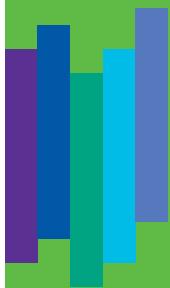


INVESTMENT PRINCIPLES
INFORMATION SHEET FOR CFA PROFESSIONALS

**EVALUATING YOUR
FINANCIAL NEEDS**
**BUILDING A
PORTFOLIO**



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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:

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- Scholarship plan dealers
- Exempt market dealers
- Portfolio managers
- Investment fund managers
- Life insurance agents
- Financial planners (F.P.I.)



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BUILDING A PORTFOLIO

We are far enough into our discussions to start building complete portfolios that investors could adopt. Even though many different approaches could be used, we have decided to design portfolios that include numerous asset classes and provide geographic diversification and also different investment styles (such as value, growth, and size) without making use of leverage or short positions. Even though ignoring leverage and short positions limits the efficiency of what could be achieved, it provides a more realistic environment for the great majority of investors. Furthermore, we will compare both simple and more comprehensive portfolios. We will also evaluate the portfolios of investors who react emotionally to rising or falling markets (investors who buy high and sell low) or simply fear investing, in order to evaluate the potential cost of poor decision making and the value of advisory services.

We will build portfolios from different points of view. The first is that of investors who have different risk profiles, to illustrate the drawdowns (worst cumulative losses) that can be observed in each case. And the second is that of investors who live in two very different countries:

- U.S. investors who have a diversified equity market and a countercyclical currency; and
- Canadian investors who have a more resource-centric equity market and a procyclical currency.

This is also the last time we will work with historical returns. In the following documents, we will be working with forward returns. History helps us understand financial markets and illustrate portfolio concepts, but the future is rarely like the past.

THE HISTORICAL PERFORMANCE OF ASSET CLASSES

The portfolios are built from 10 assets. The period analyzed starts in August 1992 because all the data are not available before this period. It ends in October 2015 for a period of 23 years and two months. We could also have used a wider range of products, such as factor-based equity products, or even other asset classes, such as commodities. Nevertheless, this is sufficient for the purpose of illustrating the different portfolio concepts.

But before we build our portfolios, let's analyze the performance data of each asset from the point of view of U.S. investors (in U.S. currency) and Canadian investors (in Canadian currency). The following table presents all 10 assets as well as the annual compounded return and volatility (standard deviation) for each component in both currencies. Fees are ignored to concentrate on the portfolio construction and diversification aspects.¹

¹ We have assumed, for the sake of simplicity, that a Canadian investor would have purchased U.S. fixed income hedged against currency risk.

AUGUST 1992 – OCTOBER 2015		US\$		C\$	
Asset	Description	Return	Volatility	Return	Volatility
Russell 1000	US Equity Large CAP	9.2%	14.7%	9.7%	12.6%
Russell 1000 Value	US Equity Value Style	9.5%	14.6%	10.0%	12.6%
Russell 1000 Growth	US Equity Growth Style	8.5%	17.0%	8.9%	15.4%
Russell 2000	US Small CAP	9.5%	18.9%	9.9%	16.3%
MSCI EAFE	International Large CAP Equity	6.2%	16.5%	6.6%	13.8%
MSCI Emerging	Emerging Markets Equity	7.0%	23.0%	7.4%	19.5%
S&P/TSX	Canadian Equity	8.1%	19.9%	8.5%	14.7%
Treasury 10 Year	US Fixed Income Government	6.2%	6.3%	6.7%	6.3%
Barclays Aggregate Credit	US Fixed Income Gov. and Corp.	7.3%	7.5%	7.8%	7.5%
Barclays High Yield	US Fixed Income Corp. Lower Quality	7.6%	8.6%	8.1%	8.6%

Several observations can be made from these data:

- The returns were slightly higher (in local currency) from the point of view of Canadian investors. This is attributed to the fact that the dollar depreciated against the U.S. dollar by an average of 0.39% a year during the period.
- All equity assets had a lower volatility from a Canadian-dollar point of view. This is consistent with the fact that the Canadian dollar is a procyclical currency (see document 3d). U.S. investors looking to reduce the volatility of their non-U.S. equity exposure should hedge at least part of their currency risk.
- The U.S. equity market had among the lowest volatility from a U.S.-dollar or Canadian-dollar standpoint. The U.S. has a more diversified and integrated economy, resulting in more-diversified equity markets than any other country or region.
- Americans had the most profitable equity markets over this period. Investors diversify internationally partly out of concern that their own financial market may generate disappointing performances, but unfortunately foreign markets may produce lower returns even though some have greater risks than the Canadian or U.S. markets.
- U.S. small-caps equity did not outperform U.S. large-caps significantly despite higher volatility.
- Fixed income did well during this period. It even outperformed global equity markets (international and emerging).

There are three more takeaways from this information. First, Canadian and U.S. investors most likely did not receive the returns in international markets that they expected because greater risks led to smaller returns. As discussed in document 3a, risk is always about the possibility that rational expectations will not be met. In other words, we could say that investors were (relatively) compensated less than expected for the global equity risk they assumed or they were (relatively) compensated more than expected for the fixed-income risk they assumed. Most likely, it is a combination of both.

Second, as discussed in document 3b, although fixed income generated high nominal and real returns historically, it cannot maintain such high nominal returns when starting from a low-yield environment. Thus if fixed income outperforms equities over the next 10 years, it could be because equities perform poorly. We hope this will not be the case.

Third, we cannot easily forecast whether the risk we take today will be adequately compensated in the future. That is why diversification makes sense when we look forward (to the future). When we look backward, we can be duped into over- or under-diversifying, depending on the historical performances of specific assets. We must have common sense. As stated in document 3d, an investor in a country that has a countercyclical currency and a diversified economy can be more domestic-centric, but an investor in a country with a procyclical currency and a less diversified economy should maintain more exposure to global markets.

BUILDING PORTFOLIOS

We will now evaluate the historical performance of portfolios from both U.S. and Canadian perspectives. Two risk levels will be used, 70/30 (equities/fixed income) and 30/70. For each risk level, two portfolio structures will be used: a basic structure with two or three assets and a more complete structure using more components. The U.S. portfolios will be more U.S.-centric. Lower-risk portfolios will also have larger allocations to domestic equities. In total there are eight portfolios. The two following tables summarize this information.

U.S. INVESTORS					
		SIMPLE PORTFOLIO		COMPREHENSIVE PORTFOLIO	
Asset	Description	Low Risk	High Risk	Low Risk	High Risk
Russell 1000	US Equity Large CAP	30.0%	70.0%		
Russell 1000 Value	US Equity Value Style			10.0%	20.0%
Russell 1000 Growth	US Equity Growth Style			10.0%	20.0%
Russell 2000	US Small CAP			10.0%	10.0%
MSCI EAFE	International Large CAP Equity				15.0%
MSCI Emerging	Emerging Markets Equity				5.0%
S&P/TSX	Canadian Equity				
Treasury 10 Year	Fixed Income Government	70.0%	30.0%	20.0 %	
Barclays Aggregate Credit	Fixed Income Gov. and Corp.			42.5 %	25.0%
Barclays High Yield	Fixed Income Corp. Lower Quality			7.5 %	5.0%

CANADIAN INVESTORS					
		SIMPLE PORTFOLIO		COMPREHENSIVE PORTFOLIO	
Asset	Description	Low Risk	High Risk	Low Risk	High Risk
Russell 1000	US Equity Large CAP	10.0%	30.0%		
Russell 1000 Value	US Equity Value Style			5.0%	12.5%
Russell 1000 Growth	US Equity Growth Style			5.0%	12.5%
Russell 2000	US Small CAP			5.0%	5.0%
MSCI EAFE	International Large CAP Equity				15.0%
MSCI Emerging	Emerging Markets Equity				5.0%
S&P/TSX	Canadian Equity	20.0%	40.0%	15.0%	20.0%
Treasury 10 Year	Fixed Income Government	70.0%	30.0%	20.0%	
Barclays Aggregate Credit	Fixed Income Gov. and Corp.			42.5%	25.0%
Barclays High Yield	Fixed Income Corp. Lower Quality			7.5%	5.0%

We are not likely to be impressed by the performance results we will achieve when comparing simple and comprehensive portfolios. As indicated previously, global markets did not outperform the local markets of U.S. and Canadian investors. Sometimes, even when we diversify, our own market could be among the ones that perform better on a risk-adjusted basis. Thus it will seem as if it was not worthwhile to diversify; but we get this result only because we are looking in the rear view mirror. For example, in the case of Canada, the favourable local

performance during this period is explained by the strong commodity cycle and the greater resistance of the Canadian financial sector to the financial crisis. Again, we cannot count on the future to resemble the past.

The following table presents the performances and some risk statistics of all eight portfolios, assuming initially a monthly rebalancing. Some of the results are puzzling but understandable.

Portfolio	Return	Volatility	Worst Month	Worst Drawdown	Date Worst Drawdown Ends
US 30/70 Simple	7.4%	5.9%	-5.7%	-10.4%	February 2009
US 30/70 Comprehensive	8.1%	6.6%	-8.3%	-21.0%	February 2009
US 70/30 Simple	8.6%	10.3%	-12.4%	-35.2%	February 2009
US 70/30 Comprehensive	8.6%	11.1%	-14.9%	-42.9%	February 2009
CAN 30/70 Simple	7.6%	5.5%	-4.3%	-8.0%	November 1994
CAN 30/70 Comprehensive	8.3%	5.9%	-7.0%	-16.1%	February 2009
CAN 70/30 Simple	8.8%	8.5%	-10.4%	-24.8%	September 2002
CAN 70/30 Comprehensive	8.8%	9.0%	-9.9%	-32.3%	February 2009

- First, Canadian portfolios outperformed U.S. portfolios. Part of the reason could be a different portfolio allocation, but part is also the 0.39% average annual depreciation of the Canadian dollar during this period.
- As we could have expected, Canadian portfolios also have lower volatility and lower drawdowns because of the pro-cyclical nature of the currency.
- Riskier portfolios outperformed less-risky portfolios. As discussed previously, there will always be exceptions (such as Japan) but, over a long period, such outperformance is more likely than not.
- Substantially greater risks were required to increase returns. For example, to increase returns by 1.2% over this period on a U.S. 70/30 simple portfolio versus a U.S. simple 30/70 portfolio, significantly higher drawdowns had to be sustained. Of course, adding 1.2% of return over more than 23 years will improve the wealth of a consistent saver by more than 15%.
- The worst drawdown did not necessarily occur at the same time in Canada and in the United States. For riskier

portfolios, the period of the financial crisis often represents the worst period in this history. But, in the case of Canada, comprehensive portfolios sustained worse performances during other periods. Part of the explanation is the fact that simple portfolios from a Canadian point of view have exposure solely to the U.S. market. Because the Canadian dollar depreciated strongly against the U.S. dollar during the financial crisis, nominal losses in Canada were significantly softened by the depreciating dollar. Furthermore, 1994 was a particularly difficult period for fixed-income investors, which affected portfolios with a significant fixed-income content.

What is more disturbing is the fact that comprehensive portfolios have bigger drawdowns and greater volatility and did not necessarily perform better in the case of riskier portfolios. First, we must recognize that we are looking at this issue from the point of view of investors in two countries whose equity markets outperformed global markets during this period. Again, we do not know what the future holds for us. Secondly, risk, in the long run, is not solely about volatility.

It is about the possibility that some markets may simply underperform significantly. It should be a concern, especially for those investors who operate in a less diversified economy, such as Canada's.

The previous example assumed a monthly rebalancing. We stated in document 3f that rebalancing less frequently may actually be more profitable. The following table presents the same information as above for U.S. investors but the rebalancing frequency was changed from monthly to annual at year-end.

Portfolio	Return	Volatility	Worst Month	Worst Drawdown	Date Worst Drawdown Ends
US 30/70 Simple	7.6%	5.9%	-4.9%	-9.0%	February 2009
US 30/70 Comprehensive	8.2%	6.5%	-8.1%	-19.0%	February 2009
US 70/30 Simple	8.9%	10.1%	-11.3%	-32.7%	February 2009
US 70/30 Comprehensive	8.8%	10.9%	-13.9%	-41.5%	February 2009

The analysis confirms the intuition presented in document 3f. Less frequent rebalancing can increase returns while reducing volatility and drawdowns. When a calendar methodology is used, rebalancing every six to 12 months is fairly optimal. But it remains essential to rebalance.

THE COST OF BEING AFRAID AND OF INCONSISTENT INVESTMENT BEHAVIOUR

Some investors simply want to avoid all risks. For the purpose of evaluating the cost of extremely conservative behaviour, we have assumed a rolling investment in five-year Treasuries and monthly rebalancing in both cases. Such an investment would have provided a return of less than 5% over the same period as the previous analysis. The following table indicates the cumulative value of an annual investment of \$1,000 since 1992 (\$24,000 in total) for a U.S. investor for all four investment scenarios.

	5-Year Treasury	30/70 Simple	30/70 Comp.	70/30 Simple	70/30 Comp.
Cumulative value	\$40,858	\$57,658	\$67,109	\$63,830	\$66,314
Gains in excess of \$24K	\$16,858	\$33,658	\$43,109	\$39,830	\$42,614
Gains in excess of 24K if away from the market for one year (from Dec. 2008 to Nov. 2009)		\$27,151	\$29,693	\$31,425	\$27,935
Decline in gains (%)		-19.3%	-25.4%	-27.1%	-34.4%

Even though we have not incorporated fees into the analysis, there is a high price to pay for extreme conservatism even against a low-risk 30/70 portfolio. Furthermore, the nearly 5% return on Treasury bonds was achieved only because of significantly higher interest rates back in the 1990s. Rates, as of the end of 2015, were below 2%, making it impossible to achieve similar returns in the future.

Other investors do not necessarily shy away from investing in equities but are inconsistent. They will invest in, or take their capital out of, the market at the worst possible time. One way we can understand the cost of inconsistency is to recalculate the compounded return on a portfolio simply by eliminating the very best months, one at the time. Let's use the example of the U.S. 70/30 simple portfolio. Its compounded return over the entire period was 8.63% (using monthly rebalancing). If we eliminate the best months, we take away about 0.30% to 0.33% of total compounded return over this 23 year-period for each such month. For example, the top three months since August 1992 account for nearly 1% of the total performance of 8.63%.

Let's now consider a more specific scenario. An investor panicked during the financial crisis and got out of the market at the end of November 2008 only to start investing again one year later. On the basis of the results presented in the previous table, such an investor would have given-up between 19% and 25% of the return gains accumulated on a 30/70 portfolio and 27% to 34% of the gains accumulated on a 70/30 portfolio. A single year can wipe out a fifth to a third of all gains generated over more than 22 years.

Risk pays off in the long run, assuming we diversify smartly, remain consistent, and can tolerate the volatility and drawdowns associated with a riskier portfolio. This exercise did confirm some of our previous statements. Investors living in countries with procyclical currencies benefit from a natural hedge on the international exposure, at least on average. Furthermore, rebalancing more efficiently does have return and risk benefits, and we can do even better by adopting smarter rebalancing methodologies. We also found that it does take proportionally more risk to increase returns. Twice as much volatility will not deliver twice the returns. That is why it is important to have a long-term investment plan and to pay reasonable fees. By lowering fees, investors can tolerate a lower-risk/lower-return portfolio without affecting their expected investment income.