

The Role Of Alternative Assets In Pension Portfolios, Examined Through Risk Factor Analysis

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In recent years, alternative assets such as agricultural land, real estate, and infrastructure have become staple investments in the portfolios of investors both large and small. This is for good cause. Alternatives provide new and compelling sources of yield and potential for capital gains that have low correlation to traditional capital markets. This relationship to traditional capital markets is the key to the valuable diversification benefits that alternatives can bring to a pension portfolio. In this article, we explore the drivers of this diversification through a risk factor framework.

Alternative investments have grown both in number and size since the 1990s and have also become widely recognized as one of the sources of outperformance of major Canadian pension plans. The 'Pension Investment Association of Canada (PIAC) Annual Asset Allocation Survey' shows that defined benefit plans have steadily increased their participation in alternatives over the past 20 years. And, Preqin's tracking of public pension funds

confirms the same concept, with median allocations to alternatives in the funds covered rising from 18.1 per cent in 2010 to 30.3 per cent in 2020 (See *Chart 1*).

Pension investors may seek alternative investments for reliable income streams, inflation hedging, risk management, low correlation to other asset classes, higher risk-adjusted returns, and, importantly, diversification.

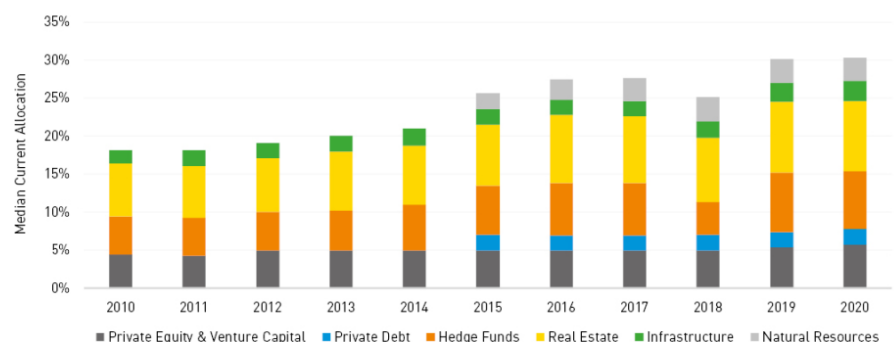
In general, alternatives are understood to be investments other than traditional

equities and bonds. Indeed, 'Alternatives' is a catch-all term which groups together several sub-classes of non-traditional investments. These sub-classes include:

- Real assets, which provide direct investment into tangible assets such as agriculture, timberland, infrastructure, and real estate
- Private equity, which offers non-public equity ownership in a company at varying stages of development, including buyout of public firms

Chart 1

Median Current Allocations of Public Pension Funds to Alternatives by Asset Class, 2010 - 2020



¹Source: *Future of Alternatives 2025: Investors' Inexorable Push to Alternatives*, Preqin

- Private debt, or the acquisition of direct loans from privately held companies, as well as project financing contracts such as real estate or infrastructure financing

- Liquid alternatives, which include non-traditional liquid investments such as equity long-short, market-neutral, and multi-assets, with less constraints and correlation when compared to traditional long-only investments

- Customized hedging solutions, which may include interest rate and inflation hedging, currency hedging, or volatility overlays through financial securities such as options and swaps, with the purpose of risk exposure control or downside protection

Using a single word to lump these strategies together implies some degree of similarity or coherence between these assets. Yet at first glance, they appear highly differentiated: some invest in public markets, some in private markets; risk levels can vary from relatively safe to highly speculative; valuation may be daily, quarterly, or annual; and so on. The question thus becomes, 'How are they different from traditional investments?'

Risk factor analysis can help to answer this important question. Digging below the surface, one finds that a portion of the returns and volatility of alternative investments is rooted in measurable macroeconomic risk factor exposure. And, despite their differences on the surface, alternatives do indeed differ from traditional investments and have similarities that allow investors to think of them as a group, albeit a non-homogenous ensemble. Understanding their underlying exposure to common risk factors, and their relationship to traditional markets, allows investors to build truly diversified and efficient portfolios.

Breaking Down Risk Factor Investing

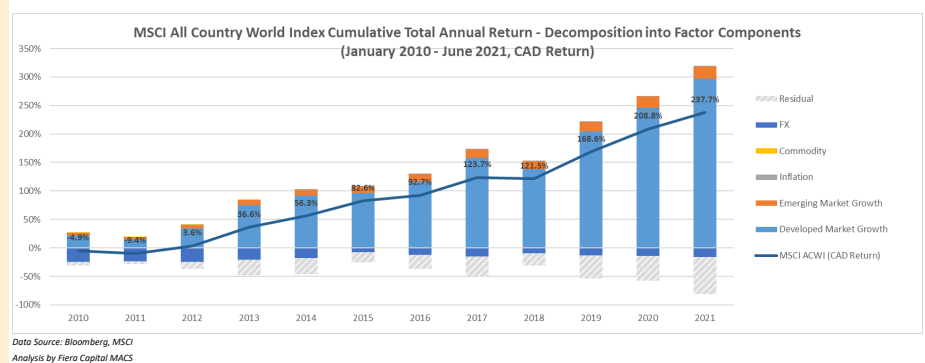
Risk factor investing (RFI) posits that the return and, most importantly, volatility of asset classes can be explained through underlying, common factors. More simply, viewed through an RFI lens, the risk and return profile of any asset class or index can be seen as being driven primarily by a combination of common economic forces. Through our research, we found that 10 risk factors are successful in

Chart 2

RISK FACTOR	DEFINITION
Developed Market (DM) Growth	Risk associated with exposure to developed market economic growth
Emerging Market (EM) Growth	Risk associated with exposure to emerging market economic growth
Real Rate	Risk associated with exposure to unexpected change in real rates
Inflation	Risk associated with unexpected change in inflation rates
Credit Premium	Risk associated with corporate bond issuer downgrade or default
Slope Premium	Risk associated with change in the slope of the yield curve
Commodity	Risk associated with uncertainty in commodity prices
Currency (FX)	Risk associated with foreign investments arising from uncertainty in foreign exchange rates from the perspective of a Canadian investor
Real Assets	Risk associated with exposure to real assets such as brick & mortar properties or land
Illiquidity	Risk associated with potential loss due to scarcity of assets or unavailability of buyers at a specified price

Chart 3

MSCI ACWI - Decomposition into Factor Components



explaining the majority of the return and volatility pattern for most benchmarks and strategies (See *Chart 2*).

RFI brings a new perspective to asset allocation. It involves building portfolios by considering the underlying forces that drive the portfolio's risk and return. When applied to portfolio construction, the result is portfolios that are better diversified and more efficient. No matter how many asset strategies are in the portfolio, the main exposures to risk and return will come from a limited amount of identified, underlying macroeconomic sources.

Chart 3 demonstrates how risk factor analysis can be used to understand the factors that drove the returns of the MSCI All Country World Index. The drivers of returns of this index are effectively explained by the underlying stacked bars which represent the contribution of each underlying risk factor.

What is the goal of investing by risk factors and how can they inform asset allocation for pension investors? In

essence, it allows portfolio managers to better understand the main risk and return factors within the portfolio, enabling them to build more efficient customized portfolios for investors. When considering the role of alternative investments in a pension portfolio, we may thus consider the following question: How different are alternative assets' main sources of return and volatility?

Explaining The Returns Of Alternatives

When we think of the characteristics of alternative investments in an RFI framework, the first question to consider is if, and to what degree, traditional macroeconomic risk factors are effective in explaining the return patterns across asset classes, both traditional and alternative. This allows us to examine what alternative investments can offer investors that traditional investments do not.

One measure to evaluate the efficiency

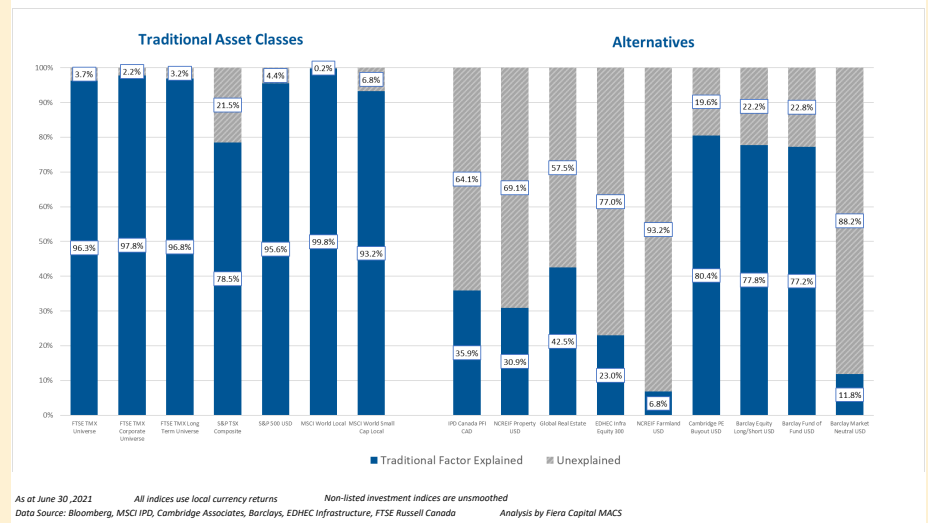
of the risk factors is the co-efficient of determination – commonly known as the R-squared – which is a statistical metric that quantifies the proportion of the return pattern accounted for by the risk factor model. Simply put, an R-squared of 100 per cent would indicate that the risk factors together account for all the returns of the index, while an R-squared of zero per cent would indicate that the risk factors do not explain the returns of the index at all.

From our analysis, *Chart 4* shows the R-squared for ‘traditional’ risk factors (i.e., real rates, inflation, developed market growth, emerging market growth, credit premium, slope premium, and commodity) for a number of indices for traditional asset class, and for alternatives.

The first observation is that traditional risk factors are overwhelmingly effective

Chart 4

Percentage of Volatility Explained by Risk Factors (R-squared Results)



while some of alternatives’ returns are rooted in measurable, macroeconomic risk factor exposures, their return patterns and risk exposures are clearly different to traditional investments.

Portfolio Construction

For pension investors, this fact showcases alternatives’ value in portfolio construction, as these differences are what allow for effective diversification. These differences may be explored further, in order to identify the driving factors of alternative returns, understand their mechanisms, and, more importantly, to evaluate the return and risk potential of respective investment exposures. Through our research, we have found that the remaining drivers include factors related to real assets as well as to illiquidity characteristics.

For pension plans, investing from a risk factor perspective allows portfolios to be built with consideration of the underlying forces that drive the portfolio’s risk and return. Through our risk factor analysis, we see that alternative investments’ returns are indeed driven by differentiated forces to traditional investments. This confirms their value and role as diversifiers in the construction and optimization of the pension portfolio.

Alternative investments exhibit valuable qualities for investors and, depending on the strategy employed, provide opportunities for reliable income streams, inflation hedging, risk management, low cor-

relation to other asset classes, high risk-adjusted returns, and, most importantly, as we have shown, across their spectrum: diversification. These benefits have made, and, in our opinion, will continue to make, alternative assets increasingly popular for institutional investors. **BPM**



ALTERNATIVE INVESTMENTS’ RETURNS ARE INDEED DRIVEN BY DIFFERENTIATED FORCES TO TRADITIONAL INVESTMENTS. THIS CONFIRMS THEIR VALUE AND ROLE AS DIVERSIFIERS IN THE CONSTRUCTION AND OPTIMIZATION OF THE PENSION PORTFOLIO.

in explaining return and volatility patterns of the traditional asset classes, to the tune of about 90 per cent or more for six out of seven of the traditional asset class indices included in this analysis. For alternatives, the traditional risk factors explain a much lower portion of risk, with between approximately 20 per cent and 90 per cent of risk unexplained by traditional factors for the nine market benchmarks considered. This means that



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