

# **EXTENDING ERM TO MULTI-EMPLOYER PENSION PLANS**

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## **ABSTRACT**

The primary focus of research in enterprise risk management (ERM) has been on the corporation, with an emphasis on publicly-traded companies. Some research has tried to apply an ERM approach to pension plans. However, many take the view that a pension plan is not an entity on its own, but exists within a corporation. As such it is just another set of risks of the corporation, and would be subsumed by the ERM approach used by the corporation.

In this author's opinion, that may be the correct way to consider single-employer pension plans; however, this paper will argue that it is not the appropriate thinking with respect to multi-employer pension plans (which come under many guises such as jointly-trusted, Taft-Hartley, but will all be abbreviated as MEPP or MEPPs). This paper begins by identifying some of the special ERM considerations that a corporation which has employees who are members of a MEPP should include in its ERM program. However, the focus of the paper is on the MEPP as an entity and tools to be used in its ERM.

The paper looks at:

- financial risk management including investment policy, asset-liability management, economic forecasting for the industry
- operational risk management including governance structure, risk mapping and conflicts of interest.

The paper<sup>1</sup> addresses practical approaches to these issues and presents examples of tools that could be used in the ERM process.

## **WHY MEPPs ARE A VALID ENTERPRISE FOR RISK MANAGEMENT**

Enterprise risk management (ERM) has been defined as “a framework of identifying, measuring and management of risk exposure for the enterprise as a whole”.<sup>2</sup> Due to the reference to the enterprise as a whole, commonly the management of risk associated with a pension plan is not considered to be ERM. Such risk management is considered to be a component in the risk management framework of a larger enterprise. This paper will not contest this viewpoint for single-employer pension plans (SEPPs). However, a contention of this paper is that multi-employer pension plans are a distinct type of plan to which ERM applies. Furthermore, this paper describes some of the issues in the operational and financial risk management of MEPPs and identifies some tools which might be used by MEPPs in ERM.

We begin by defining the type of plans considered by this paper and the perspective from which they are considered. The MEPPs under consideration are pension plans which have a number of employers as participating employers and which are managed by a board of trustees. The employers and their employees may be in the private sector, usually in the same industry such as forestry or electrical, or may be in the public sector such as municipalities and municipal workers, or the quasi public sector, such as boards of education and teachers. A number of the risk considerations depend on whether the plan is in respect of the public or private sector and on the characteristics of the industry, and these areas will be elaborated on in the discussion of risk management. The central features of MEPPs which make them an enterprise worthy of ERM are that they are stand-alone entities, with the sole responsibility of the plan to deliver on the benefit

promises, and are managed by a board of trustees that has fiduciary responsibility to manage the plan for the benefit of the participants.

One could argue that from the viewpoint of each employer, participation in the MEPP is just another risk to be managed. I agree and have identified some special considerations of which employers should be aware in an endnote.<sup>3</sup> The perspective I wish to take is that of the board of trustees. For the board, the MEPP is an enterprise. The MEPP must be managed to attempt to deliver the benefits promised to the participants in a responsible manner with due regard for costs, investments, etc. As such, the board faces a multitude of risks that must be managed. Viewed from the perspective of the board, the MEPP is an enterprise and the application of ERM is important to satisfying fiduciary obligations.

Before discussing certain financial and operational risk issues, let me provide some more background on MEPPs which influence the ERM of the plan. A critical distinction is between private sector and non-private sector MEPPs. The latter group includes both public and quasi-public sector plans. For private sector plans, there is no ultimately secure funding source. The plan is funded by participating employers who are subject to market conditions. Whole industries can decline and even disappear. In the case of the failure or withdrawal of all employers, the board of trustees of the MEPP could be left to manage liabilities without the possibility of further contributions. In contrast, in non-private sector MEPPs, although perhaps not contractually, practically there is recourse to continued funding by (the taxpayers through) a government body. As such, it is unlikely that non-private sector MEPP could fail financially;

although, there is no question that the management of such plans could be viewed as a financial failure, and as such, boards are well-advised to use ERM.

A second aspect of many private sector MEPPs is that plan participants frequently work for more than one participating employer. As such, record-keeping for these plans can be complex. Also it may be difficult to assess whether a participant has left the industry or is currently employed by a non-participating employer but may be employed by a participating employer in the future. This situation is less common in non private sector MEPPs. However a financial consequence of this pattern of movement by participants is that it makes it extremely difficult to isolate plan liabilities by a participating employer since the benefit formula is based on participation in the MEPP.

In summary, a MEPP is a legal entity and a stand-alone entity responsible for its decision-making, the continued success of which is subject to the outcome of those decisions. It has a specific purpose to attempt to manage in order to deliver the benefits promised to participants. It has its own management through a board of trustees. Because this entity faces various risks that jeopardize its ability to deliver the promised benefits, the use of enterprise risk management techniques is recommended.

The balance of this paper discusses risk considerations for MEPPs. It begins with a discussion of operational risk management, especially conflict of interest. It then advocates the establishment of pension protection plans to cover MEPPs and describes some of the relevant developments with respect to the Pension Protection Fund in the U.K. Subsequently, this paper describes some

of the financial risk management issues faced by MEPPs and tools to be used in the management of these risks.

## **OPERATIONAL RISK MANAGEMENT**

There are many aspects to operational risk management in MEPPs. This section discusses three aspects: governance structure, conflict of interest, and risk mapping.

One of the most significant issues for MEPPs is how to avoid and/or address conflict of interest. This paper suggests two significant ways: by changing the governance structure, and by purchasing pensions in respect of retired lives (which is discussed in a subsequent section).

### **Board Member Selection**

Almost universally, joint boards of trustees are appointed (or elected) as representatives of a particular group, e.g., as a representative of participating employers, as representatives of plan participants who are members of a particular union, as representatives of government (in plans, for example, where government provides financial backing or the industry is viewed as essential to the public interest). Once appointed, the members of the board have the fiduciary responsibility to act in the best interests of the plan participants. In concept there is nothing wrong with the method of appointment and the requirement to act in the interest of members. In practice, this approach does not work well and leads to conflicts of interest, decisions being made that favour some participants' interests to the detriment or neglect of other participants'

interests, block voting along interest-group lines, inferior selection of board members, and inadequate expertise on the board.

The following approach would provide for the major constituents to have input into the appointment of board members but, with appropriate application, lead to more effective boards, less likely to be plagued by the problems listed in the preceding paragraph:

- 1) A board (referred to as “the approval panel”) appointed as representative of the various constituencies would approve the appointment of all board of trustees’ members. In this way the constituencies would have representation in the process.
- 2) A nominating committee, appointed by the approval panel, would identify prospective board of trustees’ members, assess their capabilities and willingness to serve and make recommendations to the approval panel. This process is more likely to ensure that a broad range of capable candidates is considered and that candidates will be proposed who not only are competent but have requisite training, skills and experience to complete the board, ensuring depth of knowledge and expertise in all relevant areas.
- 3) An education and training program for new board members should be conducted before a new member assumes responsibility. Although some of the training program may be delivered by external experts, a part of the training should be to meet with board members, especially departing members, to gain understanding regarding the history of issues faced and decisions reached. Education and training on pertinent topics should be ongoing for all board members. However, the value of education, training and

networking received at conferences should be carefully examined. Not infrequently, the trustees are compensated for travel to conferences in attractive locations regardless of the value of the experience for managing the plan in the interest of participants.

- 4) Generally, a relatively small board will be able to act most effectively, while ensuring that the required expertise and experience is present. I suggest a board of 6 to 8 members. To ensure continuity and to gain value from the investment in education and training, a typical term for a member should be three years. Competent members might be appointed for subsequent terms.
- 5) Board members should be paid a fee for their service, from the pension fund. The fee would be based on an estimate of the amount of time required to serve on the board, including an allowance for preparation for meetings and training. The fee should not be an honorarium or token payment but based on compensation schedules for directors in publicly-traded corporations, with comparable responsibilities. In addition to compensation, a policy of fiduciary-liability insurance should be in place providing adequate protection for board members.

### **Risk Mapping**

The first task that any board of trustees should undertake is to ensure that the MEPP has an up-to-date risk map. A typical risk map will identify each risk, indicate the parties responsible for its management, establish a schedule for reporting to the board on its management and categorize the risk with respect to its potential severity. Risks are frequently grouped by type such as

financial (including funding and investment), operational (including administration, record-keeping, benefit processing, compliance) and governance (including decision making, reporting, education of trustees). A further useful aspect of a risk map is to identify related risks. For example, withdrawal of a participating employer may create exposure with respect to: reduced contributions, increased number of early retirements and terminations, need to liquidate investments and pressures on other participating employers to withdraw.

Once the trustees have an updated risk map, they should review it and establish priorities, delegating tasks to third parties as appropriate. One of the next documents the trustees should review is a report on the financial position of the plan, including projections of the financial position. This will be discussed in more detail in a subsequent section.

The following section discusses pension protection funds, not only because it is an important feature to solidify the risk-bearing foundation but also because it will provide insight into some of the financial modeling to be undertaken.

## **PENSION BENEFIT PROTECTION FUNDS**

In most situations, the establishment of a pension plan is a voluntary undertaking of an employer. In such situations, I am opposed, in principle, to the creation of pension benefit protection funds. However, MEPPs which are unable to control their funding sources and are dependent on the financial success and demographic developments of an industry, are particularly vulnerable. Consequently, I propose that a pension benefit protection fund be made available to MEPPs. Such a fund should only protect a certain level of benefits, as set by legislation. Premiums

should be set following actuarial principles such that those plans posing greater risks of failure due to financial status, benefit promises, investment policies, should pay higher premiums and should be subject to closer scrutiny.

In this regard, the U.K. is in the process of establishing a pension protection fund. There are a number of ideas contained in various consultation drafts that warrant consideration by regulators in other countries, and which could prove educational to trustees in deciding on what financial risks to model and how they might be managed. An outline of some of the ideas relevant to MEPPs contained in the consultation drafts follow: <sup>4</sup>

- 1) Categorization of the MEPP based on how the liability in respect of participating employers is pooled and the manner of dealing with the liability on cessation of participation by an employer. The categorization used in the U.K. may not be applicable in other countries, but two considerations regarding accounting and recordkeeping by participating employer are likely relevant: is liability for a participating employer that ceases plan participation segregated or is it assumed by the plan, and is there any allocation of liability by participating employer or does all liability rest with the plan to be borne by the “last man standing”?
- 2) There is a separation of risk classification into underfunding risk and solvency risk. Underfunding risk relates to the financial status of the plan and to the extent to which its assets are adequate to cover the liabilities. Solvency risk relates to the likelihood that the funding source will be able to continue to provide financial backing to the plan.

To illustrate, the December 2005 Consultation Draft <sup>5</sup> assesses an underfunding levy based on a comparison of assets to 105% of liabilities. (105% of liabilities was selected to provide some margin since the funded position can fluctuate during the time between assessment periods). Levies are based on the extent of underfunding up to 105% of liabilities. Above this level, a tapered premium is charged to plans with assets less than 125% liabilities. Above 125% of liabilities, no underfunding levy is assessed, providing a financial incentive to plans maintaining better funded ratios.

To determine the solvency risk an external credit rating agency has been engaged, Dun and Bradstreet in the U.K. A rating determination of the party whose credit is critical to the funding of the plan is made. <sup>6</sup> The rating is then placed into one of 100 bands and the risk levy determined accordingly.

- 3) The benefit levels subject to protection are established by legislation.
- 4) The Consultation Document states that “the Board intends to conduct a consultation exercise during 2006 on the potential inclusion of asset allocation as a risk factor in future levy years”. <sup>7</sup> Asset allocation is an important aspect in risk assessment because asset portfolios of equivalent market value can provide very different risk exposure due to items such as asset-liability mismatch, credit risk, over-exposure to particular sectors. It is an item to be considered in establishing risk levies and also by trustees in assessing risk<sup>8</sup>.

The total required premium (levy) for all covered plans will be calculated and then allocated among plans by giving some recognition of the risk exposure of the plan. From the consultation documents it appears that the premium structure follows broad actuarial principles.

## **FINANCIAL RISK MANAGEMENT**

Under the heading of financial risk management, we consider financial projections, structuring the benefit promise, purchasing annuities for retired lives, and some investment considerations. This is not a comprehensive list.

The starting point in financial projections is an actuarial valuation report identifying the current financial position of the plan. The next step is to have asset-liability projections prepared, showing expected future cash flows and investment income compared to future liability growth. Because the future is uncertain, these projections will be uncertain. However, by testing various scenarios, and the sensitivity of outcomes to changes in assumptions, some insight will be gained.

Some items to note in the scenario analysis include:

- **Pattern of Contributions and Contribution Rate**

Using the accrued benefit actuarial cost methods<sup>9</sup>, the cost per dollar of pension benefit will increase over time if the group is aging. This can create funding issues where the contribution per dollar of pension benefit, which is normally negotiated, is not projected

to increase as quickly as the rate at which the cost per unit of benefit is projected to increase. A recommended risk management tool is to have the costings prepared using a level funding actuarial cost method. The aggregate method is preferable since it continues to spread any gains or losses over future contributory periods.

- **The Rate of Increase in Future Liabilities**

Actuarial valuations based on current benefit levels can provide a misleading sense of confidence regarding the adequacy of benefit levels. Many MEPPs improve benefits as the board deems benefit improvements affordable. Such benefit increases typically are granted in respect of both accrued benefits and future benefits. It is advisable to anticipate benefit increases in assessing the projections of financial adequacy.

A feature of Ontario pension legislation, but not of U.S. legislation, is the ability of trustees to decrease benefit levels. From a fiduciary viewpoint, this may be the only responsible action to take when faced with certain funding situations; however, trustees generally consider a decrease in benefits to be one of their last resorts.

In this regard, I propose that MEPPs build flexibility into their benefit promises. For example, based on financial projections the trustees would set a long term benefit level (“the ultimate level”) that would be expected to be maintained for all plan participants regardless of financial position of the plan. Benefit increases above the ultimate level could be granted on an ad hoc basis but the communication would be clear that such benefit increases were not guaranteed and could be revised or eliminated at any time,

subject to appropriate notice. Termination benefits would be based on the ultimate level<sup>10</sup>. (This design will be referred to as flexible-pension-promises).

- **Need to Recognize Correlations Between Contribution Inflow, Benefit Payouts and Investment Returns**

This correlation is particularly difficult during periods of economic slowdown or recession. In such times, employment is reduced resulting in decreased contributions and increased benefit payments such as terminations, early retirements, especially subsidized early retirements, and possibly disability pensions. If the economic slowdown is widespread, and particularly if it is global, investment returns will likely be poor and it may be inopportune to liquidate investments. This suggests that investment policy should provide for some portion of liquid investments, preferably short-term fixed income, where sale will not result in significant capital losses.

- **Financial Status of Participating Employers**

Ultimately the financial capacity of the plan depends on the financial capacity of the participating employers. There is a double dependency here. First, the plan only receives contributions from employers that continue to participate. The trustees should consider various scenarios in which employers are assumed to cease participation. Second, the solvency of participating employers is important. The information referred to in the Consultation Drafts for the Pension Protection Fund for the U.K. provides insight into how credit ratings might be assigned by participating employer and how the default riskiness of the employer impacts the plan. However, in MEPPs the aggregate risk

exposure may be greater than the combined risk of insolvency of the participating employers assessed on an individual basis. This “concentration risk” is due to the fact that all participating employers are in the same industry. There may be factors which affect the industry that could put undue financial stress on all participating employers simultaneously. Although difficult to model, this possibility should be considered. If the trustees could develop a copula<sup>11</sup> based on the solvency risk of each participating employer that reflected solvency relationships among employers, it would provide a relatively easy-to-understand measure that could be updated regularly.

Suppose that the trustees have conducted studies showing financial projections over a suitable time horizon, say up to 10 years, and next let us examine other risk management issues to be considered within the investment policy. A fundamental premise of asset-liability modeling is that the most predictable financial results will be achieved via an investment policy that matches liabilities with assets of a similar nature, i.e., similar with respect to present value, with respect to timing and amount of payment, with respect to duration, and with respect to non-payment due to call or default. The simplest class of liabilities to find matching assets is retired lives. A carefully structured portfolio of zero coupon, real-return, and long government bonds can normally match any retired life liabilities. However, I would argue from an ERM perspective, trustees should not expose themselves or the plan to retiree liability risk. This risk should be annuitized. Longevity risk cannot be hedged or diversified by the MEPP, but it can be by insurers. Granted, insurance companies accepting the annuity could default, but with careful selection of insurers and diversification of policies among insurers, this risk is minimal.

Some of the reasons to recommend annuitization of retired-life pensions follow. If the pension design with flexible-pension-promises is in place, it is only the ultimate level of pension which should be annuitized:

- Trustees face a wide variety of risks, many of which cannot be transferred or hedged. When a risk can be appropriately transferred (or hedged), it is prudent to do so. The annuity market provides an appropriate method of risk transfer.
- Retirees have completed a period of service in the industry, earned a pension in respect of that service, and the amount of the pension is readily ascertainable. As fiduciaries changed with the responsibility of securing benefit promises, trustees ought to attempt to secure the promise by purchasing annuities. (If at a subsequent date, trustees found, for whatever reason, that benefit payments to the retiree that could once have been secured in full by an annuity must be reduced, the trustees will be in a very awkward situation).
- Certain issues of (perceived) conflict of interest are reduced. (Conflict of interest is a significant concern for MEPPs and some aspects of it were addressed in the proposals regarding governance). As will be discussed, there may be reasons why trustees may wish to take some risk in investment management. In a pension plan in which liabilities of retirees and other participants are commingled, it is normally not possible, except through an annuity purchase, to segregate the assets so that regardless of the risk exposure of the aggregate portfolio, the portion of the assets attributed to the retirees is secure and unaffected. Consequently, any decision to accept investment risk presents

trustees with a conflict between the interests of retirees and other participants. Conversely, one might argue that failure to accept investment risk might show unreasonable preference for the interest of retirees to the potential detriment of other participants. This situation is obviated by annuitization.

Suppose that retiree pensions have been annuitized, what asset-liability attributes pertain to the remaining liabilities? Investment policy might be crafted based on whether the liabilities are in respect of active or non-active participants, whether benefits are vested or non-vested and whether benefits are inflation-adjusted, in full, partially or not at all.

Following the arguments of financial economics, one would claim that in a SEPP, where the employer is a publicly-traded entity, fully vested accrued benefits should be matched by a suitably-structured bond portfolio. I will argue that this claim is not appropriate for all MEPP, without modification. (The only situation where I would agree that the claim is appropriate, without modification, is one where there is a guaranteed funding source and reduction of benefits cannot occur. There are very few, if any, such MEPPs).

With the flexible-pension-promise design, where the benefit formula for the MEPP contains an ultimate level or floor (“guarantee”), and additional benefits are granted on an ad hoc basis and can be temporary, then it is in the interests of the participants for the board to attempt to manage the investments and the plan in such a way that ad hoc increases can be granted. Furthermore, to meet fiduciary obligations, the board should grant increases on an ongoing basis that are viewed as appropriate, i.e., reasonable in view of the financial position of the plan judged over an

appropriate time frame, and which are equitable among classes of members. One might consider the classes to be defined by the period when the participants receive benefits from the plan. To clarify, a board which did not grant any ad hoc increases for several decades when there was surplus and then granted ad hoc increases creating a deficit, might be viewed to be acting inappropriately and not maintaining equity among cohorts of participants.

On the basis of this argument, given that the floor (guaranteed) benefits have been suitably matched by relatively risk-free investments, then investment policy should permit risk-taking and should provide guidance on the risk-taking that is permissible and desirable. In this regard, the board faces the issue of what target it should attempt to achieve through riskier investments. There is no single answer for all plans as the answer should be based on the level of the floor pension, the amount of “excess assets” available for investment, and the projections for future cash flows, changes in demographics, economic opportunities, future of the industry and financial position of the plan. However, within this analysis it is helpful to have a target by which to assess proposed investments which might be the desired replacement ratio of pre-retirement income.

To attempt to make this example more concrete, suppose that the floor benefit has been set at \$15 per month per year of service and it is expected that a typical career in the industry, that is worthy of a full pension is 30 years, then the floor pension is \$450 per month or \$5,400 per year. Let us suppose further that government pensions can be expected to provide approximately \$10,000 per year, and that the average wage in the industry for workers retiring with 30 years of service is \$60,000. To assist in assessing the various alternatives, the board might decide that it

is reasonable to attempt to deliver, from all sources, an indexed pension starting at \$30,000 per year after 30 years of service, i.e. a 50% replacement ratio. Hence there would be a need to attempt to deliver ad hoc inflation adjustments to the floor pension of \$5,400 and to attempt to provide additional ad hoc increases of \$14,600 per annum that were inflation adjusted. While this might be a completely unrealistic objective given the other circumstances of the plan, it illustrates how a framework for establishing investment policy could be developed.

With respect to risky assets that might be considered for use with other than the floor benefits, one might consider equities, real estate, hedge funds, structured products, income trusts, etc. A careful analysis of the risk-return characteristics of each asset class should be conducted in the context of the financial projection model of the plan. Not only should the diversification effect of combining asset classes be examined but the measures of correlation between asset class returns and plan and industry cash flows should be examined. For example, if the plan is for workers in the auto industry, investments that show positive return patterns when oil and gas prices rise (call them Oil-Gas-Plays) could provide some counter-cyclical benefits. Plan cash flows might decrease and industry layoffs might increase both with negative financial implications for the plan when oil and gas prices rose, but this would be partially offset by favorable investment returns. Of course, the analysis should include liquidity constraints, i.e., if Oil-Gas-Plays are not liquid investments then other sources of liquidity should be present in the event oil and gas prices rise.

This brings us to a very important, and related point. Investment policy should be developed based on an analysis of the industry. The financial status of the plan will be heavily affected by

the fortunes of the industry and the industry's business cycle, and by the life-cycle (maturity-status) of the participating employers. This is a major risk to be hedged or diversified. In this regard, to the extent that credit derivative products for the industry are available or can be constructed, they should be included in investment policy. Another idea in this regard would be to invest in contingent assets, such as letters of credit triggered in the event of insolvency of a participating employer and secured by a strong financial institution.

The Ontario Teachers' Pension Plan (OTPP) provides a good example of a MEPP with a carefully crafted investment policy.<sup>12</sup> Based on an analysis of liabilities and expected contribution income, it has been determined that the plan needs to achieve a real rate of return of at least 5.0% per annum, over the long term. This return objective provides direction with respect to the extent to which risk must be accepted. Extensive modeling of both liabilities and assets and their respective risks has been conducted. Some of the methods of risk categorization include splitting pension risks into liability risk, asset policy risk, and active management risk. The first two are considered to be policy funding risk and all three in combination are actual funding risk. The plan has reduced the involvement of the board in active management risk. This point is one that MEPP would be well-advised to follow. Another risk categorization is asset type: equity, fixed income, and inflation sensitive. Within the inflation-sensitive group are investments in real estate, timberland, commodities, and some hedge funds. The Teachers' Pension Plan has outstanding investment performance when measured against other Canadian pension plans. Mr. Bertram of the OTPP attributes its success to: “

1. its governance structure which emphasizes independence, focus on investment returns, and the use of a professional board;

2. active management;
3. proprietary risk management system;
4. culture, which is nurturing, innovative, pedagogical, and which keeps egos in check.”<sup>13</sup>

Another factor contributing to the Teachers’ ability to implement this investment plan, is its size, some \$94.6 billions in assets at December 31, 2005.<sup>14</sup> While most MEPPs would benefit from diversification into asset classes used by Teachers’, many plans have insufficient assets to be able to implement such an investment plan. In this regard, it would be advantageous if a number of MEPP were to pool their assets to enable investments to be made in certain specialized asset classes, such as real estate, private equity, or infrastructure, in coordination with regulators.

## **PRINCIPLES FOR A MEPP RISK ACCORD**

In the banking and insurance sectors, significant progress has been made in the development and implementation of risk management processes. Part of this development has been attributable to the adoption of the Basel Accord which establishes principles and practices that national regulators might adopt and that financial institutions should follow. A similar accord developed for MEPPs could enhance the development and adoption of better risk management processes. A number of the risk practices suggested in this paper may not be permitted by regulation in

certain countries. In this regard, it is important that regulators review legislation regularly to see that it permits the adoption of sound risk management practices.

To commence this initiative, the following list of principles for ERM for MEPPs is suggested:

- MEPPs should have a process for mapping risks, identifying vulnerabilities, and prioritizing risk management actions.
- MEPPs should have a process for assessing their financial adequacy in relation to their risk profile and a strategy for maintaining a financial position sufficient to make benefit delivery likely.
- Regulators should review and evaluate MEPPs financial assessments and strategies.
- Regulators should establish a protection benefit fund for MEPPs and should review the legislation and regulations to remove any impediments to the adoption of sound risk management practices.

## **SUMMARY OF RECOMMENDATIONS**

This paper has argued that MEPPs are enterprises to which ERM practices should be applied. A number of recommendations have been made which would improve the ERM for MEPPs. Few MEPPs, if any, follow these recommendations. The adoption of a number of these

recommendations will require action on the part of regulators. A summary of the main recommendations follow:

- MEPPs should restructure the method of appointment of trustees, with the objective of having a paid professional board with expertise in appropriate areas.
- Trustees should maintain an up-to-date risk map and should prioritize actions to manage risk.
- Trustees should have timely reports on the current and projected financial status of the plan. Asset-liability projections should include sensitivity analysis of important risk factors, including the potential for cessation or default by participating employers.
- MEPPs should adopt a flexible-pension-promise design, which promises a floor level of pension with ad hoc benefit increases as considered affordable. The investments supporting the floor level of pension should have low default-risk and should match appropriately the expected cash flows for the floor level of pension.
- MEPPs should purchase annuities in respect of retirees' pensions.
- Regulators should ensure that a pension benefit protection fund which covers MEPPs is in place.

- Regulators should adopt an accord, or a set of principles to be followed in the management and regulation of MEPPs.
- Trustees of MEPPs should coordinate investment activities with trustees of other MEPPs with similar investment objectives, to gain access to a wider range of investment opportunities.

Trustees of MEPP face many challenges. Adoption of the recommendations in this paper would assist them in their ERM activities and provide greater likelihood that the fiduciary responsibility to deliver on participants' benefit promises is realized.

## ENDNOTES

1. The author wishes to acknowledge the assistance provided by Robert L Brown and Harry Panjer who read a draft of this paper and provided helpful comments and to Michael Beswick, Wendy Brodtkin, Emily Kessler, Peter Morse, J. Melvin Norton and Cliff Speed for their advice. The author also wishes to acknowledge a presentation he attended by Robert G. Bertram regarding the Ontario Teachers' Pension Plan. The opinions expressed are the responsibility of the author.
2. Panjer, Harry, Enterprise Risk Management, Lecture Notes, January 3, 2006.
3. Employers participating in a MEPP often take the view that their obligations are limited to making contributions and reporting on employment in accordance with the terms of a

collective agreement. As such their ERM functions are purely operational. I would suggest that this is a very narrow view. In the event of failure of a participating employer or a MEPP, remaining employers may have unexpectedly increased liabilities. They may be asked to make up shortfalls in funding created by the failure of a participating employer. In fact, in the U.S., if a participating employer fails, the Pension Benefit Guarantee Corporation (PBGC) will look to the remaining participating employers to assume the liability. Moreover, in the event of the failure of an industry-wide MEPP, a participating employer may find that it is still dealing with the same union that negotiated the MEPP, and may find that it needs to provide special additional benefits to compensate for the shortfall in benefits under the MEPP. Hence there can be financial risk which MEPP employers should consider.

4. The method of risk levies has not been finalized at the time of writing of this paper. See for example the Pension Protection Levy Consultation Document, at various dates such as July 2005, October 2005, December 2005, to be found at [www.pensionprotectionfund.org.uk](http://www.pensionprotectionfund.org.uk).
5. The Pension Protection Levy Consultation Document: December 2005, pages 23-33.
6. Corporate structure is a factor in determining which entity to assess. For example, in the case of a pension plan sponsored by a subsidiary, the credit rating of the parent or the corporate group might be the relevant rating.

7. Ibid, page 12
8. See Andrews, Doug. A Practical Approach To Considering The Possible Impact of Asset Allocation on Funded Status For The Regulation Of Pension Plans, for one approach to including asset allocation in risk assessment.
9. Accrued benefit cost methods are a type of benefit allocation actuarial method. In a benefit allocation method, the projected benefits are allocated to specific time periods, as such, these methods do not anticipate how costs may increase in the future as the population ages. These methods may be contrasted to cost allocation methods, such as the aggregate method, that allocate projected costs to specific time periods; accordingly, such methods, anticipate future increases in costs due to benefit increases and population aging. An additional feature of the aggregate funding method is that any difference between projected assets and projected liabilities is incorporated in the determination of the future contribution rate; hence, when all benefits, contributions and assets are considered, the plan is always fully funded.
10. In Canada, this benefit design might be challenged by regulators on the basis that it does not provide for uniform accrual of benefits and that contingency reserves may develop. An alternative approach to provide trustees with flexibility, would be to operate the plan by providing each participant with units determined on an appropriate basis such as period of service. The units would be revalued and benefits adjusted based on the financial capacity of the plan. The author does not propose such an approach because he

sees it as a type of defined contribution arrangement and the author believes that MEPP have generally been negotiated to provide defined benefits and that participants will be better served by a properly managed defined benefit plan.

11. A copula is a distribution function on the unit interval with standard uniform marginal distributions. It provides a useful way of recognizing dependence relationships. In this instance pairwise copulas might be prepared showing successively the solvency risk of the largest participating employer versus the solvency risk of each of the other employers.
12. This description is based on a presentation made to the Toronto CFA Society on January 17, 2006 by R.G. Bertram, CFA entitled Ontario Teachers' Use of Alternative Investments.
13. Ibid, p.35
14. Ibid, p.3

## REFERENCES

- Andrews, Doug, A Practical Approach To Considering The Possible Impact Of Asset Allocation On Funded Status For The Regulation Of Pension Plans, CIA 2006 Stochastic Modeling Symposium, Toronto, April 2006
- Bertram, R.G., Ontario Teachers' Use of Alternative Investments, presentation to Toronto CFA Society, January 17, 2006

- Bhaduri, Ranjan and Bryon Kaneshige, Risk Management - Taming the Tail, Benefits and Pensions Monitor, December 2005
- Boone, Audra L., Laura Casares Field, Jonathon M. Karpoff and Charu G. Raheja, The Determinants of Corporate Board Size and Composition: An Empirical Analysis, October 2005, AFA 2005 Philadelphia meetings
- Choquet, André, Enterprise Risk Management And The Pension Actuary, CIA Bulletin, Vol. 16, No. 5, January 2006
- Council of Institutional Investors, Council Policies, [www.cii.org/policies/boardofdirectors.htm](http://www.cii.org/policies/boardofdirectors.htm)
- Greenan, Jennifer, The Handbook of Canadian Pension and Benefit Plans *12<sup>th</sup> Edition*, CCH Canadian Limited, 2002
- Kessler, Emily, ERM For Pension Plans presented at The Society of Actuaries Annual Meeting, New York City, November 2005
- McNeil, Alexander J., Rudiger Frey and Paul Embrechts, Quantitative Risk Management, Princeton University Press, 2005
- Panjer, Harry, Enterprise Risk Management and related materials used in a course at the University of Waterloo, January 2006

- Pension Protection Fund, The Pension Protection Levy Consultation Document, July 2005, October 2005, and December 2005 versions [www.pensionprotectionfund.org.uk](http://www.pensionprotectionfund.org.uk)