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FUNDING RULES AND IMPLICATIONS FOR PENSION FUND INVESTMENT

**By Zoltan Vajda
OECD Secretariat**

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1. This paper highlights some issues related to the funding of defined benefit (DB) plans and some implications for the investment strategy and performance of pension funds.

1. Introduction

2. There are two basic approaches to providing retirement benefits. One approach is to determine only the level of contributions to be paid. These contributions and their investment returns are credited to individual accounts. There is no pre-specified level of benefits to be achieved, the retirement benefit of a member is a function of the individual's account balance at the retirement date.

3. The second approach is to establish and maintain a pension scheme that promises a benefit level at retirement. The scheme sponsor – typically the employer – undertakes to provide, often as a compliment to explore contribution, an amount of funds (through regular contributions) that together with investment returns are sufficient to pay the promised level of benefits.

4. Funding issues are relevant for the second type of pension schemes (known as defined benefit schemes) which provide a promise to members. These pension promises are expressed in some unit of compensation that can be in monetary terms (flat amount) or a specified percentage of a measure of pre-retirement income (replacement rate).

5. The design of the plan also has implications for the investment strategy of the pension fund. In case of DB plans, the maturity of the scheme is an important factor guiding investment decisions. For example, a mature scheme is more likely to engage in maturity matching by investing mostly in a fixed income portfolio.

6. This document raises three policy issues that the Working Party may investigate further:

- *Impact of funding rules on investment:* The funding rule used has obvious implications for the investment policy to be followed. With a PBO approach diversification is vital to further reduce risks. Using an IBO approach, investment may move more towards assets acting as hedges against inflation (such as index linked bonds) and towards forms unaffected by inflation such as equities and real estate.
- *Implications of financial volatility for funding levels and regulation:* The recent financial downturn has affected DB schemes' funding levels in two ways: the low equity returns led to a decline in asset values, while the sharp decline in yields led to an increase in the net present value of their liabilities. As a result of these higher liabilities and lower asset values many DB schemes may show underfunding. Of course this affect is varied depending on their portfolio and their funding levels, however it raises concerns over the security of pension benefits.

- *Disclosure issues:* Funding rules imply a large degree of transparency vis-à-vis scheme members and (in case of company sponsored funds) company shareholders. Regular reporting to members should provide clarity on the security of meeting their pension promise (e.g. information about underfunding implying that their pensions are in jeopardy) while reporting to shareholders should provide information on the degree of their investment risk.

2. Funding rules

7. Sponsors of defined benefit schemes must tackle a number of forecasting and risk management issues such as:

- What is the liability they are assuming?
- What are the valuation factors (such as discount rates, salary growth, inflation, etc.) to be used to measure this liability?
- How should biometric risks (longevity, death, disability) be measured?
 - In particular, what mortality table(s) should be used to estimate the length of the promised annuities and how should these tables be regularly updated to take into account changes in longevity?
- How should the probability of departure from the plan be modelled?
- What is the method and periodicity to value assets and to what extent should asset-liability matching be pursued?

8. Two liability concepts in the calculation of funding are used in literature. The on-going approach (sometimes termed the prospective method) is forward looking in the sense that it takes into account not just past accrued rights but all future rights and benefits to be paid out. The winding-up approach (also called retrospective method), on the other hand, is backward looking, in the sense that it looks at the obligations of the fund if it were terminated at present, i.e. how much would need to be paid out on the basis of past contributions of the current participants.

9. Each approach has its own particular advantages and disadvantages and literature is divided on recommendations for funded schemes, however some general comments can be made. The forward looking concepts seem preferable to the backward looking method since they allow for a more even spread of costs by taking into account changes in future contribution in theory over the lifetime of the scheme.

3. The impact of the year 2000 financial downturn

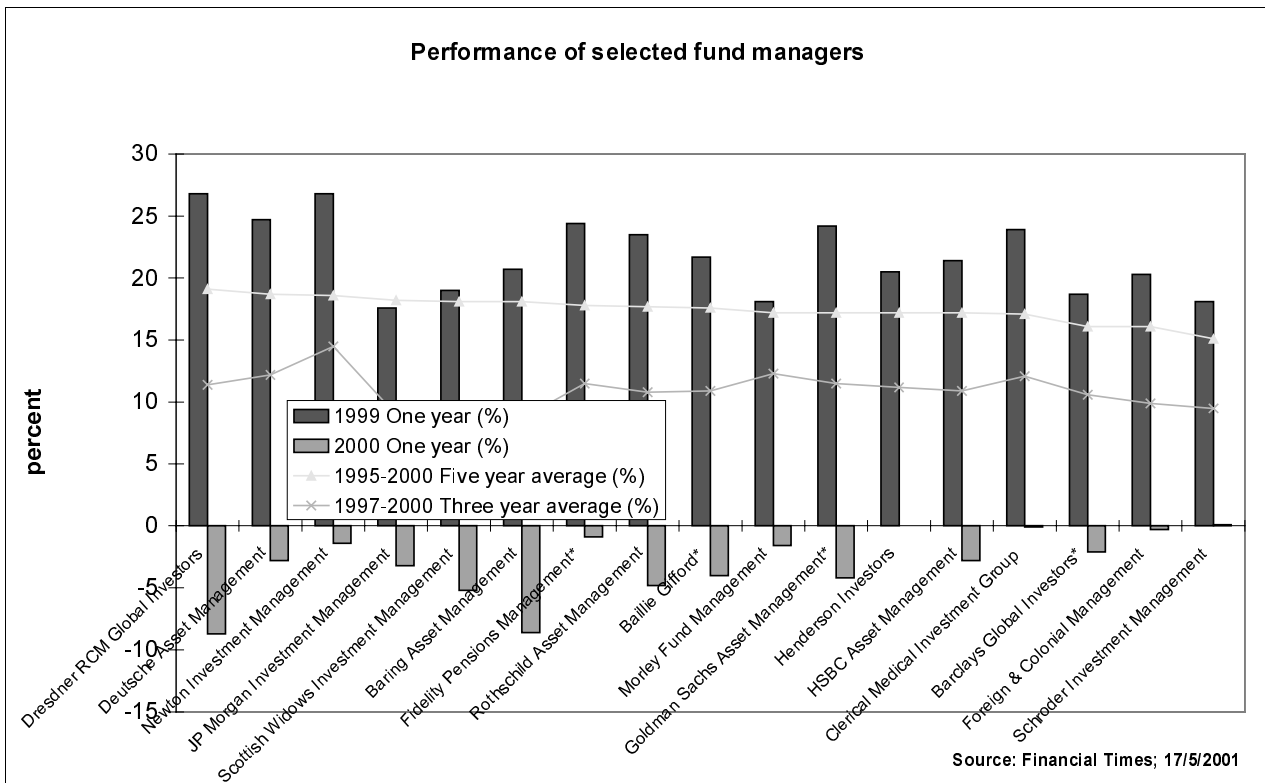
10. The year 2000 has proved to be problematic for pension funds for the losses suffered on their investments. Equity markets have fallen drastically, some stocks losing as much as 80 percent or more of their recent highs. New economy stocks in particular have taken the worst crash, with the meaningful NASDAQ index well below 2000 points. In addition, the events of September 11th have proved to have an additional notable negative impact on markets. Pension funds in the UK have suffered their worst losses since 1990 in the 3rd quarter of 2001, with an average loss of 12.6%. Some have dubbed 2000 “the worst year in pension history”^{*} and 2001 does not seem to fare any better.

^{*} R. Ryan, “Year 2000, the worst year in pension history”, January 2000, www.ryanlabs.com

11. The following table describes the above-illustrated dismal performance of pension funds, for seven selected major OECD countries. As can be seen, following 10-year average real returns of between around 5 and 14 percent, 2000 has resulted in substantial negative figures with even the best results just showing minimal (1-2%) real returns.

Pension fund managers' returns								
	Average pension fund nominal return %							
	US	Japan	Australia	Switzerland	Sweden	The Netherlands	UK	
1991	20.5	9.1	22.3	9.3	17.2	11.1	17.7	
1992	6.2	2.1	4.7	9.5	11.5	11.6	17.5	
1993	11.6	11.5	24.9	16.8	30.9	20.8	25.5	
1994	0.6	-0.5	-4.0	0.3	-1.5	-2.7	-3.0	
1995	25.5	12.3	17.2	10.1	17.2	15.7	19.6	
1996	13.6	5.4	9.7	10.6	23.2	14.9	10.4	
1997	21.2	5.4	15.7	16.6	18.9	20.0	16.8	
1998	21.9	-1.0	14.2	9.4	16.6	12.1	14.9	
1999	15.1	20.8	8.6	9.2	28.0	23.7	20.4	
2000	-3.4	-5.5	5.6	3.1	3.0	1.7	-2.7	
10-year average %/year	13.3	6.0	11.9	9.5	16.5	12.9	13.7	
	Inflation %							
	US	Japan	Australia	Switzerland	Sweden	The Netherlands	UK	
1991	4.3	3.3	3.2	5.8	9.7	3.2	4.5	
1992	3.0	1.6	0.9	4.1	2.6	3.1	2.6	
1993	2.9	1.2	1.9	3.3	4.7	2.6	1.9	
1994	2.6	0.8	1.9	0.8	2.3	2.8	2.9	
1995	2.8	-0.1	4.6	1.9	2.8	1.9	3.2	
1996	2.9	0.1	2.7	0.8	0.8	2.0	2.5	
1997	2.4	1.8	0.3	0.5	0.9	2.2	3.6	
1998	1.5	0.6	0.8	0.0	0.4	2.0	2.8	
1999	2.2	-0.3	1.5	0.9	0.3	2.2	1.8	
2000	3.4	-1.0	4.5	1.6	1.3	2.5	2.9	
10-year average %/year	2.8	0.8	2.2	2.0	2.6	2.5	2.9	
	Average pension fund real return %							
	US	Japan	Australia	Switzerland	Sweden	The Netherlands	UK	
1991	16.2	5.8	19.1	3.5	7.5	7.9	13.2	
1992	3.2	0.5	3.8	5.4	8.9	8.5	14.9	
1993	8.7	10.3	23.0	13.5	26.2	18.2	23.6	
1994	-2.0	-1.3	-5.9	-0.5	-3.8	-5.5	-5.9	
1995	22.7	12.4	12.6	8.2	14.4	13.8	16.4	
1996	10.7	5.3	7.0	9.8	22.4	12.9	7.9	
1997	18.8	3.6	15.4	16.1	18.0	17.8	13.2	
1998	20.4	-1.6	13.4	9.4	16.2	10.1	12.1	
1999	12.9	21.1	7.1	8.3	27.7	21.5	18.6	
2000	-6.8	-4.5	1.1	1.5	1.7	-0.8	-5.6	
10-year average %/year	10.5	5.2	9.7	7.5	13.9	10.4	10.8	
Source: Phillips & Drew: Pension Fund Indicators 2001 (www.philipsdrew.com) and OECD								

12. The graph below is further illustration of the discouraging performance of pension funds over the last two years. Following 5 year-average nominal returns of between 15 and 19 percent, all pension fund managers in the UK have realised negative returns in 2000.



13. Pension investments are – by definition – long term, both in terms of the long accumulation period and the long period during which benefits are drawn. Therefore investment decisions and pension benefit expectations should be based on long-term performance forecasts. Nevertheless, the negative performance of the recent past has taken a heavy toll on the funding levels of DB plans, and could therefore affect the future investment policy of pension funds.

Considerations for DB funds

14. Defined benefit funds have been particularly hard hit by the market developments, since in addition to the disappointing returns on equity, interest rates have also fallen sharply. Since assets declined while liabilities increased, both pension expenses and pension contributions increased. The following table shows how, based on the expected returns on pension assets of an illustrative US portfolio (of 5% cash, 30% bonds, 60% S&P500 equities and 5% international equities), the year 2000 returns represent a negative change in funding of 28.5%.

Average US Fund Return	Year 2000
Assets Declined as US equities fell	-2.5%
Liabilities Increase in net present value as yields fell	+26.0%
Change in funding	-28.5%

Source: R. Ryan, "Year 2000, the worst year in pension history", January 2000, www.ryanlabs.com

15. As stated, the typical reaction of DB funds to the market downturn has been to increase contributions and to end contribution holidays. A particularly interesting market reaction, however, is evidenced by the Boots pension fund in the UK. Between spring 2000 and July 2001, the pension fund has transformed its equity/bond split from a conventional 75/25 to 0/100, i.e. it has sold all its equities and invested completely (to the value of £2.3billion - 3.7billion) in long-term bonds. From the viewpoint of asset-liability matching, the move is interesting in the sense that the liabilities for pensioners are hedged completely through a bond portfolio.

16. Of course, the market downturn affects each pension fund differently, depending on their portfolio, and funding level. However it is clear that its impact raises some concern over the security of pension benefits and the suitability of different investment strategies.

Regulatory reactions to the downturn

17. Regulatory agencies should attempt to limit the negative consequences of the financial downturn for funds, members and market participants. An obvious reaction is for regulators to temporarily ease the funding rules. This can be achieved in a number of ways such as increasing the flexibility in the amortisation period of unfunded liabilities and/or changing the valuation methods to be used (e.g. by permitting book valuation). However, such policy reactions should be consistent with the long term aim of ensuring the soundness of private pension systems.

18. Regulators may be also tempted to require increased disclosure and transparency at times of financial distress. Though welcome in general, requiring more disclosure to plan members and to the market on present funding levels should be carefully evaluated, since it can create tensions in labour relations and can further weaken the plan sponsor's equity values and hence increase the chances of insolvency of the pension plan.