

Since 2004 we have had a new buzz-phrase in the world of institutional investors: liability driven investment (LDI). The good thing about LDI is that “asset-only” is passé. Indeed, neither portfolio return nor portfolio volatility themselves are now the relevant criteria, but rather the effect on risk-return profile.

However, although LDI helped in the “final kill” of the already heavily wounded asset-only approach, we at ORTEC argue that most LDI implementations lead to too much risk aversion, and consequently solutions that are much too expensive. We have quantified this statement for the virtual pension fund “Hollandia”, which we created in co-operation with the Dutch regulator. This virtual pension fund is representative of the €700bn Dutch pension market.

Origins of LDI

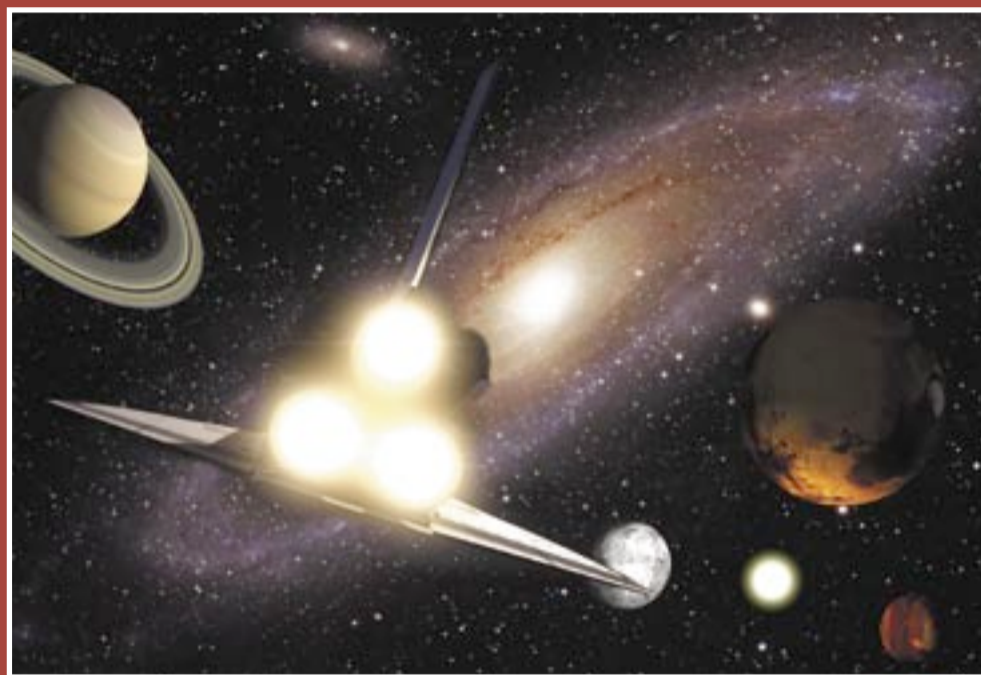
An excellent and extremely critical article on this issue by Dimitry Mindlin, managing director at Wilshire Associates in the US, has already been published in *Global Pensions* under the title *The myth of the liability benchmark* (October 2006 issue). In this paper, LDI is described as “the next big thing”, pushed by “numerous marketers trumpeting the low hanging fruits of LDI”, and Mindlin argues the case for it to be called “termination driven investing”. Our paper elaborates on the analysis presented by Mindlin and presents some initial quantitative results from our “Hollandia” simulation.

However, before describing why in many cases it leads to too much risk aversion and therefore solutions that are too costly, it is useful to delve further into the history of LDI. Mindlin’s article rightly refers to classic asset liability management (ALM) articles by Leibowitz and Sharpe in the early 1990s. For pension funds, ALM is about determining the “pension deal”, consisting of an integrated pension, contribution and investment policy, which optimally satisfies the risk constraints with respect to pensions, contributions and the funded ratio (= asset / liabilities), thereby fully taking into account the dynamics of the population and the impact on the pension liabilities. Also useful when the history of LDI is considered is the handbook *World Wide Asset and Liability Modelling* by Ziemba and Mulvey, which was published in 1997 (and contains a chapter I wrote on the scenario approach of ALM). The abundance of previous literature on the topic proves that – for pension funds – taking pension liabilities into account when investing is not new at all.

However, the history goes back even further, to the 1980s, when the series of famous papers on this issue by Wise and Wilkey were already published, along with the seminal papers on ALM by Kingsland and Winklevoss, which were published in the *Journal of Finance* in 1982 – 25 years before “new” LDI.

More importantly, many large Dutch pension funds, such as the corporate pension funds of Shell, RABO bank, ABP, PGGM, and the industry pension funds of metal workers and concrete workers, have applied liability driven

Investors must approach LDI with caution



Is LDI really a good solution for all pension funds?
Professor Guus Boender uses results from a pension fund simulation to illustrate the shortcomings of LDI strategies

ALM-techniques to sustain their strategic asset allocation (SAA) for decades. This also applies to non-Dutch pension funds, such as the pension funds of the World Bank Group in the US. With all this in mind, it is fair to say that positioning LDI as a new and innovative way of thinking about pension fund investing is misleading and absurd.

The danger of LDI

The main shortcoming of most LDI implementations is that they approximate the pension liabilities through the cash flows resulting from the current pension rights. This implies that the pension fund is virtually closed, and that LDI investors come up with an optimal investment strategy for the future payments of closed funds. For that reason, Mindlin rightly suggests in his article the re-branding of LDI as “termination driven investing”. The key question is then: why would “termination driven investing” lead to inferior investment policies? The answer is threefold:

1) Many dynamic non-closed funds have used

their ALM results to come to an agreement with the sponsor as to what extent the sponsor donates additional contributions to the fund once the funded ratio of the fund (= asset / liabilities) falls below certain levels. Many pension funds have so-called “funded ratio policy ladders” to determine the increase or decrease of the sponsor’s contribution. Of course, this implies risk transferal from the fund to the sponsor, which the fund can use ceteris paribus to increase the risk profile of the SAA, using the additional return to reward the sponsor with lower than expected pension cost. LDI completely disregards this risk-sharing contract between the funds and their sponsors. Naturally, this results in risk figures that seem much higher than they actually are. As a result, funds might choose an SAA that’s too risk averse or protection that’s too expensive. Taking into account the rule of thumb that an additional portfolio return of 1% leads to a 30% expected reduction of the pension cost, it becomes immediately clear that LDI could lead to SAA’s that do not match the profile of the pension funds at all.

2) Many policy ladders also determine how the compensation of the pension rights for inflation is postponed at low funded ratios. This element of the pension deal also yields an enormous reduction of funded ratio risk, and therefore has an enormous impact on the optimal SAA of pension funds. This, unfortunately, is also frequently neglected by LDI.

3) Last but not least, new pension rights enter non-closed pension funds each year. If the actuarial price is paid for these new rights, this implies a partial recovery of weak funded ratios. This is unfortunately also neglected by LDI.

What is the impact of neglecting this risk-reducing element of pension funds? The results in the graph below are computed for the above-mentioned virtual pension fund “Hollandia”. Each pie chart in the graph represents a SAA, where the colour green represents fixed income, and the blue and red stand for equity benchmarks of world regions. The SAA’s are evaluated in terms of portfolio return on the horizontal axis, and the more important risk of the funded ratio on the vertical axis. The policy alternatives are tested firstly in a going concern situation, like in an ALM project, and secondly, in a situation where the fund is closed, as happens in LDI solutions.

Chart 2 illustrates for instance that an SAA with 50% equity and 50% fixed income in an LDI context yields the same funded ratio risk as an SAA with 85% equity and 15% fixed income if, as in ALM, the dynamics of the fund are taken into account. In other words, the LDI approach overestimates the risk by an amount equal to the amount of risk of 35% equity in an SAA, instead of 35% fixed income. SAA’s that are evaluated in an LDI framework are therefore dangerously wrong for pension funds which have not “terminated”.

The natural conclusion to reach here is to beware of LDI. LDI is only suitable for either closed funds, or investment horizons for which the risk-reducing impact of the policy ladders characterising the pension deal is irrelevant. The use of such a short horizon is only acceptable if the long term impacts are also evaluated. Otherwise, pension funds might come to short term protection strategies that are too costly from the point of view of the long term ambition. Recall the rule of thumb that 1% additional return on the pension assets reduces pension cost by 30%. Thus, short term LDI solutions should never be implemented without verifying the ALM-consequences for the long run.

In view of this, investment managers should excel in providing the right products, and not try to be ALM consultants. On the other hand, ALM consultants should maintain their status of independence, and not compete with investment managers by selling asset management products. Rather than competing, investment managers and ALM consultants should co-operate. That way both investment managers and ALM consultants will continue to do what they should be doing, i.e. what they are good at, in the interest of their clients.

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Chart 1: ALM decision problem & the pension deal

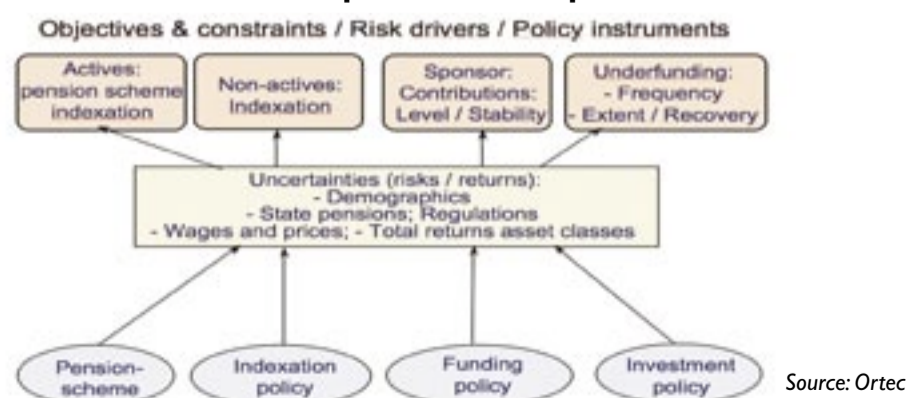


Chart 2: Liquidate & going concern

