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THE CONTAINMENT OF BANKRUPTCY RISK IN PRIVATE
PENSION PLANS

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Introduction

This paper reviews the international experience with respect to the containment of bankruptcy risk in private pension plans; that is, the risk that employees will lose some or all of their accrued pension benefits in the event of the bankruptcy of the sponsoring firm. Emphasis is placed on problems that have arisen, and the related policy responses.

There are two basic types of employer-sponsored pension plans: defined contribution plans, and defined benefit plans. In defined contribution plans, the benefit to which the employee is entitled is based on the accumulated contributions made on the employee's behalf together with the investment income earned on these contributions. In defined benefit plans, the benefit to which the employee is entitled is determined by a formula which typically links the annual pension due the employee to the employee's years of service and earnings history. For example, an employee may be entitled to an annual pension equal to 2 per cent of the employee's earnings during the last 5 years of work, for each year of service.

The traditional distinction between defined contribution and defined benefit plans focuses on the bearing of investment risk. In defined contribution plans, the employee bears all of the investment risk. In defined benefit plans, the employer bears the investment risk.¹

In the present context, there is a more important distinction. Defined contribution plans are - by definition - fully funded. So long as the employer has made the required contributions, and the plan's trustees (or an insurance company) discharge their responsibilities according to law (or regulation), the accrued pension benefits of employees are not at risk in the event of the bankruptcy of their employer.

In defined benefit plans, funding shortfalls can occur, even when legislation sets minimum funding requirements designed to ensure that benefits earned to date are fully funded. (Consider, for example, the case where investment returns deteriorate sharply.) Since pension assets may be less than the amount necessary to discharge promised pension benefits, members of defined benefit plans may be at risk in the event of the bankruptcy of the sponsoring firm. It is for this reason that most pension legislation, as well as pension regulation, is directed towards the containment of risk in defined benefit plans in the event of the bankruptcy of the employer. In the absence of fraud, and assuming that the regulatory supervision of insurance companies is adequate, there is no corresponding risk for members of defined contribution plans.

This paper thus focuses on the regulatory responses designed to contain the risks borne by members of defined benefit plans in the event of the bankruptcy of the plan sponsor. The most prevalent, although not universal, responses are funding requirements designed to ensure that plan assets are sufficient to pay for accrued pension benefits, and plan termination insurance designed to protect benefits if the plan is underfunded and the sponsoring firm goes bankrupt.

This paper is organised as follows. The first section provides an overview of the main regulatory responses used to contain the risks borne by members of defined benefit plans in the event of bankruptcy. Included in this overview is an economic assessment of the need for such regulatory responses. The second section, the major part of this paper, details the experience of five countries with regard to the containment of bankruptcy risk: the United States, Canada, the United Kingdom, Germany and Japan. The

¹. If investment returns turn out to be less than the level assumed in the actuarial valuation of the defined benefit plan, the pension fund may be inadequate to deliver the promised pension benefits, and the sponsoring firm will need to make additional contributions to offset the shortfall. In a defined contribution plan, disappointing investment returns lower the amount in the fund accumulated on behalf of the employee, and thus the pension (annuity) that can be purchased by this accumulated fund.

third section highlights the policy issues raised by the review of international experience, and offers a series of policy recommendations.

1. Regulatory responses to bankruptcy risk: Overview and economic rationale

Policy responses to concerns about bankruptcy risk include: (1) funding requirements to ensure that pension assets equal or exceed accrued pension benefits (i.e., the pension benefits due plan members in the event of plan wind-up); (2) investment restrictions, such as limits on the amount of the firm's stock that can be held in the pension fund; (3) disclosure requirements to ensure that plan members are informed as to the funded status of their plans, and thus in a position to exert pressure on their employers to accelerate contributions to underfunded plans; and (4) government-run plan termination insurance, to protect - at least in part - the pensions of employees in the event that the plan is underfunded at the time of the employer's bankruptcy.

Funding requirements are of necessity complex, and may conflict with other objectives of pension policy. To ensure that pension assets are sufficient to discharge accrued pension benefits, funding requirements may need to be so precise as to specify the assumptions to be used in the actuarial valuation that identifies the accrued pension liabilities of the firm (and thus the accrued pension benefits of its employees). To reduce the likelihood that an underfunded plan may be terminated, pension legislators may prefer to design rules which are likely to lead to overfunding or - at least - to permit overfunding to continue in the event that it arises as the result of favourable investment performance. However, private pension plans typically receive tax preferences, such as tax-deductible contributions and the tax-free accumulation of investment returns. For this reason, tax regulators may wish to impose limits on overfunding, so as to preserve the integrity of the tax base. Similarly, if the containment of bankruptcy risk were the sole objective, funding requirements could dictate that all retroactive benefit enrichments must be immediately and fully funded, rather than amortised over a period of time. To do so, however, would undoubtedly discourage plan sponsors from awarding retroactive plan enrichments, to the possible detriment of plan members. This observation has particular relevance to those countries, such as the United States and Canada, which appear to have an implicit preference for employer-sponsored plans to be of the defined benefit rather than of the defined contribution variety.

Even if funding requirements were very strict, defined benefit plans could still become temporarily underfunded; for example, as the result of a sharp drop in bond and stock prices. If the sponsoring firm were to become insolvent at such a time, employees would lose a portion of their accrued pension benefits.

For this reason, some governments have opted to provide plan termination insurance. Termination insurance is public, not private, for the following reason. Corporate bankruptcies are highly correlated due to the systematic risk inherent in macroeconomic fluctuations. So are the returns to pension fund assets. Thus private markets may not be able to provide plan termination insurance, even if demand for this insurance exists at premium rates that are commensurate with risk. This "market failure," in the view of many, provides the fundamental rationale for the public provision of plan termination insurance.

Even advocates of plan termination insurance, however, acknowledge the moral hazard and adverse selection problems that may jeopardise the long-run financial soundness of the insurance fund. To date, no government that provides plan termination insurance has set premiums for individual firms at a level that reflects their true level of risk. (No observed premium structure, for example, incorporates the risk of corporate bankruptcy.) In the United States, plan termination insurance is provided through the Pension Benefit Guaranty Corporation (PBGC). In spite of an ongoing series of reforms, the long-term financial soundness of the PBGC remains a major concern. The fact that opinion is divided as to whether termination insurance is required is most apparent in Canada. Of the 11 jurisdictions (10 provinces and the government

of Canada) that regulate private pension plans, only one, the Province of Ontario, has introduced plan termination insurance. Further, within a decade of introducing plans termination insurance in 1980, Ontario was considering its removal.

There is an additional perspective from mainstream economic analysis that also merits note. Virtually all economists now accept the proposition that pension benefits represent deferred wages. These benefits are not the "gift" of a benevolent employer. Rather, workers "pay" for their accruing pension benefits, either by reduced wages or by concessions elsewhere in the compensation package. Yet, in a competitive labour market with well-informed workers, wages will internalise the degree of risk posed by underfunded pension plans. Other things being equal, firms with fully funded plans or firms with very low probabilities of bankruptcy will extract greater wage concessions for a given level of promised pension benefits. In the limiting case, workers in poorly funded plans with a near-bankrupt employer will grant few or no wage concessions in return for enhanced pension benefits. Those who conduct public policy are inclined to evaluate pension plans solely in terms of their ability to deliver retirement incomes. Even if workers have willingly borne the risks associated with plan termination, policy analysts may find this outcome to be unacceptable. Policy analysts may also view as unrealistic the assumption that workers fully understand and willingly accept the risks to which they are exposed. Nonetheless, this economic perspective on the need for termination insurance remains useful. It suggests, for example, that a less dramatic policy initiative - such as improved disclosure, operating through the market forces of formal or informal collective bargaining - might be an adequate substitute, especially if combined with rigorous funding requirements.

2. International experience

(1) *United States*

In the United States, accrued pensions of members of a defined benefit plan are protected in the event of the sponsor's bankruptcy by a series of policy responses: (1) minimum funding requirements; (2) restrictions on pension plan investments; (3) disclosure to plan members in the event of underfunding; and (4) plan termination insurance, provided since 1974 by the Pension Benefit Guaranty Corporation (PBGC).

The feature of the U.S. system that merits the most attention, from an international perspective, is the PBGC. The PBGC insures private defined benefit plans; it is self-financed, and has three sources of income: premiums from those it insures, recoveries from plans it takes over and investment income. Since its inception, there have been a series of reforms designed to secure its long-term financial soundness. The most recent is the Retirement Protection Act of 1994, which - for example - removed the cap on insurance premiums paid by underfunded plans. Prior changes have included, for example, eliminating the possibility of voluntary termination and linking insurance premiums to the plan's extent of underfunding. In large part, these reforms have sought to reduce the moral hazard problems - and resulting strategic behaviour - arising from the fact that the insurance premium paid by an individual firm does not reflect the true risk posed by the firm to the insurance fund. Further, as an integral part of the legislative initiatives designed to protect the financial interests of the PBGC, minimum funding and like requirements have been altered as well. The PBGC was also given better tools in terms of enforcement (establishment of early warning systems, negotiation with companies, etc.) in case companies would take actions which may have a detrimental effect on their employees' pension. Besides, participants in a scheme were given an explicit right to be informed when their plans were underfunded. If a plan is less than 90% funded, the plan's sponsor must now notify the participants annually. This measure encouraged sponsors who were close to that level to fund up to that level. In 1997, thanks to these reforms and to a favourable economic context, the PBGC had its first surplus, of about \$800 millions. This surplus should amount \$3.5 billions this year. Nonetheless, in spite of this series of reforms, critics continue to argue that the long-run financial viability

of the PBGC has not been secured, and that abandonment or privatisation is the preferred policy response.² The on-going debate in the United States, and the lessons learned to date, may be of particular interest to the international community.

The minimum funding requirements now in place seek to fully fund the accrued pension benefits earned by employees.³ (This is also known as the accumulated benefit obligation or ABO.) This "wind-up" or "solvency" measure of the firm's pension liabilities reflects only salaries earned to date, and makes no allowance for anticipated salary or wage increases. The funding target is thus less stringent than would be the case, for example, if it were based on the projected benefit obligation or PBO and thus took into consideration the salary increases that could be expected through to retirement by the firm's current employees.

In order to limit the amount of tax assistance accorded to sponsors of defined benefit plans, and the possible drain on the revenue base, the amount of overfunding has been limited since 1987 to 150 per cent of the ABO. This initiative highlights the conflict between two public policy objectives with respect to private pensions: the desire to promote funding, in order to reduce bankruptcy risk; and the desire to place a cap on funding, in order to reduce the loss in tax revenue when firms increase their tax-deductible pension contributions. The ceiling on overfunding serves, inevitably, to raise the risk borne by the PBGC. The "wind-up" measure of a firm's pension liabilities is based on the interest rate that would be used to purchase a (nominal) annuity in the marketplace. A sharp drop in the market interest rate - which raises the price of an annuity and thus the firm's ABO - can thus lead to a substantial degree of underfunding.⁴

The investment of pension fund assets are subject to a "prudent person" test. Importantly, defined benefit plans are not allowed to invest more than 10 per cent of their funds in the securities of the sponsoring firm. Evidently, such securities provide little security to promised pension benefits in the event of the sponsor's bankruptcy.

The PBGC has been a pioneer in the provision of plan termination insurance, and its succession of reforms are of particular interest. For perspective, it merits note that the number of plan participants covered by this insurance program stood at 42 million in 1996, up from 39 million in 1995.⁵

If plans are fully funded (or nearly so), the potential loss of pension benefits in the event of bankruptcy is small, and the need for plan termination insurance is obviated. Further, the stated intent of United States government policy is to ensure that, ultimately, most defined benefit pensions (nominal) are fully funded. It is thus instructive to understand why, in fact, substantial underfunding of defined benefit pension plans does exist.

2. For a recent and detailed critique, culminating in a proposal for privatisation of this insurance function, see James H. Smalhout, *The Uncertain Retirement: Securing Pension Promises in a World of Risk* (Richard D. Irwin, Chicago, 1996).

3. If pension assets fall below the level of accrued benefits, this unfunded liability must be reported on the firm's balance sheet.

4. In its 1996 Annual Report, the PBGC reports that the degree of underfunding of single-employer plans increased from \$31 billion to \$64 billion largely as the result of the decline in the interest rate used by the PBGC to identify underfunding. This interest rate declined from 7.15 percent at year-end 1994 to 5.3 percent as at December 31, 1995.

5. PBGC 1996 Annual Report.

There are several reasons for this degree of underfunding, including strategic underfunding by firms that are in financial distress. Of particular note, however, is the concentration of large claims against the PBGC among the flat benefit plans that predominate in the union sector. A flat benefit plan pays a fixed periodic amount (such as \$20 per month) for each year of service. To offset the impact of inflation, and to provide real increases in pension benefits, flat benefit formulas are renegotiated upward on a periodic basis. Since these enrichments are always retroactive, new - and often quite substantial - unfunded liabilities are periodically created. United States tax law prevents these enrichments from being pre-funded. (It is not clear, if allowed, that firms would choose to pre-fund anticipated enrichments since this might weaken their position in future bargaining over the level of pension benefits.)

The premiums charged each plan for PBGC insurance (which are set through legislation, not by the PBGC) do not reflect the true risk posed for the insurance fund. Since 1987, underfunded plans do pay higher premiums than fully funded plans. There is, however, no allowance for the risk of insolvency of the plan sponsor, nor for the degree of investment risk in the pension fund. As a result, firms with a low probability of bankruptcy subsidise firms that are less stable.

Because the insurance premiums are not market-based, there exist opportunities for strategic behaviour; that is, for plan sponsors to "game" against the interest of the PBGC. As its financial situation deteriorates, a firm may reduce its plan contributions (through, for example, revising certain of its actuarial assumptions or requesting a funding waiver from the Internal Revenue Service), grant enriched pension benefits, and/or assume more risk in its pension fund. The incentives created by non-market insurance premiums, together with the relatively low priority of the PBGC's claim on a sponsor's non-pension assets under current United States bankruptcy law, invite behaviour that threatens the long-run solvency of the PBGC. Besides, recent PBGC surplus gave rise to requests to reduce premiums, in particular from the most underfunded plans. The PBGC however intends to remain vigilant, in order to strengthen its financial basis.

There is a limit on the maximum pension benefit that is insured by the PBGC. Maximum amount is currently \$34000 (annually) for someone retiring at the age of 65. There are other ways in which plan members co-insure the risk of default. Unvested benefits and special supplements for early retirement benefits are not insured, and guaranteed benefits that are created by plan amendments less than five years old are phased in at a rate of 20 per cent for each year subsequent to the plan amendment. Because of the "backloading" of pension benefits in most defined benefit plans (i.e., the tendency for pension accruals to rise sharply with age and years of service), there is substantial coinsurance by virtue of the fact that members' benefits are frozen at the date of termination. Thus, in spite of the existence of termination insurance, plan members do risk a loss of pension benefits in the event of a plan wind-up due to the insolvency of the sponsor. There is thus some market discipline on this account.

There is no shortage of proposals for the further reform of the PBGC. These include reforms within the current framework, such as an increase in the minimum funding target for defined benefit plans (and raising the maximum limit as well), a cap on the insurance guarantee for underfunded plans, changes in the Bankruptcy Code to improve the PBGC's status relative to other creditors, and - perhaps most importantly - charging a market price for PBGC insurance. Besides, the PBGC seeks to expand defined benefits plans, especially amongst small enterprises. These plans were seen as too risky when the PBGC was in deficit. They could however be the only way for a worker who started late to save for its retirement to accumulate sufficient retirement income. More dramatic proposals include the abolition or privatisation of the insurance function.⁶ This solution is however far from being approved unanimously. Supporters of a public

⁶ Smalhout (1996) offers a proposal for reform of the insurance function that has three components: (1) the freezing of benefits if plan assets become inadequate; (2) a market-based solvency test, in which plan sponsors with lower than AAA or AA credit ratings would be required to purchase termination insurance from a creditworthy private carrier; and (3) a system of co-insurance to ensure that all plan members bear some risk in the event of the termination of an underfunded plan.

insurance system emphasise that certain risks are not insurable, and that no private body would cover them unless for unaffordable premiums.

Finally, in assessing the political support for plan termination insurance in the United States and elsewhere, the potential importance of redistribution as distinct from economic efficiency merits note. Some analysts, for example, see the introduction and the subsequent evolution of the PBGC in light of the political objective of forestalling industrial decline. The cost of the pension benefits provided by firms in declining industries is shifted, in the first instance, to the third party insurer. Ultimately, this cost is shifted to prosperous firms through their inappropriately high insurance premiums, or, in the event of catastrophe, to taxpayers at large. This cross-subsidisation, one should emphasise, is endemic to existing termination insurance schemes. In Ontario, the catalyst to the introduction of plan termination insurance in December 1980 (which was made retroactive) was a series of threatened plant shutdowns. Unsurprisingly, there was no attempt to levy insurance premiums commensurate with the risks posed by these distressed firms. To levy such premiums might, in and of itself, force these firms into bankruptcy.

(2) *Canada*

In Canada, like the United States, the significant majority of members of occupational pension plans belong to defined benefit plans.⁷ Unlike the United States, however, there has been little change in the past 10 years in the basic legislative and regulatory framework for employer-sponsored private pension plans.

Canada uses a combination of minimum funding requirements, investment restrictions (the prudent person standard), and disclosure requirements to contain the risk posed to employee pensions in the event of the bankruptcy of the sponsoring firm. Unlike the United States, only one province (Ontario, in 1980) has adopted a system of plan termination insurance. The other nine provinces and the federal government, all of which have pension supervisory responsibilities, have not introduced this type of insurance.

In Canada, all jurisdictions require that sponsors of defined benefit plans fully fund the pension benefits earned by their employees. The majority of plan members belong to plans that are funded by a trusted arrangement, while a minority - typically the smaller plans - are funded through an insurance arrangement. Although it is difficult to draw precise comparisons, especially since the relevant provisions have evolved over time, it would appear that funding requirements are more rigorous in Canada than in the United States. For example, when the Employee Retirement Income Security Act (ERISA) was introduced in the United States in 1974, the amortisation period for past service credits was set at 40 years, and the amortisation period for benefit improvements was set at 30 years. In Canada, Ontario's pioneering Pension Benefits Act was introduced in 1965. This Act provided that initial unfunded liabilities that existed as at January 1st of that year had to be amortised by a series of special payments within 25 years. Unfunded liabilities that arose after this initial valuation, either because of plan amendments or because of the introduction of new plans, were to be amortised over 15 years. Other liabilities that arose from adverse experience, such as poorer investment performance than anticipated, were - as a general rule - to be amortised over 5 years.

⁷. As at year-end 1995, 88.6 percent of members of occupational pension plans in Canada belonged to defined benefit plans. (Statistics Canada, Pension Plans in Canada, Statistical Highlights and Key Tables, January 1, 1995, catalogue 74-401-SPB.) The percentage of U.S. members who belong to defined benefit plans is somewhat less, at around 70 percent.

In Canada, defined benefit plans must be funded on a going-concern basis. The funding target is the projected benefit obligation (PBO), which takes anticipated salary increases into account. In the United States, the funding target is the ABO. The ABO measures the firm's pension obligations in the event of plan wind-up, and is more modest since it does not take anticipated salary increases into account. The tax treatment of private pensions in Canada is similar to the tax treatment in the United States. However, concern about "abuse" of the tax preference appears to be less an issue in Canada. The maximum amount of overfunding in Canada is linked to the PBO, not the ABO, and appears to be more generous on this account.

As noted, only the Province of Ontario has introduced plan termination insurance. Like the PBGC, the Guarantee Fund was designed as a self-funding program financed by premiums paid by the sponsors of defined benefit plans. The Guarantee Fund was established six years after the PBGC, and was designed to pre-empt some of the more difficult problems that plagued the PBGC. For example, the insured event has always been the insolvency of the plan sponsor. Further, the Guarantee Fund in Ontario has a lien on employer assets equal to the full amount of the insured shortfall of pension assets. There is no provision, unlike the United States, for funding waivers if the employer is experiencing financial difficulties.⁸

Nonetheless, by the end of the decade, the government of Ontario was considering abandoning the scheme (accompanied by tighter funding requirements, especially for flat benefit plans) as the result of concerns regarding financial soundness.

In Canada, as in the United States, flat benefit plans are typically less well funded than earnings-based plans. Thus the exposure of the Guarantee Fund, as revealed by unfunded liabilities measured on a wind-up basis, is largest in the flat benefit plans that predominate in the union sector. As in the United States, it is the periodic and retroactive enrichments of these plans that generate significant unfunded liabilities.

The premium structure for the Guarantee Fund resembles that of the PBGC. There is a flat premium per member plus a premium surcharge related to the degree of underfunding measured on a termination basis. As in the United States, insurance premiums do not reflect the probability of bankruptcy of the corporate sponsor, and thus are not set at market levels on this account.

There is a limit on the maximum pension insured by the Guarantee Fund. This maximum insured pension is nominal, and has not been increased since the Guarantee Fund was introduced in 1980. The maximum pension insured by Ontario's Guarantee Fund is less than one-third of the maximum pension insured by the PBGC. To protect the integrity of the Fund, and to limit strategic behaviour, certain enriched early retirement benefits and any benefit enrichment in effect for less than three years are excluded.

The most significant departure from the United States experience is the absence of plan termination insurance for all plan members in Canada except those subject to Ontario's jurisdiction. This result occurs in spite of the fact that pension law and regulations are very similar on all other accounts across the different jurisdictions.

To provide an economic rationale for this disparity is difficult. It seems unlikely, for example, that policymakers in Ontario reject the "rational worker" assumption implicit in the analysis of competitive labour markets, while policymakers in other jurisdictions accept this assumption.

⁸. See James E. Pesando, "The Government's Role in Insuring Pensions" in Zvi Bodie, Olivia S. Mitchell and John A. Turner (editors), Securing Employer-Based Pensions (Philadelphia, University of Pennsylvania Press, 1996).

Interestingly, Ontario has always been considered Canada's "industrial heartland," and the existence of termination insurance only in this province is entirely consistent with a political explanation that is frequently cited in the United States: that is, that an important, although unstated, goal for plan termination insurance is to subsidise the cost of pension benefits (and thus employee compensation) in declining industries.

(3) *United Kingdom*

(i) *The pre-reform situation*

In most countries, pension legislation is in a process of continual evolution. This is certainly true in the United Kingdom as regards the issue of bankruptcy risk. Following the well-publicised shortfalls in the pension plans sponsored by Maxwell companies in 1992 and 1993, the government established the Pension Law Review Committee, chaired by Professor Roy Goode, to recommend any changes that might be enacted in order to enhance pension security. The recommendations of this Committee, whose report was filed in September 1993, have been largely adopted or are in the process of being adopted. To place these recommendations in context, and to understand the exposure of plan members to bankruptcy risk, it is necessary to review the main features of the pension system that was in place prior to the most recent reforms.⁹

State Retirement Pensions in the United Kingdom have two parts. The first part is a fixed benefit that depends on the worker's contributions record but does not vary with the worker's level of earnings. The second part is linked to the worker's earnings, and is known as the State Earnings Related Pension scheme (SERPs). If an employer-sponsored plan meets specified criteria, the employer may contract out of SERPs. In this event, both the employer's and the employees' National Insurance contributions are reduced between the lower and upper earnings limits. Salary-based (defined benefit) plans that contract out are required to provide the additional earnings-related pension known as the Guaranteed Minimum Pension (GMP). Most plans provide additional benefits, and some plans only provide such additional benefits (and their members remain contracted in to SERPs). At present, about 50 per cent of workers in the United Kingdom are covered by an occupation pension plan, and 90 per cent of these members have contracted out of SERPs. Since 1987, so can an individual who sets up an appropriate personal pension. An additional 25 per cent of employees have contracted out of SERPs by setting up an appropriate personal pension.

Employers who contract their employees out of SERPs do so by providing an adequate defined benefit pension plan.¹⁰ Minimum funding requirements are imposed on these employer-sponsored plans, but only with regard to the GMP. Contracted-out plans are required to fully fund the Guaranteed Minimum Pensions of their plan members. Funding in excess of this amount is not required by law. In most contracted-out plans, the members' GMPs are well beneath the actual pension benefits earned on the basis of service to date. Ensuring that sponsors fund pension benefits in excess of members' GMPs is the responsibility of the plan's trustees. Most defined-benefit plans that have contracted out fund benefits in

⁹ For a more detailed description of this system, See Christopher D. Daykin, "Occupational Pension Plans in the United Kingdom," in Zvi Bodie, Olivia S. Mitchell and John A. Turner (editors), *Securing Employer-Based Pensions*, Philadelphia, University of Pennsylvania Press, 1996.

¹⁰ Contracting-out is now possible, as well, for employers who provide defined contribution plans. To date, there is apparently little evidence that employers are terminating defined benefit plans and establishing defined contribution plans.

excess of the GMP on a going-concern basis, using a projected benefit obligation (PBO) or indexed benefit obligation (IBO).¹¹

In order to qualify for the preferred tax treatment accorded pension plans, a plan must be established by a trust, with financial management of the plan delegated to the trustees. If an actuarial valuation reveals that the plan's assets are insufficient to pay for accrued benefits, it is the responsibility of the plan's trustees to correct the imbalance, usually by requiring the employer to make additional contributions. If the employer is not able (or is unwilling) to make these increased contributions, the trustees may wind-up the plan in order to protect the value of previously accrued benefits. If there is an unfunded liability when a plan is wound up as the result of the sponsor's bankruptcy, the amount of the unfunded liability is treated as a debt of the employer. If this debt (which ranks with other creditors in the liquidation) is not paid, the trustees have the responsibility of reducing the benefits payable from the plan.

Unlike Canada and the United States, the adequacy of funding is not determined by a comparison of the market value of the assets in the pension fund with a measure of the firm's pension obligations. Instead, the adequacy of pension funding is determined by an assessment of current and projected cash flows from pension assets. Generally speaking, the use of this measure has not proved to be in conflict with the need for firms to have sufficient funds to meet their pension obligations in the event of plan wind-up. This is due to the fact that firms tend to use the PBO or IBO as a target, which tend to exceed the ABO (and hence the firm's pension obligations in the event of wind-up). There is concern, however, that the recent introduction of compulsory indexing may - by increasing the ABO - increase the likelihood that contracting-out plans may have inadequate funds to discharge all of their accrued pension benefits in the event that the sponsoring firm goes bankrupt.

As in Canada and the United States, the significant majority of members of occupational pension plans belong to defined benefit plans. These are typically of the final earnings type. Also as in Canada and the United States, the investment of pension funds is subject to a prudent person rule, rather than to a detailed list of eligible and ineligible investments. Plans are limited to investing a maximum of 5 per cent of their assets in the securities of the sponsoring firm. As noted, such securities are likely to provide little security to workers' accrued benefits in the event of the sponsoring firm's insolvency. As in Canada and the United States, there is a limit on overfunding (5 per cent of the PBO or IBO), so as to limit the amount of tax assistance provided to private pension plans. In the United Kingdom, both employer and employee contributions to an occupational pension plan are tax deductible, and assets within the plan earn investment income on a tax-free basis.

In the United Kingdom, there is - prior to reform - no formal system of plan termination insurance. In the event of the insolvency of the plan sponsor, any deficiency in plan assets relative to accrued benefits is treated as a debt of the employer. If this debt is not repaid, the trustees of the plan must reduce benefits, according to the priorities established in the trust deed. The protection of plan members thus relies on the fiduciary responsibility of the plan's trustees, to ensure that pension assets are sufficient to meet accrued pension benefits.¹²

^{11.} The IBO assumes indexation of the pension benefit after retirement.

^{12.} The absence of a formal system of plan termination insurance may also explain, at least in part, the absence of a legal requirement that contracted-out firms fully fund those benefits in excess of the GMP. In the United States, in particular, minimum funding requirements for defined benefit plans have evolved over time to reflect the need to protect the financial interests of the PBGC.

There is, however, an implicit system of (partial) plan termination insurance. If a sponsor of a contracted-out plan goes bankrupt, the GMPs of its members will be restored upon transfer of the corresponding plan assets to the state scheme, even if plan assets are inadequate for this purpose. Thus there exists implicit termination insurance for GMPs, but not for benefits in excess of these amounts.¹³ No premiums are levied for this implicit insurance, implying (for example) that there is a potential cross-subsidy from the employers and employees of financially sound firms to their counterparts in less stable firms.

As noted, occupational pension plans that contract out of SERPs usually provide benefits in excess of the GMP. Thus, in spite of the implicit termination insurance described above, most members of contracted-out defined benefit plans are at risk in the event of their employer's insolvency if pension assets are less than accrued pension liabilities.

If the sponsor of a contracted-out plan goes bankrupt, then those pensions that replace social security pensions are treated as if bought back into SERPs, even if the plan's assets are insufficient to do so. To protect the integrity of SERPs, the Occupational Pensions Board has the statutory responsibility to ensure that employers fully fund the accrued liabilities in respect to Guaranteed Minimum Pensions. If a plan fails to demonstrate that it has adequate resources, the Occupational Pensions Board (the statutory body which has the responsibility for monitoring plans that have contracted out) may withdraw the right to contract out of SERPs. At present, the only funding requirement set out in regulations is that the pension plan have assets at least equal to the GMPs of its members. No statutory requirement is imposed, in general, if the funding level of the plan is less than 100 per cent as established by its actuarial valuation. Further, the actuarial valuation, which must be made at least every three and a half years, need not provide the details of the method or the assumptions used in the calculation.

(ii) *The new reforms*

About 750 pension plans have been wound up with assets that are insufficient to meet their members' GMPs. Most of this shortfall, in fact, is linked to the Maxwell companies that were wound up between 1992 and 1994. Further, there is concern that the fund shortfalls were due - at least in part - to fraudulent business practices.

The highly-publicised shortfalls of pension assets relative to pension liabilities in the Maxwell plans served to focus renewed attention on the issue of bankruptcy risk. The Pension Law Review Committee - established as a response to the Maxwell debacle - recommended that a compensation fund be established in order to protect benefits in the event of fund shortfalls, but only if there has been fraud or theft of assets. The Committee also recommended a minimum funding rule based on the plan's ABO, as well as the abolishment of the GPM.

The proposal to abolish the GMP, embodied in legislation that has now been introduced into Parliament, would require contracted-out defined benefit plans to satisfy certain overall requirements regarding the generosity of pension benefits. Employees in contracted-out plans would not be eligible to receive any additional benefits from SERPs for the period in which they were contracted out. The current system of implicit termination insurance with regard to the GMPs of members of contracted-out defined-benefit plans would be eliminated.

^{13.} The implicit level of termination insurance in the United Kingdom, linked only to the GMP, is fairly modest and much closer to the explicit level of insurance in the Province of Ontario (Canada) than the explicit level provided by the PBGC in the United States.

Additional policy proposals, in large part a reaction to the difficulties with the Maxwell pension plans, include:

1. Pension plans would be required to meet a solvency test based on the cash equivalent concept. The present value of the benefits earned to date, for vested pensions, deferred pensions and pensions in pay, is to be compared with the assets in the plan. The determination of the cash equivalent of the pension benefits earned to date is to be subject to regulation, with particular attention to the interest rates to be used in the present value calculation.
2. Firms which failed to meet this test would be required to present a proposal to rectify the situation. If the plan's assets fell beneath 90 percent of the amount dictated by the solvency test, a new Pensions Regulator would require an immediate cash contribution or equivalent arrangement. If this were not forthcoming, the Pensions Regulator could wind-up the plan and impose the funding shortfall as a debt on the firm.¹⁴
3. A termination insurance system would be created, but only to rectify shortfalls that are due to fraud, theft, or misappropriation. There would be no premiums established in advance for this system. Rather, there would be an after-the-event levy imposed on all occupational pension plans eligible for the insurance.
4. The solvency position for each defined-benefit plan is to be shown in the plan's actuarial valuation, which - commencing in 1997 - is to be required every three years. However, actuaries may be required to disclose significant changes to the plan's solvency position on an annual basis.

The recent experience and policy response in the United Kingdom with respect to bankruptcy risk reflects two trends already noted in both Canada and the United States. The first is that reform with regard to protection of pension benefits in the event of bankruptcy is often event driven. In the United Kingdom, the catalyst to reform was the pension shortfalls that emerged with the collapse of the Maxwell companies. In the United States and Ontario, the threatened collapse of firms in the industrial heartland led to the introduction of plan termination insurance. The second trend is that, to protect accrued pension benefits, regulators are using a solvency test based on a wind-up measure of the firm's pension liabilities. In the United Kingdom, prior to reform, there was no legislative requirement that defined-benefit plans be periodically subject to this type of solvency test. Further, in line with recent experience in the United States (designed, in part, to protect the financial interests of the PBGC), tighter funding requirements have been imposed relative to those that existed in the past. Authorities are however in favour of not too conservative funding margins as well as relatively low level of guarantees by the pension schemes themselves, in order to allow pension funds to achieve high rates of investment returns.

Public policy in the United Kingdom has been to restrict the growth of public pensions and to encourage the growth of private pensions. This is evidenced, for example, by the introduction in 1987 of appropriate personal pensions as a vehicle for contracting out of SERPs. The pay-as-you-go (PAYG) social security system provides a basic flat benefit, and an earnings-related benefit that serves as a back-up or safety net for those who are not covered by an occupational or personal pension plan. The latter, both of which are

¹⁴. In assessing the risk of insolvency, it merits note that pension funds in the United Kingdom invest much more heavily in stocks than, for example, do pension funds in Canada or the United States. Although this preference for equities is linked to the final earnings format of most defined benefit plans and post-retirement escalation of benefits, it does increase the risk - other things equal - of a funding shortfall, due to the relatively high volatility of equity prices.

encouraged through tax incentives, substitute fully-funded private pensions for PAYG public pensions. Besides, the authorities wish to encourage the development of second pillar schemes rather than to rely on the third pillar.

The legislation enacted after the Report of the Pension Law Review Committee is designed to enhance the security of private pension benefits, especially in the event of the bankruptcy of the sponsoring firm. The minimum solvency standards seem crucial in this regard. However, with the exception of a new insurance system to protect workers' pensions in the event of fraud, no public-provided (or private) plan termination insurance has been established, in order to avoid the development of situations of moral hazard. The employer remains ultimately responsible for the payment of pensions. In this sense, the system to protect the accrued pension benefits of members of defined benefit plans more closely resembles the case in Canada than in the United States.

(4) *Germany*

In the United States, Canada and the United Kingdom, the first line of defence against the insolvency of the employer is the requirement that pension obligations be funded, combined with strict limits on the amount of the pension fund that can be invested in the securities of the sponsoring firm. The resulting diversification of plan assets protects the accrued pensions of plan members in the event of the sponsor's insolvency, under the reasonable assumption that the demise of the sponsor will not be highly correlated with the overall return on pension assets.

In Germany, courts have enforced a minimum standard of funding for pension funds¹⁵. However, firms have the option of choosing a book reserve system to finance their pension plans, and the book reserve method is - in fact - the primary system in current use. As a result, pension liabilities are typically not secured by pension assets held in a separate trust. Instead, the employer has a direct obligation to pay promised pension benefits, and these benefits are paid out of company, not pension, assets. Financing takes the form of the accrual of book reserves. Book reserves, in effect, represent a source of self-financing to firms. Analytically, the system is equivalent to a funded system in which all of the pension plan assets are invested in a single security: the debt of the sponsoring firm.

To protect the promised pension benefits in the event of the employer's bankruptcy, the book reserve system is accompanied, since 1974, by mandatory insolvency insurance. Insolvency insurance is provided by the Pensions-Sicherungs-Verein (PSVaG), a mutual insurance corporation. As such, the PSVaG is in particular submitted to the same solvency standards than other insurance companies. From 1975 to 1996, the PSVaG insured the payment of pensions in 6000 cases of plan termination.

It is instructive first to review the different financing arrangements that are permitted in Germany, and then to examine in detail the operation of the PSVaG.¹⁶

¹⁵. In Germany, "pension fund" refers to "Pension Kassen", i.e. mutuals submitted to the prudential regulation of insurance companies.

¹⁶. For a more detailed review of the system of occupational pension plans in Germany, see Peter Ahrend, "Pension Financial Security in Germany," in Zvi Bodie, Olivia S. Mitchell and John A. Turner, Securing Employer-Based Pensions, Philadelphia, University of Pennsylvania Press, 1996.

Employer-sponsored pension plans in Germany can be financed either through the accrual of book reserves (in effect, internal financing) or through contributions to a legally independent institution (external financing). External financing may take one of three forms: (1) a support fund; (2) a pension fund; or (3) direct insurance. Of the reserve funds accumulated for employee pensions as at 1991, the alternative financing methods accounted for the following percentages:

Book reserve:	58 per cent
Pension fund:	22 per cent
Direct insurance:	11 per cent
Support fund:	9 per cent

Firms do not have a legal obligation to make payments to a support fund and promised benefits, in general, are not prefunded. In the event that a support fund does not have sufficient assets to meet benefit claims, the employer is liable for the promised pension benefits. From this perspective, support funds also embody a type of internal financing. Only pension plans that are financed through pension funds or direct insurance¹⁷ are thus exempt from the mandatory insolvency insurance provided by PSVaG.

Under the book reserve method, firms must accrue a book reserve to offset the pension benefits earned by employees as these benefits accrue. Book reserves are accrued under the "entry age normal" method. Under this method, current service costs (and thus pension accruals) are set at a level annual amount over the anticipated work life of each employee. Stated differently, the book reserve accrual in each period is equal to the estimate of the present value of the pension benefits earned during this period. The interest rate used in the calculation of the entry-age normal contribution rate is set by statute and is uniform across firms. The book reserve appropriations made by the employer are tax deductible. When pensions are paid, book reserves are reduced and the firm's taxable profits rise accordingly.

Pension funds are always established as mutual insurance companies. As is the case with direct insurance, pension benefits are paid by the insurance company. As a result, the security of the pension entitlements is not dependent upon the solvency of the employer. Rather, the security of these benefits rests with the regulatory responsibilities of the Federal Supervisory Office for Insurance Companies under the Insurance Control Act. The latter, for example, imposes restrictions on the investment of funds, so as to promote security and diversification.

As in other countries, employer-sponsored pension plans receive tax preferences, especially if there is advance funding. For example, employer contributions to pension funds are tax deductible. Further, investment returns are not subject to tax, unless the pension fund is overfunded.

Pension benefits financed by the book reserve method (and, to a considerable extent, by support funds) are benefits that are not secured by an external fund that holds a diversified portfolio of securities. At present, book reserves represent about 60 per cent of the accumulated reserves that have been set aside to meet promised pension benefits. If the sponsoring firm were to go bankrupt, the accrued pensions of both active and retired workers would clearly be at risk. For this reason, the key to the security of employee pension benefits in Germany is the existence of the insolvency insurance provided by the PSVaG.

^{17.} Pensions financed by direct insurance are exempt from insolvency protection through PSVaG only if the claim is not revocable and if the insurance has not been pledged, assigned or used as collateral.

In the event of bankruptcy, the PSVaG is required to pay all the pension benefits due under the terms of the employer's plan. These include pensions that are currently in pay, together with the pension benefits that are legally vested at the time of the bankruptcy.¹⁸ The statutory vesting period in Germany is 10 years if an employee has attained age 35. The fact that unvested benefits are not insured thus merits emphasis. The PSVaG is not required to pay a monthly pension in excess of three times the Social Security Contribution Ceiling. Certain pension benefits - such as enrichments granted in the last year prior to insolvency that exceed the benefits granted in the prior year - are excluded from coverage. This is analogous to steps taken by the PBGC in the United States and the Guarantee Fund in Ontario to limit the scope for strategic behaviour against the interests of the public provider of termination insurance. Insured benefits are paid in full even if the bankruptcy involves criminal behaviour on the part of management, and even if the firm is not current in its required contributions to the PSVaG.

Employers are required by law to make contributions sufficient to finance the insolvency insurance on a pay-as-you-go basis. Required contributions are based on the size of the employer's pension liabilities, including pensions in pay to retired workers. The contribution rate, like its counterparts in North America, is not linked to a measure of the likelihood of the firm's insolvency. For this reason, the insurance premiums levied by the PSVaG are not market-determined rates; that is, the true risks of a claim on the insurance fund are not internalised into insurance premiums. There is thus a cross-subsidy, as in North America, from stable to less financially secure firms.

The annual contribution rate is set equal to the ratio of the capital required in the year by the PSVaG to the total amount of employers' liabilities for pension benefits. In 1975, the contribution rate was set equal to 0.15 per cent. Since then, it has fluctuated from year to year. To date, the highest contribution rate occurred in 1982, at 0.69 per cent; the lowest, in 1990, at 0.03 per cent.

In the United States, the PBGC levies premiums based, in part, on the amount by which pension assets fall short of pension liabilities. So, too, does the Guarantee Fund in Ontario. In Germany, there are no pension assets if the employer uses the book reserve system. From this perspective, the fact that the PSVaG levies premiums on the full amount of the employer's pension liabilities is a parallel policy, since this is the amount by which pension liabilities exceed pension assets. The fact that all accrued pension benefits under the book reserve system are implicitly treated as unfunded serves to highlight the omission of the firm's ex ante risk of bankruptcy into the determination of its insurance premium.

From the perspective of North America, the apparent lack of concern regarding the financial soundness of the PSVaG is surprising. In large part, this may reflect the relatively favourable experience of the PSVaG, at least to date. From 1988 to 1992, for example, the required contribution rate averaged 0.07 per cent. This is one-half the average contribution rate (0.14 per cent) required during the five years (1975-1979) immediately following the creation of the PSVaG.

^{18.} The PSVaG is a mutual insurance corporation. It does not pay benefits directly, but purchases annuities from a consortium of life insurance companies.

The PSVaG, like the PBGC in the United States, came into existence in 1974. Importantly, the event insured by the PSVaG has always been the bankruptcy of the firm. In the United States, by contrast, insurance provided by the PBGC was initially extended to voluntary plan terminations. This widely-acknowledged flaw in the initial design of the PBGC, which led to strategic behaviour by firms against the financial interests of the PBGC, was later corrected.

Yet, if a small number of large firms were to experience financial distress, the required contribution rate could rise sharply. (In 1982, the contribution rate rose to 0.69 per cent, more than triple the contribution rate in 1981.) Further, adverse selection would appear to present more of a problem than in the United States, since the cross-subsidy from secure to less stable firms appears to be more pronounced. Perhaps, the tax-subsidised self-financing available to secure firms who use the book reserve method provides a strong enough incentive to prevent their seeking to exit the system by adopting a different type of financing arrangement for their pension plans (such as setting up a pension fund). It also merits note, in this regard, that occupational pension plans in Germany are voluntary, as in the United States, Canada and the United Kingdom. It does seem, however, that the difficult economic situation that presently exists in Germany may draw increased attention to what appears - at least from a North American perspective - to be a legitimate concern about the long-run financial soundness of the present system of insolvency insurance.¹⁹ Apparently, there are discussions concerning the possibility (for example) of enhancing the status of the PSVaG as a creditor in the event of bankruptcy.

(5) *Japan*

In Japan, occupational pension plans are mostly defined benefit plans. As a result, the issue of the security of accrued pension benefits in the event of bankruptcy is a salient issue. So, too, is the extent to which the prefunding of pension benefits and/or plan termination insurance serve to reduce the risk borne by employees in the event that their employer goes bankrupt.

Historically, a distinguishing feature of the Japanese pension system has been the Lump Sum Retirement Benefit plan. These plans pay a large lump sum to the employee when the employee reaches the mandatory retirement age, which is often age 55. Lump sum benefit plans are financed by the book reserve method.²⁰ As a result, there is no advance funding. Due to the absence of advance funding, employers are faced with large pay-outs at the time of retirement. This fact served as a catalyst to reform, as employers sought to introduce a system which permitted advance funding.²¹

Tax Qualified Pension Plans (TQP) were introduced in 1962 and Employees' Pension Fund (EPF) plans were introduced in 1966. In some companies, a TQP plan or an EPF plan replaced a lump sum benefit plan. In other companies, the lump sum benefit plan has continued, along with a TQP plan or an EPF plan. As a result, there are several types of defined-benefit plans in Japan, with different financing arrangements.²²

^{19.} It merits note that the German social security system, although under review in light of emerging demographic pressures, is more generous than its counterparts in the United States, Canada and the United Kingdom, especially for workers at higher earnings levels. This fact may contribute to the more sanguine attitude towards the book reserve system and the related role of solvency insurance.

^{20.} For a more detailed discussion of the evolution of pension plans in Japan, see Noriyasu Watanabe, "Private Pension Plans in Japan," in Zvi Bodie, Olivia S. Mitchell and John A. Turner, *Securing Employer-Based Pensions*, Philadelphia, University of Pennsylvania Press, 1996.

^{21.} Under book reserve financing, employers are allowed to take a tax deduction based on the lump sum that an employee would receive if he or she left the job voluntarily; that is, before the mandatory retirement age. However, the lump sum benefits due at the mandatory retirement age are much larger. At the date of mandatory retirement, the employer is allowed a further tax deduction equal to the difference between the lump sum benefit due for voluntary retirement and the larger benefit due at mandatory retirement.

^{22.} There are also non-tax qualified defined benefit plans, and three types of defined contribution plans.

A TQP plan must be funded through a financial institution, typically a life insurance company or a trust banking company. Required contributions are set in advance, either as a fixed percentage of salary or as a fixed level amount. If a subsequent actuarial calculation, which must be conducted at least every five years, determines that the plan is overfunded or underfunded, then contributions must be revised accordingly.

An EPF plan is a contracted-out plan - more specifically, a plan that is a substitute for the earnings-related component of the public plan that covers the majority of workers in the private sector. To qualify for contracting out, the employer must establish the EPF plan as a legal entity separate from the plan sponsor, and provide a pension benefit that is at least 30 per cent more generous than the social security benefits that are being replaced. An EPF plan, like a TQP plan, is an advance funded pension plan. Like TQP plans, most EPF plans are managed by life insurance companies or trust banking companies. Both thus differ in a fundamental way from lump sum benefit plans, which are financed using the book reserve method.

At present, about 90 percent of firms with more than 30 employees provide an occupational pension plan. For firms that sponsor pension plans, the breakdown by plan type is as follows:

book reserve plan only:	49 per cent
TQP plan and/or EPF plan:	11 per cent
book reserve plan and TQP plan and/or EPF plan:	39 per cent

The percentage of firms offering a book reserve plan has been declining.²³ TQP plans and/or EPF plans tend to be favoured by larger firms, so the numbers cited above tend to understate their relative importance. Indeed, a single employer must have at least 500 workers to establish an EPF plan.

The risk borne by plan members in the event of insolvency varies with the type of plan to which the member belongs. Since 1976, employers who sponsor book reserve plans have been required to guarantee this amount with a financial institution. In fact, the majority of employers apparently do not guarantee their book-reserve plans, as the regulations are laxly enforced. As a result, it would appear that the lump sum payments due plan members remain at risk in the event of the insolvency of their employer.

There is no termination insurance for TQP plans, so members remain at risk in the event of the bankruptcy of their employer. For these plans, however, this risk is mitigated by the requirement of advance funding. It does merit note, however, that TQP plans are used more by small employers, where the risk of bankruptcy is presumably higher.

^{23.} TQP plans and EPF plans receive more favourable tax treatment than do book reserve plans. For the former, contributions are fully tax deductible. For a book reserve plan, the employer's tax deduction is limited to 40 percent of the value of the accruing lump sum benefit payable in the event of voluntary termination. Nonetheless, many firms still offer book reserve plans because the reserves so accumulated permit the self-financing of working capital. Further, the return on assets in a TQP plan or EPF plan is lightly taxed, while - in effect - the return on the working capital of the firm is taxed at the corporate rate, which is (about) 50 percent.

In 1989 the Pension Guarantee Program was established to provide plan termination insurance to members of EPF plans. EPF plans are required to make contributions to the insurance program, and these contributions are intended to reflect the statistical likelihood of termination as well as the unfunded liability if the plan is terminated. As previously noted, insurance premiums in the United States, Canada, and Germany do not attempt to distinguish among firms on the basis of their differing probabilities of bankruptcy. It would appear that the proxy for financial soundness in Japan is simply the size of the employer, as the required contribution per participant declines gradually as the number of participants increases. As of 1994, there had been only one plan termination under the Pension Guarantee Program, and this plan was sufficiently well funded that there was no claim on the insolvency insurance program. Since 1995 however, 22 cases of pension schemes termination have been recorded. The strengthening of the financial basis of the pension guarantee programme has therefore become urgent.

To provide an overview of the extent to which members of defined-benefit plans in Japan are exposed to bankruptcy risk, it is useful to compare the size of the book reserves for pension assets in the respective types of plans. In 1992, in U.S. dollars, the total value of book reserves was equal to \$100 billion; the pension assets in TQP plans, to \$119 billion; and the pension assets in EPF plans, to \$255 billion.

It merits note that until the fiscal year ended in March 1998, pension assets were measured on an historical or book basis, rather than on the basis of market value. To determine if a pension plan was underfunded, and therefore in need of higher contributions, one had to compare the market value of the plan's assets to a wind-up (or cash equivalent) measure of the plan's liabilities. This was, of course, not possible if assets were valued on an historical or book basis. Since then however, pension funds liabilities must be valued on the basis of market value; simultaneously, winding up measurement of plans liabilities has been introduced. Consequently, major pension funds turned out to be underfunded. They will have to make up for their deficit in seven years (through an increase in contributions for instance).

There are two other features of the occupational pension system that merit note in an international context. First, at least for EPF plans, there are fairly tight restrictions on the investment of plan assets. For example, these plans cannot invest more than 30 percent of their funds in equities. These rules are however being phased out (they are no more applicable to the largest pension funds, and will soon be abandoned by smaller ones). The "prudent man" principle is currently under consideration. Second, in the other countries reviewed in this paper, the life insurance companies or other financial institutions that hold pension funds are presumed by most observers to be tightly enough regulated that any risks posed to plan members by their possible bankruptcy are remote.²⁴ In Japan, the financial soundness of trust banking companies and life insurance companies, the principal managers of pension assets, is apparently a source of concern to those who conduct policy.

In summary, as it pertains to the issue of bankruptcy risk, the circumstances of members of occupational pension plans in Japan are as follows:

Lump Sum Retirement Plan (Book Reserve Plan):	No advance funding
TQP Plan:	No (effective) guarantee system
	Advance funding
	No termination insurance
EPF Plan: Advance funding	Termination insurance

²⁴. It is beyond the scope of this paper to attempt to assess the adequacy of the supervision of life insurance companies and other relevant financial institutions in these countries.

Relative to the four countries previously reviewed, members of defined benefit plans in Japan - especially those in book reserve plans and (to a lesser extent) TQP plans - appear to bear considerable risk in the event of the employer's bankruptcy. This additional risk, one should also note, is in a country which has the most rapidly ageing population of any developed country. In this context, the introduction of defined contributions schemes is currently under discussion in Japan. Besides, many other reforms are expected in the field of pension in this country.

(6) Other countries

In Luxembourg, like in Germany, pension schemes are largely financed through book reserves. Companies' main motivation in adopting such a system are fiscal considerations. However, these book reserves often have for counterpart identified funds; in many cases, this asset has been reinsured by an insurer, and replaced by a debt to that insurer. A draft law concerning the establishment of an insurance against the insolvency risk of pension funds, comparable to that provided by the PSVaG, is currently being discussed. In Sweden, the system of insurance against pension fund bankruptcy is comparable to that of Germany, except that two insurance companies (for blue and white collars respectively) share the role of the PSVaG between them.

In Australia, contribution to pension systems is compulsory for all employers, including the State. They have to contribute by 6% of employees' salaries (this should increase on a sliding scale up to 9% on year 2002). The great majority of schemes are defined contribution schemes (84%), and the number of such schemes is increasing. Nevertheless, some important government schemes are defined benefit schemes. Responsibility regarding pension protection is placed upon the trustee. As from July 1998, all employers will be obliged to offer a choice of pension funds to new employees. This obligation will soon be extended and concern all employees.

3. Policy recommendations

(1) Overview

In response to emerging demographic pressures, governments in many OECD countries are seeking to control the size and costs of public pensions.²⁵ The intention, in large part, is to place increased reliance on private pension arrangements to deliver retirement incomes.

In the five countries reviewed in this report, the primary form of employer-sponsored pension plan is the defined benefit plan. In a defined benefit plan, the accrued pensions of plan members are at risk in the event that these benefits are underfunded and the sponsoring firm goes bankrupt. For this reason, most governments have taken steps to mitigate this risk. The lessons learned from this international experience, together with a thorough understanding of the underlying economic issues, is central to the formulation of appropriate public policy.

There are two key policy responses to protect employee pension benefits in the event that the employer experiences bankruptcy: (1) minimum funding requirements, to ensure that plans have sufficient assets to meet their accrued pension liabilities, measured on a wind-up basis; and (2) the public provision of plan termination insurance, to protect benefits in the event that the plan is underfunded at the time of the sponsor's bankruptcy. The international variation in the public policy response to this issue is quite striking. At one extreme, the United States relies upon a combination of minimum funding requirements designed to maintain full funding on a wind-up basis and the public provision of plan termination

²⁵. See, for example, OECD Social Policy Studies No. 9, *Private Pensions and Public Policy*, OECD, 1992.

insurance. At the other extreme, Lump Sum Retirement Benefit plans in Japan - one of three major types of defined-benefit plans in that country - are financed by the book reserve method. As a result, there is no separate pension fund to deliver accrued pension benefits in the event of bankruptcy. Further, there is no publicly-provided termination insurance or (effective) private guarantees to mitigate this risk.

There is also a dramatic difference in public policy regarding the use of minimum funding requirements. In North America, these advance funding requirements are the first line of protection afforded employees. In the United Kingdom, these advance funding requirements are the only line of protection. In Germany, in sharp contrast, the majority of occupational pension plans are financed using the book reserve method, so that the basic line of defence rests with the public provision of plan termination insurance. In Japan, the experience varies with the type of defined-benefit plan offered by the employer (who, one should note, may provide more than one type of defined benefit plan). Lump Sum Retirement Benefit plans are financed through the book reserve method, and not supported by an effective system of termination insurance or financial guarantees from third party financial institutions. Tax Qualified Pension (TQP) plans and Employees' Pension Fund (EPF) plans are both subject to advance funding requirements, but only the members of EPF plans are protected by plan termination insurance.

In light of the evident diversity in public policy in this area, policy recommendations must be drawn with caution. From a North American perspective, the plan termination insurance provided in Germany by the PSVaG seems quite perilous. There is no advance funding and no attempt to set insurance premiums at market rates. As a result, the long-run financial soundness of the PSVaG itself would appear to be at risk. Yet, in Germany, this does not appear to be a concern of public policy. In the United States, in spite of the minimum funding requirements, the long-run financial soundness of the PBGC is very much an on-going concern among policy analysts.

Countries differ in their social and economic mores, as well as public attitudes towards government. Subject to this important caveat, there are recommendations for public policy that can be extracted both from economic analysis and international experience. In the interest of brevity, these recommendations are put forward in a brief form.

(2) *Minimum funding (Advance funding) requirements*

In Canada, a rigorously-enforced system of minimum funding requirements is the principal regulatory response to bankruptcy risk. In 1982, the Province of Ontario introduced a system of plan termination insurance, in response to concerns about imminent bankruptcies in its industrial sector. However, no other jurisdictions in Canada has followed suit. Further, there has been no increase in the maximum pension benefit insured by Ontario's Guarantee Fund. With inflation, the importance of this insurance has decreased steadily over time. To date, no system of public plan termination insurance has set premiums at a level commensurate with the risk posed by individual plans. There are, as a result, economic inefficiencies as well as concerns regarding the long-run financial soundness of the insurer. Both suggest that minimum funding requirements, appropriately designed and well-enforced, might be a preferred policy response. This line of reasoning is consistent with the reforms recently introduced in the United Kingdom.

The minimum or advance funding requirements in Canada appear to be more rigorous than those in force in the United States, along several dimensions. For example, the funding target is the projected benefit obligation, not the accrued pension obligation; there are no provisions for contribution waivers in the event of economic hardship; the amortisation period for newly-created unfunded liabilities is shorter. This observation is important. In Canada, these tighter funding requirements appear to have served as an effective substitute for a nation-wide system of plan termination insurance. If deemed necessary, funding

requirements could be tightened further. For example, benefit enrichments could be "frozen" if the plan is found to be underfunded, and solvency tests could be made more frequent for underfunded plans.

If minimum funding requirements are to be the principal line of defence against bankruptcy risk, it is imperative that there be strict limits on the amount of the sponsor's securities - debt or shares - that can be held in the pension fund. Clearly, these securities provide little protection to the accrued benefits of plan members in the event of bankruptcy. In this regard, it is useful to note that the book-reserve system is analytically equivalent to the case where a pension fund holds a single asset - the debt of the sponsoring firm.

If minimum funding requirements are to protect workers' benefits in the event of bankruptcy, each plan must be subject to periodic solvency tests. Further, these tests must be on a cash equivalent basis. The market value of the plan's assets must be compared with the wind-up measure of the firm's pension liabilities. This is standard practice in Canada and the United States, and is about to become the standard practice in the United Kingdom. In Japan, pension assets are still carried on an historical or book value basis. Clearly, the use of market values is necessary if solvency tests or their equivalent are to be used to identify underfunding, and thus to signal the need for higher pension contributions.

The countries reviewed in this study provide tax preferences for the advance funding of pension benefits. Typically, employer contributions are tax deductible and the income from plan assets is either not taxed or taxed at a lower rate than (say) other forms of personal saving. As a result, governments are concerned about the potential loss in tax revenue if pension plans are "too" overfunded. As is perhaps most evident in the United States, there is tension between two conflicting objectives of pension policy: (1) to impose minimum funding requirements to reduce the likelihood of underfunding; and (2) to impose limits on overfunding to contain the tax subsidy provided to private pension plans.

There is no obvious way to balance these conflicting objectives, but public policy must be formulated with a full understanding of their inherent conflict. There is no question, for example, that recently-imposed limits on overfunding in the United States (50 per cent of the ABO) do serve to increase the risk of funding shortfalls (and thus the risks borne by the PBGC). A sharp drop in interest rates, such as occurred in the United States in 1995, produces a sharp increase in the present value of a firm's accrued pension liabilities. Yet, because of the relatively strict limit on overfunding, plan sponsors may not be able to maintain an adequate "buffer" to preserve their funded status in the event of such a decline. Further, a sharp increase in interest rates - by lowering the present value of accrued benefits - can cause the limits on overfunding to bind. In Canada and the United Kingdom, the funding target - as well as the limit on overfunding - is linked to the projected pension obligation. This funding target is far less sensitive to movements in market rates of interest, since changes in the anticipated inflation rate are likely to impact on interest rates and projected salary increases in the same direction.

As a general comment, it would appear that - if minimum funding requirements are to be the primary response to bankruptcy risk - the trade-off between adequate funding and protection of the revenue base should be weighted more heavily towards the former. In large part, this can be accomplished by linking both funding targets and funding limits to the projected benefit obligation.

(3) *Plan termination insurance*

In assessing the general case for plan termination insurance, it is important to distinguish between those countries (such as the United States) which have minimum funding requirements and those countries (such as Germany) which rely primarily on the book reserve method of financing pensions. In the latter, plan termination insurance is essential if accrued pension benefits are to be protected from bankruptcy risk. The

key policy issues revolve around the design of the insurance system, with particular attention to adverse selection and moral hazard problems.

When there are minimum funding requirements, the case for the public provision of plan termination insurance is less persuasive. As noted, workers in a poorly-funded plan sponsored by a financially troubled firm may forgo little or no cash wages in return for their accruing pension benefits, thus implicitly discounting in advance the risk of bankruptcy.²⁶

Further, at least to date, no country has levied insurance premiums commensurate with the level of risk posed by the insured plan. This fact indicates that the "market failure" argument - that private markets are incapable of delivering the insurance that workers would willingly pay - has not been tested. There is simply no evidence to date that the demand for insurance exists at premiums commensurate with risk.²⁷

The difficulties in designing and in maintaining a viable system of publicly-provided plan termination insurance are evident in the on-going series of reforms to the PBGC in the United States. Continuing concerns exist, for example, regarding the lack of market discipline, the opportunities for strategic behaviour by the insureds, and regulator forbearance. For countries which are considering the introduction of plan termination insurance, especially if in conjunction with minimum funding requirements, a detailed review of the evolution of policies designed to protect the interests of the PBGC merits critical review. In Ontario, for example, plan termination insurance was introduced in 1982 after detailed consultation with experts in the United States. As a result, certain of the more obvious defects in the initial design of the PBGC - such as permitting the voluntary termination of underfunded plans - were avoided.

In general, there has been no attempt by the public providers of plan termination insurance to incorporate the probability of bankruptcy into insurance premiums. As a consequence, no plan termination system has set premiums that accurately reflect the true risk posed by individual sponsors and their pension plans. This fact leads to economic inefficiency (other things equal, financially-sound firms pay insurance premiums that are too high), to redistributive effects which may or may not be intended (in favour of less financially sound firms), and to an intensification of the adverse selection and moral hazard problems that confront any insurance program.

In all countries reviewed in this study, the provision of employer-sponsored plans is voluntary. Further, employers may choose among alternative types of plans, including defined contribution plans. If insurance premiums were to rise sharply in response to a series of large claims, adverse selection could become a problem: financially-secure firms would have an incentive to exit the system, perhaps by terminating their defined benefit plans and replacing them with defined contribution plans. This, in turn, would require an increase in the insurance contributions levied on the less financially sound firms that remain in the system (or a public subsidy to the system as a whole). Ultimately, the long-run viability of the insurance system could be at risk. Further, if workers who belong to employer-sponsored defined-benefit plans tend to be relatively well paid, it is not clear that the use of general tax revenues to assist the insurance system would represent an appropriate policy response.

^{26.} This argument is perhaps most persuasive in the case of collectively bargained plans, where underfunding in North America is concentrated. The apparent willingness of younger workers to accept the risk associated with underfunded flat benefit plans should be seen in the context of other objectives - in particular, the goal of encouraging and facilitating the retirement of older workers in order to enhance job security.

^{27.} If a government deems there to be a positive externality associated with the provision of plan termination insurance (such as reducing the likelihood of claims on an income-tested component of the public pension system or correcting worker "myopia"), then the government could rationally introduce a system of plan termination insurance even if workers would not elect to join an actuarially fair plan.

The moral hazard problem is well understood, and termination insurance schemes have taken steps designed to mitigate its impact; for example, by limiting the extent to which recent benefit enrichments are eligible for insurance. Nonetheless, so long as insurance premiums do not reflect the true risk presented by the insured, the best that the public provider of termination insurance can do is to contain - not eliminate - the moral hazard problem.

When minimum funding requirements and plan termination insurance co-exist, the experience of the PBGC in the United States highlights the importance of reducing the ability of financially-distressed firms (1) to accelerate the degree of underfunding as bankruptcy approaches and (2) to influence the timing of their "insolvency," with the recognition that delays are likely to hurt the interests of the insurer. Attention, as well, must be directed to the status of the insurer's claim in formal bankruptcy proceedings.

If a system of plan termination insurance is to be introduced, or if an existing system is to be improved, there is a strong economic case for relying on market forces to price risk, and to improve economic efficiency on this account. With the increased internationalisation of financial markets and the continued creation of new financial products, private insurers may now be capable of underwriting this bankruptcy risk. In the United States, many of those who seek to reform the PBGC argue, persuasively, that market forces can be used both to price risk and to impose market discipline. In his proposed reform of the PBGC, for example, Smalhout (1996) has suggested that - if a solvency test identifies a plan as underfunded - a sponsor with lower than an AAA or AA credited rating would be required to purchase plan termination insurance from a creditworthy private carrier. It also merits note that for larger firms in the United States, which are the ones most likely to offer defined benefit plans, the risk of bankruptcy is assessed daily by the market in its pricing of the firm's public debt.

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