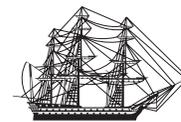


# Investment Solutions and Alternatives for Addressing Concentrated Equity

Vanguard Investment Counseling & Research



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## Executive summary

Concentrated equity holdings in a client's portfolio raise substantial concerns about idiosyncratic risk and portfolio diversification; the larger the portion of the portfolio invested in one stock, the greater the risk that the portfolio will fall short of its required returns. Because investors have vastly different reasons for holding individual stocks, concentrated equity holdings must be handled on a client-by-client basis and are difficult to incorporate into the wealth-management process. With that in mind, when the primary goal is to maximize risk-adjusted returns, our research suggests that immediate liquidation is the best solution for the vast majority of investors.

This is not to suggest that immediate liquidation should be the initial and only choice considered. Such a choice is not always preferred or even possible. For example, immediate liquidation may not be the ideal course for investors who have enough other wealth to weather substantially poor performance by the concentrated stock, or for investors who are absolutely convinced that the concentrated holding will significantly outperform the overall market (overconfidence is a common behavioral bias). Furthermore, if an investor anticipates his or her own death in the near future (and thus, a step-up in the portfolio's cost basis) or has charitable intentions, alternative strategies may be more beneficial. Finally, some investors may not be able to immediately liquidate their concentrated holdings because of legal or other restrictions.

This paper not only addresses why concentrated positions should be liquidated but, for those investors who are unwilling to or are prohibited from selling their shares, also explores ways to manage concentrated stock holdings and the associated risks.

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The chance of gain is by every man more or less overvalued, and the chance of loss is by most men undervalued.

—Adam Smith, *Wealth of Nations*

### How should risk be characterized?

Diversification of risk is a fundamental investment tenet. According to traditional finance theorists, investors are *risk averse*, preferring less risk to more risk, while behavioral finance holds that investors are *loss averse*, preferring smaller losses to larger losses. So how should one measure risk—by the potential size of the risk (e.g., standard deviation) or by the potential size of the loss? (*Note: Diversification does not ensure a profit or protect against a loss in a declining market.*)

Standard deviation<sup>1</sup> is generally accepted as the “benchmark” risk measure, since it measures total risk, including the systematic risk that all stocks share, as well as the idiosyncratic (unsystematic) risk that is unique to the individual stocks themselves. Because idiosyncratic risk can be minimized in a well-diversified portfolio, investors should only be compensated for the risk that cannot be diversified away, the systematic risk. This has significant implications for holders of concentrated stocks seeking to maximize risk-adjusted returns: The long-run return for the average stock should be similar to that of the broad market, while the extra idiosyncratic risk of the stock should go unrewarded.

In other words, although the average returns for a concentrated stock position and that of a market portfolio are expected to be similar over the long term, the concentrated stock harbors much higher risk (which contradicts the theory of risk aversion). Although one need look no farther than a list of the world’s wealthiest individuals to see that concentrated stock risk may pay off handsomely, numerous examples are available to remind investors that such risk certainly may not be rewarded. The markets are a zero-sum game—in which outperformance by some stocks must be matched by underperformance of an equal magnitude by other stocks—and the average return of an index must reflect the good fortunes as well as the ill fortunes of all of its constituents.

The previous example illustrates one criticism of standard deviation—that it includes both positive and negative potential outcomes. Although return-seeking activities inherently require some level of risk, it should be presumed that investors would not want to take any more risk than necessary. Consistent with behavioral finance theorists, it is reasonable to assume that most investors would prefer to avoid large losses where possible, and that if given the choice between pursuing greater gains (since the success of investors’ concentrated equity has likely made them wealthy already) or avoiding great losses, most holders of concentrated equities would choose the latter.

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<sup>1</sup> *Standard deviation*, as applied in this paper, is a statistical measure of the dispersion of an investment’s historical returns around its mean return in the sample period, assuming a normally distributed probability curve. Given this definition, for a security with a mean return of 10% and a standard deviation of 18%, about two-thirds of the observations are expected to fall between –8% and 28%. One-sixth of the observed returns would fall below –8%, while the remaining one-sixth of the observations would exceed 28%.

## Sources of concentrated equity holdings

Occasionally, concentrated equity is the result of a well-placed, extremely successful investment. However, more likely, the holding is the result of:

- Compensation-related payments (e.g., stock options, 401(k) contributions, initial public offerings [IPOs]).
- An inheritance.
- Stock buyouts.
- Private equity (e.g., family businesses, professional corporations).

Although wealth can be concentrated in either privately held (through entrepreneurial endeavors) or publicly traded stock (typically, common stock holdings), this paper focuses on the latter.

## What constitutes a concentrated equity holding?

The definition of a *concentrated equity position* is highly variable, depending upon the client's individual situation. Individual risk tolerance, the portfolio's asset allocation, the investor's desired and required returns, the investor's wealth, and other factors influence how one defines a concentrated stock holding. A frequently overlooked consideration is one in which an investor's fortunes—current income, health and pension benefits, and investment assets—are tied to a single company's fortunes. In this case, even a small allocation to the company's stock may be considered concentrated, given the investor's more substantial total exposure. Portfolio diversification, however, is the key. It is fair to say that when a single stock represents a sizable portion of a portfolio's assets, then the portfolio is not well diversified. This results in a portfolio with higher risks than the stock market overall, without a guarantee of higher returns.

In the past, some researchers have suggested that adequate diversification could be achieved with 15 to 30 equally weighted stocks (Graham, 1949; Fisher and Lorie, 1970). However, Campbell et al. (2001) reported that over the last few decades, there has been a noticeable increase in the volatility of individual stocks relative to the market. At the same time, they claimed, there has been a general decline in the correlations among individual stock returns. Campbell and colleagues concluded that "the  $R^2$  of the market model for a typical stock has also declined, while the number of stocks needed to obtain any given amount of portfolio diversification has increased." As a result, to assume that a small number of stocks will be representative of the future risk and return of the broad market is more problematic now than in the past. Today, a well-diversified portfolio likely requires hundreds, not a handful, of stocks (Statman, 2004).<sup>2</sup>

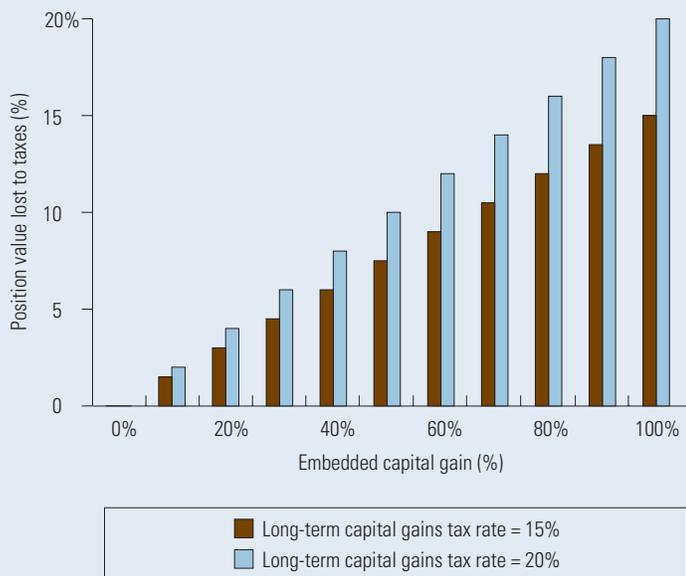
Although the number of stock holdings necessary to achieve reasonable diversification continues to be debated, it is fair to say that the trend is toward more, rather than fewer, stocks. One might measure concentration by looking at market weights in an index like the Standard & Poor's 500. At year-end 2005, General Electric (representing 3.3% of the capitalization-weighted S&P 500) was the index's largest company, and Altria Group (representing 1.4%) and AT&T (at 0.9%) were the index's 10th- and 20th-largest companies, respectively. Alternatively, using a thoroughly diversified 20-stock portfolio (a more aggressive estimate) implies that no stock should represent more than 5% of an individual's equity holdings. In an asset allocation framework, this means that for an investor with an allocation of 50% stocks and 50% bonds, no one security should represent more than 2.5% of the aggregate portfolio.

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<sup>2</sup> In "The Diversification Puzzle," Statman (2004) noted that, measured by the rules of mean-variance portfolio theory, the optimal level of diversification exceeds 300 stocks.

The Jobs and Growth Tax Relief Reconciliation Act, enacted in May 2003, reduced the tax on long-term capital gains from 20% to 15%, providing an increased incentive for investors seeking to diversify large, low-basis stock positions. Only a few years ago, the capital gains tax rate was 28%, almost twice the current rate. However, under the act's current provisions, the long-term capital gains rate is due to revert to 20% beginning in 2011. The tax trade-offs at both 15% and 20% are illustrated in Figure 1.

Figure 1. Diversification–capital gains tax trade-off



Source: Vanguard Investment Counseling & Research.

## Why do some investors prefer to hold concentrated equities?

Many investors, intent upon diversifying a large single-stock position, choose to sell all or a portion of the security outright. *For these investors, the reduction of stock-specific risk is paramount, and the diversification benefits outweigh the cost (the tax on the gain) incurred to sell the stock.* After all, by selling the security, an investor only surrenders a portion of the gain, while he or she could lose far more by continuing to hold the stock. However, some investors may decide to continue to hold concentrated equities for a variety of reasons.

Some of the most common reasons include:

- Desire to defer capital gains or to potentially eliminate capital gains due to a cost basis “step-up” at death.
- Desire to participate in the stock’s future returns.
- Stock is illiquid, or must be retained due to a lockup period, insider restrictions, or retirement plan restrictions.

### Desire to defer capital gains

Many investors hold concentrated equity positions because they would prefer not to realize capital gains on the sales. In some cases, the capital gains may be significant if their cost basis is very low. However, some investors erroneously inflate the impact of the capital gains tax (currently 15% on long-term gains for those in the higher marginal tax brackets), not recognizing that the tax is assessed only on the gain realized and not the entire position value. For example, if an investor sells a stock position that is 50% profit, the investor would surrender only 7.5% (15% of 50%) of the position’s value to capital gains tax (see Figure 1).

The 7.5% cost in our previous example (15% of a 50% profitable stock position) can be considered the primary cost of diversifying the holding. The benefits attained by diversifying are a significant reduction of downside risk, an ability to participate in the returns of the broad stock market, and an ability to reallocate the proceeds to other asset classes. Another way to look at this is that, for a *certain* 7.5% loss of principal, the investor is moderating the *uncertainty* of the stock's future performance, which may be significantly worse than that of the overall market.

*For certain clients who are either of advanced age or poor health, liquidation of the holding may not be advisable, given the step-up in cost basis that occurs at death. Since step-up results in the elimination of the accumulated capital gain—either in part or in whole—the portfolio may be diversified in a more tax-efficient manner after the step-up. One consideration is that tax laws can change, and there is no guarantee that in the future a step-up in basis will be granted at death.*

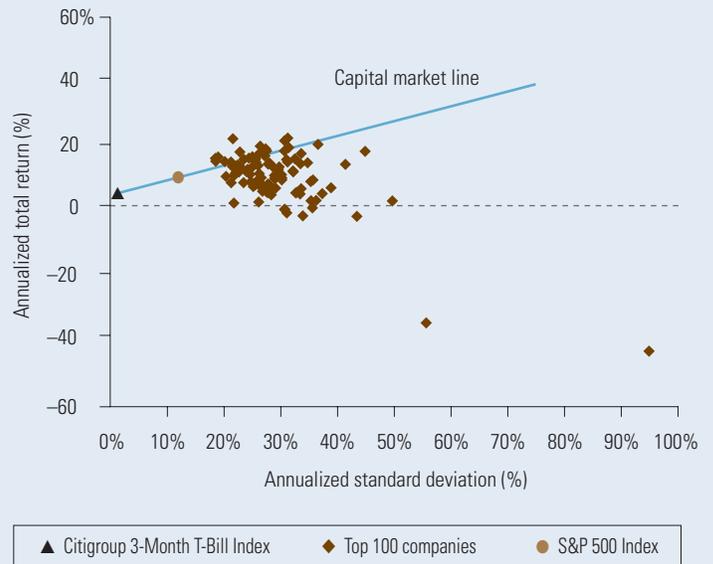
#### Desire to participate in the stock's future returns

Unless an investor expects the concentrated stock to *significantly* outperform the market, the stock should be sold. Relative to the market, the concentrated stock must provide much higher returns to compensate for its much higher risk. By adjusting the returns for risk, the cost of diversification in our previous example is reduced.

Figure 2 demonstrates this risk/return trade-off. The capital market line illustrates the additional expected risk and return for various portfolio combinations of stocks (the S&P 500 Index) and a risk-free asset (U.S. Treasury bills, or T-bills), which can range from 100% T-bills to more than 100% stocks (leveraged portfolios).

Figure 2. Individual stock risk and returns (1994–2005)

100 largest companies of S&P 500 Index as of December 31, 1993

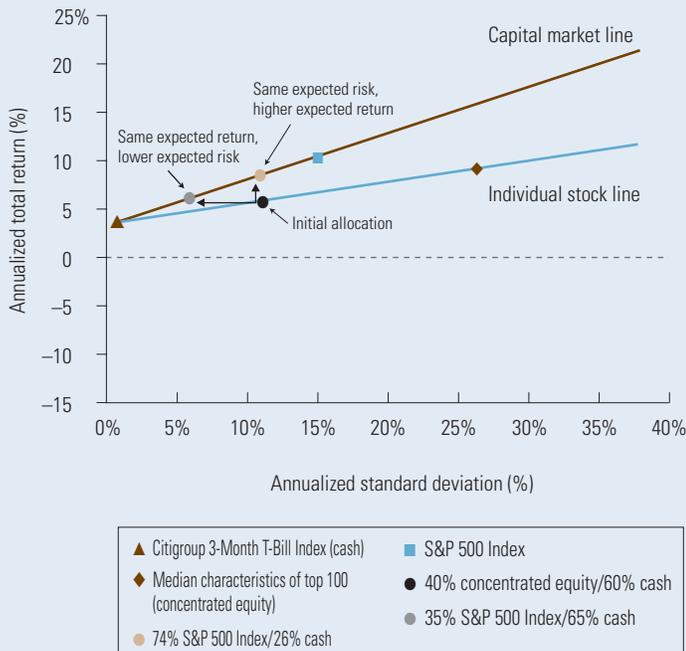


Sources: Vanguard Investment Counseling & Research; FactSet.

Tracking the performance of the 100 largest stocks in the S&P 500 Index (as of December 31, 1993) over the subsequent 12-year period reveals that although 46 stocks provided higher annualized returns than the market over the period, only 17 stocks in the group provided higher returns, risk-adjusted. These stocks are represented by the data points that are plotted above the capital market line. *One can immediately see that no stock during the period provided higher returns with less risk, compared with the S&P 500.* This result is not unexpected, as it is fundamental to the diversification argument.

**Figure 3. Individual stock risk and returns (1994–2005)**

100 largest companies of S&P 500 Index as of December 31, 1993



Sources: Vanguard Investment Counseling & Research; FactSet.

Past performance is no guarantee of future returns. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.

To some investors, a 17% success rate may seem like a fair chance of outperforming the market. However, to achieve this level of success, an investor must not only have owned one of these outperformers at the beginning of the 12-year period but also must have held on to the stock throughout the period. This may not sound like much of a challenge, since we started with the 100 largest companies in the market—companies generally characterized as sound, high-quality companies with established records of performance. But even with this select group of stocks, investors had to endure significant periods of poor performance, periods that in all likelihood tested investors' patience and conviction. For these companies that ultimately

delivered higher risk-adjusted returns during the period, their worst one-month returns ranged from about -11% to -36%; their worst 12-month losses ranged from approximately -16% to almost -55%.

For investors who want to reduce their portfolio risk, liquidating a significant portion of the concentrated stock is an obvious solution. In addition, surprising though it may seem, for investors seeking higher expected returns from their portfolio, liquidating the concentrated stock can still be the appropriate response. Figure 3 repeats the capital market line previously illustrated in Figure 2, but also plots the risk/return for the "average" individual stock (hypothetical security based on median returns and median standard deviations) in the 100-stock sample. Our base portfolio for comparison is identified as the "initial allocation" in Figure 3 and consists of 40% in the individual stock and 60% in T-bills. As shown, for the investor willing to maintain the risk level of the base portfolio, higher expected returns could be provided by an asset allocation of 74% S&P 500 Index and 26% T-bills. On the other hand, if one's goal is to reduce the risk of the overall portfolio, an allocation of 35% S&P 500 and 65% T-bills would cut the portfolio standard deviation of the initial allocation by roughly 50%, yet would have the same expected returns. Either way, the result is improved risk-adjusted returns through diversification.

These conclusions provide a framework for evaluating the benefits of diversifying the concentrated stock position. However, the impact of capital gains taxes on the portfolio's value has yet to be considered. In Figure 4, if we assume a 100% embedded capital gain (\$0 cost basis) on the concentrated stock position and the investor chooses the 35% stock/65% cash allocation, the portfolio value would be expected to trail the initial portfolio's value by the amount of the taxes paid. Conversely, the 74% stock/26% cash portfolio is expected not only to restore the value lost to capital gains in the short term (2.6 years) but to build additional wealth over the longer term. When an investor's acceptable break-even period is longer or the embedded capital gain on the position is more modest, then a more moderate equity allocation can be utilized.

This analysis reveals an important consideration touched on earlier: Investors need to carefully evaluate the impact of capital gains taxes during their investment horizon. If the investment horizon is short or of questionable length (such as for a critical illness of the security holder) and the magnitude of the diversification cost is large, the *certain* value lost to taxes may not be recouped during the time period, even if a significant diversified equity allocation is borne. In these situations, alternative methods to selling (discussed later) may be preferred to diversify the concentrated stock risk. However, if the time horizon is of a longer-term nature or the unrealized capital gain is a more moderate percentage of the holding's value, then it may be possible to fairly quickly recoup the portfolio's value lost to taxes and to profit sooner from the benefits of a more diversified portfolio.

Another way to look at how varied the returns of stocks can be is to examine total-return deciles. Dividing the ten-year annualized returns of the stocks of the S&P 500 Index into deciles (451 stocks in the index had ten-year returns as of December 31, 2005) reveals the speculative position that investors are engaged in by holding the concentrated position (see Figure 5). Although there is a chance of doing better than the stock market as a whole, there is also a chance of doing worse.

During this period, nearly 20% of the stocks in the S&P 500 (represented by deciles 1 and 2 in Figure 5) posted annualized gains more than 50% higher than the average return of the index's median stock. However, more than 20% of the stocks in the index (deciles 8 through 10) underperformed the median stock by 50% or more.

Indeed, the median stock in decile 10 in Figure 5 (the 95th percentile stock) had a *negative* ten-year annualized return. These disparate results indicate why it is imprudent to expect any individual stock to consistently provide "average" returns. A multitude of unexpected issues may influence a stock's price: competition, market leadership rotation, poor management, and so on. If anything, Figure 5 shows that individual stocks tend to provide very good or very mediocre returns, and only average returns in aggregate. Investors who want the overall

Figure 4. Impact of capital gains taxes on portfolio value

Break-even (years)		Embedded gain (% of market value)		
		100%	75%	50%
Indexed equity allocation (% of portfolio)	35%	N.A.	N.A.	N.A.
	40%	20.6	15.3	10.1
	50%	6.7	5.0	3.3
	60%	4.0	3.0	2.0
	70%	2.9	2.2	1.4
	74%	2.6	2.0	1.3
		-50%	-50%	-50%
		-44%	-44%	-44%
		-31%	-31%	-31%
		-18%	-18%	-18%
		-5%	-5%	-5%
		0%	0%	0%

Source: Vanguard Investment Counseling & Research.

Figure 5. Standard & Poor's 500 Index annualized returns for ten years ended December 31, 2005

(Median stock return in decile noted)



Sources: Vanguard Investment Counseling & Research; FactSet.

Past performance is no guarantee of future returns. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.

returns of the stock market need to own the overall stock market (e.g., a broad-market stock index fund) and not just a stock (or sample of stocks) that trades in the market. Again, it is worth repeating that a stock with a 50% embedded capital gain has already delivered a 100% return. Selling the stock and paying the capital gains tax seems reasonable, considering the potential underperformance illustrated in Figure 5.

### **Illiquid or restricted stock holdings**

Some stocks may be illiquid because they trade infrequently, making difficult the disposition of a large number of shares in a timely and cost-effective manner. Buyers may not always be readily available, and those that are available will likely want to pay a discount for the shares, because they know that the large sell order will probably depress the stock's price, if only temporarily. The ease of liquidation and the impact of the sale on the stock's market price should be considered when contemplating selling a large position.

Stocks held by some investors may be illiquid owing to a lockup period or because an investor is deemed an insider in the corporation. Lockup periods are usually associated with initial public offerings, while insider stock sales are usually restricted by Securities and Exchange Commission Rules 144 or 145. Lockup and restriction periods can last for weeks, months, or years. Diversification of the concentrated stock risk in these instances can be challenging.

For company stock, which is commonly used in employer-sponsored defined contribution plans, there are often trading limitations. Frequently, plan participants are not able to liquidate these shares immediately, if at all. According to Mitchell and Utkus (2002), approximately 3% of 401(k) plans offer company stock as an investment option; however, company stock is more frequently offered in large-company plans (more than 5,000 employees) than

Investors may not always have the ability to control the risk of concentrated stock when it comes to their retirement plan, but they do have the option of controlling the risk of the stock in their overall financial plan. For investors who want to lower the risk of falling short of their retirement goals, the exclusion (or significant discounting) of the concentrated stock's value from their portfolio may be preferable to assuming that an estimated value of the stock will be available when they need it in retirement. Excluding the stock from the investment plan may require additional savings by investors, which some may deem a burdensome or overly cautious response. However, if utilized early in the planning process, this strategy allows the investor to save while it is still practical, rather than later in life when it may not be. If this strategy is not followed and the stock performs poorly just before the investor's retirement, making up the asset shortfall with savings may no longer be possible.

small-company plans. Plans that offer company stock typically represent a significant percentage of 401(k) plan participants and a majority of 401(k) plan assets (Mitchell and Utkus, 2002). Company stock concentration in participant accounts can be significant, too. In a 2005 study of Vanguard's defined contribution plan clients, 42% of participants in plans offering company stock had more than 20% of their account balances invested in company stock—and 15% had more than 80% of their account balances in company stock (Vanguard, 2006). In the study, Vanguard found that for clients whose plans offered stock and matched in stock, company stock accounted for an average of 51% of plan assets.

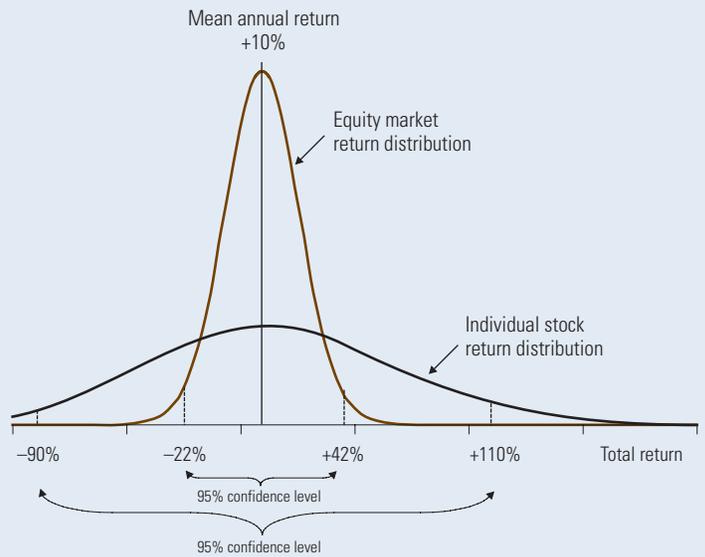
## Why liquidate concentrated equities?

*Our research suggests that, for the vast majority of investors, concentrated equities should be liquidated, because the magnitude of potential negative returns for any individual stock is substantially greater than for the overall stock market. The tax cost is comparatively small when measured against the possible losses for a single stock.*

As seen in Figure 6, over the four decades ended June 30, 2005, the stock market's average annual return (as represented by the S&P 500 Index) was approximately 10%. One might assume that the average individual stock provided a similar return. However, although this assumption is likely to hold over shorter periods, Boyle et al. (2004) found that, owing to the volatility of individual stock returns, the average stock tends to lag the market over longer time frames. Boyle and colleagues attributed this return shortfall to a "risk drag" due to the volatility of individual stocks.

The range of returns for the stock market as a whole (as measured by the standard deviation of annual returns) has been significantly lower than that for individual stocks. Intuitively, one would expect this result, since the return from any individual stock can range from a theoretically infinite gain to a total loss. As illustrated in our hypothetical example in Figure 6, an investor can be 95% confident that the stock market's annual return will fall approximately between a gain of 42% and a loss of -22%. However, the range of possible returns is substantially greater for the average individual stock: For the same confidence level, the return would fall approximately between a gain of 110% and a loss of -90%. (For the purposes of simplification in this example, we assumed that returns were normally distributed.)

Figure 6. Hypothetical distribution of stock returns: June 30, 1965, through June 30, 2005



Source: Vanguard Investment Counseling & Research.

With so much uncertainty regarding the future success of the concentrated equity position, an investor should be willing to liquidate at known capital gains tax rates. Although some may expect the returns for the average individual stock and the stock market to be similar over longer periods of time, this implicitly assumes that the investor's stock performs no worse than the average stock. This assumption in itself is likely to be optimistic. Investors may help resolve this complicated issue by asking themselves: "Given that past returns are history and that future returns are uncertain, would I buy the same stock in the same concentration *today*?"

Table 1. Long-term capital gains tax rates

Year(s)	Maximum tax rate*	Year(s)	Maximum tax rate*
1938–1941	15.0%	1979–1981	28.0%
1942–1967	25.0	1982–1986	20.0
1968	26.9	1987	28.0
1969	27.5	1988–1990	33.0
1970	30.2	1991–5/6/1997	28.0
1971	32.5	5/7/1997–5/27/2003	20.0
1972–1978	35.0	5/28/2003–present	15.0

\*For longest holding period.

Source: *Income Tax and Financial Planning Quickfinder Handbook*.

### What are the alternatives to immediate liquidation?

Clients wishing to diversify concentrated equity holdings and to defer the capital gains tax have several options. Some of the more commonly considered options are:

- Making charitable gifts.
- Liquidating over a period of years.
- Hedging through the use of derivatives.
- Hedging through the use of exchange-traded shares or sector funds.
- Participating in an exchange fund.

Although the diversification cost from the outright sale of a concentrated stock is generally straightforward—the sum of the capital gains tax and any fees associated with the sale of the security—the costs of alternative strategies are not always so clear. In addition to the transaction costs associated with executing many of the strategies, other expenses—such as legal fees—may be

incurred. As with all tax-related matters, it is recommended that the investor review the strategy with independent legal and tax counsel. For more complicated hedging strategies, consulting fees may be significant.

Before addressing the alternatives, it should be noted that ordinary income and capital gains tax rates are currently low in a historical context and that many of the strategies cited here originated when capital gains tax rates were significantly higher than today (see Table 1). The substantial costs associated with many of these strategies may no longer be warranted when compared with the current low tax environment.

### Making charitable gifts

One option available to an investor seeking to diversify his or her portfolio without incurring significant taxes is that of charitable gifting during the investor's lifetime. This strategy is most appropriate for individuals who not only want to diversify the single-stock risk in their portfolio but also have an inclination toward charitable giving. As a gift, the value of the asset (along with its low cost basis and risk) is transferred to another entity, usually a tax-exempt charitable organization. Once the security is no longer the legal property of the individual, it is sold by the charity for diversification purposes. In most cases, this transfer is irrevocable, and in exchange, the individual usually receives a significant tax deduction. In cases where a charitable remainder trust is created, a higher income stream than that provided by the concentrated stock may well be received. *Because of these benefits, we believe that for investors of means and with charitable intent, gifting is a very powerful diversification technique.*

**Table 2. Systematic-liquidation scenario analysis**

*Assumptions:*

Concentrated stock market value	\$1,000,000
Concentrated stock cost basis	\$0

Annual Return	10%
Capital gains and dividends	0%

Sell immediately			
Year	Capital gains tax	Earnings	Year-end balance
1	\$150,000	\$85,000	\$935,000
2	\$0	\$93,500	\$1,028,500
3	\$0	\$102,850	<b>\$1,131,350</b>
Cost basis—Year 3			\$805,000
Unrealized gain			\$281,350
Tax on unrealized gain (15%)			(\$42,203)
<b>Tax-adjusted balance</b>			<b>\$1,089,148</b>

Sell over three years			
Year	Capital gains tax	Earnings	Year-end balance
1	\$50,000	\$95,000	\$1,045,000
2	\$55,000	\$99,000	\$1,089,000
3	\$60,500	\$102,850	<b>\$1,131,350</b>
Cost basis—Year 3			\$937,833
Unrealized gain			\$193,517
Tax on unrealized gain (15%)			(\$29,028)
<b>Tax-adjusted balance</b>			<b>\$1,102,322</b>

<b>Difference</b>	<b>\$13,175</b>
<b>Total return (annualized)*</b>	<b>0.44%</b>

Source: Vanguard Investment Counseling & Research.

Note: The right-hand table assumes complete liquidation of the diversified index fund at the end of the third year, which is not consistent with a long-term, tax-efficient investment strategy. If liquidation is delayed beyond the third year, the total return differences are: 0.13% when sold after 10 years, 0.04% when sold after 20 years, and 0.00% when never sold (assuming a step-up in cost basis at death).

**Liquidating over a period of years**

Frequently, investors want to diversify the risk of a low-cost-basis, concentrated equity position, but also want to spread the capital gains tax over a period of years. As illustrated in Table 2, assuming that the stock is sold systematically and that the reinvested proceeds (invested in a diversified index fund) from the sales deliver the same returns, the return advantage through the tax deferral is small

(+0.44% annually over three years), compared with the considerable risk of still holding the concentrated position. *Given the marginal return benefits (which amount to the total return of the deferred tax liability) and the considerable single-stock risk that remains, this strategy is less beneficial than many investors believe.*

### Hedging through use of derivatives

Two frequently used derivative strategies for hedging concentrated stock risk are equity collars and variable prepaid forwards (VPFs).

**Equity collars.** Equity collars use a combination of long-term put and call options to limit the downside risk of the stock, but in so doing they also limit the potential upside return, should the stock appreciate considerably. Once the collar is established, the position can be used as collateral to monetize the stock without selling the position and incurring capital gains. However, to avoid “constructive sale” rules stipulated by the Taxpayer Relief Act of 1997 (see box, opposite), some exposure (typically, at least 20%) to the stock must be retained. In addition to the high costs, this strategy is also subject to rollover risks and option calls.

**Variable prepaid forwards.** A variable prepaid forward (VPF) is a forward sale of a “contingent number of shares.” This strategy establishes a dollar amount of stock that will be sold in the future, with the investor able to borrow a large portion of the proceeds in the present. This strategy avoids “constructive sale” provisions because, although the value of the sale is set, the number of shares that are to be sold depends on the share price at delivery.

The annual cost of these strategies can run 1%–2% (Gordon, 2001), but the investment advisor offering the strategy determines them on a case-by-case basis. Tax and legal consulting fees are commonly incurred in developing an appropriate strategy and are not included in this cost estimate. Also, to avoid the constructive sale rule, exposure to the stock is typically not eliminated, but moderated: A sizable portion of the stock must be held unprotected and “at risk” by the investor. *As a result of the significant costs and continued risk, these strategies may be more effective as short-term options, rather than as longer-term solutions.*

Strategies designed to hedge the risk of concentrated equities became more complicated after the Taxpayer Relief Act of 1997. Prior to the act, a client could sell “short against the box.” This strategy allowed the individual to sell a security short, which sets the sale price, and deliver the stock against the short sale at some point in the future. A capital gain on the transaction was not created until the shares were delivered. After the 1997 tax act, this transaction was deemed to be a “constructive sale”—since the client no longer bore the risk of the position—and was thus a taxable event. The potential for unfavorable changes in tax laws is an obvious and largely unpredictable factor for many “tax-centric” strategies. In addition, some currently used strategies are not supported by tax laws at all, but instead are based on guidance from private-letter rulings by the Internal Revenue Service. With a private-letter ruling, an individual makes a request to the IRS to rule on a certain issue before the individual takes action. The IRS’s ruling, then, applies to that individual and tax circumstance alone. *(You may want to consult a tax advisor regarding your particular situation.)*

### Hedging through use of sector funds or exchange-traded shares

For investors whose equity positions are concentrated in one sector and represent a significant unrealized capital gain, a “completion strategy” may be considered. This strategy involves building a well-diversified equity portfolio around the concentrated stocks by buying exposure to sectors (either through exchange-traded shares or mutual funds) not currently held. In other words, the strategy assumes that the performance of the concentrated stocks will be the same as the performance of the sector in which the concentrated stocks are classified; and that, therefore, additional exposure to the sector is

not needed, owing to the investor's belief that the concentrated stock will represent the entire sector. As we explain next, however, this is a very risky assumption. In addition, the feasibility of a completion strategy is usually severely reduced when the size of the sector-specific concentrated stock position is substantial.

This paper has already illustrated the dispersion of returns in the market, in which some stocks either significantly outperform or underperform, and only in aggregate deliver returns similar to those of the broad market. A similar return dispersion exists among the market's sectors. An investor is taking a very significant risk by assuming that the risk-and-return characteristics of the concentrated equity holdings will approximate those of the sector, even over longer time periods. As Figure 7 shows, for the consumer discretionary sector of the S&P 500 Index, a dramatic dispersion exists between the first and second decile returns and those of the ninth and tenth deciles. Also, returns at both ends of the spectrum deviate significantly from the median return of 10.8%.

One way to decide whether to create a completion portfolio is to examine the trade-off between the tax liability that would result from liquidating the concentrated stock versus the potential return the investor would relinquish and the probability of the concentrated stock underperforming the sector. If an investor owns a concentrated stock with a \$0 cost basis, under the current tax law for capital gains, the entire value of the position would be taxed at 15% (assuming that the gain is long-term and that the investor is in a higher tax bracket). This tax cost can be weighed against the cost in return if the individual's concentrated stock underperforms the sector (recall, the sector has been excluded from the portfolio due to the fact that the concentrated stock represents the entire allocation to the sector).

**Figure 7. Consumer discretionary sector of the S&P 500 Index**

*Annualized returns for ten years ended December 31, 2005  
(median stock return in decile noted)*



Source: FactSet.

As Figure 7 illustrates, an individual investing in the consumer discretionary sector of the S&P 500 Index for the ten years ended December 31, 2005, would have had a greater than 30% chance of the single stock underperforming the median stock return in the sector by at least 300 basis points annually. This would equate to a five-year break-even rate, meaning that the stock would only need to trail the sector by 15% over five years (or about 3% per year) for the cumulative underperformance and the tax to be comparable. If the individual's basis were 50%, the break-even rate would be less than three years. Thus, it does not take a significant deviation from the median return for an investor to be better off paying the capital gains tax today and diversifying the portfolio.

**Figure 8. Cumulative price performance of Merck stock (MRK) versus Vanguard® Health Care ETF (VHT)**

(January 30, 2004–December 31, 2005)



Source: Vanguard Investment Counseling & Research.

A variation of the completion portfolio strategy is to diversify the risk of the concentrated stock by short selling, rather than avoiding, the sector. Using this strategy, an investor hopes that any decline in the stock (which is held long) is also experienced by the sector exchange-traded fund being shorted. Although the investor will lose value on the stock, it is assumed that a properly constructed short-sale hedge will appreciate by a similar amount.

Similar to the completion portfolio, this strategy assumes that the returns of the concentrated stock and of the sector are very closely correlated and move by very similar magnitudes. If this is not the case, the mismatch in performance—such as the stock depreciating while the sector fund

appreciates—can cost significantly more than the capital gains tax that the investor is seeking to avoid. Figure 8 illustrates such an outcome.

*As a result, our research suggests that these strategies should not be utilized unless the characteristics of the stocks held (number of companies, asset-weighted proportions relative to sector, etc.) closely resemble those of the sector to be excluded or sold short. If the investor would prefer not to liquidate the concentrated stock position, charitable gifting or equity collars (beyond the constructive sale limits) would most likely be superior strategies.*

### Participating in exchange funds

The primary purpose of an exchange fund is to help investors diversify a large holding of low-cost-basis stock. Generally, the investor will contribute the stock in-kind to the fund in exchange for a share of the other securities in the fund. *Although the exchange helps to diversify the single-stock risk and does not trigger an immediately taxable event, it does not eliminate the tax burden—it only defers it.* To benefit from this exchange, the individual must remain in the fund for a minimum of seven years. However, even though the exchange of shares may be tax-free, participants may still incur capital gains during the commitment period if the general partner disposes of any of the portfolio's holdings. At the end of the seven-year commitment, the investor may opt out of the exchange fund, and upon doing so, will usually receive a pro-rata portion of the exchange fund's assets. However, the cost basis for these holdings remains the same as that of the stock that the investor contributed to the fund.

Exchange funds tend to be fairly expensive diversification vehicles.<sup>3</sup> An exchange fund may be more diversified than the single holding that was contributed, but is likely to be less diversified than a broad-market stock fund. There is still a degree of uncertainty regarding the composition of the stocks

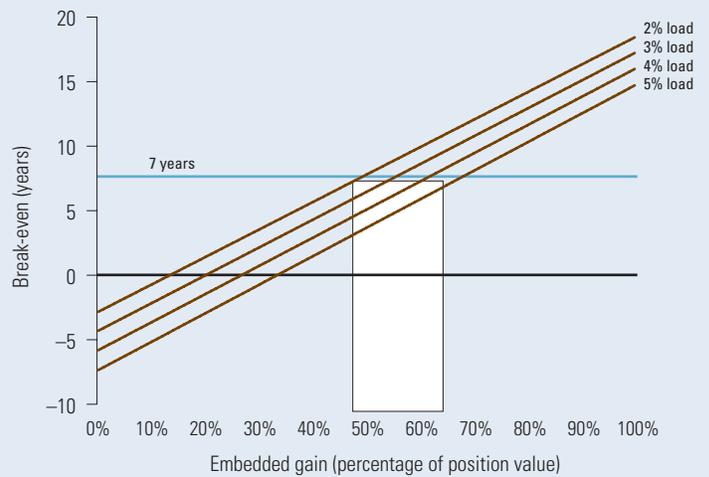
<sup>3</sup> Typically, exchange funds are sold with a front-end load and carry annual expense ratios of 0.75% to 1.00% (Bailard, 2000).

the investor receives, since the portfolio depends in large part on stocks that other investors contributed to the fund. Since exchange funds are structured as limited partnerships, it is the responsibility of the general partner to decide what stocks are accepted into the fund. This means that an investor's willingness to contribute stock to an exchange fund may not guarantee his or her ability to do so. The performance of the exchange fund may or may not reflect the performance of the overall market.

Assume that an investor intends to diversify a \$1 million position in a common stock using either an exchange fund or a broad-market fund. The exchange fund will allow the investor to defer the capital gains tax, but is likely to be more expensive to buy and own, and the resulting diversification is uncertain. An index fund can be purchased without a load, it carries a lower expense ratio, and it provides more definitive diversification—but the investor must liquidate the stock, and realize capital gains, to buy the fund. A break-even analysis can help an investor to choose between the two strategies (see Figure 9).

Figure 9 compares the cost of the diversification—the sales load of the exchange fund or the realized tax liability to buy the index fund—with the carrying costs (expense ratios) of each investment. Assuming a very conservative 0.75% annual expense differential between the funds and a 2% sales load on the exchange fund's purchase, an investor needs to have a substantial embedded gain (of at least 50%) for the costs of the exchange fund to be considered. In addition, the higher the sales load to participate in the exchange fund, the larger the embedded gain needs to be to justify the expense. When the embedded gain on the stock is less than 50%, the investor would pay more in fees over the seven-year exchange-fund commitment than he or she would pay in taxes on the realized gain. And, unlike the mutual fund, the significant tax liability from the embedded gain remains.

Figure 9. Break-even analysis



Source: Vanguard Investment Counseling & Research.

As a result, for an exchange fund to be a reasonable option, an investor must:

- Have full control of the asset (no lockup or SEC restrictions on selling the securities).
- Desire a degree of diversification.
- Have a strong desire to defer capital gains tax.
- Be comfortable committing to the exchange fund for a minimum of seven years.
- Have a significant embedded capital gain.
- Be able to find an exchange fund with low sales charges and ongoing management fees.

*Due to the high costs and uncertain diversification, exchange funds are not recommended for most investors.*

## Conclusion

Because concentrated equity positions impose substantial risks to investors' portfolios, these positions should be immediately liquidated for the vast majority of risk-conscious investors. The primary reason for this recommendation is the wide variability in returns for an individual stock versus the overall stock market. With so little certainty regarding the future success of a concentrated stock position, investors should be willing to incur the relatively minor capital gains tax to achieve a greater level of diversification.

In cases where immediate liquidation is not preferred or even possible, there are alternatives. Among the more common options, charitable gifting and the use of derivatives (such as equity collars) are generally recommended over systematic liquidation, the use of completion strategies, or exchange funds. But investors should be aware that the costs of many of these strategies, particularly over time, are usually much higher than the cost of immediate diversification.

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