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SHOULD GOVERNMENT FACILITATE VOLUNTARY PENSION PLANS?

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"If you build it, he will come."

— Field of Dreams (1989)

SUMMARY

Several proposals have surfaced recently that government develop and offer some sort of voluntary pension plan (VPP). This paper examines areas of public policy on pensions where changes should take place with or without the development of a VPP, including those that promote greater harmonization, portability, and labour mobility. Similarly, the challenges of inertia and annuitization are areas in which a VPP is only one of several available policy devices. In the final analysis, two key arguments provide the only compelling reasons to support the establishment of large, economically efficient funds: that their assets could be managed professionally and efficiently and that they could reduce the distraction from employers' primary goals. Neither of these arguments, however, offers convincing evidence that VPPs should be developed by government rather than by the private sector. Ultimately, the marketplace will determine whether the additional option of a VPP is needed and whether it is offered on terms that make it more attractive than the other available alternatives.

INTRODUCTION

Canada has an array of programs to assist individuals in the accumulation of assets that will provide financial security in retirement. A key principle in the design of these programs – and one that is retained here – has been tax neutrality. In other words, those who choose to save will bear the same tax over time as those who choose current consumption. The resulting system has registered plans operated by government, by employment-based organizations, and by individuals as the primary vehicles used for most of the savings currently being accumulated.

The dream of many who work in the public policy arena is to see sufficient retirement savings built up to support a satisfactory standard of living for seniors across the board while reducing demands on public programs such as the Guaranteed Income Supplement (GIS), an income-tested transfer targeted at low-income seniors.[1] One benefit of the current debate is the research that has been spawned aimed squarely at improving our understanding of the extent to which current savings are inadequate.[2]

Implicit in all proposals to increase retirement savings is a desire to encourage individuals to shift a portion of their consumption from the present to the future. Also explicit in some proposals is the advantage of pooling risk across individuals. A key point of contention in the debate is the extent to which individuals should be *required* to make the shift from present to future consumption; in this regard, I believe that voluntary programs, such as education and incentives, should be explored and used fully before freedom of choice is removed.

Largely absent from the current round of reform discussions, however, is any stated objective to achieve income redistribution, either across generations or from those with more wealth to those with less wealth. I assume that silence to be intentional for two important reasons. First, most studies of Canada's retirement income system find the programs in place already do an effective job of income redistribution.[3] Second, any policy designed to increase Canadians' retirement savings would be disadvantaged immediately if it did not maximize the expected value of the additional savings that would become available to the saver at some point in the future.

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[1] One study finds that the probability of becoming a consistent recipient of GIS diminishes with each year of contributions to a private pension plan or a Registered Retirement Savings Plan (RRSP). For men, one extra year of contributions to a pension plan or RRSP diminishes the probability by 0.3 of a percentage point. The effect is similar for women, diminishing the probability by 0.3 of a percentage point for one extra year of RRSP contributions and 0.5 of a percentage point for a private pension plan. See Sharanjit Uppal, Ted Wannell, and Edouard Imbeau, "Pathways into the GIS," *Perspectives on Labour and Income* (August 2009): 5-14.

[2] See, for example, Robert Baldwin, "Research Study on the Canadian Retirement Income System" Toronto: Baldwin Consulting, 2009), available online at www.fin.gov.on.ca/en/consultations/pension/dec09report.pdf; and Jack Mintz, "Summary Report on Retirement Income Adequacy Research" (paper prepared for the Federal-Provincial-Territorial Ministers of Finance Research Working Group on Retirement Income Adequacy, 2009), available online at www.fin.gc.ca/activty/pubs/pension/pdf/riar-narr-BD-eng.pdf.

[3] See, for example, Edward Whitehouse, "Canada's Retirement-Income Provision: An International Perspective" (paper prepared for the Federal-Provincial-Territorial Ministers of Finance Research Working Group on Retirement Income Adequacy, 2010), available online at www.fin.gc.ca/activty/pubs/pension/ref-bib/whitehouse-eng.asp.

Similarly, research shows that the current system of tax-favoured retirement savings generally results in sufficient savings among higher-income Canadians. Research also suggests that any increase in the tax-favoured savings limit from the current 18% of income up to a maximum of $22,000[4] would provide the greatest benefit to higher-income individuals while doing little to encourage additional retirement savings among those who are not saving under the existing limits. The problem around which current policy discussions centre is the adequacy of retirement savings and expected retirement incomes of middle-income Canadians. For that group, several recent reports have identified inefficiencies that might contribute to the lower-than-desirable savings rate.[5] One persistent challenge is the much higher expense ratio and more limited set of investment opportunities associated with small plans than with large ones. As a possible means of addressing these challenges, recent reports by pension experts have introduced the concept of another type of savings vehicle: large, government-established, pooled pensions – so-called superfund or voluntary pension pool (VPP) arrangements – for employers and employees who do not have coverage under a private pension plan. By and large, these proposals envision a defined contribution (DC) plan, but in some instances the suggested design closely resembles a target benefit plan.[6] In another recent report, the Canadian Institute of Actuaries clearly and correctly states that the attractiveness of a VPP depends largely on the objectives any such plan is attempting to achieve.[7]

Reports by the provincial expert panels make it clear that some were attracted to the concept of the VPP as envisioned by Keith Ambachtsheer.[8] In a nutshell, Ambachtsheer pegs his goal of "adequate, affordable post-work income"[9] at a replacement ratio of 60% and recommends automatic deductions on earnings between a floor of approximately $30,000 and the maximum deferral ceiling. He suggests that the automatic contribution rate be set at 5% of earnings for both employers and employees. He aspires to achieve "pension delivery institutions that are transparent and cost-effective, and operate solely in the best interests of the people they are meant to serve."[10]

For clarity, this paper proceeds on the premise that any such plan would combine workers from multiple employers and set an entry level minimum contribution formula for employers and employees (while also offering higher contribution options). The plan as proposed in most provinces would allow employers as well as employees to opt out.

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4 The policy proposals considered in this paper are those within an environment of the current RRSP contribution limits. Any changes in that limit would require a re-evaluation of policy proposals.

5 See Harry Arthurs, *A Fine Balance* (Toronto: Ontario Expert Commission on Pensions, 2008); Ron Pink, Dick Crawford, and Bill Black. (2009) Promises to Keep (Halifax, NS: Nova Scotia Expert Panel, 2009), available at http://www.gov.ns.ca/lwd/pensionreview/docs/PensionReviewPanelFinal.pdf; and Joint Expert Panel on Pension Standards, *Getting Our Acts Together: Pension Reform in Alberta and British Columbia* (Edmonton, AB; Victoria, BC, 2009).

6 A consultation paper issued by the federal Department of Finance has asked for input on these proposals; see Department of Finance, "Strengthening the Legislative and Regulatory Framework for Private Pension Plans Subject to the *Pension Benefits Standards Act*, 1985" (Ottawa: Department of Finance, January 2009).

7 Canadian Institute of Actuaries, "White Paper: Government-Facilitated Retirement Income Plans" (Ottawa, March 2010); available online at www.actuaries.ca/members/publications/2010/210014e.pdf.

8 Keith Ambachtsheer, "The Canada Supplementary Pension Plan (CSPP): Towards an Adequate, Affordable Pension for All Canadians," *C.D. Howe Institute Commentary* 265 (Toronto: C.D. Howe Institute, 2008).

9 Ibid., p. ii.

10 Ibid.

PRIMARY ARGUMENTS IN FAVOUR OF A VPP

This paper begins at the next step: assessing the appropriate role for government if policymakers were to decide a VPP is desirable. The discussion that follows is organized around the key arguments in support of the introduction of a VPP:

- achieve economies of scale for administration and asset management;
- remove fiduciary liability for individual employers;
- enhance harmonization, pension portability, and labour mobility;
- reduce distraction from employers' primary goals;
- achieve payroll tax costs that are identical to those of registered pension plans (RPPs);
- increase insolvency protection;
- increase diversification;
- reduce the impact of investor inertia; and
- provide new tools for longevity risk management.

Economies of Scale

Expenses matter. Modern portfolio theory holds that increases in gross investment returns cannot be achieved without taking on additional risk. However, an increase in net returns can be achieved if transaction costs are reduced. The amount credited to an investment account is the amount earned minus expenses charged. Whether in the current period or some future period, greater net investment returns enhance the disposable income available to Canadians. A higher net return could allow those who are saving enough for retirement to reduce their contributions appropriately and thereby increase their available income now. For those whose savings are not yet sufficient for retirement, higher net returns would enhance the level of retirement income they have available. Furthermore, beyond improving the income from existing pension plans, the availability of a pension arrangement "sponsored" by another party – whether government or a financial institution – that requires the employer simply to remit contributions with little or no other obligations might cause such programs to be more attractive to employers, thereby increasing employees' access to them.

The various proposals that focus on the importance of economies of scale offer a straightforward argument. Efficient and effective administration would be a fundamental element of the implementation and on-going success of a VPP. Administration would be most efficient if (a) contributions were to be collected and submitted via existing payroll systems and (b) it provided cost-effective access to high-quality investment management expertise. The goal would be to deliver plan administration services at a cost comparable to that currently enjoyed by the very largest pension plans.[11]

[11] The Alberta-British Columbia expert panel explicitly states that it should be feasible to attain total management expense ratios of no more than 0.5% of assets under management (Joint Expert Panel on Pension Standards, *Getting Our Acts Together*).

Fortunately, the evidence on expense factors has expanded and improved recently. According to one study,[12] the cost to manage DB plans in the private sector averages 30 to 45 basis points (bps), while the corresponding figure for public sector plans is 25 to 35 bps. Investment management fees are by far the largest component of total operating costs, accounting for more than half of the fees paid in all asset size categories. Overall, these costs can be characterized as decreasing at a decreasing rate – in other words, there is a size beyond which most economies of scale have been achieved. The study also notes that costs vary considerably by asset mix, with certain costs actually tending to increase for larger plans as they achieve greater diversification – for example, by holding more international and emerging market securities.

Costs also vary by plan type. DC plans by their very nature require the establishment and tracking of individual accounts and exhibit a correspondingly higher overall administrative cost function. Similarly, the investment flexibility typically offered to participants in DC plans adds to the cost of its administrative system; it also adds an element of capriciousness that contributes uncertainty for those managing the plan's investments. That investment uncertainty translates into higher transaction costs and a need to maintain higher levels of liquidity. Using data representing $120 billion of assets managed by insurance companies, the study cited above finds investment costs of approximately 60 bps for RPPs (primarily corporate DC plans). The data for assets of RRSPs incorporate the cost of maintaining individual accounts and communicating with individual investors (without the benefit of an employer as intermediary); then, investment costs at 92 bps are more than 50% higher than those for RPPs. A separate breakdown finds that investment management costs for assets that do not attract sales commissions are "just a few points over the costs of managing DB plans."[13]

So, while uncertainty remains based on the available evidence, it seems increases in retirement income would accrue from public policy changes that create mechanisms to accumulate funds that are sufficiently large to benefit from economies of scale. Additionally, though the magnitude is completely speculative, basic economic rationale would support the argument that savings levels could increase if investors saw evidence that their savings produced higher levels of income. In economic terminology, such a change might result in future income being subjected to a lower discount rate than might have been appropriately applied in current investment market conditions.

The issue then becomes how best to create an environment that encourages large funds and offers the desirable economies of scale. Two key questions are: must such a VPP be administered by government to achieve the desired economies of scale? and must the VPP be sponsored in some fashion by government to provide economies of scale?

[12] Vijay Jog, "Investment Performance and Costs of Pension and Other Retirement Savings Funds in Canada: Implications on Wealth Accumulation and Retirement" (Ottawa: Department of Finance, 2009); available online at www.fin.gc.ca/activty/pubs/pension/ref-bib/jog-eng.asp.

[13] Ibid.

The answer to the first question appears to be no: more than one provincial expert panel notes that administration and investment management of a VPP could be publicly tendered and that large institutional plan administrators would be expected to offer competitive bids. While some might question whether there are enough large institutions in Canada to ensure effective competition, it should be noted that a number of insurance companies are already operating in this business. Should that activity prove insufficient to generate the desired competition, banks and mutual fund companies could be expected to enter the business and the bid competition could be redesigned in a way to encourage foreign bidders. Furthermore, neither the federally administered Canada Pension Plan nor any province has a system capable of monitoring and managing individual accounts.

The answer to the question about government sponsorship seems to be tied, at least in part, to legal considerations. Clearly, with at least one provincial review panel suggesting that a not-for-profit organization such as a pension society could perform this function, it is not the only available option. Systems developed in Chile, Hong Kong, and elsewhere operate with a range of private firms available to administer the government-required savings program. Why, then, do such private "superfunds" not already exist in Canada? Since some of the expert panels became convinced that superfunds would offer sufficiently desirable characteristics to be attractive in the marketplace, one is forced to suspect barriers to their development in the legal and regulatory environment.

And that, indeed, turns out to be the case. Two key features of the current private pension environment appear to prevent financial institutions from developing and administering VPPs: the prohibition against the co-mingling of assets and the definition of a plan sponsor – namely:

> The party that establishes and maintains the plan, which is (1) the employer, in the case of an employee benefit plan maintained by a single employer; (2) the employee organization, in the case of a plan maintained by an employee organization; or (3) the association, committee, joint board of trustees or other similar group of representatives of the parties involved, in the case of a plan maintained by one or more employers and one or more employee organizations.[14]

Both of these elements of Canadian pension legislation could be amended to facilitate the offering of pooled arrangements; moreover, this could be done without involving government directly in the sponsorship of such a pool. If the legislative requirements were modified (a) to permit employers to enrol in plans offered by approved providers and (b) to enable the co-mingling of assets,[15] this would remove the principal barriers to private financial markets delivering more efficient pension administration and investment management services. It would facilitate, as we shall see later in the case of Quebec's Simplified Pension Plans (SiPPs), the ability of the marketplace to add some pooled retirement savings arrangements to the suite of products available from financial institutions.

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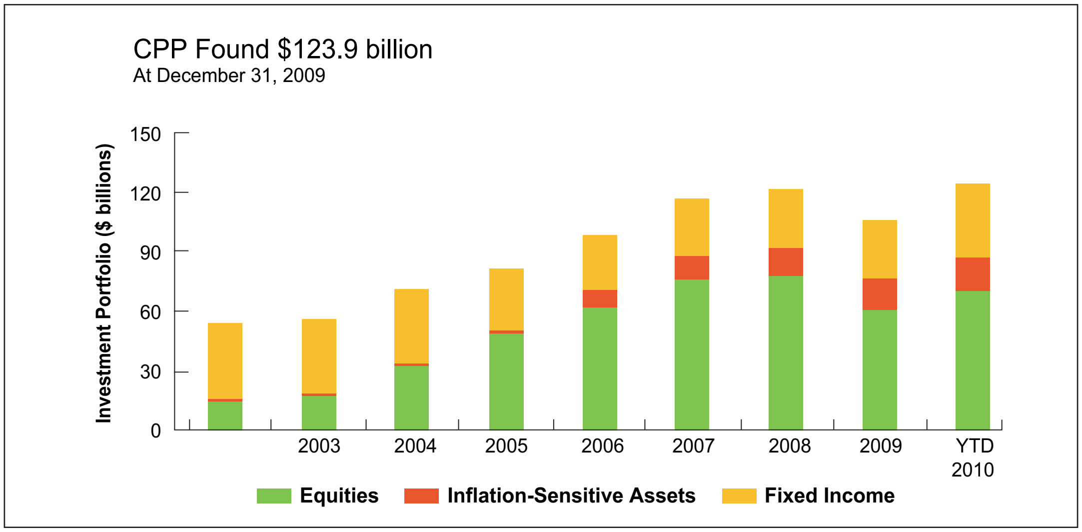
[14] Raymond Koskie, Mark Zigler, Murray Gold, and Roberto Tomassini, *Employee Benefits in Canada*, 3rd ed. (Brookfield, WI: International Foundation of Employee Benefit Plans, 2001), p. 500.

[15] Several details would require significant development before private sector implementation could occur, including, but not limited to, which institutions would meet solvency standards sufficient to warrant authorization to develop and sell VPP products and what fiduciary liability, if any, would remain with the vendor and employer, respectively.

In addition to these legal considerations, at least one critical economic question remains: is it desirable to concentrate retirement savings and, by extension, Canada's investment capital into a single (or extremely small number of) investment channels? This same question has arisen in the United States, where proposals have surfaced to convert Social Security from its pay-as-you-go (PAYG) funding model to something that would accumulate more funding. PAYG funding accumulates little capital and, therefore, has little direct effect on capital formation. However, any proposal for pre-funding of Social Security obligations always triggers opposition to the idea of putting too much of the nation's investment capital in the hands of government.[16]

In the Canadian example, the Canadian Pension Plan Investment Board has grown in less than a decade into an entity that controls $124 billion of Canada's investment capital, $69.5 billion of that in equities (see Figure 1). This accumulation of capital was an important and intended result of the 1996 CPP reforms and, *ceteris paribus*, its growth will continue until the members of the baby boom generation have progressed well into their retirement.

FIGURE 1: CPP Investment Board Portfolio, 2002-2010



SOURCE: Canada Pension Plan Investment Board.

The Removal of Fiduciary Responsibility

The federal consultation draft[17] includes the possibility of changing the standard of care for employers that sponsor DC plans to "good faith" rather than "fiduciary." That policy question is important, but it can easily be made independent of the VPP discussion. Were such a change to occur, and if the change were also to be reflected in provincial counterparts of the *Pension Benefits Standards Act*, this potential argument would become moot in the discussion of a VPP.

[16] The issue is further complicated in the United States by the fact that all Social Security trust funds are required to be invested in government securities. The arguments, however, are worth considering independently of that complication.

[17] Department of Finance, "Strengthening the Legislative and Regulatory Framework" (January 9, 2009); available online at http://www.fin.gc.ca/activty/consult/pensions-eng.pdf.

Enhanced Harmonization, Pension Portability, and Labour Mobility

A desirable feature of a system of VPPs, if harmonized across all provinces, would be the elimination of a significant portion of the paperwork required upon termination of employment to manage pension entitlements. If an employee moved from one employer to another, and if both employers participated in the same VPP, the member's account could remain unchanged except for the identity of one of the contributors.

The drafting of careful rules for VPPs in itself could be an important exercise in improving harmonization. For example, if all provinces could agree on the conditions for withdrawal of an account balance from a VPP, it should be feasible to extend those same rules to all types of registered plans. Similarly, all provinces might be able to agree, as most of the provincial expert panels recommend, that vesting of employer contributions should be immediate in order to simplify administration.

Absent that level of success in achieving harmonization, a series of provincially sponsored VPPs would be limited in the extent to which it could provide the benefits of a larger plan and a larger investment pool. Similar pools established in the private sector would be able to transfer workers seamlessly across participating employers regardless of province, while provincial pools would be unable to transfer workers across provinces. Unless it were possible to generate information describing the optimal amount and type of labour mobility in future years, no inherent advantage appears for one organizational structure over the other.

Reduced Distraction from Employers' Primary Goal

Some employers have argued that their involvement in the management of pension plans takes attention away from their primary business of delivering goods and services to their customers. It is true that a VPP would require management attention to establish the role it feels the new program should play in the design of the compensation program, but this requirement likely would be occasional rather than continual one. Overall, the availability of a VPP on a purely voluntary basis should allow the employer to retain needed flexibility in the design of compensation programs for its employees. If offered, the marketplace would decide whether the additional option of a VPP was needed and whether it would be offered on terms that made it more attractive than available alternatives.

Payroll Taxes that Are Identical to those of RPPs

One advantage touted for VPPs is that, because they would operate as a registered pension plan, participating employers would face smaller contributions to payroll-based assessments for CPP, employment insurance (EI), workers' compensation, and other earnings-related programs. Similarly, employees also face differential contributions for CPP and EI. This is in contrast to group RRSPs, which, under current law, do attract payroll taxes. This differential treatment is limited in scope in that employees earning more than the contribution limits for the various programs pay the maximum amount into the respective programs, albeit at a slightly different pace. Also, standard labour economics says that, over time, the employer will adjust total compensation so that the costs of any benefit ultimately are borne by the employee. That may generally be true, but it is difficult to confirm, especially in the part of the labour market where minimum wage laws apply. Where such constraints are binding and wages cannot be decreased, employers almost would certainly prefer an option that permitted them to avoid payroll taxes.

So, currently, at least for lower-paid workers, different levels of payroll taxes are contributed by two workers who earn the same salary, one at a firm offering a group RRSP and the other at a firm offering an RPP (whether a VPP or other defined contribution plan). A genuine source of inequality exists across different types of retirement savings vehicles. The choice for policy makers is whether to address the inequality of treatment directly or indirectly. The VPP option could offer an indirect means of addressing this inequality. A more direct approach would be to change the legislation that assesses payroll-based taxes to exclude dollars contributed to any registered plan, regardless of the plan type. Such an approach is used elsewhere (such as in the US concept of *salary reduction*) and would provide the most transparent way to eliminate the inequality. Were such a change implemented, it also would eliminate the payroll tax differential as a factor in deciding whether government should develop a VPP option.

While a change that equalizes the treatment of payroll taxes across retirement savings vehicles is feasible, the more important public policy question is the desirability of such a change. The impact on workers' benefits of smaller payroll tax contributions by employers and employees needs to be examined carefully. For example, the employee for whom lower contributions would be made would qualify for lower CPP benefits. Unsurprisingly, it would be difficult to replace what has been purchased by combined contributions of 9.9% from both the employer and the employee with a 3% contribution from the employee alone.[18] The result would be a small but measurable dilution of the value of previously established social insurance programs, an outcome that is an especially important concern for those in the lowest income brackets. Certainly, paying more now to have less later is not a bargain that any worker would embrace. And for the worker who dies leaving children behind or experiences periods of unemployment, CPP-qualified disability, or workers' compensation claim, the financial deficit would be much larger.

For a VPP to make sense financially, its coverage should not begin with the first dollars of earnings. This is consistent with the conclusions of Ambachtsheer, though the $30,000 threshold he proposes requires further examination.[19] I have developed additional examples at $40,000 and $50,000 earnings levels using the year's maximum pensionable earnings (YMPE) for 2010 of $47,200, the employment insurance contribution rate for 2009, and the median workers' compensation premium assessment for Alberta. In these example, the worker with $40,000 in earnings would experience the same result as the worker earning $30,000 for a VPP design that used a 3% first-dollar, employee-only contribution. If contributions were to apply only to amounts over $30,000 but under the YMPE, both the resulting contributions and the lost benefits would be smaller, but the direction would remain the same. The value of a VPP, therefore, would have to be found among workers earning more than the YMPE.

[18] A worker making $30,000 who puts 3% into a savings vehicle would have $900 less in gross income. Assuming a 30% marginal income tax rate, that contribution would result in a reduction of approximately $630 in net income. Furthermore, that worker's CPP benefits, as well as possible EI and workers' compensation payouts, also would decrease. The reduction in annual CPP benefits (based on a full career of paying into either system) would be approximately 25% of $900, or $225. Given the inflation indexation of the CPP and assuming inflation at 4% and interest at 6%, replacing $225 of annual income would require the accumulation of approximately $3,700 in additional savings. That is not a huge amount, but, over a 30-year career, it would completely cancel out the income from approximately 5% of the $900 of annual savings.

[19] Ambachtsheer, "The Canada Supplementary Pension Plan (CSPP)."

Another important fact in this discussion of public policy is that reduced employee and/or employer contributions would mean less revenue for the CPP, EI, and the various workers' compensation boards. While contributions might not be the only source of revenue to pay for benefits under these programs, they provide the lion's share of the needed resources. Unless the lost benefits had exactly the same actuarial present value as the lost contributions, the nature of the tradeoff that would be made between taxpayers and recipients of benefits would not be immediately apparent.

Increased Insolvency Protection

Participation in a large-scale pension savings program, possibly with government backing, would provide significant confidence to employees about the continuity of their pension plan. The portability of the benefit when the worker changes jobs would be one factor contributing to this confidence.

Another factor is that plan participants could actually experience a bit less counterparty risk than they might have faced with a single-employer pension. Realistically, since a defined contribution RPP requires only that the employer remit contributions to the plan, the participants' financial exposure if the sponsoring employer gets into financial difficulty typically is limited to only those contributions due with respect to recent payroll. The reality of this risk exposure, however, might not be the same as employees' perceptions of the risk. If employees did not distinguish between the defined benefit problems featured periodically in the media and their own defined contribution plan, some might hesitate to participate in the plan because they *perceive* the risk to be greater than it actually is.

Having a third party operate the VPP could provide assurances that the money designated for the pension plan would actually stay in the plan. Plan communication could further underscore the safety of the pension by emphasizing the degree to which the plan was assured through its government sponsor or, if it were offered through the private sector, the protection provided through current industry-based guarantee funds.[20]

[20] Unless changes were made to exclude VPP arrangements, life insurers likely would be guaranteed through Assuris, banks through the Canada Deposit Insurance Corporation, and investment firms through the Canadian Investor Protection Fund.

Increased Diversification

Undoubtedly, any VPP would incorporate diversification as an important element of its prudent investor requirements. The participant in a VPP would be further protected, by the size of the fund and the separation of its investment management, against nondiversification risk created when an employee invests in his or her own employer's securities. The exposure to this risk is uneven in Canada. Federally registered RPPs cannot hold the stock or debt of an employer participating in the plan; most other jurisdictions impose similar restrictions. However, some retirement vehicles, such as group RRSPs, may be constructed in a way that permits investment in the employer's securities. While some official publications provide explicit warnings about the importance of diversification,[21] there is no requirement for diversification in savings vehicles with employee-directed investment.[22]

Address Investor Inertia

While declining pension coverage is a concern, the "problem" has both supply and demand dimensions. Inertia refers primarily to the empirical evidence regarding the demand side of that equation. Even where pensions are offered and even where the financial advantage is incontrovertible, a significant number of employees do not participate. Evidence suggests that at least some low-saving households would welcome help in making decisions about their saving, and that individuals' pension decisions are greatly influenced by what their employer offers as the "default" decision in their pension plan.[23] Historically, the "default" has been that an employee is not enrolled in the plan until he or she takes some explicit action to become covered. Evidence shows that changing that one default – requiring action to opt out rather than to opt in – could increase pension participation significantly.

While automatic enrolment would do nothing to force employers to offer pension plans, the negative consequences of demand-based inertia could be addressed partially by legislation that made participation automatic when a pension plan was available in a workplace; making participation mandatory would go even one step farther. Beyond adjusting the participation defaults, some VPP proposals also recommend a default investment option that is sound for most participants;[24] using similar reasoning, some proposals also recommend annuitization as the automatic/default form of payout in order to reduce retirees' exposure to longevity risk.

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[21] See for example the notice at the website of Quebec's Régie des rentes (www.rrq.gouv.qc.ca/en/flashretraiteqc/Pages/capsule_retraite_008.aspx), which cautions,

> Be careful about investing too much of your private pension plan funds in securities issued by your employer (stocks, bonds, or other). Of course, you are free to invest in your employer's business, but beware of the risk of putting all your investments in one basket and make sure you abide by the limits set out in the legislation. If your employer faces financial difficulties, imagine the impact it could have on your job and your retirement savings. Consider diversifying your investments.

[22] This discussion is not intended to recommend a complete prohibition of even indirect ownership of employer securities. A large investment pool is likely to own at least a small amount of almost any publicly traded firm. Trying to eliminate that small proportion from the investment pool that might apply to employees of a particular firm would introduce tremendous complications and could even disrupt the efforts of growing firms to access new capital through public offerings.

[23] See Richard H. Thaler and Shlomo Benartzi, "Save More Tomorrow: Using Behavioral Economics to Increase Employee Saving," *Journal of Political Economy* 112 (no. 1, pt. 2, 2004): S164-S187.

[24] For example, some have suggested a life cycle investment model that gradually changes the asset mix as the member ages.

Most of the available evidence about the effect of auto-enrolment, auto-investment, and/or auto-annuitization is based on other countries' experience, especially the results following recent pension legislation in the United States and the United Kingdom. Under the US *Pension Protection Act*, there has been an increase in pension plan coverage due to auto-enrolment design features. This evidence also shows an increase in the likelihood that, once enrolled, employers and employees tend to continue their participation rather than go through the trouble of opting out. Similar auto-enrolment features have been introduced in the United Kingdom, where they were defended in these terms:

> The United Kingdom also considered evidence from the United States that showed auto-enrolment increased pension coverage across the board (for employers with over 20 employees, rates were 60 percent for auto-enrolment compared to 41 percent for opt-in plans). Participation rates were particularly strong among groups with lower coverage, such as lower income workers, ethnic minority groups, and women. Some of the stakeholders we met with, in particular labour organizations, thought that mandatory participation was key to the success of any such broad-based multi-employer plan.[25]

For the most part, the elements of human behaviour that come into play in the United States and United Kingdom could be expected to recur in the Canadian context, though differences in the institutional context mean that the same public policy likely would produce somewhat different results. The overall impact would depend on such factors as default contribution rates under the auto-enrolment provision and opportunities for savings substitution. For example, if auto-enrolment were attached to a pension plan with a low default contribution rate, some individuals could interpret that default rate to be adequate and actually reduce their level of savings. Similarly, a VPP might reduce the extent to which low- or modest-income individuals contribute to a tax-deferred savings account, which might be a better option for them. The Alberta-British Columbia expert panel states, "Several of the stakeholders voiced support for the auto-enrolment of employers and employees with an opt-out provision. While others felt strongly that mandatory employer participation was prerequisite for success of the Plan, many of the stakeholders were concerned with declining pension plan coverage, but thought that a voluntary plan with proper incentives to participate was preferable."[26] The panel ultimately advocated allowing either employees or employers to choose to opt out.

The results that any VVP achieved would depend greatly on the specific design of the program. Overall, participation rates for pension plans would likely increase if a VPP were available, and pension coverage is positively correlated with adequate retirement income. Therefore, the "average" Canadian would be expected to be better off. However, the correlation between these two factors is less than perfect, and the reformed system would have uneven effects on Canadians who are not "average" and likely at least a few who are not better off. Any measure of retirement savings adequacy that relies solely on the pension coverage rate is limited in its applicability.

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[25] United Kingdom, Department of Work and Pensions, "Personal Accounts: A New Way to Save – Executive Summary" (London, December 2006). para 66.

[26] Joint Expert Panel on Pension Standards, *Getting Our Acts Together*, p. 185.

New Tools for Longevity Risk Management

Longevity risk is real. It exists at both the aggregate (societal) and the individual level. To the extent that all Canadians receive their retirement income from government sources, primarily the fully indexed annuity payable from OAS/GIS and the CPP (and Quebec Pension Plan), the longevity risk lies with society. To the extent that these payments are not sufficient to meet retirement income goals, the longevity risk lies with the individual. Some VPP proposals go so far as to propose annuitization as the automatic form of payout – or even to require it as the only available form of payout – in order to completely remove retirees' exposure to longevity risk.

In theory, the individual risk should be manageable using the pooling techniques that life insurance companies have employed for hundreds of years. If insurance can be delivered against the risk of dying, it should be deliverable against the risk of not dying. In fact, a life insurance company's risk profile actually improves by the sale of annuities that provide a partial offset to the mortality risk present in its portfolio of life insurance contracts.[27] However, despite the simple solution offered by economic and actuarial theory, an efficient annuity market simply does not exist. The primary reason behind the thinness of the annuity market is that prices are seen as "economically unfeasible." Several factors contribute to this situation:

- Adverse selection is evident, since only healthy people choose to annuitize.
- The price of a life annuity, which depends on age and interest rates, varies considerably. In virtually all cases, however, the lump sum needed to purchase a reasonable monthly income is at least $500,000 to $1 million and can be much higher than that. Studies of the psychology of investing reveal that consumers are very reluctant to part with control over that much money – even if the product were readily available and fairly priced.
- Annuities are capital intensive in most countries, including Canada, which contributes to making them expensive.
- The increasing duration of a typical retirement means that a worker retiring at age 65 will require, on average, income for twenty years and a few will require income for double that period, but the institution attempting to price its annuities is unable to buy financial instruments for that long a period. This diminishes the ability to hedge the reinvestment risk of any portfolio of assets designed to go along with annuities.
- A series of mergers has left Canada with only three large companies available to provide annuities. Though no study has been identified on the subject, it is possible this market has become an oligopoly where the cost for annuities is higher than might be observed under fully competitive market conditions.

[27] This natural hedge is explored in detail in Ralph, Stevens, Anja De Waegenaere, and Bertrand Melenberg, "Longevity Risk in Portfolios of Life Insurance and Annuity Liabilities: The Effect of Product Design, Product Mix and Portfolio Composition" (presentation to the 4th International Longevity Risk and Capital Markets Solutions Conference, Narden, Netherlands, 25-26 September 2008).

By far the largest risk associated with annuities is the uncertainty about future mortality rates. This aggregate mortality risk is more difficult to manage. Eventually, longevity bonds offered in the capital markets might provide some additional management tools, but these are just beginning to emerge in a meaningful quantity. In the interim, a few changes to public policy might facilitate the emergence of a more efficient private annuity market, among them:

- **Consider issuing bonds with longer than 30 years' duration.** If even a small portion of the government bonds issued in Canada were to bear a 40-year term, that offering could reduce a source of risk to annuity sellers.
- **Review the capital requirements for annuities.** With annuities representing a relatively small proportion of the sales of life insurers, it would be understandable if capital requirements in Canada – such as the Minimum Continuing Capital and Surplus Requirements and its successor, the Minimum Capital Test – were developed with most of the attention focused elsewhere. A careful examination of the requirements to look for unintended consequences in the annuity market could prove useful. Unlike a life insurance purchaser, an annuity purchaser provides all the capital up front that is anticipated to be needed to deliver the contractual benefit. Capital from the insurer needs to cover (a) the risk of investment returns below what was assumed and (b) rates of mortality below what was assumed. If the capital requirements were responsive to the net risk after the hedging of these key risks – for example, as markets are able to develop longer-term investment instruments and/or longevity bonds – the impact of capital requirements on the annuity market should be reduced correspondingly.
- **Expand the available supply of annuities** by removing barriers to entry into the market, rather than requiring that annuities be purchased only from Canadian insurance companies. The concern here, of course, is that retirees need appropriate recourse if the provider of their annuity should fail to deliver – that is the purview of financial services regulators such as the federal Office of the Superintendent of Financial Institutions and others. Through licensing requirements, guarantee fund(s), and mandatory consumer protection vehicles, it should be possible to address such concerns.
- **Reduce the demand for annuities.** It has been suggested that the price might fall if the requirement for full annuitization on wind up were removed, making way for lump sums to be paid and invested as the active or retired member wished. This would indeed put downward pressure on the price of annuities, but it also would increase the problems and costs associated with small plan size and unsophisticated investors.[28] It could also have the unintended effect of increasing the magnitude of the adverse selection problem.

Once the environment has been made conducive to the development of annuity sales in the private sector, it then would be time to examine what role (if any) would remain for government. One possibility is a publicly funded non-profit annuity pool for pensions. This would make sense, however, only if there were insufficient counterparties in the private market (this is unclear at the moment) and if governments' risk profiles made them an appropriate counterparty. Other groups, such as those developing financing tools for assisted living facilities, face the same longevity risk as do annuity providers: a negative financial result if people live longer than was assumed. Conversely, those who sell products such as maintenance drugs, mobility devices, and travel to retirees could face negative financial results if people did *not* live as long as was assumed.

[28] A VPP with options for the management of orphan plans could help solve the problem.

SECONDARY EFFECTS OF A VPP

The provincial expert reports discuss some secondary effects of the introduction of VPPs. For example, the expansion of pension coverage among employers might increase savings, but the actual result would depend on how employers' compensation designs adapted to the VPP offering. Among employees, however, there is little doubt that there would be increased savings and likely an increase in the income levels of future retirees. Those effects, in turn, would increase the capital available in the Canadian economy and likely decrease the strain on social programs by retirees.

Among other secondary effects would be the reduction in public revenues in several places:

- CPP and EI contributions would decrease to the extent contributions were diverted from group or individual RRSPs; this is not a major concern, however, as the benefits being earned would see corresponding reductions.
- Workers' compensation premiums would decline, again to the extent contributions were diverted from group or individual RRSPs. Any resulting decrease in contributions would decrease benefits and could increase political pressure for a corresponding increase in the benefits scale.
- To the extent that the VPP system removed the administration of pension plans from the private sector, it would also remove the profits generated by that effort from the income tax system. Revenue then would have to be made up elsewhere and/or program spending cut.

The implications of these effects for the health care system are unclear at best. Higher-income Canadians (including retirees) generally remain in better health than those with less income. But VPP contributions during working years could mean lower disposable income, which would be associated with poorer health levels entering retirement. Pressures on the level of general revenues also might translate into pressure on funding for health services. Studies have found that the demand for annuities increases because of their superiority over bonds as a hedge against life-contingent health spending as well as longevity risks.[29]

[29] See, for example, Gaobo Pang and Mark Warshawsky, "Optimizing the Equity-Bond Annuity Portfolio in Retirement: The Impact of Uncertain Health Expenses" (presentation to the 4th International Longevity Risk and Capital Markets Solutions Conference, Narden, Netherlands, 25-26 September 2008.

PRIMARY RISKS OF A VPP

The primary risks identified with the VPP proposal are increased systemic risk if investment decisions become too concentrated; levels of acceptance and participation; implicit liability for insolvency; and details of the design and implementation.

Concentration Risk

The total value of traded stocks on the Canadian market in February 2010 was $1.78 trillion.[30] Over the past several decades, the growth of mutual funds and pension assets has increased the role of what we now recognize as the institutional investor. The CPP Investment Board today controls $69.5 billion in equity investments, the equivalent of approximately 4% of the entire Canadian market.[31] Any VPP would concentrate investment decisions further, and contributions to a VPP likely would "crowd out" other types of savings. An excellent study of that phenomenon finds that, as payroll taxes rise, significant reductions occur in the national saving rate and in the potential for capital accumulation.[32]

Both the growth in the VPP and the reduction in the size of other savings vehicles would contribute to a more highly concentrated investment market. How much concentration is desirable, and what are the risks of further concentration? Assigning investment responsibility for a significant amount of VPP contributions to a government entity could shift concentration dramatically, as measured by standard indices.[33] In a groundbreaking study that examines systemic risk in different types of complex systems, the Federal Reserve Board of New York concludes that robustness in complex adaptive systems – including financial systems – requires diversity, heterogeneity, and modularity (or limited interconnectedness).[34] Further concentrating investment management certainly would reduce diversity and heterogeneity (and probably modularity), so that consolidating assets through a VPP to create economies of scale in the pension system is a process that could be pushed too far. While further concentration could reduce administrative costs, it could also increase systemic risk of the type (though not of the scale) that caused the effects of the US sub-prime mortgage crisis in 2008 to be so rapid and widespread. For example, the "rogue trader" problem would be exacerbated if investment decisions were too concentrated in the hands of any one decision maker.

The more widespread are the investment decisions, the more robust would be the overall system when a single poor decision is made or a failure of internal controls occurs. The probability that the system would survive relatively intact would be much greater if decisions were in the hands of the many.

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30 TMX Group, "TMX Group Equity Financing Statistics February 2010" (Toronto: TMX Group); available online at www.tmx.com/en/pdf/month_stats/FinancingStats_Feb10.pdf.

31 These equity investments are split between $17.9 billion in Canada and $51.6 billion in foreign markets.

32 Laurence J. Kotlikoff, Kent Smetters, and Jan Walliser, "Mitigating America's Demographic Dilemma by Pre-funding Social Security," *Journal of Monetary Economics* 54 (2, 2007): 247-266.

33 A commonly accepted measure of market concentration is the Herfindahl-Hirschman Index: $HHI = s_1^2 + s_2^2 + s_3^2 + ... + s_n^2$, where s_i is the market share of the i^{th} firm. The closer a market is to being a monopoly, the higher its concentration (and the lower its competition). To my knowledge, no one has attempted to compute the Herfindahl-Hirschman Index for investment markets because, historically, North American markets comprised millions of individual investors.

34 Federal Reserve Bank of New York, "New Directions in the Understanding of Systemic Risk" (New York, 2006); available online at www.newyorkfed.org/research/epr/2007n1.html.

Acceptance and Participation

Every report that has examined the VPP concept precedes the enumeration of advantages with phrases such as "Assuming widespread participation by employers and employees." Indeed, the principal reason the VPP concept might come into being relies on advantages that emerge from broad participation, especially its economies of scale, without which a VPP could not become substantial enough to support state-of-the-art governance arrangements and investment management services. But what if the necessary levels of participation do not materialize? How would employers and employees receive a VPP?

The appetite for a new program among businesses that do not have a retirement savings program and workers in those firms is not easily gauged. However, a scan of the Canadian pension environment reveals two provincially sponsored programs, in Manitoba and Quebec, established expressly to encourage retirement savings by those not otherwise covered by RPPs.

MANITOBA'S SIMPLIFIED MONEY PURCHASE PENSION PLAN

Manitoba's Simplified Money Purchase Pension Plan began in July 2001, to address problems that sound eerily like those that have been described in various provincial VPP proposals:

> In past years, small business employers have had few options when choosing a retirement plan for their employees. Employers found traditional plans to be complex, expensive and difficult to explain. While other types of arrangements provided flexibility and inexpensive administration, they did not offer the security of a guaranteed retirement income or the protection of provincial legislation. In order to bridge the gap and offer small business employers a viable solution to their retirement plan dilemma, the provincial government has created a Simplified Money Purchase Pension Plan.[35]

The plan uses a DC model that is less expensive for the employer to operate, largely because of fewer legal requirements, no fees for filing, and a registration process that is administered by financial institutions. As the plan itself boasts, "There are no forms for employers to fill out – and no on-going reporting with the Pension Commission.[36] This system is entirely voluntary for employers, who also may choose to make membership voluntary for any group of workers (identified by occupation).

[35] Manitoba Labour and Immigration, "Simplified Money Purchase Pension Plan (SMPPP)" (Winnipeg, July 2001); available online at www.gov.mb.ca/labour/pension/brochure/smpp.html?print.

[36] Ibid.

QUEBEC'S SIMPLIFIED PENSION PLAN

Implemented in the 1990s (with changes in 2004), Quebec's Simplified Pension Plan is designed for and targeted at small employers. The SiPP is a defined contribution supplemental pension plan, offered and administered by a financial institution, with several employers participating in the same plan. The contributions made by the employer and, if any, by the members are divided into two accounts in each member's name: one locked in and the other not (see Table 1). Contributions to a SiPP are not subject to payroll taxes. While SiPP plans are small in number, they cover more than 1,400 employers and control assets approaching $1 billion – indirect evidence that financial institutions have found it worthwhile to set up prototype plans and have experienced some success in marketing them.[37]

TABLE 1: SiPP Requirements in Quebec

	Locked-in Account	Account not Locked in
Employer's contribution	X	
Additional employer's contribution	X	
Member's contribution	employer's choice	
Additional voluntary member's contribution		X
Transfer from a deferred profit sharing plan	employer's choice	
Transfer from a source not locked in		X
Transfer from a locked-in source	X	

SOURCE: Quebec, Régie des rentes, "Characteristsics of a Simplified Pension Plan"; available online at www.rrq.gouv.qc.ca/en/programmes/rcr/regimes_simplifies/Pages/caracteristiques_rrs.aspx.

Implicit Liability for Insolvency

The flipside of the confidence that government involvement provides is the possibility that it could be perceived as offering assurances about returns on investment and/or benefit levels. Although the expert panels advocate neither direct government sponsorship nor investment management by government bodies, they generally agree that a VPP would require some resources from government for its launching. If the anticipated results did not materialize, however, would participants expect government to make up the difference? Following the October 1987 stock market crash, sponsors of DC plans faced pressure to make up some of the market losses suffered by individual plan participants, especially those close to retirement.[38]

[37] Pierre Plamondon, "Retirement Saving Instruments for Workers in Small and Medium-Sized Enterprises: The Simplified Pension Plan" (presentation to Avenues for Reforming the Canadian Retirement Income System, Toronto, 4-5 May 2010; available online at http://irpp.org/events/archive/20100504/plamondon.pdf.

In 2007, legislative amendments created a member-funded pension plan that has been called a "new kind of defined benefit plan"; see Jacqueline Beaulieu, "The Member-Funded Pension Plan," *Newsletter* (Régie des rentes du Québec) 23 (May 2008), available online at www.rrq.gouv.qc.ca/SiteCollectionDocuments/www.rrq.gouv.qcAnglais/publications/rcr/lettre/newsletterno23.pdf. However, it could easily be called a target benefit plan in the more generic jargon of the pension industry: employer contributions are set in advance, and employees are required explicitly to adjust their contributions to address any shortfalls that may arise. Employees also are provided explicit ownership of any surplus. For additional details, see Régie des rentes du Québec, "Member-Funded pension Plan"; available online at www.rrq.gouv.qc.ca/en/ programmes/rcr/Pages/rrfs_nouveau_regime_retraite.aspx.

[38] A few companies did choose to do so, recognizing that commitments to pending retirement almost certainly would have been based on account valuations at the time those commitments were made.

The more recent financial crisis offers an additional example from the United States, where capital markets provided funds relatively cheaply to the Federal National Mortgage Association and the Federal Home Loan Mortgage Corporation because these entities were perceived to carry an implied government guarantee. The case for an implied guarantee for US-government-sponsored enterprises (GSEs) is based on several factors:[39]

- their creation by Congress to achieve a public purpose;
- their privileged status compared to other privately owned companies, including privileges built into their charters, exemption from many laws, and exemption from most state and local taxes;
- the federal government's mandate to fill some positions on boards of directors; and
- their behaviour as though they are extensions of government, including observations that the Secretary of the Treasury is authorized to purchase their debt issues, that fiduciaries may invest in these obligations as if they were government securities, and that the Federal Reserve Board treats their securities like government securities.

Perhaps fearing exactly the implicit guarantee that has surfaced, the Treasury Department has argued across both Democratic and Republican administrations that it is appropriate to wean a GSE from federal sponsorship once it becomes economically viable and successfully fulfills the purpose for which it was created or when that purpose ceases to exist.[40]

The natural result of these examples is a genuine concern that similar pressures would emerge if a Canadian government were to establish (or contract with) an organization to deliver a VPP. In the event, it would be unable to deny it was attempting to achieve a public purpose, which could give rise to a similar perception among Canadians that some element of government backing was inherent in the new entity. A portion of the actual or perceived governmental liability could be managed by how the plan was designed; for example, in *Getting Our Acts Together*, the Joint Expert Panel on Pension Standards considers and rejects both target benefit and DB plan designs, in part due to potential liabilities. High-quality communication also could mitigate the gap between actual and perceived liability, but it is doubtful that the gap could be eliminated completely.

[39] See David J. Reiss, "The Federal Government's Implied Guarantee of Fannie Mae and Freddie Mac's Obligations: Uncle Sam Will Pick Up the Tab," *Georgia Law Review 42* (2008, 4): 1019-1084.

[40] Darcy Bradbury, Deputy Assistant Secretary, Federal Finance, Department of Treasury, statement before the House Committee on Economic and Educational Opportunities, Subcommittee on Postsecondary Education, Training and Life-Long Learning, and the House Committee on Government Reform and Oversight, Subcommittee on National Economic Growth, Natural Resources, and Regulatory Affairs, Joint Hearing on Privatizing Government Sponsored Entities, 104th Cong. 2 (1995).

Design and Implementation Issues

The experts involved in writing the various provincial reports on pensions hold the view that employers who do not currently sponsor a pension plan should be strongly encouraged by government to participate in a VPP-like program in order to maximize participation. They generally tout the advantages of pooling longevity risk and investment management together with very low administration costs. Such a program could serve the additional purpose of offering an agency to handle stranded pensions.[41]

The first public document to consider in detail the design and implementation details of a VPP was prepared by the Steering Committee of Provincial/Territorial Ministers on Pension Coverage and Retirement Income Adequacy.[42] Among the most critical issues included in Appendix B of the report, on issues to be resolved, is the role of government (the focus of this paper) and governance, which is informed by the current models for multi-employer plans. However, this issue also is tied indirectly to the concentration of investment management: in any field, the need to provide appropriate oversight grows in importance whenever monopoly power is created. How effective would be the regulation of one governmental entity by another?

41 Arthurs, *A Fine Balance*.

42 Steering Committee of Provincial/Territorial Ministers on Pension Coverage and Retirement Income Adequacy, *Options for Increasing Pension Coverage among Private Sector Workers in Canada* (n.p., 2010).

CONCLUSIONS

This paper has examined the proposal of a voluntary pension plan that would be offered through employers and that would permit employers and employees (separately) to opt out. In such a VPP, government could play a role in increasing savings for retirement through the modernization and streamlining of pension standards legislation. Several arguments for government involvement – specifically, to remove fiduciary responsibility from individual employers and to obtain the same payroll taxes as available to a registered pension plan – are largely unconvincing, as such matters should be addressed independently. If these changes were deemed desirable and were implemented, their relevance to the debate surrounding VPPs would disappear.

A few arguments used to support a VPP involve areas of public policy for which changes could occur either with or without enabling legislation for such plans. For example, much could be done to enhance harmonization, pension portability, and labour mobility – worthwhile objectives of their own accord – even in the absence of a VPP. While a VPP that operated across all provinces under identical rules might increase harmonization, it is equally plausible that different VPPs operating in different provinces with disparate rules would exacerbate the current lack of harmonization.

Similarly, inertia and annuitization are areas in which a VPP is only one of several public policy devices available. Existing regulations could be changed to permit automatic enrollment of employers and/or their employees in any registered plan with a provision for the employee to opt out. Public policy changes could facilitate the development of additional tools to manage longevity risks in the private marketplace. That said, it is not possible at this point to determine whether such changes would be sufficient to offset the quantum of longevity risk that needs to be managed.

In the final analysis, two key arguments provide the most compelling reasons to consider the establishment of large, economically efficient VPPs. First, assets could be managed professionally and efficiently, leveraging economies of scale. Second, they would reduce the distraction from employers' primary goals. Neither argument, however, offers convincing evidence that government, rather than the private sector, should develop such funds. The removal of regulatory barriers to the development of "superfunds" in the private sector could achieve many of these same benefits while also maintaining choice and reducing systemic risk.

Ultimately, the marketplace will determine whether the additional option of a VPP is needed and whether it is offered on terms that make it more attractive than the other available alternatives. That said, the Joint Expert Panel on Pension Standards "encourages the government…to explore ways to create incentives, whether in the form of additional tax incentive or other economic incentives, for employers who do not already provide a pension plan, to enrol."[43] If a VPP would indeed make it easier for employers and employees to participate in a cost-effective pension plan, it would further the primary objective. The VPP's ability to do so, however, remains unclear so long as the details of design, governance, implementation, and regulation remain unaddressed.

[43] Joint Expert Panel on Pension Standards, *Getting Our Acts Together*, p. 187.

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Dr. Norma Nielson has an undergraduate degree in mathematics and a PhD in insurance from the University of Pennsylvania. In July of 1997, she assumed the responsibilities of Chairholder in Insurance and Risk Management within what is now the Haskayne School of Business at the University of Calgary where she also serves as director of the University's Risk Studies Centre. Norma's personal research efforts, which have produced nearly fifty publications, often have tackled policy issues relating to insurance and employee benefits. In addition to leading the University's efforts to coordinate and expand work in the area of disaster resilience, her current research efforts focus on estimating the cost of capital for insurers and examining alternatives that can be used to reduce the bankruptcy risk associated with private pension plans.

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