

CHAPTER 3: Asset Classes

In Chapter Two, we describe a bottom-up approach to portfolio design. The approach concentrates on purchases and sales of individual securities (stocks & bonds). By contrast, a top-down approach emphasizes diversification through asset class investing rather than security selection or market timing transactions.¹ Asset classes represent broad cross sections of all (or most) securities within a capital market. Commonly used vehicles for such investments are index funds, although there are many investment product variations.²

An asset class is a building block of a portfolio. An asset class is a set of securities that:

- Exhibit common statistical, economic or accounting characteristics.
- Are expected to exhibit common risk/reward responses to changes in economic conditions. That is to say, the responses are similar within the asset class, and relatively different between any two asset classes.
- May be categorized into two ‘macro’ groupings; fixed income (bonds), and equity (stocks). Beyond this, the responses to changes in economic conditions may qualify

certain sub-groupings of stocks and bonds as asset classes – e.g., U.S. real estate stocks respond differently to economic climates than, say, Euro-denominated bonds.

This Chapter provides a brief introduction to some of the more commonly used asset classes.³

▲ U.S. EQUITIES (STOCK)

U.S. Equities: Historical Performance Relative to Bonds and Inflation

Historically, returns from U.S. stocks have outpaced those from investment grade U.S. corporate and government debt. For example, one dollar invested in common stocks (as represented by the Standard & Poor’s [S&P] 500 Stock Index) at the beginning of 1926 would have been worth \$4,667.13 (assuming dividend reinvestment) by the end of 2013. The same dollar invested in long-term U.S. Government Bonds would have been worth just \$109.14. If invested in U.S. Treasury Bills (30-day), the dollar would have grown to only \$20.58. Inflation over this period required an increase to \$13.00 to maintain purchasing power. The greatest

¹ Under certain conditions, it may be prudent to eschew broad diversification. This is, however, a complex issue beyond the scope of an introductory essay on portfolio management. Interested readers may find further information in Collins, Patrick J., “[Prudence](#),” *The Banking Law Journal* (January 2007), pp. 3-70. This is available on the Schultz Collins website.

² For example, there are capitalization-weighted indexes, equal-weighted indexes, price-weighted indexes, and so forth. For additional details see the article on our website: “[Does Index Selection Matter?](#)” (IQ 2003 Issue #1). This is available on the Schultz Collins website.

³ Some have argued that life insurance is an asset class. For a discussion of the merits of this proposition, as well as an in-depth review of asset class characteristics, see: Collins, Patrick J. and Lam Huy, “[Asset Allocation, Human Capital, and the Demand to Hold Life Insurance in Retirement](#)” *Financial Services Review* (Winter, 2011), pp. 303-325. This is available on the Schultz Collins website.

The historical advantage of equities is even more obvious when returns are adjusted for inflation.

Time Period	# of Years	S&P 500	U.S. Long-Term Gov't Bonds	Inflation (CPI)
1926-2013	88	10.08%	5.48%	2.96%
1964-2013	50	9.96%	7.23%	4.13%
1974-2013	40	10.97%	8.55%	4.13%
1984-2013	30	11.09%	9.44%	2.82%
1994-2013	20	9.22%	7.03%	2.37%
2004-2013	10	7.41%	6.07%	2.38%
2009-2013	5	17.94%	1.94%	2.08%

FIGURE 3-1

Equities have consistently and significantly outperformed inflation over extended holding periods.⁶

Time Period	# of Years	S&P 500	U.S. Long-Term Gov't Bonds	Inflation (CPI)
1926-2013	88	6.91%	2.45%	2.96%
1964-2013	50	5.60%	2.99%	4.13%
1974-2013	40	6.57%	4.25%	4.13%
1984-2013	30	8.05%	6.44%	2.82%
1994-2013	20	6.69%	4.55%	2.37%
2004-2013	10	4.91%	3.61%	2.38%
2009-2013	5	15.53%	-0.14%	2.08%

FIGURE 3-2

return on investment over this period was produced by small stocks,⁴ which saw a one dollar investment increase to \$26,641.17.⁵

The fact that equity investments have outperformed fixed income investments over long time horizons is manifest in **FIGURE 3-1**.

Volatility and Return

Given a long-term planning horizon, equity returns are generally higher than fixed income returns. In the short run, however, equity returns are more volatile. Equity investors must be compensated for bearing this increased risk. **FIGURE 3-3** highlights the ranges of annual returns for five major asset classes over the 90-year period from 1926 through 2015⁷. All returns are nominal – that is, they have not been adjusted for inflation.

Equities exhibit the widest range of returns, with small company stock returns hitting a high of +142.9% in 1933 and a low of – 58.0% in 1937. The S&P 500 has a narrower range of historical returns. Its best month

⁴ As measured by the 9th and 10th deciles of the Center for Research in Securities Prices [CRSP] database.

⁵ Ibbotson Associates (Chicago, 2014).

⁶ The reason that U.S. stocks outperform U.S. bonds, however, remains controversial. Economic theory suggests that historical excess reward (stock return – risk-free rate = equity risk premium) received by owners of U.S. stocks is abnormally high when adjusted for risk. Economists refer to this controversy as the ‘Equity Risk Premium Puzzle.’ The past outperformance of stocks is by no means a guarantee that it will continue in the future. Mark Rubinstein, for example, asks: “how long must an investor be prepared to wait before the probability becomes high that an all-stock portfolio will outperform an all-bond portfolio?” Rubinstein develops the following theorem: Assume that all available assets collectively follow a stationary random walk in continuous time (with finite variance). Let X and Y be the values after elapsed time t > 0 from following two strategies (with equal initial total investment), each being the result of continuously rebalancing a portfolio to maintain constant proportions in the available assets. Then:

$$\text{Probability } (X > Y) = N \left\{ \frac{(\mu_x - \mu_y)\sqrt{t}}{[\sigma_x^2 - 2\rho\sigma_x\sigma_y + \sigma_y^2]^{1/2}} \right\}$$

where N is a joint standard lognormal probability distribution, $\mu_x t$ is the expected value of log (X), $\mu_y t$ is the expected value of log (Y), $\sigma_x \sqrt{t}$ is the standard deviation of log (X), $\sigma_y \sqrt{t}$ is the standard deviation of log (Y), and ρ is the correlation between log (X) and log (Y). Assuming, based on a reasonable sample of historical data, that stocks offer a 2.5% return premium over bonds, with the standard deviation of stocks equal to 18% and the standard deviation of bonds equal to 10% with a correlation of 0.4, in order to be 95% confident that an all stock portfolio will outperform an all bond portfolio requires a planning horizon of 123 years. Rubinstein, Mark “Continuously Rebalanced Investment Strategies,” *Journal of Portfolio Management* (Fall, 1991), p. 80.

⁷ Ibbotson Associates, *Op. Cit.* Annual returns are calculated for the calendar year starting January 1. If other starting calendar dates are selected, the range of annual returns may exceed those depicted on the chart. Whenever a bull or bear market lasts for more than a calendar year, the total peak-to-trough or trough-to-peak ranges will almost certainly exceed the ranges shown on the chart. The peak-to-trough decline in the S&P 500 from October 9, 2007 through March 9, 2009 was approximately 57%. For a more thorough insight into the behavior of asset classes and the implications of volatility for investment decision making see: “Collins, Patrick J. “Black Swans and Albino Crows,” *ALI-CLE Course of Study Materials: Representing Estate and Trust Beneficiaries and Fiduciaries* (Chicago, 2014) pp. 524-534. This is available on the Schultz Collins website

was also in 1933, when it advanced by +54.0%, while its return was – 43.3% in 1931.

Generally, fixed-income investments are less volatile. Returns from Corporate Bonds ranged from +42.6% (1982) to -8.01% (1969); long-term Government Bonds exhibit returns between +40.4% (1982) and -14.9% (2009). Although U.S. Treasury Bills have never had a nominal loss greater than a small fraction of 1%, they have often lagged inflation. Although Treasury Bills sometimes provide good short-term inflation protection, their long-term inflation adjusted track record is poor. Their best ten-year period was 1981 through 1990, during which time they produced an annualized return of 3.3% above inflation. Over the sixty years between 1934 and 1993, their average annualized return lagged 0.14% below inflation.⁸

Occasionally, Investment Policy Statements express return requirements relative to inflation. For example, an IPS might direct the portfolio manager to seek a return of x% above the rate of inflation over a z-year period. Whenever a portfolio with a long-term planning horizon requires returns above inflation, historical data indicate that a portion of assets should be invested in equities.⁹

RANGE OF ANNUAL RETURNS FOR ASSET CLASSES

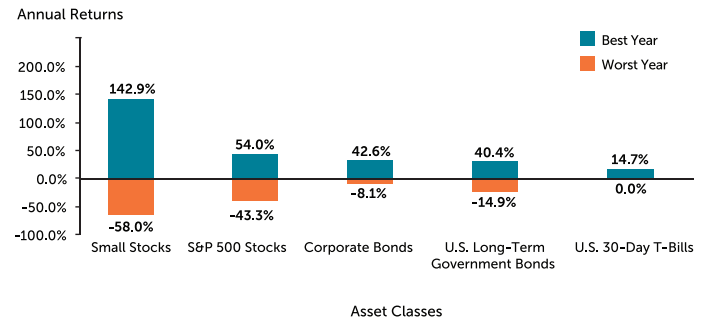


FIGURE 3-3

▲ U.S. FIXED INCOME

U.S. Fixed Income: Historical Performance

In general, fixed income returns are less variable than equity returns, and therefore have lower expected long-term returns. Much of the return variability in bonds and other fixed income investments is attributable to maturity risk. The greater the period to maturity, the greater the risk to the investor. As interest rates and issuer credit ratings change over time, the market value (that is, the net present value) of maturity proceeds, plus interim coupon payments, fluctuates.¹⁰ The fundamental bond pricing theorem

⁸ Ibbotson Associates, *Op. Cit.*

⁹ The reader should keep in mind that long-term averages are calculated for paper indexes that suffer no costs from fees, trading costs and other expenses. Additionally, results apply only in the absence of interim cash flows. Design and management of portfolios subject to cash flows (e.g., retirement income distributions) is very different from design and management of portfolios seeking to generate a high amount of terminal wealth. The former are oriented to consumption, the latter to wealth accumulation. Thus, for example, the asset allocation decision to load for equities under a distributional regime may be counterproductive if high inflation increases the need for large distributions during a time of declining stock prices. Although long-term equity returns have, on average, outpaced inflation, the investor must live with *actual* results, not *average* results. This chapter, in the main, does not discuss portfolio design or asset allocation decisions in the face of current liabilities.

¹⁰ The terminology 'coupon payment' harkens back to the days when a bond certificate had coupons specifying the interest payments and the redemption dates. In the days before computers and electronic banking systems, the bond owner would clip the coupon from the certificate and present it to a local bank or redemption agent for payment. Today, of course, such transactions occur automatically and instantaneously. For example, an investor who purchases a \$1,000 two-year bond at 5% will pay the bond issuer the principal or "face value" of \$1,000 today and receive, over the next two years, periodic interest based on the 5% coupon rate plus a final repayment of principal at the end of the two year period.

states that increases in interest rates or reductions in issuer credit rating cause the market value of the bond to decrease, and vice versa. The magnitude of the price change is directly related to the time remaining until maturity, and may be calculated using technical measures of price sensitivity known as duration and convexity.¹¹ Prices fluctuate for all types of bonds, irrespective of whether they are issued by a corporation or are backed by the U.S. Government. Indeed, when the Federal Reserve Bank raised interest rates to combat

inflation during the 1980's, long-term U.S. Treasuries suffered a substantial decrease in value.¹²

Although bonds may exhibit considerable price variability, returns from U.S. long-term fixed income assets have generally not matched returns from U.S. equity. This fact suggests that an optimal combination of short to intermediate term fixed income assets and equities could yield a return superior to a portfolio owning primarily long-term bonds. For example, during the period 1973 through 2015 the increased returns from holding longer maturity bonds was not compensated in proportion to their increased risk. The data suggest that the optimal maturity weighting for a fixed income portfolio is short to intermediate:¹³

Can investors time the bond market – i.e., generate accurate forecasts of interest rate changes? Much academic evidence strongly supports the proposition that analysts cannot accurately forecast interest rate changes with any consistency. Lengthening (shortening) bond maturities to take advantage of forecasted interest rate declines (increases), therefore, may yield uncertain results at the cost of certain transaction expenses. Comprehensive analysis of bond price changes relative to forecasted predictions indicates that, as with equities, bond prices fully reflect all available information. This analysis also indicates that it is “hard to be able to consistently forecast interest rates with greater accuracy than a “no-change model.”¹⁴

FIXED INCOME MATURITY AND THE RISK/REWARD TRADEOFF
(BASED ON DATA FROM 1973-2015)

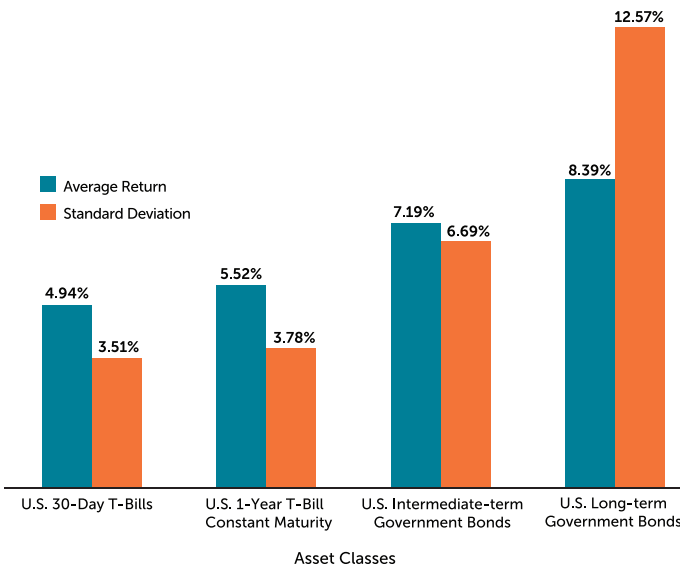


FIGURE 3-4

¹¹ Duration and convexity are the first and second derivatives, respectively, of the ratio of price change to yield change.

¹² Jones, Charles P., *Investments: Analysis And Management*, John Wiley & Sons, New York (1994), pp. 182-186.

¹³ This discussion assumes that the investor wishes to focus on the objective of enhancing reward per unit of risk over the applicable planning horizon. Investors faced with consumption liabilities, however, may wish to include long-term bonds not for their reward-to-risk characteristics but rather for their ability to hedge against future economic conditions that might be detrimental to consumption. In cases where the asset management objective requires the investor to hedge long-term liabilities, the “safe” asset may be a long-term bond; the “risky” asset may be a short-term bond.

¹⁴ Sharpe, William, and Alexander, Gordon, *Investments*, Prentice Hall, Englewood Cliffs, New Jersey (1990), p 380. For a more recent discussion of the difficulties of accurate macroeconomic forecasting, see Cohen, Abby Joseph, “Aristotle on Investment Decision Making,” *Financial Analysts Journal* (July/August, 2005).

Why Own Any Bonds?

Among the primary reasons for holding fixed income asset classes in a portfolio are:

- Diversification – historically, bonds have often increased in value during economic downturns. Thus, it often happens that bonds generate positive returns during periods when stock prices decline.
- Risk Mitigation – Even during periods when both stock and bond prices decline, bond price decreases usually are significantly less than stock price decreases.

In general, fixed income returns tend to be less variable than equity returns, and therefore, have lower expected long-term returns. This suggests that if you were an infinite-life investor, or if you never planned to take any money from your portfolio [think of Benjamin Franklin's 200 year endowment gift to the cities of Philadelphia and Boston], you would not want to own bonds. After comparing historical returns, some pundits conclude that lower expected return should disqualify bonds as an asset class suitable for long-term investors. The no-bonds "siren song" is especially attractive to investors seeking to maximize investment return.

The primary purpose of a multi-asset class portfolio, however, is not to maximize return. Extreme stock concentration or leveraged derivatives are far more effective for generating extraordinarily high profits (and losses). Neither does a multi-asset class

portfolio eliminate risk. Rather, a prudent mix of stocks and bonds is intended to enhance the likelihood that a portfolio can achieve its intended financial objectives at a level of risk appropriate to the preferences and constraints of its owner. It is safe to say that most investors do not think about "enhancing likelihood" when they invest. Though many investors want to maximize returns, most would find the necessary steps intolerably risky.¹⁵

Suppose that an investor hears a forecast that stocks will earn 7% over the next year while bonds will suffer a loss of 3%. The portfolio is allocated 60% to stocks and 40% bonds. What should the investor do? There are several questions to consider before selling the bonds. One approach is to decide on the level of confidence in the forecast. If the investor has a high degree of confidence in the prediction, this argues for implementing portfolio revisions. Change the portfolio now or it may suffer from poor bond market performance.

A second approach asks the investor to consider the distribution of possible future results as opposed to the forecast of the single "most likely" result. Let's say the investor believes that stocks will indeed return 7% next year. However, the forecast derives from the following probability distribution:

- A 30% probability of a gain in stocks of 40%,
- A 40% probability of a gain in stocks of 7%,
and
- A 30% probability of a loss in stocks of 40%.

¹⁵ A second, more technical, line of argument against a 100% equity position is neatly summarized by Nobel Prize winner Paul Samuelson when he states that "factual happenstance is not arithmetical necessity." Samuelson, Paul A., "The Long-term Case for Equities and how it can be oversold," *The Journal of Portfolio Management* (Fall, 1994), pp. 15-24. Briefly, Samuelson argues that if stocks must always beat bonds in the long run, then the investor must believe:

1. Bonds will disappear. This result would, however, violate capital market pricing theory, which advises holding the entire range of assets according to their market weightings because, in equilibrium, expected returns (prices) are set so that each asset in the market clears. Because bonds are a part of the capital market, on a risk-adjusted basis, prices should bring demand for and supply of this asset class into alignment with all other competing assets.
2. No price/earnings ratio will ever be "too high," so that equities in the future could never be said to have expected returns that are lower than bonds. But even if historical financial data has been generated by a stationary or stable probability process, it still does not follow that random draws from the process will create such a preponderance of superior future outcomes that you would always opt for a 100% equity position.

The probability-weighted (“most likely”) forecast value is +7%, but it is not this point-estimate prediction that is most important for making a good investment decision. Rather, it is the dispersion in possible results both above and below that predicted value. A loss of 40% might occur because of a significant deceleration in economic growth accompanied by a deflationary economic environment. A deflationary environment, however, generally means lower interest rates and higher bond prices. Given all that, what is the prudent course of action? The probability of both good and bad results must be factored into the decision. But this is just a restatement that portfolios should remain diversified to enhance the likelihood – i.e., probability – that they will achieve their financial goals in the face of economic uncertainty. Investment prudence often demands thinking in terms of probabilities rather than point-estimate forecasts.

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The Risk of Trying to Mitigate Risk

Any fixed income discussion must consider the cost of modifying bond holdings in the face of

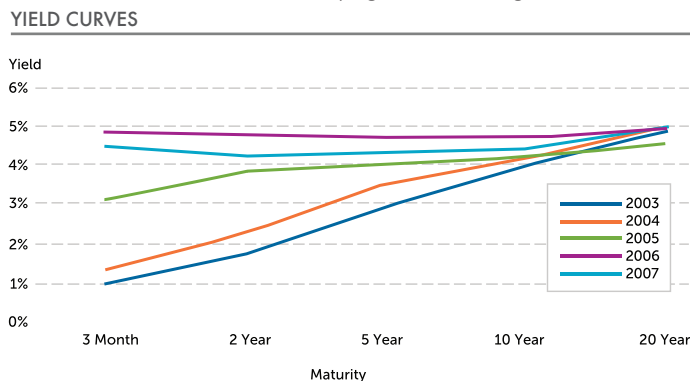


FIGURE 3-5

the threat of rising interest rates. This cost may be observed in:

- The slope of the yield curve – the steeper the yield curve, the greater the cost paid by fearful investors who choose to hold only short maturities; and,
- Time – the more time passes and rates remain static, the greater the yield lost by the fearful investor electing to own only short-term bonds.

For example, starting in 2010, some pundits stoked a fear of rising rates as the economy moved out of the global recession. In 2013, it finally happened.¹⁶ The rise in interest rates provided the previously mentioned fearful investor the opportunity to say, “I told you;” to which we would respond, “Really?” Over the 3 years prior to 2013, the intermediate corporate bond index earned an annualized return of 4.14% (as measured by the iShares Intermediate Credit Bond ETF), while the short-term bond alternative earned

1.88% annualized (as measured by the iShares 1-3 Year Credit Bond ETF). That is an extra annualized return of 2.26% provided by the corporate bonds. In other words, the prize for being “correct” was a loss of 2.26%, per year. Seeking safety can be expensive.

Rising interest rates do not necessarily hurt investors who own intermediate bonds. **FIGURE 3-5** shows the 2003-2007 timeframe. From 2003-2006, the 5 year T-note yield moved from 2.97 to 4.75%. If in 2003, an investor had predicted a 100% probability of a near 2% rise in interest rates over the next 3 years, he would have been correct. However, the aggregate bond market still compounded approximately 4% per year. By contrast, the 1-5 year Merrill U.S. Corporate/Government Bond Index compounded approximately 2.7%.

¹⁶ We are reminded of Roger Babson, who predicted the 1929 crash in 1925, 1926, 1927, and 1928 by means of a bogus model based on Isaac Newton’s laws of gravity. When the crash occurred, he plastered “Be Right with Babson” ads on billboards and proceeded to make a fortune selling his market forecasting services.

Although asset allocation decisions should not be completely independent of the current interest rate environment, no matter what you do, you are at risk. Consider the possibility that stock prices may decrease by 25% or more – which would likely trigger an intermediate term bond rally of 8%+. The intermediate term bonds may offset downside stock prices more than a portfolio holding only short-term bonds in its fixed income component. The reverse is also likely – an increasingly positive economic environment where rising rates reflect rising real rates of return in the economy, and possibly higher stock prices. Here, the intermediate bonds will subtract from equity returns, more so than a portfolio holding only short-term bonds. Which is the greater fear or concern? Either decision – to shorten maturity, or not – can be prudent, as long as the investor understands how the decision is likely to affect the portfolio’s ability to meet its objectives at an acceptable risk level.

No course of investment action – or, inaction – is risk free. Portfolio management considers both short-term results and long-term outcomes. A myopic focus on either planning horizon is often detrimental to the investor’s economic goals. The long run comprises short run periods; a short run result may or may not be indicative of an expected long run outcome. The prudent investor learns to balance the “imperatives” of each planning horizon [short run = don’t lose money because it’s difficult to make it back; long run = generate compound wealth sufficient to let me pay for desired future consumption].

We are now in a position to add yet another dimension to understanding what it means to

invest. In essence, investing is:

- Sending capital across time;
- A prudent exchange of risk; and,
- Making asset management elections to enhance the probability of successfully meeting economic goals.

One reason for the historical success of diversified portfolios lies in the fact that they reflect exposures to a variety of risk factors rather than to just a single factor. For example, the risk factors that influence price changes in Asian stocks often differ from those that influence price changes in Emerging Markets stocks. The risk factors that move foreign bond prices differ from those that move U.S. small cap stock prices.¹⁷

No course of investment action – or, inaction – is risk free. Portfolio management considers both short-term results and long-term outcomes.

▲ INTERNATIONAL EQUITY

International Equity: Correlation and Diversification

If stock market returns in every country moved in perfect lock step, and generated equal results, there would be no advantage to owning foreign stocks. However, the lack of perfect correlation between returns of different foreign stock markets indicates there may be advantages to including foreign stocks in a portfolio. During the

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¹⁷ Chapter Four provides a detailed discussion of ‘priced’ risk factors.

CORRELATION OF U.S. AND FOREIGN EQUITY RETURNS:
(FEBRUARY 1986 – MARCH 1991)

Country	Correlation to U.S. Stocks	Country	Correlation to U.S. Stocks
Australia	0.49	Japan	0.25
Austria	0.14	Netherlands	0.69
Canada	0.82	Norway	0.55
Denmark	0.30	New Zealand	0.39
Finland	0.42	South Africa	0.24
France	0.48	Spain	0.49
Germany	0.39	Sweden	0.46
Ireland	0.47	Switzerland	0.61
Italy	0.34	United Kingdom	0.67

FIGURE 3-6

1980s and early 1990s, studies of international stock diversification (from the perspective of an American investor) were almost unanimous in their recommendation to hold foreign equity within the portfolio. The primary reasons for the recommendation to diversify internationally were:

- High returns on foreign stocks; and,
- Low correlation between U.S. and foreign stock market returns.

One early study highlighted the less than perfect correlation between stock markets of developed

nations to the U.S. stock market (perfect correlation = 1.00) for the period February 1986 through March 1991 (FIGURE 3-6).¹⁸

Investing in foreign stocks enabled a portfolio to realize equity returns while lowering risk. In terms of the allocation between U.S. stocks (proxied by the S&P 500) and international stocks (proxied by the Morgan Stanley EAFE – Europe, Australia, Far East Markets – Index) shown in FIGURE 3-7, a 70% S&P 500/30% EAFE blend provided an attractive risk/reward combination over the period 1973 through 2006.

The 1973 – 2006 data suggest that the minimum risk portfolio allocation was 70% U.S. Stock and 30% foreign stock.

New Data/Reassessments

More recent studies caution that the correlation statistic is not constant, and that correlation often increases during periods of worldwide market volatility.¹⁹ Some commentators point out that global economic shocks such as the OPEC oil crisis in the 1970s or the great recession of 2008-2009 often result in a dramatic increase in the correlation of international security returns. Correlation between return series of various nations is, in part, a function of the timing of national business cycles. In normal periods, national business cycles are not well synchronized and, therefore, international investments provide a diversification benefit. In times of global economic stress, however, international equity correlations may become more positive and the risk-reduction benefit of international diversification may diminish.

There are two major schools of thought on this topic. Some studies suggest that the ‘correlation critique’ of the benefits of international investing may

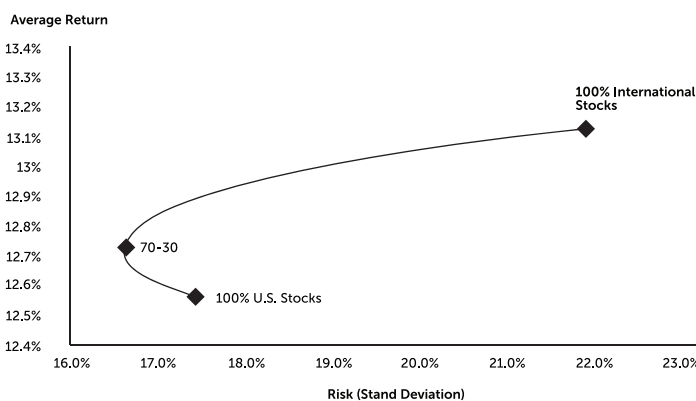


FIGURE 3-7

¹⁸ Divecha, A. B., Drach, J., & Stefek, D., “Emerging Markets: A Quantitative Perspective,” *The Journal of Portfolio Management* (Fall, 1992), p. 48. Note that the period under consideration pre-dates the formation of the European Union.

¹⁹ Erb, C. B., Harvey, C. R., & Viskanta, T. E., “Forecasting International Equity Correlations,” *Financial Analysts Journal* (December, 1994), pp. 32-45. See, more recently, Solnik, Bruno & McLeavey, Dennis, “The Case for International Diversification,” (Chapter 8) *Global Investments* (Pearson Education Limited, 6th Edition), 2014.

result from a faulty understanding of the nature of the correlation statistic. This is an econometric argument. When commentators observe that correlation increases during volatile market periods, they are conditioning correlation on high volatility. If, however, the data set is bifurcated into the set of large (absolute value) returns and small (absolute value) returns, the value of the correlation statistic seems to manifest a statistically significant difference within each of the regimes – the volatile periods exhibit correlation values greater than the less volatile periods. However, the measurement difference reflects the difference in volatility between the two samples rather than a fundamental shift in the underlying return generating process. Proponents of this point of view suggest that rather than looking at changes in the correlation statistic, the investor should examine the cross section of country returns. If the dispersion of returns is large, this suggests that foreign stocks are offering diversification benefits. Alternately, the investor might measure the cross-sectional standard deviation of returns. A large differential in the standard deviation of return also suggests that the investor benefits from international diversification.²⁰

The second school of thought argues there is a statistically significant difference in means, standard deviations, and correlation values in different economic regimes. Conditioning on economic or market direction (bull/bear) regime changes – as opposed to conditioning on high and low absolute value price changes – suggests there is a significant change in the value of

the correlation statistic in bear market regimes.

Although research papers acknowledge that global equity diversification is not a fail-safe risk control mechanism, they provide at least two other reasons for owning international equity:

1. Foreign goods represent a significant portion of U.S. citizen's consumption basket. Therefore exposure to foreign investments may protect the portfolio's purchasing power; and,
2. U.S. inflation is driven by domestic political decisions and by economic forces. Exposure to foreign assets acts as a hedge against unwise U.S. monetary and fiscal policy.²¹

By the mid-1990s, however, the combination of lower foreign stock returns, increasing globalization of international trade and business, and increasing correlation of domestic and international returns, caused some to question whether holding international equity could provide the expectation of significant future diversification benefits.²² In later years, projections of the future value of the correlation statistic became controversial. Some argued that it should remain higher than its historical average because of Europe's economic integration and the reduction in currency fluctuations brought about by the introduction of a common monetary unit (the Euro). Others pointed to increasing globalization or the increasing importance of sector influence (as opposed to country influence) on stock returns.²³ Others pointed out that short-term strongly

²⁰ The econometric arguments often involve complex statistical tools. For the purposes of this monograph the reader should note that correlation measures only the *linear* association between two return series. The interaction of various risk factors, however, often creates *non-linear* relationships. Rather than focusing exclusively – or even primarily – on the traditional correlation statistic, new research employs mathematical techniques to identify and quantify non-linear “dependencies,” with special attention to tail-risk dependencies. Copula functions, principal components analysis, dynamic correlation modeling, and other advanced techniques characterize current academic research. In 2003, Clive Granger and Robert Engle shared the Nobel Prize in Economics for their work in this area.

²¹ Odier, P., & Solnik, B., “Lessons for International Asset Allocation,” *Financial Analysts Journal* (April, 1993), pp. 63-76.

²² See, for example, Sinquefeld, R., “Where are the Gains from International Diversification?” *Financial Analysts Journal* (1996), pp. 8-14; and, Christoffersen, Peter, Errunza, Vihang, Jacobs, Kris & Langlois, Hugues, “Is the Potential for International Diversification Disappearing?” *Review of Financial Studies* (2012), pp. 3711-3751.

²³ See, for example, Li, K., & Sarkat, Asani, “Should U.S. Investors Hold Foreign Stocks?” *Current Issues in Economics and Finance*, Federal Reserve Bank of New York (March, 2002).

positive correlation values are a result of events unlikely to repeat. These studies argued that the correlation statistic tends to revert towards its long-term average following periods of substantial deviation.

A detailed examination of returns indicates that,

both U.S. and foreign [EAFE = Europe, Australasia, Far East] stocks generated attractive compound returns.

The nine-year period from 2007 through 2015 indicates that a U.S.-only investor weathered the global recession more successfully than the global, ex-U.S. investor. The research of Asness, Israelov, and Liew suggests that global diversification across developed nation markets is often unable to protect investors from short and severe crashes because correlations between the developed nations' return series tend to increase as downside volatility increases. Over longer planning horizons, however, the reverse is true. A diversified portfolio benefits investors by avoiding exposures to one nation or region that may experience a long-term slump. The longer the investment planning horizon, the greater the diversification benefits of a global portfolio.²⁴

U.S. VS INTERNATIONAL STOCK RETURNS (1973-2015)

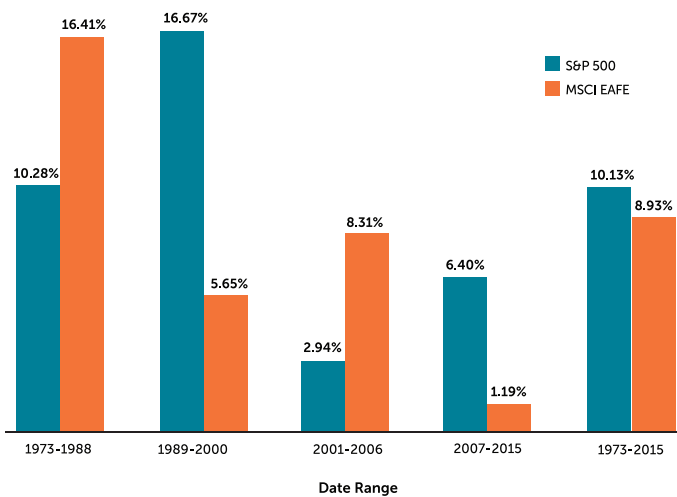


FIGURE 3-8

over time, the U.S. market has not systematically outperformed foreign alternatives (as proxied by the MSCI EAFE Index) of large company foreign stocks. Consider **FIGURE 3-8**:

Depending on the period under evaluation, foreign stocks have either significantly underperformed or outperformed their U.S. large company counterparts. However, for the entire period 1973 through 2015,

▲ INTERNATIONAL FIXED INCOME

The Rationale for International Fixed-Income Diversification

The interest rate level generally reflects the risk-free rate, the inflation premium, the liquidity premium, and the default risk premium. These factors vary both across time and across national economies. The risk-free rate is the minimum interest an investor expects in return for lending to an entity that guarantees to make all scheduled interest and principal payments. The return on short-term government securities is a common proxy for the risk-free rate – e.g., U.S. Treasury Bills are the risk-free asset for a U.S. investor. The

²⁴ Asness, Clifford S., Israelov, Roni & Liew, John M., "International Diversification Works (Eventually)," *Financial Analysts Journal* (May/June, 2011), pp. 24-38. Despite the fact that Asness *et al.* document benefits for investors holding large company stocks in a globally diversified portfolio, they also demonstrate that all-equity portfolios can be quite volatile: "...the average worst five-year return for the local portfolios was -57 percent (note that these five-year losses did not necessarily occur at the same time). So, if you believe history is any guide to the future and invest in a single country for long enough, you should expect to experience a five-year period in which your real wealth is down 57 percent. While these local portfolios had their worst five-year losses, their global portfolio counterparts lost an average of 16 percent and the average worst five-year return for the global portfolios was -39 percent. Thus, if you hold a global portfolio instead of a local portfolio... you should expect to see a worst five-year return of -39 percent."

inflation premium is an additional rate of return to compensate investors for an expected general rise in prices over time, which is related to both monetary and fiscal policy through their impact on the anticipated national inflation rate. While monetary and fiscal policy are only tangentially related to the liquidity premium (the added compensation for not being able to sell quickly and at a reasonable price) and the default-risk premium (the additional return for the risk that a borrower will not make scheduled payments), the central bank and national government's policies still have an influence on these factors.

The variation in the underlying economic fundamentals and policies of each country leads to different interest rates among national economies. To minimize the risk of adverse changes in any one country's interest rates, investors can spread the risk by investing in bonds of different countries. Professors Solnik and Mcleavey, in the study cited above ["The Case for International Diversification"] assert that for the same amount of risk, an investor would have earned approximately double the return by holding a global rather than purely domestic portfolio – stocks plus bonds – over the period 1980 through 1990. Focusing on bonds only, they demonstrate that it was in a U.S. investor's interest to allocate part of a fixed income portfolio to bonds issued outside the U.S. during this period. When compared to a purely domestic bond portfolio, international bond diversification enhanced return and reduced volatility.

Currency Risk

While investing in global bonds may provide diversification benefits, they carry an additional type of risk: currency risk. Although foreign companies and governments occasionally issue debt in U.S. dollars, about 57% of global bond issues are denominated in

currencies other than the U.S. dollar. Bonds fluctuate in value vis-à-vis each other, but so do currencies.

Consider how interactions between investment returns and currency fluctuations might influence bottom-line return. Assume that a U.S. investor purchases a basket of European government guaranteed bonds. The realized holding period return on this investment, denominated in euros, is 5%. During the holding period, the euro appreciates against the U.S. dollar by 2%. What is the return to the U.S. investor? The answer, given by the formula: (return in dollars) = (return in euros) + (currency exchange rate movement) + (return in euros) (currency exchange rate movement), is $5\% + 2\% + (5\%)(2\%) = 7.10\%$.

If, however, the euro had depreciated against the Dollar by 2%, the return to the U.S. investor would have been only 2.9%. In the former case, the 'return-to-currency' was +2.10%, in the latter, it was -2.10%. Given periods when long-term returns on the sovereign debt of many developed countries are historically low, exchange rate fluctuations may easily convert a positive 'local currency' return into an investment loss when translated back to the currency of the investor's home country.

It has been estimated that approximately 80% of the risk of a foreign bond portfolio is concentrated in the unpredictability of currency returns. Given the magnitude of potential exchange rate movements relative to the volatility of expected bond returns in local markets, many commentators advocate hedging 100% of foreign bond holdings.²⁵ Investors can eliminate most of the risk of currency fluctuations by purchasing mutual funds that lock-in future exchange rates at their current values. Using such financial tools, an investor can guarantee the future exchange rate and receive the approximate return on the foreign bonds as if there was little or no impact from exchange rate changes.

²⁵ See, for example, Campbell, John Y., "Global Currency Hedging: What Role Should Foreign Currency Play in a Diversified Investment Portfolio?" *The CFA Institute*, 2010; and, Winkelmann, Kurt, "International Diversification and Currency Hedging," *Modern Investment Management* ed. Robert Litterman (John Wiley & Sons), 2003

Utility: What's Your State Preference?

Although most international investing involves the extra dimension of currency risk, as a percentage of total return, currency fluctuations have relatively less impact on equity positions than on fixed income positions. In a world where the sovereign long-term debt of developed nations generally offer low yields, exchange rate movements can easily account for the majority of realized returns on a foreign bond portfolio. It behooves investors to consider how a changing 'states-of-the-world' [an economic term signifying a move from one set of economic conditions to another, different, set] may affect investment wealth.

Foreign Bond Market	U.S. Dollar Appreciates Relative to Foreign Currency	U.S. Dollar Depreciates Relative to Foreign Currency
Bull	Gain from Investment, Loss from Currency Movement	Gain from Investment, Gain from Currency Movement
Bear	Loss from Investment, Loss from Currency Movement	Loss from Investment, Gain from Currency Movement

FIGURE 3-9

Consider **FIGURE 3-9** which outlines four possible states-of-the-worlds – i.e., combinations of investment results and exchange rate fluctuations from the perspective of a U.S. investor's profit and loss [P&L] position:

The matrix illustrates how specific combinations of bond market returns and exchange rate movements can send foreign bond investment returns on either a strong upside or downside trajectory: Gain + Gain or Loss + Loss. These are exactly the types of

Index	Annualized Return	Annualized Standard Deviation
Citigroup World Government Bond Index (unhedged USD)	7.23%	8.67%
Citigroup World Government Bond Index (hedged to USD)	6.89%	4.88%

FIGURE 3-10

exaggerated highs and lows experienced by investors in unhedged foreign bonds. Over time, since the expected return from currency fluctuations is zero, investors in unhedged foreign bond funds must rely on fund management to predict correctly the magnitude and direction of bond market returns and to implement effective strategies to capitalize on changes in the relevant risk/return factors. Essentially, as with all potential investments, investors must decide whether they are both willing and able to bear an increase in risk for a potential increase in returns when deciding upon their portfolio holdings. If an investor is willing to cede the possibility of a Gain/Gain outcome – i.e., risk not having a portfolio that “keeps up with the Joneses” during bull markets – the investor can also eliminate the risk of severe down-side losses – a Loss/Loss outcome.

This is an important issue surrounding the decision to own a U.S. dollar hedged or a U.S. dollar unhedged mutual fund. If your preference for avoiding the severe downside state is stronger than your preference to capture high octane returns from a depreciating dollar, then you will elect to hedge your position. That is to say, your state preference will determine what you should own rather than any sales story.²⁶

Please note, however, that the matrix provides only a subset of the total information required to construct a prudent investment portfolio. If international bonds tend to exhibit countercyclical returns to stocks, then high volatility within the bond asset class may actually contribute towards lower volatility for the aggregate stock/bond portfolio. However, the investor should recognize that volatility is itself volatile and portfolio construction principles should reflect the investor's state preferences. A simultaneous bear market in foreign equities and foreign bonds, with a concurrent appreciation in the U.S. dollar, may produce downside results beyond the investor's risk tolerance.²⁷ Hedging

²⁶ Chapter Seven of Theory and Practice further develops the topic of state preference utility.

²⁷ This is the prevailing economic landscape during the 2015-2016 period for a U.S. investor holding positions in European and Asian stocks and bonds.

the foreign fixed income position against unfavorable currency moves can be a welcome risk mitigation strategy.

An Example

Many commentators recommend hedging the currency risks that accompany global bond investments. **FIGURE 3-10** illustrates the rationale for doing so. The data reflects investment results for the Citigroup World Government Bond Index hedged to the U.S. dollar and for the same index with no currency hedge. From 1985 to 2015, the hedged bond portfolio produced a slightly lower return with only half the risk (standard deviation). This suggests that currency-hedged global bond portfolios enable investors to achieve diversification without incurring significant exchange rate risk.

The Case for Foreign Bonds

What, then, is the case for foreign bonds? Although central bank policies in most developed nations have converged in the sense that they formally or informally target inflation, hedged foreign bond positions retain significant diversification properties. Specifically, they enable investors to “gain the advantage of interest rate risk diversification without the penalty of exchange rate risk.”²⁸ Briefly, the main attractions of a diversified basket of foreign bonds include:

1. Smaller variance compared to investments in the U.S. domestic bond market;
2. Mitigation of interest rate risks that are systematic to domestic investors, but diversifiable to global investors;
3. Diversification of “monetary policy mistakes of

central banks;”

4. Diversification of real economic shocks.²⁹

Thus, in terms of reducing portfolio risk, the benefits of international bond diversification appear to offer attractive portfolio construction opportunities in the fixed income area.

▲ U.S. REAL ESTATE

The 1970’s and early 1980’s were a golden age for U.S. real estate. High inflation increased real property values relative to financial assets. Over a ten-year period, real estate offered high returns, inflation protection and diversification benefits. Studies indicated that real estate exhibited a negative correlation to bonds (which lost much of their value in the inflation of the late 1970’s), and close to zero correlation with stocks. Real estate in this period earned substantially higher returns (3.2% per quarter) than either U.S. stocks or bonds, yet exposed investors to significantly lower volatility (quarterly standard deviation of returns of 1.8%) than either of these asset classes. Some believed that real estate was the only asset class suitable for a cautious investor. **FIGURE 3-11** on the following page, based on a 1986 study covering the fourth quarter of 1973 through the third quarter of 1983, demonstrates the attractiveness of real estate during this period:³⁰

The problem with a limited sampling period, however, is that the data may not accurately reflect the distribution of long-term returns. An evaluation of data from a later period produced dramatically different results. A comparative study of returns from an Equity Real Estate Investment Trust Index and from the S&P 500 underscores these differences:³¹

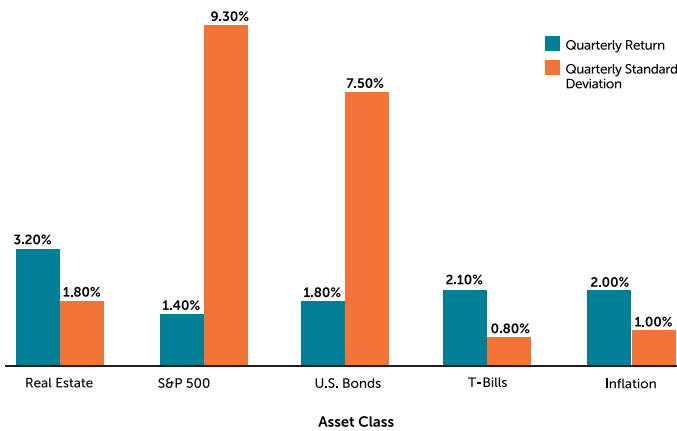
²⁸ Thomas, Lee R., “Foreign Bonds: A Strategic Asset,” *Association for Investment Management and Research* (2000), p. 13.

²⁹ *Ibid.*, p. 17: “Real shocks affect economies differently. A change in the price of oil does not affect Japan in the same way that it affects the United States; it will not affect Japanese bonds the way it does U.S. bonds.”

³⁰ Downs, D. H., & Hartzell, D. J., “Real Estate Investment Trusts,” *The Handbook of Real Estate Portfolio Management* (Irwin Professional Publishing, 1995), p. 601.

³¹ *Real Estate Finance and Investments* ed. William Brueggerman & Jeffrey Fisher (Irwin Professional Publishing, 1993), pp. 813-814.

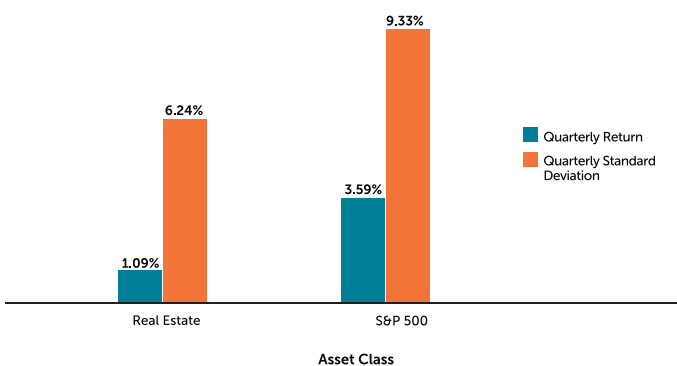
QUARTERLY PERFORMANCE COMPARISON (Q4 1973-Q3 1983)



Source: Downs, D.H., & Hartzell, D.J., "Real Estate Investment Trusts," *The Handbook of Real Estate Portfolio Management* (Irwin Professional Publishing, 1995)

FIGURE 3-11

QUARTERLY PERFORMANCE OF S&P 500 VS REAL ESTATE (1986-1990)



Source: *Real Estate Finance and Investments*, ed. William Brueggerman & Jeffrey Fisher (Irwin Professional Publishing, 1995) p. 813-814

FIGURE 3-12

An evaluation of real estate using only data from this period would indicate that, in isolation, real estate is not an attractive investment. However, despite dismal overall performance, real estate still provided some risk reduction benefits. Specifically, although

a large amount of real estate in a stock portfolio would have reduced returns more than it would have reduced risk (that is, the risk/return tradeoff was not beneficial), the imperfect correlation of the two asset classes (the equity REIT correlation to the S&P 500 was .807) meant that adding a small (approximately 20%) real estate position to the portfolio would have created a better overall risk/return tradeoff.

Historically, many individual investors' portfolios did not include real estate. Private investments in apartments, offices, warehouses, hotels, etc. are expensive propositions that, because of the necessity for complex financing arrangements, often demand a high degree of leverage. For many individual investors, either the leverage increases risk beyond their tolerance level, or the collateral and financing arrangements make private real estate equity investments impractical. Difficulties with real estate investments include illiquidity (you cannot sell a fraction of a building, and selling real estate usually takes a relatively long time), lack of marketability (high transaction costs), lack of geographic diversification, lack of diversification by property type, and high sensitivity to local economic conditions, including unemployment and tax policy. Additionally, some investors remember the financial debacle that followed the Savings & Loan crisis and the subsequent collapse of commercial real estate prices as the Resolution Trust Company formed to cope with it dumped property on the market for pennies on the dollar. By the end of the 1980s, many believed that commercial real estate investments were best left to financial institutions such as insurance companies, large pensions and endowments that could afford to own and manage commercial properties in several cities, and hold them for decades if need be.

In the first part of the 21st century, until the mortgage liquidity/sub-prime crisis of 2008, real estate investors once again enjoyed a spectacular run up in the price of single-family homes, as well as solid gains in the stocks of real estate operating companies,

home-building/home-improvement companies, financing companies, and building-supply firms. The publically traded investment vehicle of choice for many individual investors was the Real Estate Investment Trust (REIT).

A publicly traded REIT lists its shares on a stock exchange and, therefore, is traded like other stocks. A REIT's assets consist primarily of real estate equity (ownership of properties) or debt interests in real estate. REITs are actively managed to increase shareholder value, just as a public corporation is actively managed to promote economic objectives including return on equity, return on assets, increased market share, and so forth. REITs attempt to increase shareholder value through various business activities that include buying and selling property, managing tenant leases to maximize income and property value, and buying, selling, or originating mortgages. Like other publicly traded companies, REITs may utilize debt financing to accomplish some of these objectives. The majority of income earned by a REIT is passed on to shareholders to avoid taxation. But REITs receive this income tax exemption, provided the company meets certain criteria. According to the National Association of Real Estate Investment Trusts (NAREIT), a real estate operating company can qualify as a REIT if at least 75% of net assets are invested in real estate related assets, income from those real estate related assets comprises at least 95% of total gross income, and 90% of taxable income is distributed to shareholders. The remaining 10% of net income is taxable to the REIT, unless distributed to shareholders. An index for REITs – the NAREIT Index – started in 1978. This is a capitalization-weighted index of all publicly listed REITs; and is similar in construction to other

capitalization-weighted stock indexes such as the S&P 500 Index of U.S. stocks. The NAREIT Index provides the longest pricing history for the asset class of securitized (that is, publicly traded) real estate equity investments. Today, there are several indexes that track the performance of publicly traded REITs.

In the early 1990's the mutual fund industry launched several real estate equity funds. These funds invest, mostly, in stocks of real estate related companies or in REIT shares. Among the early entrants into the real estate "index fund" business were DFA (Dimensional Fund Advisors) and Vanguard Funds, each of which developed a mutual fund designed to track a specific REIT index (e.g., the Vanguard REIT Index tracks the Morgan Stanley U.S. REIT Index).³² More recent indexed investments include the iShares Cohen & Steers Realty Majors Fund, and the iShares Dow Jones U.S. Real Estate Index Fund.

Investors now have more comprehensive information available to them so they may better judge the advantages of adding real estate to an investment portfolio.³³ However, despite the informational advantages, the benefits of real estate remain uncertain. For example, is real estate an effective hedge against inflation? The answer to this question depends on the definition of real estate, on the definition of inflation, and on the time period under evaluation. The distinction between public and private real estate equity is important with respect to real estate's inflation-hedging ability. Since REIT stocks are stocks of real estate corporations that own portfolios of assets, a reasonable working hypothesis would be that REITs and private real estate equity would exhibit similar responses to inflation. However, this is

³² The DFA Real Estate Securities Portfolio is a capitalization-weighted fund purchasing equity securities of companies in certain real estate investment trusts and companies engaged in residential construction and in firms whose principal business is to develop commercial property. Although holding a broad cross-section of eligible securities, it does not track any specific index.

³³ The increase in the amount and timeliness of information in the real estate market has led some commentators to argue that real estate investing is becoming more efficient – i.e., it is harder for active management to add value. See, for example, Clayton, Jim, Fabozzi, Frank J., Giliberto, S. Michael, Gordon, Jacques N., Hudson-Wilson, Susan, Hughes, William, Liang, Youguo, MacKinnon, Greg & Mansour, Asieh, "The Changing Face of Real Estate Investment Management," *Journal of Portfolio Management* (September, 2011), pp. 14-23.

S&P 500, REAL ESTATE, AND S&P ROLLING 36 MONTH RETURNS EXPRESSED AS MONTHLY FIGURE (1978-2015)

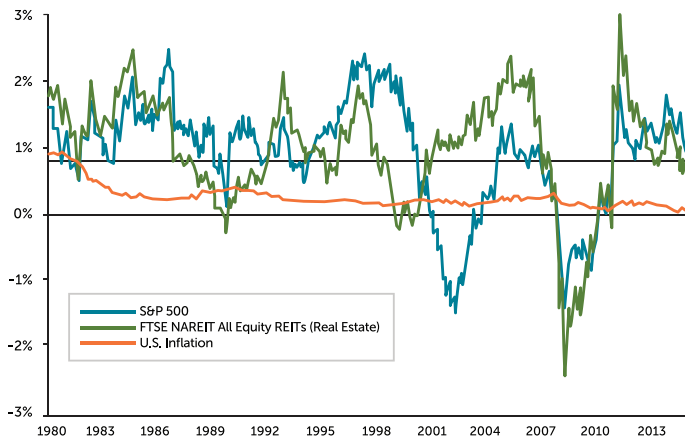


FIGURE 3-13

often not the case. One researcher notes a positive correlation (+0.41) between inflation and private real estate returns over the period 1978 through 1997, but argues that the correlation between inflation and securitized real estate is 0.00 for the same period. A correlation statistic is only an average for the entire period; and, an examination of sub-periods can reveal return patterns significantly different from the overall average. Although the study concludes “that private real estate provided a meaningful positive inflation hedge,” this is not to be expected under all market conditions such as, “when space markets experience significant excess supply, as in the 1988-1992 period, the presence of unanticipated inflation will not necessarily result in a rise in real estate returns.”³⁴

Other than high expected returns, academic studies offer several reasons to include real estate securities in a prudent and balanced investment

portfolio:

- Real estate may offer a hedge against inflation; and,
- Real estate securities have low correlation with other common stocks.³⁵

FIGURE 3-13 shows how real estate has behaved vis-à-vis inflation and the S&P 500 from 1978 through 2015.

By combining asset classes that respond differently to future economic conditions, a portfolio theoretically becomes more stable and, therefore, less likely to produce unacceptable downside returns. Real estate proved to be a valuable source of downside protection during the NASDAQ stock meltdown of 2001 through 2003. However, this proved not to be the case during the global recession of 2008-2009.

It is also interesting to note how commentators shift their arguments for using real estate in a portfolio before and after the global recession of 2008-2009. A sample of pre-recession arguments includes Susan Hudson-Wilson’s contention that real estate is a good portfolio diversifier.³⁶ After developing a custom index reflective of the “four quadrants” of real estate investing (public and private debt instruments /public and private equity positions), she notes that the value of the correlation statistic between stocks (S&P 500) and real estate is +0.547 during the period 1987 through 2000, and the correlation between bonds (Lehman Corporate/Government Bond Index) and real estate is +0.284 during the period. She notes: “when the return to an asset class is high enough, or the risk is low enough, and/or the correlation reflects a sufficiently different pattern of returns, the asset class earns a place in the portfolio for at least a portion of the return-risk spectrum. Real estate meets these

³⁴ Sanders, Grayson, “An Updated Look at Asset Allocation: Private and Public Real Estate in a Multi-Asset Class Portfolio,” *The Real Estate Finance Journal* (Winter, 1998), pp. 5-13.

³⁵ The essay *Real Estate in a Multi Asset Class Portfolio* provides a comprehensive discussion of real estate’s role in the investment portfolio. This is available on the Schultz Collins website.

³⁶ Hudson-Wilson, Susan, “Why Real Estate?” *The Journal of Portfolio Management* (Fall, 2001), pp. 20-31.

tests, and is therefore a component of the well-diversified mixed-asset portfolio.”³⁷ She suggests that “real estate is a risk-reducer at low to moderate risk and return levels, and so has no role in highly risk-tolerant portfolios.” She pegs the optimal allocation for risk-averse investors at 27%; however, this weight drops to zero rather quickly as one moves up the risk spectrum seeking higher returns. Thus, in her opinion, real estate is primarily suitable only for investors interested in capital preservation.

Ziobrowski, Caines & Ziobrowski arrive at exactly the opposite conclusion: “conservative managers seeking low risk and willing to tolerate lower returns should hold little or no real estate. Managers seeking higher returns who are more tolerant of risk should hold some real estate, but not very much, ranging between 4% and 18% of the total portfolio maximum.”³⁸

Grayson Sanders advances the proposition that “the optimal portfolio ... turns out to be 40 percent bonds, 30% stocks, and 30% public real estate. This is probably not a feasible solution in the marketplace because of the mismatch with the size of the investable universe.... From a practical perspective we can take comfort from this analysis that a 10 to 15 percent allocation to either public or private real estate or a combination thereof can be readily justified.”³⁹

Mark Anson, analyzing real estate returns on both a pre- and post-crisis basis, suggests that the optimal weighting of real estate in a portfolio owned by an investor with average risk tolerance should be approximately 8.68%. The weighting was calculated prior to

factoring in transaction costs. Liquidity risk, in Anson’s opinion reduces the optimal weighting even further.⁴⁰

The diversity of opinion is a good example of how statistical conclusions are hypersensitive to the sampling period and to the way the variables of interest are defined. The investor must understand the role of real estate within the portfolio. It is not a guaranteed safety net against the ravages of unexpected inflation, nor is it an asset class that will produce returns with ‘smoothed’ volatility. Allocation weightings reflect precise calculations, investor preferences, and common sense. If an investor holds no investment real estate assets outside of the portfolio, a modest allocation to real estate appears to be prudent and suitable. However, if an investor owns a large amount of private real estate, a heavy allocation towards real estate within the investment portfolio may create redundancies and unnecessary asset concentration risks.

▲ EMERGING MARKETS

Emerging Markets: Early Research

Emerging markets are the equities markets of countries still in the early decades of forming the institutions that make for economic success. In emerging markets, fundamental elements of a market system, such as property rights, contract law, freedom of speech, and due process, may not be securely instituted. The stock markets of developing nations can be extremely volatile. For example, in 1990, the Taiwanese Stock

³⁷ It is interesting to note that, when the four ‘quadrants’ are combined into a capitalization-weighted index of real estate debt and equity securities, the index suffered no nominal dollar losses in any year from 1982 through 2000. However, this observation must be tempered by noting that, for most of this period, the index is weighted primarily to private debt and equity.

³⁸ Ziobrowski, A.J., Caines, Royce & Ziobrowski, B. J., “Mixed-Asset Portfolio Composition with Long-term Holding Periods and Uncertainty,” *Journal of Real Estate Portfolio Management* (Vol. 5, 1999), pp. 139-144.

³⁹ Sanders, Grayson, “An Updated Look at Asset Allocation: Private and Public Real Estate in a Multi-Asset Class Portfolio,” *Real Estate Finance Journal* (Winter, 1998), pp. 5-13.

⁴⁰ Anson, Mark J.P., “Risk Management and Risk Budgeting in Real Estate and Other Illiquid Asset Classes,” *CFA Institute Conference Proceedings Quarterly* (March, 2013), pp. 56-63. For a detailed analysis of the performance of real estate during the global recession, see: Webb, Earl, “Assessing Real Estate Markets: Pothole or Sinkhole?” *CFA Institute Conference Proceedings Quarterly* (December, 2009), pp. 54-61.

EQUITY VOLATILITY IN EMERGING MARKETS
AND THE UNITED STATES (1987-1991)

Country	Standard Deviation
Argentina	108%
Turkey	84%
Brazil	74%
Taiwan	63%
Portugal	61%
Greece	56%
Mexico	56%
Indonesia	39%
Korea	29%
US	17%

FIGURE 3-14

Country	Return	Standard Deviation
Argentina	4.54%	25.86%
Brazil	2.14%	16.99%
Chile	2.46%	10.52%
Colombia	2.07%	9.20%
Greece	1.20%	9.98%
India	1.41%	8.05%
Indonesia	2.08%	17.56%
Jordan	0.78%	4.77%
S. Korea	1.61%	11.17%
Malaysia	0.91%	10.51%
Mexico	2.04%	12.24%
Nigeria	1.81%	12.56%
Pakistan	1.00%	8.98%
Philippines	2.35%	11.23%
Portugal	2.41%	11.09%
Taiwan	2.27%	13.34%
Thailand	1.35%	10.08%
Turkey	3.83%	20.04%
Venezuela	1.89%	14.72%
Zimbabwe	1.08%	10.43%

FIGURE 3-15

Exchange Index started the year near the 5,000 level. By the end of the first quarter, it had reached 12,600; six months later it had plunged to 2,500.

A broader perspective on emerging market volatility is provided by a study of the period 1987-1991.⁴¹ In general, stock market volatility (as measured by standard deviation) was considerably higher for emerging market economies than for the U.S. (see **FIGURE 3-14**).

Although returns from emerging market investments were also high during this period (19.7% vs. 12.6% for the London Financial Times World Index of developed nations), the variability of returns from individual nations is striking. A survey of emerging market returns, covering the period 1975 through 1999, derives similar results for the longer-term series of monthly returns (See **FIGURE 3-15**).

The average monthly return is 1.62% over the period under evaluation. This return compares to returns of 1.26% for EAFE and 1.36% for the U.S. When each country is considered in isolation, monthly volatility for the period averaged 12.46% – a number indicating the presence of significant investment risk. However, when considered as a single portfolio, an investment in the aggregate emerging markets asset class had a monthly volatility of only 5.70%. This compares to monthly volatility of 4.73% for EAFE and 4.23% for the U.S.

As trustworthy return data for emerging markets became available to academic researchers, the preponderance of evidence indicated that investors would benefit by adding an emerging markets position to a globally diversified portfolio of stocks and bonds. For example, Conover, Jensen, and Johnson examine the behavior of emerging markets over the period 1976 through 1999, including all emerging markets with at least ten years of returns data, as of December 1999.⁴²

⁴¹ Divecha, A. B., Drach, J., & Stefek, D., "Emerging Markets: A Quantitative Perspective," *The Journal of Portfolio Management* (Fall, 1992), p. 42.

⁴² Conover, C. Mitchell, Jensen, Gerald R., & Johnson, Robert J., "Emerging Markets: When are they Worth It?" *Financial Analysts Journal*, (March/April, 2002), pp. 86-95.

They calculated returns for a composite emerging markets index, with underlying countries weighted according to each market’s gross domestic product. The larger economies of Brazil, India and Mexico were heavily weighted in the index, while Zimbabwe contributed little. They note: “The U.S. market offers a substantially higher return for a given level of risk, which indicates that emerging markets are not attractive stand-alone investments.” But, in the authors’ opinion, this does not rule out emerging markets as elements of diversified portfolios; “the attraction of the emerging markets lies to a large extent in their much lower average correlations with developed markets.”

FIGURE 3-16 illustrates the ending value of \$1,000 invested in various indices over the period 1988 through 2006. It is noteworthy that the emerging markets asset class performed extraordinarily well during 2004 and 2005 as the U.S. Federal Reserve engaged in a series of interest rate increases.

One source of diversification benefit lies in the fact that, unlike stocks of other developed economies, performance of emerging market stocks are not closely correlated with U.S. Federal Reserve policy. This implies that “developing countries are less likely to establish monetary policies that align with those of the developed countries.” Thus, apart from the compensation of the raw investment returns they offer, the risk of investing in emerging markets may also be compensated by a reduction in overall portfolio volatility, during periods of restrictive U.S. monetary policy (that is, “tight money” brought about through increases in the Federal Funds rate). While the stock returns of developed nations seem to correlate closely with the performance of U.S. stocks over interest rate cycles, the returns from emerging markets have a greater degree of independence. The authors conclude: “Even for investors interested in maintaining relatively low-risk equity positions, the optimal portfolio has a large

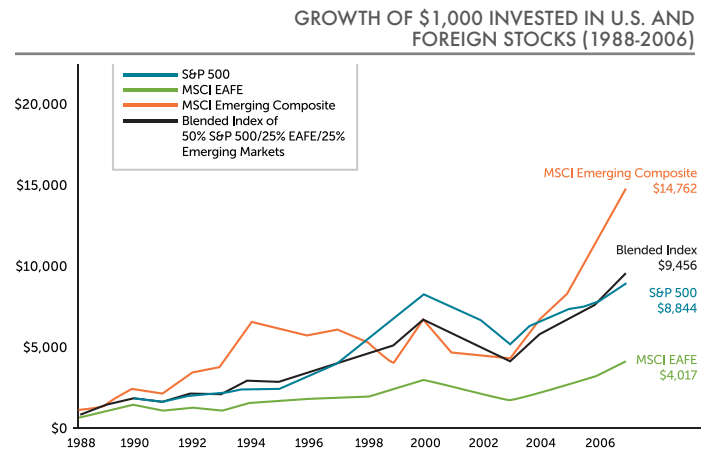


FIGURE 3-16

international exposure and most of it is in emerging market stocks.” This graph is updated through 2015 in the next section.

The Conover, Jensen & Johnson study echoes conclusions made by other studies:

- Returns of emerging market nations are not strongly correlated to each other, so investment in the overall asset class is substantially less risky than an investment in any single individual emerging market; and,
- Returns of emerging market nations are not strongly correlated with those of developed nations; thus, they offer an opportunity for effective portfolio risk reduction.

The low correlation of returns means that, in a well-diversified portfolio of emerging market investments, the pattern of gains or losses in one nation’s markets offset those in others. Several studies demonstrate that adding emerging markets to an international portfolio reduces overall portfolio risk. Divecha, Drach, & Stefek reviewed varying mixes of the Financial Times World Index with the International Finance Corporation Emerging Market Index. They concluded that

“until reaching about 20% in the Emerging Markets Index, the risk of the overall portfolio decreases, because of the low correlations between the two.”⁴³ Using another set of benchmarks (Morgan Stanley Capital World Index and Genesis Emerging Markets Fund) in a study of the period July 1989 to June 1993, J. Paulson-Ellis demonstrated “... that an investor can reduce risk until 40% of the portfolio is in emerging markets.”⁴⁴ Finally, Conover, et al., concluded that even low-risk portfolios can accommodate up to 33% in emerging market equities.⁴⁵ Thus, most early research concludes that emerging markets offer important diversification benefits to investors wishing to implement prudent investment portfolios.⁴⁶

Emerging Markets: Recent Research

As the 21st century got underway, several comprehensive studies confirmed the diversification benefits suggested in the earlier research. In 2005 Goetzmann, Li and Rouwenhost conclude that emerging markets offer investors an expanding set of markets in which to invest. Many of these markets have a relatively low correlation with developed nation markets.⁴⁷ Eun and Lee note that the correlation statistic between developed nations and emerging market nations is trending higher. However, the asset class of emerging markets remains sufficiently distinct from that of developed nations, so including emerging markets in a portfolio can provide a significant diversification benefit.⁴⁸

A 2009 study examines the return performance

of emerging markets during the recent U.S. financial crisis. Dooley and Hutchison divide the period from February 2007 through March 2009 into three phases: (1) February 2007 to May 2008; (2) May 2008 to the Lehman bankruptcy in September 2008; and, (3) September 2008 post-Lehman to March 2009.⁴⁹ During the initial phases of the crisis, emerging markets outperformed and had low correlations with U.S. financial market returns; in phase two, emerging markets performed similarly to the U.S. bond market, but underperformed the U.S. equity market; in phase three, emerging markets recoupled strongly with U.S. financial markets as the correlation statistics between markets converged towards high positive value – i.e., little diversification benefit. The evidence from the crisis period is mixed. Initially, exposure to emerging markets provided strong diversification benefits. However, as the contagion spread globally, the benefits waned.

The 2012 article by Christofferson, et al. [“Is the Potential for International Diversification Disappearing?”], cited earlier, is an in-depth study of the interrelationships between developed and emerging markets using weekly data from the late 1980s through mid-June 2009. Although correlation values between emerging markets and developed nations have been trending upwards, the authors conclude: “the wide range of correlations found within emerging markets again suggests that the potential for diversification benefits are greater here.” Specifically, they note that there are dramatic differences in “tail risk” across

⁴³ *Op. Cit.*, Divecha, Drach & Stefek, p. 49.

⁴⁴ Paulson-Ellis, J., “Introducing Emerging Markets,” *Managing Emerging Market Portfolios* (AIMR, 1994), p.15.

⁴⁵ *Op. Cit.*, Conover, et al., p. 92.

⁴⁶ An in depth discussion of the early research in emerging markets entitled *Emerging Markets and Portfolio Risk* is found in the *Investment Quarterly 2004 Q1*. This is available on the Schultz Collins website.

⁴⁷ Goetzmann, William N., Li, L. & Rouwenhorst, K. Geert, “Long-term Global Market Correlations,” *Journal of Business* (2005), pp. 1-38.

⁴⁸ Eun, Cheol S. & Lee, Jinsoo, “Mean-Variance Convergence around the World,” *Journal of Banking & Finance* (April, 2010), pp. 856-870.

⁴⁹ Dooley, Michael & Hutchison, Michael, “Transmission of the U.S. Subprime Crisis to Emerging Markets: Evidence on the Decoupling-Recoupling Hypothesis,” *Journal of International Money and Finance* (December, 2009), pp. 1331-1349.

markets – the risk of multiple markets experiencing significant losses, concurrently.⁵⁰ They assert that the diversification benefits from adding emerging markets to a portfolio appear to be large compared to those offered by developed markets alone.” (See **FIGURE 3-17**).

▲ **ADDITIONAL INFORMATION ON ASSET CLASSES**

Although the above discussion covers asset classes commonly used to construct investment portfolios, it is not an exhaustive list. The Schultz Collins website offers a more technical discussion of the benefits of other asset classes, including inflation-adjusted bonds and commodity investments. A short essay on inflation-adjusted bonds called “[Revisiting Tips](#)” appears in the *Investment Quarterly 2011 Q3*. Additionally, a working paper entitled “[Investing in Commodities: Issues and Current Research](#)” offers insights into the pros and cons of including commodities in an investment portfolio.⁵¹

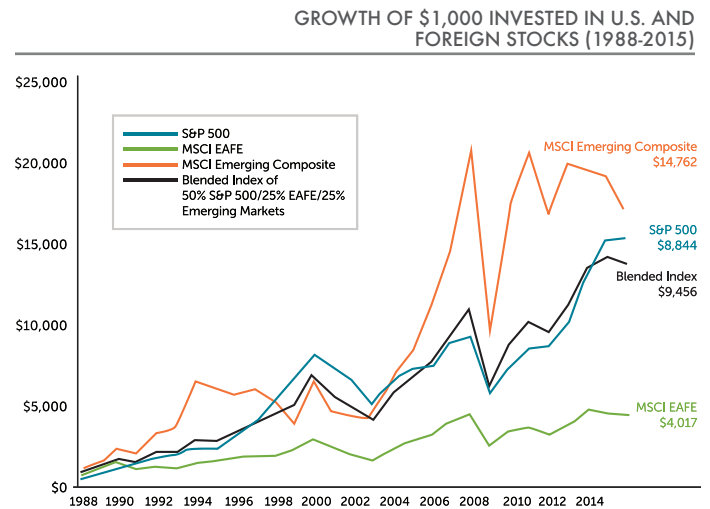


FIGURE 3-17

⁵⁰ Technically, a high correlation between markets does not signal a greater likelihood for the two markets to experience a *simultaneous* crash.

⁵¹ These are available on the Schultz Collins website.

