

MEASUREMENT OF THE SAFETY OF A MUTUAL FUND

THE DERIVATION & SIGNIFICANCE OF THE PORTFOLIO QUALITY INDEX (PQI), PORTFOLIO LIQUIDITY INDEX (PLI) & PORTFOLIO CAPITALIZATION INDEX (PCI) MEASUREMENT OF THE SAFETY OF A MUTUAL FUND

SOME INVESTMENT REALITIES

The most valuable tenet upon which to premise an investment philosophy is recognition of the fact that "there is no free lunch." All investing involves trade-offs. For every perceived reward, there is some associated risk—whether perceived or not. Hence, it is incumbent upon every investor, tempted by the potential rewards of any investment, to ascertain the nature and magnitude of the risks involved. To assume that such risks do not exist, just because they are not readily apparent, may be an invitation to disaster.

For all practical purposes, it is folly to assume that the securities markets are not "efficient"—that is, to assume that we can outguess them, or that we can employ the services of some person or organization that can outguess them. Countless scholarly studies have demonstrated that not even the so-called "professionals" can outperform the markets in which they invest with a consistency greater than that dictated by random chance. If there is someone who can, he is surely not foolish enough to dilute the effectiveness of his techniques by making his services available to others. Furthermore, if such a person or organization does exist, we ought not be so self-assured as to think we are capable of identifying who or what it is.

There is decidedly a tendency among investors, especially when selecting mutual funds, to overemphasize the importance of past performance. If performance has been above-average in the past, it is most usually because the fund has borne above-average risks, and these risks have proved fruitful. As to the future, the issue is not whether one wants to enjoy above-average performance. Everybody does. The question is whether or not we want to subject our capital to the above-average risk necessary to try to achieve that above-average performance. All too often, when an investor finally understands and appreciates the nature and magnitude of the risks to which he must expose himself for a chance to earn this above-average return, he changes his mind.

THE SIGNIFICANCE OF "QUALITY" IN A MUTUAL FUND PORTFOLIO

I have observed belief in two investment myths over the years, both of which have proved inimical to the financial well-being of great numbers of investors.

The first myth has been that, if an investment is a "bond," it must, of necessity, be "safe." The fact that many long-term Treasury bonds (in spite of their being guaranteed by the United States Government) lost half their nominal value as interest rates rose (and lost most of their remaining

value through the erosion of purchasing power due to inflation), over the third of a century following World War II, did much to dispel this myth; but, still, it has tended to persist.

The late 1980s and early 1990s was not the first time in the post-War era that investors lost their shirts on "junk" bonds; but, once again, investors had an opportunity to learn, the hard way, that the word "bond" is not synonymous with the word "safe."

It is the second popular myth that I want to discuss here, however, because it is the one by which I believe hundreds of thousands of investors are currently being deceived. That is the belief that, if an investment is a "mutual fund," it also must be "safe." Over and over again, I have heard the inane comment that somebody bought a mutual fund because, "though he may not make so much, he cannot lose." The presumptions are that, because mutual funds are diversified, because they are "professionally" managed, because they have been going up recently, and because so many people are buying them, they must, therefore, be "safe."

I can think of few assumptions more hazardous to one's wealth than this one. There is just no way that a portfolio of investments can be any safer than the investments that constitute the portfolio, whether there are a lot of such investments in the portfolio, or a few; whether they have been purchased directly by the investor, or through a so-called "professional" intermediary; whether they have been going up in the recent past, or going down; or whether other people have been buying them, or not. The "quality," and so the "safety," of a portfolio of securities is absolutely identical to the "quality" or "safety" of the securities that make up the portfolio, irrespective of the circumstances accompanying their getting into the portfolio.

I think that one of the best ways to drive this point home is to look at what happened to the net asset values of some of the glamour, "go-go," and "junk" common stock mutual funds of the late 1960s during the market crunch of the mid-1970s. A quarter of a century ago, there were relatively few mutual funds (less than 500), compared to the number available today (over 10,000), yet the devastation many of them wrought upon their shareholders is mind boggling. I have listed below a sampling of some of the more glamorous funds of that period, together with the depth of decline in the net asset value of each when its speculative bubble burst:

MUTUAL FUND	1964-1975 NAV		%	MUTUAL FUND	1964-1975 NAV		%
	HIGH	LOW	DECLINE*		HIGH	LOW	DECLINE*
Admiralty Growth Fund	\$16.85	\$3.01	-82%	Growth Fund of America	\$12.23	\$2.92	-76%
All American Fund	1.53	0.27	-82	Heritage Fund	4.52	0.66	-85
American General Venture Fund	17.14	4.30	-75	Industry Fund of America	8.91	1.21	-86
American Investors Fund	11.57	2.90	-75	Keystone Custodian S-4 Fund	7.82	1.91	-76
Babson Investment Fund	12.19	1.71	-86	Manhattan Fund	12.12	1.93	-84
Brown Fund of Hawaii	9.75	1.83	-81	Pennsylvania Mutual Fund	13.32	0.97	-93
Capital Shares Fund	12.10	3.00	-75	Philadelphia Fund	16.24	3.91	-76
Constellation Growth Fund	14.78	3.61	-76	Rainbow Fund	16.69	1.10	-93
Davidge Early Bird Fund	19.01	4.48	-76	Revere Fund	20.06	3.88	-81
Delta Trend Fund	10.09	2.57	-75	SafeCo Growth Fund	14.32	3.64	-75
Eaton & Howard Special Fund	17.29	3.97	-77	Seaboard Leverage Fund	18.66	3.40	-82
Essex Fund	27.41	4.65	-83	20th Century Growth Fund	7.06	1.62	-77
Fletcher Fund	10.84	2.75	-75	USLIFE Apex Fund	12.67	2.36	-81
44 Wall Street Fund	21.40	3.58	-83	Vanderbilt Income Fund	10.91	2.14	-80
Founders Growth Fund	23.60	3.51	-85	Western Industries Shares Fund	10.23	1.49	-85

Source: Standard & Poor's

* Actual shareholder loss of principle would be less by the amount of any capital gains distributions between the time of the high and the time of the low in NAV

In retrospect, it should also be noted that, though the mid-1970s may have been difficult times, they were not the worst of times. We had a recession, but it was no Great Depression. In the sixteen-month recession of 1974-75, real Gross National Product declined only 1.8%; in the four years of the depression of 1929-33, real GNP declined 37.2%. What might have happened, one might ask, to the net asset value of a mutual fund that had declined by 75% by the mid-1970s if we had had an economic setback of major proportions?

It is my own firm belief that the prime prerequisite in the acquisition and management of any security portfolio—whether through direct investment, or through the vehicle of a mutual fund—unless it is deliberately meant to be a "speculative" portfolio, is that it be made up, for the most part, of "high-quality" securities.

The reason for having high-quality securities in a portfolio is not to maximize one's short-term return; it is to minimize one's long-term loss. Admittedly, a price must be paid for the privilege of owning high-quality securities. This price is that, when low-quality securities are going up more than high-quality securities, we do not participate in the incremental gains bestowed by the former.

Our reward for this sacrifice is that, when low-quality companies go bankrupt and the prices of their securities collapse and never recover, as holders of high-quality securities, not only are our companies more apt to survive the debacle, but they may be even further nurtured by the carnage of the low-quality companies that have failed, as the high-quality companies pick up the business that the latter companies have left behind.

There are two analogies I like to use to try to explain the significance of "quality" in an investment portfolio. The first is an "insurance" analogy. We carry fire insurance on our houses and accident insurance on our cars, not because we "expect" our houses to burn down or because we "expect" to be in automobile accidents. We carry the insurance because, if we do not have it,

and a calamity does strike, it may be one from which, without insurance, we cannot otherwise financially recover.

Similarly, the element of "high-quality" serves the purpose of "insurance" in an investment portfolio. It provides some degree of protection against an economic, monetary, or market calamity which we cannot foresee, which we might not withstand, or from which we might not otherwise recover.

My second analogy concerns "floodplains" along the shores of a great river like the Mississippi. We might elect to build a house in a 25-year floodplain (where, in any given year, we stand a chance of one in twenty-five of being the victim of a flood), and have a good view of the river; or, we might elect to build in a 100-year floodplain (with only one chance in a hundred of being flooded), with a less favorable view of the river, but with a greatly reduced possibility that we may see our home washed away by the water. The problem for many mutual fund investors is that, while they think they have built in a 100-year floodplain, they really have built in a 25-year floodplain.

THE PORTFOLIO "QUALITY" INDEX (PQI)

One of the best ways of measuring the "quality" or "safety" of any investment portfolio is to take a weighted-average of the value of the securities that constitute the portfolio that are classified by Standard & Poor's as "above-average," "average," and "below-average." As a frame of reference, both the Dow-Jones Industrial Average and the Standard & Poor's 500 Stock Composite, at any given time, are made up of very close to 40% stocks that are rated by Standard & Poor's as "above-average" (A+, A, A-), 20% that are rated "average" (B+), and 40% that are "below-average" (B, B-, C, D, or not rated). Except in those instances where a client unequivocally seeks to speculate, it may be a good idea to limit portfolio holdings to those common stocks of "above-average" quality, as indicated by Standard & Poor's ratings of A+, A, and A-.

We have further constructed what we call a "Portfolio Quality Index" (PQI) whereby stocks with "average" S&P ratings are assigned a score of "0.5," those with "below-average" ratings are assigned a score of "0.0," and those with "above-average" ratings are assigned a score of "1.0." The percentage figure arrived at relates the quality of the portfolio being measured to the quality of a portfolio made up of all the stocks in the Standard & Poor's 500 and the Dow-Jones Industrial Average. Using this index, a portfolio made up entirely of "above-average" issues receives the highest possible score of 100%; the S&P 500 and the Dow-Jones Industrials receive "average" scores of about 50%; and a portfolio made up entirely of "below-average" stocks would receive a score of 0%. The "Portfolio Quality Index," then, is an approximate measure of the quality of a common stock portfolio, expressed as a percentage of the quality of a portfolio consisting of all "above-average" stocks, and also relating the portfolio to the quality of the market as a whole.

As a further frame of reference, or quality benchmark, it is my own conviction that certain portfolios should have high PQIs. If a portfolio represents what I call "irreplaceable funds," such as an elderly person's retirement savings, a child's education fund, or anybody's large inheritance, the PQI of the portfolio should be well above 50%, and probably above 80%. If, on the other hand, the portfolio is made up of funds deposited by a young professional or businessman who is not concerned about the loss of principal, a PQI of less than 80%, or even less than 50%, might be acceptable. As a general rule, I would think that most of the money currently coming out of bank certificates of deposit and going into the stock market had ought to go into portfolios with PQIs well above 80%. Presumably, if CD money were money for which safety was not the prime consideration, it never would have been in CDs in the first place. The average PQI of the portfolios we monitor is well above 90%.¹

THE SIGNIFICANCE OF "LIQUIDITY" IN A MUTUAL FUND PORTFOLIO

Liquidity refers to the ability to buy or sell an asset without inordinately influencing the price at which the transaction is consummated.

Mutual funds, by virtue of their large size, and so the large size of the blocks of stock they must trade, are perennially plagued with liquidity problems to some degree. Institutions refer to these liquidity problems as their "market impact" costs. Market impact costs are the premiums they must pay above the going market price to buy a stock and the concessions they must accept below the going market price to sell, to accommodate the large size of the positions they need to trade. In normal times market impact costs on a single purchase or sale for a typical institution may vary anywhere from as little as 1/2 of 1% of the total value of the position for a small trade in a large capitalization company to as much as 20% of the total value of the position for a large trade in a small capitalization company.

It is for this reason that, in normal times, mutual funds invested in U. S. stocks collectively underperform the U. S. market by about 3% per year, and mutual funds invested in foreign stocks collectively underperform foreign markets by about 4% per year.

¹ If there are bonds in the portfolio, we classify those with ratings of A, AA, and AAA as "above average"; those rated BBB as "average"; and those rated less than BBB as "below-average." Bonds rated below BBB are conventionally known as "junk" bonds.

Otherwise lower quality portfolios also tend to have large numbers of securities not rated by Standard & Poor's at all (designated "NR"). The question, then, arises as to how these non-rated issues should be classified, and so scored, in calculating our PQI. For bonds, we utilize the *Morningstar Mutual Funds* service convention of classifying non-rated municipal bonds as "BB" and non-rated corporate bonds as "B." The service, however, has no comparable quality rating system for equities, and so no convention for classifying non-rated common stocks.

To arrive at an appropriate classification for common stocks without S&P ratings, we surveyed all of those securities covered by S&P for a 12-month period, noting the initial ratings received by those issues that went from a non-rated to a rated status when they first became rated, and noting those ratings carried by those issues that were dropped back from a rated to a non-rated status just before they lost their ratings.

Our analysis revealed the following: The modal (most common) rating for stocks when initially rated was a "C," while the median (mid-point) rating for such stocks was a "B-." For stocks becoming non-rated, both the mode and the median were ratings of "D." Our PQI does not discriminate among stocks rated as low as "B," "B-," "C," and "D"; but, if it did, it appears that non-rated stocks would most legitimately be consigned to the lower end of this spectrum. In any event, "Non-Rated" issues clearly belong in the "Below-Average" category.

Liquidity in the stock market, however, is less of a problem in bull markets such as we have enjoyed over most of the period since August 1982. As long as the demand to buy stocks exceeds the demand to sell, though institutions may have to pay substantial premiums to buy, the concessions they must accept to sell are of lesser consequence. Furthermore, in a bull market, the premiums paid by institutions for individual purchases are masked by the overall rise in the market. Mutual fund shareholders who are making money do not, very vociferously, complain that they should be making still more money. For mutual funds with net inflows of cash, liquidity problems are of even less concern. New investment commitments can be made by simply deploying the new cash, and so without having to sell other securities to raise the money needed to buy.

Bear markets and net redemptions for mutual funds, however, put all of the foregoing into reverse. Bear markets can cause net fund redemptions; net redemptions must be accommodated by an excess of portfolio sales over portfolio purchases; and heavy sales exacerbate market impact costs. A real concern today, throughout the investment community, is that many mutual funds that have grown especially large, and others that have specialized in smaller capitalization companies, may suffer enormous losses if they are required to sell massive amounts of stock to meet shareholder redemptions. Mutual funds have not had such a problem since the 1970s, at which time, as previously noted, there were only about 500 funds in existence, as compared to over 10,000 today. Unless we are willing to believe that we shall not have another bear market, or that mutual funds will never again collectively experience net redemptions, liquidity will surely be a problem for these institutions at some point down the road. Given the many-fold increase in the number of funds and the many-fold increase in their average size, the problem next time around may dwarf the problem that impacted the funds in the 1970s. Unfortunately, too, as with fires and floods, it is always too late to prepare after the misfortune has hit.

One way to address the potential problem of massive losses due to mutual fund illiquidity problems is to confine mutual fund investments to those funds which, in turn, confine their investments to issues in which the size of their individual security positions are small relative to the market capitalizations of the companies in which they invest.

THE PORTFOLIO "LIQUIDITY" INDEX (PLI)

Our Portfolio Liquidity Index (PLI) for a mutual fund is a relatively simple calculation. One starts with the total net asset value of the mutual fund, multiplies that figure by the percentage of the entire fund in common stocks, and divides by the number of common stocks in the portfolio. This provides the size of the fund's average position in a common stock. One next divides this figure by the median capitalization of the companies in which the fund invests. This median capitalization is the total dollar value of all the outstanding shares of stock in the average size company in which the particular fund currently has positions.

Our studies indicate that funds typically average positions equal to about 1/2 of 1% of the total outstanding shares in the companies they own. 1% positions are very much on the high side,

while positions of less than 1/10 of 1% are very much on the low side. If one multiplies the size of this average position by 10,000 and subtracts the product from 100, one has a pretty good index of the fund's liquidity, measured on a scale of 0% to 100%. A very few funds will have PLIs that fall above 100%, and a few will have PLIs below 0%. Most, however, will fall within the zero-to-one-hundred range; and the average will be about 50%. In fact, our studies further indicate that the distribution throughout the range is relatively uniform: a PLI of 80% indicates that a fund is probably more liquid than about 80% of all funds; while a PLI of 20% indicates that a fund is probably less liquid than about 80% of all funds. In other words, the PLI serves as an approximate "percentile" score.²

THE SIGNIFICANCE OF THE AVERAGE "CAPITALIZATION RATE" OR AVERAGE PRICE-EARNINGS RATIO IN A MUTUAL FUND PORTFOLIO

The most common measure of the price level of a common stock is its price-earnings ratio (P/E)—the share price divided by the company's earnings per share. The reciprocal of the P/E is what is known as the "capitalization" rate. If, for example, a stock sells at 20 times earnings, the company's earnings are being capitalized at 5% (1/20); if the stock sells at 25 times earnings, its earnings are capitalized at 4% (1/25); and, if a stock sells at 10 times earnings, those earnings are capitalized at 10% (1/10).

If all other things were equal, it would be better to own a stock for which the marketplace capitalized earnings at 10% than one for which earnings were capitalized at 5%, just as it would be more desirable to get 10% interest in the bank than to receive only 5%. It is, however, because all other things are not equal that the earnings of some companies are capitalized at 10%, while those of other companies are capitalized at 5%. Lower rates of capitalization are associated with higher quality and/or higher anticipated rates of growth. In other words, if a company is of high enough quality and/or is growing fast enough, it may be able to satisfy its shareholders by earning only 5% on their dollar of investment, rather than having to earn 10%, as might be the case with a lower quality and/or slower growing company.

To see how lower capitalized (high price-earnings ratio) companies have the potential for above-average declines in declining markets, let us refer to the following example:

² In the case of a bond fund, we define liquidity in terms of the average maturity of the bonds in the portfolio. Long-term bonds are typically less liquid than short-term bonds. The reason for their lesser liquidity is the greater uncertainty of the ability of the guarantor of the bonds to pay back the principal borrowed when due. While we may have the utmost conviction that an issuer will remain viable over the next two years and so be able to redeem bonds outstanding that mature in two years, no such level of confidence can be attached to the same company's ability to redeem bonds that will not come due for fifteen years. The world of capitalism is much too dynamic to afford anywhere near the degree of certainty regarding the health of an enterprise many years out as it is at some point in time near at hand.

Our studies indicate that the average maturities in mutual fund bond portfolios gravitate remarkably near 10 years. We construct our liquidity index for bond portfolios by multiplying the average maturity of the portfolio by 5 and subtracting the product from 100%. Bond portfolios with various maturities, then, generate scores as follows: 10 years, 50%; 15 years, 25%; 20 years, 0%; 5 years, 75%; and 0 years, 100%—which would be more like a money market fund.

A	Market Environment	Bullish	Bearish
B	Bank Interest	4%	6%
C	Premium for Equity	+1%	+2%
D	Average Capitalization Rate	=5%	=8%
E	Discount for Glamour	-3%	-1%
F	Capitalization Rate for Glamour Stock	=2%	=7%
G	Average P/E	20.0x (1/.05)	12.5x (1/.08)
H	Glamour P/E	50.0x (1/.02)	14.3x (1/.07)
I	Potential Average Price Decline		-38%
J	Potential Glamour Price Decline		-71%

Let us assume that we go from a bull market to a bear market (Row A) which is accompanied by (and perhaps even caused by) a significant rise in interest rates. Bank interest goes from 4% to 6% (B). Whereas, during the bull market, investors required only a 1% premium to hold equity (common stocks) as opposed to money in the bank, they are less enthusiastic about equity in a bear market and so require a 2% premium to be persuaded to hold common stocks (C). The average capitalization rate for equity, then, goes from 5% in the bull market to 8% in the bear market (D).

During the euphoria of the bull market, companies with the potential for high-growth, which we call here "glamour" stocks, are accepted in the marketplace at a capitalization discount of 3%; in the bear market, however, the market accords this potential for growth a value of only 1% (E). Whereas the capitalization rate for glamour stocks in the bull market was 2%, their capitalization rate in the bear market rises to 7% (F).

Because price earnings ratios are the reciprocals of capitalization rates, we see that, as we go from the bull market to the bear market, the price-earnings ratio for the average stock declines from 20-to-1 to 12.5-to-1 (G), while the price-earnings ratio for glamour stocks declines from 50-to-1 to 14.3-to-1 (H).

Whereas these contractions in price-earnings ratios result in price declines of 38% for the average common stock (I), they result in price declines of 71%, or nearly twice as much, for the glamour stocks (J).

THE PORTFOLIO "CAPITALIZATION" INDEX (PCI)

The Portfolio Capitalization Index (PCI) is a measure of the weighted average of the price-earnings ratios of the companies in the mutual fund portfolio, relative to the average price-earnings ratios of the stocks in the Standard & Poor's 500 Composite Stock Index. Specifically, the PCI is arrived at by subtracting the average relative P/E of the stocks in the mutual fund portfolio from 150%. If the average relative P/E for a fund were 150%, the fund would have a PCI of 0%; if the average relative P/E for the fund were 100%, the fund would have a PCI of 50% which would be the same as the PCI for the S&P 500; and, if the fund had a relative P/E of 50%, it would have a PCI of 100%.

Though possible, it is unlikely that a mutual fund portfolio will have an average price-earnings ratio either more than 150% or less than 50% that of the S&P 500, and so unlikely that it will have a PCI outside the 0% to 100% range. It is further reasonable to presume that the market risk associated with PCIs is approximately linear. That is, a mutual fund with a PCI of 25% is probably vulnerable to three times the degree of collapse in net asset value in a bear market as is a mutual fund with a PCI of 75%.³

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³ For bond funds, we use "duration" as a proxy for the equivalent of price-earnings ratio. Duration is one of the most esoteric concepts in the field of security analysis. It is most commonly used in the analysis of bonds and bond portfolios, though it is sometimes used in the discussion of common stocks as well. Bond duration is a complicated mathematical combination of a bond's maturity and its coupon rate. The longer to a bond's maturity, the longer its duration; and the higher its coupon rate, the shorter its duration. Duration may be described as a measure of the "payback" period for a bond, some of which payback comes in the form of semi-annual interest payments, and the rest of which comes in the form of a return of principal at maturity.

The duration of a bond or a bond portfolio is generally regarded as the best measure of the "interest-rate-sensitivity" of that bond or bond portfolio. The longer the duration, the greater will be the decline in a period of rising interest rates. In this sense, duration provides a measure of the price vulnerability of a bond very similar to that provided by the price-earnings ratio for a stock.

As average maturities for mutual fund bond portfolios cluster around 10 years, so their average durations, conveniently, cluster around 5 years. We therefore define our PCI for bond portfolios as 100% minus 10 times the duration of the portfolio. A portfolio with a duration of 5 years scores 50%; one with a duration of 10 years scores 0%; and one with a duration of 0 years scores 100%—essentially a money market fund.

In the case of mutual funds invested predominantly in foreign stocks, the relative price-earnings ratio of the portfolio is measured against the price-earnings ratio of the Morgan-Stanley EAFE (Europe, Australia, Far East) Capital Index.