

**THOUGHTS ON THE  
MANAGEMENT OF THE NATIONAL  
PENSIONS RESERVE FUND**

**Paper presented at the Dublin Economic  
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## **Introduction**

1. The National Pensions Reserve Fund Bill, 2000 provides for partial pre-funding arrangements to meet public service employee and social welfare pension liabilities maturing after 2025. With the exception of Denmark, Finland, Sweden and the Netherlands, which have varying forms and degrees of pre-funding, public pensions in Europe are almost entirely met on an unfunded pay-as-you-go basis. Today for every pensioner in Europe there are on average 3.5 workers who contribute to the retirement income of one pensioner. By 2020 this ratio is expected to disimprove to 2.5 workers for every pensioner. In Ireland we have currently a ratio of 1 person aged 65 or over for every 5 persons of working age. By 2025 this ratio will have fallen to around 3 workers for each pensioner and will fall further to 2 workers for each pensioner by 2046.
  
2. From the point of view of the public finances and sovereign credit ratings, how countries tackle the ageing of their populations and the provision of retirement income will be a major differentiating factor. A key question will be whether or not to fund retirement schemes. However, for many countries because of their age structure, funding will not be a major part of the solution. Those countries are likely to have to resort to other measures such as increasing the retirement age or reducing benefits. In Ireland's case, however, where the median age is some ten years lower than the European median, we are uniquely positioned to address the funding question through the National Pensions Reserve Fund mechanism.
  
3. I propose today to talk briefly about
  - the philosophy underlying the typical pension fund investment mandate;
  - possible approaches to long term asset allocation;
  - the Fund's market entry strategy;
  - passive/active management and manager selection; and
  - the liability side of the Fund.

The control and management of the Pensions Reserve Fund will be vested in the National Pensions Reserve Fund Commission. The Commission will perform its functions through the National Treasury Management Agency and may also delegate to the Agency any of its functions, as it considers appropriate. The enabling legislation passed its second stage in the Dáil earlier this week. The views expressed in this paper are personal.

### **Philosophy/Investment Mandate**

4. The Prudent Man/Expert Rule underpins the Anglo-Saxon approach to the responsibilities of pension fund trustees. In his book ‘Against the Gods – the Remarkable Story of Risk’ Peter Bernstein refers to a decision by Justice Samuel Putnam of the Massachusetts Supreme Judicial Court as the most authoritative statement on the subject of risk. The decision was delivered in 1830 and was purposefully vague. In rendering his decision in the case, Justice Putnam defined what came to be immortalised as the Prudent Man Rule:

All that can be required of a trustee to invest, is that he shall conduct himself faithfully and exercise a sound discretion. He is to observe how men of prudence, discretion, and intelligence manage their own affairs, not in regard to speculation, but in regard to the permanent disposition of their funds, considering the probable income, as well as the probable safety of the capital to be invested.

5. The U.S. Employee Retirement Income Security Act (ERISA) of 1974 applies a revised and restated version of the Prudent Man Rule to pension and profit sharing portfolios. ERISA requires that a fiduciary manage a portfolio ‘with the care, skill, prudence, and diligence under the circumstances then prevailing, that a prudent man acting in a like capacity and familiar with such matters would use in the conduct of an enterprise of like character and with like aims.’ This statement differs from the classic Prudent Man Rule in that familiarity with such matters suggests a higher standard than simple prudence;

hence, the name – Prudent Expert Rule. Other provisions of U.S. law and US Department of Labour regulations suggest a portfolio approach under which a position imprudent in isolation may be acceptable in a portfolio context.

6. In drafting the National Pensions Reserve Fund Bill, the authors had the Prudent Man/Expert Rule to the fore of their thinking. In that regard the Bill provides (section 6.4) that the Commission shall at all times exercise due care, skill, prudence and diligence, acting in the utmost good faith, in the discharge of its functions under this Act. The Bill further provides (section 6.3) that the National Pensions Reserve Fund Commission shall have all such.... powers as are necessary or expedient for the performance of its functions and that the Commission (section 6.2.e) may engage, from time to time, consultants and advisers and other service providers as are necessary or expedient for the performance of its functions. Last, but not least, as regards the investment mandate or policy of the Fund section 19.1 of the Bill provides as follows:

**19.—**(1) Moneys standing to the credit of the Fund shall, from time to time, be held or invested for the benefit of the Fund by the Commission, in or outside the State, so as to secure the optimal total financial return, as to both capital and income, having regard to—

(a) the purpose of the Fund as set out in *section* 18(1), and

(b) the payment requirements of the Fund as provided for under *section* 20,

provided the level of risk to the moneys held or invested is acceptable to the Commission.

7. This brings us to the question of return and risk and reflects the two objectives which the father of modern portfolio theory, Nobel Laureate Harry Markowitz, identified in his classic book “Portfolio Selection: Efficient Diversification of Investments”, published in 1959, as being common to all investors:

Return: Investors want return to be high. The appropriate definition of “return” may vary from investor to investor. But, in whatever sense is appropriate, they prefer more of it to less of it.

Risk: Investors want this return to be dependable, stable, not subject to uncertainty. No doubt there are security purchasers who prefer uncertainty, like bettors at a horse race who pay to take chances. The techniques in this (Markowitz’s) presentation are not for such speculators. The techniques are for the investor who, other things being equal, prefers certainty to uncertainty.

8. The Pensions Bill leaves the question of risk to the discretion of the Commission and identifies it as a constraint on how the Fund’s moneys may be invested. Risk, as indicated above, is best regarded as a measure of uncertainty. In portfolio theory risk is defined as the standard deviation, or the probability distribution, of possible returns about the mean viz the extent to which the actual outcome of an investment decision is likely to diverge from the expected value. Holding period, or time frame, is obviously of relevance. Focus on the short term, for example, places equities in a high-risk category and bonds and cash into a low-risk category whereas over longer holding periods, say 20 years, the converse is the reality. A research note published earlier this year by Merrill Lynch on the equity risk premium (i.e. the expected excess return on equities over debt) showed that, over a one-year time horizon, equities are much more volatile/risky than bonds but over a twenty year time horizon, at least for the US, equities are slightly less volatile/risky than bonds:

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**Volatility of US Returns over Different Time Horizons, 1802-1995**

<b>Year</b>	<b>Equities (%)</b>	<b>Bonds (%)</b>
1 year	18.15	6.14
20 years	2.76	2.86

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Source US: Siegel and Thaler (1997) and Merrill Lynch

Looking at the relative performance of equities and bonds the Merrill Lynch note made the same point in a different way

**Holding Period Comparisons: Percentage of Periods when US Equities Outperform US Bonds, 1802-1996**

<b>Holding Period</b>	<b>% of Periods Equities Outperform Bonds</b>
1 year	60.5
5 years	70.2
10 years	79.6
20 years	91.5
30 years	99.4

Source: Siegel (1998) and Merrill Lynch

The Barclays Equity/Gilt Study shows a similar pattern using UK data

<b>Holding Period – Years</b>	<b>Time Period</b>	<b>Equities</b>	<b>Equities</b>	<b>Gilts</b>
		<b>Outperform Gilts %</b>	<b>Outperform T-Bills %</b>	<b>Outperform T-Bills %</b>
<b>1</b>	1918-1998	67.50	62.50	47.50
	1958-1998	68.29	63.41	43.90
<b>2</b>	1918-1998	69.62	72.15	49.37
	1958-1998	68.29	73.17	46.34
<b>5</b>	1918-1998	82.89	82.89	57.89
	1958-1998	87.80	80.49	48.78
<b>10</b>	1918-1998	98.59	98.59	60.56
	1958-1998	100.00	97.56	43.90
<b>20</b>	1918-1998	100.00	100.00	50.82
	1958-1998	100.00	100.00	31.71
<b>30</b>	1918-1998	100.00	100.00	41.18
	1958-1998	100.00	100.00	26.83

Source: Barclay's Capital Equity-Gilt Study & NTMA

- The above presentation should not, however, be taken as justifying a blind act of faith in equities for funds with a long term time horizon in terms of their investment decisions. A cautionary note is that after the 1929 crash it took 15 years for equities (with the dividends reinvested) to regain their 1929 highs and 21 years for equities to outperform bonds!

**Long Term Strategic Asset Allocation**

- Central to the successful management of the new Pensions Reserve Fund will be the strategic asset allocation process, or the process of defining a benchmark for the Fund. This involves identifying the asset classes most

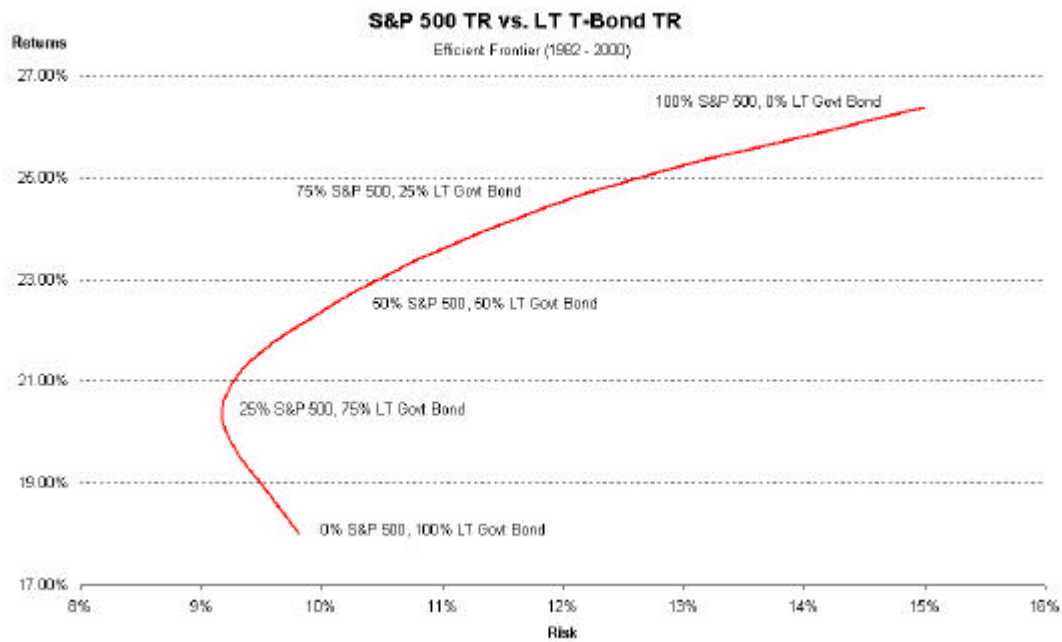
appropriate to the Fund and the proportions of these asset classes that would be expected to make up the Fund over the long term. In sum, the benchmark will define the Fund's investment universe and its strategic risk tolerance. Trustees are expected to take ownership of the risk inherent in the benchmark itself. Subject to being satisfied with the level of risk the Pensions Bill gives the Commission virtually absolute discretion as to the type and weighting of asset classes that would be included in the benchmark. Asset classes open to the Fund would include (but would not necessarily be restricted to) the following:

- Cash (and cash-like instruments)
- Sovereign Bonds (euro/non-euro)
- Corporate Bonds (euro/non-euro)
- Convertible Bonds (euro/non-euro)
- Quoted Equities (euro/non-euro; large, medium, small, capitalisation)
- Emerging Markets
- Alternative Investments/Private Equity/Venture Capital (euro/non-euro)
- Property
- Currency

In the normal course trustees' decisions on strategic asset weightings for a pension fund can be expected to be heavily influenced by their understanding of the liability profile, their interpretation of the Fund's long term investment objectives and any constraints (such as a minimum rate of absolute return or a maximum downside tolerance) which the trustees would wish to impose. Other influences on the asset allocation decision are obviously the performance characteristics of the different asset classes and how they interact. Trustees also tend to be influenced by what other similar funds do.

11. A common approach to strategic asset allocation is the mean variance portfolio optimisation process or efficient frontier analysis developed by Markowitz. Efficient frontier analysis involves the construction of a set of

alternative diversified portfolios each of which has the minimum expected risk for a given expected maximum return. It is best explained, as the following example constructed by Paine-Webber illustrates, as a graph with risk on the X axis and expected return on the Y axis.



Source: Paine Webber

The above example is based on a portfolio containing two asset classes: equities (the Standard and Poor’s 500 Index) and bonds (US 30 year Treasury Bonds). All feasible combinations of these asset classes are plotted for their given level of risk and return. No one portfolio above the minimum risk portfolio (consisting of 25 per cent equities and 75 per cent bonds) on the frontier is “better” than any other. Risk is the same definition as set out in paragraph 8 above viz the standard deviation of possible returns about the mean. The asset allocation should flow from the risk selection not the other way around. This approach would be consistent with the Pensions Bill which, as indicated above, identifies risk as the primary constraint in the asset allocation process.

12. Efficient frontier analysis should be seen as a process rather than some form of holy grail. It is highly sensitive to the inputs: expected returns from the

different asset classes account for about 80 per cent of the sensitivity, with standard deviation/risk and the matrix of correlations accounting for 15 per cent and 5 per cent respectively. As regards expected return, estimation of the equity risk premium is a key input. There is a wide range of estimates around what the equity risk premium is, starting with whether you are looking at it historically or in terms of expectations. Ex post, it was probably around 6 per cent in the last 40/50 years, although this is not to say that investors' expectations at the time were actually targeting 6 per cent: their ex ante estimates were probably nearer 4-5 per cent. Going forward, Goldman Sachs estimated some time ago that, if equity market valuations were to remain constant (i.e. stable price/earnings ratios and real bond yields), the excess return from equity investments would likely to be 1 per cent to 3 percent. Notwithstanding the lower expected equity risk premium, the view expressed earlier, that over longer holding periods equities should out-perform bonds, still remains valid although the probability of under-performance is likely to have increased somewhat.

13. As well as representing a formal statement of long term asset allocation and risk tolerance, the benchmark is also the reference point against which the managers – both passive and active – can be judged. In that regard the return on the benchmark is usually calculated on the basis of the weighted returns on selected indices representing its individual asset class constituents. The choice of indices or asset class benchmarks is obviously important not least because it will condition the behaviour of the investment managers whose performance will be evaluated against the indices. Within asset classes there is an argument for segmenting managers by style e.g. value versus growth managers or separate managers for large and small capitalisation stocks. Returning to the choice of index or asset class benchmarks, the following are the type of criteria that should make up a good benchmark:

- *Market weighting scheme* – a market capitalisation weighted index is essential.

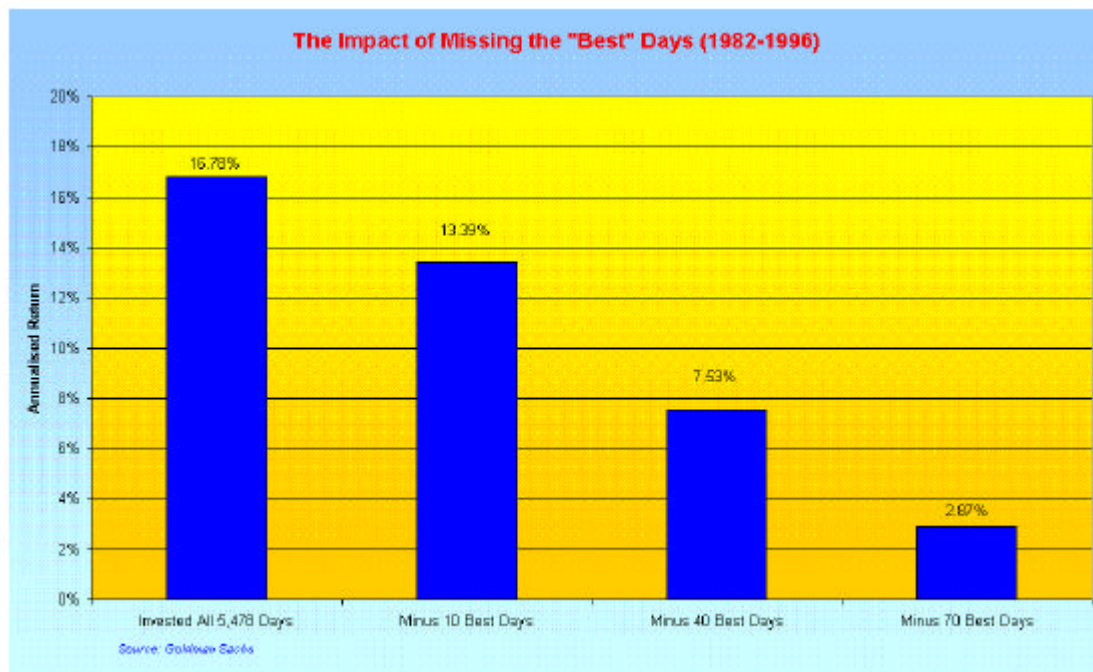
- *Rule based* – the index should be constructed and re-balanced according to published rules, rather than rely on qualitative judgements.
- *Timely availability of capital and total return indices* – this information is obviously required for fund pricing purposes, ideally via electronic feeds.
- *Good usage by institutional investors* – this facilitates peer group comparisons.
- *Availability of Derivatives* – derivatives can be used to manage the exposure of the portfolio.

### **Market Entry Strategy**

14. Notwithstanding the long-run superiority of equities over bonds, for pension funds the long-run tends to be a series of short-runs, as represented by the annual performance statistics. The market entry strategy for the Fund, which on its establishment will consist solely of cash, will obviously be of vital importance. If risk is redefined as the downside risk (or, statistically speaking, semi-variance) the key question in looking at the efficient frontier is how big a loss can one tolerate in one year out of six (one standard deviation). In terms of entry strategy a not unreasonable concern would be that the outlier one-in-six event would occur in the first year of the Fund's existence. In a presentation earlier this year to a seminar on the new Reserve Fund organised by the Irish Association of Pension Funds I suggested that possible entry strategies might be as follows:

- (i) fully invest the Fund as soon as possible after its establishment;
- (ii) invest the Fund on the basis of an “averaging in” approach over say 12/18 months;
- (iii) fully invest the Fund as at (i) above but insure some of the downside risk by, for example, buying put options which could be partly financed by selling call options; and
- (iv) some combination of (ii) and (iii).

15. Fully investing the Fund on its establishment would intuitively expose it to unacceptable market risk. An averaging-in approach clearly reduces the Fund's market risk by spreading investment over time. Depending on market volatility the options approach could be expensive and indeed may not provide any more cost-effective risk reduction than the simple averaging-in approach. As the following chart (source Goldman Sachs) shows market timing can be problematic leading to the conclusion that the simple approach may well be the best.



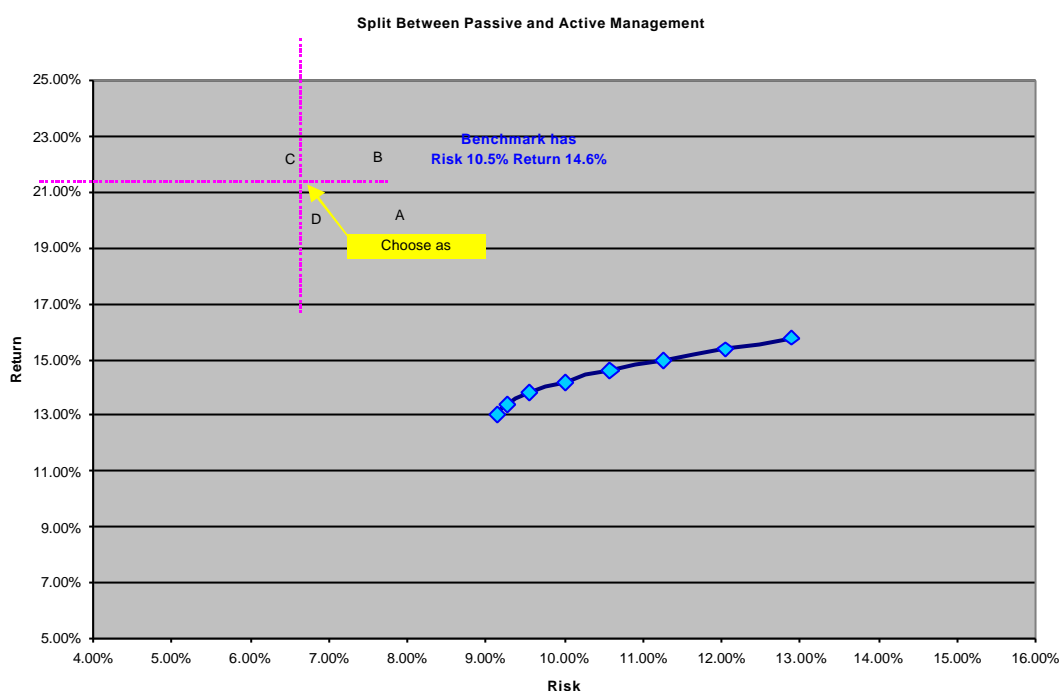
The conclusion to be drawn is that in trying to avoid the “worst” days to invest, you may miss the ‘best’ days, which could reduce the portfolio’s return.

### **Passive/Active Management; Manager Selection**

16. Passive management means holding securities in proportion to their weighting in the benchmark so that the risk and return of the portfolio very nearly match the risk and return of the benchmark. Active management seeks to outperform the investment benchmark by active asset allocation, security selection, sector rotation and other potential sources of valued-added (or alpha); each of these decisions is likely to result in the risk and return of the actual portfolio

deviating from the benchmark. There is evidence (e.g. Gupta, Prajogi and Stubbs – The Journal of Portfolio Management – Autumn 1999) that top-quartile managers add value but that their persistence of performance (i.e. their ability to continue to outperform) is weak in certain asset classes, notably those involving more efficient markets, such as US large capitalisation stocks. There is considerable merit in the idea of the Fund having a core passive portfolio combined with active specialist portfolios in those asset classes where there is a reasonable degree of confidence that managers who consistently outperform can be identified.

17. The manager selection process should, of course, be subject to transparent competition. In seeking to identify good active managers the Fund should be looking for those managers with an externally verified high Information Ratio, (compliant with the Global Investment Performance Standards) indicating that they are able to generate more value-added (alpha) for each unit of active risk or tracking error (the standard deviation of a manager's return relative to the benchmark). Managers should have a clearly articulated investment process which can be expected consistently to deliver alpha within clearly defined performance targets and risk parameters. They should also have stable and properly incentivised investment teams, sound IT systems and databases and a clear sense of corporate governance. An active investment manager's demonstrated ability to operate within prescribed risk parameters will be essential if there is to be effective management and control of the Fund's active risk across the different asset classes and at the total Fund level through a formalised risk budgeting process, most likely operated by the NTMA on behalf of the Pensions Reserve Commission.
18. Schematically, the active manager selection process can simplistically be represented as follows:



The above example assumes that the trustees have chosen a benchmark consisting of 70 per cent equities and 30 per cent bonds: the benchmark has an expected return of 14.6 per cent and a risk/standard deviation of 10.5 per cent. A passive manager would be expected to produce a return close to 14.6 per cent. An active manager consistently in quadrant A would be rejected on the basis that the return would be lower than the benchmark/passive return while the risk would be greater. An active manager in quadrant B would be generating higher return than the benchmark but on the basis of higher risk. In quadrant C an active manager would be outperforming both the benchmark/passive portfolio and the manager in quadrant B in terms of risk and possibly return. The manager in quadrant D could best be described as conservative. He might deliver a return close to, but obviously not exceeding, the benchmark on a lower risk basis: a question arises as to whether he is really a closet indexer charging the much higher active management fees. From the point of view of awarding active mandates managers consistently in quadrant C would clearly be the preferred choice.

## **Liabilities**

19. The Prudent Man/Expert should also look at the liability side. This should involve not looking just at their size and structure as currently constituted but also looking ahead by analysing the dynamics of those liabilities. For example: are the liabilities growing; if so, are they growing in line with inflation? So how big are the pension bills to be addressed by the National Pensions Reserve Fund? The cost of Social Welfare pensions in 1999 was 3.4 per cent of GNP which is projected to rise to 5.7 per cent in 2026, 6.9 per cent in 2036 and 10 per cent in 2056. By contrast the Public Service pensions bill was 1.3 per cent of GNP in 1999 and will rise to 2.4 per cent by 2026 and stay at around that level. So the key part is the rapid growth in outlay to the Government from Social Welfare pensions in the years after 2026 – hence the 25 years commitment to injecting money before it can be drawn down.
20. The Pensions Reserve Fund Bill (section 6 (1)(h)) includes as a function of the Pensions Commission, the commissioning, from time to time, of independent valuations of the assets of the Fund, and, after consultation with the Minister for Finance, assessments of the projected profile of Exchequer outlays on a public service pensions, and after consultation with the Minister for Finance and the Minister for Social, Community and Family Affairs, assessments of the projected profile of Exchequer outlays on social welfare pensions.
21. There are, of course important differences between the liability streams of the Pensions Reserve Fund and those in private sector pension funds, notably the solvency/discontinuance actuarial tests for defined benefit schemes which the latter must meet every 3½ years and which it would not be appropriate to apply to the Pensions Reserve Fund. Nonetheless, it makes sense for changes in assets and liabilities to be considered together – as provided for in the Bill – to see whether there are any policy implications arising from unexpected changes in either the Fund’s assets or the pensions liability stream. It will be important to see whether the investment performance has been sufficient to keep up with the growth in liabilities or not – and to understand the reasons

for falling behind or gaining ground. This means that the assets will need to be compared with long-term liability-measures as well as investment benchmarks. These analyses of assets and liabilities can feed directly into long-term Government thinking. It is important that this cycle of review of performance is put in place from the outset. The impact of pension changes is seductively long-term and transitions need to be planned far in advance or they run the risk of being politically unacceptable. The decision to set up the Fund in the first place should be reinforced by establishing sensible review processes, but in the short term these should not impact on the main objective of maximising investment returns.

## **Conclusion**

22. The Pensions Reserve Fund is going to be a very big Fund: in this week's Dáil debate the Minister for Finance said that, assuming a conservative equity risk premium of 1 per cent ,by 2025 the value of the Fund would be equivalent to some 42 per cent of GNP. The Fund needs to be looked at from a long-term perspective: short-term rigidities, which do not allow the Prudent Man's common sense to prevail, will undermine the successful management of the Fund. A long-term perspective with a heavy equity bias, combined with proper risk management systems, clear strategic asset allocation and manager selection processes, as well as sensible monitoring and review arrangements, will ensure that the Fund will meet its statutory investment policy objective.

12 October, 2000