calculator; finally, in 1976, the coming of the first mass-produced personal computer. The Information Age had arrived, and it has changed the way we think about things. Its impact on the study of how economies and markets work is just one example. Numeracy is in the saddle and rides our professional and our business lives. *If you can't count it*, it seems, *it doesn't matter*.

I disagree with that syllogism. Indeed, as you'll hear again in a quotation I'll cite at the conclusion of my remarks, "to presume that what cannot be measured is not very important is blindness." But before I get to the pitfalls of measurement, to say nothing of trying to measure the immeasurable—things like human character, ethical values, and the heart and soul that play a profound role in all economic activity—I will talk about the fallacies of some of the measurements we use, and, the pitfalls they create for economists, financiers, and investors.

My thesis is that today, in our society, in economics, and in finance, we place too much trust in numbers. *Numbers are not reality*. At best, they're a pale reflection of reality. At worst, they're a gross distortion of the truths we seek to measure. So first, I'll show that we rely too heavily on historic economic and market data. Second, I'll discuss how our optimistic bias leads us to misinterpret the data and give them credence that they rarely merit. Third, to make matters worse, how we worship hard numbers and accept (or *did* accept!) as the talisman of investment reality the momentary precision of stock prices rather than the eternal vagueness of intrinsic corporate value. Fourth, by failing to avoid these pitfalls of the *numeric* economy, how we have in fact undermined the *real* economy. Finally, I conclude that our best defenses against numerical illusions of certainty are the immeasurable, but nonetheless invaluable, qualities of perspective, experience, common sense, and judgment.

Peril #1. Attributing Certitude to History

The notion that common stocks were acceptable as investments—rather than merely speculative instruments—can be said to have begun in 1925 with Edgar Lawrence Smith's *Common Stocks as Long-Term Investments*. Its most recent incarnation came in 1994, in Jeremy Siegel's *Stocks for the Long Run*. Both books unabashedly state the case for equities and both arguably helped fuel the great bull markets that ensued. Both, of course, were then followed by great bear markets. Both books, too, were replete with data, but the seemingly infinite data presented in the Siegel tome, a product of this age of computer-driven numeracy, puts its predecessor to shame.

But it's not the panoply of information imparted in *Stocks for the Long Run* that troubles me. Who can be against knowledge? After all, as the quotation goes, "knowledge is power." My concern is too many of us make the implicit assumption that stock market history repeats itself when we know, deep down, that the only certainty about the equity returns that lie ahead is their very uncertainty. We simply do not know what the future holds, and we must accept the self-evident fact that historic stock market returns have absolutely nothing in common with actuarial tables.

John Maynard Keynes identified this pitfall in a way that makes it obvious: "It is dangerous to apply to the future inductive arguments based on past experience . . .".[2] That's the bad news. "Unless one can distinguish the broad reasons for what it was." And that's the good news. For there are just two factors that explain equity returns, and it takes only elementary

[2] John Maynard Keynes commenting on Edgar Lawrence Smith's book, 1926.

addition and subtraction to see how they shape investment experience. The too-often-ignored reality is that, just as Keynes assured us, stock returns are shaped by (1) enterprise ("forecasting the prospective yield of assets over their whole life") and (2) speculation ("forecasting the psychology of the market").

Economics and Emotions

Curiously enough, in his Chapter 12 ("The State of Long-Term Expectation") on enterprise and speculation in *The General Theory,* Keynes used not a single statistic. But for more than a decade, I've taken the liberty of doing exactly that, although slightly changing the terminology. To describe *investment* return—the dividend yield on stocks plus the subsequent earnings growth—I use the term "economics" rather than "enterprise." To describe *speculative* return—the return generated by changes in the valuation or discount rate that investors place on that investment return—I use the term "emotions." This valuation is simply measured by the change in the earnings yield on stocks (or its reciprocal, the price-earnings ratio)[3]. For example, if stocks begin a decade with a dividend yield of 4% and experience earnings growth of 5%, the *investment* return would be 9%. If the price-earnings ratio rises from 15 times to 20 times, that 33% increase would translate into an additional *speculative* return of about 3% annually over ten years. Then, simply add the two returns together: Total return on stocks: 12%.[4]

So when we analyze the experience of the Great Bull Market of the 1980s and 1990s, we discern that in each of these remarkably similar decades for stock returns, dividend yields contributed about 4% to the return, the earnings growth about 6% (for a 10% *investment* return), and the average *annual* increase in the price/earnings ratio was a remarkable and unprecedented 7%. Result: Annual stock returns of 17% were at the highest levels, for the longest period, in the entire 200-year history of the U.S. stock market.

The Pension "Experts"

Who, you may wonder, would be so foolish as to blindly extrapolate the historical rate of return on stocks into the future? It is not only the "mass" of ignorant individuals that Keynes described, but even those experts in investing who ought to know better. Worse, even sophisticated corporate financial officers and their pension consultants follow the same course. A recent (and typical) corporate annual report from one Fortune 500 company for example states that "our asset return assumption is derived from a detailed study conducted by our actuaries and our asset management group, and *is based on long-term historical returns*." Astonishingly, but naturally, this policy leads corporations to raise their future expectations with each increase in past returns. At the outset of the bull market in the early 1980s, for example, major corporations assumed a future return on pension assets of 7%. By the end of 2000, just before the great bear market took hold, most firms had sharply raised their assumptions, some to 10% or even more. Since pension portfolios are balanced between equities and bonds, they had implicitly raised the expected annual return on the *stocks* in the portfolio to as much as 15%. ***Don't count on it*!**

Consider what a difference in the market outlook would have arisen between relying on extrapolation and on rational expectations as the new decade began on January 1, 2000. If we had been persuaded by history that the then-long-term annual return on stocks of 11.2% would continue, all would be well in the stock market. But if we had thought instead about economics and emotions, two things would have been obvious: First, with dividend yields having tumbled to 1%, even if that earlier 6% earnings growth were to continue (no mean challenge!), the investment return in the subsequent ten years

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[3] *The General Theory of Employment, Interest and Money*, Chapter 12. This chapter makes as good reading today as when I first read it as a Princeton student in 1950 and quoted from it in my thesis.

[4] I recognize that one should actually multiply the two (i.e., 1.09 x 1.03 = 1.123), obviously a small difference. But such precision is hardly necessary in the uncertain world of investing, and for the lay investor, simplicity is a virtue.

would be not 10%, but 7%. Second, speculative returns cannot rise forever. (Now he tells us!) And if price-earnings ratios, then at 31 times, had simply followed their seemingly universal pattern of reversion to the mean of 15 times, the total investment return over the coming decade would be reduced by seven percentage points per year. As the year 2000 began, then, reasonable expectations suggested that annual stock returns might just be zero over the coming decade.

So, if we listened to Keynes and simply thought about the broad reasons behind those prior returns on stock—investment vs. speculation—we pretty much knew *what* was going to happen: The bubble created by all of those emotions—optimism, exuberance, greed, all wrapped in the excitement of the turn of the millennium, the fantastic promise of the Information Age, and the "New Economy"—had to burst. While rational expectations can tell us *what* will happen, however, they can never tell us *when.* But the day of reckoning came within three months, and in late March 2000 the bear market began. Clearly, investors would have been wise to set their expectations for future returns on the basis of current conditions, rather than fall into the trap of looking to the history of total stock market returns to set their course. Is it wise, or even reasonable, to rely on the stock market to deliver in the future the returns it has delivered in the past? ***Don't count on it!***

Peril #2. A Bias Toward Optimism

The peril of relying on stock market history rather than current circumstances to make investment policy decisions is apt to be costly. But that is hardly the only problem. Equally harmful is our bias toward optimism. *The fact is that the stock market returns I've just presented are themselves an illusion.* Whether investors are appraising the past or looking to the future, they are wearing rose-colored glasses. For by focusing on theoretical *market* returns rather than actual *investor* returns, we grossly overstate the returns that equity investing can provide.

First, of course, we usually do our counting in *nominal* dollars rather than *real* dollars—a difference that, compounded over time, creates a staggering dichotomy. Over the past 50 years, the return on stocks has averaged 11.3% per year, so $1,000 dollars invested in stocks at the outset would today have a value of $212,000. But the 4.2% inflation rate for that era reduced the return to 7.1% and the value to just $31,000 in real terms—truly a staggering reduction. Then we compound the problem by in effect assuming that somewhere, somehow, investors as a group actually *earn* the returns the stock market provides. Nothing could be further from the truth. They *don't* because they *can't*. The reality inevitably falls short of the illusion. Yes, if the stock market annual return is 10%, investors as a group enjoy a *gross* return of 10%. But their *net* return is reduced by the *costs* of our system of financial intermediation—brokerage commissions, management fees, administrative expenses—and, for most investors, by the *taxes* on income and capital gains.

A reasonable assumption is that intermediation costs come to at least 2% per year. For taxable investment accounts, taxes could *easily* take another 2%. Result: In a 10% market, the *net* return of investors would be no more than 8% before taxes, and 6% after taxes. Reality: Such costs would consume 40% of the market's nominal return. But there's more. Costs and taxes are taken out each year in *nominal* dollars, but final values reflect *real*, spendable dollars. In an environment of 3% annual inflation, a nominal stock return of 10% would be reduced to a real return of just 7%. When intermediation costs and taxes of 4% are deducted, the investor's real return tumbles to 3% per year. Costs and taxes have consumed, not 40%, but 57% of the market's real return.

Taken over the long-term, this bias toward optimism—presenting theoretical returns that are far higher than those available in the real world—creates staggering differences. Remember that $212,000 50-year nominal return on a $1,000 investment? Well, when we took out the cost of inflation, it tumbled to $31,000 in real terms. But then deduct estimated investment expenses of 2%, and the value drops to $11,600. Finally, assume as little as 2% for taxes for taxable accounts, and that initial $1,000 investment is worth just $4,300 in real terms. *Some 98% of what we thought we would have has vanished into thin air*. If that $212,000 illustrates the amazing power of compounding returns, so that $4,300 illustrates the amazing power of compounding *costs.* Will you earn the stock market's full return? ***Don't count on it!***

Escaping Costs and Taxes

It goes without saying that few Wall Street stockbrokers, financial advisers, or mutual funds present this kind of real-world comparison. (In fairness, *Stocks for the Long Run* does show historic returns on both a real and nominal basis, although it largely ignores costs and taxes.) We not only pander to, but reinforce, the optimistic bias of investors. Yet while there's no escaping inflation, it is easily possible to reduce both investment costs and taxes almost to the vanishing point. With only the will to do so, equity investors can count on (virtually) matching the market's gross return: *Owning the stock market through a low-cost, low-turnover index fund*—the ultimate strategy for earning nearly 100% rather than 60% of the market's nominal annual return. ***You can count on it!***

The bias toward optimism also permeates the world of commerce. Businessmen consistently place the most optimistic possible face on their firms' prospects for growth . . . and are usually proven wrong. With the earnings guidance from the corporations they cover, Wall Street security analysts have, over that past two decades, regularly estimated average future five-year earnings growth. On average, the projections were for growth at an annual rate of 11½%. But as a group, these firms met their earnings targets in only three of the 20 five-year periods that followed—overly optimistic six out of every seven times! And the actual earnings growth of these corporations has averaged only slightly more than one-half of the average projection—just 6%.

How could we be surprised by this gap between guidance and delivery? The fact is that the aggregate profits of our corporations are closely linked, indeed almost in lock step, with the growth of our economy. It's been a rare year when after-tax corporate profits accounted for less than 4½% of U.S. gross domestic product, and they have yet to account for much more than 7%. Indeed since 1929, after-tax profits have grown at 5.6% annually, actually lagging the 6.6% growth rate of the GDP. In a dog-eat-dog capitalistic economy where the competition is vigorous and largely unfettered and where the consumer is king—more than ever in this age of information —how could the long-term profits of corporate America *possibly* grow faster than our GDP? ***Don't count on it*!**

Earnings: Reported, Operating, *Pro Forma*, or Restated

Our optimistic bias has also led to another serious weakness. In a trend that has attracted too little notice, we've changed the very definition of earnings. While *reported* earnings had been the, well, standard since Standard & Poor's first began to collect the data all those years ago, in recent years the *standard has changed to operating* earnings. Operating earnings, essentially, are reported earnings bereft of all those messy charges like capital write-offs, often the result of unwise investments and mergers of earlier years. They're considered "non-recurring," though for corporations as a group they recur with remarkable consistency.

During the past twenty years, *operating* earnings of the companies in the S&P 500 Index totaled $567. Largely a result of the huge "non-recurring" write-offs of the era, cumulative *reported* earnings came to just $507. So after paying $229 in dividends, instead of having $338 remaining to reinvest in the business, there was in fact just $278 to invest—20% less—mostly because of those bad business decisions. *Reported* earnings, not *operating* earnings, reflect the ultimate long-term reality of corporate achievement.

Pro forma earnings—that ghastly formulation that makes new use (or abuse) of a once-respectable term—that report corporate results net of unpleasant developments, is simply a further step in the wrong direction. What is more, even auditor-certified earnings have come under doubt, as the number of corporate earnings restatements has soared. During the past four years alone 632 corporations have restated their earnings, nearly five *times* the 139 restatements in the comparable period a decade earlier. Do you believe that corporate financial reporting is punctilious? ***Don't count on it!***

"Creative" Accounting

Loose accounting standards have made it possible to create, out of thin air, what passes for earnings. One popular method is making an acquisition and then taking giant charges described as "non-recurring," only to be reversed in later years when needed to bolster sagging operating results. But the breakdown in our accounting standards goes far beyond that: Cavalierly classifying large items as "immaterial"; hyping the assumed future returns of pension plans; counting as sales those made to customers who, in order to make their purchases, borrowed the money from the seller; making special deals to force out extra sales at quarter's end; and so on. If you can't merge your way into meeting the numbers, in effect, just change the numbers. But what we loosely describe as *creative* accounting is only a small step removed from *dishonest* accounting. Can a company make it work forever? ***Don't count on it*!**

That said, I suppose it does little harm to calculate the stock market's price-earnings ratio on the basis of anticipated *operating* earnings. The net result of using the higher (albeit less realistic) number is to make price-earnings ratios appear more reasonable; i.e., to make stocks seem cheaper. By doing so, the present p/e ratio for the S&P 500 Index (based on 2002 estimates) comes to a perhaps mildly-reassuring 19 times based on *operating* earnings, rather than a far more concerning 28 times based on *reported* earnings. But our financial intermediation system—Wall Street is, after all, a mighty machine designed to sell securities—has far too much optimism embedded in it to promulgate the higher p/e number.

Nonetheless, it is folly to rely on the higher earnings figure (and resultant lower p/e) without recognizing the reality that in the long run corporate value is determined, not only by the results of the firm's current operations, but by the entire amalgam of investment decisions and mergers and combinations it has made over time. *And they don't usually work*. Recently *Business Week* studied the $4 trillion of mergers that had taken place amid the mania of the late bubble and reported that fully 61% of them had destroyed shareholder wealth. It's high time to recognize the fallacy that these investment decisions, largely driven to improve the *numbers*, actually improve the *business*. ***Don't count on it!***

Peril #3. The Worship of Hard Numbers

Our financial market system is a vital part of the process of investing, and of the task of raising the capital to fund the nation's economic growth. We require active, informed markets and ask of them neither more nor less than to provide liquidity for stocks in return for the promise of future cash flows. In this way, stock owners are able to realize the present value of a future stream of income at any time. But in return for that advantage comes the disadvantage of the widely fluctuating moment-by-moment valuation of corporate shares. We demand hard numbers to measure an enterprise's accomplishments. *And we want them now*! Markets being what they are, of course, we get them.

But the consequences are not necessarily good. Keynes saw this relationship clearly, noting that "the organization of the capital markets required for the holders of *quoted* equities requires much more nerve, patience, and fortitude than for the holders of wealth in other forms . . . some (investors) will buy without a tremor unmarketable investments which, if they had (continuous) quotations available, would turn their hair gray." Translation: Owning investments that don't often trade is easier on the psyche.

This wisdom has been often repeated. It is what Benjamin Graham meant when he warned about the hazards when "Mr. Market" comes by every day and offers to buy your home at a current price. Investors who pay heed to Mr. Market are simply allowing transitory shifts in prices to get them thinking about the wrong things, and letting the emotions of the moment take precedence over the economics of the long term. As the Professor Graham pointed out, "in the short-run, the stock market is a *voting* machine; in the long-run it is a *weighing* machine."

Momentary Precision vs. Eternal Imprecision

Yet the Information Age that is part of this generation's lot in life has led us to the belief that the momentary *precision* reflected in the price of a stock is more important than the eternal *imprecision* in measuring the intrinsic value of a corporation. Put another way, investors seem to be perfectly happy to take the risk of being precisely wrong rather than roughly right. This triumph of perception over reality was reflected—and magnified!—in the recent bubble. The painful stock market decline that we are now enduring simply represents the return to reality. Is the price of a stock truly a consistent and reliable measure of the value of the corporation? ***Don't count on it*!**

Among the principal beneficiaries of the focus on stock prices were corporate chief executives. Holding huge numbers of stock options, they were eager to "make their numbers," by fair means or foul, or something in between. As the numbers materialized, their stock prices soared, and they sold their shares at the moment their options vested—as we know now, often in "cashless" transactions with bridge loans provided by the company. But unlike all other forms of compensation, the cost of fixed-price options was not considered a corporate expense. Such options came to be considered as "free," despite the fact that, to avoid dilution, most corporations simply bought compensatory shares of their own stock (at prices far above the option prices) in the public market.

It is not only that shares acquired through options were sold by executives almost as soon as they were exercised, nor that they were unencumbered by a capital charge nor indexed to the level of stock prices that make such options fundamentally flawed. It is that compensation based on raising the price of the stock rather than enhancing the value of the corporation flies in the face of common sense. Do stock options link the interests of management with the interests of long-term shareholders? ***Don't count on it*!**

Ignorant Individuals Lead Expert Professionals . . . into Trouble

Years ago, Keynes worried about the implications for our society when "the conventional valuation of stocks is established (by) the mass psychology of a large number of ignorant individuals." The result, he suggested would lead to violent changes in prices, a trend that would be intensified as even expert professionals—who, one might have supposed, would offset these vagaries by their perspective and judgement—follow the mass psychology, and try to foresee changes in the public valuation. As a result, he described the stock market as "a battle of wits to anticipate the basis of conventional values a few months hence rather than the prospective yield of an investment over a long term of years."

In my senior thesis of a half-century ago, I had the temerity to disagree. Portfolio managers in a far larger mutual fund industry, I suggested, would "supply the market with a demand for securities that is *steady*, *sophisticated*, *enlightened*, and *analytic*, a demand that is based essentially on the (intrinsic) performance of a corporation rather than the public appraisal of the value of a share, that is, its price." Well, 50 years later, it is fair to say that the worldly-wise Keynes has won, and that the callowly-idealistic Bogle has lost. And the contest wasn't even close! Has the move of institutions away from the wisdom of long-term investment and toward the folly of short-term speculation enhanced their performance? ***Don't count on it!***

Economics Trumps Emotion—Finally

In those ancient days when I wrote my thesis, investment committees (that's how the fund management game was then largely played) turned over their fund portfolios at about 15% per year. Today, portfolio managers (that's how the game is now played) turn over their fund portfolios at an annual rate exceeding 110%—for the average stock in the average fund, an average holding period of just eleven months. Using Keynes' formulation, "enterprise" (call it investment fundamentals) has become "a mere bubble on a whirlpool of speculation." It is the triumph of emotions over economics.

But it is an irrefutable fact that in the long run it is economics that triumphs over emotions. Since 1872, the average annual real stock market return (after inflation but before intermediation costs) has been 6.5%. The real *investment* return generated by dividends and earnings growth has come to 6.6%. Yes, speculative return slashed *investment* return by more than one-half during the 1970s and then *tripled*(!) it during the 1980s and 1990s. But measured today, after this year's staggering drop in stock prices, *speculation* provided a *net* negative annual return of -0.1% during the entire 130-year period. On balance, it neither contributed to, nor materially detracted from, investment return. Is it wise to rely on a healthy dollop of speculative return to enhance future returns on stocks? ***Don't count on it*!**

The fact is that when the perception—interim stock prices—vastly departs from the reality—intrinsic corporate values—the gap can *only* be reconciled in favor of reality. It is simply impossible to raise reality to perception in any short timeframe; the tough and demanding task of building value in a corporation in a competitive world is a long-term proposition. Nonetheless, when stock prices lost touch with corporate values in the recent bubble too many market participants seemed to anticipate that values would soon rise to justify prices. Investors learned, too late, the lesson: ***Don't count on it!***

Peril #4. The Adverse Real World Consequences of Counting

When we attribute certitude to history, when we constantly bias our numbers to the positive side, and when we worship the pleasing precision of momentary stock prices above the messy imprecision of intrinsic corporate values, the consequences go far beyond unfortunate numeric abstractions. These perils have societal implications, and most of them are negative.

For example, when investors accept stock market returns as being derived from a type of actuarial table, they won't be prepared for the risks that arise from the inevitable uncertainty of investment returns and the even greater uncertainty of speculative returns. As a result, they are apt to make unwise asset allocation decisions under the duress—or exuberance—of the moment. Pension plans that make this mistake will have to step-up their funding when reality intervenes. And when investors base their retirement planning on actually achieving whatever returns the financial markets are generous enough to give us and tacitly ignore the staggering toll taken by intermediation costs and taxes, they save a pathetically small portion of what they ought to be saving in order to assure a comfortable retirement. Nonetheless, wise investors can totally avoid both the Scylla of costs and the Charybdis of taxes by educating themselves, by heeding the counsel of experienced professionals, or by attending the wisdom of academe.

An Ill-Done System of Capital Formation

But the perils of our focus on stock prices—so easy to measure by the moment—rather than corporate values—so hard to measure with precision—is less easily overcome. Lord Keynes was right to worry that if enterprise becomes a mere bubble on a whirlpool of speculation, "the job (of capital formation) is likely to be ill-done." In the post-bubble environment, the job *has* been ill-done. But while some of the speculation has now been driven from the system and the day-trader is conspicuous by his near-absence, the mutual fund industry still needs to get its high-wire act together and at last go back to the future by returning long-term investment policy to its earlier primacy over short-term speculation.

It is not just our capital markets that have been corrupted by the perils of relying so heavily on the apparent certitude of numbers. It is our whole society. The economic consequences of managing corporations by the numbers are both extensive and profound. Our financial system has, in substance, challenged our corporations to produce earnings growth that has not been and cannot be sustained. When corporations fail to meet their numeric targets the hard way—over the long-term, by raising productivity, by improving old products and creating new ones, by providing services on a more friendly, more timely and more efficient basis, by challenging the people of the organization to work more effectively together (and those are the ways that our best corporations have achieved success)—they are compelled to do it in other ways.

One of these ways of course, is the aggressive merger and acquisition strategy I've earlier noted. Even leaving aside the commonplace that most mergers fail to achieve their goals, the companies that followed these strategies were well-described in a recent *New York Times* op-ed essay as "serial acquirers (whose) dazzling number of deals makes an absence of long-term management success easy to hide."[5] Tyco International, for example, acquired 700(!) companies before the day of reckoning came. But the final outcome of the strategy, as the *Times* essay explained, was almost preordained: "Their empires of (numbers) hype can be undone very quickly by market discipline." Are such strategies a formula for long-run success? ***Don't count on it!***

In this context, it's amazing how much of companies' returns today are based on financial factors rather than operating factors. The pension plan assets of the 30 companies in the Dow-Jones Industrial average now total $400 billion, not far from the corporations' collective book value of $700 billion. Off-balance sheet financial schemes proliferate. (Or *did*!) Selling put options to reduce the cost of repurchasing shares and avoid the potential dilution of stock options helped prevent earnings penalties in the boom, but in the bust has come back to deplete corporate coffers. And lending by major corporations to enable consumers to buy their wares has skyrocketed. Perhaps unsurprisingly, that strategy isn't looking so good in today's economic environment.

When Paper Covers Rock, What Comes Next?

Too many so-called industrial companies, have become financial companies—companies that *count* rather than *make*. (Witness the fact that the senior aide to the CEO is almost invariably the chief financial officer, often viewed by the investment community as the *eminence gris*.) Such companies, again quoting the *New York Times* article, "base their strategies not on understanding the businesses they go into, but assume that by scavenging about for good deals, they can better allocate their financial resources than can existing financial markets." As we now observe the consequences of this strategy, we come to a painful realization. ***Don't count on it!***

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[5] Jeffrey Sonnenfeld, *The New York Times,* June 5, 2002.

Most of us probably still remember the children's game in which rock breaks scissors, scissors cut paper, and paper covers rock. In manias, as prices lose touch with values, paper indeed covers rock. "Paper" companies that *count* have acquired "rock" companies that *make*, and the results have been devastating. When I mention AOL/Time Warner, Qwest/U.S. West, and WorldCom/MCI, I don't have to explain which is paper and which is rock. These mergers are among the most poignant examples of a phenomenon in whose aftermath hundreds of thousands of loyal long-term employees have lost their jobs, their retirement savings slashed unmercifully.

That the penalties for our financial mania are borne by our society was well-stated in a perceptive op-ed piece in *The Wall Street Journal*: "Stock prices are not simply abstract numbers. (They) affect the nature of the strategies the firm adopts and hence its prospects for success, the company's cost of capital, its borrowing ability, and its ability to make acquisitions. *A valuation unhinged by the underlying realities of the business can rob investors of savings, cost people far more innocent than senior management their jobs, and undermine the viability of suppliers and communities*."[6] Yes, the human consequences of excessive reliance on numbers, as we now know, can be remarkably harsh.

Counting at the Firm Level

The perils of excessive numeracy don't end there. Even otherwise sound companies dwell too heavily on what can be measured—market share, productivity, efficiency, product quality, costs—and set internal goals to achieve them. But when *measures* become *objectives*, they are often counterproductive and self-defeating. Most measurements are inherently short-term in nature. (Call it the Six-Sigma syndrome.) The far more durable qualities drive a corporation's success over the long-term are not easily measured. Yet character, integrity, enthusiasm, conviction, and passion are every bit as important to a firm's success as precise measurements. It is *human beings* who are the prime instrument for implementing a corporation's strategy. If they are inspired, motivated, cooperative, diligent, and creative, the firm's stockholders will be well served.

Recent years have shown us that when ambitious chief executives set aggressive financial objectives, they place the achievement of those objectives above all else—even above proper accounting principles and a sound balance sheet, even above their corporate character. Far too often, all available means—fair or foul—are harnessed to justify the ends. As good practices are driven out by bad, and the rule of the day becomes "everyone else is doing it, so I will too," a sort of Gresham's law comes to prevail in corporate standards.

"Management by measurement" is easily taken too far. I recently read of a chief executive who called for earnings growth from $6.15 per share in 2001 to a nice round $10 per share in 2005—an earnings increase of almost 15% per year—but without a word about how it will be done. I don't believe that the greater good of shareholders is served by such a precise yet abstract numeric goal. Indeed what *worries* me is not that it *won't* be achieved, but that it *will*. In an uncertain world, the company may get there only by manipulating the numbers or even worse, relying on cutbacks and false economies, and shaping everything that moves (including the human beings who will have to bend to the task) to achieve the goal. *But at what cost?* The sooner companies cease their aggressive "guidance," the better. For I believe that a quarter-century from now the companies that will be leading the way in their industries will be those that make their earnings growth, not the *objective* of their strategy, but the *consequence* of their corporate performance. Will the numbers *counters* outpace the product *makers*? ***Don't count on it!***

[6] Joseph Fuller and Michael C. Jensen, *The Wall Street Journal*, December 31, 2001.

An Individual Perspective

Lest I be accused of *innumeracy*, however, please be clear that I'm not saying that numbers don't matter. Measurement standards—*counting*, if you will—are essential to the communication of financial goals and achievements. *I know that*. But for the past 28 years I've been engaged in building an enterprise—and a *financial* institution at that—based far more on the sound implementation of a few common sense investment ideas and an enlightened sense of human values and ethical standards than on the search for quantitative goals and statistical achievements. Vanguard's market share, as I've said countless times, must be a *measure*, not an *objective*; it must be *earned*, not *bought*. The steady increase in the firm's market share over more than two decades says much about the fact that such an approach need not be counterproductive.

Our strategy arose from a conviction that the best corporate growth comes from putting the horse of doing things for clients ahead of the cart of earnings targets. *Growth must be organic, rather than forced.* And I've believed it for a long time. Indeed, consider the perspective that follows about giving too much credence to mere numbers, with which, as head of Wellington Management Company, I closed my annual staff message *thirty years ago*:

> *"The first step is to measure what can be easily measured. This is okay as far as it goes. The second step is to disregard that which cannot be measured, or give it an arbitrary quantitative value. This is artificial and misleading. The third step is to presume that what cannot be measured really is not very important. This is blindness. The fourth step is to say that what cannot be measured does not really exist. This is suicide."*[7]

There is, then, a futility in excessive reliance on numbers, and a perversity in trying to measure the immeasurable in our uncertain world. When *counting* becomes the name of the game to the exclusion of human values, our financial markets, our corporations and our society pay the price. ***So don't count on it!***

Numbers are a necessary tool and a vital one. But they are a *means* and not an *end*. They are a condition *necessary* to measure corporate success, but not a condition *sufficient.* To believe that measurements—in the absence of the immeasurable qualities of experience, judgment, and character—are all that illuminate the truth is one of the great failings of our contemporary financial and economic system.

In little more than half a century, the academic study of how economies and financial markets work has moved from the worldly philosophies of yore to the higher mathematics of the Information Age. Yet our field must remain, above all, concerned with the eternal search for truth. If the academy has been part of the problem, it must be part of the solution. Two thousand years ago the Roman poet Horace put it perfectly:

> *"Good Athens gave my art another theme*
> *To sort what is from what is merely seen*
> *And search for truth in groves of academe."*

[7] From a 1972 speech by pollster Daniel Yankelovich

Note: The opinions expressed in this speech do not necessarily represent the views of Vanguard's present management.