

If your plan's demographics are changing, so should your investment approach

TDAM Asset Liability Management Team

While we watch the volatile investment and evolving regulatory landscapes receive a lot of attention, another looming trend can't be ignored – shifting defined benefit (DB) pension plan demographics. Fortunately, the breadth of investment instruments now available and an Asset Liability Management (ALM) practitioner's ability to put them together with purpose can create opportunities in an otherwise challenging environment.

Coming of age

Whether it's the aging baby boomer population or the general trend towards the closing defined benefit (DB) plans to new entrants, you may have found your plan has shifted to an older demographic¹. In addition, your plan may be facing negative cash flow events resulting from monthly benefits payments now exceeding plan contributions². So, adding to the list of challenges to contend with, you may find yourself playing part-time treasurer each month, in an effort to make

pensioner payroll and/or fund various capital calls on private investments.

Fortunately, **demographic focused investing (DFI)**, an innovative solution that's gaining traction in Canada, lets your plan's demographics and cashflow needs frame your investment approach. It's widely accepted that a plan's maturity is a relevant factor in developing an appropriate investment approach – but how exactly is this done? DFI answers this question.

¹ Ratio of Active Members to Pensions for Ontario registered plans is 1.5:1, 2018 Report on the Funding of Defined Benefit Pension Plans in Ontario, Financial Services Commission of Ontario, Table 2.4 – Funding Information Grouped By Maturity. In 2010 29% of plans consisted of over ½ retirees; In 2018 45% of plans consisted of over ½ retirees.

² Resulting from monthly benefits payments exceeding plan contributions you may be facing two potential costly risks – disinvestment risk and performance drag. Disinvestment risk occurs when you are forced to sell liquid, higher volatility assets such as equities during adverse market conditions. Performance drag risk is caused by defensively sitting on excessive amounts of cash.

Membership drives investments

DFI starts with analysis of a plan's liabilities by demographic cohort. Then for each of the retired and active member segments, different investment objectives, risk tolerances and approach can be defined. Based on these definitions, the most appropriate investment asset classes are selected to support each approach:

| | 1 | 2 |
|--------------------------|--|---|
| | Retirees | Actives & Deferred |
| Objective | <ul style="list-style-type: none"> Generate monthly cashflow to meet pension payments and expenses at reasonable cost | <ul style="list-style-type: none"> Grow assets to meet or exceed growth of liabilities within acceptable level of risk |
| Risk Tolerance | <ul style="list-style-type: none"> Generally lower | <ul style="list-style-type: none"> Generally higher |
| Approach | <ul style="list-style-type: none"> Custom horizon matching | <ul style="list-style-type: none"> Liability-aware growth |
| Asset Classes | <ul style="list-style-type: none"> Diversified investment grade public & private fixed income (including mortgages) | <ul style="list-style-type: none"> Equities, infrastructure, real estate & fixed income (including bond overlay) |
| Measuring Success | <ul style="list-style-type: none"> Cash flow adequacy testing | <ul style="list-style-type: none"> Funded status value at risk |

From a plan's solvency perspective, it is interesting that in Canada retired and older active members are valued using different assumptions than younger active members³. So, while the segmented view is important, DFI recognizes that the plan's funded position and its assets are typically managed all together. It is the relative

proportion of actives to retirees that defines the overall objectives, risk tolerance, balance of approaches and the target asset mix. In this way it's your plan's membership that drives a disciplined approach to expanding the opportunity set as you seek to grow your assets, preserve capital and right risk your plan.

How it works

The DFI process begins by separating the plan into the two demographic segments.

Custom horizon matching approach for retirees

DFI recognizes that on behalf of **retired members** receiving monthly benefit payments, most plan sponsors are essentially running a small internal annuity program. It's not hard to see why purchasing a traditional buy-in annuity has intuitive appeal – essentially solving the problem of finding the liquidity to pay pensioners monthly.

In practice, however, purchasing annuities can be expensive. It is estimated that for every \$100m of annuities purchased, \$10m could be saved by investing in similar asset classes as an annuity provider⁴. This strategy, referred to as a **Do-It-Yourself (DIY)** annuity portfolio, consists of high quality cashflow generating instruments including:

- Investment grade private fixed income (including commercial mortgages) where a liquidity premium can be harvested

- Public corporate debt for diversification
- Government bonds & strips for rebalancing liquidity and long tail protection
- Real return bond exposure for inflation protection

While enjoying a high degree of benefit protection, the portfolio is expected to have minimal transaction costs from low turnover. Credit research allows for securities to be confidently selected with a long-term view. At the same time these securities purposely cashflow match the most near-term plan liability payments to avoid sales in potentially adverse market conditions. Capital preserved from using the DIY annuity portfolio can be redeployed to purchase longevity protection and/or manage the more difficult to hedge, longer duration active member liabilities.

³ This is because retirees and the older active members are assumed to be settled by annuity purchase, while the younger active members are expected to be settled by a lump sum payment.

⁴ Based on indicative data using TD Emerald Private Debt PFT, TD Emerald Long Private Debt PFT, TD Greystone Mortgage Fund. Savings approximated as \$100mm x 90bps x 11 years duration.

Liability-aware growth approach for actives & deferred members

DFI takes advantage of the longer time horizon and larger risk budget often associated with **active and deferred members**. Emphasizing variable payoff investments that are expected to outperform in the long term, the portfolio is well aligned with the segment's emphasis on growth. The portfolio consists of a diversified collection growth instruments including:

- Low volatility equities that can deliver market comparable returns with less risk
- Real estate for attractive yield, enhanced diversification and inflation protection
- Infrastructure for attractive yield, lower sensitivity to economic cycles and inflation protection
- Bond overlay to complete the required degree of liability hedging in a capital efficient fashion

For active members, the strategy is implemented in a pragmatic liability-aware fashion. This means striking the right balance between achieving an asset growth rate expected to exceed the liability growth rate, while tracking the liability value within an acceptable tolerance level. Each asset class is evaluated on the merits of its contribution to portfolio yield, liability correlation and diversification benefits.

The optimal bond overlay allocation brings the total retiree and active portfolio within the total risk budget, typically measured by the tracking error and funded status value at risk.

Does DFI work for all plan types? Absolutely.

A huge benefit of DFI is that it works for all plan types and characteristics including:

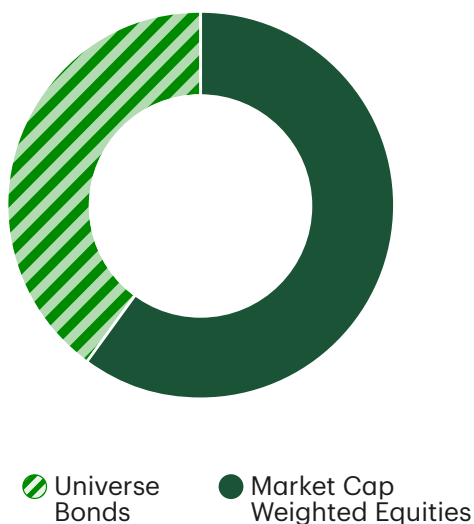
| | | | | |
|--|--|--------------------------------------|--|---|
| Well-funded and underfunded plans | Young, mature and middle-aged plan demographics | Open, closed and frozen plans | Non-indexed and indexed benefit plans | Corporate & multi-employer plans, registered across any jurisdiction |
|--|--|--------------------------------------|--|---|

Growth

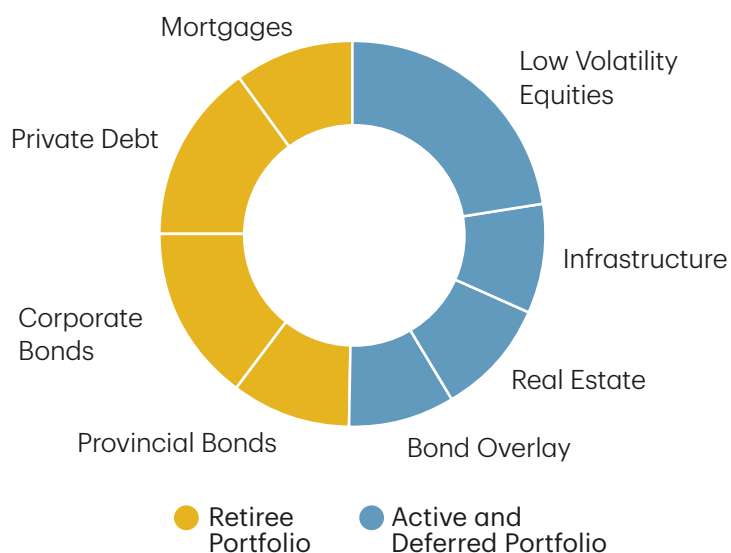
Case study

Consider a closed plan that is evenly balanced demographically between retirees receiving benefits and active members accruing service. The plan has recently reached an inflection point where the monthly cash outflows have begun to exceed the contributions or inflows. The plan is fully funded on a solvency basis and 126% on a going concern basis. The plan is currently invested in a traditional "60/40" asset mix but its objectives is to "right risk", reducing monthly cashflow shortages and funded status volatility, while avoiding an increase in contributions.

Traditional "60/40" Investing



Demographic Focused Investing



| Traditional "60/40" Investing | Key Metrics | Demographic Focused Investing |
|-------------------------------|-----------------------------------|-------------------------------|
| 50% | Retiree Cash Flow Coverage (3-yr) | 100% |
| 25% | Hedge Ratio | 70% |
| 9.4% | Tracking Error | 3.2% |
| 14.6% | Funded Status VaR (95%) | 5.0% |
| 5.15% | Gross Expected Return | 5.20% |
| 4.55% | Going Concern Discount Rate | 4.70% |
| 2.66% | Solvency Discount Rate | 2.66% |

Note: Solvency funded ratio of 100%. Going concern funded ratio of 126% and 128% for Traditional "60/40" Investing and Demographic Focused Investing, respectively. Source: TDAM, as of December 31, 2019

In this case study, asset allocation begins first and foremost by fully backing the retiree liabilities with fixed income instruments. This improves the plan's near-term cashflow coverage ratio to 100%, potentially alleviating serious cash management issues⁵. By employing a custom horizon matching strategy that harvests the uniqueness premium associated with private fixed income assets, the plan sponsor achieves a similar outcome to a traditional buy-in annuity while enjoying a 10% savings. These savings can then be redeployed to the active and deferred vested member strategy, potentially lowering contributions.

With respect to the longer duration active and deferred vested cohort, there would be a reduction in equities in favour of alternatives and bond overlay. In this way, the sponsor matches its longest-term liabilities with a diversified set of long-term holdings, which are expected to outperform over the longer horizon. Since there is still an underlying liability obligation, the bond overlay position helps ensure the value of these assets retains a degree of interest rate sensitivity hedging for the active and deferred liabilities.

In aggregate the DFI portfolio significantly reduces risk. The asset-liability tracking error declines significantly to 3.2%, ensuring assets are well-suited in hedging the market sensitivity of the liabilities during normal market conditions. The improvement in funded status VaR essentially limits the plan's solvency position to a 1-in-20 chance of declining below roughly 95% in a given year. An extra benefit to the DFI portfolio is that its gross expected return increases by 5bps providing support for potentially increasing the going concern discount rate.

⁵ Cash management issues can be even more critical if the plan enjoys contribution holidays.

DFI should help most
plan sponsors **meet
their objectives.**

On-going management

While it's easy to see how DFI can greatly simplify your day-to-day responsibilities, you will want a clear line of sight as to how this framework can also meet your plan's most important longer-term objectives.

Glidepaths

DFI recognizes plan demographics are not static. Over time, active members will retire and some will elect fixed pensions. In this way, the assets backing today's active/deferred members can be considered a placeholder for the eventual purchase of fixed income assets. The beauty of DFI is that alongside the gradual aging of plan members, there is a natural demographic rebalancing that occurs – continued "right risking". In practice, this could occur with each triennial plan valuation.

DFI can also work in concert with a traditional glidepath based on an array of market, time or funded status triggers. While not a set and forget strategy, day-to-day management and on-going rebalancing can be delegated to the investment management service provider, greatly reducing the burden put on plan sponsors.

Preparing for a full pension risk transfer

We believe the optimal time to purchase annuities is after your plan has no more active members. DFI allows you to capture additional returns while significantly reducing interest rate and inflation risk until such time as you are in position to wind up your plan. These additional returns can be used to cover the cost of additional service accruals, reducing the additional contributions needed to be made to the plan.

Trying to perform a risk transfer when your plan has a high equity allocation is often problematic as there is little alignment between the market sensitivity of your assets and the price of an annuity. With a systematic migration of the asset mix to fixed income, DFI allows you to evaluate the annuity purchase from a position of solid footing.

Measuring success

A hallmark of a well-structured DFI implementation is its ability to ensure the assets continue to be appropriate for the plan's demographics and performance is within expectations. To this end, an asset-liability dashboard and reporting with clear funded status attribution will help you exercise your governance and oversight responsibilities.

Bringing it all together



Preserve capital

- DIY annuity portfolio approach can save a plan sponsor up to 10% compared to traditional buy-in annuity
- Get paid while you wait. By delaying an annuity purchase for retirees until there are no more active members, additional returns can be used to reduce contributions.



Grow assets

- Liability aware growth portfolio seeks higher growth over a longer investment horizon
- For active members where liquidity needs are low, simple intuitive approach to including alternatives



Right risk

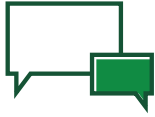
- Differing risk profiles by demographic cohort defines how the risk budget is spent and assets allocated
- Helps alleviate serious cash management issues as benefit payments become larger than contributions
- Diversification and measured interest rate protection can reduce total plan funded status volatility

Assumptions used

| Asset class | Expected return | Standard Deviation |
|-------------------------|-----------------|--------------------|
| Cash | 1.7% | 0.4% |
| Universe Bonds | 2.5% | 3.6% |
| Long Provincial Bonds | 2.8% | 7.4% |
| Real Estate | 5.6% | 6.4% |
| Infrastructure (Global) | 6.9% | 9.5% |
| Canadian Equities | 6.9% | 15.5% |
| Global Equities | 7.1% | 12.6% |
| Global Low Vol Equities | 7.1% | 9.2% |
| DIY Annuity Portfolio | 3.9% | 5.6% |

| Correlations | Cash | Universe Bonds | Long Provincial Bonds | Real Estate | Infrastructure (Global) | Canadian Equities | Global Equities | Global Low Vol Equities | DIY Annuity Portfolio* |
|-------------------------|------|----------------|-----------------------|-------------|-------------------------|-------------------|-----------------|-------------------------|------------------------|
| Cash | 1.0 | | | | | | | | |
| Universe Bonds | 0.2 | 1.0 | | | | | | | |
| Long Provincial Bonds | 0.0 | 0.9 | 1.0 | | | | | | |
| Real Estate | -0.4 | -0.2 | 0.0 | 1.0 | | | | | |
| Infrastructure (Global) | -0.3 | 0.3 | 0.3 | 0.2 | 1.0 | | | | |
| Canadian Equities | -0.4 | -0.1 | 0.0 | 0.2 | 0.4 | 1.0 | | | |
| Global Equities | -0.4 | -0.1 | 0.1 | 0.3 | 0.5 | 0.7 | 1.0 | | |
| Global Low Vol Equities | -0.3 | 0.1 | 0.2 | 0.4 | 0.4 | 0.4 | 0.9 | 1.0 | |
| DIY Annuity Portfolio* | -0.3 | 0.7 | 0.8 | 0.0 | 0.5 | 0.4 | 0.3 | 0.3 | 1.0 |

*Custom asset mix is 20% Provincial Bonds, 30% Corporate Bonds, 30% Private Debt and 20% Mortgages managed to match the duration of liability cash flows. Source: TD Asset Management. As at December 31, 2019. For illustrative purposes only.



Let's talk

Our relationship management team would be happy to illustrate a **DFI solution** that's right for your plan.



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