C.D. Howe Institute
Institut C.D. Howe
e-brief

Lifting the Lid on Pension Funding: Why Income-Tax-Act Limits on Contributions Should Rise

Robin Banerjee and William Robson*

April 15, 2008

Single-employer, defined-benefit (DB) pension plans in Canada are in decline. Among the reasons: laws and regulations that foster under-funding of these plans by their sponsors (Laidler and Robson 2007). A case in point is the prohibition by the federal *Income Tax Act* (ITA) of sponsor contributions to such plans when their assets exceed recorded liabilities by 10 percent.[1] Recent volatility in asset prices and interest rates, and resulting volatility in DB plan balance sheets, highlights the desirability of raising — or even removing — this restriction.

The 10 percent limit exists to prevent companies making pension contributions, which are tax deductible, to reduce taxable profits. The benefit of the limit is marginal at best, however, since (i) businesses will typically prefer to reinvest their earnings or pay them out as dividends, (ii) pension funds attract tax when distributed or withdrawn, and (iii) regulations prevent deliberate over-funding of designated plans. Easier to demonstrate are the problems the limit creates.

First, and fundamentally, limiting contributions in good times stops plan sponsors saving in fat years to cushion against lean ones. Having the flexibility to time investments can also help firms buy assets when they are cheaper, and enjoy longer compounding periods.

A related and more particular reason why the limit promotes under-funding is that most DB pension plans do not match their assets to their liabilities. In principle, a plan could buy a mix of high-quality nominal- and real-return bonds yielding income timed to service its obligations to pensioners. If it did, the values

---

* For their advice, we thank the C.D. Howe Institute's Pension Papers Advisory Panel. Errors and responsibility for conclusions rests with us.

[1] The ITA limits contributions when the plan surplus is the greater of twice the employer's annual current service cost (up to 20 percent of liabilities), and 10 percent of actuarial liabilities; the 10 percent limit is usually the binding constraint, so we focus on it here (Pierlot and Bonnar 2007).

of its assets and liabilities would fluctuate together as interest rates changed: only the unavailability of required asset maturities would prevent perfect matching.

Many pension managers, however, see perfect asset/liability matching as requiring unattractively high contributions. Since pension plans have long time horizons, the theory goes, they need little current liquidity and can tolerate short-term volatility in asset prices. So they can earn higher returns by investing in assets that investors who either need liquidity or dislike short-term volatility shun. The resulting assets/liability mismatch means that even plans that are fully funded or better, on average, over time will swing either side of balance as asset prices and interest rates change.[2]

Against this backdrop, the problem with limiting contributions when plans are in surplus is obvious. Only by letting sponsors achieve surpluses can regulators and tax authorities let them seek as much investment return above the matched portfolio as they deem prudent.[3] By preventing contributions when surpluses reach 10 percent, the ITA either induces sponsors to inflate the size of reported liabilities so the cap does not constrain funding — a practice that perverts the cause of meaningful reporting — or stops companies from pursuing consistent contribution strategies as interest rates and asset markets fluctuate.

A simple model of a DB plan sheds useful light on the seriousness of this second problem. The model plan has 40 percent of its assets in bonds, which yield a risk-free 4 percent annual return, and perfectly match its liabilities, which also grow at 4 percent annually. It holds 60 percent of its assets in equities, which yield 6 percent annually on average, and do not match its liabilities: the (normally distributed) standard deviation of returns for the equities is 18 percent.[4]

Annual pension payouts in the plan are 4 percent of liabilities. If the plan is in balance at the beginning of the year, the sponsor contributes an amount equal to expected growth in liabilities minus expected growth in fund assets. If the fund is in deficit, the sponsor contributes an additional amount equal to one-quarter of the deficit. If the plan is in surplus, the sponsor may take a "contribution holiday," but for our main simulations, we set the threshold for a holiday too high to matter.

The model plan starts fully funded, with an asset-liability ratio of 100 percent. (If it held only bonds, contributions would be 4 percent of liabilities every year and the asset-liability ratio would always be 100 percent.) We simulate 50 runs of 20 years each to get 1,000 annual realizations for the plan.

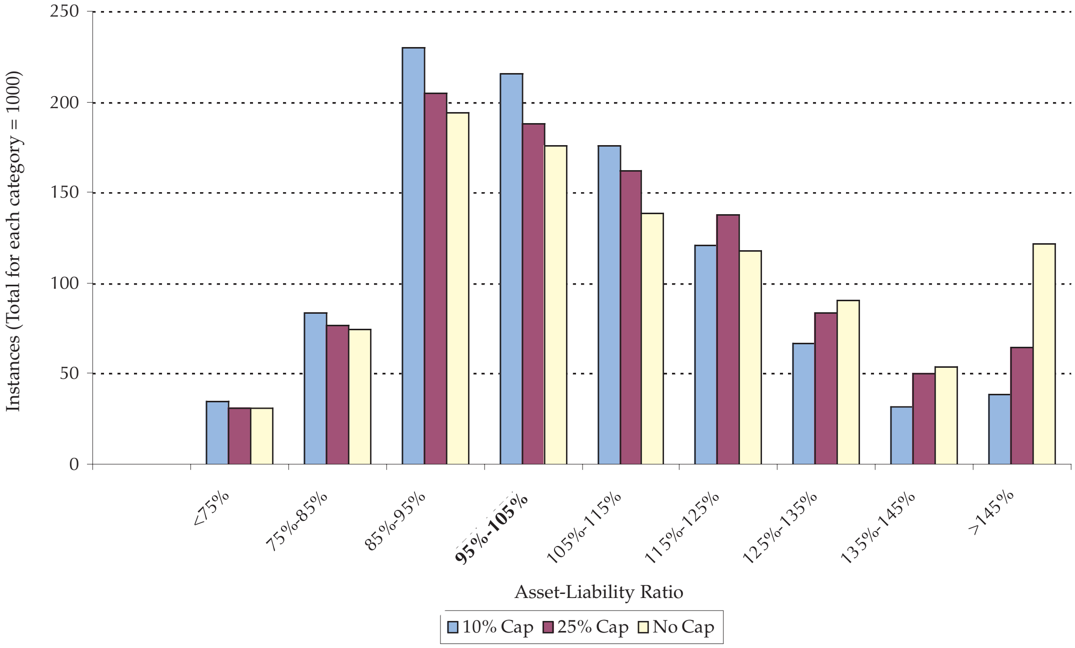
---

[2] Tuer and Woodman (2005) note that the 10 percent contribution limit was hit often during the 1990s and "surpluses that could have provided a buffer in later years were distributed to current employees and pensioners."

[3] How much risk is prudent turns largely on the existence and reliability of an "equity risk premium" (see, for example, Kocherlakota 1996 and Dimson et al. 2006). We argue that sponsors and participants — and, when necessary, regulators — should make this call, and that tax limits should not distort those decisions.

[4] The equity/risk-free asset ratio in this model is in line with models based on proprietary client data (see, for example, Watson Wyatt 2008) and other surveys (Tuer and Woodman 2005). Statistics Canada's 2006 Census of Trusteed Pension Plans shows that bonds and bond funds made up 40.6 percent of the identified assets of defined-benefit plans that year. The assumed liability growth and payout rates correspond to a mature DB pension plan. The asset returns used in this model are fairly conservative, based on current nominal long-bond returns and an equity premium of 2 percent — lower than many managers expect, but not out of line with much current thinking (Laidler and Robson 2007). A 3 percent equity premium does not change the results significantly.

Figure 1: *Frequency of Over- and Under-Funding*



Sources: Authors' calculations.

How big and frequent are surpluses and deficits with this degree of asset/liability mismatch and no ITA constraint on contributions? The "No Cap" bars in Figure 1 show how often the fund is over- or under-funded on the vertical axis, and to what degree on the horizontal axis. The superior returns on equities mean the plan is over-funded on average (the average funding ratio is 112 percent). Asset volatility, however, means that plan balances vary over time. In these simulations, the plan is under-funded in almost 40 percent of annual realizations, with deficits that exceed 5 percent of obligations occurring more than 30 percent of the time.

How do contribution limits change the situation? We next run the model with no contributions when assets exceed liabilities by 10 percent or more. The "10% Cap" bars in Figure 1 show the resulting pattern of balances. The limit pushes the average funding ratio over all annual realizations down from 112 to 105 percent.[5] The plan is under-funded 46 percent of the time, and deficits exceed 5 percent 35 percent of the time.

Since secure pension promises need assets to back them, these differences in funding levels matter. The more the ITA constrains sponsor contributions, the greater the likelihood that — should a sponsor become unable or unwilling to back its promises — participants will get pensions smaller than they bargained for.

A straightforward response would be to eliminate contribution limits. Or, if the purported benefits of some kind of limit appear compelling, the limit could rise. A higher limit — 25 percent — already applies to multiemployer plans with provisions for sharing of risk between sponsors and participants, so we test such a limit on our model plan. The results appear as the middle bars in Figure 1. A quick glance shows that deficits in this case are about as infrequent and small as when there is no limit at all.[6]

---

[5] The gap in average funding also implies that there is a range of shocks to portfolio returns that would leave unconstrained plans funded on average, while pushing constrained plans into deficit.

Our model assumes that the variability of returns on unmatched assets will be the same in the future as in the past, which is unlikely. The typical pension plan of the future, moreover, will likely have an asset-liability profile different from our model. The appropriate response to these uncertainties is to set any limit on the generous side. The *Income Tax Act* should not impede prudent funding of pension plans. Raising the limit for DB plans to the same 25 percent that currently applies to multiemployer risk-shared plans would be sensible, and a respectable case exists for making it higher yet.

Such changes would not relieve DB plans of all the pressures afflicting them. Most notably, sponsors must cover deficits, but fear building surpluses to which they may lose access. This asymmetry also discourages fuller funding. (Indeed, it discourages the sponsorship of DB plans in the first place.) Our model can treat a sponsor's reluctance to fund as a lowering of the funding target that triggers contribution holidays. If that threshold is 110 percent of liabilities, it has almost exactly the same impact as the current ITA cap.[7] If the threshold is 100 percent — that is, sponsors seek to avoid surpluses at all — our model plan is under-funded about 50 percent of the time, and has deficits larger than 5 percent almost 40 percent of the time; the ITA cap makes no difference to the results. So raising or removing the ITA cap is a necessary, but not sufficient, condition for DB plans in Canada to become more widespread and better funded.

Our conclusion is straightforward. Policies that foster under-funding of single-employer DB pension plans make no sense. The ITA limit on contributions is not the only problem afflicting DB plans, but it is readily addressed. Raising or removing it would be a useful step toward more healthy DB pension plans in Canada.

---

[6] Pierlot and Bonnar (2007) similarly conclude that moving to a 125 percent limit would reduce the chance of a deficit over any three-year valuation cycle from 33 to 5 percent, providing "better (but not perfect) benefit security."

[7] The impact is not identical because the ITA limit reduces contributions to zero, while the "contribution holiday" rule will sometimes reduce, but not eliminate, contributions.

References:

Dimson, Elroy, Paul Marsh and Mike Staunton. 2006. "The Worldwide Equity Premium: a Smaller Puzzle." London, UK: London Business School. Mimeo.

Kocherlakota, Narayana. 1996. "The Equity Premium: It's Still a Puzzle." *Journal of Economic Literature*. Vol. 34 (1).

Laidler, David, and William B.P. Robson. 2007. "Ill-Defined Benefits: The Uncertain Present and Brighter Future of Employee Pensions in Canada." C.D. Howe Institute Commentary. June.

Pierlot, James, and Steve Bonnar. 2007. "A Tale of Two Tax Rules." *Benefits Canada*. October.

Tuer, Eric, and Elizabeth Woodman. 2005. "Recent Trends in Canadian Defined-Benefit Pension Sector Investment and Risk Management." *Bank of Canada Review*. Bank of Canada.

Watson Wyatt. 2008. "Canadian Pension Funded Ratios Post Net Improvement in 2007."
< http://www.watsonwyatt.com/canada-english/news/press.asp?ID=18493>
Accessed January 10.

The Pension Papers Program

The C.D. Howe Institute launched the Pension Papers in May 2007 to address key challenges facing Canada's system of retirement saving, assess current developments, identify regulatory strengths and shortfalls, and make recommendations to ensure the integrity of pension earnings for the growing number of Canadians approaching retirement. The Institute gratefully acknowledges the participation of the advisory panel for the program:

Advisory Panel: C.D. Howe Institute Pension Papers Program

Co-chairs:
Claude Lamoureux
Former President and CEO of the Ontario Teachers' Pension Plan
Nick Le Pan
Former Superintendent of Financial Institutions

Members:

Keith Ambachtsheer, Rotman International Centre for Pension Management, University of Toronto;

Bob Baldwin;

Steve Bonnar, Towers Perrin;

Frank Fedyk, Human Resources and Social Development Canada;

Peter Drake, Fidelity Investments;

Bruce Gordon, Manulife Financial Canada;

Malcolm Hamilton, Mercer Human Resource Consulting Limited;

Bryan Hocking/ Scott Perkin, Association of Canadian Pension Management;

John Ilkiw, Canada Pension Plan Investment Board;

Michael Nobrega, Ontario Municipal Employees' Retirement System;

Ellen Nygaard, Alberta Finance;

Jim Pesando, University of Toronto;

John Por, Cortex;

Tammy Schirle, Wilfrid Laurier University;

Jack Selody, Bank of Canada;

Terri Troy, Pension Investment Association of Canada;

Fred Vettese, Morneau Sobeco;

Barbara Zvan, Ontario Teachers' Pension Plan

This *e-brief* is a publication of the C.D. Howe Institute.

William Robson is President and CEO and **Robin Banerjee** is Policy Analyst at the C.D. Howe Institute. For more information contact **Robin Banerjee** at 416-865-1904, e-mail cdhowe@cdhowe.org.

This *e-brief* is available at www.cdhowe.org.

Permission is granted to reprint this text if the content is not altered and proper attribution is provided.