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*Measuring and explaining pension system risk**

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Abstract

We discuss pension system risk in the USA, focusing on the investment policy and the methodology for the valuation of the liabilities of the Pension Benefit Guaranty Corporation (PBGC). We offer suggestions as to how the PBGC should consider modifying the Pension Insurance Modeling System. The issues of investment policy and liability valuation are not two distinct topics. As emphasized here, the proper valuation of liabilities provides a benchmark for the PBGC to use as a starting point for the establishment of its investment policy and then for assessing investment performance.

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In this paper, we discuss the USA pension system risk by focusing on the investment policy and the methodology for the valuation of the liabilities of the Pension Benefit Guaranty Corporation (PBGC). My goal is to offer some suggestions as to how the PBGC should consider modifying the Pension Insurance Modeling System (PIMS). The issues of investment policy and liability valuation are not two distinct topics. As emphasized here, the proper valuation of liabilities provides a benchmark for the PBGC to use as a starting point for the establishment of its investment policy and then for assessing investment performance.

The PBGC can best be described as an insurer with little control over the key financial decisions that might permit it to increase the likelihood of accomplishing its overarching mandate. Under the Employee Retirement Income Security Act of 1974 (ERISA), the mission of the PBGC is to preserve defined benefit (DB) plans it insures and to protect the beneficiaries of those plans. The agency's inability to employ strategies available to private insurers and the influence of political issues associated with decisions made by Congress make the management of the PBGC one of the most challenging tasks faced by any financial institution.

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The PBGC has acknowledged that, based on its current funded status and investment policy, the probability is high that it will have insufficient funds to pay all future benefits due to current beneficiaries. For example, as of September 30, 2012, the single-employer program deficit was $29.1 billion and the multiemployer program deficit was $5.2 billion. It will be quite difficult for the PBGC with its current asset portfolio as well as the premiums expected to be generated, to fully meet its obligations in the long run. Moreover, given the methodology for the valuation of liabilities as explained below, there is good reason to believe that the program deficits may be understated.

It would seem that a reasonable goal would be to maintain the program as long as possible, with the hope of eventually putting as small a deficit as possible to the U.S. government. Although it is true that the federal government does not stand behind the PBGC's obligations as explicitly stated under ERISA, an April 28, 2008 letter from the Congressional Budget Office (CBO) to Congressman George Miller (Chair of the Committee on Education and Labor), states that, 'an implicit expectation exists among many market participants and policymakers that taxpayers will ultimately pay for benefits should PBGC be unable to meet those obligations' (CBO, 2008).

Consequently, it is not a surprise that the General Accountability Office (GAO) highlighted the PBGC as a 'high risk' agency in its report to the U.S. Congress starting in 2003. In the GAO's February 14, 2013 update, the progress made by the PBGC and actions by the Congress to address the agency's weaknesses were acknowledged, but the GAO concluded: 'Because of long-term challenges related to PBGC's governance and funding structure, PBGC's financial future is uncertain' (GAO, 2013: 26).

The need for a critical review of the PBGC's investment policy is two-fold. First, the plan's investment policy changes periodically. By investment policy, we mean the asset allocation among major asset classes (equities, fixed income, real estate, and alternative assets such as private equity). Guidance as to the proper asset allocation policy is needed so that those responsible for making that decision – the PBGC's Board of Directors includes the Secretaries of Labor, Treasury, and Commerce – and those responsible for implementing the investment policy in selecting and evaluating the performance of asset managers – the staff of the PBGC – will better understand the implications of their actions. Moreover, should the PBGC need to obtain external funding through the issuance of non-government guaranteed debt, the questions raised here will be those that potential investors and credit rating agencies must examine. The major issue to be raised by these parties has to do with the agency's actual deficit. When making their estimate of the deficit, they are not likely to use the rules that currently govern the PBGC in estimating the value of liabilities. Instead, potential investors and credit rating agencies will likely employ a methodology similar to the one described in this paper, rather than the methodology used by PIMS.

In what follows, I first provide some background information and describe the challenges faced by the PBGC. Then I describe the issues associated with the liability valuation, and two general investment policies that the PBGC has pursued since 1974. Next I discuss alternative investment policy strategies along with benchmark

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construction for the asset managers engaged by the PBGC. These will also be useful in the evaluation of the PBGC's investment policy.

Brief review of PBGC management issues

In this section, I briefly describe the decisions available to the PBGC to mitigate the risk of failing to accomplish its mandate. There are two separate insurance programs under the PBGC's purview – single-employer and multiemployer plan insurance programs. For the single-employer plan there is a 'revolving fund' and a 'trust fund'. Because the trust fund for the multiemployer plan ran of funds, there is only a revolving trust.

The revolving fund results from the premium payments received from the sponsors of the insured plans. It is a budgetary account (i.e., the cash flow appears in the federal budget). The revolving fund can only be invested in debt guaranteed by the U.S. government. The trust fund, reflecting accumulated assets from the terminated plans, is a non-budgetary account (i.e., the assets from terminated plans are not part of the federal budget). The funds must be invested in compliance with the investment policy approved by the Secretaries of Labor, Treasury, and Commerce. Although the staff of the PBGC does not manage the funds, it does make four critical investment decisions. First, based on the PBGC's investment policy (asset allocation), the staff determines which professional asset managers to engage. Second, in the selection of asset managers for each asset class, it decides on whether active or passive managers should be engaged. Third, the staff determines the benchmarks to be used, and fourth, the staff evaluates performance of external managers.

To meet claims not covered by plan assets or obtained from terminated plan sponsors, no funding can be obtained from the federal government. This is because there are no appropriations from the general revenues to cover any claims. Instead, the funding sources are limited to investment returns, premiums received, and the assets from terminated plans taken over by the PBGC.

These premiums are established by Congress. In 1974 when ERISA was established, the premium was set at $1 per participant for single-employer plans and $0.50 per participant for multiemployer plans. The per participant rate has been raised over time, and also adjusted to the financial health of the plan as measured by the amount of underfunding of the vested plan.

Liabilities

PBGC's liabilities must be projected and then valued so that the agency's deficit can be determined. As this is critical, the structure of the liabilities needs to be determined and integrated into the investment policy.

Measuring the agency's liabilities involves projections for the current beneficiaries whose benefits are covered by the PGBC, and also for beneficiaries whose plans are projected to be terminated within the year (probable terminations). For the former, the standard actuarial models are employed to determine payments. Although there are improvements in actuarial modeling, particularly dealing with the treatment of longevity risk, this exercise is not as complicated as projecting the claims to be paid

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to future beneficiaries arising from (probable) terminated plans. Unlike a typical insurer who may refuse an applicant seeking insurance based on its underwriting standards, the PBGC cannot make such a business decision. Moreover, such plans often have substantial underfunding, resulting in an increase in the PBGC's deficit.

One obvious way to reduce the likelihood of receiving the assets of terminated pension plans is to require one or more of the following: larger contributions, higher premiums for underfunded plans, or lower guaranteed payments. But such risk mitigation policies are currently unavailable to the PGBC's management. Unlike an insurer, the first two can adversely impact the viability of the current plans covered by the PBGC, while the last is a politically sensitive issue. Instead, it seems that the best that can be done is to prepare for the terminated plans, working with the sponsors of troubled plans, and, in the case of bankruptcy, litigating to obtain recovery of additional assets. These practices are currently being pursued. In projecting future financial status, the PBGC uses PIMS to estimate both single-employer and multiemployer exposure. The model, discussed in other technical panel papers, does not provide one prediction but instead uses simulation to obtain a range of possible outcomes. The model continues to be improved.

Once the projections of the future liabilities are obtained, the next step is to value those liabilities. This is done by discounting the projected liabilities by a suitable set of discount rates. What should be the discount rate or rates has been the subject of considerable debate, to be reviewed below. Given the importance of liability valuation to the design of the PBGC's investment policy, the construction of benchmarks given to asset managers, and the evaluation of PBGC performance, the topic is not merely a theoretical issue in financial economics.

The challenge

Managing a private insurer is far less challenging than managing the PBGC since the former has many tools and much managerial discretion. For instance, private insurers have the following:

1. ability to set risk-based premiums as determined by its actuaries;
2. ability to refuse entities seeking insurance;
3. ability to reinsure to lay off any risk (i.e., can determine what risk to retain and which risk to sell off); and
4. ability to raise funds in the capital market.

In contrast, for the PBGC, the options are quite different. The agency cannot set its own premiums; it is required by law to accept qualified DB plans regardless of their level of underfunding; it cannot reinsure, making it difficult to lay off risk; and it may not raise funds in the capital market. Not only are premium levels under the control of Congress, but also the setting of a fair premium could have an adverse impact on the system-wide surviving plans, increasing their likelihood of being terminated. This is unique to the PBGC as an insurer wherein a realistic premium increase could boost underfunding, despite an increase in premium income.

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One limitation of both the single-employer and multiemployer PIMS is that they are predictive models. In the case of PIMS applied to single-employer plans, there is no feedback to deal with possible responses by the corporate management of insured plans to the changes in PBGC or Congressional policy. The PIMS model designed for the multiemployer plans does include the probability that there might be mass withdrawal from a given plan or the possibility of plan insolvency before any such mass withdrawal. However, from the perspective of an individual employer, the PIMS model does not anticipate how individual employers might respond to changes in the PBGC or Congressional policy. Accordingly, a longer-term project should be for the PBGC to develop a model to allow for behavioral responses to policy changes.

Crucial role of the benchmark

Given these constraints and restrictions on the effective management of the PBGC, one might think about redesigning its governance structure and investment strategy. Here we discuss how to create an investment strategy that will improve the current investment process, so as to improve the financial health of the PBGC. The process for doing so begins with the establishment of the appropriate benchmarks for (1) determining the asset allocation policy, and (2) evaluating performance. The critical component in this process is the development of a customized benchmark.

Investment policy

The agency's investment policy fundamentally pertains to its asset allocation decision. Although there is frequent mention in the PIMS documentation that asset allocation is tied to its liability structure, it is unclear how the link is made in PIMS.

Historically, the agency's asset association policy has alternated between a 'maximize long-term returns' and a 'liability-driven investment' (LDI) strategy. More specifically:

- From 1974 to 1990, the investment policy was designed to allow for greater equity exposure in order to maximize expected returns within acceptable levels of risk;
- From 1990 to 1994, the investment policy was designed primarily to reduce balance-sheet volatility that arose from a mismatch between the sensitivity to interest rates changes of the PBGC's assets and liabilities through greater exposure to fixed-income securities with long duration (i.e., LDI strategy);
- From 1994 to 2004, the investment policy returned to that pursued in 1974–1990, seeking to maximize expected returns within acceptable levels of risk by permitting greater exposure to equities;
- From 2004 to January 2008, there was a return to an investment policy of reducing balance-sheet volatility (LDI strategy). The asset allocation policy permitted from 15% to 25% of asset exposure to equities and 75% to 85% exposure to fixed-income securities;
- In February 2008 to April 2011, the investment policy shifted to a '45-45-10' policy: 45% equities, 45% fixed income, and 10% alternative investments (i.e., private

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equity and real estate). The view in designing this policy was that the PBGC should take advantage of its long-term investment horizon and target the generation of better returns to provide a greater probability of satisfying its long-term obligations (i.e., maximize long-term returns strategy); and

- In May 2011, the PBGC adopted a new policy of targeting 30% equity and other non-fixed income assets and 70% fixed income assets. On adopting this policy, the Board gave the following reason: 'The investment policy objective is to maximize total return within a prudent risk framework that incorporates PBGC's fixed obligations and asset composition of potential trusteed plans' (PBGC, 2012*a*: 35). That is, it is a return to the LDI strategy.

It is interesting to note that these policy recommendations have come from external advisors, although the recommendations have been evaluated by other government agencies. For example, the 45-45-10 policy adopted in February 2011 which represented a major shift in the allocation policy was based on an analysis of the Rocaton Investment Advisors. The CBO reviewed the assumptions underlying the PBGC's decision to shift to the 45-45-10 policy and assessed its potential for affecting the PBGC's ability to meet its obligations to retirees and for increasing costs to taxpayers. In commenting on the new investment policy to Congressman George Miller, Chair of the Committee on Education and Labor in the U.S. House of Representatives, the CBO in April 2008 wrote:

> The new strategy is likely to produce higher returns, on average, over the long run. But the new strategy also increases the risk that PBGC will not have sufficient assets to cover retirees' benefit payments when the economy and financial markets are weak. By investing a greater share of its assets in risky securities, PBGC is more likely to experience a decline in the value of its portfolio during an economic downturn—the point at which it is most likely to have to assume responsibility for a larger number of underfunded pension plans. If interest rates fall at the same time that the overall economy and financial markets decline, the present value of benefit obligations will increase, and the pension plans likely to be assumed by PBGC will be even more underfunded as a result (CBO, 2008: 2).

The CBO's further comments are noteworthy because they highlight the distinction between the much-abused principles of portfolio construction using the classical mean-variance framework to obtain diversification while ignoring the critical nature of the liability structure (i.e., the timing of the obligations). The CBO wrote:

> It is widely accepted that an investor benefits from having as diversified a portfolio as possible, given an established level of risk tolerance. A portfolio containing a mixture of risky securities will generally pose less risk to an investor than a portfolio consisting of just a single risky asset. Most observers would agree that the portion of assets allocated to equities and other risky securities should be well-diversified in order to maximize return for a given level of risk.
>
> There is a significant difference, however, between the riskiness of PBGC's asset portfolio and the risk posed by the new investment strategy to the corporation's funded status – the difference between the value of PBGC's assets and the present value of its liabilities. That is, although Rocaton's analysis suggests the new investment strategy offers greater expected returns with lower risk to the assets held in PBGC's portfolio, that strategy reduces the timing

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match between the corporation's future pension obligations and cash-flow streams from its investments. The increased risk to funded status is illustrated in principle on page 28 of Rocaton's report in a graphic that is reproduced in this letter (see Figure 1). In particular, 'Alternative #5' (which most closely represents the new strategy) is further to the right than the 'current target' (which represents the recent strategy) (CBO, 2008: 4).

Liability valuation

The underlying principle in the valuation of an asset or a liability is that it should be discounted at a risk-appropriate interest rate. The rate should be based on the rate that can be earned on market-traded investment vehicles. If one accepts the notion that a set of liabilities should be valued at the cost necessary to defease those liabilities by purchasing a portfolio of risk-free securities, then the appropriate investment vehicles are the securities traded in the U.S. Treasury market.[1] Although Treasury securities are not default-free, they are still viewed as the benchmark for risk-free rates around the world, as well as providing a liquid market for creating a portfolio for defeasing a liability stream. This means that not one or two Treasury coupon rates should be used for discounting liabilities, but a set of Treasury spot rates. Spot rates are the theoretical rates that the U.S. Department of the Treasury would have to pay if it is elected to issue zero-coupon Treasury securities with different maturities. There are well-developed analytical methodologies (e.g., bootstrapping) and econometric techniques for deriving theoretical spot rates from Treasury coupon rates. In fact, Treasury spot rates are used in arbitrage-free pricing of fixed income cash and derivative instruments.

The PBGC's liabilities can be viewed as a yield curve of monthly benefit payments. The argument in favor of using Treasury spot rates is that the present value of the liabilities represents how much the U.S. Department of the Treasury would have to issue in Treasury securities to pay off the projected liabilities. Investors and credit rating agencies would view liabilities in the same way in the determination of their value.

How does this compare with the PIMS treatment of the liabilities? In the PBGC's 2012 Actuarial Report, the interest rate used as of September 30, 2012 was 3.28% for liability obligations for the first 25 years, and 2.97% thereafter. Although the long-term rate is in line with prevailing Treasury rates at that time (roughly 2.92% in 2012), the fixed rate for less than 25 years was far greater than for 25-year Treasuries (3.28% versus 2.54%). The difference was even greater at the short-end of the yield curve, where 5-year and 10-year Treasuries, for example, offered a yield of only 0.76% and 1.8%, respectively. Consequently, the projected liabilities for the first 25 years were considerably undervalued.

The PBGC report, 'FY 2012 PBGC Exposure Report' (PBGC, 2012*b*), prepared to satisfy requirements in Section 4008 of ERISA, included an Appendix titled 'Overview of PIMS'. The following statement appeared:

1 A long-time proponent of establishing customized benchmarks based on liabilities for public and private defined benefit plans, as well as the PBGC is Ronald J. Ryan, CEO of Ryan ALM, Inc. See Ryan (2014).

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Throughout this report, we express all future outcomes in present value terms (i.e., discounted back to 2012). Each scenario's outcomes are discounted based on the 30-year Treasury bond yields projected for that scenario, regardless of whether the underlying simulated cash flows are generated from holdings of equities, high-yield bonds, corporate bonds, or U.S. Treasury bonds.

The same problem arises here: using a single discount rate rather than a term structure of Treasury spot rates, the projected liabilities and the deficit are underestimated. Given that short-term rates (due to a steep Treasury yield curve) as of this writing are far lower than the 30-year Treasury rate used in the simulations by PIMS to calculate the present value of liabilities, there is likely to be a considerable understatement of the value of the PBGC's liabilities and deficit.

The Financial Accounting Standards Board (FASB), in its Financial Accounting Statement (FAS) 87, has explained how to value pension liabilities of plan sponsors. Here the plan liabilities must be priced as high-quality zero-coupon bonds whose par values match the liability payment amounts, and whose maturities match the liability payment dates. More precisely, the selection of discount rates is explained in Paragraph 186 of FAS 106 (December 15, 1990) as follows:

The objective of selecting assumed discount rates is to measure the single amount that, if invested at the measurement date in a portfolio of high-quality debt instruments, would provide the necessary future cash flows to pay the accumulated benefits when due. Notionally, that single amount, the accumulated post retirement benefit obligation, would equal the current market value of a portfolio of high-quality zero coupon bonds whose maturity dates and amounts would be the same as the timing and amount of the expected future benefit payments."

Although the FASB refers to the pension liabilities of the plan sponsors, the valuation is equally relevant to the PBGC's liabilities.

Moreover, in a June 1993 letter to corporations, the Securities and Exchange Commission (SEC) Guidelines on FAS 87 were set forth as follows:

The SEC staff believes that the guidance that is provided in paragraph 186 of FASB 106, for selecting discount rates to measure the post-retirement benefit obligation, also is appropriate guidance for measuring the pension benefit obligation.

The SEC letter stated further that:

Rates that cannot be justified or are just too high will be passed on to the SEC's enforcement division for further action. The enforcement division could require restatement of the company's financial statements, as well as seek to impose civil or criminal penalties.

Apparently the SEC believes that the FASB guidelines are important enough for reporting entities to invoke such consequences for failure to comply.

Although the above arguments about using a term structure of interest rates rest on sound principles of valuation, the issue still remains as to what financial instrument should be used. The FASB, for example, states in Paragraph 44 of FAS 87:

In making those estimates, employers may also look to rates of return on high-quality fixed income investments currently available and expected to be available during the period to maturity of the pension benefits.

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It is clear that it should be a high-quality fixed income instrument. I have argued above that it should be Treasury rates. Historically, some have argued that the rate on double A (AA or Aa) or triple A (AAA or Aaa) rated corporate bonds should be used. The SEC, for example, qualified 'high quality' to include corporate bonds with those ratings. But there are four problems using double-A or triple-A rated corporate bonds.[2] First, these are not viewed as free of default risk. A portion of the yield offered on corporate bonds reflects both default risk and liquidity risk. Second, there are major problems with corporate bond indices used to represent the corporate AA and AAA markets. Third, few corporate bonds are available with a duration in excess of 15 years, while pension liabilities are far longer than 15 years. Finally, one of the reasons for using a term structure to create a portfolio of high-quality fixed income instruments is to defease the projected liabilities. However, the size and liquidity of the AA and AAA rated corporate bond market is such that a defeasance is not possible.

The PBGC currently discounts its future benefits obligations using an interest rate that approximates the discount rate used in the private-sector annuity market. But there are several problems with this rate. The rates for the 1–25 and 25 year plus periods reflect annuity rates. But annuity rates are not really market rates but individually negotiated rates. Consequently, the first problem with annuity rates as candidates for discounting is that the same rate is not available to all market participants. Second, there is not a market determined set of zero-coupon rates. Third, the annuity providers are subject to default risk. Finally, the market may not be large enough to defease the PBGC's projected liabilities.

Although I have argued that liabilities should be discounted at Treasury spot rates, one might argue that the projections for terminated plans as projected by PIMS are not known with certainty. As a result, it might be argued that these liabilities might warrant a higher discount rate depending on the likelihood associated with the projection. Nevertheless, it is crucial for PIMS to include a term structure model for Treasury securities and to use the resulting set of rates to discount liabilities. Not only will this provide the proper valuation of liabilities and deficit, it is the benchmark that can be used to establish investment policy and performance evaluation.

Proposed solutions

Here we take as given that there is no reasonable way to move the PBGC from an unhealthy, high-risk agency to a healthy agency. Accordingly, the proposed solutions we discuss next is to seek to minimize the cost of an eventual bailout, should that be necessary as determined by the Congress. Moreover, our solutions do not deal with the strategy of raising premiums or reducing benefits, since these are beyond the control of the PBGC. The CBO noted these other solutions in the letter to Chairman Miller referred to earlier, writing:

The Congress could address the issue of structural underfunding in three ways:

- Set premiums at a level that will cover expected shortfalls from future claims;

2 These problems are discussed further in Ryan and Fabozzi (2003).

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- Reduce retirees' benefit payments; or
- Tighten funding rules for insured plans.

In what follows, I focus instead on the investment policy and performance evaluation.

Investment policy

As explained earlier, the PBGC's investment policy must take into account its liability structure. One approach would construct a portfolio of Treasury securities that defease the future liabilities. There are still risks associated with longevity risk and uncertainty about future liabilities owing to new obligations from bankrupt plans. Moreover, as of this writing, the prevailing level of low interest rates makes it difficult to support such a proposal. It would be interesting to assess the performance of such an investment strategy and compare it with the current funding status of the PBGC, had such a policy been instituted in 1974. Although this strategy may be unacceptable now, it still remains the basis for formulating a benchmark to compare the PBGC's investment policy.

Consideration of the liability structure alone is not sufficient, given the uncertainty about future liabilities inherited from bankrupt plans. Instead, consideration can also be given to the factors that will drive future liabilities. This broader view of the liability structure is analogous to portfolio construction on the asset side, where the factor exposure is considered. In the case of the PBGC, this means using its models to determine what sectors/industries are highly likely candidates for bankruptcy/plan termination. That information would then be used to set investment policy. For instance, in its current allocation both in fixed income and equities, the PBGC's external managers can be told that their performance will be evaluated against some customized index. The customized index would take into account the potential exposure to plans in sectors that the PBGC might inherit. So if several firms in industry X were estimated to have a high probability of being taken over by the PBGC, avoiding industry X in establishing a benchmark for the asset managers it engages would be appropriate. This would call for the development of a benchmark that minimizes exposure to the troubled industries where the PBGC had identified its exposure.[3]

In fact, not only is minimizing exposure to such industries or sectors warranted, but risk mitigation might also call for short positions in such industries. Assuming that the PBGC could not short the stock of such firms nor write put options on them, there are more acceptable alternatives in the equity market to implement this strategy. For instance, exchange-traded funds (ETFs) for targeted industries/sectors could be shorted, as well as index put options that benefit from difficulties in an industry or sector. The decision as to the type of exposure (ETFs versus contingent-type positions) will depend on the likelihood of the PBGC projected exposure to an industry or sector from bankrupt firms whose plans it will inherit. In the case of fixed income (bond)

3 On page 38 of the PBGC's (2012*a*, *b*) Annual Report, the following is stated about custom benchmarks: 'The custom benchmarks include similar securities and are weighted combinations of sub-sector benchmarks. PBGC is able to redeem composite assets upon request.' However, it unclear whether reference to a custom benchmark means the same type of customization suggested in this proposal.

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indices, again there can be customization of the benchmark to avoid troubled industries or shorting exposure can be obtained by taking positions in credit derivatives.

Would identifying the PBGC's exposure to industries/sectors become an integral part of its risk management program? Currently, the PBGC indicates that:

> Throughout the year, we conduct due diligence on our processes and the investment management firms. Our due diligence includes regular communication with the management firms, enabling us to stay updated on matters affecting the agency's investment program, including the agency's portfolio, the portfolio's performance, and firm changes. (PBGC, 2012*a*: 20)

This due diligence process would benefit from identification of aggregate exposure to positions driving potential future liabilities.

There is an implementation issue associated with this proposal involving the signaling of information to the financial markets when benchmarks are established as described. The signaling of concerns by the PBGC could cause external managers to take positions in the portfolio of their other clients that could accelerate the difficulties in the troubled industries or sectors. However, there is a solution to this signaling problem. Although the PBGC does not manage funds internally, it should be able to hire staff that can employ an overall strategy so as to obtain the target exposure to an industry. This would require external managers reporting their exposure periodically to the PBGC. The PBGC staff would then offset this exposure with ETFs and/or derivatives and take additional positions to accomplish the target exposure it seeks.

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