

Investment beliefs: The importance of focus for an institutional investor

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**Investment Beliefs:
The Importance of Focus for an Institutional Investor**

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Abstract

We investigate the building blocks for institutional investors' successful investment strategies. We focus on organizations which formulate investment beliefs and define clear views on how the capital markets work. We present the results of a world wide survey of investment beliefs. We find striking differences in how asset managers and pension funds view capital markets, and what they believe is their added value.

We link investment beliefs to performance measures and find that pension funds with beliefs on risk diversification show better return-risk performance measures, but also lower costs. Also, funds that hold clear views on risk management realize higher alpha and return/risk ratios.

“Markets price securities efficiently enough that when presented with a superior performance record, the initial reaction ought to be that strong performance most likely resulted from good fortune... Only when managers articulate a compelling coherent investment philosophy should fiduciaries begin to be drawn into evaluation of the active management opportunity”

Swensen (2000)

“Because of probabilities, good decisions will sometimes lead to bad outcomes... Over the long haul however, process dominates outcome. That's why casino - "the house" - makes money over time.”

Mauboussin (2006, 10)

“Those are my principles, and if you don't like them... well, I have others. “

Groucho Marx

1 Introduction

This paper explores the beliefs that guide asset managers and pension funds in making their investments by addressing three main questions. Why do beliefs matter in investments? Second, what are the main beliefs which are applied? Finally, does clinging to a strong set of beliefs lead to better results?

After a steep decline in global stock markets and a recovery that is still uncertain, surviving in the pension fund industry has gradually become a tough challenge. As a result, a profound shift is taking place in the paradigm governing the management of pension funds (Ambachtsheer 2005). The shift is moving away from static investment policies, supported by static beliefs about return distributions in general, and about the equity risk premium in particular. There is instead an increasing acceptance that return distributions are at least partially predictable, and that pro-active informed investors can in fact positively impact investment outcomes through their actions.

This realization in turn has profound implications for how pension funds should design their business models and their investment functions. Many people attribute the success of firms like eBay and Amazon to the manner in which they are using new technologies, not just to make their operations more efficient but to create new business models altogether (e.g. Gurley 2001). Does something similar apply to pension funds?

This paper attempts to answer some basic questions about business models for the institutional asset management industry. Framed in a strategic management context, we focus on the pension fund's value proposition: what does it involve to add real value to the client in capital markets? It is simply not enough to have a good organization, good staff and a well defined and embedded mission. A pension fund needs to formulate its own investment beliefs: a clear view on how they perceive the way capital markets function, and how their organization can add value with these views to their clients. Investment beliefs are important because they create a context for value-creating investing (Ambachtsheer 2005). What are the core competencies of an investment organization aiming for success in the capital markets? How does and how should an institutional investor view capital markets? We address a strategic issue that seems obvious but has to date seldom been applied in the strategy and investment literature (cf. Ambachtsheer and Ezra 1994; Ambachtsheer 2004).

The paper is organized as follows. We start out with a theoretical framework for investment beliefs. We present the results from a world wide survey of investment beliefs, and discuss the combinations of investment beliefs that emerge. We refer back to investment in practice by linking the investment beliefs to common performance measures to analyze the actual effective implementation of investment beliefs.

2 What is an investment belief?

Investing theory and practice have developed dramatically over the past five decades; yet there still is no objective framework around as to how we view capital markets and how to apply these insights for investment purposes (Lo 2005). Investment beliefs accept this reality, and usually contain a view on how (other) market participants learn or fail to learn on the capital market. Consider the case for active management where investors basically value a security by discounting the future cash flows of a security and compare this to the current price (Minahan 2006). The trading strategy is straightforward: buy if the value is higher than the price, and sell if the value is lower than the price. In real life, failure to do so successfully in active management is well documented. Human judgment and human behavior stand in the way of an objective valuation and trading strategy. One does not know the future cash flows of the security, nor is there agreement about the discount rate to be applied. To make matters worse, if the security is an illiquid asset, determining the current price itself is the result of an arbitrary valuation. Besides failure to create an objective assessment, the effect of dissemination of news on the security also creates further noise when investors hold different views, as extensively documented by behavioral finance.

The question here is not *why* the market is not able to deliver a consensus on the future cash flows or the discount rate. Rather, the real question is whether an investment manager has a clear view on what the (mis)pricing of securities and assets is, and *how* the manager is able to identify these mispricings and exploit them. This is the basis for a workable investment belief. We therefore argue that an investment belief consists of four main elements (Figure 1).

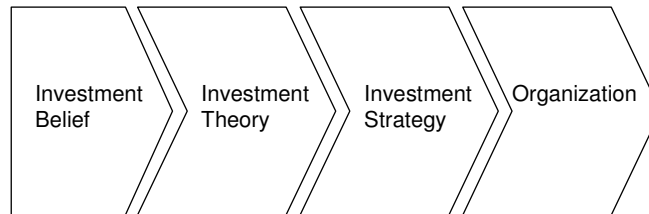


Figure 1: framework for analyzing investment beliefs

The investment **belief** is generally formulated as an observation of a mechanism of human behavior in the financial marketplace; such as "markets overreaction". There is usually a judgmental element included in this, since most of the time it addresses the fallibility of human behavior, and implicitly frames why the asset management organization deals with this in a more sophisticated way.

Investment **theory** argues whether there is a theoretical basis behind the investment belief. What is it about that mechanism that causes the mispricing? Is it a structural phenomenon which is repeatable in the (near) future? If a mechanism is observed in the financial markets but arguments for

a theoretical basis cannot be reasoned, then the investment organization runs the risk of how to design a strategy around this, without being able to predict future performance in any way.

The investment **strategy** describes how the investment belief can be exploited. With market overreaction, an exploitable strategy is to sell stocks after a positive news announcement and buy them when the opposite happens.

Finally, the **organization** addresses the issues that an organization has to take care of to successfully exploit the investment strategy. Ideally, the investment process that links the exploitation of the investment beliefs to performance measures which relate directly back to the investment belief.

<input checked="" type="checkbox"/> Belief	Investors over react to news
<input checked="" type="checkbox"/> Theory	Stocks that have had bad news announcements will be under priced relative to stocks that have good news announcement.
<input checked="" type="checkbox"/> Strategy	Buy (sell short) stocks after bad (good) earnings announcements. Alternatively, buy (sell short) stocks after big stock price declines (increases).
<input checked="" type="checkbox"/> Organization	Trading strategy with short term horizon. Good versus bad news announcements have to be identified.

Table 1. Example of investment beliefs, drawn from Damodaran (2007).

The interpretation of this approach is straightforward. Consider the example for the overreaction belief in Table 1. If all of the four boxes can be applied then there is a workable investment belief in place. If one of the boxes cannot be determined or implemented, the investment belief might be flawed. Implementing a strategy based on a belief, but with a clear argument as to why is like betting on the lottery. Alternatively, not thinking through the organizational aspects also has its drawbacks. For example, Shell Pension Funds argue that when ignoring to minimize implementation costs, it becomes very hard to outperform through classic stock picking (Bartlema 2005).

The investment belief itself should not be a reflection of consensus; it stands out as a belief against other beliefs. That the relationship between risk and return in general represents an upward slope is no surprise to market participants; however, the view that there are unique risk/return opportunities that only pension funds can exploit lends itself to become a belief.

2.1 Investment philosophy

We define investment philosophy as the collection of investment beliefs that the asset management organization considers to reflect as part of its added value. An investment philosophy is a dynamic set of core investment beliefs; Damodaran (2007) argues that you can go back to these investment beliefs

to generate new investment strategies when old ones do not work. Ideally, an investment philosophy combines those investment beliefs that provide the best fit for the client, given essential characteristics such as risk aversion, time horizon, and asset size.

Within an investment philosophy, there are usually *dominant* and *subordinate* investment beliefs. Multiple investment beliefs potentially create alignment issues in the investment organization. Consider a pension fund that believes in long term mean reversion and creates value versus growth portfolios. When the pension fund in the short term also believes in active management and implements a (short term) overreaction strategy, conflicts can arise. Based on the long term mean reversion belief a security may be bought while the overreaction strategy sells the security. To reduce potential misalignment, one of these strategies can be termed as the dominant one.

2.2 Why Trustees should take notice

Why should pension funds, trustees and investment consultants take note of investment beliefs? Just as firms compete for industry foresight and stake out a leadership position in the area of competence (Hamel and Prahalad 1994), asset managers have similar objectives within investment management. Borrowing from Porter (1985), product leadership, customer intimacy and cost leadership are the main focus of firm strategy. For investment managers, investment beliefs and their effective implementation form the cornerstone of their corporate strategies and thus their “unique selling proposition” to clients.

For investment managers and pension fund trustees, focusing on investment beliefs simplifies their task in evaluating managers and investment strategies. If a fund does not have a coherent investment philosophy, trustees will find themselves lacking a rudder and become an easy prey for investment banks, consultants and asset managers with each one claiming to have found the magic strategy that beats the market. Buzzwords in the financial markets are for example Liability Driven Investing, Portable Alpha, Exotic Beta, SRI, Absolute Return Strategies, 130/30 Strategies or fiduciary management. We need to determine which are relevant for a fund and why? Without a good set of investment beliefs, a pension fund might end up with a strategy that is not appropriate for its participants, given the objectives, and the risk (aversion) profile.

Clear beliefs prevent a fund from switching from strategy to strategy, changing the portfolio more often than necessary, resulting in high transactions costs and lowering net investment results. With investment beliefs, trustees and their investment managers can make informed decisions, instead of simply joining the herd.

3 How popular is the Investment Belief? An investigation

The American asset manager Vanguard believes in low cost and index replication. Canadian endowment fund Edmonton considers tactical asset allocation as the main decision it has to take while the Swiss private bank Pictet views security selection using a bottom up approach as a key driver. There are also nuances. For Danish pension insurer PensionDanmark, tactical asset allocation is crucial, while Edmonton believes that limited value is realized from tactical asset allocation shifts. All investment managers might well end up investing in the same securities, but have widely differing investment beliefs as to *why*. In this section, we develop a typology for these investment beliefs.

The power of typology as a tool for classification is that it provides a basis for useful research and is a recognizable strand in the organizational studies literature (Rich 1992). A typology allows for the easier recognition of fundamental structure and relationships (McKinney 1966) and provides a platform for theory development (Hass, Hall et al. 1996). However, the risk of producing oversimplified, a priori typologies that turn out to be tautologies is also a strong one (Carper and Snizek 1980). We carefully take this drawback into consideration when constructing our dataset and analyses, and present practical examples throughout the paper.

3.1 Sample collection procedure and characteristics

The dataset amounts to 40 pension funds and asset managers, with publicly reported investment beliefs (Table 17). The dataset is constructed by collecting web site and publicly available annual reports of pension funds worldwide, looking for sections describing their "investment philosophy", "added value", "investment beliefs". The list of pension funds is derived from the Pension & Investments Databook 2007, where the funds are listed by asset size for 2006. Of the 300 funds, we find 14 funds which publish this information. Selecting from the 300 largest funds introduces a size bias – neglecting smaller organizations. We therefore analyze other pension plans and endowment funds outside the top 300 for their investment beliefs and philosophy; additional investment beliefs from 9 funds are found.

To enhance robustness we further expand the dataset to include 17 institutional asset managers, as the main suppliers of investment management for pension funds, based on the Pension & Investments Databook 2007. This also allows us to check for distinguishing characteristics of the pension funds against the asset managers. Table 2 presents summary information on the characteristics of the firms in our sample.

Country	Asset Managers			Pension plans			Total		
	Total Assets	Col %	N	Total Assets	Col %	N	Total Assets	Col %	N
Australia	-			33,721	2.2%	2	33,721	0.3%	2
New Zealand	-			7,121		1	7,121	0.1%	1
Canada	-			241,669	15.7%	7	241,669	2.3%	7
United States	3,634,751	41.5%	7	407,479	26.5%	4	4,042,230	39.2%	11
Denmark	-			73,655	4.8%	2	73,655	0.7%	2
Germany	1,026,875	11.7%	1	-			1,026,875	10.0%	1
Netherlands	904,464	10.3%	3	397,840	25.8%	4	1,302,304	12.6%	7
Norway	-			235,849	15.3%	1	235,849	2.3%	1
Sweden	-			93,861	6.1%	1	93,861	0.9%	1
Switzerland	2,084,013	23.8%	2	-			2,084,013	20.2%	2
United Kingdom	1,117,958	12.8%	4	48,416	3.1%	1	1,166,374	11.3%	5
Total	8,768,061	100.0%	17	1,539,611	100.0%	23	10,307,672	100.0%	40
Minimum	2,000			623			623		
Quartile 1	105,885			8,473			16,973		
Quartile 2	269,493			34,536			81,122		
Quartile 3	647,867			81,122			244,260		
Maximum	2,016,000			367,939			2,016,000		

Source: Note: Pension & Investments Databook 2007, augmented with annual report data. Assets are in million US dollar.

Table 2: Summary statistics and regional distribution of dataset.

The publication of investment beliefs is centered in Canada, the United States, the Netherlands, Australia, Denmark and Sweden. Emphasis on Anglo-Saxon countries was to be expected. These countries have a long standing tradition for pension plans to draw up and publish investment principles, outlining goals, objectives, and the organization of the pension arrangement. In continental Europe this is not yet commonplace; only since last year has the European Directive for occupational retirement provisions required pension funds to draw up investment principles¹. The selection of the countries might raise some selection bias issues; these are mitigated since the majority of the world's pension assets are also concentrated in these countries. Also, more public pension plans than corporate pension plans tend to publish investment beliefs, reflecting a higher demand for transparency towards these types of funds.

Table 3 presents the documented investment beliefs for both pension funds and asset managers. Several authors (Ambachtsheer 2004; 2007; Slager and Koedijk 2007) have identified elements that can be addressed in an investment belief, providing the basis for the survey. When formulating investment beliefs, the asset manager has several stakeholders to consider, and to differentiate between what he can and what he cannot influence. Furthermore, he might also consider the relations/

¹ Directive 2003/41/EC of the European Parliament and of the Council, of 3 June 2003, on the activities and supervision of institutions for occupational retirement provision. Paragraph 23 mentions that "The investment policy of an institution is a decisive factor for both security and affordability of occupational pensions. The institutions should therefore draw up and, at least every three years, review a statement of investment principles. It should be made available to the competent authorities and on request also to members and beneficiaries of each pension scheme."

interdependencies with non-capital markets. Based on these considerations, we cluster investment beliefs in four sets of beliefs. The first set addresses financial markets; the second set considers the added value of the investment process. We also identify a set of beliefs about the firm’s own organizational skills, and finally one about sustainability and corporate governance.

	Organization type					
	Pension fund		Asset Manager		Total	
	Count	Column %	Count	Column %	Count	Column %
Financial markets						
Risk premium	10	6.4%	2	2.5%	12	5.1%
Risk diversification	14	9.0%	2	2.5%	16	6.8%
(In)efficiencies in financial markets /asset pricing	9	5.8%	12	15.0%	21	8.9%
Horizon	10	6.4%	4	5.0%	14	5.9%
	43	27.6%	20	25.0%	63	26.7%
Investment process beliefs						
Impact, focus of management decisions	34	21.8%	15	18.8%	49	20.8%
Risk management	6	3.8%	6	7.5%	12	5.1%
Investment management style	25	16.0%	14	17.5%	39	16.5%
Costs	2	1.3%	1	1.3%	3	1.3%
	67	42.9%	36	45.0%	103	43.6%
Organizational beliefs						
Teams, role of investment managers	9	5.8%	13	16.3%	22	9.3%
Out vs. insourcing	5	3.2%	0	0.0%	5	2.1%
Experience	1	0.6%	3	3.8%	4	1.7%
Other	5	3.2%	3	3.8%	8	3.4%
	20	12.8%	19	23.8%	39	16.5%
Sustainability and Corporate Governance						
Sust. & Corp. Gov. in asset pricing	4	2.6%	0	0.0%	4	1.7%
Role in investment process	5	3.2%	1	1.3%	6	2.5%
	9	5.8%	1	1.3%	10	4.2%
Other beliefs						
Pension liabilities	7	4.5%	1	1.3%	8	3.4%
Goal	3	1.9%	1	1.3%	4	1.7%
Other	7	4.5%	2	2.5%	9	3.8%
	17	10.9%	4	5.0%	21	8.9%
Total Count	156	100.0%	80	100.0%	236	100.0%

Table 3. Summary of reported investment beliefs

4 Investment beliefs

4.1 Financial market beliefs

An informed and well-reasoned decision about the asset allocation and investment strategy begins with a view on financial markets: how does an investor view (structural) relationships between risk, return, and asset pricing? Roughly 28% of pension funds’ investment beliefs, 25% for asset managers, deal with the risk premium, diversification, or the investment horizon. Pension funds however

emphasize risk diversification (9%) while asset managers focus on (in)efficiencies in financial markets and its link to asset pricing (15%).

Inefficiencies in financial markets deal with the question of whether the pricing of securities (and/or in aggregate the market or asset category) is perfectly efficient, or less than perfectly efficient. If they are less than perfectly efficient, what is then the inefficiency? Since the 1970s investment professionals adhere to either the strong variant of the efficient market hypothesis, or the semi-strong (or even weak) efficient market hypothesis. Financial markets are not a homogeneous pool of capital. In the United States, large corporations listed at the NYSE are traded in large volumes and covered by a large number of stock analysts, creating very efficient markets where returns are basically not predictable.

AXA Rosenberg believes that "markets are reasonably efficient but not perfectly efficient ... it is difficult to add value consistently by betting on countries or sectors or by timing the markets".

Vanguard finds that "consistently outperforming the financial markets is extremely difficult". Pictet holds a bottom up approach, believing that "the price of a financial asset should reflect the present value of its future cash flows".

UBS finds that the "intrinsic value is determined by the fundamentals that drive a security's cash flow."

Table 4. Illustration (in)efficiencies investment beliefs

Relatively few firms deal with the *risk premium*. Beliefs about risk attitude and risk-return relationship are based on the premise that investors are generally risk-averse and require expected risk premiums before they will hold investments they deem risky (cf. Ambachtsheer 2007) . Investment risk is contextual, and thus the riskiness of any investment depends in part on the objectives of the investor. The (equity) risk premium plays an important part in the amount of risk an investor has to bear. The equity risk premium is the difference between the return on risky stocks and the return on safe bond.

The equity risk premium is central to investments; yet it is not clear how big the equity risk premium has been in the past, or how large it is today (Dimson, Marsh et al. 2003). However, the assessment of what level the equity risk premium is in the future, heavily determines a pension fund's allocation into equities. In an experiment, pension fund executives were asked to give an estimate for financial indicators, deriving an equity risk premium of between -2 and +10.4% for the coming 20 years (Ambachtsheer 2007). Besides being overly optimistic, this would have generally led to strong biases towards equities.

The New Zealand Superannuation Fund believes that it should “exploit the premium available to investors who do not require liquidity. Our long investment horizon, combined with the fact that no outflows are required until after 2020, means we are extremely well positioned to capture this premium.”

The Superannuation Fund for Australia’s universities argues that investors are rewarded for taking long term market risk; as a consequence they believe in active management but recognize that index managers have a role in certain markets.

Table 5. Illustration of risk premium investment beliefs

Pension funds tend to stretch the role of *diversification* more than asset managers (9.0% compared to 2.5%) as one of the few free lunches available in investments. Diversification is usually framed in a mean variance context: diversification among assets is an essential instrument to create portfolios with a lower expected risk given the target return. Since the latest equity markets down turn in 2002-2004 views on diversification have shifted. Correlation, as a measure of potential diversification increasingly does not hold in periods of extreme volatility (Campbell, Koedijk and Kofman, 2002). Investment managers increasingly look to add new – alternative – investments to uphold diversification advantages.

NZ Superannuation Fund believes that risk and return are strongly related and that diversification reduces total risk. Combining lowly correlated assets to deliver stable returns is critical to our success.

Table 6. Illustration of risk diversification investment beliefs

Finally, 6.4% of pension funds’ investment beliefs address the *investment horizon* (5.0% for asset managers). Predictive processes have either long-horizon or short-horizon orientations. Statistically, the longer the investment period, the smaller the standard error of the estimated return becomes. Long-horizon processes focus on projecting and valuing uncertain future cash-flows and are positive-sum games. Short-horizon processes in contrast focus on predicting and exploiting temporary securities pricing discrepancies, and are zero-sum games before expenses (Ambachtsheer, 2007).

Focusing on longer term horizon also has the additional benefit of avoiding a potential zero-sum game; in a 2005 survey among 180 investment professionals, Guyatt (2005) found that 30% of respondents believe that lengthening the investment horizon would improve corporate behavior and ultimately portfolio performance, while 26% also viewed a longer horizon as an opportunity to integrate extra financial information and thus improving the valuation of securities and assets.

Pictet assumes that "value measures give no indication about the short-term return of a financial asset, but valuation is central to the long term (5

years and more) return estimate." Also, "in the short run, the economy can be better predicted on the basis of the financial markets than the other way around."

Vanguard is more explicit: "A long-term outlook matters. An approach based on short-term goals or tactics doesn't represent an investment philosophy."

Pension fund PGGM "capitalizes on its strength as a long-term investor. [...] It can select investments which generate a high return in the long term, even though they may suffer short term losses."

Table 7. Illustration investment horizon investment beliefs

4.2 Investment process beliefs

The investment process outlines the steps in creating a portfolio, and emphasizes the sequence of actions involved from understanding the investor's risk preferences to asset allocation and selection to performance evaluation. The investment process provides a structure that allows stakeholders to see the source of different investment strategies and choices within the investment portfolio.

An investment process combines all the necessary steps to move from conceptualizing the investor's mission to realizing the returns in relation to the risk attitude and to prior set goals. The investment process emphasizes the different components that are needed for an investment strategy to be successful. 42.9% of the investment beliefs of pension funds, and 45.0% of asset managers, deal with investment process related beliefs, the most important being the impact and focus of the management decisions, and the choice of investment management style. Less quoted beliefs concern the choice between passive and active management, the focus on the cost of the investment process, and risk management.

Pension funds, more than asset managers, tend to articulate the *impact and focus on management decisions* they ought to make within the investment process, with greater focus on their fiduciary responsibilities along the way. The focus on asset allocation is a key element, reflecting research that the asset allocation decision between asset classes may play a greater role than the tactical movements of holdings within asset classes in shaping risk and performance (Brinson, Hood et al. 1986; Brinson, Singer et al. 1991).

Axa Rosenberg believes that "it is difficult to add value consistently by betting on countries or sectors or by timing the markets. We bet only on stocks and build portfolios that have similar country, industry, capitalization and risk exposures to the client's designated benchmark. Our portfolios are fully invested at all times."

TRowePrice "does not seek to achieve excess returns through volatile, short-term investment strategies or securities [...]. Rather, we pursue a highly disciplined, risk-controlled investment process aimed at achieving consistent, long-term returns.

The Alberta Workers Compensation Fund finds that “Asset allocation is the most determining factor in the investment performance of the Fund”

Table 8. Illustration management decisions investment beliefs

More asset managers than pension funds (7.5% versus 3.8%) formulate beliefs on *risk management*. Although risk as a separate belief is embedded in the financial market beliefs in the form of risk-return relationship, risk management addresses a broader range than just securities; more specifically on the implementation and monitoring of the investment process. Diversification is usually stressed as one of the key elements, especially by pension funds. Besides the portfolio management motives, stressing diversification reflects the trustee’s interpretation of a “prudent person principle”.

The OMERS Board believes that “capital markets and risk processes will continue to evolve and, as such, encourages investment staff to investigate, understand and use, where applicable, new strategies and asset classes to enhance the Fund’s value or mitigate risk.”

For Teacher’s Pension Plan “managing investment risk is just as important as generating returns. Maintaining a well-diversified portfolio is the cornerstone of the Fund's risk management program.”

Table 9. Illustration risk management investment beliefs

Investment management style. Investment managers usually describe their activities as having a “style” that describes their approach to investing. The most common known ones are active and passive investing. With passive management, portfolio managers bet on the movement of entire markets - financial as well as real assets, assuming that these markets are efficiently priced. With active management selection, the focus is on picking good investments within each market. A belief in inefficiencies in the pricing of markets can well be combined with a belief in the efficiency of pricing individual securities in that market, and vice versa. Additionally efficiencies might exist in the short term but disappear in the long term and vice versa.

Pension funds and asset managers adhere to a wide range of active management styles, ranging from growth to value companies. Styles can be subjective and change as their markets change. Both pension funds (16.0%) and asset managers (17.5%) concretely formulate their investment management styles. For pension funds, 5% of those beliefs deal with the classical active-passive management style. Some funds like Dutch PGGM and ABP are explicit and stress their potential for gaining alpha, but the formulation of the beliefs remain at an abstract level.

Not all funds adhere to an active management style. Active management is more costly than a passive indexing strategy, and active management may not generate higher net returns after management fees (Hsin and Mitchell, 1997a, b).

For ABP, Alpha generates a valuable contribution to the return: “Generating ‘alpha’ [...] yields a valuable contribution to the return on the portfolio, with little increase of the overall risk.”

ABN AMRO Asset Management expects over the longer term to see “the majority of value added come from stock selection as this normally represents a more stable and consistent source of out-performance.”

Table 10. Illustration investment management style investment beliefs

Beliefs about costs are based on the premise that, all other things equal, lower investment *costs* are always better than higher investment costs. Reducing costs can be an investment belief based on economies of scale. Avoiding high cost assets (such as private equity or hedge funds) or focusing on low cost strategies in large liquid, efficient markets can form an alternative investment belief.

Not many pension funds hold explicit beliefs on costs, while this still is a hotly debated subject. The high cost base is a major explanatory factor why mutual funds generally struggle to deliver higher than benchmark returns after costs. Pension funds on the other hand have substantially lower costs raising net returns, especially for large compulsory schemes.

Vanguard believes that "minimizing the costs of investing is vital for long-term investment success".

LAPP also centers on costs, believing that "adopting different investment styles can reduce the potentially positive impact of active management, can increase the cost of managing the pension fund and can increase the time and cost of monitoring the investment management?"

Table 11. Illustration of costs investment beliefs

4.3 Organization beliefs

How much thought (and research) has gone into the organizational set-up and structure of the pension plan, and how it manages its own or external managers? This is addressed by the organizational belief, for example through the belief on the role an investment manager should play in the organization to add value, or a choice about in/and outsourcing. Asset managers tend to focus more on the role of teams than investment managers (16.3% compared to 5.8%), which can probably be explained by the commercial focus of asset managers, and makes intuitive sense given the fact that it is part of their commercial focus.

HSBC asset management believes “that the best results are delivered by small teams of portfolio managers who are focused, empowered and accountable.”

Similarly, T.Rowe Price argues that “consistently, strong, risk-adjusted performance is, in a significant measure, the result of a stable management team.”

According to PensionDanmark, “the best investment results are most likely to be achieved with a relatively small and focused investment team combined with a high degree of outsourcing to external managers.”

Table 12. Illustration organization investment beliefs

Smaller pension funds outsource a substantial part of their activities out of necessity: costs and scale advantages. For larger pension funds, outsourcing versus insourcing represents a strategic choice. Still, only a small percentage (3.2%) of pension funds’ investment beliefs deals with out- versus insourcing. Asset managers have none, which also makes sense since they are the beneficiaries of pension funds’ outsourcing activities. Outsourcing asset management should improve investment returns since outside investment managers are likely to bring superior professional experience and skills to the pension plan investment decisions. Moreover, contracting-out allows a retirement system to change its investment managers more readily in response to poor performance. A pension fund is likely to find it more difficult to oust inside managers for weak results than to dismiss an outside firm for comparable shortcomings. Finally, outside managers are likely to be better shielded against political pressures to pick state and local companies for investment. A comparison of internally-managed pension funds with mutual funds during the late 1970s and early 1980s revealed lower risk-adjusted returns among the former, suggesting that external management has yielded superior results in the past (Berkowitz, Finney, and Logue, 1988).

API Fonden manages its assets ”both internally and externally. A decisive factor in the choice between internal and external management is the ability to create a higher return (after management costs) compared to the established strategic benchmark. Management areas where the Fund does not possess or has difficulty in obtaining the right expertise are managed externally.”

The Victorian Fund Management Corporation outsources fund management, “with the skills of the in-house investment team focused on selecting the best in class providers and then building asset class portfolios as efficiently as possible. As we expand into alternative asset classes we may review this model since it may be more effective to bring various activities in-house.”

Table 13. Illustration of in- and outsourcing investment beliefs

4.4 Sustainability and Corporate Governance Beliefs

(Socially) responsible investments has gained headways in recent years. The debate whether SRI is part of fiduciary duty has abated to some extent, with pension industry bodies like the English NAPF

stimulating to view it as part of the fiduciary duty. Our dataset contains many of the largest pension funds and asset managers in the world. Relatively few pension funds (5.8%) hold explicit beliefs about sustainability. An interesting result, considering that that several members – pension funds as well as asset managers - in the dataset are actively involved in SRI initiatives like PRI, or are members of corporate governance initiatives like CGNI. Either there is a time lag in incorporating these phenomena in their investment beliefs, or funds do consider it as a separate set of principles, unrelated to the investment portfolio. The two sets of beliefs we focus on are corporate governance and sustainable investments.

Some of the most spectacular corporate collapses and losses in recent memory have highlighted the role that *sustainability and corporate governance* practices play in maintaining viable entities, and safeguarding investors' interests. For example, a number of studies published in recent years have shown a strong link between good corporate governance and strong profitability and investment performance measures (CFA Institute, 2004). Research carried out by the California Public Employees Retirement System (CalPERS) on the effects of the system's Focus List suggests that efforts by investment funds to improve the governance of companies which are considered poorly governed also produces good returns in excess of market performance. For corporate governance structures to work effectively, shareowners must be active and prudent in the use of their rights.

Shareowners must act like owners and continue to exercise the rights available to them. PGGM believes that "active exercise of shareholder rights by investors can generate higher investment results [...] Good corporate governance helps to raise the share price." This is implemented by defining and applying voting guidelines, as well as disclosing its voting behavior.

Hermes' approach is based on the belief that "companies with concerned and involved shareholders are more likely to achieve superior long-term returns than those without." Active shareowner involvement could remedy consistently underperforming companies as a result of structural or strategic governance weaknesses.

Table 14. Illustration sustainability and corporate governance investment beliefs

Few investment firms hold outspoken views on *sustainable investments and corporate governance* and if they do, it is not integrally published alongside the investment beliefs. Of the 42 organizations, 13 are signatories of the “Principles for Responsible Investments”, yet only 4 organizations include views on sustainable investments and corporate governance in their investment beliefs (Principles for Responsible Investment 2007). The merits of this investment belief are hotly debated, as well as the most efficient application to portfolio management. The minimalist approach is to view it as another investment style. Environmental, Society and Governance are integrated as one of the factors in mainstream, alpha-driven strategies. However, it can be considered a true investment

belief when the organization links sustainable investments with a long term view towards the capital markets and society. Supporters of sustainable investments believe that there is either a "capital gap" to be filled or a "sacrifice" is required (Ghilarducci 1994).

Capital gaps are caused by market failures such as information asymmetries: investors do not take into account all relevant information or do not price the information right, creating incorrect combinations of risk and return for different stocks or sectors; proponents of the efficient market on the other hand argue that at any time the market price reflects the fundamental value of the firm. Sustainable investors believe that companies with adequate sustainable policies deliver on average superior earnings and will be rewarded with above average investment returns. The second type of sustainable investments is sacrifice, which means giving up risk- or return objectives to achieve a non-financial goal. Restrictions and constraints on the investment universe to incorporate sustainable goals will create sub-optimal risk-return combinations compared to the best portfolios that are managed without any other consideration than risk-adjusted return. However, sustainable investments seem to provide at least comparable risk return characteristics to "normal" investments (Derwall, Guenster et al. 2005).

OMERS believes that “well-managed companies are those that demonstrate respect for their employees, the environment, the communities in which they do business and for human rights, as well as meeting financial standards.”

The New Zealand Superannuation Fund believes that “long-term financial performance can be affected by environmental, social and governance (ESG) issues. We will encourage the companies we invest in to meet international standards in these areas.”

Table 15. Illustration sustainability in investment process investment beliefs

5 Interaction of investment beliefs

The previous section discussed investment beliefs in detail. To analyze how they interact, correlation statistics for the investment beliefs are presented in Table 18. The investment belief variables are dichotomous (they either are reported or not), therefore the phi values are shown, a chi-square based measure of association which is often used as a measure of association in 2-by-2 tables.

The overall level of relationships between the investment beliefs is relatively weak, suggesting that their formulation for (most) organizations has been a sensible thought-out process. Ideally, the formulated investment beliefs should be independently formulated. If two investment beliefs are highly related, then they should have been integrated into one investment belief. An obvious example

would be an organization that stresses the role of risk management in the organization (we know how to manage), while also stressing the role of risk in the financial markets (we know how to assess risks).

However, the correlation statistics in Table 18 still identify several relationships. There is a relatively strong positive association between focus of management decisions on the one hand ($\phi=0.26$), and the beliefs about in- and outsourcing and pension liabilities on the other hand ($\phi=0.26$). Organizations which hold beliefs about where their added value is, tend to apply it in the investment process. A stronger positive relationship exists between beliefs about costs and the investment horizon in financial markets ($\phi=0.43$), reflecting the standpoint that the impact of lower costs becomes more visible with a longer time horizon. Organizations with a belief about in- and outsourcing (mostly pension funds) tend to show less beliefs about financial markets, like risk diversification ($\phi=-0.26$) and inefficiencies ($\phi=-0.29$). In other words, beliefs about risk diversification and inefficiencies are in some cases passed on to the external managers that pension funds select. On the other hand, pension funds with beliefs about in- and outsourcing are more focused on the organizations goals ($\phi=0.46$) and pension liabilities ($\phi=0.31$). Finally, beliefs about risk premia are related to beliefs about risk diversification ($\phi=0.40$), but also to beliefs about the role of sustainability and corporate governance in the investment process.

5.1 Pension funds and asset managers: sharing different beliefs?

When we approach pension funds and asset managers as separate organizations, additional insights can be gained. Table 3 and the surveyed investment beliefs allow us to draw a stylized picture of the differences between pension funds and asset managers. A pension fund interprets the consequences of risk premia in the financial markets, and emphasizes risk diversification. Both beliefs are consistent with a long term view in investment management.

Both pension funds and asset managers focus comparably on their investment process. However, pension funds tend to stress which decision has the highest impact, while asset managers tend to stress the role of risk management as an argument for investment style. An asset manager also emphasizes his view on asset pricing, as it turns out mostly inefficiencies are the basis for active management.

Asset managers tend to over-emphasize the qualities of their organization. Asset managers, more than pension funds, also place great value in the teams and staff of their investment organization, stressing risk management along the way. This suggests that asset managers use their investment belief to position themselves in the investment management market. Finally, some pension funds emphasize the role of sustainability in their investment philosophy, and other beliefs that relate to their organizational goals. Sustainability as a belief is practically absent for asset managers.

6 Linking investment beliefs to performance measures

Formulating investment beliefs is surely worthwhile from a pension fund governance point of view. Does it also show in the results? Application of a coherent set of investment beliefs that translate into effective financial performance should be of interest to for example participants and pension trustees, Since in practice investment performance varies across plans and managers, it would be useful to know whether financial success can be linked to structural principles (cf. Mauboussin, 2006; Swensen, 2000) as embedded in the investment beliefs, or just to good fortune.

The relation between objectives, strategy and performance in investment management is a broad one (see for example Clark and Urwin 2007). We do not intend to present a thorough data analysis at this stage; however, we do sketch quantifiable measures that can be directly related to investment beliefs: costs, risk diversification, investment management style and horizon (Table 16). Again the data was collected from annual reports; the asset under management data for asset managers was retrieved from the CRSP/Mutual Fund database.

Investment belief	Performance measure	Calculation
Financial markets	Risk diversification	Return-risk ratio Average yearly return as a ratio of average yearly standard deviation.
	Asset diversification	Herfindahl index: indicator of distribution between different assets
	Horizon	Comparison of measures for 3, 5, 8 years
Investment process	Investment Management Style	Alpha Performance compared to self reported benchmark
		Information ratio Risk adjusted performance compared to benchmark
	Costs	Expense ratio Total cost divided by the fund's total assets

Table 16: Quantifiable measures for investment beliefs

The *return-risk* ratio is calculated as the average yearly return divided by the yearly standard deviation, and focuses on the portfolio construction. Does the organization combine assets and strategies to exploit inefficiencies that result in a better risk/return trade off? The effect of superior strategic allocation and diversification strategies should be reflected to a certain extent in this measure. Superior strategic allocation and diversification also shows up through the concentration of assets.

Diversifying over assets is an easily observed implementation of risk diversification. If a fund acknowledges that diversification is crucial, assets are more likely to be allocated over different asset categories. Overall concentration tends to be lower, decreasing systematic risk. We measure *asset diversification* through the Herfindahl index, the sum of squared asset allocation weights for a portfolio, ranging from close to zero (relatively diversified) to one (highly undiversified).

$$DI = \sum_{i=1}^{i=n} \left(\frac{A_i}{\sum_{i=1}^n A_i} \right)^2 \quad (1)$$

Alpha measures the yearly return compared to the organization's benchmark (or policy) portfolio return, and basically represents the successful exploitation of inefficiencies in financial markets. It aggregates the performance effect of active investment choices like tactical allocation, but also manager selection. The *information ratio*, measuring the results of active management controlled for the additional risk taken, is then calculated as alpha as a ratio of the standard deviation of alpha. Here too, yearly figures have been used. The *expense ratio* reflects competences of the organization: does the organization have a clear view about its cost base and procurement process: which activities are kept inside, and which are outsourced.

6.1 Results

Figures 2 to 4 show boxplots for the alpha, information ratio and asset diversification variables for pension funds. Alpha is positive for all periods. The information ratio for 3 years compared to 5 or 8 years suggests that pension funds have achieved this while at the same time increasingly controlling the additional risk. The asset diversification shows a relatively stable pattern, with median values between 0.2 and 0.3.

For the expense ratio and return-risk ratio, boxplots for pension funds as well as asset managers could be construed (Figures 5 and 6). **Figure 5** shows that pension funds have in recent years improve their average return-risk ratio compared to asset managers. For the pension funds with the positive outliers, this can be mainly attributed to the increased allocation of alternative investments. Finally, the well documented differences in costs between pension funds and asset managers are also confirmed in **Figure 6**. The difference in cost base is stable over the different time periods.

To examine if there is a relation between the investment beliefs and the performance measures we perform t-tests for equality of means for the performance measures, testing whether having an investment belief significantly impacts the performance measure (**Table 19**). Two results stand out. Holding strong investment beliefs about risk diversification is related to an improvement in the return/risk ratio of the organization, related to realizing higher alpha and lowering costs. On the other hand, costs as a belief are not a differentiating element for the performance measures.

Interesting too is the absence of expected results. Having clear views on the (in)efficiencies in the financial markets has no relation to any of the performance measures. Similarly, time horizon has no relation to the performance measures. However, holding strong views on the time horizon probably influences the views towards risk diversification, given the relative strong correlation ($\phi=0.41$) between those two investment beliefs in Table 18.

7 Conclusions

Developing a set of investment beliefs makes sense from a strategic perspective: an organization has to identify where and how it does add value to the investment process. Developing these views is especially necessary in financial markets. There is no unified approach on how to view these markets. Without investment beliefs, trustees and investment managers are bound to assess new investment strategies and make changes on an ad hoc basis, running the danger of creating sub optimal results. Having investment beliefs also makes sense from a pension fund governance point of view (Clark and Urwin 2007).

We investigate which beliefs institutional investors hold and document the investment beliefs that major pension funds, endowment funds and asset managers have published. We find that investment beliefs are basically Anglo Saxon in orientation and a relatively unknown phenomenon, which seems odd, considering all the management time focused on formulating core competences in companies.

We cluster investment beliefs in four categories: beliefs about the financial markets (covering elements like risk premium, diversification, time horizon), investment process (risk management, impact of decisions in process, investment style), organization (teams, in- or outsourcing, role of experience), and sustainability and corporate governance (the effect of sustainability and corporate governance on asset pricing and its role in the investment process).

Our survey suggests a stylized picture of the differences in investment focus between pension funds and asset managers. A pension fund focuses on getting its beta right: it interprets the consequences of expected risk premiums in the financial markets in making investment strategies, and in particular emphasizes risk diversification. Both beliefs are consistent with a long term view in investment management.

Both pension funds and asset managers focus comparably on their investment process. However, pension funds tend to stress the decision which has the highest impact, while asset managers tend to stress the role of risk management and the argument for a particular investment style. An asset manager also emphasizes his view on asset pricing, as it turns out inefficiencies are most often cited as the basis for active management. Asset managers tend to over-emphasize the quality of their organization. Asset managers, more than pension funds, place great value in the teams and staff of

their investment organization, stressing risk management along the way. This suggests that asset managers use their investment belief to position themselves in the investment management market.

Finally, some pension funds emphasize the role of sustainability in their investment philosophy, and other beliefs that relate to their organizational goals. Sustainability as a belief is practically absent for asset managers.

There also seems to be a link between several investment beliefs and structural performance measures. In an exploratory data analysis, we find evidence that organizations with investment beliefs on risk diversification show better return-risk performance measures, but also lower costs. In other words, a pension funds not only focuses on getting the right beta, but also achieves the right results. Furthermore, focus pays off. Funds that hold a clear view on how risk management is organized, usually in combination with a view on the management style, realize higher alpha and return/risk ratio's than funds that do not hold such views.

Further research in this area allows for a straightforward extension of the analysis. There are many asset managers and pension funds around, yet only a few publish investment beliefs. Their investment beliefs are implicit, and a broader survey would help unearth their beliefs, allowing us to confirm our preliminary findings in a broader setting. Refining the performance measures that link investment strategy with execution, but also to governance will help us to answer further questions as to which investment beliefs work and which don't. This will aid pension funds further in fine-tuning or re-designing their investment management and business models.

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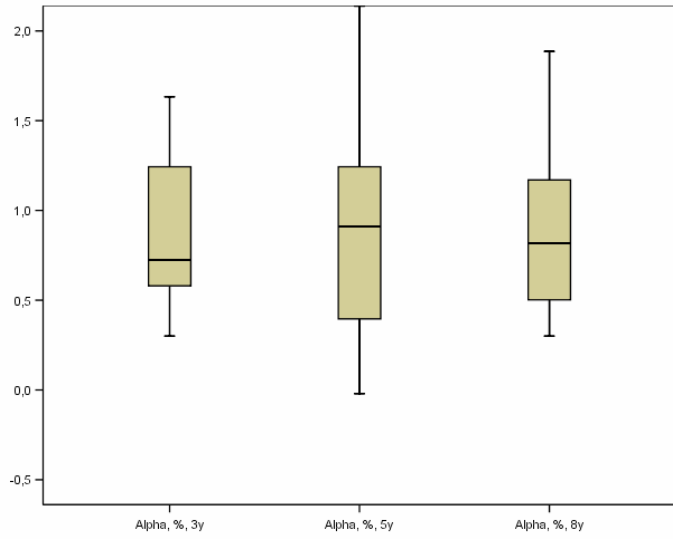


Figure 2: Average alpha in % for pension funds for 3, 5 and 8 year periods

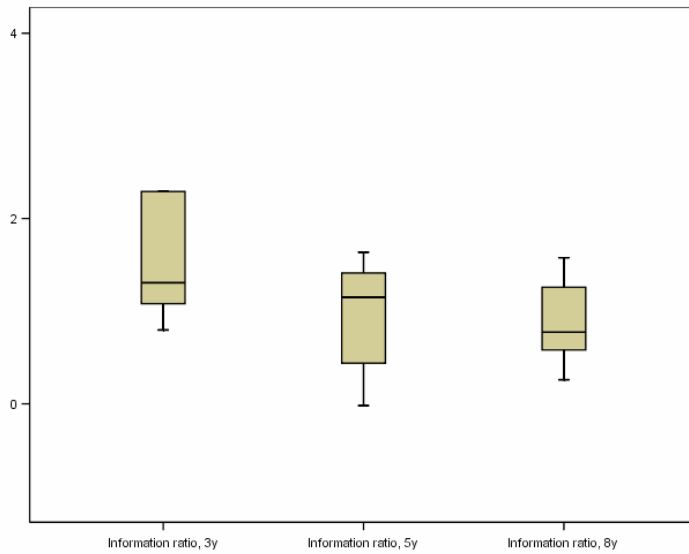


Figure 3: Information ratio for pension funds for 3, 5 and 8 year periods

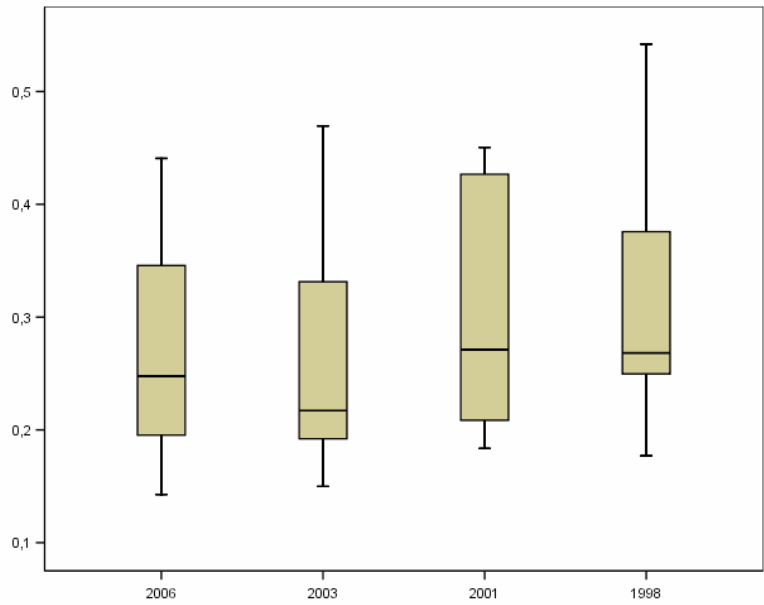


Figure 4: Asset diversification for pension funds for 3, 5 and 8 year periods.

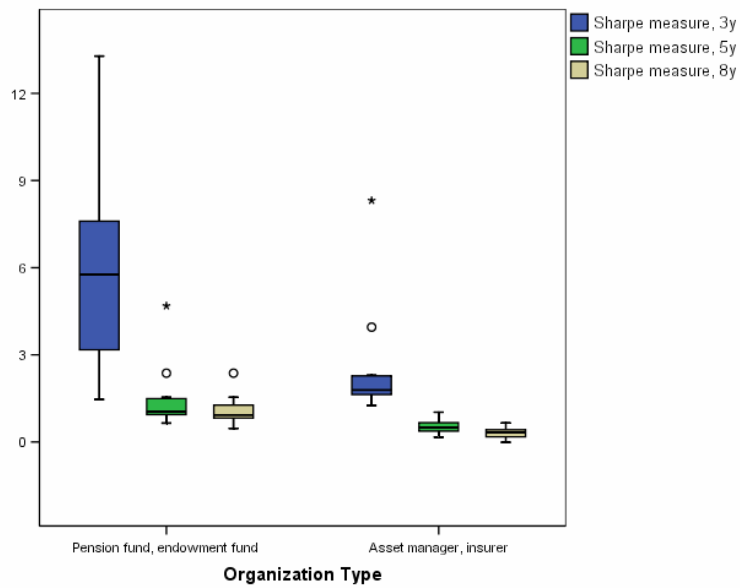


Figure 5: Average return-risk ratio for pension funds and asset managers for 3, 5 8 year periods

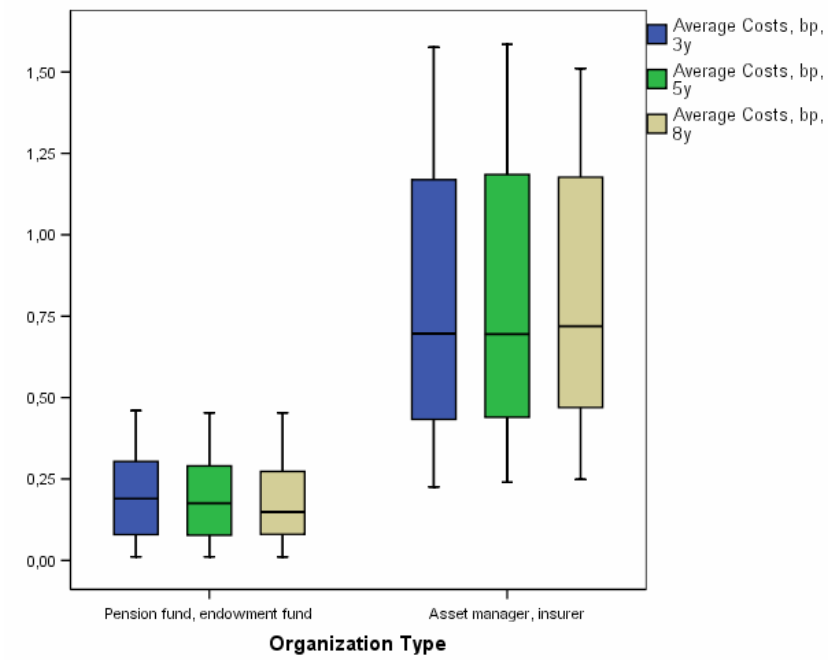


Figure 6: Reported average expense ratio's, for 3, 5 and 8 year periods

Table 17. Dataset of pension funds and asset managers with published investment beliefs

Organization type	Name	Country	Assets under Management, mln USD
Pension Plan	ABP	Netherlands	223,668
	AP Fonden	Sweden	93,861
	ATP	Denmark	64,420
	Canada Pension Plan	Canada	77,257
	Edmonton Tel Endowment Fund	Canada	623
	Local Authorities Pension Plan	Canada	10,804
	Metalektro	Netherlands	34,536
	Mosers	United States	7,710
	Nebraska Investment Council	United States	13,800
	Norges Bank Investment Management	Norway	235,849
	NZ Superannuation Fund	New Zealand	7,121
	Omers	Canada	44,390
	Ontario Teachers Pension Plan	Canada	99,490
	Pension Denmark	Denmark	9,235
	PGGM	Netherlands	84,986
	Public Employees Benefits Agency	Canada	3,433
	Shell Pension Fund	Netherlands	54,650
	State Super Financial Services	Australia	4,727
	TIAA-CREF	United States	367,939
	University Superannuation Scheme	United Kingdom	48,416
Victorian Fund Management Corp.	Australia	28,994	
Workers Compensation Board Alberta	Canada	5,673	
Yale Endowment Fund	United States	18,030	
Asset manager	ABN Amro Asset Management	Netherlands	207,781
	Axa Rosenberg	United States	90,000
	Capital group	United States	1,165,754
	Deutsche Asset Management	Germany	1,026,875
	DGAM	United States	2,000
	Foreign & Colonial Asset Management	United Kingdom	224,914
	Goldman Sachs Asset Management	United States	532,000
	Hermes	United Kingdom	105,885
	HSBC Asset Management	United Kingdom	576,200
	ING Asset Management	Netherlands	647,867
	Interpolis Insurance	Netherlands	48,816
	Northern Trust	United States	617,915
	Pictet	Switzerland	68,013
	Schroder Investment	United Kingdom	210,959
	T. Rowe Price	United States	269,493
	UBS	Switzerland	2,016,000
Vanguard	United States	957,589	

Table 18: Association Between Investments Beliefs

			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Investment process	Focus of man. decisions	(1)	1.0000								
Investment process	Risk management	(2)	0.0308	1.0000							
Investment process	Investment man. style	(3)	0.1281	0.1260	1.0000						
Investment process	Costs	(4)	0.1976	-0.1644	-0.0207	1.0000					
Organizational	Teams, role of investment man.	(5)	0.1647	0.2044	0.2318	0.1392	1.0000				
Organizational	Out vs. insourcing	(6)	0.2623 *	-0.0436	-0.0825	-0.1076	-0.0191	1.0000			
Organizational	Experience	(7)	0.0534	0.0000	0.0364	0.2215	0.3877 **	0.1260	1.0000		
Organizational	Other	(8)	0.0534	-0.1925	-0.3273 **	0.2215	0.2191	-0.1260	0.1667	1.0000	
Financial markets	Risk premium	(9)	-0.1703	-0.0970	-0.0855	0.0372	0.0368	-0.2328	-0.0187	-0.0187	1.0000
Financial markets	Risk diversification	(10)	-0.2023	-0.0308	-0.2446	0.2077	-0.1647	-0.2623 *	-0.0534	0.1245	0.4094 **
Financial markets	(In)efficiencies	(11)	-0.0138	0.0298	0.0563	-0.0245	-0.0392	-0.2928 *	-0.0861	-0.0861	0.2168
Financial markets	Horizon	(12)	0.1048	0.0000	-0.0476	0.4350 **	0.2097	0.2474	0.3273 **	-0.0364	0.0855
Other	Pension liabilities	(13)	0.2623 *	0.1309	-0.2474	-0.1076	-0.0191	0.3143 **	0.1260	0.1260	-0.0635
Other	Goal	(14)	0.1976	0.0548	-0.0207	-0.0811	-0.2448	0.4664 **	-0.0949	-0.0949	-0.1754
Other	Other	(15)	-0.1245	0.1925	-0.1455	0.2215	-0.2866 *	-0.1260	-0.1111	-0.1111	-0.2053
Sust. and Corp.Gov.	Sust. & Corp. Gov. in asset pricing	(16)	-0.0051	0.2740 *	-0.0207	-0.0811	0.1392	0.1794	0.2215	-0.0949	0.2498
Sust. and Corp.Gov.	Role in investment process	(17)	0.0534	-0.1925	0.2182	0.2215	0.3877 **	-0.1260	-0.1111	-0.1111	0.3546 **
			(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	
Investment process	Focus of man. decisions	(1)									
Investment process	Risk management	(2)									
Investment process	Investment man. style	(3)									
Investment process	Costs	(4)									
Organizational	Teams, role of investment man.	(5)									
Organizational	Out vs. insourcing	(6)									
Organizational	Experience	(7)									
Organizational	Other	(8)									
Financial markets	Risk premium	(9)									
Financial markets	Risk diversification	(10)	1.0000								
Financial markets	(In)efficiencies	(11)	-0.0965	1.0000							
Financial markets	Horizon	(12)	0.0116	-0.0563	1.0000						
Other	Pension liabilities	(13)	0.0605	0.0195	-0.0825	1.0000					
Other	Goal	(14)	-0.1976	-0.2206	0.0207	-0.1076	1.0000				
Other	Other	(15)	0.1245	-0.0861	0.1455	-0.1260	-0.0949	1.0000			
Sust. and Corp.Gov.	Sust. & Corp. Gov. in asset pricing	(16)	0.2077	-0.0245	0.2278	0.1794	-0.0811	-0.0949	1.0000		
Sust. and Corp.Gov.	Role in investment process	(17)	0.1245	-0.0861	0.1455	-0.1260	-0.0949	-0.1111	-0.0949	1.0000	

Note: the table shows the association between the different investment beliefs variables, measured by Phi. *: p value < 0.1; **: p value < 0.05. N=40

Table 19. Mean differences t-tests in selected performance measures between reported and non-reported investment beliefs

			Investment process beliefs								Organizational beliefs					
			Focus of decisions		Risk management		Investment style		Costs		Teams, role of man.		Out vs. insourcing		Experience	
		df	Signif.	Mean Diff.	Signif.	Mean Diff.	Signif.	Mean Diff.	Signif.	Mean Diff.	Signif.	Mean Diff.	Signif.	Mean Diff.	Signif.	Mean Diff.
Asset diversification	2006	29	0.2440	-0.0613	0.6399	-0.0260	0.5110	-0.0349	0.9073	0.0110	0.1787	0.0618	0.9715	0.0023	0.3860	0.0599
	2003	16	0.0598 *	-0.1125	0.6739	-0.0265	0.2602	0.0647	0.4837	0.0797	0.0927 *	0.0850	0.9891	0.0009	0.2685	0.1245
	2001	14	0.1959	-0.0717	0.9762	-0.0019	0.8218	0.0120	0.6622	0.0445	0.6427	0.0236	0.9392	0.0044	0.0796 *	0.1696
Return / risk ratio	3 year	27	0.5357	0.8653	0.9328	-0.1313	0.4341	1.0906	0.4668	-1.9046	0.1280	-1.9959	0.2181	2.3468	0.4591	-1.6120
	5 year	27	0.2553	0.3803	0.9886	0.0054	0.6213	0.1668	0.7430	-0.2079	0.4430	-0.2468	0.8630	-0.0805	0.4939	-0.3598
	8 year	27	0.3026	0.2127	0.4806	0.1625	0.8397	0.0421	0.6418	-0.1815	0.9151	0.0212	0.7921	0.0757	0.4821	-0.2276
Alpha	3 year	14	0.3744	-0.4412	0.4331	0.4638	0.1964	0.6044	0.5570	0.5632	0.9102	0.0531	0.7412	-0.1661	0.0885 *	1.5587
	5 year	14	0.2525	-0.3748	0.8381	0.0814	0.7372	0.1076	0.7446	0.2090	0.5921	-0.1671	0.5081	-0.2203	0.7956	0.1663
	8 year	14	0.5948	-0.1452	0.7742	0.0933	0.8273	0.0573	0.6274	0.2539	0.8358	-0.0531	0.1635	-0.3688	0.7073	0.1967
Information ratio	3 year	12	0.0972 *	-2.7956	0.6105	0.9969	0.7097	0.6256	0.7001	-1.2043	0.8095	-0.3930	0.9631	0.0828	0.0513 *	5.6384
	5 year	12	0.5881	-0.1772	0.8262	0.0795	0.2697	0.3337	0.9635	0.0264	0.7751	-0.0857	0.5712	-0.1852	0.2730	-0.6168
	8 year	12	0.3311	-0.2431	0.3801	0.2426	0.0732 *	0.4026	0.7520	-0.1412	0.5892	0.1250	0.7160	-0.0926	0.4675	-0.3216
Expense ratio	3 year	25	0.2461	-0.2043	0.5877	0.1095	0.5681	0.1016	0.3899	-0.2743	0.2380	0.1960	0.2582	-0.2645	0.2548	0.3010
	5 year	25	0.2533	-0.2058	0.5672	0.1180	0.6557	0.0812	0.4239	-0.2610	0.2572	0.1926	0.2701	-0.2638	0.2428	0.3154
	8 year	25	0.2401	-0.2128	0.5859	0.1131	0.7900	0.0489	0.4318	-0.2583	0.3173	0.1716	0.2397	-0.2826	0.3324	0.2645

			Financial markets beliefs						Sust. and Corp.Gov. Beliefs					
			Risk premium		Risk diversification		(In)efficiencies		Horizon		Asset pricing		Role in inv. proc.	
		df	Signif.	Mean Diff.	Signif.	Mean Diff.	Signif.	Mean Diff.	Signif.	Mean Diff.	Signif.	Mean Diff.	Signif.	Mean Diff.
Asset diversification	2006	29	0.2832	-0.0627	0.1221	-0.0778	0.6144	-0.0258	0.8443	-0.0101	0.8181	-0.0218	0.4656	-0.0505
	2003	16	0.6673	0.0252	0.5926	0.0282	0.6769	0.0263	0.1417	0.0833	0.4976	0.0563	0.1067	0.0978
	2001	14	0.8936	-0.0076	0.3634	0.0447	0.9725	-0.0022	0.9112	0.0060	0.0796 *	0.1696	0.6565	-0.0281
Return / risk ratio	3 year	27	0.7482	0.4782	0.4654	1.0184	0.5029	-0.9610	0.6611	0.6304	0.5270	-1.3793	0.4514	1.6393
	5 year	27	0.3751	0.3169	0.0149 **	0.7799	0.7251	-0.1221	0.8419	-0.0693	0.1851	0.6886	0.8448	0.1033
	8 year	27	0.0186 **	0.4955	0.0073 **	0.5230	0.9759	-0.0065	0.7493	0.0684	0.0014 **	0.9489	0.4694	0.2341
Alpha	3 year	14	0.9725	0.0174	0.3748	0.4118	0.6988	-0.2309	0.6703	0.2047	0.2209	0.7127	0.7319	0.2415
	5 year	14	0.4129	0.2714	0.0838 *	0.5134	0.6636	0.1727	0.9573	-0.0172	0.3607	0.3587	0.4376	0.3610
	8 year	14	0.4089	0.2237	0.0360 **	0.4963	0.7799	0.0909	0.8924	-0.0355	0.2508	0.3651	0.4644	0.2785
Information ratio	3 year	12	0.2869	-1.8576	0.5906	0.8725	0.3578	-1.7773	0.7782	0.5028	0.3192	2.2504	0.6153	-1.1535
	5 year	12	0.4541	0.2435	0.2462	0.3386	0.4258	0.2848	0.4900	-0.2249	0.7697	-0.1242	0.4439	0.3213
	8 year	12	0.2096	0.3096	0.5236	0.1473	0.1048	0.4309	0.8019	-0.0640	0.7323	0.1124	0.3915	0.2779
Expense ratio	3 year	25	0.4301	0.1506	0.0265 **	-0.3893	0.1562	0.2481	0.9219	0.0188	0.8878	-0.0453	0.3071	-0.2707
	5 year	25	0.4168	0.1584	0.0263 **	-0.3985	0.1476	0.2587	0.8525	0.0365	0.9097	-0.0372	0.2748	-0.2954
	8 year	25	0.4496	0.1485	0.0233 **	-0.4083	0.1177	0.2803	0.8767	0.0306	0.8137	-0.0779	0.2373	-0.3210

Means T-test for equality of means, equal variances assumed. Significance 2 tailed. *: p value < 0.1, **: p value < 0.05. Alpha is measured in %, expense ratio in basispoints.

