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PENSION FUNDS LETTER

Building together smart solutions to face a challenging environment

Thierry ANCONA
Global Head of Corporate, Corporate Pension & Insurance Segment at Amundi

EXECUTIVE SUMMARY

Building the long-term alignment

After several decades driven by short-termism, we have observed since the Global Financial Crisis the rising of a "long-term awareness", the perception that we are facing long-term challenges and that long-term investment needs are expending.

The world can today observe some preliminary impacts of long-term materialising challenges on the society and the planet, such as climate changes or demography dynamics, having investors rethink the valuation of stock prices to include long-term trends not yet captured by financial markets. In addition, while life expectancy is increasing all over the world, the investment horizons are expanding and liability duration is increasing. Individuals have to accumulate savings for a very long-term period for their retirement (35-40 years); even retirees still have potentially a period of 20 years to preserve their capital.

Due to their very long-term liabilities, asset owners such as Pension Funds can fully benefit from long-term investing. Not only will they be able to capture the long-term premia, should it be factor/multi-factor risk premia through a cycle or the illiquidity premia embedded in real and alternative assets, but they will also be in a position to avoid the negative impacts related to short-term investments, notably transaction costs. If asset allocators already integrate long-term considerations in their investment decision process, the whole investment model and value-chain have been developed in a way that is entrenched in short-term considerations: metrics for the measurement of value creation or portfolio risks, return profile guidelines, fees schemes, bonus systems... Long-term investment cannot be implemented with the same approach. A new framework needs to be defined for long-term perspectives to be properly taken into consideration.

Long-term horizon has to be properly integrated into the portfolio allocation. However, long-term-investment-only is not the proper answer either. Long-term investment should rather be seen as a journey across "time allocation" and "time diversification": the portfolio is split into several buckets by investment horizon ("time allocation" between short-, medium- and long-term horizons) and the asset allocator can mix these buckets ("time diversification"), as combining horizons is a source of diversification which should not be neglected. When addressing long-term investing, Pension Funds need as a prerequisite to set the objectives of their asset allocation, at both strategic and tactical levels. When doing so, it is particularly interesting to point out that we encounter different practices in the pension funds industry, depending on specific pension plans' size and model.

Long-term investment is also a matter of regulation and how regulators may encourage this trend. However, regulators remain ambiguous as some post-crisis regulations still tend to favor short-term behaviors, as highlighted in a recent empirical analysis of regulatory changes affecting defined benefit (DB) pension schemes in the US, Canada and the Netherlands.

Last but not least, there is a premium to be captured from a long horizon investing mindset according to the Willis Towers Watson's Thinking Ahead Institute. This premium is evaluated at between 0.5% and 1.5% per annum, depending on the size and the governance of the asset owner. The enhanced performance would stem from active ownership, capturing systematic mispricing, liquidity premia and thematic investing.

Pascal BLANQUÉ
Global CIO of Amundi

What should be the investment approach for the long term?

Learning from the past to look into the future: mean reversion matters

Long term, equities tend to post returns in line with earnings growth. Divergences can last for long periods, but due to mean reversion, these phases end up with corrections. In current conditions, markets still have room to go, but unless we see a structural rise in earnings (unlikely), returns should revert to their structural trends.

Long-term investing is about the belief that fundamental value exists and that asset class returns tend to mean revert to their equilibrium levels and rotate around it, within regimes. Hence, looking at long-term historical dynamics may help to put shorter-term asset class returns in context and draw some conclusions regarding the future, in particular on earnings dynamics. In fact, we think that the view on earnings is key to valuations as interest rates will become less supportive.

Lessons from the past

Earnings and equity prices have both risen at a reasonable pace in recent years. To what extent is this sustainable and valid in the long run? We can derive some lessons from the past by looking at the historical relationship between changes in equity prices and in earnings. A starting point for this analysis could be a research report from the Kansas Fed in 1998 (right chart below). Why 1998? Because there are common points with the current environment (global and US growth, talks of new tech revolution, bubbling segments in the markets, talks of structural change in the economy, Fed normalisation, etc). This analysis shows that in the long run (1922-1996) equity prices (S&P500) and earnings have both risen at an annual rate of 8%. However, they have been diverging since 1982, with equity prices rising at an average annual rate of 13%, faster than earnings and above their long-term average.

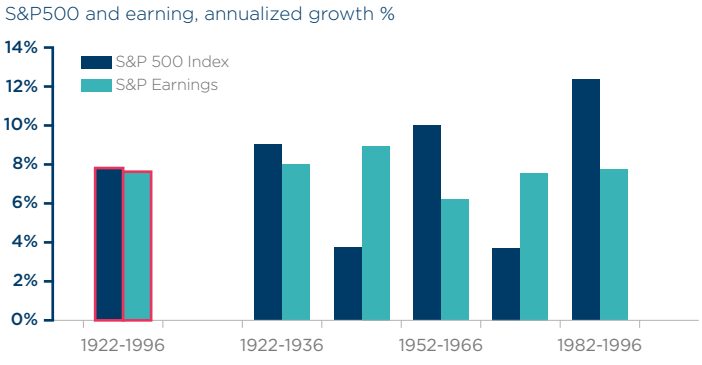
Additionally, this analysis shows that in the past, these periods of equity prices rising above earnings have lasted 14 years on average and have been followed by periods when equity prices adjusted, rising less than earnings. In fact, reversion to the mean would imply that periods of above-average returns are followed by periods of below-average returns. As a result, the subsequent years saw market returns well below earnings growth (1st chart on the left p.3), further depressed by the great financial crisis in 2008, which determined the realignment of the long-term trends in price and earnings growth (at around 7% in the period of 1970-2012). This illustrates how markets actually revert to the mean in the long run.

The current long-term configuration

Today, we are again in a phase of divergence. Since 2012-13, we have seen equity prices rise faster (14%) than earnings (no more than 5%). Can the market continue to post these returns? With dividend yields of about 2%, to see a continuation of the trend of the last five years in market returns, return to physical capital should also rise at an annual rate around 12%. This seems unlikely assuming the current trend in labour force growth, stock of capital and productivity, and the high share of profits from value added. In order to return to a phase in which physical capital rises further, productivity gains would have to jump, with all else remaining constant, and this is unlikely at this stage in the cycle.

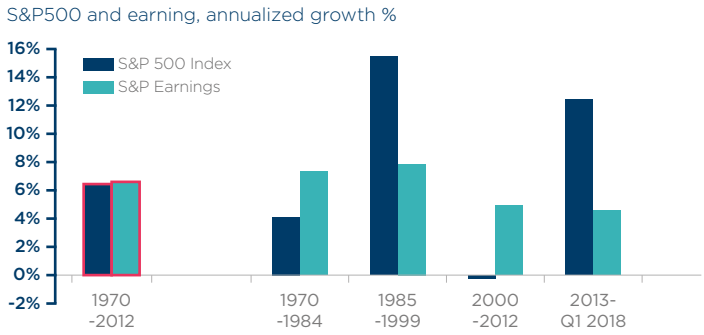
However, the long-term analysis shows that markets can still go through relatively long periods of divergence and therefore the current phase started in 2012-13 can, in our view, continue for a couple of years, until support from the cycle fades. A possible correction could, in fact, be triggered by a combination of higher bond yields and downward revisions to earnings expectations.

The long-term view back in 1997



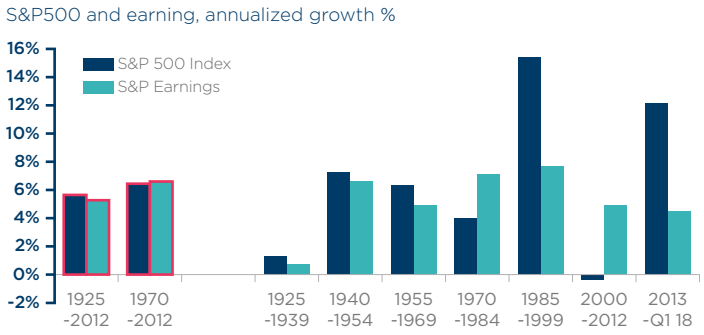
Source: Federal Reserve Bank of Kansas City (1997).

What has occurred since then



Source: Amundi Research, Global Financial Data. Quarterly data 1925-2018.

The long-term view today



Source: Amundi Research, Global Financial Data. Quarterly data 1925-2018.

Investment convictions to enhance the return potential in the long run

In entering a long-term phase that will see lower potential returns for a balanced portfolio compared to the past, investors will need to focus on building asymmetric payoff by making more and losing less, and exploiting the long-term risk premium available in the market.

While on equity markets, as we have seen, we expect returns to revert to their long-term mean and therefore to be potentially lower compared to the past 10 years, investors should also be mindful of the long-term trends that will affect fixed income markets.

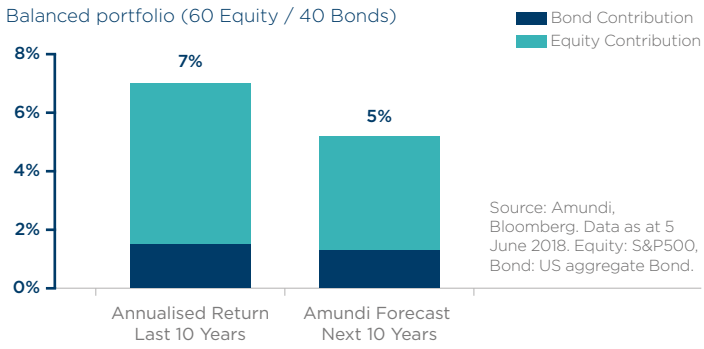
Bonds: low structural interest rates will require an active approach

Over the last 30 years, bonds have enjoyed a long bull run. On top of low (and falling) inflation, on the bond side, the key driver of real returns has been the fall in nominal yields (down from 8.5% at March 1988 to 3.8% at March 2003 to 2.9% at March 2018) which determined significant capital gains over this long benign market phase. Backing this trend, there has been the drop in real interest rates supported by the significant savings flow into Developed Markets (savings glut). Looking ahead (ageing population will drive structural demand for safe assets), we expect lower rates at equilibrium which could lead to lower, but still positive long-term real returns (with subdued inflation). With lower government bond returns likely in the future, the ability to generate alpha across the board will be paramount to enhancing total return and income potential for the bond component of a portfolio. Given this goal, investors should exploit market divergences and consider looking beyond boundaries to benefit from the opportunities in the credit continuum (with a strong understanding of each asset liquidity profile).

The need to enhance return potential by including short-/medium-term tactical allocation as well

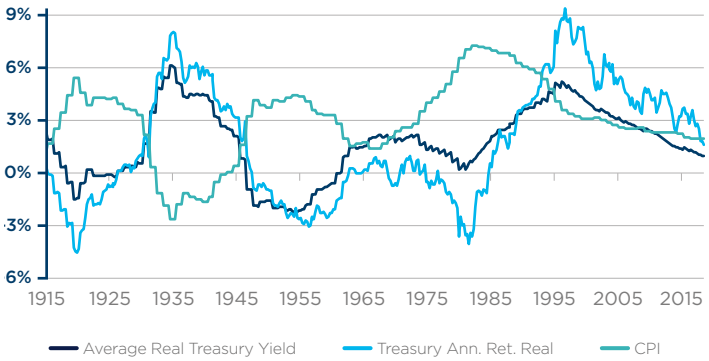
Lower return potential on government bonds and equities will imply lower returns ahead in a balanced portfolio. To address this challenge, investors will need to focus on strategies that can help maximise long-term results while also mitigating cyclical bear phases. Short- and medium-term convictions can be helpful for identifying investment opportunities in terms of valuable entry points and in managing possible risk scenarios that could undermine the potential to achieve long-term investment objectives.

Facing lower expected returns ahead



Therefore, the asset allocation should also include structural hedges against tail events and be based on a strong portfolio construction framework to navigate possible different cyclical developments. With possible market downturns in the future, the ability to lose less during corrections can be a valuable source of additional return in the long run.

US Treasury average yields, Real Return and CPI – 15Y rolling



Source: Amundi analysis on data from Global Financial Data, Bloomberg and U.S. Bureau of Labor Statistics. Analysis on rolling real returns (nominal returns – average inflation in the period) on quarterly data from December 1875 to March 2018.

Widening the investment universe to explore risk and liquidity premia

Expanding the opportunity set to include different regions (ie, Emeging Markets) will be key, as will focusing on well remunerated risk factors while avoiding poorly remunerated ones. Real assets should also receive a more prominent role, especially for long-term investors in search of regular cash flows (infrastructure, private debt, real estate) and attractive liquidity premia.

How the investment framework changes based on a long-term view

Long-term investing encompasses a new definition of risk and diversification, a new opportunity set and new investment tools. Based on this new framework, the investment process should be redesigned to exploit long-term potential.

The longer the investment horizon, the higher the degree of uncertainty investors have to deal with and the probability that different scenarios materialise. Dealing with this uncertainty requires a strong focus on the intrinsic value of each asset, based on a strong research framework. But, a long-term investment approach also goes beyond this fundamental assessment and requires a redefinition of all the key portfolio construction variables and a redesign of the investment process.

A new definition of risk

The definition of risk changes significantly with a longer view. For example, when the investment horizon increases, the equity risk (in terms of standard deviation of returns) decreases, making this asset class more appealing on a risk-adjusted basis. A long-term horizon allows a portfolio to weather short-term volatility and, consequently, risk measures should focus on the long term and not on short-term movements. Instead of volatility, these risk metrics may be based on the assessment of the probability and magnitude of tail losses over a multi-year horizon or additionally consider forward-looking risk in probability terms (shortfall risk) of missing the investment goals. Mitigating risk on the basis of these new metrics requires the ability to navigate through periods of turmoil, reassessing investment cases to identify those for which the intrinsic value remains intact vs those that could face the risk of disruption and/or permanent loss.

Diversification across risk factors

Diversification principles also change with the investment horizon. In fact, as correlation dynamics can change over the short term, long-term diversification should be based on the permanent differences in the features of the underlying risk factors (ie, growth, inflation, interest rates, among others).

A wider opportunity set

A longer horizon determines the ability to accept uncertainty on the path of asset price evolution in order to cash in the long-term risk premium. This kind of "pattern-agnostic approach" allows for investment in assets whose performance will, with a high probability, materialise over the long run, but that will remain exposed to uncertainty on the timing and potential price swings during the journey. Therefore, long-term investors can uncover spaces restricted by a short- term horizon, such as illiquid assets (ie, real assets) or distressed assets that by definition require a long holding period. Liquidity management becomes a key tool in this respect, as liquidity buffers can allow for the exploitation of market opportunities when they materialise.

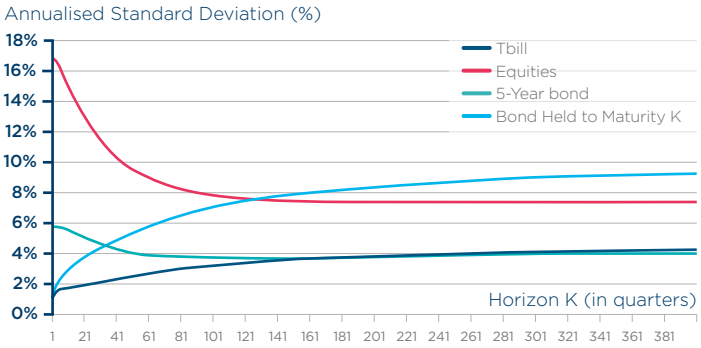
Focus on approaches for the long term (such as active management, ESG, engagement, thematic)

Investment designed to exploit long-term opportunities should be at the core of a portfolio with a long to very long horizon. For example, engaging with companies is an approach that can help to maximise the long-term value creation, while ESG factors and active management based on fundamental selection are crucial to identifying the intrinsic value of a company, detecting outperformers and avoiding permanent loss of capital. Exploiting long-term thematic investing can also provide the opportunity to benefit from trends that should deliver most of their potential value in the long run while managing risks related to areas of overvaluation that can arise in some fashionable theme.

Rethink the investment process

As we have seen, a long-term approach has profound implications on the definitions of the key metrics underlying the investment process: risk, investment universe and approaches. This implies that the whole investment process should consider this new framework. In this respect, investors could integrate long-term risk considerations in setting their allocation and implement hedging strategies against such risks. For example, the risk associated with climate change can be reduced via a low-carbon portfolio, without negatively impacting returns. Investors should also set the appropriate split between strategic asset allocation and active management (including tactical asset allocation and security/manager selection) to exploit the long-term risk factors and themes and implement active management where it is most valuable, considering the possible long-term scenarios ahead. The definition of investment objectives with respect to the different time frames is also key, as it allows an investor to bucket the portfolio across investment horizons (with different liquidity profiles) and to benefit from time diversification. In our view, having a proper long-term process and mindset will foster investment behaviours that will increase the probability of reaching long-term goals.

Different risk patterns depending on the investment horizon



Source: Luis M. Viceira, John Y. Campbell "The Term Structure ff the Risk-Return Tradeoff".

Building investment solutions for the long term

Investing for the long term is both a journey and a destination. These factors require an investor to recognise the themes that will support the most long-term value creation which is not yet priced by the markets. They also require the design of investment solutions for an investment horizon that is continuing to lengthen.

Long-term investing is an approach designed to detect fundamental trends that will drive long-term risk premia and will allow an investor to meet investment goals with a long to very long time horizon. This approach can offer major benefits that can remunerate investor patience, but at the same time, an investor will need to be conscious of the tradeoff vs short-term investing. Taking a long-term view increases the probability of reaching long-term objectives, allows an investor to take a contrarian approach, reduces the risk of being forced to sell and monetise losses, allows for exploration of all possible risk factors, and reduces transaction costs as turnover tends to be lower with a long horizon. Yet, this comes at the cost of potentially experiencing high short-term risk. Furthermore, while many institutional investors, such as pension funds and sovereign-wealth funds, but also retail investors in the early accumulation phase have a long-term horizon, they still usually have additional constraints, such as liability requirements and cash flows that will determine their overall long-term investment strategy. This means that this strategy will need to be tailored around the specific investor horizon, goals and risk guidelines, and will mix long-term convictions with short- and medium-term views as well. Indeed, while the investment goal is set in the long run and hence will require seeking out the trends underpinning the desired future outcome, long-term investing is both a journey and a destination. The journey will be based on sequences across the cycles, where market valuations and investors dynamics (accumulation/decumulation) matter when deciding on and implementing the path.

Themes affecting long-term investing

The world today reflects the preliminary impacts of some long-term dynamics such as climate change, demographic dynamics, and the growing demand for investment with "purpose" that should be taken into account in framing the investment strategy for the long run.
In fact, all these trends while not yet captured by financial markets could affect asset prices in the long run. Regulation is also a major topic that could drive further focus on long-term investing, as reflected in some new regulations currently under consultation. For example, the European Union Shareholder Rights Directive recommends asset managers and institutional investors take long-term considerations into account; the UK Department for Work and Pensions also seeks to promote legislation that might require trustees to evaluate how they take account of financially material risks, among which long-term ESG risks were recognised. However, regulations remain ambiguous, as some post- crisis regulations still tend to favour short-termist behaviours: for instance, Solvency II, where capital requirements penalise investments most appropriate for a long-term perspective.

Short- and long-term tradeoff

	Short term	Long term
Risk budget approach	Short-term risk budget runs a high probability to miss the long-term target	Long-term risk budget may imply high short-term risk
Risk free reference	Cash	Depend on investor liability structure
Approach	Pro-Cyclical	Contrarian
Turnover	High	Low (buy & maintain high conviction ideas)
Risk factor exposure	Focus on «priced» risk factors	Focus on full cycle rewarded factors and on «not yet priced» risk factors
Risk of missing investment opportunities / monetize short term losses	High	Low, but potential risk of over-valuation of fashionable long-term trends

Source: Amundi

Develop new investment solutions for an expanding investment horizon

The length of the investment horizon is also changing and determining new objectives for investing in the long run. With rising life expectancy, investment horizons are expanding regarding both the accumulation and decumulation phases. Pension reforms and lower interest rates are also leading to the need for investors to take an active role on their investment decisions to address potentially lower pension provisions in the future. This results in the emergence of new needs and new investment solutions. An example of this is the rising demand for solutions designed to take care of the full life cycle, from accumulation to decumulation.

This leads to the emergence of new investor goals moving away from a pure capital appreciation focus in the accumulation phase and income generation during decumulation to more hybrid goals combining capital appreciation with the progressive buildup of an income-generating portfolio for the future decumulation phase.

In our view, the ability to design investment solutions for the long term will rely on a strong alignment between asset managers and asset owners in defining common long-term investment beliefs. This should allow the building of trust and encourage a partnership relationship that will be key to successfully navigating the long-term investment journey.



Bruno TAILLARDAT
Global Head of Smart Beta & Factor Investing at Amundi

Tim HODGSON
Head of the Thinking Ahead Group and executive to the Thinking Ahead Institute

Liang YIN
CFA, PhD, Senior investment consultant in the Thinking Ahead Group and executive to the Thinking Ahead Institute

Thinking Ahead Institute
Willis Towers Watson

Investing in equity factors for the long run

Extract from the report "Investing in equity factors for the long run" co-authored with the Thinking Ahead Institute, an independent research team at Willis Towers Watson. Amundi is a member of the Thinking Ahead Institute. Read the full document on the Smart Beta section on Amundi website or on Amundi Research center.

Factor investing: a long-horizon investing building block

Many asset owners construct their investment portfolios with the aim of meeting long-term liabilities or objectives. No institution can be sure of achieving its savings goals unless it adopts a full liability-matching strategy, which is typically expensive. Instead, most investors rely on a portfolio of assets to generate sufficient returns over time and thus face the uncertainties inherent in exposure to the financial markets.

However, an institution can increase its chances of success in long-horizon investing by following a number of steps. These include a thorough planning process, ensuring the ability to tolerate inconsistent returns, a diversified approach to portfolio construction and discipline when conducting portfolio rebalancing. Equities are an asset class of choice for long-horizon investors and equity factors offer an attractive means of sourcing returns from equities. Factors arguably offer a more efficient way of constructing portfolios than the traditional approach of alpha/beta separation.

Under the traditional alpha/beta approach, an asset owner tracks market capitalisation-weighted indices for the beta core of the portfolio and engages active managers to generate alpha. The owner can expect benchmark performance in the core (before fees, which are typically minimal), but relies on the ability of the asset manager to generate alpha in the active part of the portfolio. As multiple studies have demonstrated, persistence in producing alpha is very hard to achieve. Instead, a factor approach could be used across the whole equity portfolio. By using factors, an investor "looks through" the equity asset class and benefits from the systematic sources of return associated with particular stock characteristics. This provides an opportunity for a long-horizon investor to tailor their equity exposure more closely to their liability profile or long-term objectives. A 2017 Thinking Ahead Institute study[1] identified factor investing as one of the building blocks of a substantial long-term premium for genuine long-horizon investors.

However, given the fact that factors work well at different points in the economic and market cycles, diversification across factors can help mitigate downside as well as tail risks and provide superior long-term risk-adjusted returns.

How to select factors

It is important to guard against data mining when selecting factors. Do the candidates have a solid economic, structural or behavioural rationale? Is there something unreliable in the data? Factors should also show reliability across market contexts, regions, sectors and over different time periods. They should help in portfolio diversification. And factors require scalability: there is no point using factor language to describe a strategy that works only in a small niche of the securities market. In many cases, institutional investors will have moved to a factor approach in recognition of the fact that alpha is not scalable. Factors should therefore be available for use at scale without an obvious detrimental effect on portfolio risk or return.

Nevertheless, there are trade-offs in factor investing, since by definition a factor strategy offers somewhat less capacity than a capitalisation-weighted market index. A key skill in factor portfolio construction is to recognise at what point a factor strategy starts to run into capacity or liquidity constraints, or when it might risk a degradation in performance as a result of crowding.

1. See "The search for a long-term premium", Thinking Ahead Institute, May 2017

Capacity of factors

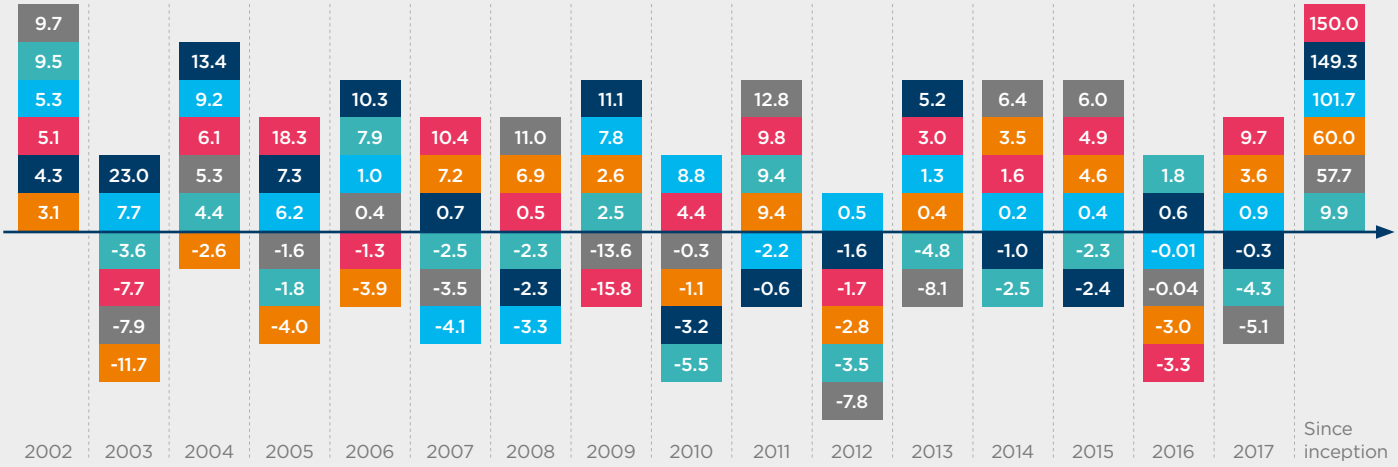
A combination of factors will only represent a sub-segment of the equity market. We estimate that the capacity and the liquidity available for the 5 factors (using MSCI factor indices as of 30/09/2017) represent 60% of the MSCI World index. In other words, we do not see capacity currently being an issue considering the present assets invested in factor strategies.

A key issue, however, is the potential crowding effect, should sufficient investors decide that a particular factor, or group of factors, are of interest. Some factors have a lower level of capacity and can be more impacted by potential crowded trades. Crowding can be monitored and controlled through relatively simple measures. Assessing the current valuation of a factor relative to its long-term history can provide a good estimate of whether a factor is becoming "too popular" due to a sudden and strong multiple expansion. This valuation measure coupled with lower liquidity can be used as a forward looking signal of a crowding risk.

Long-horizon investing in factors should stay away from market timing

Factors perform differently at different points in the economic and market cycle. This can be seen clearly in figure 1, which illustrates the annual relative returns of MSCI's factor indices against the MSCI World index, a representative capitalisation-weighted benchmark.

Figure 1: Annual relative returns of MSCI factor indices vs. global equity benchmark (%)



Source: MSCI. Data as of end December 2017. Relative returns vs MSCI World.

An investor trying to time factor allocations could easily have moved into or out of a factor at the wrong time. However, an investor exhibiting patience would have benefited: over the whole period value outperformed the other factors by a comfortable margin.

The lowly-correlated return streams of different factors offer investors the opportunity to diversify. In figure 2 we show the correlations between factors over the same 15-year period. None of the correlations between factors exceeded 40%, while several of the factors were negatively correlated, helping smooth the overall return stream of investors able to combine them in a portfolio.

Figure 2: Historic correlations of factor excess returns

Correlations of excess return - Global 2002-2017					
	Mid Cap	Minimum Volatility	Momentum	Quality	Value
Mid Cap	100%				
Minimum Volatility	-19.0%	100%			
Momentum	16.3%	31.1%	100%		
Quality	-30.9%	39.7%	31.8%	100%	
Value	28.9%	-35.2%	-22.1%	-53.9%	100%

Source: MSCI, Amundi. Data as of end December 2017. Net monthly returns in USD.

Combining factors brings diversification benefits

When diversifying across factors investors should look beyond correlations, which can be unstable, especially in stressed market conditions. For instance, some assets may present a low correlation in a normal regime and a high correlation in periods of market crisis.

A better approach to building a diversified factor portfolio will take into account the nature of individual factors' pay-offs in different market conditions. For example, during periods when equity markets are rising strongly, the value factor tends to perform even better than the market. Conversely, when markets are falling sharply, value tends to underperform the market.

By contrast, the low volatility factor has a very different pay-off profile. It tends to outperform strongly in turbulent and bear markets, while it tends to lag when the market is strongly bullish. A long-horizon investor's factor diversification approach should therefore be multifaceted. The investor should be diversified not just across risk factors, but also across payoff functions and over time.

Factors are governance friendly

Viewing the behaviour of markets through a factor lens helps asset owners gain a much more granular understanding than could be offered by a reliance on other benchmarks, such as investor peer groups or capitalisation-weighted indices. It follows that factors can help to make governance more robust. For asset owners who are accustomed to delegating investment management responsibilities to third parties, factors can help simplify the manager selection, due diligence processes, and monitoring. This should ultimately result in greater operational efficiency, the ability to change asset allocation more quickly and accurately, and an overall reduction in costs, to the benefit of the beneficiaries.

Could anything go wrong?

One of the easiest ways for investors to lose money is to buy high and sell low. We strongly believe that a factor-based approach, if executed well, can enhance long-term returns, but we acknowledge that asset owners can easily destroy value by constantly chasing the "hottest" factors in the recent past. There is extensive commentary, or heated debate, in the press about whether factor timing is possible or advisable.

We very much support a long-horizon factor investment approach. As previously shown in figure 1, the returns of individual factors can vary sharply from one year to the next and timing market allocations is notoriously difficult. A long-horizon investor who is willing to stay the course and hold a portfolio combining multiple factors can reap significant benefits. But that doesn't mean we should turn a blind eye to potential hidden biases. Crowding in individual factor strategies could lead to a degradation of the factor's future expected returns. For instance, some factors may become a victim of their own success which may lead to extreme valuations. Monitoring and analysing crowding and valuation risk is important, and will likely lead to rebalancing.

Conversely, new factors could emerge, offering opportunities to those able to identify them. Things could also go wrong if asset owners fail to understand the implications of capacity. By definition, a factor approach involves some reduction in investment capacity and liquidity by comparison with a portfolio tracking the capitalisation-weighted index. These strategies need to demonstrate their ability to provide enough capacity and liquidity to asset owners who would like to deploy significant assets in these strategies as a core positioning in their portfolios. Factor-based strategies are well diversified and are exposed to different segments of the market. Therefore, a combination of factors provides good liquidity. But we need to monitor whether capacity constraints or frictional costs ever become a significant threat to returns.

Conclusion

Following the financial crisis, many asset owners have sought to bring about improved cost-efficiency, transparency and efficiency in their portfolios. In this environment, interest in factor approaches has grown substantially. Factors offer a way to reproduce many of the sources of return traditionally exploited by active managers, at much lower cost. Equally, factors offer one way to address the return drag of capitalisation-weighted approaches. Given these benefits, We believe factors are a useful and valuable tool for long-horizon investors.

To summarise, we propose that the asset owners and their advisers follow four steps to develop a factor-based framework.

1. Develop a shared understanding and belief that a factor-based approach adds value in a long-horizon investing programme.
2. Identify what factors are best suited to the investment objectives and risk budget.
3. Construct a diversified portfolio of factors by understanding the nature of individual factors' pay-offs in different market conditions.
4. In measuring and monitoring performance, asset owners should guard themselves against market timing while in the same time being adaptive when extreme valuations are created by crowding.

Éric TAZÉ-BERNARD
Chief Allocation Advisor at Amundi

Amundi LOOKOUT

Setting objectives for your asset allocation, at both strategic and tactical levels

When constructing its portfolio of assets, any investor tries to achieve a certain return target compatible with its risk appetite and liability constraints. It usually breaks down the total expected return of its portfolio between a Strategic Asset Allocation (SAA) return, and an active return, dependent on the sources of excess return which the investor has decided to implement.

It is quite logical that investors mainly focus on SAA, as the major source of return for their portfolio and as a long-term reference target. Setting SAA is based on risk, return and correlation assumptions on the major asset classes included in the investor's portfolio as well as on the investor's risk profile, generally defined in terms of volatility target or maximum drawdown over a certain horizon. Defining expected returns is a delicate exercise, but it can be argued that it is probably easier to perform on a long-term horizon, where normative assumptions, consistent with a certain macroeconomic framework, can be meaningful, than on a short-term horizon. Likewise, volatilities and correlations tend to be relatively stable over long cycles, justifying the use of long-term averages for these indicators when setting SAA return.

Less attention has been given to the formulation of an excess return objective.

Its quantification obviously depends on the scope of active management according to the institution.

Two main sources of excess return are generally considered:

- **Tactical Asset Allocation (TAA)**, or the decision to overweight or underweight the asset classes included in the investor's universe,
- **Selection**, which consists in identifying securities (stocks or bonds) or managers (in the case of multi-manager portfolios) set to outperform the reference index of the asset class.

Setting an excess return target then depends on whether the investor believes in the capacity of active management to add value, a hotly-debated issue in the asset management industry. Academic studies, as well as our own quantitative analysis tend to confirm that manager skill does exist, even though it varies depending on asset classes and market conditions.

We have analysed the most common institutional practice in setting excess return targets, following interviews with a sample of major global pension funds investors. Our observation is that excess return targets tend to have a "motivational" purpose and are designed to instil ambition in portfolio managers. Targets vary widely between institutions generally between 25 and 50bp. Excess return target also seems to be negatively correlated with asset size, as the largest global investors make more extensive use of passive management in particular. It is also positively correlated with the total return target for the portfolio, with a median ratio of about 10% between both. These targets are determined either using a bottom-up approach, based on the aggregation of the expected contributions of the different components of the portfolio or top-down, based on a mix of experience and academic background.

Based on these observations, we propose different methodologies to help investors quantify their excess return target.

Setting excess returns for each component of the active portfolio

The bottom-up approach consists in setting excess returns for each component of the active portfolio, including the expected contribution from TAA and from active management for each major asset class component of the investor's strategic benchmark. This granular approach requires to make a number of assumptions which may all be challenged. Its advantage it that it provides a useful consistency check with the other methodologies and can help the investor set individual objectives to each of the specialist investment teams.

Keeping a balance between excess return and total return

According to the second methodology, we consider that, as SAA should be the major return driver for investors, they should try to keep their excess return target to a limited proportion of their total return target. This is all the more so if their confidence in their capacity to deliver outperformance is small relative to their confidence in reaching their total expected return target over a long-term horizon.

Under certain simple assumptions, it can be defined as
α = ER * IR / 2*SquareRoot(T)
where ER is the expected return, IR the information ratio and T the investment horizon.

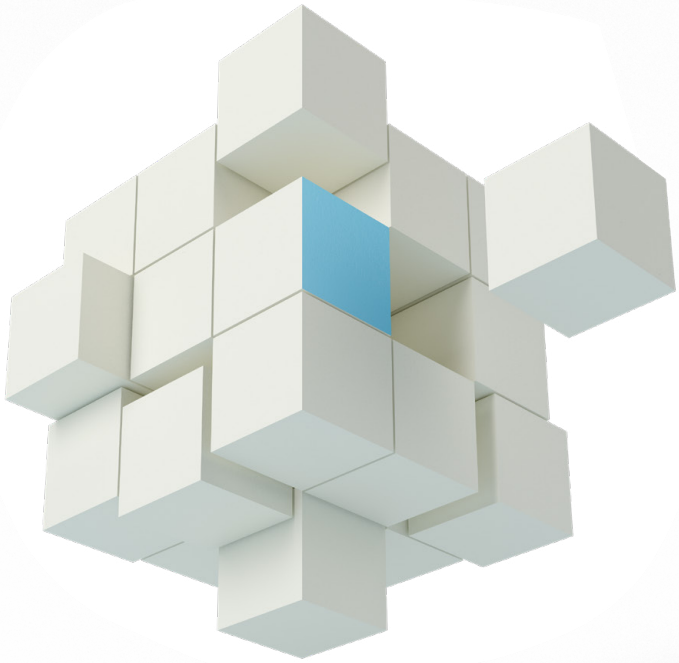
Taking an example, if we assume a 0.3 information ratio expected from active management, a 6% total return target and a 10-year investment horizon, excess return can be quantified at 28bp, which is close to 5% of the total return target.

Taking into account the correlation between active management and the total portfolio return

Finally, we propose a methodology based on the observation that **the more active management is correlated to portfolio total returns, the higher one should set the excess return target for a given tracking-error (TE) level**, in order to offset the limited diversification offered by active management. Given that TE is an increasing function of alpha and a decreasing function of correlation, it can be found by reverse optimisation that implied alpha is an increasing function of tracking error and a decreasing function of correlation. This relationship can be formalized according to different expected volatility and return assumptions for the SAA.

As an illustration, in the case of a 6% volatility and 3% expected return for SAA, the combination of a 1% tracking-error and of a 0.5 correlation assumption between active and total return leads to a 31bp implied excess return.

Setting an excess return target for a pension fund's portfolio is a soft matter, and no hard rule can pretend to provide "the" appropriate solution. We believe that investors should conduct this exercise by combining different approaches. Most importantly, investors should set this target on the basis of a clear investment philosophy, definition of the scope of active management and articulation of its role in targeting their long-term investment objectives. In this sense, even though the quantification of excess return is subject to a number of assumptions that can be debated, we believe it is a highly worthwhile exercise for investors.



Marie BRIÈRE
Head of Investor Research Center, Amundi
Affiliate Professor, Université Paris Dauphine

Towards tighter regulation in Europe?
Unintended effects on pension asset allocations

With the debate over European pension fund regulation in full swing, a key question is whether the changes being discussed may affect the ability to invest in risky assets and meet pension promises. An empirical analysis (Boon, Brière and Rigot, Journal of International Money and Finance) of regulatory changes affecting defined benefit (DB) pension schemes in three countries – the US, Canada and the Netherlands – shows that capital requirements and mark-to-market valuation materially diminish DB funds' investment in risky assets, especially equities.

Many countries are struggling with the sustainability of their pension systems, due to higher life expectancy and the adverse effects of the financial crisis on investment performances. In Europe, considerable uncertainty surrounding pension regulation has intensified the challenge for funds.

European regulation differs not only by country, but also by the type of institution providing pensions. The European Commission (EIOPA, 2012, 2016) has recently undertaken work to harmonise rules in order to avoid competitive distortions between different types of institutions and facilitate portability of pension rights. With Solvency II as a template, the regulator is exploring regulatory capital requirements for pensions. How might this affect European pension funds' ability to invest in risky assets and their investment performances?

Comparison of pension regulation in the US, Canada and the Netherlands

In a recent paper (Boon, Brière and Rigot, 2018), we evaluate the relationship between pension regulation and fund allocations by exploiting the regulatory changes in three countries, the US, Canada and the Netherlands, over the last two decades. Using asset allocation details for nearly 600 funds, we estimate the percentage change of fund investments in risky assets that is related to new regulatory requirements. The selected countries are particularly interesting because they are representative of regulatory approaches around the world. Fixed investment limits and minimum funding ratios exist in the US, while Canada has gradually introduced a risk-based approach by requiring funds to publish various risk indicators. In contrast, the Netherlands has had a quantitative risk-based approach in place since 2007. Dutch pension funds face regulatory capital requirements based on the assessment of funding risk. This approach resembles the Solvency II model that has applied to European insurers since 2016, and the EIOPA (2012) proposal for pension funds.

How does regulation affect pension fund asset allocation choices?

Our analysis reveals that regulatory factors account for a substantial proportion of funds' investment risk, after controlling for fund characteristics such as the proportion of retired members and the value of assets under management. Risk-based capital requirements and mark-to-market valuation have the largest economic impact. These factors are associated with an average 7% reduction in risky asset allocation, even after stripping out the coincident effect of the 2008-2009 financial crisis. We find that a pension fund subject to a 100% funding requirement has no significantly different exposure to risky assets relative to an unconstrained pension fund during normal times, but it invests 4% less in risky assets during the financial crisis. This result is consistent with theoretical papers exhibiting a different optimal response under a minimum funding ratio, as compared with Value-at-Risk (VaR)-based constraints when market conditions are stressed (Basak and Shapiro, 2001). Regulatory requirements have a statistically and economically significant influence on pension funds' asset allocations, which may be sensitive to financial market conditions depending on the specific details of the constraint.

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- *European Insurance and Occupational Pensions Authority (EIOPA) (2016), "Opinion to EU Institutions on a Common Framework for Risk Assessment and Transparency for IORPs".*

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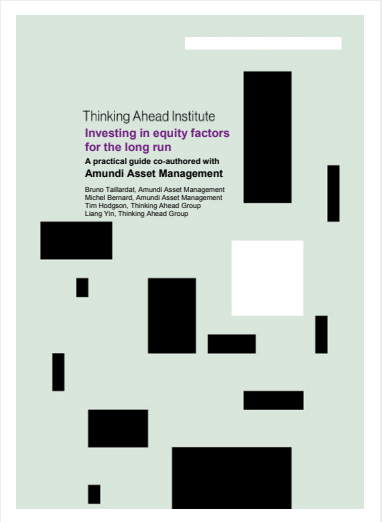

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