

**Insurance against Plan and Sponsor Failure:  
Examining Alternative Systems to  
Guarantee Private Pension Payments\***

Submitted to the  
Ontario Expert Pension Commission

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## Executive Summary

Bankruptcy risk accrues to pension plan participants if a plan sponsor fails when the pension plan is underfunded. This research examines the extent of that risk, alternative approaches to mitigating that risk, and offers considerations around the public policy decision regarding who bears the remaining risk. It reviews theoretical reasons for underfunding, including a review of the literature on incentive-based and capital-based explanations, as well as the approaches available – at least theoretically – to mitigate and manage the risk of sponsor bankruptcy.

The second section of the report summarizes the systems in place around the globe to handle pension default risk. The report assembles information on guarantee funds from other jurisdictions, approaches to pension default risk other than government-based guarantee funds, and approaches to protecting consumers from default risks in non-pension financial services. Attention goes first to the U.S. Pension Benefit Guaranty Corporation (PBGC) which applies to most defined benefit (DB) plans and has experienced multi-billion-dollar losses annually since the year 2000. Academic evidence suggesting that adverse selection and moral hazard are genuine issues in such funds is reviewed as are the most recent estimates of the PBGC's exposure from the Congressional Budget Office (2005). A summary of recent reform efforts, through the provisions of the *Pension Protection Act of 2006*, is provided with emphasis on changes to the PBGC.

Looking beyond North America, the report provides information about guarantee funds in other nations, viz. Germany, Japan, Sweden, Switzerland, and the United Kingdom. Alternatives to government-based guarantee funds are examined from other Canadian jurisdictions, the Netherlands, and Finland. Relevant elements of the banking literature and the insurance literature were reviewed for their insight into how providing insurance will lead to a potential increase in inappropriate risk-taking. For example, Kane and Demirgüç-Kunt's (2001) empirical examination of the effects of deposit insurance for banks led them to recommend characteristics for an insurance scheme that enhance market discipline and reduce moral hazard.

Section 3 of the report summarizes the major strengths and weaknesses of each of three public policy choices of mechanisms to manage the residual of plan sponsor bankruptcy:

- do nothing in advance,
- rely on private market mechanisms, or
- implement a government-based mechanism like a guarantee fund.

- These three alternatives are assessed in terms of their ability to deliver equity, effectiveness, and/or political viability.
- *Doing nothing in advance* by definition leaves the door open to *ad hoc* responses to circumstances as they develop. This has the advantage of being adaptable to each circumstance but may produce inconsistent results across jurisdictions, firms, and citizens.
- *Private market mechanisms* are perhaps the best way to use the full capabilities of the market to assess, monitor, and price default risk. It also adapts readily to changes in technology and circumstance. However, private mechanisms are limited in the type of risk reduction they can deliver effectively. Most importantly, private pooling mechanisms are not easily able to eliminate systematic risk, will be more readily available to some firms than others, and tie up capital in the economy in order to make private guarantee viable.
- *Government-based guarantee funds* have the advantage in providing protection that is by definition available to all firms. It has additional options available with which to manage risk intertemporally, e.g., by accumulating funds during a boom and running a deficit during a recession. A guarantee fund can assist in managing the expectations of retirees with respect to aid while simultaneously managing the expectations of plan sponsors as to the assessments that the system will require with the latter providing some assistance in managing contagion risk.
- Overall, the literature supports the notion of a government-based entity to provide pension protection, primarily because of the extent to which the risk of sponsor default is systematic in nature. Such a program should be established with an expectation that financial results will exhibit wide swings over time.

With these theoretical and global views as background, Section 4 of the report narrows its focus to look more closely at Ontario where the 1980 *Pension Benefits Act* established the Pension Benefits Guarantee Fund (PBGF). Ontario's PBGF, still the only guarantee fund to protect the pension promises of Canadian private employers, guarantees specified benefits, up to \$1,000 per month per member. The amount of claims payable with respect to already-terminated pension plans as of March 31, 2006, was reported by the PBGF to be \$104,064,000. That figure does not include any amount for claims that may arise from future insolvencies of sponsor employers.

Following this, the financial condition of the Ontario plans covered by the PBGF was examined. A regression model of plan assets per DB-plan participant finds that plan assets go up with real earnings of workers and down with higher unemployment; that level of assets also is moderated by the influence of taxes with higher plan assets observed when and where tax rates are higher. Several other factors help to explain the up or down movement of the per-participant asset level across plans and across time, including investment markets, plan design, and regulatory factors. Ontario-registered pension plans had on average \$17,816 less in asset value per participant. Beyond that, plans covered by the PBGF have an average of \$17,037 less per participant than other Canadian DB plans that are not backed by a guarantee fund. The latter result is statistically significant at the 1% level. Though regression results do not conclusively prove a causal relationship, the strength of these results suggests that, despite controlling for a number of sources of variation, the guarantee fund is either a cause or is highly correlated with something that causes Ontario plan sponsors to invest fewer dollars into their DB pension plans.

These statistical results support recommendations found in several places in the literature that, in order to avoid unwarranted incentives for risk-taking (moral hazard), pension benefit guarantee systems should follow a set of principles designed to operate in an economically efficient manner. The present PBGF does meet two of the required principles – it provides limited benefit coverage and operates within a system of consistent funding rules. Overall, however, the PBGF falls short of qualifying as an economically efficient pension benefit guarantee system because it does not have the effective risk-based pricing and probably does not have sufficient powers to prevent moral hazard.

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# **Insurance against Plan and Sponsor Failure: Examining Alternative Systems to Guarantee Private Pension Payments**

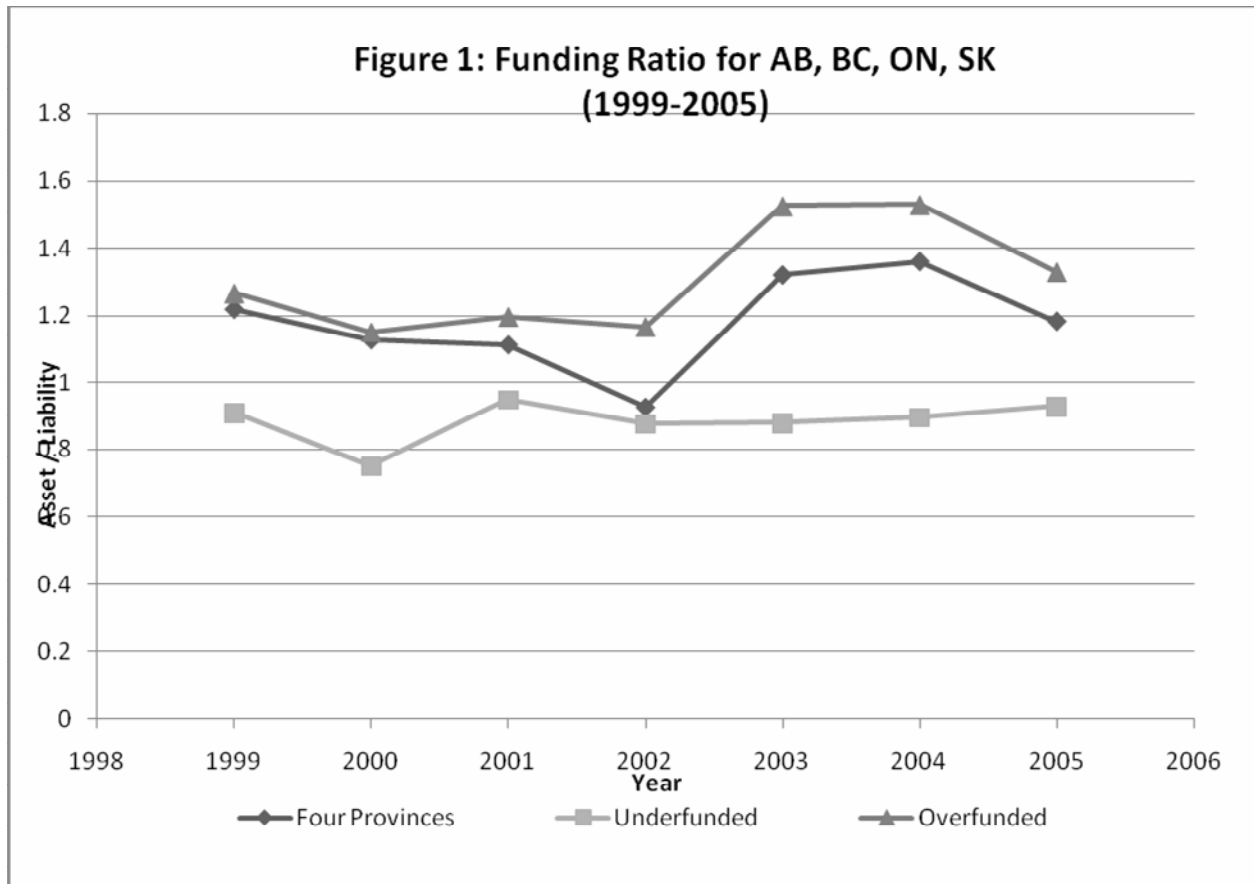
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“It goes without saying that a sound system of private pensions is important from the perspective of pensioners who rely on a given plan for their retirement income. For firms, a pension plan can help to attract and retain staff, and so the business community also counts on a sound pension system. And ... a sound pension system is important from the perspective of economic and financial market efficiency. ... Ultimately, it is crucial for all Canadians that our pension system function as well as possible.” David Dodge, 2007.

The very nature of a pension plan is that a promise is made in one period to provide income in a later period. When pension promises are broken, intense political pressure can arise. The financial consequences are intensified by the fact that affected workers have generally aged past the point where they can easily work to replace the promised income. Yet Canadian pension plans operate in the environment of a market economy where financial failures of plan sponsors are inevitable. If a firm has insufficient capital available to pay pension promises, then capital elsewhere in the system is put at risk. The questions being asked by this research mandate of the Ontario Expert Pension Commission is how much risk is too much and who could and does bear that risk.

A key reason that pensions involve risk is that the actual cost cannot be known with certainty. Pesando (2000) and others stress that it is impossible to ensure that pension funds are always fully funded, citing examples of sharp deterioration in investment returns, actuarial assumptions proving incorrect, or when financial instruments required to fully ‘immunize’ assets against liabilities are not available. Plan underfunding is the symptom through which the potential for default initially appears. Overall, the issue of underfunding in Canadian pension

plans is widespread but not universal. In 2005, 43.8% of all defined benefit plans in Alberta, British Columbia, Ontario and Saskatchewan<sup>1</sup> were underfunded; on average these underfunded plans had assets equal to 84.1% of their liabilities. Figure 1 graphs the level of funding found in these four provinces for the period December 31, 1999, to June 01, 2006.



## 1. Bankruptcy Risk and Pensions: The Theory

As always, a review of theory provides a good beginning point for development of sound policy for the risk associated with the possible bankruptcy of pension plan sponsors. Throughout this report, the terms *bankrupt* and *bankruptcy* are used in an economic sense, i.e.,

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<sup>1</sup> Data were provided at the plan level from these four provinces and represent 70.96% of pension plan membership in Canada in 2006. The author is grateful to the Financial Services Commission of Ontario and Departments of Finance of Alberta, British Columbia, and Saskatchewan for their cooperation and effort in supplying this data.

to mean firms with no remaining capital; when *bankruptcy* is intended in the legal sense, an explicit term such as *bankruptcy proceedings* or *CCAA* are used.

A discussion about how to manage the bankruptcy risk involves two distinct branches of the theoretical literature:

- Understanding the risk profile, i.e., understanding why underfunding occurs and who bears the risk associated with that underfunding; and
- Understanding the theoretical underpinnings of the most common approaches used to modify that risk profile. This most often takes the form of governmental action to protect the most vulnerable citizens from a portion of the risk they would otherwise be forced to bear.

The section is organized accordingly.

## ***1.1 Understanding the Risk Profile of Underfunded Pensions***

### **Theoretical Reasons for Underfunding**

Two branches of literature examine different reasons that economic theory predicts the underfunding of pension plans. These two branches of the literature are broadly classed as incentive based and capital based.

#### ***Incentive-Based Explanations***

The *incentive-based* research arises chiefly from the field of labour economics with early work by Lazear (1981) modeling pensions as a way to elicit worker effort. Ippolito (1985) went further and incorporated the tax benefits available to pension funding. His model, developed to explain why pension funds generally are underfunded despite tax incentives, has workers “depositing” with the firm the amount of wage reduction willingly incurred in exchange for pension promises. In this way workers become debtholders of the firm and, to the extent the pension plan is underfunded, bear the risk of losing some or all of their promised benefits if the firm loses viability. His theoretical model, developed in an environment that does not regulate

funding, explicitly examines the relationship between a firm and its (organized) workers. A firm facing financial difficulties also faces a situation where its ability to bargain with its workers changes. Specifically, the two parties refrain from cooperating – even though economically that would be the most efficient thing for them to do – because cooperation could give the other party increased bargaining power. Organization theorists use the term *holding up* to describe this circumstance; in lay terms it might be called a stalemate.

Albeit under a set of somewhat restrictive assumptions, Ippolito (1985) further demonstrated that funding ratios for plans covering unionized participants would be systematically lower than their counterparts in nonunionized firms. He proves that, at least when assuming a zero discount rate, the additional risks assumed through a pension arrangement are distributed in approximately the same fashion across workers as would be the higher wages one could expect to be negotiated with a firm that presents a higher risk of failure:

An underfunded pension can be naturally designed in a way to offset the gains in a proportional sense across worker cohorts; it even assesses the appropriate penalty on workers who are already retired at the point of firm failure but who nevertheless participated in the holdup (Ippolito, 1985 at p. 622-623).

### ***Capital-Based Explanations***

Another set of academic research outlines *capital-based* reasons for pension underfunding that arise from the field of finance. This stream of work focuses on optimizing behavior in an environment where positive interest rates are offered. D'Arcy et al. (1999) examine the special case of public pensions, notably examining organizations that do not themselves benefit (though their employees do) from the tax-favoured status of pension contributions. They conclude that a modest degree of underfunding is optimal under specific conditions, e.g., where pension costs are expected to grow at a slower rate than the tax base. The logical corollary for private pensions, though undocumented in the literature, would be that a modest degree of underfunding is optimal where pension costs are expected to grow at a slower rate than the productivity of the firm's workers. In both instances, the proportion of income being diverted to

cover pension costs remains smaller – and less onerous – because it will require the sacrifice of a smaller share of income in the future than would be required to fully fund the pension at the present time.

More recently Cooper and Ross (2003) developed theory that ties the existence of underfunding in defined benefit plans to undercapitalized firms. Their work shows undercapitalized firms prefer defined benefit plans precisely because they permit underfunding. However, a paradox emerges. When a benefit system requires funding to be higher in the future, the level of future earnings required for the firm to show a profit also increases. Therefore, underfunding in the present can distort future decisions by that firm to remain in business. Furthermore, by influencing funding levels and costs, both funding standards and the premiums charged by guarantee funds can indirectly affect the probability of a firm's decision to exit the marketplace.

## **Key Types of Risk**

A pension plan's risks are typically managed in a way that (a) minimizes the pension cost to contributors and/or (b) minimizes the risk of benefit reductions to beneficiaries. The main risks to which DB pension funds are exposed involve capital markets, including investment return, inflation, and interest rates. One key risk that does not involve investment markets directly is longevity risk.

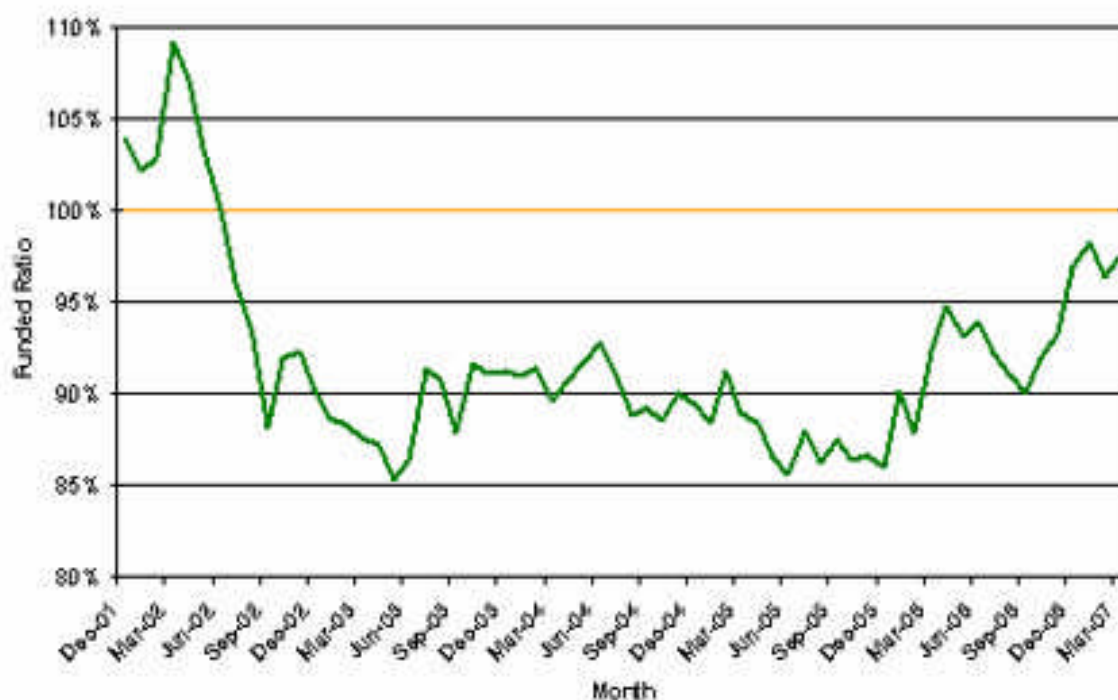
### ***Capital Market Risks***

A key characteristic of the capital market risks associated with pension plans is that, as a whole, the population of pension funds all face the same risk-return tradeoffs for their investments. When an investor shares the same risk as the full market it is referred to as systematic risk. Systematic risk in the capital markets affects pension bankruptcy risk because many pension sponsors will suffer poor earnings and weakened cash flow in times of economic

downturn. Similarly, all firms in all industries will see liabilities rise and income on assets fall when interest rates decline.

Inflation risk is closely related to interest rate risk as most economists view nominal interest rates as the sum of real interest rates plus inflation. High(er) rates of inflation result in high(er) rates of interest. This risk, at least from the perspective of the plan solvency, is managed in the capital markets through an investment policy that may incorporate a variety of approaches to hedging inflation.

**Figure 2: Funded Ratios of Typical Canadian Pensions**



Source: <http://www.watsonwyatt.com/canada-english/news/press.asp?ID=17257>

The volatility in the adequacy of pension funding (as measured by the funded ratio) that results from this combination of capital market risks is well illustrated in a model developed by Watson Wyatt Worldwide. Their so-called *Pension Barometer* uses actual market and interest rates from the past seven years to illustrate the ratio of assets to liabilities for a typical Canadian pension plan, measured on a GAAP accounting basis. Figure 2 shows the movement in funded

ratios as it moves in reaction to the combined impact of investment performance and interest rates for a fairly mature plan (50% of liabilities for active members, 50% for pensioners) with an asset mix of 60% in equities and 40% in bonds.

### ***Longevity Risk***

The longevity risk has proven far less amenable to sophisticated financial markets techniques than have the investment and inflation risks. At present, an efficient annuity market simply does not exist. As evidence of this, Blome et al. (2007) finds that in *none* of the countries studied did the value of plan liabilities correspond to the amount that would have to be paid to an insurance company in order to buy out the accrued benefits in case of plan termination. The fact that such annuities are capital intensive in most countries also makes them expensive. In the long run longevity bonds, which are just beginning to emerge in any meaningful quantity, may provide some additional management tools.

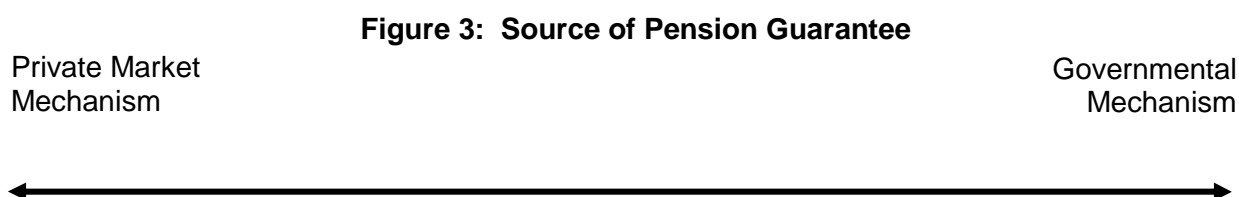
The importance and impact of this risk differs for going concerns versus pensions where the sponsor has disappeared into bankruptcy. The pension plan sponsored by a going concern will experience costs when longevity increases, but these costs occur gradually over time and can normally be absorbed within funding rules that cause the impact to be spread over an extended amortization period. However, such is not the case for a plan with a bankrupt sponsor. In this situation, the risk is that the plan will run out of money before all beneficiaries are deceased. Assuming no spreading of the risk to other parties, the longevity risk manifests itself as a loss that could eventually fall on those who live the longest.

## ***1.2 Mitigating the Risk of Underfunded Pensions***

This sub-section examines the alternative approaches available to reduce the amount of risk associated with the bankruptcy of pension sponsors. The focus of the public policy argument arises from a branch of economic inquiry that considers the major risk to arise from

the simple fact that workers with pensions have staked both their current and future income within a single firm. This risk is one that by definition cannot be diversified and is greatest for lifetime employees of a single firm (Bodie, 1996). The risk associated with lack of diversification is one that can readily be reduced by a pooling or insurance mechanism; it is no surprise that several such approaches have developed to protect workers from the risk of an employer's bankruptcy. Policy alternatives are discussed in terms of their equity, effectiveness, and political viability.

One dimension across which to consider protection mechanisms is the source, i.e., whether the protection is provided through private markets or through government-based arrangements. Though this dichotomy is used in the remainder of this section to organize information, it is entirely feasible that a practical solution could be devised using a combination of the two endpoints, creating a continuum such as the one illustrated in Figure 3.



### ***Ad hoc* bailouts**

Governments often face pressures to become more involved any time a political constituency is threatened. A threat to current and/or future pensioners is no exception. The question of bailout in the context of pensions is but one example of the *Samaritan's Dilemma* first described by Buchanan (1965). Stating that dilemma for the extant issue, how can society provide help to those whose pensions disappear through sponsor bankruptcy without inadvertently preventing those individuals from doing what they should to avoid being covered by a pension that cannot meet its promises? This question is examined below first for the

narrower question of bailing out of a pension plan as a separate entity; a discussion of bailouts for failing firms in a much broader sense follows.

### ***Pension Bailout***

Discussion of pension bailouts can only proceed in the context of the specific environment in which they operate. One tool used in public policy to help mollify the problems arising from ‘unrestrained altruism’ is the development of restraints. In the pension arena, funding standards and governance rules are obvious examples of the ‘responsible standards’ that are predicted in the theory developed around the Samaritan's Dilemma.

Another prediction of that theory is the emergence of an agency like the PBGF. That agency serves two purposes simultaneously:

- explicitly avoiding the need to respond to each difficult situation individually, and
- enforcing the belief that limitations on government response as imposed in that formal agency will be followed.

The likelihood and extent of *ad hoc* political response to problems in pensions are impacted directly by the existence (or non-existence) of a guarantee fund like the PBGF. For example, historically low interest rates in recent years caused a precipitous increase in plan liabilities that led to discussions in many jurisdictions (and actions in some) to lengthen the time allowed to amortize payments into a pension. Such action might be considered an *ad hoc* response, especially if it applies only to a single firm or industry; on the other hand, that same change, if applied to all firms, might be viewed as a change in the system's ‘responsible standards.’ Even this now-familiar example can be used to illustrate the point that such a policy change might be either more or less likely if the environment includes a guarantee fund like the PBGF. In that environment, the PBGF faces potentially larger claims if funding requirements are relaxed. That potential exposure of government and taxpayers to larger losses would impose a barrier to extended amortization periods. On the other hand, if there were no PBGF,

public policy could easily have been built in a way that relies even more heavily on funding regulations as the primary source of protection against the pension bankruptcy risk. That environment also imposes a barrier to extended amortization periods.

Both arguments are valid and there exists no theoretical or empirical evidence to determine which would be the stronger pull. Any conclusions that could be offered would be purely speculative. About all that can be stated definitively is that political responses develop on a situational basis.

### ***Firm Bailout Involving Pensions***

When discussions emerge about bailing out a firm, concern often focuses more intensely on the loss of jobs in a community than on problems with the firm's pension. Here the relevant question is whether the political response will differ if concerns also are present about the possible loss of pension benefits? Anecdotally, experts believe it has happened. The American government's bailout of Chrysler Corporation in 1980 was influenced heavily by the fact that, if the corporation did not survive, the PBGC would be the unhappy recipient of pension liabilities estimated conservatively at \$1 billion. Ultimately the government made a loan of \$750 million to Chrysler. That particular bailout may have been more difficult to engineer had the environment not included a large unfunded pension liability and a government-based guarantee fund.

More recently and closer to home, pension deficits at Algoma Steel Inc., Air Canada, and Stelco Inc., have forced those companies to seek protection from their creditors under the *Companies' Creditors Arrangement Act (CCAA)*. Contemporaneous press reports estimated PBGF claims for Algoma and Stelco could have exceeded \$1 billion if both companies had filed a maximum claim following insolvency (Vincent and Bomhof, 2004). In the case of Algoma Steel, the PBGF took over Algoma's obligations to its retirees and, in exchange, active employees gave up their protection under the PBGF (O'Reilly, 2004). The solution, which

experts view to be as much a bailout of the PBGF as it was of Algoma, also included regulations to extend the amortization period of Algoma's deficit to 15 years from the normal five years.

In the general context, the costs involved with a proposal to provide assistance to a failing business or some of its constituencies must ultimately be compared with the costs of not providing that assistance. Consider, for example, the event of a possible plant closure. The Canadian response would likely build around the existing Employment Insurance (EI) program. In past recessions, EI benefit periods have been expanded in recognition that the economic situation makes it more difficult than usual to find employment. Unless the economy is so depressed as to have depleted the EI funds to the point of jeopardizing that program's viability, a more extreme response is difficult to envision. In principle it would even be possible to extend a program like EI to cover deferred compensation (e.g., pensions or retiree medical coverage) in a fashion similar to its coverage of current compensation.

Short of that sort of major reorganization, however, it is once again impossible to predict the likelihood or strength of government response. Nothing in the literature offers guidance about whether unfunded pension promises make it more or less likely that the government will step in and prop up failing industries.

## **Private Market Mechanisms**

Numerous economic arguments suggest that, as a general principle, private insurance markets should be allowed to operate where they can be expected to function. For example, insurance markets provide incentives for efficient investment in risk mitigation, careful claims adjustment, and the development of capacity sufficient to satisfy demand. The foundations of insurance recognize, however, that some risks cannot be handled easily and well in the private marketplace. In the broadest theoretical terms, an ideal insurable risk:

- has a large number of exposure units,
- stems from losses that are accidental and unintentional,

- results in a loss that is both determinable and measurable,
- is not catastrophic in nature,
- has a calculable chance of loss, and
- carries a premium that is economically feasible.

Pension default risk comes close to meeting these criteria for insurability. Nontrivial concerns arise, however, about whether failure of a sponsoring firm is “accidental” and also whether the losses across firms are likely to be sufficiently correlated as to pose a potentially catastrophic exposure. Pesando (1996) argues that the correlated (systematic) risk makes it unlikely – or even impossible – for private markets to provide plan termination insurance. More recently, however, Ippolito (2004) has raised the possibility that developments in the sophistication of credit risk modeling and risk hedging products may have reduced those concerns to the point of irrelevance. Still, these questions relating to private pension insurance remain unaddressed by rigorous research. Based on the results of an inquiry by a major reinsurer that found no instance of private pension guarantee insurance having been issued anywhere in the world, the questions also remain unaddressed in the marketplace. Furthermore, indications from the federal solvency regulator in Canada (OSFI) are that it might not permit such products to be issued. In summary, while private pension insurance holds some theoretical potential to address sponsor bankruptcy concerns, it does not at present offer a readily available solution.

The remainder of this sub-section examines mechanisms through which private market mechanisms can be used to provide better information about pension default risk and how private market instruments can be used as contingent assets that provide additional protection against the default risk.

## ***Ensure Pensions are Considered in Market Assessments of Credit Risk***

Recommendations can be found from several sources going back fifteen years that public policy should be changed to improve the rights of pension plans (or proxies like the PBGF) in bankruptcy proceedings. For example, Arvin and Lanoie (1993) recommended that policymakers should, at a minimum, redefine the position of the PBGF in bankruptcy proceedings rather than allow it to continue its position behind preferred creditors and, in most instances, find itself not represented on creditors' committees. Weaver (1997) described an increase in the priority for pension claims in bankruptcy as a market mechanism that will cause creditors to exert pressure on companies to properly secure their pension promises. Bonnar and Service (2004) recommended that pension deficits be given the same status as unpaid wages. The crux of the arguments by these experts is that improved incentives would encourage bond rating agencies and creditors to monitor pension solvency and to explicitly incorporate pension concerns into their assessment and pricing of a firm's credit. Such a change, while it could be an effective long-term policy, would require a transition period in the financial markets that almost certainly would involve disruption.

Actual modification of how pension rights are reflected in bankruptcy proceedings would, require changes that are far removed from economic theory. Current policy is a creation of statute and can be changed by statute. In fact, a wide range of alternatives are possible.<sup>2</sup> One policy alternative for policymakers to consider falls squarely between the status quo and the

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<sup>2</sup> The author's statements here are intended to suggest only that the overlap of policy concerning the bankruptcy system has a place in a comprehensive review of pension policy. They are not intended to suggest that reforms emerging from the present review in the Province of Ontario will be able to effectively change the priority of pension trusts or its own PBGF. Certainly the principle of paramountcy would give priority to a federal law, such as *the Bankruptcy and Insolvency Act* (BIA) and *Companies' Creditors Arrangement Act* (CCAA), over any provincial statute. However, the question of whether pension plan members should remain essentially on par with unsecured creditors is included here for completeness. If policymakers chose to pursue a change in that status its implementation would require a different approach -- and probably a longer timeframe -- than changes that can be implemented by any provincial legislature alone.

higher priority recommended by the authors cited in the previous paragraph. The pension fund and/or the PBGF could be prioritized at the *same* level as bondholders in the distribution of assets in bankruptcy. Within the “and/or” of the previous sentence is a rich range of policy choices. For example, granting priority to the pension guarantee fund (only) rather than the pension fund would have the effect of granting added protection in bankruptcy only to the guaranteed level of benefits (rather than to all benefits). A policy change of such limited scope would likely be less disruptive to debt markets than a change that increased the priority of a broad set of pension benefit rights.

### **Contingent Assets**

The role of contingent assets in pension funding has expanded during recent times in some jurisdictions. Since passage of the *Pensions Act* in 2004, negotiations between plan sponsors and pension trustees in the U.K. have increasingly resulted in the use of contingent assets to strengthen security for pension benefits while maintaining flexibility for the sponsor’s capital. These arrangements, while subject to approval by the pension regulator, are actively encouraged to a degree not observed elsewhere. Contingent assets can take a range of forms, but the most important possibilities include a guarantee from another company or companies in the group, financial guarantees like letters of credit, an escrow account that segregates cash until no longer needed, or the granting of security in specific corporate assets (Dale, 2007).

Of these contingent assets, only one is being used here in Canada, viz. the financial guarantees. Here the private financial services market can offer a range of products to directly guarantee pension promises. Such guarantees could be provided by a bank, life insurance company, or property-casualty (P/C) insurance company. For example, banks can provide letters of credit that back funding promises, life insurers can provide annuity products that incorporate guarantees that funding is sufficient to meet benefit promises, and, as mentioned above, P/C companies could theoretically offer financial guarantee products.

In 2005, the province of Québec became the first jurisdiction in North America to incorporate these modern financial guarantees into its pension law.<sup>3</sup> That law provided a funding extension to private plan sponsors under specific conditions, one of which could be the employer providing the pension committee “with a guarantee, such as a letter of credit, established in accordance with the regulations.”<sup>4</sup> Further legislation in 2006 made permanent the provisions for the use of a letter of credit but apparently removed the possibility of using the broader range of financial guarantee instruments.<sup>5</sup> The relevant section of the *Supplemental Pension Plans Act* now reads as follows:

**42.1.** Under the conditions prescribed by regulation, an employer may, upon providing the pension committee with a letter of credit established in accordance with the regulations, be relieved of paying all or part of the portion of the employer contribution related to an amortization payment determined for a fiscal year of the plan in relation to the solvency deficiency.

Under the Québec law the total amount of such letters of credit may not exceed 15% of the value of the liabilities of the plan. For purposes of determining plan solvency the guarantee is a *contingent asset* that adds to the assets of a pension plan. At the same time this contingency creates an asset for the pension plan, it may create an offsetting liability on the

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<sup>3</sup> The regulator of Canada’s federally registered pension plans (the Office of the Superintendent of Financial Institutions) is in the process of developing similar letter of credit rules. Similar rules, originally proposed by Alberta Finance in 2005, were not included in that province’s eventual legislation; Alberta has suggested it will bring in similar rules at a later time.

<sup>4</sup> Enabling regulations appeared in *Gazette Officielle du Québec* on August 24, 2005 (Vol. 137, No. 34, p. 3439). In combination, the legislation and regulation provided details such minimum criteria for the letter of credit and its issuer. The instrument must, for example, include terms with respect to automatic renewal and payment in the event of nonrenewal and a stipulation that the amount payable under the letter of credit will be paid to the pension fund upon presentation, before expiry of the letter, of a written payment demand signed by the person authorized by the pension committee to make the demand. Furthermore, the issuer must:

be a financial institution that is authorized in Québec (or in another place in Canada where the relevant reciprocity agreement is in place); have an “A” quality rating from Standard & Poor’s or an equivalent specified in the regulations.

<sup>5</sup> Such instruments specifically include guaranteed issue annuities and surety contracts such as those seen in Sweden. Discussion of the full range of possible financial guarantee products is beyond the scope of this report.

sponsor's books.<sup>6</sup> One important characteristic of using these financial instruments as contingent assets in a pension is that the risk is priced in the private market and, if called, the costs will lie with the private market and not with other plans or with taxpayers.

While letters of credit are commonplace tools in corporate finance, the insurance products are less widespread and, as a result, less well understood. Several jurisdictions<sup>7</sup> explicitly allow "guarantee insurance" (or «assurance-cautionnement») in their respective *Insurance Acts*. Generally this is defined as “the undertaking to perform an agreement or contract or to discharge a trust, duty or obligation on default of the person liable for the performance or discharge or to pay money on the default or in place of the performance or discharge ...”

Whatever financial tool a pension plan sponsor may select, that instrument in Canada is backed, at least to a limited extent, by the guarantee mechanisms in place for these respective types of financial institutions. Bank promises are backed by the Canadian Deposit Insurance Corporation (CDIC), life insurer promises are backed by Assuris<sup>8</sup>, and contracts issued by P/C insurers are backed by the Property and Casualty Insurance Compensation Corporation (PACICC)<sup>9</sup>. Clearly, considerable effort has been expended in the Canadian marketplace to

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<sup>6</sup> A significant difference exists across jurisdictions on this point. For Federally registered plans, as well as any of about five provinces, employers can wind up a DB plan with no obligation to pay for the deficit. In the other five jurisdictions, including Québec and Ontario, employers who wind up a DB plan remain responsible to pay any deficit.

<sup>7</sup> Such a reference appears in NWT, SK, Yukon, and NL although the latter does not define the term(s) when it is used.

<sup>8</sup> Assuris's guarantee also applies to funding that has been set aside for pension plans that are funded with group accumulation annuities and/or group segregated funds purchased from a life insurance company. Assuris backs retirement accounts in both the accumulation stage and payout stage. Specifically group accumulation annuities are guaranteed to retain 100% of the accumulated value up to \$100,000. In the payout phase, a group payout annuity is guaranteed up to \$2,000 per month or 85% of the Monthly Income benefit, whichever is higher.

<sup>9</sup> Currently the “ceiling amount” for claims that will be paid in full by PACICC is \$250,000; additional amounts may be available if sufficient resources have been recovered from the bankrupt insurer but are not guaranteed.

develop confidence in private financial solutions that may be considered viable; the infrastructure exists to make them worthy of serious consideration.

In the final analysis, while this backing brings additional diversification benefits to the pension bankruptcy risk, it does not completely eliminate the risk. Because of the limits placed on guarantees from CDIC, Assuris, and PACICC, the risk of default by a pension plan sponsor above those limits remains. One must conclude, therefore, that the residual default risk is marginally greater than would be associated with a government-based program.

### **Government-Based Guarantee Funds**

Several branches of literature examine the reasons why various jurisdictions have attempted to modify the basic economics underlying underfunded pension plans and/or to become involved in reducing the risk of underfunding to pension participants. One theory that supports the development of systems to bolster the pension market deals with *fragile markets*. That theory supports the establishment of guarantee funds across sectors, e.g., deposit insurance in banking, to provide general support for trade by increasing confidence in the financial system. Similarly, pension guarantees provide confidence to workers whose concerns about the long-term viability of their pension sponsor may otherwise induce them to leave the firm or demand higher wages.

Governmental policies to modify or manage pension underfunding risk have been manifested primarily as pension regulation and the offering of pension guarantees. One charge of this report is to explicitly consider the latter. In some of the earliest extant work, Langetieg, Findlay, and daMotta (1982) modeled pension guarantees using contingent claims techniques. Later research eases some of the more restrictive assumptions found in the earliest analyses, such as requiring knowledge about the term to maturity of the guarantees. When Ippolito (1985) introduces inflation into the theoretical model, a large divergence appears in bankruptcy between the legal liabilities of a pension plan and the economic value of pension promises

made.<sup>10</sup> In such an economic market, workers face real losses even from plans that are fully funded on a nominal basis. He presented the first theoretical framework under which a government-based program of pension insurance emerged.

Once research moved past theory and into an examination of practical models for guarantee funds, theory began to illuminate the advantages and disadvantages of such a program.

### ***Advantages of Government-Based Guarantee Funds***

The key argument in favour of government involvement in a pension guarantee scheme is the greater ability of a societal body to address problems associated with systematic risk. A governmental entity may be the only type that can handle tremendous swings in losses across both economic booms and recessions. For this reason, however, any guarantee fund that is established should be accompanied by an expectation that those swings will occur.

Another advantage of a government-based guarantee fund is its ability to manage expectations in advance of a default event. The formality of such a fund, to the extent it caps the amount of benefits guaranteed, offers a credible way to place limits on the extent to which government will help address a specific type of problem. The structure of a formal pension guarantee fund also provides a known limit on the extent to which others will be expected to assist. Specifically in the case of defined benefit pensions, it limits the extent to which sponsors of other DB plans will be asked to contribute.

Furthermore, knowing the limits of the costs of a shock to government and to others a priori effectively reduces the likely spill-over effects to other firm(s) in a way that ad hoc responses cannot. Such spill-over effects, called contagion effects by economists, have been

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<sup>10</sup> This finding is an important one for Canadian public policy because the difference under most Canadian pension laws between the going concern liability of a plan and its windup liability is increasingly recognized, if not as a source of problems, at least as a source of confusion.

studied most extensively in the context of bank runs. There the phenomenon of concern is that one financial failure can spawn anxiety that other institutions also are about to fail. In the case of insurance or pensions, however, the effect is less obvious. Such long-term financial protection arrangements are structured in a way that makes it far more difficult to get money out. They also make it somewhat more difficult to grasp the concept of contagion. A simple erosion of confidence likely is not sufficient to trigger additional failures in an environment characterized by formal requirements for capital/funding. However, the system of guarantees itself can be a source of contagion. With a default other firms in the guarantee fund begin to anticipate ex-post assessments. Should that assessment be anticipated to be especially large, whether because of a single large failure or a series of smaller ones, it can cause liquidity problems for other plans and for the sponsors of those other plans. Those added costs remove assets from all other plans in the guarantee fund, thereby reducing the funded ratio of each and every plan. Of the added costs cause other plans to terminate, the spiral may continue.

Such contagion effects are generally viewed to include two important components – a change in the valuation of other firms based on new information and an effect that appears to be spread randomly across unrelated firms and is unsupported by market data. Brewer and Jackson (2002) provide the first modern contagion study that attempts to measure the relative importance of informational content versus pure contagion. They conclude that, while informational content is more important than pure contagion, the pure contagion effect does exist. Furthermore, it exists to a greater extent within an industry than across industries. In the pension environment this means we should expect that terminations can and will occur because of fear of additional terminations. A government-based guarantee fund for pensions is a viable tool to assist in management of the uncertainty around the potential assessments and, therefore, management of the contagion risk.

## ***Disadvantages of Government-Based Guarantee Funds***

The main theoretical argument against a pension guarantee fund is moral hazard – a situation whereby the existence of insurance actually increases the losses against which the insurance provides. Government-based insurance increases concern that pension sponsors will not have appropriate incentives to engage in risk mitigation. This form of moral hazard is the crux of the so-called “Samaritan’s Dilemma” (Buchanan, 1975). In the U.K.’s development of its pension insurance scheme in 2004, for example, Young (2006) identified three separate types of moral hazard that were considered:

- The number of claims facing the guarantee fund will increase if employers dump plan liabilities
- Pension plan benefits may be manipulated before entry into the guarantee fund to maximize the level of compensation payable to some or all participants
- The cost of claims by employers may increase if firms can legally reduce the claim held by the guarantee fund on the employer in the event of insolvency. An example would be the shifting of sponsor assets to another jurisdiction, thereby putting those assets beyond the reach of the guarantee fund.

The first of these is an issue of the frequency of claims; the latter two are issues of claim severity.

Another argument against a pension guarantee fund is that it may reduce the efficiency of the economy. By definition efficiency is enhanced by a guarantee fund when the benefit produced to those made better off exceeds the cost to those made worse off. Ippolito (1985) observes that, for some ranges of fundedness, a government pension guarantee increases the power of unions to extract additional resources for its members by recognizing that some amounts still will be received even if a firm fails. Empirical results in Ippolito (1985) for the period 1978-1983 find unionized plans are twice as likely<sup>11</sup> to be the recipient of a transfer from

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<sup>11</sup> The overall probability of receiving a transfer in Ippolito’s sample is 4.5 percent; unionized plans have a probability of 9.1 percent.

the governmental guarantee. Similarly, failing firms and workers associated with poorly funded pension plans may find it mutually beneficial to collude to terminate the plan in order to obtain the transfer amount from the government pension insurance.

Using the theory of optimal contracts, Cooper and Ross (2003) demonstrate theoretically that participation in a guarantee fund – public or private – can make some firms worse off by forcing strong firms to subsidize weak ones. Other research indicates that governmental guarantees tend to increase equity values and subsidize wages at firms in financial distress. In the extreme cases, it keeps some otherwise insolvent companies afloat. It is a source of genuine concern that steep increases in the premium charged for a guarantee system could accelerate the move away from the provision of pensions in general and away from defined benefit plans in particular.

In addition to the problems of moral hazard that face all guarantee funds, some funds are organized in a way that forces them to assume additional investment risk because they take over existing plan assets from failing firms. In effect, the guarantee program inherits the portfolio risk of a sponsor whose investments did not succeed in reaching funding targets. This risk occurs because the agency now owns the assets, a fact that does not change depending upon whether the invested assets are managed internally or externally. Such risks are characteristic of guarantee funds in the US and UK.

Ontario's PBGF does not take on the assets of plans and so has less exposure to this type of investment risk. Such a system has potential exposure to additional uncertainty from the asset management choices of plan sponsors. When the guarantee is designed to evaluate the amount of supplemental funds needed at one point in time, the risk is greater that supplement will be insufficient if the guarantor has no control over the investment of the funds it is supplementing.

Finally, it is extraordinarily difficult to manage the pension bankruptcy risk inside the borders of one political jurisdiction when so many factors outside that jurisdiction influence the success or failure of the plan's sponsor. Clark (2003) summarizes this source of exposure:

“In a world of national economies, and competitive stability between national corporations and whole industries, it was widely believed that these insurance institutions would face only idiosyncratic risks of default (isolated instances of corporate failure). However, as domestic manufacturing industries have been exposed to increasing international competition, it is apparent that these institutions have had to deal with large-scale systematic risks of default”(pp. 233-234).

## 2. How Default Risk is Managed Globally

A review of how other jurisdictions and other industries address the pension sponsor bankruptcy risk is provided to assist in the development of policy for Ontario. This section takes readers on that tour and attempts to identify some additional ideas and concepts that may fit the circumstances of Ontario. A summary of important systems also is offered in Table 1.

<b>Country (program)</b>	<b>Who is covered</b>	<b>Coverage amount</b>	<b>Premium/ Cost Structure</b>	<b>Claim process</b>	<b>System status</b>
<b>US</b> (Pension Benefit Guaranty Corporation)	Participants in private DB plans.	Vested benefits up to a \$44,300 [annual] maximum.	Charge based on number of participants and underfunded amount.	Assets and liabilities taken over in case of corporate bankruptcy.	Surplus of \$7.7bn in 2001 eroded to a deficit of \$23.3bn 2004.
<b>Canada – Ontario</b> (Pension Benefit Guarantee Fund)	Participants in private DB plans.	Vested benefits up to CAD 12,000 annual maximum.	Charge based on number of participants and underfunded amount.	Cash allocation made to plan administrator to cover guaranteed benefits.	CAD100m deficit, with several further large potential claims pending.
<b>UK</b> (Pension Protection Fund)	Participants in eligible DB plans (this will include some public sector schemes that do not have a full crown guarantee).	Pensioners, survivor and ill health pension at 100% (subject to a review of the rules of the scheme), with increases in accordance with PPF rules. Under	Administration and fraud compensation flat based levies. To fund compensation payments: an initial levy (in year 1) and then a scheme	Assets and liabilities taken over in case of corporate bankruptcy.	PPF proposed to be in place from April 2005. Government estimates GBP300m annual funding to be raised.

		pensionable age, 90% capped (estimated GBP 25,000) – again increases subject to PPF rules.	based and a risk based levy. Ultimately the risk based levy must collect at least 80% of the total.		
<b>Germany</b> (Pensions-Sicherungs-Verein)	Participants in book reserve, support fund or pensionsfonds financed plans.	Statutory vested benefits up to €86,700 annual maximum.	Charge is a % of liabilities, and reflects experience in prior year.	Insolvency of a Member company triggers annuity purchase.	Ex post premium ensures ongoing solvency of PSV.
<b>Sweden</b> (Forsakringsbolaget Pensionsgaranti)	Contractual coverage of white collar employees.	Full benefits.	Charge is % of liabilities; collateral required if insolvency risk deemed high.	Insolvency of a member company triggers annuity purchase.	End of 2003 reserves of \$1.7bn and potential insurance exposure of \$15bn.
<b>Switzerland</b> (sicherheitsfonds BVG)	Participants in DB and Swiss-style DC schemes.	100% of Government-mandated minimum benefits; Additional benefits are subject to salary cap.	Charged based on liabilities.	When pension plan declared insolvent, annuities are purchased.	Reserves of CHF 300m in early 1990's have eroded to CHF19m.
<b>Japan</b> (Pension Guarantee Program)	Members of EPF.	0.3x substitutional component and half of any benefits in excess of this amount.	Premiums related to size of company, size of benefit and risk adjusted for level of underfunding.	Unclear what events trigger a claim.	Reserves of Y30bn.
<p>Reproduced with permission from Stewart, F. (2007), "Benefit Security Pension Fund Guarantee Schemes", <i>OECD Working Papers on Insurance and Private Pensions</i>, No. 5, OECD Publishing.</p> <p>Notes:</p> <ul style="list-style-type: none"> <li>- Some conversion amounts to US dollars have been omitted from the original because of dramatic shifts in those values since the report's publication.</li> <li>- Additional details about Ontario's PBGF can be found elsewhere in this report.</li> </ul>					

## **2.1 Pension Guarantee Funds**

A number of nations around the world have opted to manage the bankruptcy risk facing their citizens by directly establishing guarantee programs. This section reviews the provisions of six such countries.

### **The United States**

Globally the guarantee system that is perhaps most similar to Ontario's guarantee fund is the one adopted in the U.S. in 1974. The Pension Benefit Guaranty Corporation (PBGC), which some argue arose in part because of problems with previous private guarantee funds, was established by The *Employee Retirement Income Security Act (ERISA)* with a mission:

- To encourage the continuation and maintenance of voluntary private pension plans for the benefit of their participants,
- To provide for the timely and uninterrupted payment of pension benefits to participants and beneficiaries under plans, and
- To maintain premiums ... at the lowest level consistent with carrying out its obligations.

In 2005 the PBGC insured 44.1 million participants in 30,336 defined benefit plans. In that same year the agency collected \$1.5 billion in premiums and was managing accumulated assets of \$57.6 billion. It was making payments to 697,910 retirees and, in 2004, suffered a net loss of \$12.1 billion.<sup>12</sup> That annual deficit figure represents about two percent of the pension assets held by 100 of the largest U.S. defined benefit pension plans and approximately one year's annual pension cost for these plans large plans (Ehrhardt, LaBombarde, and Morgan, 2007). Additional statistics from the PBGC are presented in Table A1 in the Appendix.

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<sup>12</sup> These results followed on the heels of record losses of US\$11.4 billion in 2002 and US\$7.6 billion in 2003 (PBGC, 2005). Ehrhardt et al. (2007) reports the results of Milliman's seventh annual study of the financial reports of 100 large U.S. corporations that sponsor DB plans. As a group, these companies had pension plan assets of almost \$1.3 trillion and annual pension costs of \$26.4 billion.

The PBGC's official estimate of its total liability in 2005 was \$80.741 billion. Holtz-Eakin (2005) reported estimates by the Congressional Budget Office that the cost of honouring that PBGC guarantee will be \$71 billion in the first decade and \$91 billion over 20 years. He further testified that "the underfunding of defined-benefit pension plans is a pervasive and sizable phenomenon." Though articulating that the PBGC is not, as a matter of statute, backed by the full faith and credit of the U.S. government, he states on the record that "as a practical matter ... the public probably views the pension insurance system as carrying an implicit federal guarantee."

Hoping that changes in policy can mitigate future costs and perhaps increase the recognition of risk used in premiums, the U.S. adopted the *Pension Protection Act of 2006 (PPA)*. This law amends the *Employee Retirement Income Security Act (ERISA)* to implement new rules for pension plans. *PPA* improves the accuracy in the measurement of pension liabilities and funding requirements and increases public disclosure of plans' funding status as well as establishing new minimum funding standards for single-employer defined benefit pension plans, single-employer money purchase plans, and multi-employer plans.

### ***Single Employer Plans***

Single-employer plans (SEPPs) dominate the PBGC guarantee program, largely because of their sheer scale. In 2005, SEPPs represented 77.6 percent of insured participants, 98 percent of the program's assets, and 98 percent of its liabilities. Much of the literature on the PBGC examines the adequacy and appropriate level of premiums to charge plan sponsors for the public guarantee. Many of those studies, such as Niehaus (1990), VanDerhei (1990), Hsieh, Chen and Ferris (1994), and Pennacchi (1999), focus on the SEPP system. Boyce and Ippolito (2002) provide one of the most recent and most comprehensive studies of pricing adequacy. After examining the shortcomings of net present value and options pricing formulae for estimating the cost of the PBGC guarantees, they use Monte Carlo methods that "model the

insurance program in its full complexity” to estimate the cost of that protection and characterize the nature of subsidies implicit in the program. They find the “full cost” of the insurance, including the value assigned to market risk, is approximately \$24.60 annually per \$1,000 of insured exposure. This compared with PBGC premiums (including a “fixed” per-participant charge) that at the time of their writing provided approximately \$4.60.

One other study, Wilcox (2006), developed detailed recommendations for reform including recommendations that were very specific to the U.S. law at the time as well as other recommendations that are more generalizable to pension system financial standards outside of the U.S., e.g., determining required contributions over a reasonably short time period on a mark-to-market basis, restricting the ability of sponsors with unfunded liabilities to increase benefits, and encouraging plans to actively immunize their asset portfolios against interest rate risk. All of these academic studies were available to policymakers at the time the *Pension Protection Act* was being drafted.

The ensuing political process produced 900-plus pages of legislation that is considered the most comprehensive reform of pension laws since ERISA was passed in 1974. The legislation includes several important changes to pension funding:

- Alters the calculation of both assets and liabilities when determining how well a plan is funded.
- Asset smoothing is reduced from five years to three with the additional requirement that the smoothed value must fall within a corridor of 90% to 110% of the fair market value of the assets.
- Liabilities will be valued on the basis of a three-segment yield curve. The new yield curve will be based on a 24-month average of the yield on investment grade corporate bonds of varying maturities in the top three quality levels. The segments are intended to match the durations of the liabilities owed plan participants and beneficiaries over the first five years, the following 15 years, and those due in year 21 and thereafter. There will be one interest rate assigned to each of the three segments. The new yield curve will phase in by 1/3 in 2008, 2/3 in 2009, and fully in 2010.

- Prescribes a funding target of 100% for plans that wish to avoid being required to employ faster funding under the Deficit Reduction Contribution (DRC) rules.<sup>13</sup> Starting in 2008, plans that are not 100% funded must amortize any shortfall over seven years.
- Allows significantly higher tax deductions for pension contributions. In 2006 and 2007, the limit increased to 150% of current liability. Beginning in 2008, a formula will determine the maximum contribution available to pension plans; that formula will provide approximately an additional 50% of funding room that is tax deductible. Deduction limits for sponsors with both a defined benefit and defined contribution plan also have been eased.

The *Pension Protection Act* paid additional attention to managing the bankruptcy risk with certain underfunded plans, i.e., those deemed to be “at-risk” under the *Act*, by requiring that they accelerate their funding beyond the increased amounts under the new rules. Such plans *may* be prevented from making lump sum distributions and, in addition, may not increase benefits if the plan is less than 80% funded (unless those benefits are paid for immediately).

Complementing this new financial standards environment, changes also occurred with respect to the PBGC. Following an increase in the basic flat-rate premium to \$30 in 2005<sup>14</sup>, the *Pension Protection Act* expanded the PBGC’s variable rate premium (VRP). Liabilities for this purpose are now measured using a spot yield curve and plans that have a funding shortfall pay a VRP of \$9 for each \$1,000 of underfunding after 2007. The *Act* also makes permanent the \$1,250 premium per participant that is paid for three years by certain terminated plans which transfer their liabilities to the PBGC.

Completing the scope of changes in *PPA* are expanded *ERISA* disclosure requirements. More information about plan finances must be given to participants and plans are required to provide warnings about PBGC’s guarantee limitations.

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<sup>13</sup> Except for plans subject to the DRC in 2007, the 100% funding target is being phased in. Those plans face a 92% target in 2008, to 94% in 2009, 96% in 2010, and at 100% in 2011.

<sup>14</sup> This change occurred as part of the *Pension Security and Transparency Bill* of 2005.

## **Multi-Employer Plans**

The funded ratio for multi-employer plans, at 77.6 percent, is slightly higher than the 71 percent funded ratio observed for single employer plans in the U.S. The first impression, then, is that multi-employer plans (MEPPs) expose the PBGC to slightly less risk than SEPPs. On the other hand, under the *Multiemployer Pension Plan Amendments Act (MPPAA)* of 1980, MEPPs are the only entities that can apply for direct financial assistance under *ERISA*.<sup>15</sup> A PBGC-insured multi-employer plan that is unable to pay guaranteed benefits when due will be provided a loan that allows payment of guaranteed participant benefits and reasonable administrative expenses. The PBGC has broad discretion to set the conditions for this financial assistance, but typically will require that the loan will be repaid if the plan's financial condition improves and that benefits be paid only at the guaranteed level. The PBGC's loan is collateralized, e.g., by employer contributions, withdrawal liability payments, and other plan assets, and is conditional upon the granting of broad audit authority over the plan. Grants of such financial assistance have amounted to \$191 million since the founding of the PBGC.

Going forward, the *Pension Protection Act* did not change funding rules as drastically for multi-employer DB plans as it did for their single-employer counterparts. However, the *Act* did reduce the permissible amortization period to 15 years (from 30) for supplemental liability associated with plan startup and benefit amendments. Underfunded plans that fall into one of two categories:

- Plans that are less than 80% funded or that expect to have a funding deficiency in the next six years are considered "endangered" plans. These plans will need to develop a "funding improvement plan" with improved plan funding subject to bargaining.
- Plans less than 65% funded that face certain types of insufficiencies, e.g., a projected inability to pay benefits, are known as "critical" plans. These plans will need to develop a rehabilitation plan to correct funding over a ten-year period. The initial plan is to be based on a cutback of future accruals to a level that can be supported by current

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<sup>15</sup> SEPPs may apply for a waiver of funding requirements, but not for financial assistance.

contribution levels; if that is insufficient, a second plan would be based on an increase in contributions.

are subject to special requirements. Employer surcharges apply once a plan enters critical status; the surcharge is 5% the first year and 10% until certain criteria are met under the rehabilitation plan. The *Act* increases the maximum tax-deductible contributions to a multi-employer plan to 140% of current liability. Further, beginning in 2006, the provision limiting tax deductibility of contributions by plan sponsors who maintain both a defined benefit and a defined contribution plan will no longer apply to multi-employer plans. The deductibility of contributions to plans of both types became the simple sum of the allowable contributions for the plans of each type.

## **Germany**

Der Pensions-Sicherungs-Verein Versicherungsverein auf Gegenseitigkeit (PSVaG) is the guarantee scheme covering most pension obligations in Germany. It is not a government entity but rather a self-financed organization of employers established in 1974 (Hoppenrath, 2006). Insolvency insurance covers four different types of financing for employee pension benefits:

- The direct pension pledge within the book-reserve-system
- The support fund (Unterstützungskasse)
- Direct insurance with revokable rights or policy loans
- Benefits backed by a separate pension fund (since 2002). Where this additional funding is used, contributions to the guarantee fund are reduced to 20% of what they would otherwise be (Hoppenrath, 2006).

The system excludes those funded with pension trusts and direct insurance with irrevocable rights. Benefits protected under the insolvency insurance include pensions in the course of payment and benefits that have vested at the time of bankruptcy. Employee claims are considered legitimate even if the insolvency is caused by misconduct that rises to the standard of criminal actions and even if the employer failed to pay PSVaG contributions when due. The

PSVaG covers existing benefit entitlements by paying the single premium necessary to purchase annuity contracts from the consortium of life insurance companies. Employers are obligated to provide the necessary means to finance the insolvency insurance on a pay-as-you-go basis under the Improvement of Occupational Pensions Act (*Gesetz zur Verbesserung der betrieblichen Altersversorgung* (BetrAVG)).

Organizationally the PSVaG is a mutual insurance corporation with the powers of an institution of public administration to, for example, levy fines for non-compliance. The fund does not pay guaranteed pensions directly, but rather uses a consortium of life insurance companies that share the annuity business (Ahrend, 1996). This solution is similar in many respects to assigned risk pools developed in North American countries to ensure availability of mandatory insurance coverages like workers compensation and automobile liability insurance. It spreads risk efficiently while protecting each member company from an unmanageable share of adverse selection.

## **Sweden**

ITP (Industrins och handelns tilläggspension för tjänstemän) is the main pension system for white collar workers in Sweden's private sector. ITP pensions that choose a funding method other than full insurance must be covered by the Pension Guarantee Mutual Insurance Company (FPG). Uniquely, it is Swedish trade unions and not the government that require plans to subscribe to the guarantee system. Also interesting is the fact that only creditworthy companies (or those who can provide collateral) are allowed to belong to the non-governmental arrangement. On average a far higher percentage of bankruptcy claims are recovered in Sweden than by other guarantee systems, primarily because of surety bonds provided by parent companies domiciled in other countries (Stewart, 2007).

## Switzerland

The Sicherheitsfonds BVG was established in 1986 by the federal government as an independent public foundation and is one of the few guarantee schemes found anywhere globally that covers both DB and DC plans. Reflecting the strict legal separation of pension funds and sponsoring companies in that country, the SBVG provides protection on the bankruptcy of the pension fund itself. It may sue trustees or fund managers where insolvency occurs due to fraud (Stewart, 2007).

## United Kingdom

Historically the UK provided insurance implicitly for pensions through a commitment to absorb them back into the public system if the sponsoring company went bankrupt. However, after some 65,000 workers lost large amounts of their pension benefits due to bankruptcy of plan sponsors, an explicit pension guarantee fund, called the Pension Protection Fund (PPF) was introduced in 2005. The mission of the Board of the Pension Protection Fund is to “promote increased confidence and set reasonable expectations for members of UK defined benefit pension schemes by:

- Paying the right people the right amount at the right time;
- Prudent and effective management of our investments to meet future obligations;
- Setting and collecting a levy which is appropriate and proportionate, balancing employer and member interests;
- Communicating clearly what we do and why” (Pension Protection Fund, 2007)

The PPF Compensation formula covers

- 100% of the pension entitlement for those people over normal pension age (NPA) as well as survivor and disability pensions in payment on the insolvency date.
- 90% of the pension entitlement for recipients below the NPA.

A statutory limit called the *Compensation Cap* is imposed on the amount which may be paid to members who had not reached *Normal Pension Age* at the time the PPF assumes responsibility

for a pension. For the 2006-07 year, indexation has increased the Compensation Cap to £28,944.45 at age 65. That cap is actuarially reduced for ages younger than 65, and is set at the same level for single and married members. Survivor benefits are limited to 50% of the deceased member's PPF compensation.

The PPF contributions are the sum of a non-risk-based levy and a risk-based levy:

- Non-risk based levy (20% of total levy) is a flat percentage of PPF liabilities
- Risk-based levy (80% of total levy) is capped at 1.25% of PPF liabilities and vanishes for plans that are more than 125% funded. This levy is the product of three factors:
  - *Insolvency risk factor* is based on a U.K. Failure Score<sup>16</sup> from Dun & Bradstreet where available. This percentile score is intended to predict the likelihood that a company will cease operations without paying all creditors over the next 12 months. If there is a guarantee from a related company, the insolvency risk factor may be based wholly or partly on the insolvency risk of the guarantor.
  - *Underfunding factor* is the deficit between assets and 105% of liabilities for most plans. The 105% factor recognizes the normal fluctuation in funding levels during the year. Where assets exceed 104% of the Pension Protection Fund liabilities, a different formula applies.
  - *Scaling factor* which is used to force a matching between the product of the first two items and the total amount of levy needed. In 2007-08, the scaling factor will be 2.47.

For 2007-08 the PPF Board set the estimated levy at £675m, including a non-risk-based element of £135m and a risk-based element of £540m. It is worth noting that the total 2007-08 estimated levies are nearly double the £300m amount reported in 2005 by Stewart (2007) as the British government's estimate of the annual levy amount.

The U.K. system was designed and launched with access to virtually all of the research available in this report. The choice made by British policymakers permitted a wide range of creativity in negotiations between plan sponsors and plan trustees that, among other things, has permitted the use of contingent assets by plan sponsors. In addition it has built an extensive

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<sup>16</sup> Additional details about the UK Failure Score can be found at the PPF website at [http://www.pensionprotectionfund.org.uk/index/pension\\_protection\\_levy-2/d\\_b\\_faqs.htm](http://www.pensionprotectionfund.org.uk/index/pension_protection_levy-2/d_b_faqs.htm).

system of data gathering and publishes monthly updates on the state of the British system of almost 7,800 predominantly private sector defined benefit plans. Still, it remains too early to know how well their risk-based premium and market-based credit evaluation mechanisms will function through all parts of a business cycle.<sup>17</sup>

## Japan

The guarantee fund available in Japan, the Employee Pension Insurance (EPI), applies only to Employee Pension Funds (EPF). These include large plans only, many of which use a system of book reserves as funding. One author describes the EPI as a “mutual aid system” that has few rules imposed by government on its structure, coverage, and operations. A cap was introduced in 2000 to limit the present value of the unfunded liability to approximately one

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<sup>17</sup> In addition to financial concerns, some legal concerns also pose uncertainty that may affect the long-term viability of the PPF. One key source, which does not apply equally in Canada, is the European Union’s *Directive on the Activities and Supervision of Institutions for Occupational Retirement Provision*. Member countries had until September 23, 2005, to implement the *Directive* into their national set of laws. Key aspects of the *Directive* include the pension being supervised by a single country and having to comply with only one solvency measure for the entire fund. The *Directive* makes the consolidation of plans across national borders inevitable as multinational firms seek the efficiency benefits promised under the *Directive*.

When the prospect of economic efficiency is combined with case law from the European Court of Justice (see Marshall, 2004; *Danner* (C-136-00); *Skandia v Ramstedt* (C-422-01)) that establishes member states must apply the same tax provisions to pensions for cross-border and domestic plans and formal ED requests that tax laws be amended, it seems quite feasible that defined benefit plans can consider assessments by a guarantee fund when it chooses where to locate within Europe. However, it is also plausible that Britain may be allowed to levy some assessment on all pension benefits accrued by British workers regardless of the country of domicile of the pension plan itself just as different nations continue under the *Directive* to offer a variety of social security programs. Various member states have, for quite some time now, been trying to attract new pension business by stressing the advantages of their regulatory or low-tax systems. In the end, the effect may not produce moral hazard against the pension guarantee fund, but rather serve as one environmental factor that may alter the attractiveness of British workers relative to other European states. Similar variation occurs in social security systems or member states’ choices regarding the optional sections of the *Directive*, including *ring fencing*.

Full text of the E.U. Directive is available online in English ([http://eur-lex.europa.eu/LexUriServ/site/en/oj/2003/l\\_235/l\\_23520030923en00100021.pdf](http://eur-lex.europa.eu/LexUriServ/site/en/oj/2003/l_235/l_23520030923en00100021.pdf)) and French ([http://eur-lex.europa.eu/LexUriServ/site/fr/oj/2003/l\\_235/l\\_23520030923fr00100021.pdf](http://eur-lex.europa.eu/LexUriServ/site/fr/oj/2003/l_235/l_23520030923fr00100021.pdf))

year's contribution by employers to the guarantee arrangement. The Tax Qualified Pension Plans (TQPP), to which no funding rules apply, are not covered by the EPI (Stewart, 2007).

## **2.2 Pension Protection Methods other than Guarantee Funds**

Several jurisdictions globally have addressed the pension security issue in a fashion that does not involve the creation of government-run guarantee funds. Still others appear to have adopted a *caveat emptor* approach that places the burden on plan participants to assess, mitigate, and ultimately accept the risk of sponsor bankruptcy.

### **Canadian Jurisdictions**

According to Pesando (1982, p. 741), “plan termination insurance is [was] under active consideration by other governments” in the period immediately following Ontario’s establishment of the PBGF. Ultimately no other provinces adopted such a guarantee fund.

Informally, the policies in other provinces appear to remain consistent with that formal policy. Officials in Alberta and British Columbia indicate that neither province has given loans or other bailouts to pension plans that could be interpreted as an informal policy to protect pensioners against pension bankruptcy risk. Alberta representatives did, however, state that the province has not seen any instances of private sector employers’ plans defaulting or threatening to default, so has not been tested to any great extent. However, one Alberta union-sponsored multi-employer plan (Specified Multi-Employer Plan) has been forced to reduce benefits as provided for in the regulations.<sup>18</sup>

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<sup>18</sup> Alberta law explicitly limits employers’ liability in such plans to the contributions they have contracted to make in a collective agreement.

## **Netherlands**

On the continent of Europe we find the Dutch among the leaders in the adoption of stronger funding requirements. Indeed, theirs are among the most stringent funding rules found anywhere, requiring pensions to be fully funded at all times. Those requirements are augmented by a Social fund similar to the PBGC, but the risk faced by that fund is extremely limited because of its coupling with the funding requirements and with the fact that the fund's responsibility is limited to one year's funding obligation.

## **Finland**

Finland has created a two-tiered system of occupational pension funds. The first pillar, a mandatory earning-related system that is partially funded and partially pay-as-you-go, is often referred to as a defined benefit but more closely resembles a DC plan coupled with target benefits and very stringent funding requirements. The accumulated funds are entrusted to private pension providers with the result that investments are co-mingled in a small number of large funds. Requirements for solvency capital are imposed on the private pension providers based on the liability level and on asset risk. These solvency rules are the primary measure used to eliminate the danger of bankruptcy (Li, 2007).

Voluntary pension funds are considered the second pillar of the Finnish system. With voluntary and individual funded pensions representing only 4.4% of all pension benefits, and 5.6% of all pension contributions in 2000, these provide a minor component of Finnish retirement security. As has been observed in other jurisdictions with strict funding requirements, no guarantee fund exists with pension in Finland.

### ***2.3 Financial Protection Systems outside Pensions***

This section examines what might be learned from guarantee arrangements in other financial services sectors, especially banking and insurance.

## Banking

Banking is the locus of considerable research into guarantee systems, with those studies generally referring to the concept as *deposit insurance*. As is true of most modern theorists, Diamond and Dybvig (1983) view deposit insurance as problem in multi-party principal-agent contracting. Their research revealed circumstances when government provision of deposit insurance can produce superior contracts. They further showed that when the role of government policy focused on preventing a bad equilibrium (in this case, bank runs) rather than moving an existing equilibrium, government deposit insurance actually improves on the best allocations the private market can provide. For a summary of subsequent deposit insurance literature, see Kane (2000).

Kane (2000) emphasizes that controlling the moral hazard aspects of bank risk-taking requires transparency and deterrence, as well an insurer that is accountable to taxpayers for successes and failures. Transparency, deterrence and accountability are characteristics where Canada ranks fairly high in its ability to ensure that counterparties in private and public sectors can enforce appropriate behavior by evaluating bank activities, disciplining their risk-taking, and resolving their financial difficulties promptly. In 1993, Congress offered U.S. taxpayers additional protection by passing the *Depositor Preference Act*, which subordinated the claims of non-deposit creditors to those of the FDIC.

Kane and Demirgüç-Kunt (2001) provide some of the first research to examine the effects of deposit insurance empirically and internationally.<sup>19</sup> They find the following characteristics enhance market discipline and reduce moral hazard:

- Credibly low coverage limits per account

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<sup>19</sup> As with pensions, bank deposit insurance typically is managed in a government agency (or in a public-private partnership) and membership is compulsory. There are exceptions as a few countries (Switzerland, Germany, and Argentina) manage their schemes privately and one (Switzerland) allows banks to opt out.

- Narrow coverage (e.g., excluding interbank deposits)
- Coinsurance (and alternative private loss-sharing arrangements such as subordinated debt and extended stockholder liability)
- Compulsory membership
- Ex-post funding
- Targeting surviving banks to cover losses (although taxpayers may be asked to assist banks in a truly system-wide crisis)
- Private-public joint management

The advantages of credibly limiting insurance coverage and requiring compulsory membership are obvious and not at all controversial. Limiting coverage in a believable way ensures that identifiable groups of private individuals, e.g., large depositors, subordinated debtholders or other banks, understand that their funds are indeed at risk. This exposure to loss gives them an incentive to monitor the behavior of both banks and deposit guarantors. Similarly Weaver (1997) mentions the role of limited guarantees in encouraging workers to monitor & exert pressure on plan sponsors.

Compulsory membership increases the size of the insurance pool and prevents low-risk institutions from selecting out of the system. These authors' preference for ex-post funding and private involvement in insurance design and management will inevitably become a more political – and therefore controversial – matter.

O'Hara and Shaw (1990) provide some of the only empirical evidence regarding the value of the put option provided by deposit guarantees. Their work examined the movement of markets when confronted with news that deposit insurance guarantee was (implicitly) unlimited for a subset of banks<sup>20</sup> and found a subsidy to shareholders of the biggest institutions from

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<sup>20</sup> The specific event examined by O'Hara and Shaw (1990) is the September 1984 announcement by the U.S. Comptroller of the Currency when he testified before Congress that some institutions were “too big to fail.”

smaller ones. Their work suggests that default prevention policies imply costs and benefits for continuing institutions as well as for governments.

An optimal worldwide blueprint for a deposit insurance system has not been found. The danger that insurance will induce a willful increase in inappropriate risk-taking is widely recognized. Indeed, the major indirect cost of deposit insurance is viewed to be its potential to subsidize inefficient types of bank risk-taking. Coinsurance provisions are relatively rare, but are found more frequently in recently adopted schemes. Banks are generally assessed an annual premium that is based entirely or in large part on the amount of their insured deposits. Efforts to make these annual premiums sensitive to bank risk exposure have begun in recent years.

## **Insurance Industries**

Separate systems exist in most North American jurisdictions for life insurance and for property/casualty insurance. Generically referred to as guarantee funds, these systems in Canada are called Assuris (formerly CompCorp) and the Property and Casualty Insurance Compensation Corporation (PACICC) respectively. Some variety is observed across the approximately 100 guarantee funds found in North America; however, the fundamental characteristic of all the models observed in the insurance industry have been observed previously in the pension arena in some countries around the world. The guarantees tend to be limited in scope and the funding for payouts from the guarantee fund are most often provided by some combination of pre- and post-event assessment of others in the same industry.

## **3. Identifying Best Practices for Management of Pension Bankruptcy Risk**

Best practices can be gleaned from the combination of theory and practice discussed above. The initial decision facing policymakers is how heavily to rely on mechanisms such as funding rules to try and prevent bankruptcy. To the extent the risk cannot be fully eliminated,

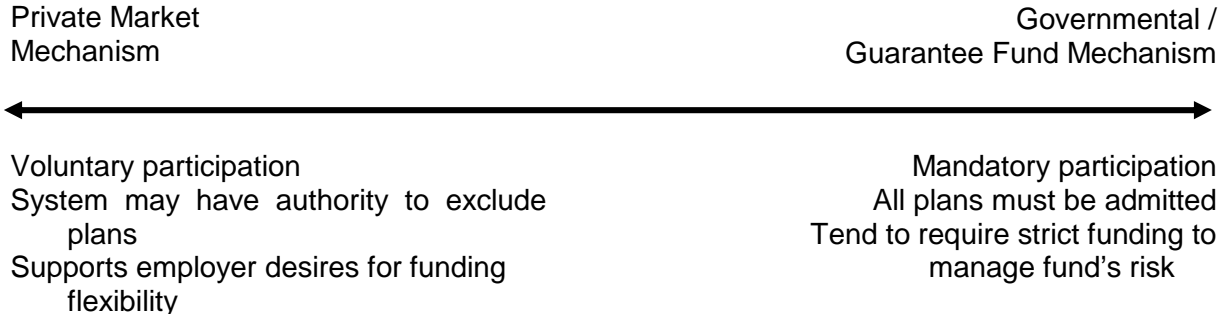
the choice becomes how to manage the bankruptcy risk that remains. The choices are threefold: do nothing in advance of a bankruptcy, rely on private market mechanisms, or implement a government-based mechanism like a guarantee fund. Table 2 summarizes the strengths and weaknesses that emerge from theory for these three alternatives, providing the major strengths and weaknesses of each model along these dimensions commonly used to assess public policy alternatives: equity, effectiveness, and/or political viability.

<b>Table 2: Strengths and Weaknesses of Tools for Managing Pension Bankruptcy Risk</b>		
<b><i>Model</i></b>	<b><i>Major Strengths</i></b>	<b><i>Major Weaknesses</i></b>
Ad hoc bailouts	<i>Political Viability</i> <ul style="list-style-type: none"> <li>Adaptable to each circumstance</li> </ul>	<i>Equity</i> <ul style="list-style-type: none"> <li>Likely to produce inconsistent results across jurisdictions, firms, citizens</li> </ul>
Private Market Mechanisms	<i>Effectiveness</i> <ul style="list-style-type: none"> <li>Use market forces to assess, monitor, and price default risk.</li> <li>Adapts readily to changes in technology, circumstance</li> </ul>	<i>Equity</i> <ul style="list-style-type: none"> <li>Likely to produce inconsistent results across firms</li> </ul> <i>Effectiveness</i> <ul style="list-style-type: none"> <li>Not able to eliminate systematic risk by pooling</li> <li>Not able to reduce risk to retirees to the same extent as government-based fund</li> <li>Likely to be less available to some firms than others</li> <li>Ties up capital in reserves required to make private guarantee viable</li> </ul>
Government-based Guarantee Fund	<i>Equity</i> <ul style="list-style-type: none"> <li>Available to all firms</li> <li>Produces consistent results across firms, citizens</li> </ul> <i>Effectiveness</i> <ul style="list-style-type: none"> <li>Manages expectations of citizenry wrt aid, sponsors wrt contributions</li> <li>Assists in managing contagion following failure(s)</li> <li>Can manage risk intertemporally, e.g., by running a deficit</li> </ul> <i>Political Viability</i> <ul style="list-style-type: none"> <li>Manages cost of providing aid</li> <li>Permits design of system, e.g., through premiums charging less than full cost, that supports other policy objectives</li> </ul>	<i>Equity</i> <ul style="list-style-type: none"> <li>Adds costs to strong firms as well as weak ones (administration costs plus any subsidy of risk-based premium)</li> </ul> <i>Effectiveness</i> <ul style="list-style-type: none"> <li>Increases moral hazard unless premium assesses full cost of risk</li> </ul> <i>Political Viability</i> <ul style="list-style-type: none"> <li>Full risk-based cost probably not acceptable</li> </ul>

From the summary provided in Table 2, no single system clearly emerges as ideal. The problem facing public policy makers, once they have determined they wish to incorporate some active protection beyond operational requirements such as funding rules, becomes how to combine the strengths and weakness of each approach in a manner that best balances the need to protect pension participants against other policy objectives.

From the review of the various systems of financial protection that have been devised across political jurisdictions and across the pillars of financial services, a pattern emerges that may provide guidance in how to achieve a balance. Certain characteristics tend to be associated more frequently with private market mechanisms while their complements tend to be associated with government-based guarantee mechanisms. These pairings provide two sets of characteristics that combine in reasonable ways the strengths and weaknesses of each particular approach to risk mitigation and risk management of the pension bankruptcy risk. Figure 4 presents these observations visually.

**Figure 4: Structure of Financial Protection Systems**



The functioning private systems around the world tend to be voluntary in nature and operated by pension sponsors in an organization where sponsors mutually insure one another.<sup>21</sup> Notably they tend *not* to transfer risk from plan sponsors to independent agents via private

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<sup>21</sup> A similar arrangement exists in the property-casualty insurance industry and is called a reciprocal insurance company.

markets. Thus, such systems as they have developed are consistent with the nature of the business cycle and its highly correlated bankruptcy risk being difficult to insure in the private marketplace.<sup>22</sup>

Where these voluntary systems have not been adopted, the government in a number of countries has taken on the role of provider of pension guarantees. Specifically, a government-based program can be designed to manage systematic risk by accumulating funds in good times for use in bad times, resembling loosely a system of unemployment insurance that deals with pensions as well as wages.

## **4. A Closer Look at Ontario**

### ***4.1 Background on the PBGF***

In 1980, the *Pension Benefits Act* established the Pension Benefits Guarantee Fund (PBGF) and made Ontario the only Canadian province to provide a government-based system of protection for the pension promises of private employers. Pesando (1982), in addition to being one of the first scholarly works to focus on Ontario in examining the economic impact of a guarantee fund, also provides important historical context. From the outset, the PBGF guaranteed benefits retroactive to passage of the *Pension Benefits Act* in 1965. It was

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<sup>22</sup> Ippolito (1989) discusses further why the United States did not see the spontaneous development of a private insurance mechanism prior to the enactment of *ERISA*:

“...a reasonable argument could be made that no insurance company wanted to be the first to market a new line of insurance. In the absence of any information about the size of claims, and any experience with moral hazard and selection problems, the first firm in this market would be an innovator of sorts, a collector of statistics, and a developer of solutions to problems. Everyone has an incentive to free ride on the first entrant, that is, to copy the product of the first entrant’s research, thus making it difficult for the first firm to recoup its development cost. In this sense the PBGC can fulfill a role: it can collect and disseminate statistics on the frequency and magnitude of the insurable event and can identify moral hazard problems that need to be addressed, together with some attempted solutions.” [p. 37]

compulsory and was designed to be self-financing, i.e., to meet its obligations solely through an annual premium based on the number of employees in defined benefit plans.

PBGF premiums bring in a total \$20 to \$25 million annually. That premium structure begins at \$1.00 per member for a plan that is fully funded. If underfunded, risk-based premiums are assessed on the basis of unfunded, vested wind-up benefits. Premiums for most plans are capped at \$4 million per year with the annual cap increased to \$5 million for *qualifying plans*. The qualifying plan provision,<sup>23</sup> adopted during the major recession of the early '90s, allowed an employer to elect not to fund the solvency deficiency in its plans.<sup>24</sup> At the time this provision was created, the threshold of \$500 million in assets limited the scope of the qualifying plan rules to the very largest pension plans. However, continuing benefit accruals and inflation worked together to expand its availability to at least 27 plans by 2002.<sup>25</sup> Effective June 28, 2002, the *Pension Benefits Act* was amended to remove the *qualifying plans* option. The few plans that actually had made the election prior to its removal were grandfathered under the reform legislation.

The PBGF guarantees specified benefits, up to \$1,000 per month per member, in respect of service in Ontario.<sup>26</sup> For participants to receive PBGF benefits, a pension plan must be

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<sup>23</sup> *Pension Benefits Act*, R.R.O. 1990, Regulation 909, §5.1.

<sup>24</sup> Plan sponsors making the *qualifying plan* election were required to file actuarial valuations more frequently (annually) and to pay higher PBGF premiums.

<sup>25</sup> Author tabulation of the FSCO data for 2002. This count reflects the number of separate plans that reached the \$500 million threshold. The number would increase slightly because the qualifying plan election also was available to some plan sponsors who reached the threshold by aggregating multiple plans sponsored.

<sup>26</sup> For purposes of the *Pension Benefits Act*, a worker is deemed to be employed in the province in which the establishment of his or her employment is located and to which the person is required to report for work. Employees who are not required to report to a specific location for work are considered to be employed in the province from which they are paid. That the PBGF coverage can apply to participants in plans not registered in Ontario was clearly articulated in a May 22, 2002, letter that the Pension Plans Branch of the Financial Service Commission of Ontario sent as part of a program initiated to systematically recover PBGF assessments from all plans with members who are eligible for coverage.

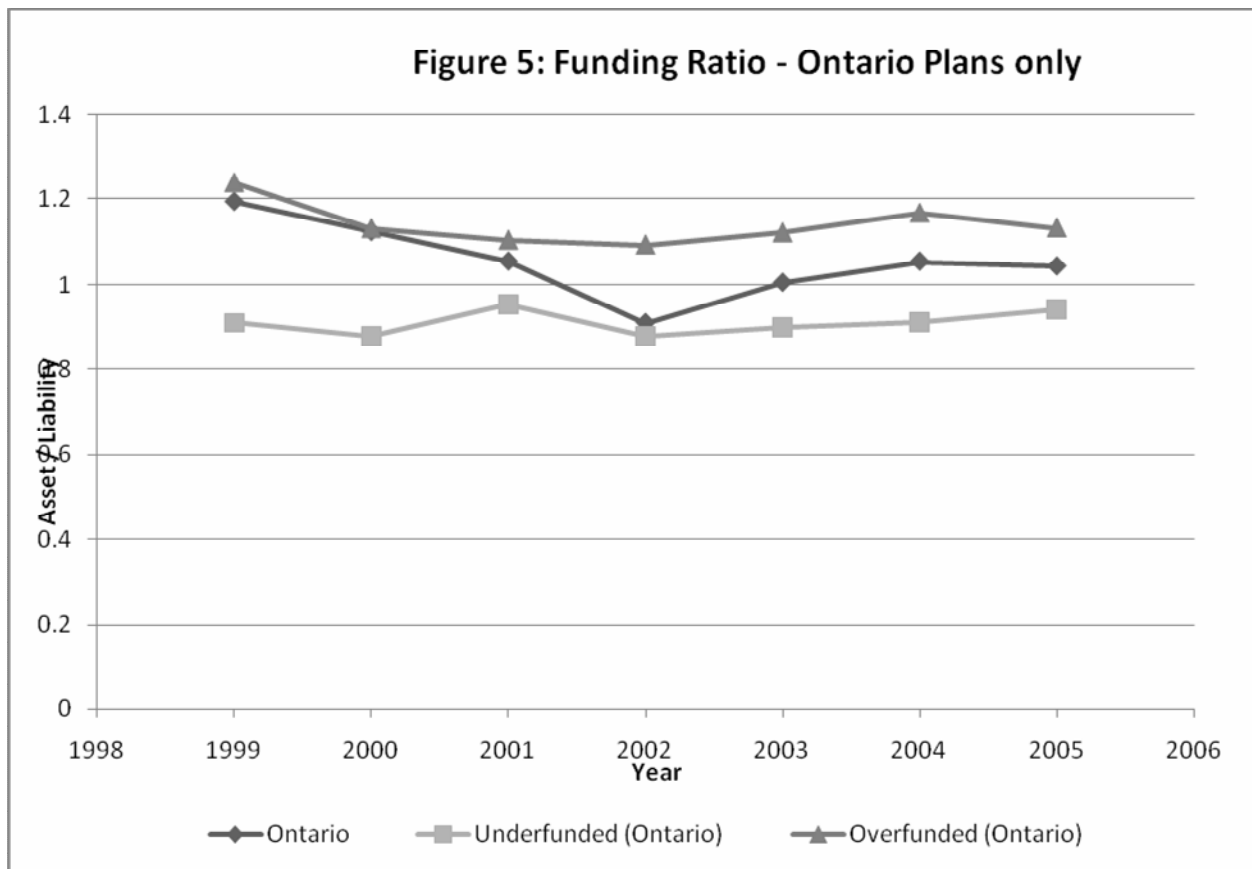
registered under the Ontario legislation or a designated province, wound up in whole or in part, and receive a determination from the Financial Services Commission of Ontario (FSCO) that it is not able to satisfy the funding requirements of the legislation. Several exclusions, some intended to reduce moral hazard, are included in the legislation to which the PBGF does not apply. Those exclusions include:

- a plan that has been established for less than three years,
- increases in benefits within the preceding three years,
- multi-employer plans,
- benefits under a defined benefit plan where the employer's contributions are set by collective agreement, or
- other pension plans excluded in the regulations.

So, in principle, a retiree will receive total payments equal to 100% of the benefits guaranteed by the PBGF plus a proportion of other benefits included in calculating the wind-up liability under the Ontario rules. In practice, determination of these benefits is plan-specific and can be complex. An example is provided, based on a member who has a pension entitlement under the plan of \$1,500 per month in a plan that has average amount of underfunding (see Figure 1), i.e., holds about 75% of the funds needed to meet its liabilities. The first step is to determine how much of the \$1,500 benefit may be excluded under the PBGF rules, e.g., the benefits added over the last three years. To continue the example, assume the amount remaining after the required reductions is \$1,200 per month. The plan's assets are used to pay 75% of the \$1,200 and the PBGF ensures that benefit reaches \$1,000 (i.e. \$900 from the plan and \$100 from the PBGF). Beyond that the Plan will pay 75% of the difference between \$1,000 and the full benefit. So in the end, the member gets \$1,150 per month - \$1,050 from the plan and \$100 from the PBGF. Administratively funds are transferred from the PBGF to the plan once the application for PBGF support is approved. Members receive one cheque.

## 4.2 Experience to Date in Ontario

A review of some key outcomes in Ontario during the 27 years since it introduced the PBGF is provided in this section as background. Figure 5 illustrates the same trends in fundedness for Ontario plans (only) as was presented in Figure 1 for four provinces. In Ontario 48.2% of all defined benefit plans were underfunded in 2005; on average these underfunded plans had assets equal to 88.1% of their liabilities.



### Financial Condition of the PBGF

The PBGF bears the cost of bankruptcy by sponsors of plans it guarantees. The Annual Reports of the PBGC provide information about claims payable with respect to already-terminated pension plans. In the Annual Report for March 31, 2005, the amount of outstanding

claims was \$204,624,000; by March 31, 2006, that figure had dropped to \$104,064,000.<sup>27</sup> Based on valuation reports filed between July 1, 2003 and June 30, 2006, the FSCO DB funding report of March 2007 estimated there were approximately 1,300 underfunded plans in Ontario with an aggregate wind-up deficit approaching \$29.5 billion. The number of underfunded plans and deficit amount would likely be smaller today, as a result of the strong investment returns and the slightly higher bond interest rates in recent years.

The Fund has not determined, and has stated they do not have the technical capacity to determine, the potential PBGF exposures in a manner that reflects any non-zero insolvency probability of the sponsor employers. Assuming that no terminations will occur in the future, and that the cost of future terminations is zero, is unrealistic in a market economy. In order to provide at least some sense of how losses recorded to date compare with potential losses, two special tabulations were done, one on a measure aimed at assessing potential *frequency* of future losses and the other aimed at assessing potential *severity* of future losses:

- *Frequency*. The 1% of plans in Ontario with the lowest ratio of assets to liabilities was examined. The low funding ratio found in these plans is one indicator that these plans may expose the PBGF to additional claims. For those seven plans, the gap between assets and liabilities was \$20.9 million. The single plan with the lowest funded ratio (46%) represents a potential liability of \$238,100; the next plan in that sequence has a funded ratio of 52% and represents a potential liability of \$7.8 million. Other plans that appear in this 99<sup>th</sup> percentile grouping have funding ratios that range from 56% to 68%.
- *Severity*. The 1% of plans in Ontario with the highest dollar value difference between their PBGF liabilities minus assets also was examined. These plans represent the extent to which the PBGF may find itself exposed due to a small number of claims of catastrophic proportions. These six plans, dominated by the steel and auto industries, represent a potential aggregate deficit of \$5.95 billion.

All of these plans that appeared in these special tabulations did supply their most recent valuations in 2005. Their solvency positions, like that of the typical Canadian plan (See Figure

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<sup>27</sup> The steep decline was caused by higher interest rates which, in turn, caused the present value of liabilities to decline. Simply stated, this effect recognizes that more of the funds needed to pay promised benefits can be expected to arise from investment earnings.

2) and the PBGF itself, likely have been improved by higher interest rates since that especially weak year.

Estimating the present value of additional future PBGF claims with any greater accuracy would require assessing the creditworthiness of each plan sponsor individually, a difficult technical exercise for which data are not readily available. For additional detail on such methodologies, see Hirtle and Estrella (1990) or Lewis and Cooperstein (1993). For an example of what such an estimation process might entail in practice, readers are referred to the U.K. Failure Score from Dun and Bradstreet.

## **Financial Strength of Ontario's Pension Plans**

Pension benefits, by definition, mean the provision of cash and cash benefits can best be secured by funding. Therefore, by extension, the funds available to a pension plan are one measure of the security of a pension's benefits.<sup>28</sup> The two principal types of measures used in pension research are (a) nominal and (b) relative. Nominal measures look at plan assets only. For example, the *qualifying plan* rule described earlier used a nominal measure – the absolute number of dollars in a pension plan – as its threshold. Relative measures, such as the commonly used *funded ratio*, compare the dollar values to something else, often the plan's liabilities. This section reports an examination of one nominal measure – plan assets per participant in DB plans across the four provinces for which plan-level information was presented earlier, updating and extending the results published in Nielson and Chan (2004). The model incorporates regional influences by using provincial data for all variables except interest rate, in which case a national measure was used.

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<sup>28</sup> Conceptually, the “funds available to a pension plan” could be broadly interpreted to include funds from a guarantee fund; however, such an interpretation would lead to endogeneity and limit the usefulness of the discussion that follows for the purpose of devising public policy as regards such a fund. Therefore, “funds available to a pension plan” should be interpreted here to mean (1) sponsor and member contributions plus (2) earnings on those contributions minus (3) benefit payments by the plan.

The resulting model, presented in Table 3, is an ordinary least squares regression that is highly significant (as indicated by the high F-statistic). One place to begin interpreting the results is to view a basic amount of pension funding as that based on the state of the economy. The coefficients indicate that plan assets increase with real earnings of workers (though that relationship is not statistically significant) and decrease with higher unemployment. The level of accumulated assets supported by these underlying economic conditions is then moderated by the influence of tax incentives, with plan assets increasing when and where higher tax rates are observed.

From this starting point, the model reveals several other factors that partially explain the up or down movement of the asset level across plans and across time. These variables reflect differences in investment markets, plan design, and regulatory factors. Movements of returns in the investment market – both interest rates and stock market returns – produce coefficients that are significant. Each basis point increase in interest rates can be expected to produce an aggregate decrease on average of an additional \$47.17 of funding per DB plan participant. For example, an interest rate movement from 5% to 5.05% (a 1% relative

<b>Table 3: Plan Asset Value per DB Participant</b> OLS model using provincial data (Alberta, British Columbia, Ontario, Saskatchewan) 1999 – 2006	
Real Income per Worker	0.1761 ( 0.38)
Unemployment	-13798.91*** (-6.41)
Tax Rate	4095.27*** (4.89)
Basis point of interest	-47.1827** (-2.21)
TSX	3.1945** (2.28)
PBO design (compared to ABO)	58308.93*** (17.19)
ABO/PBO Uncertain (compared with ABO)	69915.67*** (13.26)
Ontario	-17816.1*** (-3.24)
PBGF	- 17036.7*** (-3.76)
R <sup>2</sup>	0.3342
F	345.79***
*** significant at 1% ** significant at 5% * significant at 10%	

increase) would be associated with a decrease in pension assets of \$236. The value of the TSX index at the reporting date<sup>29</sup> produced results of a similar magnitude: each one point rise in the TSX results in a \$3.19 increase in funding. For example, if the TSX were at 12000, a 1% increase (120 points) would be associated with an increase in pension assets of \$383. The negative coefficient on the interest rate variable indicates that funding tends to be reduced when markets expect higher rates in the future, but that actual returns in the market (TSX) increase pension assets by amounts that were not fully anticipated in the funding formula.

In terms of plan design, the analysis incorporated a pair of variables designed to distinguish among the basic types of actuarial cost methods. The key difference recognized is that certain plan designs (notably final average plans) automatically incorporate actuarial assumptions regarding future wage growth, e.g., use projected benefit obligation (PBO) methods, when estimating liability and determining contributions. Plan designs that use accrued benefit obligation (ABO) methods, such as flat benefit and career average plans, ignore future growth in wages until such time as plan changes become explicit. The ABO/PBO information was incorporated in the model to separate that source of variability from other influences on the nominal level of plan funding. As anticipated, the PBO-based plan designs, which by their very nature produce higher liability estimates and contributions, resulted in higher asset values per participant. In the current regression, the funding is estimated to be \$58,309 higher per participant for PBO plans than for ABO plans.<sup>30</sup>

Finally, the model assessed the importance of jurisdictional differences in explaining differences in the level of plan assets. One variable reflects the simple fact of the plan being

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<sup>29</sup> In some instances data limitations required this variable to be estimated as of the calendar year-end closest to the reporting date.

<sup>30</sup> For plan types recorded as hybrid, designated, or other by the respective provincial regulator, neither ABO nor PBO methodology could be inferred. These plans are classed as “ABO/PBO uncertain” in the regression.

registered in Ontario to reflect the fact that Ontario law differs from other provinces. For example, the so-called "grow-in" provision<sup>31</sup> guarantees early retirement benefits to members of DB plans in Ontario whose age plus years of plan membership as of the date of the windup equal 55 (also known as the "rule of 55"). Another difference is the availability during a portion of the period studied of the qualifying plan election in Ontario that allowed some plans to legitimately slow down their funding in a way that other plans could not.

In addition to the variable for plans registered in Ontario, a separate variable was created to identify plans covered and not covered by the PBGF.<sup>32</sup> The use of two separate variables is especially important considering that the literature suggests reasons to expect *a priori* that the effect on plan assets may operate in opposite directions, e.g., the PBGF may provide an incentive to plan sponsors to fund at a lower level while the "grow-in" provision operates to increase liability and, in turn, require higher contribution levels.

After correcting statistically for all the variables described above, Ontario pension plans still exhibited a distinct and statistically differentiable level of assets per participant with each participant in an Ontario-registered plan having on average \$17,816 less in asset value. Beyond that, a dummy variable for PBGF coverage was statistically significant at the 10% level. Plans insured by the PBGF have an average of \$17,037 less per participant than other Canadian DB plans that are not backed by a guarantee fund. The model explains approximately one-third of the variability in nominal pension funding across plans. That explanatory power ( $R^2$ ) is considered extremely good for a model of this type, but those utilizing

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<sup>31</sup> Nova Scotia amended its Pension Benefits Regulations on December 9, 2004 to remove a similar requirement to include "grow-in" benefits within a solvency valuation. In Nova Scotia, "grow-in" provisions continue to apply on full or partial pension plan wind-up; however, their priority on payout would be second to the basic pension that all employees would receive.

<sup>32</sup> A "multi-employer pension plan established pursuant to a collective bargaining agreement or a pension plan providing defined benefits and the employer obligation is limited to a fixed amount set out in a collective bargaining agreement" is exempt under subsection 6 of the Regulations as is a plan established within the last three years. Also, twelve public plans have specifically been exempted by Ontario law from paying the PBGF assessment.

these results are reminded that it does not account for differences in average age, industry, or a host of other variables that affect the level of funding. Though regression results do not conclusively prove a causal relationship, the strength of these results suggests that, despite controlling for a number of sources of variation, the guarantee fund is either a cause or is highly correlated with something that causes Ontario plan sponsors to invest fewer dollars into their DB pension plans.

### ***4.3 Moving Pension Policy Forward***

For policy makers, the issue of pension guarantees truly is a double-edged sword. The availability of a pension plan that makes deferred funding options available to a firm also makes it possible for an economy with finite capital to create more jobs and promise more pensions. The implicit assumption is that future growth will fund the future promises. Explicitly protecting pension plan participants against the risk of a sponsor's bankruptcy, e.g., by offering some sort of guarantee, encourages confidence in the growth of the economy and the firm and makes it easier for firms and workers to reach an agreement.

However, removing the risk associated with pensions from the firm and its workers by definition transfers risk to somewhere else in the economy. A guarantee program like the PBGF can assist in minimizing that risk by pooling it across different firms, different industries and across time. The section that follows describes ways in which the risk that a guarantee fund will face can be minimized and managed.

### **Policy Objectives**

What exactly are the objectives of the Pension Benefit Guarantee Fund in Ontario? Who is it intended to benefit? How much risk is intended to be assumed? The review of the literature presented in this report has identified a list of possible objectives that is neither exhaustive nor mutually exclusive: to support declining industries, to encourage job creation, to protect against

systematic risk that cannot easily be diversified away, to sustain the defined benefit pension system, or to enforce transfers from healthy pension plans to weak ones. Perhaps the information that went into these decisions has been lost in time; perhaps the dialogue to formally enumerate plan objectives never occurred. Whatever the cause, the result is that this research must make an explicit assumption in order to continue – that the primary PBGF objective is the protection of workers against non-diversifiable risk.

That objective is consistent with transfers from healthy pension plans to weaker ones as a means of paying the cost of that program by a smaller group than all taxpayers. In deciding to proceed with this assumed objective, two possible alternatives were rejected. First, though the establishment of the PBGF may support declining industries and/or encourage job creation, it is rejected as a primary objective because other policy options available to achieve these objectives can be identified that are more direct and more likely to be effective. Second, the PBGF, with its additional costs and administrative burden, is viewed by many to be a factor weighing against the establishment and maintenance of defined benefit plans. Therefore, if its primary objective were to sustain DB pensions, it would arguably have been discontinued long ago.

### ***Who Does the System Benefit?***

One step in analyzing the extent to which the PBGF is needed to achieve the desired objectives is to examine the extent to which other programs of income protection might already satisfy the intended objectives and to what extent. Canada offers a range of income protection programs to its citizens, some of which originate at the federal level and some of which are provincial in nature. For at least some beneficiaries, the PBGF guarantee is simply another such income protection program. Let us review how an employer bankruptcy that reduces pension entitlement interfaces with some of those benefits.

First, benefits from the Canada Pension Plan (CPP) will be available to almost all workers covered by private pension plans. CPP benefits are unlikely to be affected in any way by problems within the workplace pension. A retirement-age Canadian earning the average wage in 2007 will receive a maximum CPP retirement benefit (at age 65) of \$863.75 monthly. The average monthly benefit (as of October 2006) was \$473.09.

The Government of Canada also offers Old Age Security (OAS) and other benefits to lower income Canadians. Qualifying for these benefits does not depend on the circumstances which have brought an individual into old age with low income. The programs administered by OAS (including GIS and the Allowance) incorporate significant clawbacks for recipients with other sources of income, so any funds payable from PBGF reduce the amount of GIS payments to which the retiree is entitled. Ultimately this means that the welfare impact of the bankruptcy protection often is less than the amount paid out.

Canadians whose earnings history generates the average CPP payment and who also qualify for a pension in the amount of the maximum PBGF benefit of \$1,000 (regardless of what share is funded by the PBGF) would see their incomes increase by only about \$1 for every \$3 paid. Any benefit lower than \$1,000 would result in an even smaller net increase in income. The portion of a pension payment retained by a retiree increases substantially as income approaches the YMPE, i.e., the level that will produce the highest CPP benefit. From these estimations it is clear that any 'safety net' function intended to be provided by the PBGF is eroded in value considerably for those at the lowest level of income, say under \$20,000. At somewhat higher levels, say \$30,000 to \$40,000, however, the value that is retained approaches whatever remains after paying income taxes at the recipient's marginal rate. See Table A2 for additional detail.

One benchmark against which an arrangement like the current PBGF can be measured is its effectiveness in achieving the objective of assisting workers harmed by pension sponsor bankruptcy. A proposed arrangement should do the best job possible of replacing income to a

population of Canadians who are the intended beneficiaries of the program in order to be considered effective. In summary, as to effectiveness it is particularly important to note that (a) the net value of the program to Ontario workers is eroded substantially by the progressive nature of other Canadian programs of income support and (b) the lack of any inflation adjustments since 1980 in the maximum benefit payable causes the net value of the program to be eroded even further. Also, because the PBGF guarantee has not increased while benefits like CPP, OAS, and GIS are fully indexed to inflation, the application of clawbacks to the replacement pension income is growing. Simultaneously, the income tax effects will have been shrinking with bracket indexation. *Ceteris paribus*, both of these trends will continue. A pragmatic factor that may warrant consideration when evaluating the effectiveness of a provincial program like PBGF is a realization of the extent to which payments under that program are replacing federal tax dollars with dollars that have been assessed against other pension plans and/or provincial tax dollars.

### ***How Much Risk is to be Assumed?***

The extent to which the PBGF guarantees pension benefits is a political question, not an economic one. Increasing benefits, whether through an explicit change in the limit on guaranteed benefits or some automatic indexing measure, increases the cost and increases the potential for moral hazard. The public policy question is how best to balance the needs of pension participants against other policy objectives and possible uses of limited resources.

### **Achieving the Objectives**

Later in the speech quoted at the beginning of this report, the Governor of the Bank of Canada states that “what needs to be done is to make sure that those who have to bear risk also have the right incentives to deal with it in the most appropriate manner” (Dodge, 2007). His remarks to the Conference Board of Canada’s *2007 Pensions Summit* included an array of

risks considerably broader than just the bankruptcy risk, but he did explicitly state that “the risk that a sponsor will be unable to fulfill its promise must be properly managed” (Dodge, 2007). This statement, taken in context of its discussion in conjunction with the full set of pension risks, provides extremely high profile recognition by Canada’s top economic official that the bankruptcy risk cannot be considered in a vacuum.

The review of relevant literature just completed indicates a set of solutions consistent with a well-functioning guarantee fund, should that remain a part of Ontario’s public policy. Unless the desire is to depart from the global norms and trends, a guarantee fund to provide insurance against the sponsor bankruptcy risk would be accompanied by financial standards, including funding and reporting requirements, and governance standards that provide accountability by the right parties at the right time. The remainder of this section looks at these areas of possible reform.

### ***Financial Standards***

Pesando (1985) observes that the pension liabilities of the firm also represent the pension wealth of its workers. A fundamental test of any liability measure used in measuring and managing the bankruptcy risk is that it be a reasonable measure from both points of view. Financial economists have long favored the use of a wind-up measure of the firm’s pension liabilities because that is the obligation faced by the firm at each point in time when it can choose to continue or terminate the plan.

Once the liabilities are valued, the extent to which plans are required to set aside assets to offset those liabilities varies greatly. Global examples showed that when strong financial standards are used, guarantee funds may be considered unnecessary (as in Finland) or provide coverage that is extremely limited (as in the Netherlands). In that environment, only firms that can afford relatively high required contributions will establish and maintain a pension plan. In the long run this will mean that, while the default risk has been reduced, fewer of a country’s

citizens can expect to be covered by private pensions. In turn, this is likely to increase pressure on some level of government to itself provide more or larger income programs during retirement years.

Other countries such as Germany have allowed tremendous flexibility in pension funding. Such a public policy that is consistent with faster growth in the economy and in pension coverage. As public policy tilts toward encouraging more aggressive growth, however, a corresponding increase can be expected to occur in the potential risk associated with sponsors being unable to fund their pension promises.

Stewart (2007) summarizes the importance of financial standards when she states that “good funding rules can achieve almost all of what a guarantee scheme is striving for” and “when combined with other measures ... offer a high level of protection.” Financial standards codify both the measurement methods used by pension plans and the extent to which plans are required to set aside assets.

Canadian policymakers face this same spectrum of risk-reward choices. Among the generic recommendations developed by Wilcox (2006) are three that combine the concepts of funding standards and a fund for the protection of pensions. His recommendations for a pension system’s financial standards are:

- Determine required contributions on a basis that fully funds current benefit accruals and amortizes supplemental liabilities (shortfalls or surpluses) over a reasonably short time period, all on a mark-to-market basis.
- Restrict the ability of sponsors with unfunded liabilities to increase benefits.
- Encourage, through requirements or positive incentives, plans to actively immunize their asset portfolios against interest rate risk.

Wilcox (2006) further suggests that any protection provided by a guarantee fund be phased in over the same period that liabilities are allowed to be amortized, essentially providing a strong match between the liabilities of the guarantee fund and the assets of that plans it covers access. These recommendations, while not supportive of all objectives that might be considered

desirable for the pension system, are consistent with an objective of managing the risk faced by a guarantee fund and minimizing moral hazard against that fund.

## **Governance Standards**

Whatever system may be adopted to reduce the risk of sponsor bankruptcy, the literature consistently supports a view that risk will be minimized if appropriate governance requirements are in place. The most widely applicable guidance on this subject is Guideline No. 4 developed by the Canadian Association of Pension Supervisory Authorities (CAPSA).<sup>33</sup> The result of additional recent deliberations on governance can be found in the report of Québec's expert pension committee (*Rôle des comités de retraite dans les régimes complémentaires ...*, 2006). That committee considered a key element in management of sponsor default risk to be the need to balance the role and responsibilities of pension committee members and the oversight role of official monitoring agency for pension plans (Bernier, 2007). A good deal of uncertainty still exists as to how these provisions apply to pension plans with both Québec and Ontario employees.

## **5. Summary**

Pension fund regulations aim to promote high levels of benefit security at an acceptable cost. By necessity, the goals and objectives of sponsors must be balanced against the goals and objectives of current and future beneficiaries. This report has been built on an assumption that policymakers desire to assist pension beneficiaries in managing the non-diversifiable bankruptcy risk they face and to have any guarantee fund that may be adopted contribute to the strength of the private pension system. However, it would be preferable for the purposes of

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<sup>33</sup> Available at [http://www.capsa-acor.org/capsa-newhome.nsf/4a5938dfa169be3285256c1a00752c5d/c23e35f57379385a85256f62007038ab/\\$FILE/Guideline%20No.%204%20-%20ENG.pdf](http://www.capsa-acor.org/capsa-newhome.nsf/4a5938dfa169be3285256c1a00752c5d/c23e35f57379385a85256f62007038ab/$FILE/Guideline%20No.%204%20-%20ENG.pdf).

assessing the effectiveness of any guarantee fund that its intended objectives be set out explicitly.

The literature supports the participation of a government agency as a source of pension protection, primarily because of the extent to which the risk of sponsor default is systematic in nature. That governmental involvement is supported precisely because it may be the only type of entity that can handle tremendous swings in losses across both economic booms and recessions. For this reason, those establishing a guarantee fund should expect those swings to occur. A further theoretical reason that supports the development of an insurance-type system for pension protection is that it can provide a means for the government to credibly limit the extent to which it can be expected to finance any specific risk.

The literature suggests that any guarantee fund, in order to operate in an economically efficient manner, must use premiums that reflect the risk present. The *Guidelines on Funding and Benefit Security* published by the OECD say it this way:

Insolvency guaranty schemes should rely on appropriate pricing of the insurance provided in order to avoid unwarranted incentives for risk-taking (moral hazard).

Subsequent OECD work (Stewart, 2007) incorporates this concept and presents a set of principles designed to operate an economically efficient pension benefit guarantee system:

- Limited benefit coverage
- Risk-based pricing
- Accurate and consistent funding rules
- Prudent asset-liability management (ALM)
- Adequate powers, e.g., to avoid moral hazard and prevent plan sponsors using their guarantee as a 'put' for pension liabilities

No circumstances have been identified in Ontario that would make this set of guidelines less applicable here than elsewhere. Of the items on the OECD list of principles, the present PBGF does have limited benefit coverage and consistent funding rules. It does not have effective risk-based pricing and probably does not have powers that are sufficient to prevent moral hazard.

Unless it can accumulate additional assets and better assess its liabilities, sophisticated systems of asset-liability management are unlikely to add great value.

Overall, the current PBGF falls short of qualifying as “an economically efficient pension benefit guarantee system” when measured against Stewart’s (2007) principles. Future policy decisions that strive to make the system as economically efficient as possible can be expected to minimize the largest moral hazard problem that faces the continuation of Ontario’s PBGF – that while the guarantee program is mandatory for all defined benefit plans, a sponsor who does not wish to participate need only change its offering to a defined contribution plan – or no plan at all.

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## 7. Appendix

<b>Table A1: PBGC DATA 2005</b>			
(Dollars in millions)			
	Single-Employer Program	Multi-employer Program	Combined Programs
<i>Fiscal Year 2005:</i>			
Net Financial Position	-\$22,776	-\$335	-\$23,111
Total Assets	\$56,470	\$1,160	\$57,630
Total Liabilities	\$79,246	\$1,495	\$80,741
Premium Revenue	\$1,451	\$26	\$1,477
Number of Insured Plans	28,769	1,567	30,336
Number of Insured Participants	34.2 million	9.9 million	44.1 million
New Plans Trusteed or Pending Trusteeship	120	n/a	120
Change in Gross Claims	\$11,103	n/a	\$11,103
Number of Payees*	697,631	279	697,910
Total Benefits Paid	\$3,685	\$1	\$3,686
Plans Receiving Financial Assistance	n/a	29	29
Amount of Financial Assistance Granted	n/a	\$14	\$14
<i>Fiscal Years 1975-2005:</i>			
Plans Trusteed or Pending Trusteeship	3,585	10	3,595
Amount of Claims	\$31,709	\$31	\$31,739
Plans Receiving Financial Assistance	n/a	41	41
Amount of Financial Assistance Granted	n/a	\$191	\$191
Sources: PBGC <i>Pension Insurance Data Book 2005</i> , Tables S-1, S-2, S-3, S-20, S-30, S-31, M-1, M-2, M-3, M-4, M-5 and M-6.			

<b>Table A2: Sensitivity of Annual Income to Maximum PBGF Payments</b>			
	No PBGF payment	PBGF of \$1,000 per month	% retained by PBGF recipient
Single retiree	Average CPP benefit \$ 5,677.08 PBGF 0.00 OAS/GIS benefits <u>10,682.28</u> Pre-tax income \$16,359.36 Approx. income tax <sup>†</sup> 1,254.72 GST Credit <u>354.00</u> Net income \$15,458.64	Average CPP benefit \$ 5,677.08 PBGF (max) 12,000.00 OAS/GIS benefits <u>5,602.56</u> Pre-tax income \$23,279.64 Approx. taxes <sup>†</sup> 4,110.72 GST Credit <u>354.00</u> Net income \$19,522.92	33.9%
Single retiree	Maximum CPP benefit \$10,365.00 PBGF 0.00 OAS/GIS benefits <u>8,342.29</u> TOTAL pre-tax \$18,707.28 - Approx. taxes <sup>†</sup> 2,316.09 + GST Credit <u>354.00</u> Net income \$16,745.19	Maximum CPP benefit \$10,365.00 PBGF (max) 12,000.00 OAS/GIS benefits <u>5,602.56</u> TOTAL pre-tax \$27,967.56 - Approx. taxes <sup>†</sup> 4,027.27 + GST Credit <u>354.00</u> Net income \$24,294.29	62.9%
Couple	2x avg CPP benefit \$11,354.16 PBGF 0.00 OAS/GIS benefits <u>8,121.46</u> Pre-tax income \$19,475.64 - Approx. taxes <sup>†</sup> 0.00 + GST Credit <u>464.00</u> Net income \$19,939.64	2x avg CPP benefit \$11,354.16 PBGF 12,000.00 OAS/GIS benefits <u>6,573.48</u> Pre-tax income \$29,927.64 - Approx. taxes <sup>†</sup> 1,484.61 + GST Credit <u>403.72</u> Net income \$28,846.75	74.2%
Couple, both receiving CPP (with CPP split evenly for income tax purposes)	Maximum CPP \$20,730.00 PBGF 0.00 OAS/GIS benefits <u>0.00</u> Pre-tax income \$20,730.00 - Approx. taxes <sup>†</sup> 100.42 + GST Credit <u>464.00</u> Net income \$21,093.58	Maximum CPP \$20,730.00 PBGF 12,000.00 OAS/GIS benefits <u>0.00</u> Pre-tax income \$32,730.00 - Approx. taxes <sup>†</sup> 2,726.03 + GST Credit <u>341.00</u> Net income \$30,344.97	77.1%
<sup>†</sup> Computed using <i>Income Tax Estimator</i> online at <a href="http://www.walterharder.ca/T1.html">http://www.walterharder.ca/T1.html</a> with settings for province of Ontario, tax year of 2006, and age 65-69 for taxpayer and spouse.			