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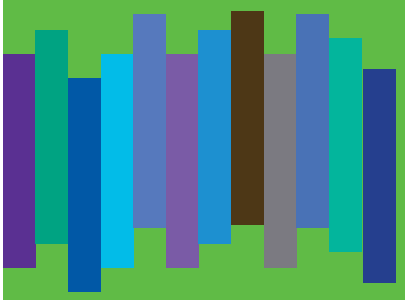
INVESTMENT PRINCIPLES

INFORMATION SHEET FOR INVESTORS

THE IMPACT OF DIVERSIFICATION AND RISK



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IMPORTANT NOTICE

The term "financial advisor" is used here in a general and generic way to refer to any duly authorized person who works in the field of financial services, including the following:

- Investment brokers
- Mutual fund brokers
- Scholarship plan dealers
- Exempt market dealers
- Portfolio managers
- Investment fund managers
- Life insurance agents
- Financial planners (F.Pl.)

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THE IMPACT OF DIVERSIFICATION AND RISK

Until now, we have assumed that returns are stable at 3% or 6% yearly. Of course, investment returns are not stable. Not only is there no guarantee that a portfolio will deliver a return of 3% or 6% on average, realized returns may vary greatly from year to year. Risk is about the likelihood that our return expectations are not met.

This document deals solely with the impact of risk on total wealth. It illustrates that risk amputates total wealth and that a properly diversified portfolio will mitigate its impact. Unfortunately, we will have to use a mathematical formula to fully illustrate our point. It may be the one of the most complicated of this series but also one of the most important.

AVERAGE RETURNS VERSUS COMPOUNDED RETURNS

Which do you prefer?

- A 10% return two years in a row, or
- A return of 20% followed by a return of 0%.

In both cases the average return is 10% [(10% + 10%)/2 and (20% + 0%)/2], but if you invested $1,000, your final wealth will be higher in the first return scenario since:

- $1,000 x (1+10%) x (1+10%) = $1,210 vs
- $1,000 x (1+20%) x (1+0%) = $1,200

In fact, having a return of 20% followed by a return of 0% generates the same final wealth as a stable return of 9.54% since:

- $1,000 x (1+9.54%) x (1+ 9.54%) = $1,200.

The average fixed return that leads to the same final wealth is called the compounded return. In the first scenario, 10% is both the average return and the compounded return. Both are equal in the absence of volatility of returns (risk). In the second scenario, 10% is the average return but the compounded return is 9.54%. Your final wealth is always explained by the compounded return, not by the average return.

This illustrates a simple but important principle of asset management: risk amputates the compounded return and, therefore, final wealth. More specifically:

Compounded Return = Average Return – Impact of Risk

Therefore, managing and/or reducing risk is tremendously important to your final wealth. It's an unavoidable reality.

HOW TO DEFINE RISK

The most common measure of risk is the standard deviation of return (SDR). SDR is a measure of the amplitude and likelihood that actual returns may differ from expected returns. For example, assuming the expected yearly return of equity is 10% and SDR is 15%, there would be a:

- 68% probability that realized yearly returns would remain within ± one SDR of expected returns (between -5% and +25%);
- 95% probability that realized yearly returns would remain within ± two SDRs of expected returns (between -20% and +40%).

In other words:

	68% Probability			
-20%	-5%	10%	25%	40%
-2 SDRs	-1 SDR	Expected Return	+1 SDR	+2 SDRs
95% Probability				

Although SDR is not a perfect measure of risk, it is widely used in the industry and can be found in the reports of most investment products. In fact, the relation between average return and compounded return is approximately the following:

Compounded Return ≈ Average Return – $SDR^2/2$

Hence, the expected compounded return in the above example is 8.875%[1] since:

$8.875\% = 10\% - 15\%^2/2$

The 15% volatility drains compounded returns by 1.125% ($15\%^2/2$). The following table illustrates the drain of volatility on compounded returns for different levels of volatility.

Volatility	Performance Drain
1%	0.005%
5%	0.125%
10%	0.500%
15%	1.125%
20%	2.000%
25%	3.125%

Key observers will notice that the volatility drain on compounded returns increases much faster than volatility itself. For example, when volatility doubles from 10% to 20%, the performance drain quadruples from 0.50% to 2.00%. Hence, even if this equation does not appear intuitive to all, it does communicate the importance of reducing and managing volatility in order to maximize final wealth. It also implicitly illustrates the danger of purchasing investment products, such as some ETFs, that use leverage. Leverage amplifies the volatility drain because it amplifies volatility.

[1] SDR^2 simply means SDR x SDR or in this case 15% x 15%

THE IMPACT OF RISK ON FINAL WEALTH USING REALISTIC EXAMPLES

The following table illustrates the average return, compounded return and risk of an investment in US equity and US bonds between 1990 and 2014. We ignore fees and taxes for the purposes of this illustration.

	Assets		Portfolio
	US Equity	US Bonds	60% Equity / 40% Bonds
Average Return	11.50%	7.87%	10.05%
Compounded Return	9.82%	7.61%	9.54%
Spread	1.68%	0.26%	0.51%
SDR	18.49%	7.61%	10.63%
$SDR^2/2$	1.71%	0.29%	0.56%

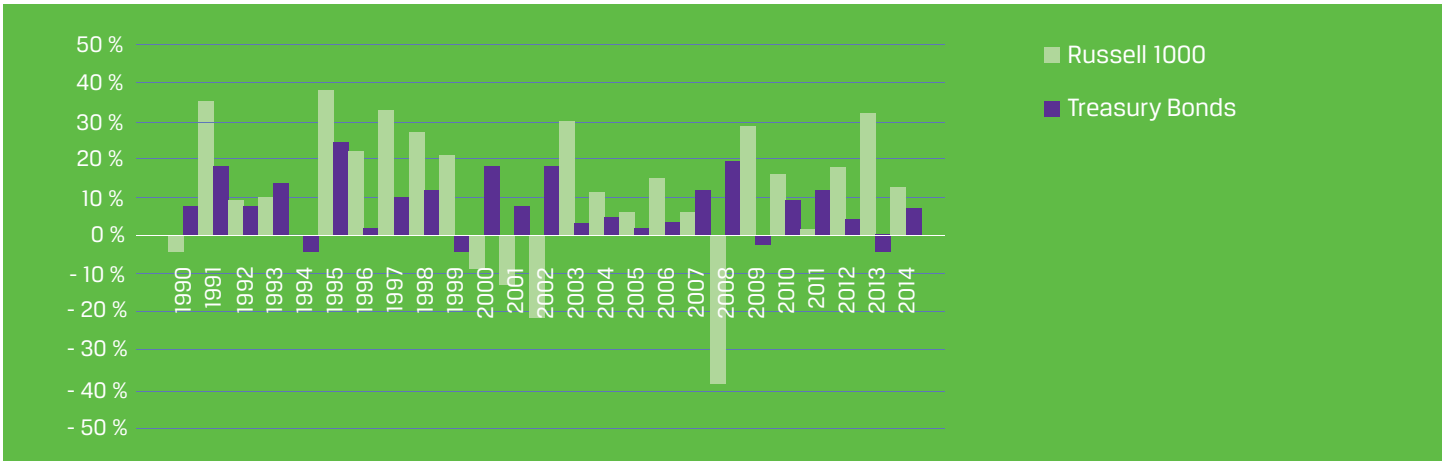
The difference between the average return and the compounded return for US equity is 1.68% (11.50% vs. 9.82%), while it is only 0.26% (7.87% vs. 7.61%) for bonds. As expected, the spread is greater for equity than bonds, because the volatility (SDR) of equity is much higher. It is no coincidence that the return spread between the average and compounded returns for both equity and fixed income is almost equal to $SDR^2/2$. It is mathematical, not a forecast.

The level of volatility illustrates the significant risk of owning equity. An SDR of 18.49% combined with an average return of 11.5% indicate a 68% probability that yearly return could fall between -6.99% (Average return -1 SDR) and +29.99% (Average return +1 SDR) over the 1990-2014 period and a 95% probability that the performance will be between -25.48% (-2 SDRs) and +48.48% (+2 SDRs). Equity investing is not for short-term investors. Disastrous performance can occur over short periods and is even more likely if a portfolio is not properly diversified.

The last column illustrates well why it is so important to own diversified portfolios. It presents the performance and volatility of a portfolio invested 60% in US equity and 40% in bonds. Surprisingly, the compounded return on the portfolio is almost as high as that of equity despite a strong bond component. Why?

The lower volatility of the blended portfolio explains this result. Diversification reduces portfolio volatility because good and poor performance among asset classes is often and fortunately not well synchronized. For example, the following table illustrates yearly returns on US equity and US bonds since 1990. In 2008, US equity performed badly while bonds performed well. The reverse occurred in 2013. This imperfect synchronization reduces the volatility of a blended portfolio and its performance drain on compounded returns.

YEARLY RETURNS



THE IMPORTANCE OF REBALANCING

Before going further, let's summarize our findings. What determines final wealth is not the average return but the compounded return. Volatility drains compounded returns and does so at an increasing pace as volatility increases. Hence, the reason why we diversify is not only to reduce the likelihood of poor performance but also because lower volatility helps increase compounded returns. However, there is one important factor we have not mentioned.

"The impact of lower volatility on compounded return will not occur if the portfolio is not regularly rebalanced."

For example, when a portfolio is designed with a 60/40 allocation target, the actual weights of equity and bonds will constantly deviate from this target, since the return of each asset will be different. Hence, the investor must periodically rebalance the portfolio to bring the portfolio back to this 60/40 target. If equity outperforms bonds, some equity will have to be sold to buy bonds. In our previous example, we assumed that the rebalancing occurs on a monthly basis.

However, although it is essential to rebalance a portfolio to benefit from the effect of lower volatility on compounded returns, the portfolio does not need to be rebalanced on a daily or even a monthly basis. Research shows that rebalancing on a semi-annual basis or even on an annual basis can lead to even better returns than rebalancing on a monthly basis. Your advisor may also present other rebalancing methodologies that are even more efficient. You must rebalance, and there is more than a single approach to rebalancing.

SUMMARY AND CONCLUSION

Diversification across asset classes (such as US bonds and US equity) is often presented as a way to reduce risk. But there is more. Although diversification does reduce portfolio risk, the impact of lower volatility on compounded returns is rarely discussed with investors. Diversification is both about decreasing risk and decreasing the drain on compounded returns. Hence, diversifying and managing risk efficiently reduces the performance drain and increases your expected return for the risk you are taking.